



United States Department of Agriculture

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# **Record of Decision**

## **Rosemont Copper Project and Amendment of the Coronado Land and Resource Management Plan**



Forest Service

Coronado National Forest

Nogales Ranger District

June 2017

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# Contents

<b>Acronyms and Abbreviations .....</b>	<b>v</b>
<b>List of Cooperating Agencies.....</b>	<b>ix</b>
<b>1.0 Introduction .....</b>	<b>1</b>
<b>1.1 Introduction to the Record of Decision.....</b>	<b>1</b>
<b>1.2 Changes Since the Draft ROD.....</b>	<b>1</b>
<b>2.0 Background of the Project.....</b>	<b>3</b>
<b>2.1 Project History .....</b>	<b>3</b>
<b>2.2 Purpose and Need for Action .....</b>	<b>4</b>
<b>2.3 Issues .....</b>	<b>7</b>
2.3.1 Issue 1: Land Stability and Soil Productivity .....	7
2.3.2 Issue 2: Air Quality .....	7
2.3.3 Issue 3: Water Resources.....	7
2.3.4 Issue 4: Seeps, Springs, and Riparian Vegetation .....	8
2.3.5 Issue 5: Plants and Animals .....	8
2.3.6 Issue 6: Cultural Resources.....	9
2.3.7 Issue 7: Visual Resources .....	10
2.3.8 Issue 8: Dark Skies and Astronomy .....	11
2.3.9 Issue 9: Recreation.....	11
2.3.10 Issue 10: Public Health and Safety .....	11
2.3.11 Issue 11: Social and Economic Resources .....	11
2.3.12 Issue 12: Transportation/Access .....	12
<b>3.0 My Decisions .....</b>	<b>12</b>
<b>3.1 Decision for the Rosemont Copper Project.....</b>	<b>12</b>
3.1.1 Decision Rationale for the Selected Action .....	13
3.1.2 Decision Space for the Selected Action .....	13
3.1.3 Responsiveness to the Purpose and Need for the Selected Action .....	15
3.1.4 Responsiveness to the Issues and Resources Analyzed for the Selected Action .....	15
3.1.5 Decision Conclusion for the Selected Action .....	30
<b>3.2 Decision to Amend the 1986 Forest Plan.....</b>	<b>31</b>
3.2.1 Decision Rationale for the Forest Plan Amendment .....	31
3.2.2 Decision Space for the Forest Plan Amendment .....	32
3.2.3 Responsiveness to the Purpose and Need for the Forest Plan Amendment.....	32
3.2.4 Responsiveness to the Issues and Resources Analyzed for the Forest Plan Amendment ...	33
3.2.5 Decision Conclusion for the Forest Plan Amendment .....	33
<b>4.0 Selected Action .....</b>	<b>33</b>
<b>4.1 Summary of Selected Action.....</b>	<b>33</b>
<b>4.2 Connected Actions .....</b>	<b>37</b>
4.2.1 Electrical Transmission Line .....	37
4.2.2 Water Supply Pipeline.....	37

4.2.3 Electrical Distribution Line .....	38
4.2.4 Arizona National Scenic Trail Reroute.....	38
4.2.5 State Route 83 Highway Maintenance and Improvements.....	38
<b>4.3 Mitigations, Monitoring, and Additional Requirements.....</b>	<b>38</b>
4.3.1 General Requirements .....	38
4.3.2 Mitigation and Monitoring Requirements .....	43
4.3.3 Reporting and Evaluation .....	62
<b>5.0 Other Alternatives .....</b>	<b>62</b>
<b>5.1 Alternatives Considered.....</b>	<b>62</b>
5.1.1 Alternative 1 – No Action (Environmentally Preferable Alternative).....	63
5.1.2 Features Common to All Action Alternatives .....	64
5.1.3 Alternative 2 – Proposed Action.....	64
5.1.4 Alternative 3 – Phased Tailings .....	65
5.1.5 Alternative 5 – Barrel Trail Alternative.....	67
5.1.6 Alternative 6 – Scholefield-McCleary Alternative .....	67
<b>5.2 Alternatives Considered but Eliminated from Detailed Study.....</b>	<b>69</b>
<b>6.0 Public Involvement and Agency Collaboration .....</b>	<b>70</b>
6.1 Public Scoping.....	70
6.2 Public Review of the Draft EIS.....	71
6.3 Public Objection of the FEIS and Draft ROD .....	72
6.4 Tribal Consultation.....	72
6.5 Cooperating Agency Consultation.....	73
6.6 Federal Agency Consultation .....	73
6.7 Professional Disagreement and Scientific Uncertainty .....	74
6.7.1 Caves .....	74
6.7.2 Groundwater Modeling .....	75
6.7.3 Riparian .....	76
6.7.4 Air Quality.....	76
<b>7.0 Compatibility with Goals of Other Entities.....</b>	<b>77</b>
7.1 Las Cienegas National Conservation Area Resource Management Plan.....	77
7.2 Cienega Creek Wild and Scenic River Eligibility .....	77
7.3 Saguaro National Park Management Plan.....	78
7.4 Patagonia-Sonoita Scenic Road Corridor Management Plan .....	78
7.5 Pima County Sonoran Desert Conservation Plan.....	79
7.6 Town of Sahuarita General Plan.....	79
7.7 Santa Cruz County Comprehensive Plan.....	79
7.8 United States Army Fort Huachuca.....	79

<b>8.0 Findings Required by Laws, Regulations, Policy, and Direction .....</b>	<b>80</b>
<b>8.1 Organic Administration Act of 1897.....</b>	<b>80</b>
<b>8.2 General Mining Act of 1872.....</b>	<b>80</b>
<b>8.3 Mining and Minerals Policy Act of 1970 .....</b>	<b>81</b>
<b>8.4 Multiple Surface Use Mining Act of 1955.....</b>	<b>81</b>
<b>8.5 36 CFR 228, Subpart A .....</b>	<b>81</b>
<b>8.6 National Forest Management Act of 1976.....</b>	<b>82</b>
8.6.1 Rosemont Copper Project.....	82
8.6.2 Forest Plan Finding of Nonsignificant Amendment.....	83
<b>8.7 National Environmental Policy Act of 1970 .....</b>	<b>85</b>
<b>8.8 Endangered Species Act of 1973 .....</b>	<b>85</b>
<b>8.9 Regional Forester’s Sensitive Species .....</b>	<b>87</b>
<b>8.10 Migratory Bird Treaty Act of 1918, and Executive Order 13186.....</b>	<b>88</b>
<b>8.11 Water Pollution Control Act of 1972 (Clean Water Act).....</b>	<b>89</b>
<b>8.12 Clean Air Act of 1963.....</b>	<b>89</b>
<b>8.13 Federal Noxious Weed Act of 1974 and Invasive Species (Executive Order 12112).....</b>	<b>89</b>
<b>8.14 Wetlands (Executive Order 11990) .....</b>	<b>90</b>
<b>8.15 Floodplains (Executive Order 11988).....</b>	<b>90</b>
<b>8.16 Environmental Justice (Executive Order 12898).....</b>	<b>90</b>
<b>8.17 Planning for Federal Sustainability in the Next Decade (Executive Order 13514).....</b>	<b>91</b>
<b>8.18 National Historic Preservation Act of 1966 .....</b>	<b>91</b>
<b>8.19 Tribal Consultation and Coordination (Executive Order 13175) and Consultation         with Tribes on Indian Sacred Sites (Executive Order 13007) .....</b>	<b>92</b>
<b>8.20 American Indian Religious Freedom Act of 1978 and Religious Freedom Restoration         Act of 1993 .....</b>	<b>92</b>
<b>9.0 Implementation of the MPO .....</b>	<b>93</b>
<b>9.1 Forest Service Requirements.....</b>	<b>93</b>
9.1.1 Submittal of Final MPO with ROD Requirements.....	93
9.1.2 Financial Assurance (Reclamation Bond) .....	94
9.1.3 Clean Water Act 401 Certification .....	95
<b>9.2 Other Permits, Licenses, and Authorizations.....</b>	<b>95</b>
9.2.1 Federal Permits, Licenses and Authorizations .....	96
9.2.2 State Permits, Licenses, and Authorizations .....	96
9.2.3 Local Permits, Licenses, and Authorizations .....	97
<b>9.3 Procedures for Change During Implementation.....</b>	<b>97</b>
9.3.1 Modifications to MPO .....	97
9.3.2 Non-compliance with MPO.....	98
9.3.3 Interim Management .....	98

**10.0 Effective Date ..... 99**

**11.0 Project Information ..... 99**

**12.0 Signature and Date ..... 99**

**Appendices**

- A. Detailed Description of the Selected Action
- B. Regional Forester Review of Objections

**Figures**

Figure ROD-1. Vicinity map and footprint of the selected action.....5

Figure ROD-2. Approved utility alignment for the Rosemont Copper Project .....6

Figure ROD-3. Selected action footprint .....34

Figure ROD-4. Road changes under the selected action .....36

**Table**

Table 1. Soil disturbance by alternative.....69

## Acronyms and Abbreviations

ACC	Arizona Corporation Commission
ACHP	Advisory Council on Historic Preservation
ADA	Arizona Department of Agriculture
ADEQ	Arizona Department of Environmental Quality
ADOT	Arizona Department of Transportation
ADWR	Arizona Department of Water Resources
AGFD	Arizona Game and Fish Department
APE	area of potential effects
APP	aquifer protection permit
ARS	Arizona Revised Statutes
ASLD	Arizona State Land Department
AUM	animal unit month
AZPDES	Arizona Pollutant Discharge Elimination System
BA	biological assessment
BLM	Bureau of Land Management
BMP	best management practice
BO	biological opinion
CAA	Clean Air Act
CEC	Certificate of Environmental Compatibility
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CWA	Clean Water Act
DEIS	draft environmental impact statement
EIS	environmental impact statement
EO	Executive Order
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
ETR	Electronic Testing Range

## Record of Decision and Finding of Nonsignificant Amendment

FEIS	final environmental impact statement
FLAG	Federal Land Managers Air Quality Related Values Working Group
forest plan	“Coronado National Forest Land and Resource Management Plan”
Forest Service	U.S. Forest Service
FSM	Forest Service Manual
GIS	geographic information system
GS	General Schedule
HPTP	historic properties treatment plan
I-	interstate
ID team	interdisciplinary team
kV	kilovolt
LED	light emitting diode
MA	management area
MOA	memorandum of agreement
MPO	mine plan of operations
MSHA	Mine Safety and Health Administration
NAAQS	national ambient air quality standards
NCA	National Conservation Area
NEPA	National Environmental Policy Act
NFMA	National Forest Management Act
NFS	National Forest System
NFSR	National Forest System road
NHPA	National Historic Preservation Act
NO <sub>x</sub>	nitrogen oxides
no.	number



NPS	National Park Service
NRHP	National Register of Historic Places
OHV	off-highway vehicle
PL	Public Law
PM <sub>2.5</sub>	particulate matter less than or equal to 2.5 microns in diameter
PM <sub>10</sub>	particulate matter less than or equal to 10 microns in diameter
QA/QC	quality assurance/quality control
ROD	record of decision
Rosemont Copper	Rosemont Copper Company
ROW	right-of-way
SBA	supplemental biological assessment
SHPO	State Historic Preservation Office
SIR	supplemental information report
SR	State Route
SWPPP	stormwater pollution prevention plan
the Coronado	Coronado National Forest (the agency)
U.S.	United States
USACE	U.S. Army Corps of Engineers
U.S.C.	United States Code
USDOT	U.S. Department of Transportation
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
WUS	waters of the United States

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## List of Cooperating Agencies

The following table shows the agencies that were invited to participate as cooperating agencies, and whether they accepted or declined.

Agency	Accepted or Declined Invitation
<b>Federal Agencies</b>	
Bureau of Indian Affairs, Office of the Special Trustee for American Indians	Declined <sup>1</sup>
Department of the Air Force, 162nd Fighter Airwing	Accepted
Department of Army, Corps of Engineers, Los Angeles District	Accepted <sup>2</sup>
Department of Energy, Western Area Power Administration	Declined
Department of Labor, Mine Safety and Health Administration	Declined
Department of Transportation, Federal Highway Administration, Arizona Division	Declined
Department of Transportation, Federal Railroad Administration	Did Not Respond
Environmental Protection Agency	Declined
National Park Service, Saguaro National Park	Accepted
Office of Surface Mining Reclamation	Declined
Smithsonian Astrophysical Observatory, Fred Lawrence Whipple Observatory	Accepted
Bureau of Land Management, Tucson Field Office	Accepted
U.S. Bureau of Reclamation	Declined
U.S. Fish and Wildlife Service	Did Not Respond
U.S. Geological Survey	Declined
<b>Tribal Governments</b>	
Tohono O'odham Nation	Accepted
<b>State Agencies</b>	
Arizona Department of Administration, Risk Management	Declined
Arizona Department of Game and Fish	Accepted
Arizona Department of Environmental Quality	Accepted
Arizona Department of Mines and Mineral Resources	Accepted
Arizona Department of Public Safety	Declined
Arizona Department of Transportation	Accepted
Arizona Department of Water Resources	Accepted
Arizona Geological Survey	Accepted
Arizona State Historic Preservation Office	Declined
Arizona State Land Department	Accepted
Arizona State Mine Inspector	Accepted
Arizona State Parks	Accepted
Arizona Water Banking Authority	Declined

<sup>1</sup> The Office of the Special Trustee for American Indians declined, but forwarded the inquiry on to the Bureau of Indian Affairs.

<sup>2</sup> U.S. Army Corps of Engineers policy prohibits signing memoranda of understanding. The agency sent a letter of cooperation parameters.

Record of Decision and Finding of Nonsignificant Amendment

Agency	Accepted or Declined Invitation
<b>Local Governments</b>	
City of Tucson	Accepted
Cochise County	Declined
Pima County	Accepted
Santa Cruz County	Declined
Town of Sahuarita	Accepted

## **1.0 Introduction**

### **1.1 Introduction to the Record of Decision**

This is the record of decision (ROD) for the Coronado National Forest's (the Coronado's) response to the mine plan of operations (MPO) submitted by Rosemont Copper Company<sup>3</sup> (Rosemont Copper) (referred to as the "proponent") for the Rosemont Copper Project. It also includes a decision to amend the 1986 "Coronado National Forest Land and Resource Management Plan" (referred to as the "forest plan"), which will create a new forest management area (MA) for which specific standards and guidelines will be established relative to a large-scale mining operation. The new MA is located in the northeast area of the Santa Rita Mountains on the Nogales Ranger District, and encompasses the Rosemont Copper Project area.

An environmental impact statement (EIS) was developed to analyze the potential effects of the Rosemont Copper Project. Six alternatives were considered and analyzed. The final EIS (FEIS) was made available to the public, along with a draft ROD, on December 13, 2013.

This ROD documents my decision, along with the rationale for the decision and alternatives considered in reaching the decision. It includes a discussion of preferences among alternatives based on relevant factors and how those factors were considered in reaching the decision, as well as mitigation and monitoring measures that are required by this decision. Furthermore, this ROD documents changes and additions to the preliminary MPO submitted by the proponent and deemed necessary by the Coronado (i.e., removal of the heap leach, redesign of the coarse ore stockpile dome and pebble crusher/ball loading facility, etc.), an administrative unit of the U.S. Forest Service (Forest Service), to meet the requirements of the regulations at 36 Code of Federal Regulations (CFR) 228 Subpart A and to comply with other applicable laws and regulations (see section 8.0 of this document).

The decision presented in this document addresses activities proposed on lands administered by the Forest Service for which Federal decisions are required. This ROD is the National Environmental Policy Act (NEPA) decision and is not authorization and/or a permit to operate. The proponent will need to meet the conditions in the ROD (section 9.0) prior to my written approval to operate.

### **1.2 Changes Since the Draft ROD**

A public objection period followed the 2013 release of the FEIS and draft ROD. While the Regional Forester (reviewing official) determined that the Rosemont Copper Project complies with laws, regulations, policies, and the forest plan, he provided a number of instructions to the Coronado Forest Supervisor that must be completed before approval of the ROD. This ROD describes how the Regional Forester's instructions have been addressed within this document and in other documents contained in the project record for the Rosemont Copper Project. Refer to appendix B of this document for details regarding the Regional Forester's instructions and how they have been addressed.

Since the draft ROD was published, the Coronado became aware of new information that had not been considered in the FEIS and draft ROD. The Coronado reviewed this new information in accordance with 40 CFR 1502.9(c)(ii) and Forest Service Handbook 1909.15, section 18, and

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<sup>3</sup> In September 2014, Hudbay Minerals, Inc., acquired Augusta Resource Corporation, Rosemont Copper's parent company. Hudbay Minerals, Inc., and Rosemont Copper are currently the project proponents for the Rosemont Copper Project.

documented the results of the review in a supplemental information report (SIR), dated May 22, 2015, which was provided to the U.S Environmental Protection Agency (EPA), U.S. Army Corps of Engineers (USACE), Bureau of Land Management (BLM), and U.S Fish and Wildlife Service (USFWS) for review and comment. The new information did not require substantial changes in the proposed action nor was it considered significant new information under 40 CFR 1502.9(c) since it did not reveal any new or changed environmental impacts that were not previously evaluated and considered. Therefore, the Coronado Forest Supervisor determined that a supplement or revision of the Rosemont Copper Project FEIS was not necessary. However, a number of changes and additions to some baseline conditions and analysis methodologies warranted minor corrections of the FEIS. These corrections are contained in an errata document for the FEIS (referred to as the “Rosemont Copper Project Errata”). The project errata should be considered when reviewing sections of the FEIS referenced in this document.

Since the publication of the first SIR in May 2015, additional new information was addressed in a second SIR in June 2016. This new information included an “Amended Final Reinitiated Biological and Conference Opinion for the Rosemont Copper Mine” (BO), dated April 28, 2016; additional documents submitted to USFWS during preparation of the “Amended Final Reinitiated Biological and Conference Opinion;” new information on wildfires in the area; and new information concerning the Buffalo Soldier Electronic Testing Range (ETR). As with the 2015 SIR, the new information did not require substantial changes in the proposed action, nor was it considered significant new information under 40 CFR 1502.9(c). The Coronado Forest Supervisor determined that a supplement or revision of the Rosemont Copper Project FEIS was not necessary.

Consultation under Section 106 of the National Historic Preservation Act (NHPA) has occurred. A memorandum of agreement (MOA) on the resolution of adverse effects was signed by the Forest Service, State Historic Preservation Office (SHPO), and Advisory Council on Historic Preservation (ACHP) in October/November 2013. The Arizona SHPO concurred with the Federal Historic Properties Treatment Plan (HPTP), with no further changes, on May 2, 2014. The Arizona SHPO concurred with the Utilities HPTP, with edits recommended, on August 12, 2015. Since then, two HPTPs have been finalized, both in December 2015: the “Historic Properties Treatment Plan for the Proposed Rosemont Copper Project, Pima County, Arizona;” and “A Historic Properties Treatment Plan for Rosemont Copper Utilities, Pima County, Arizona.” Both plans can be found in the project record for the Rosemont Copper Project.

On May 16, 2014, USFWS provided the Coronado with its rationale for reinitiation of Endangered Species Act (ESA) Section 7 consultation listing a number of reasons related to listed species. On May 23, 2014, the Coronado Forest Supervisor replied to the USFWS, indicating his intention to reinitiate Section 7 consultation. The Coronado worked with numerous agencies to engage their expertise to improve accuracy or reduce uncertainty in the analysis of impacts to species in a supplemental biological assessment (SBA). The SBA was submitted to the USFWS on May 26, 2015, and was accepted by USFWS as complete in June 2015. As stated in the May 26 cover letter, the SBA included:

- documentation of an ocelot in the action area;
- new information, including a refined aquatic analysis;
- listing of the northern Mexican gartersnake and the western yellow-billed cuckoo as threatened;
- the recently identified introduction of the desert pupfish into the action area;
- designation of critical habitat for jaguar; and

- the Mexican gray wolf subspecies, which was listed as endangered, gained its own listing separate from the gray wolf, and concurrently the regulations for the nonessential experimental population of the subspecies changed and the 10J reintroduction area for that subspecies changed to include the entire action area.

During reinitiation of ESA Section 7 formal consultation, Rosemont Copper brought forth three new conservation measures to provide additional mitigation of impacts to threatened and endangered species. These measures are described in section 4.3.2.7 of this document.

The USFWS issued an “Amended Final Reinitiated Biological and Conference Opinion for the Rosemont Copper Mine” (BO) for the Rosemont Copper Project on April 28, 2016. The results of the BO are addressed in this ROD. The April 2016 BO incorporates many aspects of the October 30, 2013, BO by reference. Any reference to the term ‘BO’ in this ROD refers to the final April 2016 BO, including language incorporated from the October 30, 2013, BO.

Kerwin Dewberry was appointed as the Coronado Forest Supervisor in July 2015, replacing former Forest Supervisor Jim Upchurch. Prior to his departure, Supervisor Upchurch made numerous process decisions that are noted in this ROD and are described in both the FEIS and the project record. Supervisor Dewberry has been briefed by former Supervisor Upchurch as well as the interdisciplinary team (ID team), reviewed the FEIS and pertinent documentation from the project record, and met with numerous agencies regarding their concerns about the Rosemont Copper Project. This ROD will sometimes differentiate between Supervisor Upchurch and Supervisor Dewberry when discussing certain actions and preliminary decisions only to help describe the decision-making process. As the current Forest Supervisor at the time this ROD was signed, Supervisor Dewberry is the responsible official for the Rosemont Copper Project.

In late April and early May 2017, two wildland fires burned through areas analyzed for impacts in the Rosemont Copper Project FEIS. The post-fire conditions within the analysis area were reviewed by the ID team in light of the analyses disclosed in the FEIS, SIRs, and Rosemont Copper Project Errata. Based on the results of the ID team fire review, the responsible official has determined that correcting, supplementing, or revising the EIS is not necessary.

## 2.0 Background of the Project

### 2.1 Project History

The preliminary MPO<sup>4</sup> for the Rosemont Copper Project is the latest in an extensive history of copper prospecting and development in this area of southern Arizona. Copper production in the Santa Rita Mountains began in the 1880s and continued until the 1950s. Previous mining activity on the east side of the Santa Rita Mountains supported operation of the Rosemont smelter in the Rosemont

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<sup>4</sup> The term “preliminary MPO” refers to the description of mining activities provided to the Forest Service by the proponent that is used to analyze impacts as required under NEPA. This is different from the “final MPO,” which would be submitted by the proponent and approved by the Forest Service after issuance of this ROD. The final MPO would be specifically for the selected action and would include any additional mitigation, requirement, or other changes required by the Forest Service.

Note that the preliminary MPO, as analyzed, also includes many other supplemental documents and technical reports submitted by the proponent that cover specific aspects of mining activities. An initial version of the preliminary MPO was originally submitted by the proponent to the Forest Service in July 2006, with a full revised version submitted in July 2007. The Forest Service requested additional information concerning the July 2007 preliminary MPO, and upon receipt of that information, the preliminary MPO was considered acceptable for analysis in February 2008.

mining district, which is located in and around the project area. Previous mining activity on the west side of the Santa Rita Mountains supported operation of the Columbia smelter at Helvetia in the Helvetia mining district. Although several exploration projects have been undertaken, there has been no recent production of copper at or near this location.

In its MPO, Rosemont Copper proposed to develop an open pit mine to recover copper, silver, and molybdenum from private and National Forest System (NFS) lands, with copper being the primary metal extracted. Copper is used for a variety of commercial purposes, including construction, power generation, household plumbing and wiring, telecommunications, and components of cars and trucks. The Rosemont mine is expected to produce an estimated 5.88 billion pounds of copper, 194 million pounds of molybdenum, and 80 million ounces of silver. This represents approximately 11 percent of U.S. copper production and less than 1 percent of world copper production, based on 2011 statistics (U.S. Geological Survey (USGS) 2013e).<sup>5</sup>

The proposed mine is located on private and NFS lands in the Barrel drainage on the Nogales Ranger District, Coronado National Forest, approximately 30 air miles southeast of the center of Tucson, Arizona (figure ROD-1). There are also associated connected actions to the project, including a co-located electric transmission line and water supply pipeline; relocation of an electrical distribution line; reroute of the Arizona National Scenic Trail; and maintenance and improvements on State Route (SR) 83. These connected actions are described in more detail on pp. 8–9 of the FEIS and in section 4.2 of this document.

In summary, the project will consist of an open pit, a processing plant (mill) and associated facilities, transmission lines for power and water, and waste rock and tailings facilities. Approval of the final MPO for this project will result in total surface disturbance of an estimated 5,431 acres of combined private lands, lands administered by Arizona State Land Department (ASLD), and NFS lands (figure ROD-2). This acreage assumes all areas will be disturbed within the perimeter fence; the primary access road corridor; utility corridor (including the electric supply line, water supply line, and utility maintenance road); areas of road construction and decommissioning; and the reroute of the Arizona National Scenic Trail. Refer to the description of the Barrel Alternative in chapter 2 of the FEIS for further detail.

## 2.2 Purpose and Need for Action

The Coronado's overall purpose and need is to process the proponent's MPO. The proponent is entitled to conduct operations that are reasonably incident to exploration and development of mineral deposits on its mining claims pursuant to applicable U.S. laws and regulations and is asserting its right under the General Mining Law to develop, mine, and remove the mineral deposit subject to regulatory laws.

From the perspective of the Forest Service, the need for action is to:

- Respond to the proponent's proposed MPO to develop and mine the Rosemont copper, molybdenum, and silver deposit;
- Ensure that the selected alternative would comply with other applicable Federal and State laws and regulations;

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<sup>5</sup> References that were cited in the FEIS are shown here in author-date form. The reader is referred to the FEIS for the full citation. References that are new are footnoted in this ROD.



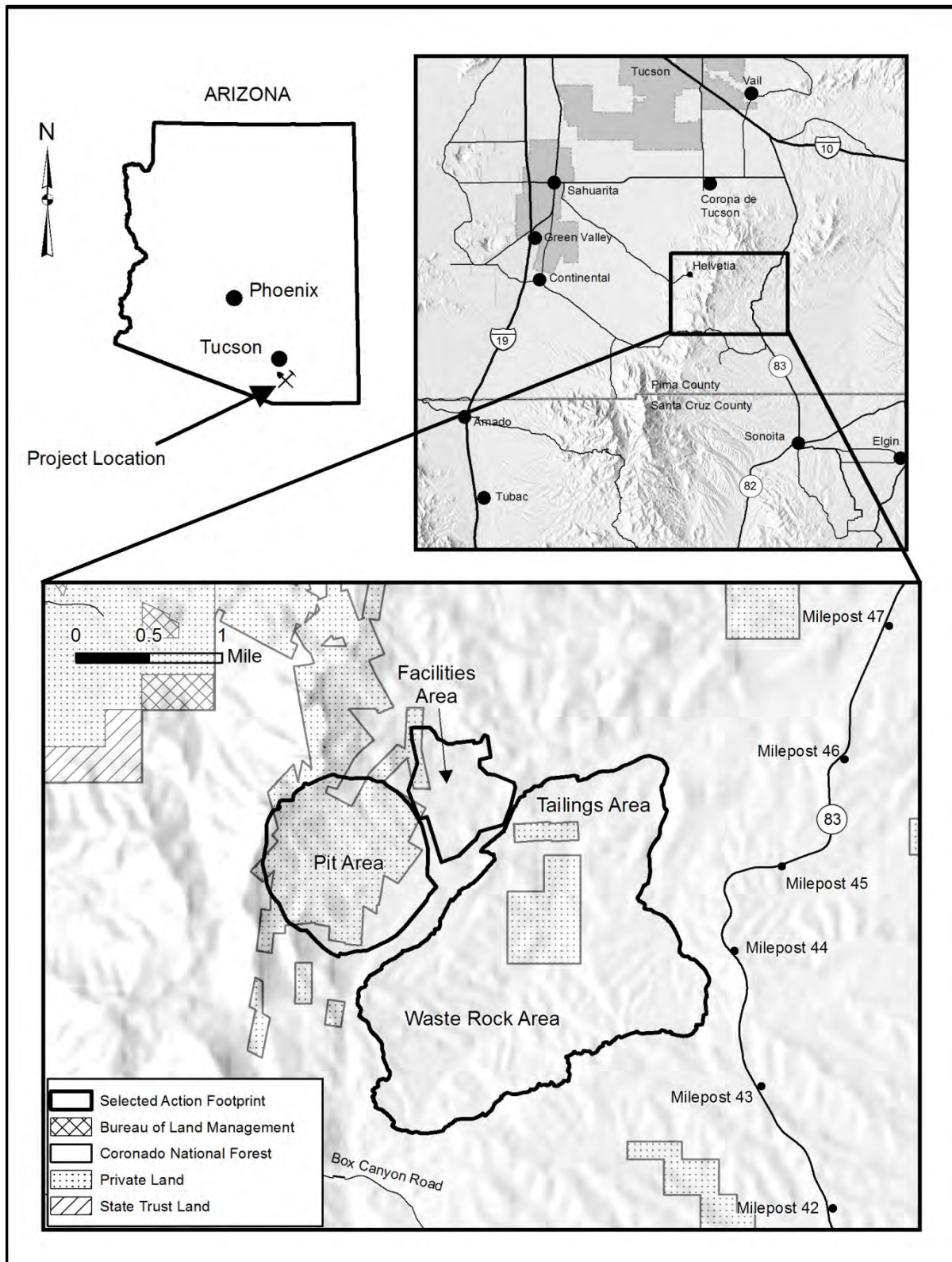


Figure ROD-1. Vicinity map and footprint of the selected action

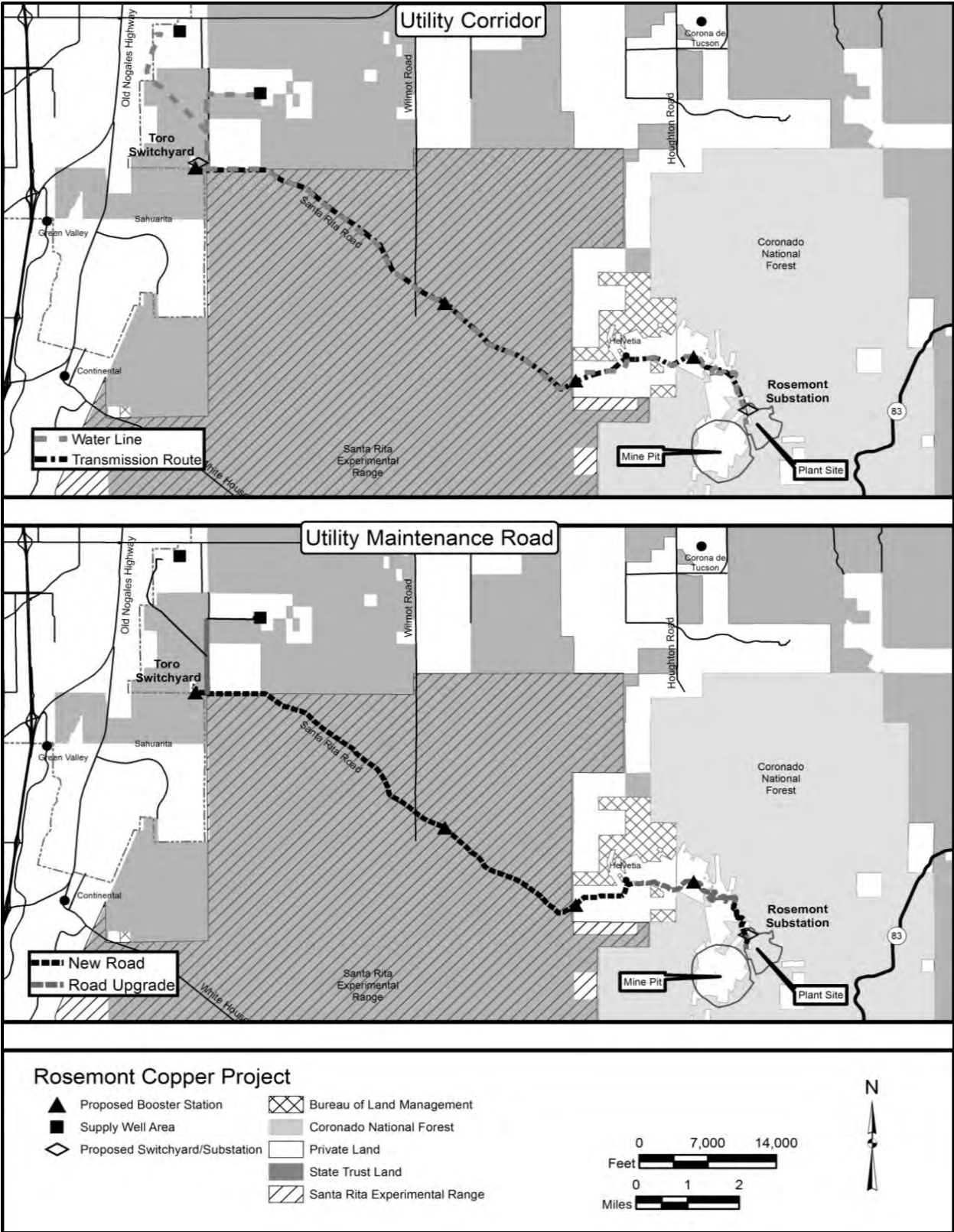


Figure ROD-2. Approved utility alignment for the Rosemont Copper Project

- Ensure that the selected alternative, where feasible, would minimize adverse environmental impacts on NFS surface resources; and
- Ensure that measures would be included that provide for reclamation of the surface disturbance.

The Coronado has evaluated the proposed action in order to comply with its statutory obligations (see section 3.1.2, “Decision Space for the Selected Action,” in this document) to respond to the proponent’s preliminary MPO in a timely manner.

This ROD also documents the Forest Supervisor’s decision to amend the 1986 Coronado forest plan (see “Decision to Amend the 1986 Forest Plan” in section 3.2 of this document). Amendment of the 1986 forest plan was addressed in the FEIS, under “Forest Plan Consistency” in chapter 2, with impacts of the proposed amendment addressed in each resource section in chapter 3.

## **2.3 Issues**

The Forest Service developed significant issues to address in the draft EIS (DEIS) using the comments received during the scoping process from tribes, agencies, organizations, and the public (see “Public Involvement” in chapter 1 of the FEIS and “Public Involvement and Agency Collaboration” in section 6.0 of this document). These issues were used to help formulate alternatives to the proposed action, develop elements or components of the alternatives, develop mitigation measures, and analyze environmental impacts. A summary of significant issues for this project follows. See “Issues” in chapter 1 of the FEIS for a more thorough discussion.

### **2.3.1 Issue 1: Land Stability and Soil Productivity**

Ground disturbance from clearing vegetation, grading, and stockpiling soils has the potential to accelerate erosion and reduce soil productivity. The tailings and waste rock facilities could be unstable over time, and reclamation may not adequately result in a stable, revegetated landscape. The geochemical composition of tailings and waste rock facilities may not support native vegetation. Soils are nonrenewable resources. Damage, disturbance, and removal of the soil resource may result in a loss of soil productivity, physical structure, and ecological function across the proposed mine site and across downgradient lands. The mining area could potentially act as a barrier to sourcing and supporting natural downslope transportation of geological material, water, and nutrients through alluvial, eolian, and fluvial processes.

### **2.3.2 Issue 2: Air Quality**

Changes in air quality that could potentially occur from the mine operation were identified as a significant issue. Construction, mining, and reclamation activities at the mine and along transportation and utility corridors would increase dust, airborne chemicals, and transportation related (mobile) emissions in the affected area. The Clean Air Act (CAA) and other laws, regulations, policies, and plans set thresholds for air quality, including Class I airsheds.

### **2.3.3 Issue 3: Water Resources**

This group of issues relates to the effects during premining, active mining, final reclamation and closure, and postmining phases on the quality and quantity of water for beneficial uses, wells, and stock watering. The loss of water available to riparian and other plant and animal habitat is addressed in Issues 4 and 5.

#### **2.3.3.1 Issue 3A: East Side Groundwater Availability**

The proposed open-pit mine may reduce groundwater availability to private and public wells in the vicinity of the open pit. Household water availability could potentially be reduced.

#### **2.3.3.2 Issue 3B: West Side Groundwater Availability**

Water needed to run the mine facility could reduce groundwater availability to private and public wells in the Santa Cruz Valley, specifically the communities of Sahuarita and Green Valley, Arizona. Household water availability could potentially be reduced.

#### **2.3.3.3 Issue 3C: Groundwater Quality**

Construction and operation of the mine pit, waste rock, and leach facilities have the potential to exceed Arizona Aquifer Water Quality Standards. The mine pit could result in the creation of a permanent pit lake, which has the potential to concentrate dissolved metals and other chemical constituents and may lower pH levels. Likewise, disposal of waste material in surface facilities such as tailings, waste rock, and leaching operations could potentially contribute to degradation of the aquifer.

#### **2.3.3.4 Issue 3D: Surface Water Availability**

Construction and operation of the mine pit, tailings, waste rock, and leach facilities have the potential to change surface water discharge to Davidson Canyon and Cienega Creek, portions of which are designated an Outstanding Arizona Water by the Arizona Department of Environmental Quality (ADEQ). Additionally, the availability of water for stock watering tanks could be reduced.

#### **2.3.3.5 Issue 3E: Surface Water Quality**

Construction and operation of tailings, waste rock, and leach facilities have the potential to result in sediment or other pollutants reaching surface water and degrading water quality, leading to a loss of beneficial uses. If sediment enters streams, turbidity will increase, and State water quality standards could be exceeded. Downstream segments of Davidson Canyon and Cienega Creek are Outstanding Arizona Waters (Tier 3), which are given the highest level of antidegradation protection. As outstanding resource waters under the Arizona Revised Statutes (ARS), Tier 3 waters must be maintained and protected, with no degradation in water quality allowed.

#### **2.3.4 Issue 4: Seeps, Springs, and Riparian Vegetation**

Potential impacts on seeps, springs, and associated riparian vegetation could result from the alteration of surface and subsurface hydrology because of the pit and other operations. Potential impacts could include reduced or eliminated flow to seeps and springs and loss of, or change in, the function of riparian areas.

#### **2.3.5 Issue 5: Plants and Animals**

This group of issues focuses on the effects on plant and animal populations and habitats. Many aspects of the mine operations have the potential to affect individuals, populations, and habitat for plants and animals, including special status species. This issue includes the potential for impacts on wildlife as a result of landscape alteration and as a result of light, noise, vibration, traffic, and other disturbance from the proposed mine operations.

#### **2.3.5.1 Issue 5A: Vegetation**

The pit, plant, tailings and waste rock facilities, road and utility corridors, and other facilities have the potential to permanently change vegetation, and reclamation may not restore vegetation to pre-project conditions.

#### **2.3.5.2 Issue 5B: Habitat Loss**

The mine and ancillary facilities could result in a loss or alteration of habitat for numerous plant and animal species. Potential impacts could include loss of riparian habitat and fragmentation of riparian habitat and corridors, including Cienega Creek.

#### **2.3.5.3 Issue 5C: Nonnative Species**

The mine and its operations have the potential to create conditions conducive to the introduction, establishment, and/or spread of nonnative species, which may out-compete native plants and animals. Forest Service and other Federal, State, and local laws, regulations, policies, and plans contain management direction for invasive plants.

#### **2.3.5.4 Issue 5D: Wildlife Movement**

The mine and its operations could potentially modify and/or fragment wildlife habitats and/or reduce connectivity between habitats. Increased traffic could correspondingly increase wildlife mortality and injury.

#### **2.3.5.5 Issue 5E: Special Status Species**

The mine and its operations have the potential to impact habitat for special status species (see the “Analysis Methodology, Assumptions, Uncertain and Unknown Information” part of the “Biological Resources” section in chapter 3 of the FEIS for a description of special status species).

#### **2.3.5.6 Issue 5F: Animal Behavior**

Mine construction, closure, and operations, including drilling and blasting, may result in noise and vibrations, which could impact animal behavior and result in negative impacts on wildlife. Nocturnal and other animals may be adversely affected by the light glow in night skies.

### **2.3.6 Issue 6: Cultural Resources**

This group of issues focuses on the adverse effects of the proposed mine operations on cultural resources. Mine operations could impact historic properties as well as traditional uses and perceptions of the land for the many communities who have used it over the past centuries. Native Americans claim the area as part of their ancestral homelands. Tribes consulted as part of the EIS process perceive disruption of the physical world as causing spiritual harm to the Earth and to the people here. Ancestral human remains and sacred sites are known to exist in the project area, as are traditional resource collection areas.

Ranching and mining communities also have attachments to the area that began in the late 19th century and continue through the present. Comments submitted during public scoping identified impacts on the historic rural landscape as an issue, as well as impacts on traditional resource

collection areas and recreation venues. Historic human burials may yet be found in areas not excavated during previous archaeological investigations.

#### **2.3.6.1 Issue 6A: Historic Properties**

Proposed mine activities, from premining through final reclamation and closure, would bury, remove, or damage historic properties, including traditional cultural properties, sacred sites, traditional use areas, archaeological sites, historical structures, districts, and landscapes. Vibrations from blasting and drilling could damage historical structures in the immediate and adjacent areas. This could also result in the loss of or reduction in the future research and public interpretation potential of known and yet-to-be-discovered sites, along with the permanent alteration of cultural landscapes important to the ongoing cultural practices of Native American tribes and other communities with cultural or historic ties to the project area.

#### **2.3.6.2 Issue 6B: Disturbance of Human Remains**

Human remains have been discovered in previous archaeological excavations of prehistoric and historical sites in the Rosemont area. Additional burials are present in previously excavated and unexcavated historic properties and may be present in as-yet-undetected historic properties. Proposed mine activities, from premining through final reclamation and closure, have the potential to disturb human remains. Native American remains on Federal lands fall under the jurisdiction of the Native American Graves Protection and Repatriation Act (25 United States Code (U.S.C.) 3001); nonnative remains on Federal lands fall under the Advisory Council's "Policy on Burial Sites, Human Remains and Funerary Objects on Federal Lands" (February 23, 2007). Arizona burial laws (ARS 41-844 and 41-865) protect human remains on State and private lands.

#### **2.3.6.3 Issue 6C: Sacred Sites**

Several Federal laws direct Federal land management agencies, to the extent permitted by law and not clearly inconsistent with essential agency functions, to accommodate access to and use of Native American sacred sites, to avoid affecting the physical integrity of such sites wherever possible, and to temporarily close NFS land for traditional and cultural purposes. Tribal consultation has identified springs, high vision points, and many natural resources in the project area as having sacred ceremonial functions. Proposed mine activities, from premining through final reclamation and closure, could preclude access to or destroy or degrade these types of resources.

#### **2.3.6.4 Issue 6D: Traditional Resource Collecting Areas**

Native Americans and the ranching, mining, and Mexican American communities use the Rosemont area to collect and process natural resources for food, medicines, firewood, and traditional crafts.

Proposed mine activities, from premining through final reclamation and closure, could preclude access to or destroy or degrade these types of resources.

#### **2.3.7 Issue 7: Visual Resources**

This issue focuses on the visual impacts that would result from the proposed mine pit, placement of tailings and waste rock facilities, and development and use of other facilities. The proposed mine tailings and waste rock facilities would create significant changes to the landscape. The facilities may block valued mountain views. The processing plant, roads, and utility corridor could also affect visual

resources in the area. The character of the SR 83 designated scenic corridor and the views from it may change. The ability for the area to meet assigned scenic integrity objectives in the forest plan could potentially be reduced. The scenic quality of the landscape may be permanently degraded.

### **2.3.8 Issue 8: Dark Skies and Astronomy**

This issue relates to the potential for the mine operation and facilities to reduce night sky visibility. Many area residents, recreationists, research and amateur astronomers, and stargazers value the current dark skies in the area. Increased light and air particulates from mine related facilities, equipment, vehicles, and processes have the potential to diminish dark skies. The increased sky glow could reduce the visibility of celestial objects, particularly the faint ones, which are often the subject of scientific study. Key observation points and the Smithsonian Institution's Fred Lawrence Whipple Observatory could be adversely affected.

### **2.3.9 Issue 9: Recreation**

This issue focuses on the effects of the mine operation on recreation on NFS land, including loss of access and recreation opportunities and loss of or reduction in solitude, remoteness, rural setting, and quiet. The mine may lead to permanent changes to recreation settings (Recreation Opportunity Spectrum) and/or the type of recreation available and may result in increased pressure on public and private lands in other places to compensate for lost opportunities.

### **2.3.10 Issue 10: Public Health and Safety**

This issue focuses on the hazardous materials that would be transported and the potential increase in the risk of a spill or other public safety impact. Furthermore, an increase in traffic could reduce public safety by increasing the potential for traffic accidents. Another aspect of this issue is human health risks to forest visitors if they inadvertently come into contact with mine operations, tailings facilities, or waste rock facilities. Air quality impacts resulting from the operation could potentially be harmful to public health.

### **2.3.11 Issue 11: Social and Economic Resources**

Mine operation could have both negative and positive socioeconomic impacts that could change over time. The socioeconomic stability of the area could be affected. Residents', business owners', and visitors' expectations of national forests and the historic rural landscape may not be met.

#### **2.3.11.1 Issue 11A: Regional Socioeconomics**

The mine facilities and operation may result in changes over time to local employment, property values, tax base, tourism revenue, and demand and cost for road maintenance and emergency services. There may be costs to the alternative elements and mitigation measures that influence the present net value of the mine operations and, thus, its economic profile.

#### **2.3.11.2 Issue 11B: Rural Landscapes**

The mine operation may not conform to the quality of life expectations as expressed by the forest plan and Federal, State, and local regulations and ordinances. Commenters expressed concerns about modification of rural historic landscapes and local ranching traditions, which are important to local

residents and visitors. Commenters also expressed a need to assess impacts on quality of life, including the economic nature of these rural landscapes.

### **2.3.12 Issue 12: Transportation/Access**

This issue focuses on the impact of increased mine related traffic during premining, active mining, and final reclamation and closure. Transportation of personnel, equipment, supplies, oversize permitted loads, and materials related to the mine operation has the potential to increase traffic. Additionally, the operations have the potential to permanently obliterate forest roads or temporarily restrict access to forest roads and lands.

## **3.0 My Decisions**

As the Forest Service responsible official for the Rosemont Copper Project, I am making two separate and interrelated decisions regarding this project. First, I have decided to select “Alternative 4 – Barrel Alternative” for implementation, as described in section 4.0 and in appendix A of this document. My rationale for this decision is provided in section 3.1 below. Second, I have decided to amend the 1986 Coronado forest plan, and the rationale is further described in section 3.2 of this document. These decisions must comply with all applicable Federal environmental laws and regulations. Forest Service decision authority applies only to NFS lands and does not extend to private lands within or adjacent to the Coronado National Forest.

### **3.1 Decision for the Rosemont Copper Project**

This ROD documents my decision and rationale for the selection of “Alternative 4 – Barrel Alternative” (referred to in this ROD as the “selected action”). Alternative 4 (Barrel Alternative or selected action) is described in chapter 2 of the FEIS. It is also described in detail in appendix A of this ROD. My decision includes the associated transportation system, design features, mitigation and monitoring measures as amended in this decision (appendix B of the FEIS and errata<sup>6</sup>), changes to the Arizona National Scenic Trail, and forest plan amendments (FEIS chapter 2, p. 117), as described in this document and the FEIS. My decision allows development of the Rosemont mineral deposit in a manner that is consistent with the selected action. However, approval to begin operations on NFS land will require changes and additions to the preliminary MPO that are necessary to meet the requirements of regulations at 36 CFR 228 Subpart A and comply with applicable laws and regulations; these changes will be incorporated into a final MPO to be submitted to the Coronado by the proponent. While this ROD documents my decision to allow the Rosemont Copper Project to be implemented, operations on NFS lands cannot begin until the final MPO is authorized.

My decision to select the Barrel Alternative for implementation is based on a thorough review of the FEIS, review of public and agency concerns received on this project, consultation with cooperating and regulatory agencies, consultation with interested tribes, and the project record. Both Supervisor Upchurch and I have met on numerous occasions with interested members of the public to listen to their concerns and issues, which helped in formulating this decision. While we were unable to resolve all professional disagreement, particularly as it related to groundwater modeling, the professional

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<sup>6</sup> Note that several mitigation and monitoring measures included in appendix B of the FEIS do not apply to the selected action. See section 4.3.2 of this document for a listing and more information.



consultation that was conducted has provided the background and information from which to make an informed decision (see section 6.7 for further discussion on professional disagreement).

### **3.1.1 Decision Rationale for the Selected Action**

The Coronado National Forest comprises outstanding landscapes, with a diversity of resource values, and a rich history of human use and visitation. The Santa Rita Mountains, in which the project area is located, provide a spectrum of ecological conditions that support wildlife and plant communities, provide for human uses such as livestock grazing, and are important to a number of Native American tribes for spiritual and cultural values. The area also provides opportunities for a variety of recreational pursuits, such as hiking the Arizona National Scenic Trail, dispersed camping, or riding off-highway vehicles (OHVs). I have personally recreated in this area, and value the resources and recreational opportunities the area provides. Furthermore, the area is home to many rare plants, animals, and a vast array of valuable cultural sites.

With these factors in mind, I do not take this decision lightly. My decision to approve the proposal is guided by Federal law. The primary guidance comes from the General Mining Act of 1872, which grants citizens the right to conduct mining activities on public lands that are open to mineral prospecting, exploration, and development. The Multiple-Use Mining Act of 1955 reaffirms the right to conduct mining activities on public lands, including mine processing facilities and the placement of mining tailings and waste rock. Although a right to conduct mining activities exists, proposals must comply with applicable Federal and State environmental protection laws, and the Forest Service can require reasonable measures, within its authority, to protect surface resources.

Conducting a mining operation of this type and size will undoubtedly impact the natural, cultural, and social resource values found on the Coronado National Forest as well as adjacent lands outside the forest. There will also be associated economic and job creation effects, as well as contributing to the worldwide supply of copper. This decision incorporates a wide array of mitigation and conservation measures that will minimize or avoid impacts on NFS lands to the extent practicable. In addition, a comprehensive monitoring program will be implemented to verify that effects disclosed in the FEIS are within predicted ranges and to ensure that mitigation requirements are being met.

In reaching my decision, I have considered the purpose of and need for action, the issues, the forest plan and associated amendments, current policies and regulations, effects on natural, biological, and cultural resources, public and cooperating agency comments received, and the full range of alternatives. I considered the broad range of concerns expressed throughout this process. Importantly, my decision implements an alternative that will allow the proponent to comply with applicable Federal laws and regulations with the least amount of adverse impacts. The following discussion summarizes pertinent aspects of my rationale for selecting the Barrel Alternative for implementation.

### **3.1.2 Decision Space for the Selected Action**

My decision to select the Barrel Alternative for implementation authorizes actions on NFS lands. It will also trigger connected actions, some of which are under the jurisdiction of other agencies (i.e., the utility corridor located on State land is under the jurisdiction of ASLD; the SR 83 connected action is under the jurisdiction of the Arizona Department of Transportation (ADOT)). Those connected actions that are not on NFS lands will require authorization by the appropriate jurisdictional agency. See chapter 2 of the FEIS for further detail.

The role of the Coronado under its primary authorities in the Organic Administration Act, Locatable Regulations (36 CFR 228 Subpart A), and Multiple-Use Mining Act is to ensure that mining activities minimize adverse environmental effects on NFS lands and comply with all applicable laws and regulations. The Coronado may impose reasonable conditions to protect surface resources, but cannot materially interfere with reasonably necessary activities under the General Mining Law that are otherwise lawful.

Through the Mining and Mineral Policy Act of 1970, Congress stated that it is the continuing policy of the Federal Government, in the national interest, to foster and encourage private enterprise in:

- The development of economically sound and stable domestic mining, minerals, and metal and mineral reclamation industries; and
- The orderly and economic development of domestic mineral resources, reserves, and reclamation of metals and minerals to help ensure satisfaction of industrial, security, and environmental needs.

In addition, Forest Service Manual (FSM) 2800 states that the mission of the Forest Service in minerals management is to encourage, facilitate, and administer the orderly exploration, development, and production of mineral and energy resources on NFS lands to help meet the present and future needs of the Nation.

The objectives (FSM 2802) are to:

1. Encourage and facilitate the orderly exploration, development, and production of mineral and energy resources on NFS lands to maintain a viable, healthy minerals industry.
2. Ensure that exploration, development, and production of mineral and energy resources are conducted in an environmentally sound manner and that these activities are integrated with the planning and management of other NFS resources.
3. Eliminate or prevent occupancy and activities that are not reasonably incident to and required for the mineral operation.
4. Ensure that mineral-related activities are processed and administered in accordance with laws, regulations, and policy.
5. Promote self-sufficiency in mineral and energy resources essential for economic growth and the national defense.

I recognize that each of the action alternatives would result in significant environmental and social impacts and that the no action alternative is the environmentally preferable alternative (see section 5.1.1 of this document for further detail). However, Federal law provides the right for a proponent to develop the mineral resources it owns and to use the surface of its unpatented mining claims for mining and processing operations and reasonably incidental uses (see 30 U.S.C. 612). Pursuant to Federal law, the Forest Service may reasonably regulate the use of the surface estate to minimize impacts to Forest Service surface resources (see 30 U.S.C. 612 and 36 CFR 228.1). The analysis that is disclosed in the Rosemont Copper Project FEIS concludes that the Barrel Alternative is the alternative that best achieves the minimization of impacts to Forest Service surface resources while allowing mineral operations and all uses reasonably incident thereto.

### **3.1.3 Responsiveness to the Purpose and Need for the Selected Action**

The selected action meets the stated purpose and need, which is to process the proponent's MPO in a timely manner while complying with applicable laws and regulations, minimizing adverse impacts to NFS surface resources, and providing for reclamation of surface disturbance. The selected action will protect resources to the extent practicable, addresses the public's concerns, and is consistent with applicable Federal laws and regulations. The selected action provides practicable environmental safeguards, including features designed to avoid or reduce environmental impacts; mitigation measures designed to avoid, reduce, or minimize impacts; and a monitoring plan to ensure that resulting impacts comply with applicable laws and regulations and are within the range predicted in the FEIS impacts analysis. Refer to chapter 2 of the FEIS for a description of the components of the Barrel Alternative (also contained in appendix A of this ROD) and to chapter 3 of the FEIS for a complete description of the environmental impacts predicted for the Barrel Alternative. Section 4.3.3 of this document describes monitoring reporting and evaluation.

### **3.1.4 Responsiveness to the Issues and Resources Analyzed for the Selected Action**

The selected action is responsive to the issues described in chapter 1 of the FEIS and summarized earlier in this ROD, which were derived from public scoping comments. The Barrel Alternative was developed to respond to significant issues regarding potential impacts on biological resources, cultural resources, and the surface water component of water resources. It also responds to the other significant issues through design features and mitigation measures that reduce potential environmental and social impacts. The topics presented below provide further information on how the selected action responds to the significant issues and how those were considered in making my decision.

In addition to the scoping issues summarized in section 2.3 of this document and described in detail in chapter 1 of the FEIS, the Rosemont ID team identified several additional resources that were included in the analysis of environmental impacts disclosed in chapter 3 of the FEIS. Determination of the impacts to these resources was important in order to fully disclose the impacts of the proposed project, as well as determine compliance with the forest plan and Forest Service policy and direction.

When reviewing the results of the impact analyses disclosed in chapter 3 of the FEIS, I found there to be relatively few significant differences in the magnitude of impacts between the alternatives for many issues and resources. This is primarily due to the nature of the project, which resulted in practical constraints being imposed during development of the alternatives. The proponent's mineral deposit is in a fixed location, and the mine facilities are by necessity located nearby, and such uses of unpatented mining claims is allowed by Federal law. In addition, I find it to be critically important to minimize the amount of NFS land and resources impacted by the project, which further constrained the overall footprint of the mining facilities. Therefore, the differences between alternatives tend to focus on placement and design of the tailings and waste rock facilities, the variations of which have similar impacts.

The proponent brought forward a preliminary MPO that contained mineral processing practices (dry-stack tailings – see chapter 2 of the FEIS for details) that would result in a smaller footprint on NFS land than traditional processing methods. While an alternative that would include traditional slurry processing procedures was considered, Supervisor Upchurch instructed the ID team to eliminate it from detailed study because preliminary assessment and past agency experience indicated that it would result in a significantly larger footprint on NFS lands, and it was deemed to have greater overall impacts and greater environmental risks than any of the alternatives considered. Therefore,

I concur with Supervisor Upchurch that the inclusion of this alternative would not have been a good investment of time or resources. This is one example of an alternative considered but eliminated from detailed study; other such alternatives are described further in section 5.2 of this document and in the FEIS (chapter 2, pp. 100–114), as well as in project record documents.

A number of other alternative themes and components suggested by public and agency comments and Forest Service staff were evaluated for detailed consideration in the FEIS. Many were incorporated into the four action alternatives to the proposed action that are considered in detail in the FEIS and section 5.1 of this document. Others were considered but eliminated from detailed study for a variety of reasons (see section 5.2).

Because there were relatively few significant differences between the overall impacts of the action alternatives, my decision came down to a few substantive differences or factors, as described below. Note that issues in the FEIS are addressed by describing comparative factors that provide a way to describe, compare, and contrast the effects of the proposed action and other alternatives (FEIS, p. 15). This section of the ROD generally follows the order in which issues were presented in chapter 2 of the FEIS, followed by resource topics not covered in those issues. Impacts are typically described in terms of the issue factors presented in the FEIS.

#### **3.1.4.1 Issue 1 – Land Stability and Soil Productivity**

This issue considered the long-term stability of tailings and waste rock facilities, level of soil disturbance, alteration of soil productivity, and potential for revegetation of tailings and waste rock facilities.

The results of analysis disclosed in chapter 3 of the FEIS indicate there would be few or no differences between the action alternatives regarding long-term stability of tailings and waste rock facilities, and the seismic stability of the pit. For all action alternatives, seismic hazards are considered low to moderate; because of appropriate project design criteria used for the tailings and waste rock facilities, seismic impacts to operations are not expected. In order to ensure that predictions of pit stability are correct, mitigation and monitoring measure FS-SR-04, “Slope stability monitoring,” is required to monitor rock slopes within the mine pit for movement.

Likewise, there would be few or no differences between the action alternatives regarding alteration of soil productivity, and potential for revegetation of tailings and waste rock facilities. Therefore, these factors did not influence my decision.

Soil disturbance is the primary aspect of this issue that factored into my decision. Acres of soil disturbance are a component of most of the issues that were identified during scoping. Generally speaking, the more acres that are disturbed, the greater the likelihood of increased impacts. Disturbance acres apply to Issues 1, 2, 3, 4, 5, 6, 7, and 9, and are included in the impact analysis for the resources associated with these issues.

The selected action will result in the smallest amount of acres directly disturbed of all the action alternatives. The constrained footprint of the tailings and waste rock facilities incorporated into the design of the selected action avoids impacts in a number of ways:

- Other than the Scholefield McCleary Alternative, the selected action will result in fewer acres of waters of the U.S. (WUS) directly impacted, compared with other action alternatives that comply with applicable law and regulation.

- The selected action will directly disturb the fewest acres of riparian areas of any action alternative (an estimated 588 acres, compared with 631 to 686 acres for the other action alternatives).
- The selected action will directly impact the fewest number of springs of any of the action alternatives (5, compared with 7 to 13). Along with riparian habitat, these springs provide aquatic habitat and surface water that support wildlife and plants, including species that are listed as threatened, endangered, or sensitive.
- The selected action will directly impact or modify the fewest acres of terrestrial vegetation, which provides habitat for a number of plant and animal species, including those listed as threatened, endangered, or sensitive (5,431 acres for the Barrel Alternative, compared with 5,481 to 6,197 acres for the other action alternatives).
- The selected action will result in the smallest amount of disturbed area that will be conducive to invasive plants. While the impacts of potential invasive plant establishment are expected to be largely mitigated through monitoring and treatment requirements, the remaining risk will be reduced with the selected action due to the fewer disturbed acres that are conducive to invasive plant establishment.

#### **3.1.4.2 Issue 2 – Air Quality**

The analysis of impacts associated with this issue is titled “Air Quality and Climate Change” in chapter 3 of the FEIS. Meeting air quality standards is the primary aspect of this issue that factored into my decision. While cumulative impacts related to climate change are important, the analysis indicated no discernible differences between the action alternatives.

Legal compliance with air quality standards and regulations is determined by the agency with the delegated responsibility for administering the CAA, which in the case of the Rosemont Copper Project is the ADEQ. The ADEQ air quality class II synthetic minor permit (referred to as the air quality permit) for the Rosemont Copper Project was issued in January 2013. Issuance of the permit underwent court review (see section 9.2.2 of this document for further detail), but was ultimately upheld by the Arizona Court of Appeals in July 2016.

For the purposes of evaluating impacts and approving an MPO, I have a further responsibility to ensure that the proposed project as planned will minimize impacts to surface resources on NFS land. Those surface resources include, among other things, public use of adjoining Forest Service lands for multiple-use objectives. To ensure the minimization of impacts to those Forest Service lands and to allow the continued use and enjoyment of those lands, Supervisor Upchurch determined, and I concur, that the selected action must have the ability to meet National Ambient Air Quality Standards (NAAQS) as specified in the CAA at the perimeter fenceline. NAAQS were adopted by the EPA to protect public health and public welfare. The selected action is the only action alternative that demonstrated the ability to meet NAAQS at the perimeter fenceline and thus comply with standards established to protect human health.

- The Scholefield-McCleary Alternative would not meet NAAQS at the fenceline for particulate matter less than or equal to 2.5 microns in diameter (PM<sub>2.5</sub>) emissions;
- The proposed action and Phased Tailings, Barrel Trail, and Scholefield-McCleary Alternatives would not meet NAAQS at the perimeter fenceline for particulate matter less than or equal to 10 microns in diameter (PM<sub>10</sub>).

- A number of additional mitigation measures were added for all action alternatives after the DEIS air analysis indicated that many alternatives would not meet NAAQS at the project fenceline. At this time, no additional practicable onsite mitigation measures have been identified that would further improve the ability of the alternatives to meet NAAQS.
- With the exception of the selected action, none of the action alternatives are acceptable from an air quality perspective. While it may be possible to expand the perimeter fence location for these alternatives to a location where NAAQS would be met, I do not regard this as an acceptable option due to the increased amount of NFS land that would be included within the perimeter fence and therefore unavailable for public use. The impacts to many other resources for other action alternatives are similar to or greater than the selected action. Therefore, I have determined that there are no substantive benefits for selecting these other alternatives that would offset the additional reduction in access to NFS lands.
- Regarding potential impacts to Class I airsheds, all alternatives are predicted to degrade views from Class I airsheds, including Saguaro National Park East, Saguaro National Park West, and the Galiuro Wilderness Area. This is primarily the result of fugitive dust emissions during severe weather events with high winds. The selected action has the same predicted impacts as three other action alternatives, while the Barrel Trail Alternative is predicted to impact only Saguaro National Park East and the Galiuro Wilderness Area. Mitigation measures to control fugitive dust have been developed and will be required as conditions of the air quality permit, when it is issued by ADEQ. While degradation to visibility from Class I airsheds is not desirable, this situation does not violate Federal, State, or county air quality laws or regulations. In addition, all practicable mitigation measures designed to reduce fugitive dust emissions from the project will be required. All alternatives are predicted to also increase nitrogen deposition at Saguaro National Park East, Saguaro National Park West, and the Galiuro Wilderness Area. Nitrogen deposition has already been estimated to exceed critical loads in these areas, and additional nitrogen deposition will further contribute to this issue. Research indicates that responses to nitrogen deposition could include alteration of species composition, specifically an increase in biomass of exotic species, and decreases in native species. This, in turn, can result in management consequences, including changes in fire frequency and carrying capacity. While impacts to nitrogen deposition are not desirable, this situation does not violate Federal, State, or county air quality laws or regulations. Technological changes to engines on heavy mine equipment continue to reduce nitrogen oxide (NO<sub>x</sub>) emissions, and the use of improved lower-emission engines will be required under the air quality permit (FEIS, appendix B, measure OA-AQ-9, p. B-81). In the SIR dated May 22, 2015, updated emission factors obtained from Caterpillar were evaluated. Since the FEIS analysis was conducted, NO<sub>x</sub> emissions have been reduced by 3.3 percent due to technological improvements in engines.
- Guidance developed by the Federal Land Managers Air Quality Related Values Working Group (FLAG) recommends approaches for Federal land managers for protection of air quality related values like visibility and deposition. Federal land managers have an “affirmative responsibility” to protect these values, even though they have no permitting authority under the CAA. This responsibility includes identifying the potential for adverse effects to occur, which has been done in the FEIS, but also includes ensuring that all reasonable mitigation has been applied to the project. In coordination with other Federal agencies, Supervisor Upchurch requested that the proponent explore additional onsite mitigation, and determined that all reasonable mitigation has been applied to the project onsite. Supervisor Upchurch also requested that the proponent explore additional emission offsets within the airshed. This has resulted in the proponent developing additional offsite

mitigation at the request of the Coronado to reduce nitrogen, such as carpooling and busing options that will reduce nitrogen emissions in the airshed. See “Air Quality and Climate Change” under “Mitigation and Monitoring Measures – Rosemont Copper” in appendix B of the FEIS for a description of the carpooling and busing option.

### **3.1.4.3 Issue 3 – Water Resources**

#### **3.1.4.3.1 Issues 3A and 3B – Groundwater Availability**

The selected action will result in the smallest potential reduction in subsurface outflow to Cienega Creek. Reduction of subsurface outflow is a direct result of reductions in stormwater flow downstream. While all action alternatives would likely reduce subsurface outflow to Cienega Creek over the long term, the selected action will result in the smallest reduction of any action alternative (4.4 percent reduction, compared with 5.8 to 11.7 percent reduction for the other action alternatives). This will result in less risk of impacts to seeps, springs, riparian vegetation, and related habitat near Cienega Creek than any of the remaining alternatives.

#### **3.1.4.3.2 Issue 3D – Surface Water Availability**

The selected action will retain the greatest amount of downstream surface water flow into Barrel and Davidson Canyons. All of the action alternatives would reduce the amount of stormwater delivery into downstream drainages. However, as a result of design modifications intended to minimize reductions in stormwater downstream of the mine site, the selected action will result in the least reduction of any action alternative (17 percent reduction in average annual volume vs. 23 to 46 percent reduction for the other action alternatives). While any reduction in downstream flows is not desirable, the selected action does a better job of providing future flows into Barrel Canyon and Davidson Canyon than any other action alternative.

I considered suggestions by Pima County to modify stormwater drainage design to increase the amount of water delivered into downstream drainages. I share the desire to minimize the amount of stormwater that is retained at the mine site. However, actions to increase stormwater flows would require increasing the mine footprint and associated increased disturbance. In my estimation, the potential 6.4 percent increase in stormwater flows that could be realized is not worth increasing the mine footprint, which would result in additional soil disturbance and impacts to additional cultural sites. It is important to note that this potential percent increase does not factor in flow losses that would occur between the retention sites and Barrel Canyon, which could be substantial. Refer to the briefing paper on this topic for further detail.<sup>7</sup>

#### **3.1.4.3.3 Issues 3C and 3E – Surface Water and Groundwater Quality**

The selected action is similar to the other action alternatives with respect to the groundwater and surface water discharges that are planned to occur, specifically tailings seepage and stormwater runoff. For all alternatives the seepage from the tailings facility is expected to meet aquifer water quality standards, and for all alternatives stormwater runoff from waste rock would not exceed applicable surface water quality standards in Barrel Canyon, except for dissolved silver, which is already observed to exceed applicable surface water quality standards in stormwater runoff.

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<sup>7</sup> Garrett, C. 2016. *Proposed Rosemont Copper Project Environmental Impact Statement Process Memorandum to File: Analysis and Decision for Pima County Stormwater Objections*. Prepared on behalf of U.S. Forest Service, Coronado National Forest, Arizona. May 5, 2016.

The selected action has less risk of unplanned releases due to the removal of the heap leach facility (discussed below).

I recognize that protection of water quality is of great importance and that modeling and predictions have uncertainty; therefore, I have incorporated a wide variety of monitoring measures to ensure that any unexpected changes in water quality, should they occur, would be identified.

Portions of lower Davidson Canyon and Lower Cienega Creek, located downstream of the project, have been designated Outstanding Arizona Waters. Upper Cienega Creek, located east of the project, has also been designated an Outstanding Arizona Water. These waters are afforded the highest level of protection from degradation under State law. The State of Arizona has the sole authority to make a determination about whether or not the proposed project would violate State water quality regulations by degrading Outstanding Arizona Waters. The person seeking authorization for a regulated discharge to a tributary to, or upstream of, an Outstanding Arizona Water (in this case the proponent) has the responsibility to demonstrate to the State of Arizona that the regulated discharge will not degrade existing water quality in the downstream Outstanding Arizona Water. ADEQ certified that water quality in downstream Outstanding Arizona Waters would not be degraded in its Clean Water Act (CWA) 401 water quality certification issued on February 3, 2015.

Independent of this determination, the potential for degradation of Outstanding Arizona Waters was a concern raised by the public, and therefore the Forest Service has the responsibility under NEPA to analyze the potential for degradation.

Seven criteria were developed by the Coronado and assessed for impacts to Outstanding Arizona Waters. These criteria included the potential for degradation of surface water quality in the Outstanding Arizona Waters due to the mine; however, as the existing surface water quality in the Outstanding Arizona Waters has never been sampled, it is not possible to fully assess degradation. With consideration to these uncertainties, a screening analysis was still conducted to identify potential concerns. With respect to Lower Davidson Canyon and Lower Cienega Creek, the screening analysis suggests that several constituents, including sulfate, molybdenum, arsenic, sodium, and mercury, may be elevated in stormwater with all action alternatives. Waste rock segregation requirements are likely to reduce this potential. All other criteria will likely remain unchanged for Lower Davidson Canyon and Lower Cienega Creek. With respect to Upper Cienega Creek, predictions are mixed. Few changes are predicted in the near term (up to 50 years after closure). In the long term, some modeling scenarios suggest that intermittent or ephemeral flow conditions could occur, as could increases in the frequency of low-flow conditions, which could affect water quality. All other criteria will likely remain unchanged for Upper Cienega Creek.

I considered the effects of the project on these Outstanding Arizona Waters that will result from changes in both water quality and quantity. The Coronado consulted with the ADEQ, which found that the antidegradation criteria required for the Outstanding Arizona Waters were likely to be met when the effects from the project were considered in light of mitigation to be applied to lower Davidson Canyon and monitoring requirements implemented by the Coronado. I have included monitoring requirements on lower Davidson Canyon requested by ADEQ (see FEIS appendix B, measure FS-BR-22, p. B-48, as well as the edits to this measure included in the Rosemont Copper Project Errata).



#### **3.1.4.3.4 Issue 3C – Groundwater Quality – Heap Leach Treatment Facility**

The heap leach facility is a component of several issues that were identified during scoping, including groundwater quality; dark skies and astronomy (Issue 8); and public health and safety (Issue 10). Removal of the heap leach from the selected action avoids or reduces a variety of environmental impacts. In response to comments received on the DEIS, Supervisor Upchurch directed the ID team and the proponent to consider geomorphic reclamation concepts in the design of the selected action. One of the restrictive conditions Supervisor Upchurch placed upon this effort was for no expansion of the tailings and waste rock facility footprint. The intent for this specific restriction was to avoid impacting additional NFS lands, including nearby areas that contain cultural sites (including the prehistoric Ballcourt Site), wildlife and plant habitat (including habitat for threatened, endangered, and sensitive species and the biological diversity of McCleary Canyon), and WUS. As a result of these efforts, the proponent redesigned the stormwater facilities in order to route more water into Barrel and Davidson Canyons postclosure (SWCA 2013g). During this redesign, the proponent determined that processing copper oxide ores by means of heap leaching was not viable from a logistical standpoint, as there would be insufficient leaching time under the operational constraints of the Barrel Alternative configuration. Therefore, the proponent voluntarily proposed to remove the heap leach facility and process from the selected action only, a modification that was approved because it reduces or avoids a number of environmental impacts, including the following:

- Avoidance of any risk of groundwater contamination from heap leach seepage.
- Reduction of impacts to WUS. Although the Scholefield-McCleary Alternative would have impacted 19.5 fewer acres of WUS, it does not meet NAAQS at the project fence line, it would result in the greatest number of acres of disturbance of all alternatives, and it excludes the public from more acres of NFS lands than all other alternatives. Of the remaining alternatives, the selected action will impact the fewest acres of WUS (68.4 acres).
- Slightly reduced sky brightness from artificial night lighting. Since the selected action eliminates the need for lighting the heap leach and associated facilities during night operations, it will have slightly reduced sky brightness, compared with other action alternatives (it eliminates approximately 105,500 lumens, for a total estimated 6.4 million lumens for the selected action). This slightly reduces the observed fractional increase in sky brightness at the Whipple Observatory; Jarnac Observatory; Corona de Tucson; SR 83; and Empire Ranch, which were identified as key viewpoints for night sky brightness during the scoping process.
- Reduced risk of release of hazardous materials into the environment. Specifically, removal of the heap leach process from this alternative eliminates the need for sulfuric acid and kerosene, thereby avoiding any risk of accidental release of these materials into the environment during transportation, use, or storage.
- Reduced number of trips of hazardous materials to the mine due to the elimination of sulfuric acid and kerosene shipments. The number of trips will decrease from 157 per week to 94 per week, a reduction of 63 trips per week, or 40 percent. This will reduce potential emergency response to accidents or spills of these materials.

#### **3.1.4.3.5 Issue 3E – Surface Water Quality – Sediment Delivery**

Sediment delivery is a component of surface water quality. Maintaining sediment delivery is desirable to minimize changes, such as scour, in the geomorphology of Barrel Canyon. Apart from the Scholefield-McCleary Alternative, the selected action has the smallest reduction in sediment delivery of all action alternatives. The Scholefield-McCleary Alternative would result in more sediment

delivery into downstream drainages. However, the Scholefield-McCleary Alternative does not meet the NAAQS, it would result in the most acres of disturbance of all alternatives, and it excludes the public from more acres of NFS lands than all other alternatives. Refer to the “Surface Water Quality” resource section in chapter 3 of the FEIS for more information regarding sediment delivery.

#### **3.1.4.4 Issue 4 – Seeps, Springs, and Riparian Vegetation**

Stock tanks are addressed in this issue as well as under “Livestock Grazing” in the impact analysis that is addressed in chapter 3 of the FEIS.

The analysis of potential impacts to seeps, springs, and riparian areas is complex and relies on a number of variables. Including a summary of analysis methodology is warranted in order to provide a basis for understanding of the potential impacts from the action alternatives. A more thorough description is contained in “Seeps, Springs, and Riparian Areas” resource section in chapter 3 of the FEIS, with new information presented and considered in the “Seeps, Springs, and Riparian Areas” section of the SIR dated May 22, 2015.

Flow from seeps and springs in the analysis areas can be attributed to the following: (1) discharge of shallow subsurface fracture flow that is directly dependent on storm and runoff events and that may or may not be in direct hydraulic connection with the groundwater flow system; (2) discharge of groundwater via fractures that intersect land surface and that are in connection with the regional groundwater flow system; (3) discharge from the recent stream channel alluvium or other shallow aquifer, where it is forced to flow to land surface at bedrock constrictions; and/or (4) discharge of groundwater along low-permeability fault zones that force groundwater to flow to the land surface.

For many of the seeps and springs considered for this analysis, the exact source of groundwater is unknown. However, it is acknowledged that the source of water is important to predicting impacts to springs. Springs hydraulically connected to the regional aquifer are likely to be impacted by groundwater drawdown associated with the mine pit. Springs that receive water from local fractures or that are located in ephemeral stream channels may not be impacted, even when they are in close proximity to the pit. Many springs may have a mix of regional and local water sources. For springs, seeps, and perennial and intermittent stream reaches, the following qualitative thresholds were established to reflect this uncertainty and are used in this analysis:

- High likelihood of impact – The predicted changes in hydrology due to the mine would impact resource function, and the source of water can either be estimated with high certainty to be connected with the regional aquifer, or impacts would occur no matter what the source of water.
- Possible impact – Reduction in flow could occur, given predicted changes in hydrology as a result of the mine, but uncertainty exists regarding the source of the water. While field surveys were conducted to locate springs, it is possible that not every spring was found. Those springs that have been identified but not physically located in the field are assumed to exist, and impacts are considered possible.
- Unlikely to be impacted – Predicted changes in hydrology as a result of the mine are small enough that they are unlikely to cause a reduction in flow, regardless of the source of water, or the source of the water is local and unlikely to be affected by aquifer drawdown associated with the pit. Springs that fall beyond the perimeter of the modeled 5-foot drawdown contour are considered unlikely to be impacted.

The FEIS analysis made use of available data where the data were deemed sufficient to determine the source of water for individual springs. Field observations over several years or seasons have provided this level of evidence. For springs without direct field data evidence, springs are assumed to have the potential to be impacted.

When all springs impacts are considered (directly impacted by surface disturbance, highly likely to be indirectly impacted by groundwater drawdown, and possibly indirectly impacted by groundwater drawdown), most of the action alternatives are identical, each potentially impacting 76 springs or seeps, except for the Scholefield-McCleary Alternative, which would potentially impact 78 springs or seeps.

I recognize that seeps, springs, and riparian areas are a valuable resource and that once impacted, they are unlikely to be restored to existing condition. However, there is substantial uncertainty regarding the ability to predict indirect impacts to springs. For this project, the cause of indirect impacts to seeps and springs results from predicted groundwater drawdown, as well as reductions in stormwater flow.

Seeps and springs whose water source is not tied to groundwater (refer to the “Seeps, Springs, and Riparian Areas” resource section in chapter 3 of the FEIS for further information) are not likely to be affected by groundwater drawdown, and it is not feasible to determine the source of water for every spring. While the analysis disclosed in the FEIS has attempted to address this situation by considering relevant factors such as the presence of perennial water and riparian vegetation, uncertainty remains. Therefore, I consider those springs with either direct impacts or highly likely indirect impacts to be the most significant factor related to seeps and springs influencing my decision.

When considering just those springs that are directly impacted by surface disturbance or that are highly likely to be indirectly impacted by groundwater drawdown, the selected action and Barrel Trail Alternative impact fewer springs (16 total, with 5 springs directly impacted and 11 springs indirectly impacted). The other action alternatives impact 17 to 22 springs.

However, these impacts will be reduced somewhat through required mitigation and monitoring focused on replacing impacted water sources. Under terms and conditions of the BO, which are also described in mitigation measure FS-BR-05 in appendix B of the FEIS, the proponent will replace or enhance up to 30 water sources if they are impacted by the project. Because of the uncertainty of effects on springs and seeps, FS-SSR-02 includes a requirement that the proponent continue to monitor 25 springs with baseline data to identify any impacts that may occur due to dewatering of the regional aquifer in the vicinity of the mine pit. Additionally, the Cienega Creek Watershed Conservation Fund (FS-BR-16) can be used for monitoring of success of replacement or enhanced water features. If springs levels decrease, funding for mitigation can come from this fund. I consider the impacts of all action alternatives to be similar with mitigation applied.

In addition, the selected action and Barrel Trail Alternative would result in the greatest impact to stock tanks of all the action alternatives (15 tanks lost, compared with 5 to 11 lost with the other alternatives). Due to the inclusion of mitigation measures to replace lost water sources, the impact to stock tanks was not a primary factor in my decision for the selected action. See FS-BR-05 in section 4.3.2.7 of this document and in appendix B of the FEIS for more detail, as well as edits to this measure included in the Rosemont Copper Project Errata.

Another factor related to the seeps, springs, and riparian issue includes acres of riparian area disturbed. The selected action will impact the fewest acres of riparian area of the action alternatives

(an estimated 588 acres for the selected action, compared with 631 to 686 acres for the other action alternatives). Other factors analyzed for this issue include change in the function of riparian areas; and the ability to meet legal and regulatory requirements for riparian areas. There are no differences between the action alternatives for these factors.

The FEIS included an analysis of potential impacts to distant riparian corridors along Empire Gulch and Cienega Creek, particularly within the Las Cienegas National Conservation Area (NCA) managed by the BLM. A substantial portion of the new information that formed the basis for the SIR dated May 22, 2015, was related to impacts on these riparian areas. The riparian analysis was thoroughly reviewed in the May 22, 2015, SIR based on the best available information, in consultation with biologists and hydrologists from a variety of federal agencies. The results described in the May 22, 2015, SIR are within the range of impacts described in the FEIS. Specifically, with all action alternatives, hydriparian habitat along Empire Gulch could transition to mesoriparian or xeroriparian, although this is highly uncertain. Pockets of mesoriparian habitat along Davidson Canyon (Reach 2) could transition to mesoriparian or xeroriparian with moderate certainty. Xeroriparian habitat in lower Barrel Canyon is highly certain to experience reduced vitality, extensiveness, and health and to transition to lesser quality habitat. Along Upper Cienega Creek, there is unlikely to be any transition from hydriparian to xeroriparian habitat, although some changes could occur at the margins of the hydriparian corridor. See section 1.2 of this document for a discussion of the 2015 and 2016 SIRs.

#### **3.1.4.5 Issue 5 – Plants and Animals**

Impacts to plants and animals are assessed under the “Biological Resources” resource section in chapter 3 of the FEIS. I consider the selected action to have the smallest impact of all the action alternatives to biological resources, including special status species (federally listed threatened, endangered, and sensitive species, as well as some migratory birds and Forest Service management indicator species). The overall conclusions of impacts to species viability are the same for all action alternatives. However, there are differences between the action alternatives in how they respond to the issue indicators chosen to reflect impacts. I considered the following in making my decision:

- The selected action will result in the smallest amount of acres of terrestrial vegetation permanently lost or modified;
- The selected action will result in impacts to fewer acres of terrestrial and aquatic habitat for most special status species;
- The selected action will result in less overall impact in animal movement corridors and connectivity between wildlife habitats. Under the selected action, McCleary Canyon will remain largely intact, which is the most physically and biologically diverse of the nearby canyons and which harbors the rare plant Coleman’s coral-root. Due to the protection of McCleary Canyon, I consider the selected action to have the smallest impact of the action alternatives in terms of impacts to animal movement corridors and connectivity between wildlife habitats. See the FEIS, pp. 610–616, for descriptions of the various Forest Service sensitive plants found in McCleary Canyon; and the FEIS, p. 668, and the October 30, 2013, BO, p. 16, for a description of the ecological diversity of this canyon.

#### **3.1.4.6 Issue 6 – Cultural Resources**

I considered impacts to cultural resources carefully in my decision. Each of the action alternatives will have significant, permanent adverse impacts to cultural resources. The action alternatives differ

in the number of sites impacted, and some alternatives clearly have more impacts than others. Cultural sites are resources that cannot be restored once impacted, and this project will impact several sites irrespective of which action alternative is chosen for implementation. I recognize that every site is significant, and I do not take lightly small differences in the number of sites impacted.

- Considering the overall results of the cultural resource impact analysis, I believe that the Barrel Trail and Scholefield-McCleary Alternatives would result in the greatest impacts of the action alternatives.
- Of the remaining three alternatives, the selected action will impact the fewest sacred springs (16 for the selected action, compared with 17 for the proposed action and Phased Tailings Alternative) and will impact the fewest sites that are eligible for the National Register of Historic Places (NRHP) (84 for the selected action and Phased Tailings Alternative, compared with 86 for the proposed action).
- Of the remaining three alternatives, the selected action (and Barrel Trail Alternative) will impact one more prehistoric site known or likely to have human remains (32, compared with 31 for the Phased Tailings Alternative).
- The selected action will impact the greatest amount of acres of traditional resource collection areas impacted (6,990 acres, compared with 6,073 to 6,176 acres for the other action alternatives<sup>8</sup>).
- The selected action carefully avoids impacting one of the more significant cultural sites (the Ballcourt Site) because of the reduced footprint of the tailings.

Furthermore, I carefully considered the impacts to the *Ce:wi Duag* Traditional Cultural Property and Huerfano Butte Traditional Cultural Property, which could be affected by the selected action. I also recognize the cultural significance and importance of the Santa Rita Mountains to the tribes. All action alternatives would have similar impacts to the Santa Rita Mountains.

In making my decision to implement the selected action, both Supervisor Upchurch and I consulted with multiple tribes, the SHPO, and the ACHP, which resulted in a signed MOA that was developed in compliance with Section 106 of the NHPA and the 2003 “Region 3 First Amended Programmatic Agreement Regarding Historic Property Protection and Responsibilities” with four SHPOs and the ACHP. The MOA is contained in appendix D of the FEIS. I considered the sites that would be impacted by the action alternatives, the traditional resource collection areas that would be affected, and the sum of other environmental and social impacts that would result from each alternative.

I decided to choose the selected action for implementation, even though it will impact 6 more historic sites than the Scholefield-McCleary Alternative (the selected action would impact 1 to 3 fewer sites than the Phased Tailings Alternative and proposed action, and 24 fewer than the Barrel Trail Alternative). The selected action will also impact 917 more acres of traditional resource collection areas than the Phased Tailings Alternative and 813 more acres of traditional resource collection areas than the proposed action (the selected action would impact 4 fewer acres than the Barrel Trail Alternative and 1,899 acres fewer than the Scholefield-McCleary Alternative). In making my decision, I considered the following:

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<sup>8</sup> The number of acres excluded from public access is considered a proxy to represent the resource collection area that would be impacted by each alternative. This is equal to the acres within the perimeter fence for each alternative. See the FEIS, p. 1042, for more information.

- The Barrel Trail and Scholefield-McCleary Alternatives would result in substantially greater impacts to cultural resources than the other action alternatives (the Barrel Trail Alternative impacts 24 more historic properties; the Scholefield-McCleary Alternative impacts 1,899 more acres of traditional resource collection areas). For that reason, along with other environmental and social impacts, these alternatives are unacceptable to me.
- The proposed action and Phased Tailings Alternative have greater environmental impacts as described elsewhere in this ROD and are therefore unacceptable to me.

#### **3.1.4.7 Issue 7 – Visual Resources**

While there are differences between the action alternatives related to impacts to visual resources, I do not consider the differences between the alternatives to be substantial. All alternatives would result in permanent, major adverse impacts, although the Scholefield-McCleary Alternative ranks as having the greatest impacts because its tailings and waste rock facilities would be visible from the west side of the Santa Rita Mountains. The selected action generally ranks in the middle of all action alternatives for the following issue factors:

- amount of area that would not meet current forest plan scenic integrity objective designations (note that once the 1986 forest plan is amended by this ROD, the selected action will be consistent with the plan);
- change in landscape character over time;
- miles of project visibility from level 1 and 2 forest roads and trails;
- miles of SR 83 with direct views of the project; and
- miles of Arizona National Scenic Trail with views of the project.

However, the differences between alternatives are not substantive enough to modify my overall conclusion that permanent, major, adverse impacts that cannot be avoided or mitigated will occur with all action alternatives. With the exception of the Scholefield-McCleary Alternative, the minor differences between alternatives are not substantive enough to sway my decision toward or away from one alternative or another.

#### **3.1.4.8 Issue 8 – Dark Skies and Astronomy**

All action alternatives could potentially result in some impairment to observatories near the project area. However, the night lighting mitigation plan that applies to all alternatives except the proposed action will substantially reduce potential impacts. The selected action has somewhat less lighting required than the Phased Tailings, Barrel Trail, and Scholefield-McCleary Alternatives because of the removal of the heap leach facility and therefore will have less impact on sky brightness than the other action alternatives.

#### **3.1.4.9 Issue 9 – Recreation**

The analysis disclosed in chapter 3 of the FEIS includes impacts to wilderness as well as recreation.

However, the location for the Arizona National Scenic Trail was a consideration in my decision. Based upon the analysis, knowledge of the area, and consultation with the Arizona Trail Association. I believe that the location of the Trail on the east side of SR 83 is superior to the location on the west side of SR 83 in terms of providing a desired user experience. My decision includes relocation of the

Arizona National Scenic Trail on the east side of SR 83. I have also decided to defer construction of the two new trailheads and their associated infrastructure pending consideration of use levels on the Las Colinas segment and other factors in order to determine the need for these facilities. Following this assessment, I may choose to construct the facilities as described in chapter 3 of the FEIS and section A-13 of appendix A of this document; construct trailheads that are smaller and/or contain fewer infrastructure components than were analyzed in the FEIS; or not construct new trailheads at this time. Note that clarifications to the FEIS regarding construction of these trailheads have been made and are contained in the Rosemont Copper Project Errata.

Other than the Scholefield-McCleary Alternative, which would have the greatest impacts to recreation and wilderness, there is little difference in the impacts between the action alternatives. The minor differences related to the issue factors are:

- impacts to Recreation Opportunity Spectrum (the selected action would result in 6,990 acres no longer meeting designated Recreation Opportunity Spectrum; the proposed action and Phased Tailings Alternative would be 6,117 and 6,073 acres, respectively; the Barrel Trail and Scholefield-McCleary Alternatives would be 6,994 and 8,885, respectively) (note that once the 1986 forest plan is amended by this ROD, the selected action will be consistent with the plan);
- percentage of game management unit 34A affected (the selected action, proposed action, and Phased Tailings Alternative would affect 4 percent of game management unit 34A on NFS lands; the Barrel Trail and Scholefield-McCleary Alternatives would affect 5 percent); and
- National Forest System roads (NFSRs) lost (i.e., roads currently available for legal public motorized use that would not be available with project implementation). Note that the selected action and Barrel Trail Alternative would result in 18.5 miles of NFSRs lost; the proposed action and Phased Tailings Alternative would result in 17.5 miles lost; and the Scholefield-McCleary Alternative would result in 28.5 miles lost.

The differences in these impacts are not substantive enough to sway my decision toward or away from any of the alternatives.

It is important to note that most action alternatives include new road construction designed to connect roads that will be cut off by the perimeter fence, provide turnarounds, and connect the primary access road to an NFSR network in Sycamore Canyon. Because of the geographic aspect of the perimeter fence for the Scholefield-McCleary Alternative, new connector roads are not included. Overall, I consider these connector roads to be critical for reducing or compensating for the loss of public motorized access. However, other than the Scholefield-McCleary Alternative, these actions are similar between the remaining action alternatives and thus were not a major factor in my decision.

#### **3.1.4.10 Issue 10 – Public Health and Safety**

The analysis of impacts to public health and safety includes the following sections in chapter 3 of the FEIS: Hazardous Materials; and Public Health and Safety. It also addresses the results of air quality analysis as it relates to potential impacts to public health.

The primary aspects of this issue that factored into my decision are transportation, storage, and use of hazardous materials; and potential human health impacts related to emissions that affect air quality.

The selected action will not include heap leach processing, which eliminates the need for two hazardous substances, kerosene and sulfuric acid. The risk of accidental release of these materials into the environment during transportation, storage, and use has been eliminated for the selected action, which reduces the overall risk of accidental release of hazardous materials, compared with the other action alternatives.

The selected action is the only alternative that complies with air quality standards for both PM<sub>2.5</sub> and PM<sub>10</sub> particulates at the project fence line. These standards were adopted by the EPA to protect public health. Refer to the discussion of impacts to air quality in section 3.1.4.2 above for further information.

### **3.1.4.11 Issue 11 – Social and Economic Resources**

Social and economic issues were analyzed under the “Socioeconomics and Environmental Justice” resource section in chapter 3. There would be few differences between action alternatives in terms of their socioeconomic and environmental justice effects.

#### **3.1.4.11.1 Socioeconomics**

Two models were used to calculate economic impacts: a model from Applied Economics, and a Forest Service economic model. The Applied Economics model focuses solely on impacts to Pima County, while the Forest Service’s IMPLAN model estimates impacts to the entire three-county analysis area. Results from both models are presented in the FEIS (pp. 1101–1104) to provide a range of possible impacts (that also reflects a range of scale), rather than single absolute numbers. Industry sectors used in the two models differed in some cases for analysis of non-labor indirect expenditures (indirect impacts from supply purchases from local vendors). For example, the Applied Economics model assigned more local purchases of equipment, supplies, and services to retail, as well as the labor-intensive repair and maintenance sectors, while the Forest Service model allocated more of those purchases to wholesale sectors. Differences were most pronounced for purchase of fuel, equipment repair, and maintenance, resulting in indirect impacts six times greater for the Applied Economics model vs. the Forest Service model. These differences account, in large part, for the differences and apparent inconsistency between the relatively higher indirect/induced impacts under the Applied Economics model and the relatively lower impacts under the Forest Service model, despite the larger impact area assumed for the Forest Service model. Neither method is incorrect since there is uncertainty about how future expenditures will be distributed, but use of retail sectors results in larger multipliers and impacts, while use of wholesale sectors results in smaller, more conservative multipliers.

Induced jobs during construction were higher for the Forest Service model because ‘benefits’ were assumed to be included in labor income (the Applied Economics model assumed no benefits and therefore lower labor income available for local spending).

- Tourism. Spending for nature based tourism is estimated at \$683 million annually in the greater Tucson area. The analysis indicated that the selected action could result in a greater reduction in tourism and recreation revenue over time than the proposed action or Phased Tailings Alternative (the Barrel Trail and Scholefield-McCleary Alternatives would result in greater impacts; refer to the “Socioeconomics and Environmental Justice” section in chapter



3 of the FEIS for further information).<sup>9</sup> The analysis of impacts to tourism indicates that the selected action could result in direct annual reduction in spending related to nature-based tourism of \$300,000 to \$900,000 greater than the proposed action; and indirect effects in output per year of \$111,000 to \$370,000 greater than the proposed action (note that an estimated \$649 million in direct spending for nature-based tourism occurs annually in the 3-county analysis; see FEIS, p. 1086). While I consider any negative impacts to local economies to be important, the difference between the selected action and the other action alternatives did not rise to a level that influenced my decision toward or away from any specific alternative.

- **Amenity-based relocation.** The analysis indicates a 0.01 percent difference in net migration to Santa Cruz County between the alternatives (impacts range from a decrease in net migration of 0.08 to 0.09 percent). I did not regard this difference to be of a substantial enough magnitude to influence my decision toward or against any specific alternative. The analysis also indicates a potential decrease in the rate of population growth in Patagonia Census County Division of between 6 to 33 percent and 6 to 38 percent. The selected action was projected at a 6 to 37 percent decrease in population growth. This projection did not influence my decision toward or away from any specific action alternative for two reasons: (1) similar to predicting impacts to tourism and recreation revenue discussed above, there is considerable uncertainty in this analysis; and (2) the analysis of this issue indicates that any decrease in amenity-based migration may be offset by an increase in mine staff relocation.

#### **3.1.4.11.2 Environmental Justice**

All action alternatives are anticipated to result in disproportionate adverse impacts on an environmental justice community due to impacts to cultural resources (FEIS, table 238, p. 1123). While there are slight differences between alternatives in their impact to cultural resources (see Issue 6 above), all would result in disproportionate adverse impacts. Thus, the difference between the selected action and the other action alternatives did not rise to a level that influenced my decision toward or away from any specific alternative. See section 8.16 of this document for a more detailed discussion of environmental justice.

#### **3.1.4.12 Transportation/Access**

The analysis of transportation and access in the FEIS focused on change in type and pattern of traffic, change in level of service on potential highway routes, and roads decommissioned and roads with access restricted by mine operations.

There were no difference among the action alternatives change in level of service on potential highway routes. While there were slight differences between the action alternatives in change in type and pattern of traffic and roads decommissioned and roads with access restricted by mine operations, the differences were slight and did not influence my decision. Refer to the “Transportation/Access” resource section in chapter 3 of the FEIS for details.

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<sup>9</sup> The results of the alternatives differ based on their varying viewsheds, or the different areas and distances from which tailings and other mine activity can be seen. It should be noted that the visual resources impact analysis in the FEIS does not predict major visual impacts from many of the viewpoints within the viewshed of the proposed mine. Thus, the potential impact that aesthetic changes would have on nature-based tourism has a high level of uncertainty, which accounts for the wide range in impacts. See the FEIS, pp. 1112–1113, for more information.

### **3.1.4.13 Other Resources Analyzed**

#### **3.1.4.13.1 Paleontological Resources**

I am aware that paleontological impacts are predicted to be greater with the selected action than with one or more of the other action alternatives (326 acres greater than the proposed action, 398 acres greater than the Phased Tailings Alternative, and 853 acres greater than the Scholefield-McCleary Alternative).

The selected action will result in more acres of disturbance to areas considered to have a moderate to high potential for occurrence of paleontological resources, compared with some other action alternatives. While no significant fossil localities were discovered within the proposed perimeter fence boundary during the paleontological resources field surveys, a mitigation measure is included that requires ground-disturbing work in an area to stop upon discovery of a significant paleontological resource until the Forest Service can investigate and determine the appropriate steps prior to commencement of operations. Therefore, I do not consider the slight increase in risk of impacting potential paleontological resources with the selected action to be great enough to outweigh the reduced or avoided impacts previously described for the selected action.

#### **3.1.4.14 Livestock Grazing**

The selected action will result in the lowest potential reduction in livestock grazing on Federal grazing allotments. The potential reduction in animal unit months (AUMs) (a measurement of livestock use consisting of a cow-calf pair using the allotment for 1 month) annually over the life of the mine will be lowest with the selected action. This is primarily attributable to the location of the perimeter fence, within which the livestock grazing analysis assumes grazing will be restricted. The actual reduction in AUMs is expected to be lower than those described in the analysis because the area between the perimeter and security fences will be evaluated for grazing potential once perimeter fence construction is completed and regularly during mine operation. The reduced footprint of the waste rock and tailings facilities, and thus the reduced acreage within the security fence with the selected action, will likely allow a higher number of AUMs than will the other action alternatives.

#### **3.1.4.15 Other Factors**

A number of other resources were addressed in the analysis, including “Soils and Revegetation,” “Land Ownership and Boundary Management,” “Fuels and Fire Management,” and “Noise.” However, in general, there were no or very minor differences between the action alternatives in terms of their impacts. Therefore, the results of these impact analyses were not a substantial influence in my decision.

### **3.1.5 Decision Conclusion for the Selected Action**

After reviewing the analysis and supporting information contained in the FEIS and project record; consulting with cooperating and regulatory agencies; reviewing public comments on the DEIS; and considering the factors discussed above, I determined that the selected action is the best balance of minimizing impacts to NFS resources as well as other environmental and social values. This alternative has reduced impacts, compared with other alternatives, while allowing the proponent to develop its mineral resources in a manner that is consistent with applicable laws and regulations.

The selected action contains a number of design features that will avoid or reduce environmental impacts, as well as a comprehensive mitigation and monitoring plan that will reduce overall impacts

and ensure that impacts are within the range predicted by the analysis that is disclosed in the FEIS. There is no one action alternative that completely mitigates or eliminates effects on important resource values when the proposal results in the placement of about 1.9 billion tons of waste rock and tailings on the landscape. The challenge is in selecting an alternative that represents the best balance of mitigating effects and avoiding significant impacts to cultural, social, and resource values while allowing mining activities authorized in Federal law. It is my determination that the selected action best meets these goals.

### **3.2 Decision to Amend the 1986 Forest Plan**

This ROD also documents my decision to amend the 1986 Coronado forest plan concurrently with my decision on the MPO. Determining whether the proposed project would be consistent with the forest plan is a component of the purpose and need for the Rosemont Copper project (FEIS, pp. 7–8). A review of the consistency of the proposed MPO determined that certain aspects of implementing the proposed action or any of the action alternatives would result in conditions that are inconsistent with management direction in the 1986 forest plan (see the FEIS, pp. 114–117, for details). The no action alternative is the only alternative among the six considered in the FEIS that is consistent with management direction in the 1986 forest plan. However, I cannot select the no action alternative for implementation because Federal law provides the right for a proponent to develop the mineral resources it owns and to use the surface of its unpatented mining claims for mining and processing operations and reasonably incidental uses (see section 3.1.2, “Decision Space for the Selected Action,” for further detail). A programmatic forest plan amendment must be approved for any of the action alternatives to change direction specific to the proposed project area, including plan components (FEIS, p. 27).

My decision to amend the 1986 forest plan will create a new forest MA for which specific standards and guidelines are being established relative to a large-scale mining operation. The amendment would apply only to the Rosemont area and would not affect activities outside the Rosemont area. The amendment will ensure the project’s consistency with the 1986 forest plan. The components of this programmatic amendment to the 1986 forest plan are described in the FEIS (pp. 117–120). In making my decision to amend the 1986 forest plan, I considered the impacts of the amendment (refer to “Effects of Amending the Coronado Forest Plan” in each resource section in chapter 3 of the FEIS), as well as whether the amendment is considered significant.

#### **3.2.1 Decision Rationale for the Forest Plan Amendment**

I decided to amend the 1986 Coronado forest plan so that the Rosemont Copper Project will be consistent with the plan as amended. As previously stated in section 3.1.2, “Decision Space for the Selected Action,” Federal law provides the right for a proponent to develop the mineral resources it owns and to use the surface of its unpatented mining claims for mining and processing operations and reasonably incidental uses (see 30 U.S.C. 612). Pursuant to Federal law, the Forest Service may reasonably regulate the use of the surface estate to minimize impacts to Forest Service surface resources, but cannot endanger or materially interfere with mining and processing operations and reasonably incidental uses (see 30 U.S.C. 612 and 36 CFR 228.1).

Thus, I cannot reject outright the proposed project. While my decision to implement the selected action includes mitigation measures to minimize impacts on NFS surface resources, the selected action (and all action alternatives) remained inconsistent with the 1986 forest plan. In order to meet

my legal obligations under 30 U.S.C. 612 and 36 CFR 228.1, amending the 1986 forest plan is necessary.

### **3.2.2 Decision Space for the Forest Plan Amendment**

My decision to amend the 1986 forest plan is consistent with 16 U.S.C. 1604(f)(4), which states that forest plans may “be amended in any manner whatsoever after final adoption and after public notice.” Federal regulations at 36 CFR 219.17(b)(3) allow forests to use the provisions of the planning regulations in effect before November 9, 2000, in order to amend forest plans.

FSM 1926.5 states that the responsible official shall: (1) determine whether proposed changes to a land management plan are significant or not significant in accordance with the requirements of FSM 1926.51 and 1926.52; (2) document the determination of whether the change is significant or not significant in a decision document; and (3) provide appropriate public notification of the decision prior to implementing the changes. FSM 1926.51 and 1926.52 provide guidance for determining whether changes to land management plans are significant or not significant.

Projects and activities authorized after approval of a forest plan must be consistent with the plan (36 CFR 219.15). As previously mentioned, the selected action and each of the action alternatives were found to be inconsistent with the 1986 Coronado forest plan.

The following describes the options available to me, as well as my choice between these options for resolving inconsistencies with the forest plan.

1. Modify the proposed project or activity to make it consistent with the applicable plan components. The proposed action and each of the action alternatives were determined to be inconsistent with many aspects of the 1986 Coronado forest plan. Modification of any of these alternatives would have severely limited Rosemont Copper’s access to its mineral deposit, which is contrary to Federal mining law. I determined that modifying the proposed project to comply with the current Coronado forest plan would materially interfere with mineral operations, which is beyond my legal authority.
2. Reject the proposal or terminate the project or activity. As discussed earlier, as well as in the DEIS and FEIS, I do not have the authority to reject a mining proposal as long as it is determined to meet applicable laws and regulations. Compliance with laws and regulations is discussed throughout the FEIS, as well as in section 8 of this document.
3. Amend the plan as a separate action prior to any decision on the MPO so that the project or activity will be consistent with the plan as amended.
4. Amend the plan contemporaneously with the approval of the project or activity so that the project or activity will be consistent with the plan as amended. Supervisor Upchurch chose this option and decided to address both the project and the forest plan amendment in a single EIS in order to most effectively involve the public and tribes, and most efficiently disclose the impacts of both decisions, and I concur with his determination.

### **3.2.3 Responsiveness to the Purpose and Need for the Forest Plan Amendment**

The description of the purpose and need for action in the FEIS includes a discussion of the need to amend the 1986 forest plan (FEIS, pp. 7–8). The forest plan amendment meets the stated need to amend the forest plan so that the project will be consistent with the plan as amended.

### **3.2.4 Responsiveness to the Issues and Resources Analyzed for the Forest Plan Amendment**

The forest plan amendment is responsive to the issues described in chapter 1 of the FEIS and summarized earlier in this ROD. When determining compliance of the proposed action and its alternatives to the forest plan, the ID team reviewed all forest plan components in light of the actions and impacts predicted for the proposed action and action alternatives. Where applicable, the issue statements described in the FEIS included statements regarding inconsistencies with the forest plan (see FEIS, p. 22, Issue 7; p. 23, Issue 9; and p. 24, Issue 11b). By amending the 1986 Coronado forest plan, the project is consistent with the plan as amended.

### **3.2.5 Decision Conclusion for the Forest Plan Amendment**

I have decided to amend the 1986 Coronado forest plan by creating a new MA that provides for mining of privately held mineral resources while allowing other forest uses to the degree that they are safe, practical, and appropriate for an active mining or postmine environment. Standards and guidelines have been developed specifically for this new MA (MA 16). See the FEIS, pp. 117–120, for details. In so doing, this project meets the requirements of 36 CFR 219.

I have determined that this programmatic amendment of the 1986 forest plan is not significant because it would not significantly alter the multiple-use goals and objectives for long-term land and resource management for the forest as a whole. Refer to section 8.6.2 of this document for a discussion of that determination. Public notification of the need to amend the Coronado's forest plan was made in the notice of intent to prepare an environmental impact statement (Forest Service 2008k), DEIS, FEIS, and draft ROD.

## **4.0 Selected Action**

### **4.1 Summary of Selected Action**

The selected action is fully described in chapter 2 of the FEIS and in appendix A of this ROD. The selected action contains changes and additions to the preliminary MPO (“Alternative 2 – Proposed Action”) and includes design modifications, operational components, and mitigation and monitoring plans intended to minimize the risk of adverse impacts to the environment. A summary of the major aspects of the selected action follows. Figure ROD-3 depicts the footprint and major components of the selected action.

The selected action will develop the proponent's mineral deposit using open-pit mining techniques. The mine will consist of an open pit; plant site and support facilities; waste rock and tailings facilities; and ancillary facilities, including access and maintenance roads and electrical supply and water supply lines. The pit will require 18 to 24 months<sup>10</sup> before full-scale mining can occur, and will ultimately be up to 6,500 feet in maximum diameter, with a final elevation of about 3,050 feet above mean sea level. The pit will disturb about 955 acres, of which 590 acres are private lands and 365 acres are NFS lands. In total, the selected alternative would result in 5,431 acres of land being disturbed, consisting of 1,197 acres of private land, 574 acres of State land, 3,653 acres of NFS land, and 3 acres of BLM land. Note that the BLM land is included because it falls within the utility line corridor analyzed in the FEIS, but final construction is not expected to actually disturb any BLM land. See table 1 in section 5.1 of this document for more detail on disturbance acreages.

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<sup>10</sup> The stages of mine life are as follows: premining (18–24 months), active mining (20–25 years), final reclamation and closure activities (3 years), and postclosure (indefinite). See table 5 on p. 66 in the FEIS and table A-2 in appendix A of this document for a more detailed description.

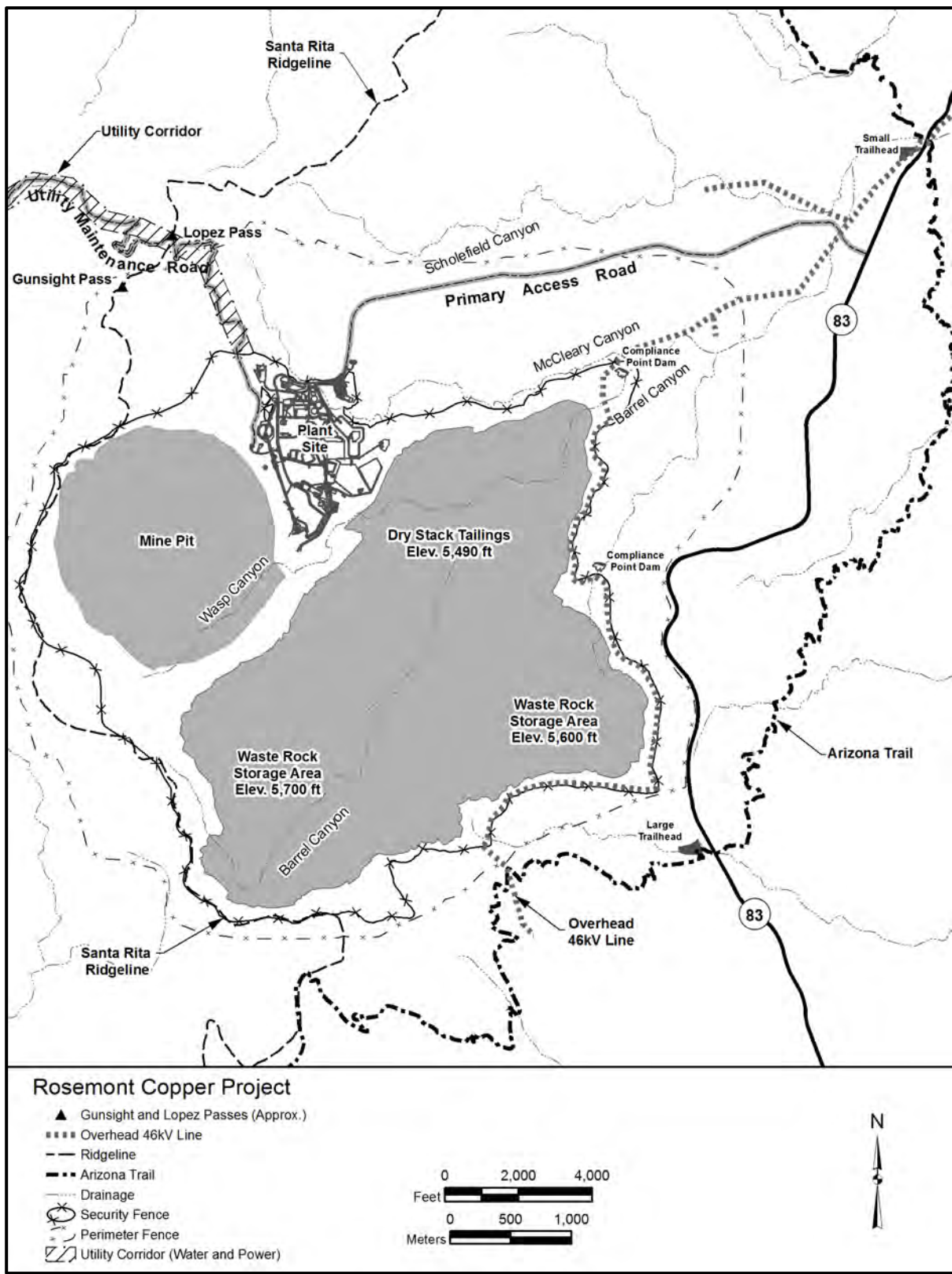


Figure ROD-3. Selected action footprint

During the 18- to 24-month premining phase, other activities will include construction of a security fence that will be located approximately 750 feet from the eventual toe of the tailings and waste rock facilities; construction of a perimeter fence to protect public health and safety (see figure ROD-3), construction of the primary access road, including its intersection with SR 83; temporary improvements of an intersection at SR 83 and NFSR 231; and improvement to NFSR 231 to allow access to the mine site while the primary access road is being constructed. The 6,990-acre area within the perimeter fence will be closed to the public from premining through reclamation and closure periods, totaling up to 30 years. An estimated 35 miles of NFSRs will be decommissioned and 18.5 miles of NFSRs restricted by mine operations. An estimated 3.2 miles of new roads will be constructed to connect cut-off roads, including the 2.3-mile-long Sycamore Connector Road, which will connect the primary access road outside the perimeter fence to an existing NFSR in the Sycamore Canyon area north of the mine site (figure ROD-4).

A utility maintenance road will be located within the utility corridor (see section 4.2, “Connected Actions,” below) to serve as access to the power supply line, water supply line, and water booster pump stations. The road will consist of two discrete segments: one from the plant site, over Lopez Pass, to a major wash on private land; and another from the supply wells near Sahuarita to the other side of the major wash, generally following the electrical transmission and water line location (the wash itself will not be crossed by the utility maintenance road). Overall, this low-use utility road will require about 11.5 miles of new construction and 4.5 miles of reconstruction or upgrade to an existing road. Other connected actions associated with the selected action include construction of a 138-kilovolt (kV) electrical transmission line and associated facilities; construction of a water supply line and ancillary facilities; relocation of an existing electrical distribution line; and relocation of the Arizona National Scenic Trail. See “Connected Actions” in section 4.2 of this document and in chapter 1 of the FEIS for further details.

Active mining will occur for an estimated 20 to 25 years. Blasting in the pit will typically occur once per day during daylight hours. Mineral material will be transported from the pit to a crusher in mine haul trucks; following crushing, the mineral material will be transported via conveyors to the grinding and flotation unit. Dewatered tailings will be transported using a conveyor system from the dewatering plant to the tailings facility for final placement. The conveyors will transfer the tailings to a radial stacker, and the tailings will then be spread and compacted by dozers. The compacted tailings will be encapsulated by a perimeter buttress formed of waste rock and a covering of waste rock (referred to as the waste rock cap) that will be placed by haul trucks traveling on haul roads. Over the life of the mine, it is estimated that 661,429,000 tons of sulfide ore will be processed and 1,249,161,000 tons of waste rock produced.

Reclamation will occur concurrently with active mining. This consists primarily of continuous construction of the perimeter buttresses, with revegetation activities and application of appropriate best management practices (BMPs) beginning as early as year 1, as portions of the waste rock buttress are completed. A large portion of the waste rock perimeter buttresses that surround the tailings facility and the waste rock facility itself will be concurrently reclaimed by year 10; these areas will begin to discharge water downstream as reclamation is completed. The upper benches and tops of the waste rock and tailings facilities will be reclaimed beginning in year 16, but will not be completely reclaimed until the mine is fully closed. This will help to limit erosion potential and allow noncontact stormwater runoff to discharge to sediment ponds and eventually to washes downstream of the mine site.



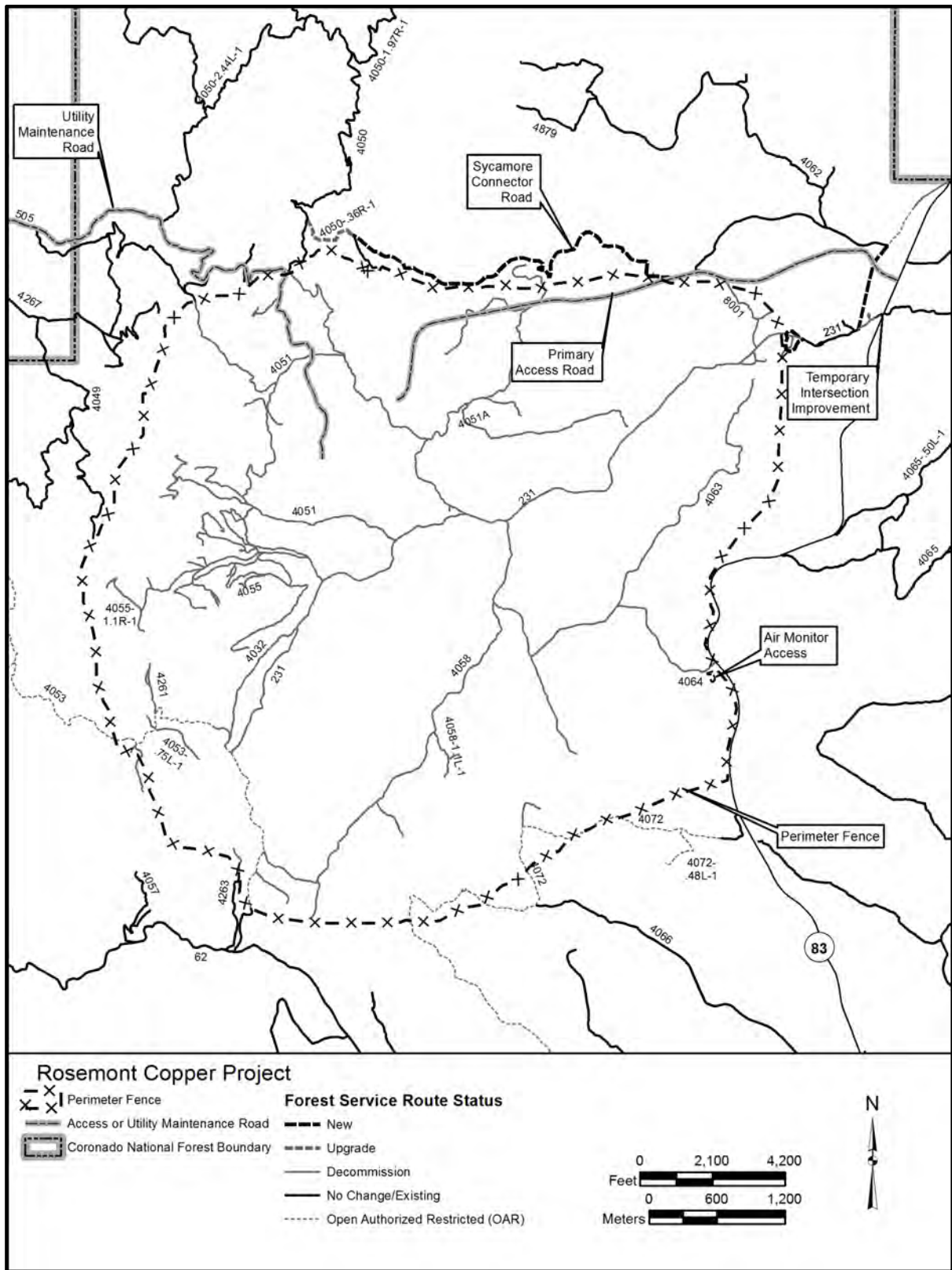


Figure ROD-4. Road changes under the selected action



Final reclamation and closure is expected to take an additional 3 years, for a total mine life of 24.5 to 30 years. Reclamation and closure consists of several components, including but not limited to:

- Removal of all equipment and buildings;
- Capping the top of the tailings facility with waste rock upon closure;
- Removal of pond liners as deemed appropriate under the aquifer protection permit (APP);
- Final regrading and revegetation of the plant and mill site areas upon closure;
- Final regrading and revegetation of any access roads requiring closure;
- Removal of electric supply line, water supply line, and related facilities from NFS lands;
- Revegetation of utility corridors where removal causes soil disturbance;
- Final regrading and revegetation of the landform that encompasses the waste rock and tailings facilities;
- Removal of perimeter and security fencing, and signing as needed;
- Construction of fencing and/or berms for safety considerations, including around the open pit;
- Identification of postclosure land use;
- Establishment of postclosure access roads; and
- Reestablishment of downstream drainage and surface water flow.

## **4.2 Connected Actions**

The selected action will result in connected actions as described below.

### **4.2.1 Electrical Transmission Line**

The proposed line would run generally southeast approximately 13 miles from the proposed Toro switchyard (to be located on private property owned by Rosemont Copper, approximately 3 miles south of Sahuarita Road and 3.5 miles east of Interstate (I-) 19 near the Country Club Road and Corto Road alignments), to the proposed Rosemont Substation located at the mine site. The proposed Toro switchyard will tap into the existing 138-kV transmission line that extends from the South substation to the Green Valley substation.

### **4.2.2 Water Supply Pipeline**

A water supply pipeline and ancillary facilities will be constructed to convey mine supply water from supply wells near Sahuarita to the mine site. This pipeline will be co-located with the electrical transmission line and buried where possible. Ancillary facilities include four pump stations and an electrical distribution line that will run from the Rosemont substation to the pump stations on the same towers as the electrical transmission line.

#### **4.2.3 Electrical Distribution Line**

An existing 46-kV electrical distribution line that currently provides electrical power to Rosemont Ranch and other private lands is located in an area where tailings and waste rock facilities will be constructed. This distribution line will be relocated adjacent to the security fence.

#### **4.2.4 Arizona National Scenic Trail Reroute**

The Las Colinas portion of the Arizona National Scenic Trail currently runs through the project area. Approximately 10 miles of existing trail will be relocated to the east side of SR 83 in order to accommodate both the Rosemont Copper Project and continued use of the trail (see figure ROD-3). This will require constructing an estimated 12.8 miles of new construction. Ancillary facilities such as trailheads and parking areas may be constructed if the Coronado determines that such facilities are needed for existing and predicted level of use. Construction of the relocated trail and potential ancillary facilities is described in chapter 2 of the FEIS, as well as in section A-13 of appendix A in this document. Note that changes to wording concerning potential trail facilities have been made in the Rosemont Copper Project Errata.

#### **4.2.5 State Route 83 Highway Maintenance and Improvements**

ADOT has determined that a number of road maintenance and improvement actions will be required to mitigate increased traffic on SR 83 associated with the combination of mine activities and anticipated population growth. These actions include a 3-inch pavement overlay from the intersection of the primary access road to the junction with I-10; associated striping, raising of guardrails, and resigning; and paving of three existing pullouts to safely accommodate school buses. All actions on NFS lands will occur within the ADOT easement. Note that ADOT has indicated that it intends to defer its final adoption of these improvements pending final approval of this ROD by the Forest Service.

### **4.3 Mitigations, Monitoring, and Additional Requirements**

A number of modifications to the preliminary MPO, monitoring requirements, and mitigation measures will be incorporated in a revised final MPO (the final MPO) as identified in the selected action. The Forest Service has determined that these changes and additions are necessary to meet the purposes of the applicable regulations, including compliance with the ESA, as set forth in the BO prepared by the USFWS, compliance with Sections 401 of the CWA, and compliance with the NHPA, as set forth in the MOA for NHPA Section 106 compliance.

#### **4.3.1 General Requirements**

1. All requirements specified in the FEIS and in this ROD for the selected action, including the requirements and mitigation and monitoring measures in this section, are binding upon the proponent and its successors, if any. These include all requirements contained in the USFWS BO and MOA for NHPA Section 106 compliance, including the HPTP. Any deviation from these requirements must be approved by the Coronado in advance.
2. The proponent shall modify and amend the MPO to be consistent with development of the Rosemont Copper deposit in accordance with the selected action as described in this ROD.
3. The final MPO shall contain a final reclamation and closure plan that is consistent with the preliminary reclamation and closure plan for the Barrel Alternative (CDM Smith 2012a),

including changes at the request of and approved by the Forest Service. The final reclamation plan will incorporate applicable mitigation measures, such as those for soils and revegetation. The proponent shall conduct reclamation in accordance with the approved final reclamation plan.

4. Any contract or permit issued by the Forest Service to the proponent for this project that has the potential to affect cultural resources shall include appropriate clauses on protection responsibilities and liability for damage.
5. The proponent shall submit a reclamation performance bond, meeting the requirements of 36 CFR 228.13, in an amount acceptable to the Forest Service and using an instrument acceptable to the Forest Service. The bond will be maintained by the proponent and may be required to be reviewed, increased, and updated as deemed necessary by the Forest Service.

The proponent shall not commence any action or activity located on NFS lands, nor any action or activity that will impact national forest resources, until such time that the action or activity is bonded. This includes bonding for monitoring associated with such actions or activities.

6. The proponent shall prepare a conceptual interim closure plan and submit it to the Coronado for inclusion in the MPO. Upon approval of the final MPO and commencement of construction, the proponent will be required to execute the interim closure plan no later than 90 days after cessation of operations. No later than 90 days after cessation of operations, the proponent will also submit for approval by the Coronado an updated detailed closure plan that meets the requirements of CFR 228.10. Refer to section 9.3.3 of this document for further details.
7. The proponent shall comply with the USFWS BO, dated April 28, 2016, and any subsequent revised or supplemental BOs in effect for the project. The proponent shall notify the Coronado of actions that do not comply with requirements of the applicable BO.
8. The proponent shall obtain and comply with all the current and future permits issued by the Arizona Department of Water Resources (ADWR), ADEQ, ASLD, Pima County, USACE, and any other permitting agencies; and shall comply with any revised or supplemental permits in effect for the project.
9. The proponent shall prepare a summary list of reports submitted to non-Forest Service agencies for annual submission to the Forest Service. This summary list will include the title and subject for each report and any relevant notifications the proponent has submitted concerning the Rosemont Copper Project. Upon Forest Service review of this summary list, the Coronado has the option of requesting a copy of any report and/or notification. As stated in section 9.3.2 of this document, the proponent will notify the Coronado in a timely manner if the proponent is notified of non-compliance by any permitting agency.
10. The proponent shall provide the Coronado with copies of:
  - the Arizona Pollutant Discharge Elimination System (AZPDES) multisector general permit authorization from the ADEQ, including a copy of the stormwater pollution prevention plan (SWPPP);
  - the AZPDES construction general permit authorization and SWPPP if this permit is required by ADEQ in addition to the multisector general permit;
  - the CWA Section 401 certification from ADEQ;

- the CWA Section 404 permit from USACE, including the final version of the habitat mitigation and monitoring plan;
  - updates to the APP;
  - the final air quality class II synthetic minor permit from ADEQ incorporating any necessary changes resulting from the decision to implement the selected action and any subsequent updates; and
  - the right-of-way (ROW) permit(s) from the ASLD indicating permission to construct a power line, water pipeline, and utility maintenance road across State property to the Rosemont Copper Project plant site; and ROW encroachment permits from ADOT to allow construction or improvement of intersections of NFSRs and SR 83.
11. The proponent shall prepare a construction schedule that describes the order of activities and which activities and associated mitigation measures are required prior to initiation of construction and submit it to the Coronado for approval prior to initiating any activities on NFS lands.
  12. The proponent shall provide an annual report summarizing mining, reclamation, and monitoring activities and projecting proposed activities for the coming year. The proponent shall conduct an annual review with the Coronado to determine whether activities are in accordance with the approved MPO and whether any changes to the approved MPO or financial assurance are needed.
  13. The proponent shall notify the Coronado in the event of any action, activity, or occurrence that results in deviation from the mine life as described in the final MPO.
  14. At any time during operations the Forest Service may ask the proponent for a proposed modification of the MPO detailing the means of minimizing unforeseen significant disturbance of surface resources, as stated in 36 CFR 228.4(e).
  15. The Rosemont Copper final MPO shall describe plans to control public access to mine areas after mine closure, such as fencing and posting to prohibit unauthorized entry to hazardous areas.
  16. Prior to approval of the MPO, the proponent will provide adequate assurance (easements, contracts, etc.) to the Forest Service with regard to the proponent's private lands that are associated with the Rosemont Copper Project MPO, including private lands with mitigation actions required by the BO. This assurance must allow the Forest Service access to conduct official business related to the administration of the MPO and the ability to complete any reclamation and monitoring requirements. Consequently, this will improve efficiencies in calculating the financial assurance. This assurance will terminate upon successful closure of the Rosemont Copper Project MPO or upon completion of final reclamation and monitoring if under distress closure, whichever occurs later.
  17. To accomplish the objective of documenting compliance with permit requirements, a system of self-monitoring and quality assurance/quality control (QA/QC) techniques will occur. To achieve this objective, the proponent will provide the Coronado with a description of how environmental protection standards contained in approved plans and permits will be implemented. The proponent will designate an employee as the primary contact with the Coronado on permit compliance, monitoring, and mitigation. A multiagency task group will be formed by the Coronado Forest Supervisor to assist the Coronado with oversight of mitigation and monitoring activities. See "Reporting and Evaluation" in section 4.3.3 of this document and "Mitigation and Monitoring – Reporting and Evaluation" in chapter 2 of the

FEIS for further details. As stated in section 4.3.3 of this document, the Forest Service will retain its authority to make decisions related to all actions and activities that occur on NFS lands, or impact national forest resources.

18. Monitoring and reporting frequencies are described for each applicable mitigation and monitoring items in appendix B of the FEIS. The proponent will be required to compile monitoring results into a monitoring report that will be provided to the Coronado on a quarterly basis beginning the first quarter following approval of the MPO by the Coronado. This will not limit the ability of the Coronado to approve other reporting frequencies for specific monitoring items on a case-by-case basis. Any monitoring result that is not in compliance with the effectiveness criteria will be reported to the Coronado within 72 hours, unless another reporting requirement is approved by the Coronado. After reviewing the results of these reporting requirements, the Coronado will notify members of the multiagency monitoring group should conditions warrant interim or emergency meetings.
19. In addition to quarterly monitoring reports, the proponent will submit an annual summary report of quarterly monitoring for the previous year to the Coronado. The annual monitoring report will contain a summary of quarterly results in a format approved by the Coronado, including a data summary and any data trends, a discussion of mining status, and plans for the coming year.
20. Rosemont Copper will establish and maintain a website<sup>11</sup> that is accessible by the public and post final monitoring reports on said website. Quarterly and annual monitoring reports will be posted within 90 days of being submitted to the Coronado.
21. The proponent has agreed to enter into a voluntary cost collection agreement with the Coronado to fund work performed by Coronado employees and their consultants, assigned to administer and monitor the project. This would include a biologist, whose role in overseeing monitoring activities is described in the BO (see revised conservation measure 1 in section 4.3.2.7 of this document); and the time spent by the forest archaeologist to oversee the implementation of the HPTP for the construction, operation, and reclamation of the project. Details regarding other Coronado positions that would be necessary for administering the project and overseeing monitoring, including costs for lands and realty work needed for easements or mineral survey fractions, are still being developed. The cost collection agreement will be in place at the time the final MPO is approved. This measure may be refined with further details once the collection agreement is finalized and approved by both parties.
22. The proponent has agreed to purchase merchantable large, woody material cleared from NFS lands during mine construction after reclamation requirements are met. The purchase of said material must occur prior to commencement of clearing operations. The proponent will be responsible for disposal of this material, which could occur in several ways. For example, the remaining material could be made available to the public, including tribal members. In order to allow public access to firewood, previously cleared areas on NFS lands outside the perimeter fence may be used for temporarily stockpiling firewood if approved in advance by the Coronado. Approval of areas used for stockpiling will specify the duration of time for which stockpiles can remain on NFS lands. Some material could also be sold commercially for other uses, such as for lumber. Some woody material suitable for reclamation will likely be stored in temporary stockpiles prior to placement, but no large-scale stockpiles of wood

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<sup>11</sup> The Coronado will work with the proponent to define details for this website, such as content, format, update frequency, and longevity.

will be maintained long term on NFS lands. Refer to the “Fuels and Fire Management” resource section in chapter 3 of the FEIS for further detail.

23. A number of required mitigation measures and BO requirements include recordation of a restrictive covenant or conservation on parcels owned by or to be acquired by the proponent. These covenants or easements must be legally recorded prior to commencement of construction activities on NFS lands.
24. The proponent has previously established a weather station that could be disturbed by mining activities because it is located in the pit area. Prior to commencing construction of the pit, the proponent shall establish a weather station elsewhere within the security fence.<sup>12</sup>
25. The water supply pipeline that is located on NFS land shall be covered with earth to a depth of 36 inches, unless otherwise approved by the Coronado. That portion of the water supply pipeline located on NFS lands will be removed during final reclamation. Disturbed areas resulting from pipeline removal will be reclaimed.
26. The Coronado retains the authority to use agency personnel and consultants to review all designs prior to approval and to retain a qualified independent third party to conduct periodic site reviews and review pertinent monitoring data. The proponent shall reimburse the Coronado for the cost of such reviews.
27. The proponent shall provide applicable conceptual engineering designs at a level of specificity to support bonding that includes but is not limited to:
  - a. Any necessary modifications to ensure that the ultimate landform and plant facilities comply with this decision. The final configuration of the tailings and waste rock landform shall be such that no storage of stormwater occurs on the top of these facilities or benches. Design of these facilities shall include grading of the tops to discharge stormwater to the lower benches, which in turn shall be designed to move stormwater laterally along the benches until it reaches concrete drop structures. The runoff from these drop structures shall be discharged into the natural washes (Barrel Canyon or a tributary) or discharged into a diversion channel that will carry runoff along the toe of the waste rock and tailings facilities and discharge that runoff into the natural washes.
  - b. The thickness of waste rock material to be placed as a closure cap over the tailings facility.
  - c. Applicable conceptual engineering designs necessary to support bonding shall be provided in phases at the same time as the periodic comprehensive bond review, which will be conducted at least every 3 years or at the direction of the responsible Forest Service official (see section 9.1.2 of this document).
  - d. Within 1 year of completion of any landform and/or facility, the proponent shall provide the Coronado with as-built plans for that landform and/or facility.
28. The proponent shall remove and reclaim compliance point dams, unless monitoring and maintenance of such structure determine the need to retain them for further monitoring. Such determination is the responsibility of the Coronado, in coordination with ADEQ.

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<sup>12</sup> In a letter dated September 23, 2016, Hudbay Minerals, Inc., informed the Coronado that the weather station had already been moved to a new location, and that they anticipate moving it again once the mine administrative offices are in place.

29. Prior to completing construction of the perimeter fence, the proponent (who is the grazing permittee) shall coordinate with the Coronado regarding livestock grazing levels and restrictions for the permitted area between the perimeter and security fences.
30. Grazing may be reintroduced in areas within the security fence once reclamation is completed and the Coronado has determined the land to be suitable for grazing. This could be during the active mining phase in some areas where concurrent reclamation has occurred or is occurring and livestock grazing has been determined to be suitable for specific areas.
31. The proponent shall submit plans and specifications for the final MPO detailing how the perimeter and security fence will be constructed, maintained, and removed in a manner that minimizes surface disturbance.
32. The proponent shall submit monitoring plans for inclusion in the final MPO detailing how each required mitigation and monitoring measure will be implemented and reported to the agency. These plans will include details such as monitoring protocols, timing, frequency, duration, location, etc. The Coronado will retain its authority to review and approve a final mitigation and monitoring plan before its inclusion in the final MPO. Final authority regarding how required Forest Service mitigation and monitoring measures will be conducted lies with the Coronado.
33. The proponent may propose additional detail or modification to mitigation or monitoring measures, including but not limited to, timing, location, duration, sampling or survey protocol, or reporting frequency. The Forest Service will consider such proposals and make the final determination regarding what modifications are appropriate, if any. In its determination, the Forest Service will consider whether such modifications are within the scope of the decisions documented in this ROD, and whether additional environmental compliance is warranted.

#### **4.3.2 Mitigation and Monitoring Requirements**

The description of the selected action in appendix A of this ROD contains descriptions of operational requirements, design criteria, and changes and additions to the preliminary MPO. Mitigation measures and monitoring that must be incorporated in the final MPO prior to Coronado approval are listed below. Where deemed appropriate, I have included clarification or additional details regarding these required mitigation and monitoring measures, including clarification and modifications directed by the Regional Forester in response to public objections (see appendix B of this document).

All mitigation and monitoring listed as Forest Service measures in appendix B of the FEIS are included in my decision, with the following exceptions, as they applied solely to heap leach processing and facilities, which have been removed from the selected action:

- FS-GW-05 – Monitoring, pumping, and treatment of heap leach drainage.
- OA-AQ-07 – Use of drip emitters on heap leach pad to reduce emissions.
- OA-AQ-10 – Air pollution control requirements for electrowinning process.
- OA-GW-01 – Location and design of the heap leach facility to reduce potential impacts to groundwater and surface water quality.
- OA-AQ-06 – Use of covers on mix tanks and settlers to reduce emissions of volatile organic chemicals. Note that minor edits to OA-AQ-06 have been included in the Rosemont Copper Project Errata.

Mitigation and monitoring items under this heading are within the authority of the Forest Service, USFWS through the BO, or Arizona SHPO MOA. The Forest Service is responsible for overseeing implementation of the mitigation and monitoring in this category. It has the regulatory responsibility to do so for those measures that minimize impacts to Forest Service surface resources, and it has a legal obligation to ensure that the requirements of the BO and MOA/HPTP are implemented.

Mitigation and monitoring measures identified as “Mitigation and Monitoring – Other Regulatory and Permitting Agencies” in appendix B of the FEIS are also required; however, these measures are required by permits that are under the authority of ADEQ, ADWR, ASLD, Pima County, or other permitting agencies and are not within the authority of the Forest Service. While these measures are not specified as a requirement of this ROD, they are expected to be implemented under the jurisdiction of a permitting agency and are referenced below. If a permitting or regulatory agency changes any requirement, the proponent will notify the Forest Service, and the Forest Service will determine whether further action is necessary.

Mitigation and monitoring measures identified as “Mitigation and Monitoring Measures – Rosemont Copper” in appendix B of the FEIS are not within the authority of the Forest Service or any permitting or regulatory agency; therefore, the implementation of these measures is not assured. However, the proponent has publicly committed to implementing these measures, and I expect the proponent to follow through with this commitment. Because these measures are outside the authority of the Forest Service, they are not considered to be requirements of this ROD. I have referenced these Rosemont Copper mitigation and monitoring measures below for informational purposes. Additional details for all mitigation and monitoring are described in appendix B of the FEIS.

The proponent and Arizona Game and Fish Department (AGFD) signed an agreement in principle on October 25, 2013 (AGFD 2013), in which the proponent agrees to provide funding to AGFD and AGFD agrees to implement certain mitigation and monitoring items. While this agreement details the relationship between the proponent and AGFD in implementing required mitigation and monitoring, it is important to note that nothing in this agreement changes or modifies the requirements of this ROD, including requirements of the BO. At the current time, this agreement has not been finalized. The proponent is responsible for implementing the project in a manner that complies with all applicable laws and regulations and meets the requirements of my decision irrespective of whether or not this agreement is finalized.

In summary, all mitigation and monitoring in the “Mitigation and Monitoring – Forest Service” and “Mitigation and Monitoring – Other Regulatory and Permitting Agencies” sections in appendix B of the FEIS are within the jurisdiction of the Forest Service or other regulatory agency, are nondiscretionary, and are required to be implemented. The proponent has committed to implementing the mitigation and monitoring in the “Mitigation and Monitoring Measures – Rosemont Copper” category; however, these items are not within the jurisdiction of the Forest Service or other regulatory agencies and their implementation is not assured.



#### **4.3.2.1 Geology, Minerals, and Paleontology**

The following mitigation and monitoring measures associated with geology, minerals, and paleontology are required and will be incorporated into the final MPO. Refer to appendix B in the FEIS for details:

- FS-GMP-01 – Upon discovery of paleontological resources, suspension of operations pending Forest Service review. In the response to the objections to the Rosemont Copper FEIS and draft ROD, the Regional Forester directed the Forest Supervisor to clarify that this mitigation measure is primarily aimed at recognizing vertebrate fossils, but that other fossil assemblages may occur. Note that this clarification has been added to the Rosemont Copper Project Errata.
- FS-GMP-02 – Upon discovery of a cave or sinkhole, suspension of operations pending Forest Service review.

#### **4.3.2.2 Soils and Revegetation**

The following mitigation and monitoring measures associated with soils and revegetation are required and will be incorporated into the final MPO. Refer to appendix B in the FEIS for details:

- FS-SR-01 – Growth media salvage and application. Note that minor edits to FS-SR-01 have been included in the Rosemont Copper Project Errata.
- FS-SR-02 – Revegetate disturbed areas with native species.
- FS-SR-03 – Concurrent placement of perimeter buttress. Note that minor edits to FS-SR-03 have been included in the Rosemont Copper Project Errata.
- FS-SR-04 – Slope stability monitoring.
- FS-SR-05 – Sediment transport monitoring.

#### **4.3.2.3 Air Quality**

The analysis of impacts associated with this issue is titled “Air Quality and Climate Change” in chapter 3 of the FEIS. A number of other regulatory agency mitigation and monitoring measures associated with air quality and climate change are described in appendix B of the FEIS. The Forest Service identified a number of mitigation measures related to air quality, which are reflected in requirements of the ADEQ air quality class II synthetic minor permit (see section 9.2.2 of this ROD). Since ADEQ has the legal authority to oversee compliance with its air quality permit, these mitigations are listed as Other Agency mitigations in the FEIS. Please see items OA-AQ-01 through OA-AQ-11 in appendix B of the FEIS for details.

In addition, the proponent has agreed to implement mitigation and monitoring measures associated with air quality and climate change. Please see RC-AQ-01 in appendix B of the FEIS for details.

In the response to the objections to the Rosemont Copper FEIS and draft ROD, the Regional Forester directed the Forest Supervisor to add clarifying language to mitigation measure OA-AQ-03. Mitigation measure OA-AQ-03 has been corrected to read, “These activities include application and reapplication of chemical dust suppressant and/or water as defined in ADEQ Air Quality Class II Synthetic Minor Permit” (see FEIS appendix B, p. B-78, and the edits to this measure included in the Rosemont Copper Project Errata).

Also, please refer to item #7 in appendix B of this ROD for further detail.

#### **4.3.2.4 Groundwater Quantity and Quality**

The following mitigation and monitoring measures associated with groundwater quantity and quality are required and will be incorporated into the final MPO. Refer to appendix B in the FEIS for details:

- FS-GW-01 – Monitoring of waste rock for seepage. Note that minor edits to FS-GW-01 have been included in the Rosemont Copper Project Errata.
- FS-GW-02 – Water quality monitoring beyond point-of-compliance wells. Note that minor edits to FS-GW-02 have been included in the Rosemont Copper Project Errata.
- FS-GW-03 – Additional operational waste rock and tailings characterization.

The following clarifications and requirements will apply to FS-GW-01, FS-GW-02, and FS-GW-03:

The proponent shall test water quality, waste rock, leachate, and tailings materials to evaluate potential for acid generation and metals leaching, as specified in appendix B of the FEIS, as well as the edits to these measures included in the Rosemont Copper Project Errata.

The proponent shall provide a detailed sampling plan for water quality sampling and waste rock/tailings characterization plan for Forest Service review and approval that includes:

1. quality assurance protocol,
2. sampling protocol consistent with accepted scientific standards,
3. detailed analyte (chemical or contaminant) list, including the contaminants of concern,
4. sampling frequency no less than monthly (tailings), quarterly (process water), every 6 months (humidity cell testing for potentially acid-generating waste rock), annually (humidity cell testing for tailings), every 250,000 tons (for potentially acid-generating waste rock), and every 5,000,000 tons (for non-potentially acid-generating waste rock),
5. criteria for defining baseline or ambient groundwater quality,
6. definition of non-regulatory water quality thresholds against which to compare results,
7. no less than annually reporting requirements,
8. proposed protocols to be followed in the event that a water quality threshold is exceeded (i.e., reporting, increased sampling frequency, other investigative approaches, and remedial action), and
9. a proposed procedure with which to review and request changes to the level of monitoring.

The final item is as follows:

- FS-GW-04 – Periodic update and rerunning of pit lake geochemistry model throughout life of mine.

In addition, a number of other regulatory agency mitigation and monitoring measures associated with groundwater quantity and quality are described in appendix B of the FEIS. Please see items OA-GW-01 through OA-GW-08 in appendix B of the FEIS for details (note that OA-GW-06 does not apply to the selected action).

The proponent has committed to implement several mitigation and monitoring measures associated with groundwater quantity and quality. Please refer to RC-GW-01 through RC-GW-03 in appendix B of the FEIS for details.

#### **4.3.2.5 Surface Water Quantity and Quality**

The following mitigation and monitoring measures associated with surface water quantity and quality are required and will be incorporated into the final MPO. Refer to appendix B in the FEIS for details:

- FS-SW-01 – Location, design, and operation of facilities and structures intended to route stormwater around the mine and into downstream drainages.
- FS-SW-02 – Stormwater diversion for Barrel Alternative designed to route more stormwater into downstream drainages postclosure.

The following clarifications and requirements will apply to FS-SW-01 and FS-SW-02:

The proponent shall provide a site water management plan that includes:

1. Locations and design criteria for all stormwater conveyance or storage facilities.
2. Engineering final design for conveyance channels, stormwater drop structures, and stormwater management and detention/retention basins.
3. Phasing of stormwater management features over the mine life.
4. Stormwater management features after reclamation and closure.
5. Reestablishment of downstream drainage and surface water flow.

In addition, a number of other regulatory agency mitigation and monitoring measures associated with surface water quantity and quality are described in appendix B of the FEIS. Please see items OA-SW-01 and OA-SW-02 in appendix B of the FEIS for details.

The proponent has committed to implement a mitigation and monitoring measure associated with surface water quantity and quality. Please refer to RC-SW-01 in appendix B of the FEIS for details.

#### **4.3.2.6 Seeps, Springs, and Riparian Areas**

The following mitigation and monitoring measures associated with seeps, springs, and riparian areas are required and will be incorporated into the final MPO. Refer to appendix B in the FEIS for details:

- FS-SSR-01 – Purchase of water rights, to be used for mitigating for impacts in the Cienega Creek watershed. Note that the Regional Forester directed that language be added to this ROD clarifying that the in-lieu fee program is not the only possible use of water at Pantano Dam. This clarification relates to language in mitigation measure FS-SSR-01, which describes the purchase of water rights to be used for mitigating impacts to Cienega Creek. FS-SSR-01 states that certain water rights will be conveyed to Pima County entity authorized

under Arizona law to hold a surface water right for recreation and wildlife purposes; and the remainder of water rights would be conveyed to a USACE-approved in-lieu fee sponsor other uses besides the in-lieu fee program, as determined in the final 404 permit.

The permitting process required by Section 404 of the CWA, under the jurisdiction of the USACE, is parallel to the process being undertaken by the Forest Service for approval of the MPO. As such, the mitigation required as part of the 404 permit has not yet been fully determined by the USACE and continues to evolve. When the FEIS was published, the proposed 404 mitigation was summarized in the “Rosemont Copper Project Conceptual Habitat Mitigation and Monitoring Plan Summary,” dated September 2013, and that mitigation included in its entirety as part of appendix B of the FEIS. This document envisioned that a portion of the water rights purchased by the proponent on Cienega Creek would be transferred to an in-lieu fee mitigation program. The permitting process required by Section 404 of the CWA under the September 2013 document has been subsequently updated by a “Revised Habitat Mitigation and Monitoring Plan,”<sup>13</sup> dated September 2014. This document indicates that the portion of the water rights could still be transferred to support an in-lieu fee mitigation program, but also could be used for other restoration projects at or downstream of Pantano Dam, or other beneficial use in the Cienega Creek watershed.

The following has been added to FS-SSR-01 via the Rosemont Copper Project Errata: “Surface water rights may be transferred to support other uses besides the in-lieu fee program, as determined in the final 404 permit.”

Also see item #21 in appendix B of this ROD and the Rosemont Copper Project Errata for further detail.

- FS-SSR-02 – Spring, seep, and constructed/enhanced waters monitoring.

#### **4.3.2.7 Biological Resources**

The following mitigation and monitoring measures associated with biological resources are required and will be incorporated into the final MPO. Refer to appendix B in the FEIS for details:

- FS-BR-01 – Plant site location and design adjustments to reduce impacts to biological resources.
- FS-BR-02 – Redesign of the coarse ore stockpile dome and pebble crusher/ball loading facility to avoid a subpopulation of sensitive plants. Note that clarifications to FS-BR-02 have been included in the Rosemont Copper Project Errata.
- FS-BR-03 – Measures to exclude wildlife, livestock, and the public from water ponds and other areas.
- FS-BR-04 – Salvage, growing, planting, and monitoring of Palmer’s agave. Note that clarifications to FS-BR-04 have been included in the Rosemont Copper Project Errata.
- FS-BR-05 – Construction, management, and maintenance of water features to reduce potential impacts to wildlife and livestock from reduced flow in seeps, springs, surface water, and groundwater. Note that clarifications to FS-BR-05 have been included in the Rosemont Copper Project Errata.

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<sup>13</sup> WestLand Resources, Inc. 2014. *Rosemont Copper Project Revised Habitat Mitigation and Monitoring Plan*. Permit No. SPL-2008-00816-MB. Prepared for Rosemont Copper Company and Hudbay Minerals, Inc. Project No. 1049.15 800. Revised September 26, 2014.

The following clarifications and requirements will apply to FS-BR-05:

Any water features constructed to comply with FS-BR-05 will include wildlife escape ramps that extend to the bottom and near the edge of aboveground constructed waters, and at an angle to avoid entrapment of wildlife underneath the ramp. Artificial waters constructed for livestock should be designed and/or retrofitted to provide a year-round drinking and habitat resource for native wildlife. Overflow from all constructed water features will be diverted to allow for soil moisture recharge and creation or maintenance of wetland habitat features.

- FS-BR-06 – Location of the electrical power line that provides power to the pit area so that it avoids talus slopes to the extent practicable.
- FS-BR-07 – Recordation of a restrictive covenant or conservation easement on the private Helvetia Ranch Annex North Parcel to mitigate for impacts to species listed as threatened or endangered.
- FS-BR-08 – Recordation of a restrictive easement on the private Sonoita Creek Ranch Parcel to mitigate for impacts to species listed as threatened or endangered. Note that the yellow-billed cuckoo, northern Mexican gartersnake, and southwestern willow flycatcher have been added to the list of species that may benefit from this mitigation. New information and changed conditions related to these species have been addressed in the Rosemont SIR dated May 22, 2015. Modifications to the restrictive easement on the Sonoita Creek Ranch Parcel are contained in the “Amended Final Reinitiated Biological and Conference Opinion for the Rosemont Copper Mine,” dated April 28, 2016, which are addressed in the June 2016 Rosemont SIR.
- FS-BR-09 – Funding to support camera studies for large predators, including jaguar and ocelot.
- FS-BR-10 – Measures to reduce and rectify impacts to Pima pineapple cactus.
- FS-BR-11 – Monitoring and control of actions to reduce or prevent impacts to Chiricahua leopard frog from invasive aquatic species. Note that clarifications to FS-BR11 have been included in the Rosemont Copper Project Errata.
- FS-BR-12 – Relocation of Chiricahua leopard frogs from areas in the immediate vicinity of the project area.
- FS-BR-13 – Measures to ensure relocation of lesser long-nosed bat and other bat species in the immediate vicinity of the mine.
- FS-BR-14 – Measures to reduce impacts to western yellow-billed cuckoo.
- FS-BR-15 – Measures to protect two occurrences of Coleman’s coral-root during road decommissioning.
- FS-BR-16 – Establishment of the Cienega Creek Watershed Conservation Fund, to be used for future mitigation in the Cienega Creek watershed. Note that the northern Mexican gartersnake and desert pupfish have been added to the list of species that may benefit from this mitigation. New information and changed conditions related to these species have been addressed in the Rosemont SIR dated May 22, 2015. Modifications to the Cienega Creek Watershed Conservation Fund conservation measure are contained in the “Amended Final Reinitiated Biological and Conference Opinion for the Rosemont Copper Mine,” dated April

28, 2016, which are addressed in the June 2016 Rosemont SIR. Clarifications to FS-BR-16 have been included in the Rosemont Copper Project Errata.

- FS-BR-17 – Future modification of allotment management plans.
- FS-BR-18 – Predisturbance surveys for Forest Service sensitive species. Note that Coleman's coral-root has been added to the list of plant species that must be surveyed and monitored under this measure. Clarifications to FS-BR-18 have been included in the Rosemont Copper Project Errata.
- FS-BR-19 – Measures to reduce impacts to jaguar. Note that ocelot has been added to the list of species that may benefit from this mitigation. New information and changed conditions related to these species have been addressed in the Rosemont SIR dated May 22, 2015.
- FS-BR-21 – Recordation of a restrictive covenant or conservation easement on private land parcels in Davidson Canyon to mitigate for loss of habitat for listed species. Note that the yellow-billed cuckoo has been added to the list of species that may benefit from this mitigation. New information and changed conditions related to these species have been addressed in the Rosemont SIR dated May 22, 2015.

Note that the Regional Forester directed that clarifying language be provided for this measure. The following statement has been added to mitigation measure FS-BR-21: "Future land uses under the restrictive covenant or conservation easements developed will be coordinated with the nature, purposes, and primary uses of the Arizona National Scenic Trail (ANST) corridor for hikers, mountain bikes, and equestrians. See FS-RW-02." Also please refer to item #19 in appendix B of this ROD for further detail.

Beyond including this clarification here, it will be included in the Rosemont Copper Project Errata as a means of correcting this mitigation measure in appendix B of the FEIS.

- FS-BR-22 – Monitoring to determine impacts from pit dewatering on downstream sites in Barrel and Davidson Canyons. Note that clarification to FS-BR-22 regarding the location of future meteorological monitoring has been included in the Rosemont Copper Project Errata.
- FS-BR-23 – Monitoring to determine the extent of road-kill near the project area.
- FS-BR-24 – Surveying and monitoring for lesser long-nosed bats. Note that while this mitigation requires survey and monitoring to occur throughout the premining through final reclamation and closure periods, survey and monitoring actually started in 2009 and have been occurring since that time.
- FS-BR-25 – Surveying for bats in the vicinity of the project area.
- FS-BR-26 – Annual monitoring for Chiricahua leopard frog.
- FS-BR-27 – Periodic validation and rerunning of groundwater model throughout life of mine.
- FS-BR-28 – Monitoring of water quality in potential Chiricahua leopard frog habitat.
- FS-BR-29, 30, and 31 – See revised conservation measures 1, 2, and 3 below for details.
- FS-BR-32 – Recordation of a restrictive easement on private land referred to as the Fullerton Parcel to protect wildlife habitat.

The April 2016 BO includes required conservation actions on the Fullerton Ranch parcel, which were originally addressed as voluntary mitigation measure RC-BR-01 in appendix B of the FEIS. For details, refer to pp. 15 and 16 of the BO issued by USFWS, dated April 28,

2016. Since this mitigation measure is a BO requirement, it has been reclassified as a required Forest Service mitigation measure, with the new title FS-BR-29. Refer to the Rosemont Copper Project Errata for details.

In addition, the proponent has committed to implement two mitigation and monitoring measures associated with biological resources. Please refer to RC-BR-02 and RC-BR-03 in appendix B of the FEIS for details. As mentioned, RC-BR-01 has been reclassified as FS-BR-32 and is now a required mitigation measure.

#### **4.3.2.7.1 Additional Requirements from the BO**

The April 28, 2016, BO contained several requirements that were not stipulated in the FEIS, including three new conservation measures and an additional requirement for monitoring jaguar and ocelot monitoring.

##### ***New Conservation Measures***

During reinitiation of ESA Section 7 formal consultation, Rosemont Copper brought forth three new conservation measures to provide additional mitigation of impacts to threatened and endangered species. These three measures are incorporated into the BO issued by USFWS, dated April 28, 2016. Consistent with the FEIS (FEIS, appendix B, p. B-3), mitigation and monitoring items required by the BO are considered mandatory by the Forest Service, are hereby required as a component of this ROD, and will be incorporated into the final MPO. For ease of reference, these three new measures have been given unique identifiers similar to those used in appendix B of the FEIS. Descriptions of the measures follow.

##### **Revised Conservation Measure 1 – Staff Funding (FS-BR-29)**

Rosemont Copper will provide funding to the Forest Service for one full-time biologist position at a pay grade level of General Schedule (GS) 9 or higher. The full-time biologist position would support the Rosemont Copper Project on all biology-related issues and would be responsible for oversight of implementation and monitoring of all conservation measures, as well as terms and conditions appearing in the BO. Furthermore, this position will incorporate and fulfill the roles previously identified for the biological monitor in the October 30, 2013, BO and FEIS. Funding for this position will continue until either such time as the Rosemont Copper Project is completed or until all conservation funds have been fully expended, whichever happens later. This conservation measure supplants the biological monitor position described in the “Description of the Proposed Conservation Measures” section in the October 30, 2013, final BO.

The conservation entities to be engaged in the distribution and use of funds tied to the conservation measures consist of those land and resource management agencies with special expertise or knowledge regarding the action area and adjoining areas in southeastern Arizona, as well as wildlife and other resources associated with these conservation measures.

##### **Revised Conservation Measure 2 – Harmful Nonnative Species Management and Removal (FS-BR-30)**

To benefit threatened and endangered aquatic species, as well as other native Arizona aquatic species potentially impacted by the Rosemont Copper Project, a harmful nonnative aquatic species management and removal program will be developed and implemented. This program will

specifically address the threat of harmful nonnative aquatic vertebrate, invertebrate, and plant species invading the aquatic habitat on NFS lands preferentially in and around Cienega Creek and in the San Rafael–Santa Cruz River Watersheds in the Nogales and Sierra Vista Ranger Districts (but excluding the recreational sport fishery at Parker Canyon Lake). Acreage within these watersheds but outside Forest Service lands will also be considered for inclusion within this program, subject to obtaining consent of the appropriate landowner/management agency and the agreement of the USFWS and the Forest Service.

This conservation measure will augment a program that the Coronado is currently undertaking that will assemble existing data on efforts to control targeted harmful nonnative species, collect additional data, purchase equipment for the removal of harmful nonnative species, mitigate effects on threatened and endangered species as well as other native aquatic species, and develop a plan for continued control efforts within the Sierra Vista Ranger District.

The purpose of this conservation measure is to provide funding for a program with the following goal:

That subbasins within the Cienega Creek and neighboring San Rafael-Santa Cruz River Watersheds in the Nogales and Sierra Vista Ranger Districts, that are of value to the survival and continued recovery of the Gila chub, Gila topminnow, desert pupfish, Chiricahua leopard frog, northern Mexican gartersnake, Huachuca water umbel, and other native aquatic species, are secured and maintained as a whole or nearly whole native community.

Specific components of the harmful nonnative species management and removal program include:

1. Baseline surveys and the preparation of plans and priorities of the program.
2. Harmful nonnatives to be addressed in the program will include, but not be limited to, nonnative fish in the families Centrarchidae (sunfishes and black basses) and Ictaluridae (catfishes), American bullfrogs, any species of crayfish, other nonnative aquatic invertebrates, and nonnative plants invading aquatic habitat and adjoining riparian areas.
3. Baseline surveys will include all known suitable habitat that has legal access or for which legal access is given for Gila chub, Gila topminnow, desert pupfish, Chiricahua leopard frogs, and northern Mexican gartersnakes (and their native prey species (i.e., fish and amphibians)).
4. The plans shall include removal activities of harmful nonnative species using mechanical methods or any other methods, with associated revegetation or restoration where appropriate, which accomplish the repeated removal and control of harmful nonnative species as authorized by the Forest Service.
5. Data, plans, and priorities that arise from this funding will be managed through the Conservation Partners program, with the Forest Service ultimately being responsible for program direction and administration.
6. Funding for this measure will be apportioned as follows:
  - a. Ten (10) percent of the total funding will be provided to the Forest Service within 90 days of approval of the final MPO for use in planning and survey implementation.
  - b. The remainder of the fund will be provided within 30 days of project



commissioning, which is defined by the declaration of commercial production for the facility.

- c. The total amount of funding for these activities will be \$3,000,000.<sup>14</sup>

The Forest Service and Conservation Partners will be responsible for appropriate reporting and financial management of the \$3,000,000 to ensure that the funds are spent in a way that meets the goals specified above.

Revised Conservation Measure 3 – Western Yellow-Billed Cuckoo and Southwestern Willow Flycatcher Habitat Enhancement and Monitoring, Surveying, and Conservation Property Management (FS-BR-31)

Western yellow-billed cuckoos (cuckoo) have been detected along Cienega Creek and Empire Gulch, in areas proposed as critical habitat, and in small numbers in xeroriparian habitat in drainages at the Rosemont Copper Project site. Additionally, small numbers of southwestern willow flycatchers have been detected along upper Cienega Creek and Empire Gulch, in areas that have been designated as critical habitat for the species.

Analysis of the Cienega Creek basin has shown a possibility that, under the range of potential groundwater impacts, habitat for the western yellow-billed cuckoo and southwestern willow flycatcher may be affected by the Rosemont Copper Project. Because of this, Rosemont Copper is interested in providing funding for a habitat improvement, preservation, and replacement program to benefit these species. This program also will provide substantial benefits to other native Arizona species that use riparian habitat.

*Habitat Replacement, Improvement, and Survey Program*

In addition to the elements of the program specified above, habitat replacement, improvement, and surveys funded by this conservation measure will include these specific components:

1. Baseline surveys, preparation of plans, priorities, and implementation of the plans for a southwestern willow flycatcher and western yellow-billed cuckoo habitat replacement, improvement, and survey program.
2. Specific projects will be identified in areas proximal to the Rosemont Copper Project, preferably on Forest Service lands (USFWS also intends that the sites are in areas not subject to drawdown effects). Rosemont Copper will also work with conservation entities as necessary in other appropriate areas.
3. Baseline surveys<sup>15</sup> for southwestern willow flycatcher and western yellow-billed cuckoo in the action area will include all known suitable habitat that has legal access or for which legal access is given. Proposed habitat monitoring methods will be measurable, repeatable, and

<sup>14</sup> The proponent is responsible for providing this funding.

<sup>15</sup> Surveys must be conducted by individuals with the appropriate species-specific section 10(a)(1)(a) Recovery Permits employing protocols acceptable to the USFWS (i.e., Halterman et al. (2015) for yellow-billed cuckoos and Sogge et al. (2010) for southwestern willow flycatchers).

Halterman, M., M.J. Johnson, J.A. Holmes, and S.A. Laymon. 2015. *A Natural History Summary and Survey Protocol for the Western Distinct Population Segment of the Yellow-Billed Cuckoo*. U.S. Fish and Wildlife Techniques and Methods. Sogge, M.K., D. Ahlers, and S.J. Sferra. 2010. *A Natural History Summary and Survey Protocol for the Southwestern Willow Flycatcher*. U.S. Geological Survey Techniques and Methods 2A-10.

capable of detecting changes in extent, density, species composition, canopy height, canopy closure, vertical foliar density, soil moisture, temperature, and humidity of habitat.

4. The program shall include enhancement activities that may include, but not be limited to, the following: planting and maintaining trees native to the local environment, elevating groundwater levels, reducing stressors that affect vegetation establishment and growth, installing rock erosion control structures that slow stream flow, excluding or removing livestock from certain riparian areas, and providing riparian area fencing to prevent damage from humans and livestock.
5. Data, plans, and priorities that arise from this funding will be managed through the Conservation Partners program, with the Forest Service ultimately being responsible for direction and administration.
6. Funding for this measure will be apportioned as follows:
  - Ten (10) percent of the total funding will be provided to the Forest Service within 90 days of approval of the final MPO for use in planning and survey implementation.
  - The remainder of the fund will be provided within 30 days of project commissioning, which is defined by the declaration of commercial production for the facility.
  - The total amount of funding for these activities will be \$1,250,000.<sup>15</sup>

The Forest Service and Conservation Partners will be responsible for appropriate reporting and financial management of the \$1,250,000 to ensure that funds are spent in a way that meets the goals specified above.

#### ***Additional Monitoring Requirement for Jaguar and Ocelot***

In the 2016 BO, term and condition 2 for jaguar (BO, pp. 314–315) and for ocelot (BO, pp. 332–333) states the following: “The USFS and Corps shall ensure that Rosemont conduct (or provide funding to conduct) jaguar surveys and monitoring for the life of the proposed mine and for 5-years post-closure.” Mitigation measure FS-BR-09 requires that Rosemont Copper provide \$50,000 for camera monitoring of large predators. Term and condition 2 for jaguar and ocelot expands the allowable methods of monitoring: “Jaguar survey and monitoring will be conducted through non-invasive means, including, but not limited to the use of trail cameras, and/or scat-detection dogs.” These terms and conditions also require monitoring activity to occur for the life of the mine, and for 5 years postclosure, regardless of whether the cost exceeds the \$50,000 stated in FS-BO-09.

#### ***4.3.2.8 Landownership and Boundary Management***

The following mitigation and monitoring measures associated with landownership and boundary management are required and will be incorporated into the final MPO. Refer to appendix B in the FEIS for details:

- FS-LO-01 – Resurveying of existing survey monuments and land lines to allow reestablishment postmining.
- FS-LO-02 – Reestablishment of survey monuments and surveyed land line upon completion of final reclamation.

In addition, the proponent has committed to implement two mitigation and monitoring measures associated with landownership and boundary adjustment. Please refer to RC-LO-01 and RC-LO-02 in appendix B of the FEIS for details.

#### **4.3.2.9 Dark Skies**

The following mitigation and monitoring measures associated with dark skies are required and will be incorporated into the final MPO. Refer to appendix B in the FEIS for details:

- FS-DS-01 – Implementation of an outdoor lighting plan that would reduce potential impacts from artificial night lighting.
- FS-DS-02 – Funding of additional ground-based sky brightness monitoring.

In his response letter to objectors, the Regional Forester directed the Forest Supervisor to consider Mine Safety and Health Administration (MSHA) lighting requirements in mitigation measure FS-DS-02. MSHA lighting regulations are contained in 30 CFR 56.17001:

- Illumination of surface working areas.
- Illumination sufficient to provide safe working conditions shall be provided in and on all surface structures, paths, walkways, stairways, switch panels, loading and dumping sites, and work areas.

As stated in mitigation measure FS-DS-02 (FEIS, p. 766, and FEIS appendix B, pp. B-58 to B-60), the intent of Rosemont Copper's outdoor lighting plan is to fully comply with the Pima County Outdoor Lighting Code; however, deviations may be required to comply with MSHA regulations. These deviations would be determined on a case-by-case basis. However, it is expected that deviations for safety purposes, if any, would not significantly increase the overall night brightness from the mine site.

#### **4.3.2.10 Visual Resources**

The following mitigation and monitoring measures associated with visual resources are required and will be incorporated into the final MPO. Refer to appendix B in the FEIS for details:

- FS-VR-01 – Color of mine related buildings blends into the natural landscape.
- FS-VR-02 – Removal of unneeded facilities during closure.
- FS-VR-03 – Measures to reduce color contrasts from cuts, fills, and concrete structures associated with the mine.
- FS-VR-04 – Measures to reduce the visual impact of the mine pit.

#### **4.3.2.11 Recreation and Wilderness**

The following mitigation and monitoring measures associated with recreation and wilderness are required and will be incorporated into the final MPO. Refer to appendix B in the FEIS for details:

- FS-RW-01 – Relocation of a segment of the Arizona National Scenic Trail and construction of trailheads. Note that clarifications to FS-RW-01 have been included in the Rosemont Copper Project Errata.

- FS-RW-02 – Arizona National Scenic Trail: easement to allow the trail to be constructed across Rosemont Copper’s private land. Note that these are the same land parcels described in FS-BR-21. Note that clarifications to FS-RW-02 have been included in the Rosemont Copper Project Errata.
- FS-RW-03 – Mitigate loss of off-highway-vehicle use opportunities. Note that the Regional Forester directed that clarifying language be provided for this measure. The following clarifying language has been added to FS-RW-03, and will be included in the Rosemont Copper Project Errata as a means of correcting this mitigation measure in appendix B of the FEIS:

“NEPA analysis would consider actions that may include, but are not limited to designation or construction of additional roads, motorized routes, or changes to recreation opportunity settings in any future planning effort.”

Also see item #20 in appendix B of this ROD.

In addition, the following clarifications and requirements will apply to recreation and wilderness mitigation and monitoring items as noted:

- FS-RW-01 – The proponent shall ensure that the relocated segment of the Arizona National Scenic Trail is pioneered and available for public use at the time the existing trail segment is closed to public use. With the intent of maintaining the trail in an open condition during the prime hiking season of March, April, October, and November, any activity that will restrict the trail to public use shall be reported to the Coronado in advance and shall not commence without the approval of the Coronado. See FS-RW-01 in appendix B of the FEIS for further detail, as well as the clarifications to this measure included in the Rosemont Copper Project Errata.
- FS-RW-02 – The proponent has agreed to grant ROWs to the Coronado across its private lands for construction of a trailhead and associated facilities for the relocated Arizona National Scenic Trail; and to allow the relocated trail to be constructed across the proponent’s private land. ROWs will be granted prior to commencement of mine construction activities on NFS lands. See FS-RW-02 in appendix B of the FEIS for further detail, as well as the clarifications to this measure included in the Rosemont Copper Project Errata.

#### **4.3.2.12 Hazardous Materials**

The following mitigation and monitoring measures associated with hazardous materials are required and will be incorporated into the final MPO. Refer to appendix B in the FEIS for details:

- FS-HM-01 – Hazardous materials containment and management.

The following clarification and requirement will apply to FS-HM-01: The proponent shall submit for the final MPO details of procedures for blasting and handling of ammonium nitrate and other explosive materials to minimize loss or spillage.

- FS-HM-02 – Maintaining material safety data sheets in accordance with 30 CFR 47.

#### **4.3.2.13 Transportation/Access**

The following mitigation and monitoring measure associated with transportation and access is required and will be incorporated into the final MPO. Refer to appendix B in the FEIS for details:

- FS-TA-01 – Development of a comprehensive transportation plan.

The following clarifications and requirements will apply to FS-TA-01:

1. The proponent shall prepare a comprehensive transportation plan for inclusion in the final MPO. The plan shall address the following for all roads on NFS lands used for mining and related purposes, other than temporary haul roads, including all roads to be constructed or reconstructed, or maintained, that are used for mining or related purposes:
  - a. A list of all NFSRs that the proponent intends to use for mining or related purposes, including those roads to be constructed;
  - b. Maintenance standards;
  - c. Levels of appropriate use;
  - d. Methods to maintain the roadways sufficiently to prevent washboard, rutting, and drainage problems;
  - e. Commitment to replace surfacing lost to drainage;
  - f. Commitment to repair roads damaged by use;
  - g. Commitment to restore temporary roads to natural preoperation conditions during reclamation/closure;
  - h. Installation and maintenance of wildlife crossing structures (e.g., corrugated metal pipes) under the primary access road at locations of known wildlife concentration;
  - i. A transportation reduction plan for reducing traffic (i.e., carpooling, busing); and
  - j. A delivery schedule plan that will indicate actions to be taken to schedule delivery traffic on SR 83 outside peak traffic hours, as well as monitoring and reporting requirements (see RC-TA-01 in appendix B of the FEIS).
2. The final MPO shall specify the conditions under which the proponent may use NFSRs, and address the following:
  - a. Access road design shall meet Forest Service specifications (to be furnished by the Forest Service) for road width, grade, alignment, surfacing, drainage, quality control, and signing. Exceptions to these standards may occur only with Coronado approval. The proponent will submit designs for road construction and improvements to the Coronado for review and approval prior to initiating construction.
  - b. A requirement that Coronado approval must be obtained for all location or design changes for access and utility maintenance roads on NFS lands.
  - c. The proponent shall be responsible for maintaining all signs, fencing, and other features deemed necessary to ensure public safety.
  - d. During the construction period, the proponent shall coordinate all use of approved and alternative access routes with the Coronado.

- e. The proponent shall construct or reconstruct all mine access and utility maintenance roads on NFS lands in a manner acceptable to the Coronado and will be responsible for providing “as-built” certification of all items by a licensed professional engineer. The Forest Service administrator will review the Rosemont Copper Project construction to ensure compliance with approved plans. Certification and results of tests and inspections will be forwarded to the Coronado for review and approval.
  - f. The proponent and the Coronado will review all access and utility maintenance roads on NFS lands, during and after summer monsoon runoff. The purpose of this inspection will be to verify that all design features are functioning as designed and/or to identify any needed improvements or changes.
3. The proponent shall work with authorized permittees to provide access to their permit area where road access has been cut off by mine related actions. The proponent shall provide permittees access to their permit areas upon request.
  4. Unless otherwise agreed to by the Forest Service, the proponent shall construct the Sycamore Connector Road and all other new road construction on NFS lands described for the selected action within 1 year of the time that public motorized access is restricted on said road by mining or related actions (i.e., construction of the perimeter fence). The timing of construction and design of specific roads may be reviewed and modified by the Forest Supervisor at a future date in consideration of safety or other logistical concerns. All roads constructed on NFS lands will be constructed to standards that are approved in advance by the Coronado. Should substantive changes to road new road construction on NFS lands occur during implementation, the Forest Service will conduct a review following the procedures for changed conditions described in Forest Service Handbook 1909.15, section 18.1.
  5. The proponent shall be responsible for road decommissioning for all NFSRs identified for decommissioning in the selected action. The proponent shall coordinate with the Coronado to determine specifically which segments of road are to be decommissioned and specifically what level of decommissioning is required for each segment (see FEIS, p. 49). No active decommissioning shall occur on any NFSR without prior Coronado approval. Within 1 year of completion of the perimeter fence, the proponent shall complete decommissioning activities at the direction of the Coronado. Decommissioning activities that result in ground disturbance shall not occur until the Coronado has been notified and approved the activity.
  6. All new roads on NFS lands, except those roads identified by the Coronado as needed for administrative or other purposes, will be reclaimed at mine closure.
  7. Active road decommissioning will be coordinated with the Coronado archaeologist and biologist prior to implementation to coordinate areas to avoid due to the presence of cultural sites and sensitive plant populations.
  8. Establishment of postclosure access roads will be coordinated with the Coronado prior to closure, with work conducted by Rosemont Copper.

In addition, the proponent has committed to implement several mitigation and monitoring measures associated with transportation and access. Please refer to RC-TA-01 through RC-TA-03 in appendix B of the FEIS for details.

#### **4.3.2.14 Noise**

The following mitigation and monitoring measures associated with noise are required and will be incorporated into the final MPO. Refer to appendix B in the FEIS for details:

- FS-N-01 – Management techniques to reduce potential noise impacts from blasting.

Note that the Regional Forester provided direction for clarifying language for this mitigation measure. The following clarifying language has been to mitigation measure FS-N-01. Beyond including this clarification here, it will be included in the Rosemont Copper Project Errata as a means of correcting this mitigation measure in appendix B of the FEIS.

“Air quality related blasting restrictions are specified in the Air Quality Class II Synthetic Minor Permit issued by the Arizona Department of Environmental Quality. Additional blasting restrictions were established focused on noise management techniques, including generally limiting blasting to once per day, during daylight hours; and sequenced blasting using time-delay technology.”

Also please see item #4 in appendix B of this ROD for further information.

- FS-N-02 – Actions to reduce potential noise impacts from vehicles.

#### **4.3.2.15 Public Health and Safety**

The following mitigation and monitoring measures associated with public health and safety is required and will be incorporated into the final MPO. Refer to appendix B in the FEIS for details:

- FS-PHS-01 – Construction of a perimeter fence that would exclude the public.

The following clarifications and requirements will apply to FS-PHS-01:

Construction of fencing and/or berms for postclosure safety will be coordinated with the Coronado and other applicable regulatory agencies (i.e., MSHA, Arizona State Mine Inspector) and installed by Rosemont Copper.

- FS-PHS-02 – Preparation of emergency response and contingency plans, including a fire plan.

In addition, the following clarifications and requirements will apply to FS-PHS-02:

The proponent shall prepare an emergency response and contingency plan, including a fire plan. Prior to construction, the proponent shall conduct emergency response and contingency planning with appropriate agencies. The emergency response and contingency plan shall document the results of this consultation. These plans shall identify emergency preparedness and clear protocols for contacting emergency responders.

The fire plan shall contain requirements for providing and maintaining fire-fighting tools onsite; precautionary requirements for blasting and welding; training of employees in fire prevention, detection, and suppression; and independent actions taken by the proponent and its employees and contractors to suppress fires in the work area or vicinity. It will also include requirements for mechanized equipment to reduce the risk of fire ignition; and construction of new water sources such as a firewater storage tank.

#### **4.3.2.16 Cultural Resources**

The following mitigation and monitoring measures associated with cultural resources are required and will be incorporated into the final MPO. Refer to appendix B in the FEIS for details and the HPTP in appendix D of the FEIS:

- FS-CR-01 – Archaeological data recovery on sites that would be adversely affected.
- FS-CR-02 – Respectful and appropriate treatment of human remains that would be disturbed by the project.
- FS-CR-03 – Curation of archaeological collections in accordance with 36 CFR 79 and the HPTP.
- FS-CR-04 – Monitoring and treatment of inadvertent discoveries.
- FS-CR-05 – Limiting ground-disturbing activity between the perimeter fence and security fence.

The following clarifications and requirements will apply to FS-CR-05:

Ground-disturbing activities between the perimeter and security fences shall be approved in advance by the Coronado. Areas of disturbance in this area are anticipated to be limited to construction of compliance wells, stormwater drainage facilities, access to monitoring equipment, the perimeter fence, and active road decommissioning. Approved cultural monitors shall be present for all ground-disturbing work in this area. Cultural material discovered during monitoring shall be dealt with in accordance with the discovery plan in the HPTP.

- FS-CR-06 – Cultural resources protection training.
- FS-CR-07 – Project proponent would allow tribal members access, upon 5 days' advance request, to the project area for cultural practices.

The following clarifications and requirements will apply to FS-CR-07:

The proponent shall provide access to Native Americans to springs, vision sites, other sacred sites, and resource-collecting areas within the project area, while remaining in compliance with any applicable MSHA or other regulations. Requests for access for these purposes will be submitted to the Coronado, who will coordinate with the proponent to provide access.

- FS-CR-08 – Project proponent would organize tribal members' field visits to potentially affected springs.
- FS-CR-09 – Transplanting of critical plant resources and inclusion of species within revegetation mixture.
- FS-CR-10 – Interpretation of the results of the cultural resources investigations for tribal members, the Hispanic community, and the public.
- FS-CR-11 – Stabilization of previously excavated historic properties between the security and perimeter fences.

In addition, the proponent has committed to implement a mitigation and monitoring measure associated with cultural resources. Please refer to RC-CR-01 in appendix B of the FEIS for details.



#### **4.3.2.17 Socioeconomics**

In his response letter to objectors, the Regional Forester directed the Forest Supervisor to clarify mitigation of groundwater impact costs to homeowners by referencing more details about the mechanics of the Well Owners Agreements (and sign-ups), as well as the licensing agreement with Sahuarita in the mitigation measures section of the socioeconomic section. That clarification follows.

RC-GW-01 – The Well Owners Agreements are addressed on p. 358 of the “Groundwater Quantity” resource section in chapter 3 of the FEIS, and described in detail in mitigation measure RC-GW-01 (FEIS, appendix B, pp. B-91 to B-92). The Well Owners Agreements (officially, “Rosemont Copper Residential Water Well Warranty Service Agreements”) are legally binding well owner protection agreements that provide certain protections with respect to potential impacts to individual well owners. There are two distinct agreements: one covers an area near Rosemont Copper’s supply wells; the second covers an area near the project site. Both of these areas are shown in maps contained in the agreements. Participation in these agreements may compensate for potential impacts to domestic wells for homeowners who are eligible for and sign up for the plan. The agreements include a water-level monitoring program, a water well pump warranty program, residential well deepening, and an in-lieu cash option. Conditions and restrictions apply. Agreements have been executed and are recorded with the Pima County Recorder’s Office. No Forest Service or agency monitoring would occur. Involvement of homeowners is voluntary, and the agreement is between the homeowner and Rosemont Copper. Agreements for the area near the supply wells are already in place and effective; the remaining agreements for the area near the project site would become effective within 180 days of issuance of this ROD. Whether there will be any future opportunity for signing up for the well owner agreements is solely a proponent decision.

Multiple mitigation and monitoring measures (see OA-SR-01; OA-AQ-02; and RC-GW-02 in FEIS appendix B, as well as the edits to measure OA-AQ-02 included in the Rosemont Copper Project Errata): In June 2013, the Town of Sahuarita entered into a “License for Right-of-Way Encroachment” with Rosemont Copper. The license grants permission for the proponent to encroach on portions of the Town’s ROW for the purpose of construction, installation, operation, maintenance, and repair of a water delivery pipeline and related facilities. It also obligates the proponent to recharge within the drawdown area a minimum of 105 percent of the amount of water withdrawn from specific Rosemont Copper supply wells using Central Arizona Project water. Rosemont Copper agrees to hold the Town harmless from adverse effect of production of water in the Rosemont Wells causing interference to Town Wells, including, as necessary the repair, replacement, or deepening of Town Wells impacted by drawdown from pumping from Rosemont Wells. The license requires Rosemont Copper to remove all or part of the encroachment as required by the Town within 180 days of the license expiration, termination, or revocation. The term of the license is 25 years. Item 11 in section 9.2.2 of this document discusses the amount of recharge that has occurred to date.

#### **4.3.2.18 Power Use**

The proponent has committed to implement a mitigation and monitoring measure associated with power use. Please refer to RC-PU-01 in appendix B of the FEIS for details.

#### **4.3.2.19 Community Programs**

The proponent has committed to implement a mitigation and monitoring measure associated with community programs. Please refer to RC-CP-01 in appendix B of the FEIS for details.

#### **4.3.3 Reporting and Evaluation**

Monitoring and evaluation activities will be prescribed, conducted, and/or reviewed by Rosemont Copper, the Coronado, and other regulatory agencies participating in a multiagency monitoring and evaluation task group. The Coronado Forest Supervisor will invite county, State, and Federal agencies with permitting or other regulatory authority, to participate on this task group. The task group will meet at least annually to review and evaluate monitoring results and make recommendations to the Forest Supervisor. Evaluation will indicate: (1) whether monitoring requirements have been completed according to the final monitoring plan; (2) whether monitoring results indicate that the effects and results of mining and related activities are within the range of those predicted in the FEIS and ROD; (3) whether monitoring activities and methods remain valid and whether continued monitoring is warranted going forward; (4) whether changes in monitoring requirements are warranted; and (5) whether changed conditions, if any, dictate modification of the final MPO and/or ROD.

As needed, the task group will further define and recommend thresholds for determining compliance with the NEPA decision, as well as applicable mitigation measures and permit requirements. The authorized agency for that decision or permit will make a final determination regarding all recommendations by the task group, including thresholds and compliance. For instance, determination of compliance with the Forest Service NEPA decision will be made solely by the Coronado Forest Supervisor. Determination of compliance with requirements of the aquifer protection permit will be made by ADEQ. The task group will also be used as a forum to identify, develop, and recommend actions that could be taken should monitoring indicate that impacts are outside the bounds specified in the NEPA decision or applicable permit or authorization. Final determination of contingency actions will remain with the authorized agency.

### **5.0 Other Alternatives**

Other than the proposed action, the action alternatives considered in the FEIS were initially developed to respond to the issues identified during public scoping. The alternatives were further modified in response to comments received on the DEIS from the public, agencies, and tribes. In addition to the selected action (presented as “Alternative 4 – Barrel Alternative” in the FEIS), five other alternatives were analyzed in detail. They include “Alternative 1 – No Action,” and Alternatives 2 through 6, which feature differing configurations of waste rock, tailings, plant site, and associated facilities. Alternatives 2 through 6 (the action alternatives) include all the common facilities, processes, and activities described under “General Overview of Mining Operations” in chapter 2 of the FEIS (also described in appendix A of this ROD as they apply to the selected action). The connected actions described in section 4.2 of this ROD are also included in each of the action alternatives.

Additional alternatives include those considered in the FEIS and eliminated from detailed study (FEIS chapter 2, pp. 100–114).

#### **5.1 Alternatives Considered**

This section contains brief descriptions of alternatives considered in the FEIS. It also identifies the environmentally preferable alternative. The selected action (“Alternative 4 – Barrel Alternative”) is not included here, as it is described in section 4.0 and appendix A of this ROD. Table 1 at the end of this section shows acres of soil disturbance by alternative.

### **5.1.1 Alternative 1 – No Action (Environmentally Preferable Alternative)**

The no action alternative was developed to provide an environmental baseline with which to compare the action alternatives. The no action alternative does not meet the purpose and need for action because it would not respond to Rosemont Copper's proposed MPO to develop and mine the Rosemont copper, molybdenum, and silver deposit. Other than issues associated with economic benefits associated with the project, the no action alternative addresses the issues identified during scoping in that it would avoid environmental impacts that are inherent in the action alternatives.

Additionally, while the Forest Service may reasonably regulate mining activities to protect surface resources, there are statutory and constitutional limits to its discretion. The Forest Service may reject an unreasonable MPO but cannot categorically prohibit mining or deny reasonable and legal mineral operations under mining law.

If no action is taken, the proponent would not develop the Rosemont mineral deposit as described in the MPO submitted for approval (including modifications to date). For the most part, the project area of the Rosemont Copper Project proposed action (figure 9 in chapter 2 of the FEIS) would continue to grow and develop in accordance with generally accepted social and environmental trends. Information regarding current uses and trends in the project area are described in the "Affected Environment" parts of the resource sections in chapter 3 of the FEIS.

In the absence of the proposed action, current uses of the proposed project area, including the Coronado National Forest, would continue, and new future uses may be proposed. These include all forms of recreation, grazing, and minerals exploration. Traditional cultural uses of the project area would continue. Access to public land in the area would continue as governed by law, regulation, policy, and existing and future landownership constraints, the latter of which may include denial of access over private land.

The environment, population, and economy of southeastern Arizona will continue to evolve over time, whether or not the Rosemont Copper Project is implemented. Population growth in Pima County is estimated to continue, reaching 1.45 million by 2041. The Town of Sahuarita expects its population to increase to 45,597 over a 20-year planning horizon. The population of Santa Cruz County is expected to reach 60,080 by 2025, an increase of more than 26 percent from the county's 2010 population of 47,420. As populations increase, land and resource uses, including those of the Coronado National Forest, would be expected to increase proportionately. Traffic would likely increase with population growth.

Changes in the climate of the southwestern United States are expected to continue, including an increase in mean annual temperature, a more frequent drought cycle, a decrease in winter precipitation, and an increased frequency of heavy rains and flooding.

#### **5.1.1.1 Environmentally Preferable Alternative**

The identification of an environmentally preferred alternative is required by NEPA (40 CFR 1505.2(b)). The environmentally preferred alternative is the alternative that has the least impact on the physical and biological environment and that best protects, preserves, and enhances historic, cultural, and natural resources. Economic, social, technical, and agency mission factors are not considered in the identification of this alternative.

After evaluating all alternatives presented in the FEIS, I find that “Alternative 1 – No Action” is the most environmentally preferable alternative. This alternative best protects, preserves, and enhances historic, cultural, and natural resources. Each of the action alternatives would result in permanent adverse impacts to historic, cultural, and natural resources. However, the environmentally preferable alternative does not meet the agency need to process Rosemont Copper’s MPO in a timely manner as required by law. Chapter 3 of the FEIS contains a more detailed evaluation of impacts associated with the various alternatives, including the no action alternative.

### **5.1.2 Features Common to All Action Alternatives**

The following action alternatives contain a number of common features that do not differ significantly between alternatives, such as the extent of the mineral deposit to be mined; location and size of the pit; frequency of drilling and blasting; amount and types of ore to be processed (other than the heap leach facility, which is not contained in the selected action); transport of ore, waste rock, and tailings; general plant site and support facility locations; use of perimeter and security fences; electric and water supply lines and facilities; use and routing of process water; use of one or more compliance point dams; a primary access road and utility maintenance road; decommissioning of roads within the perimeter fence; transportation of materials to and from the mine site using SR 83; relocation of the Arizona National Scenic Trail (location varies by alternative); and general requirements for reclamation and closure. All the action alternatives were developed to respond to the purpose and need for action. They would respond to the purpose and need for action by processing Rosemont Copper’s MPO in a manner that complies with applicable laws and regulations; and they would include measures for reclamation of surface resources.

Amendment of the 1986 forest plan is also common to all action alternatives. See section 3.2, “Decision to Amend the 1986 Forest Plan,” for additional information.

### **5.1.3 Alternative 2 – Proposed Action**

The proposed action includes all the common facilities, processes, and activities described under “General Overview of Mining Operations” on p. 30 in chapter 2 of the FEIS (see figure 9 in chapter 2 of the FEIS). While this alternative would contain measures to minimize adverse environmental impacts on NFS surface resources, it would not do so as well as the selected action.

The proposed action reflects Rosemont Copper’s preliminary MPO. It was not developed to respond to the significant issues. Rather, scoping was conducted to gather public comment on the preliminary MPO, and the issues were identified from the resulting comments.

The waste rock facility would be constructed south of the tailings facility. Reclamation of these areas would be conducted concurrently with active mining. Starting in the first year, waste rock would be placed as a perimeter buttress to partially block the view of the mining area project for travelers on SR 83 and for viewers in the surrounding area. Throughout the life of the mine, waste rock would be disposed of to the west and/or north of (behind) these berms. Waste rock would also be placed to support and armor the outer slopes of the dry-stack tailings facility. Construction of the perimeter buttress would be complete approximately 5 years after plant startup. The final elevation of the perimeter buttress would be about 5,475 feet but would step down on the northeast side to between 5,150 and 5,050 feet to tie in with the dry-stack tailings and oxide heap leach facilities. The height of the waste rock facility would vary, ranging from 100 to 400 feet above the ground surface, depending on existing topography.

Waste rock disposal would be restricted to a single surface water drainage basin, the Barrel Canyon area, which includes the tributaries of the Wasp and McCleary drainages. The tops of the waste rock facility would be sloped to direct stormwater away from the crest of the perimeter buttress. The dry-stack tailings facility would be divided into two separate units, north and south, which would be separated by a stormwater control facility (the central drain).

The plant site would be located between the pit and the north end of the tailings facility. The coarse ore stockpile would be a rectangular building with the appropriate conveyors going to and from the building.

The central drain would be a rock chimney drain that is designed to route excess stormwater through the tailings facility from both upstream and on top of the dry-stack tailings facility to the compliance point dam in Barrel Canyon. Stormwater from the waste rock buttresses of the dry-stack tailings facility would be combined with stormwater from the waste rock facility for reuse or discharge downstream after passing through the final compliance pond (see figure 11 in chapter 2 of the FEIS).

The central drain design is designed to allow conveyance of the 100-year, 24-hour storm event volume through the drain within 30 days. Other diversion channels around the plant site are sized to handle runoff from the 100-year, 24-hour storm event (equal to 4.75 inches of rain over a 24-hour period).

The Arizona National Scenic Trail would be realigned just outside the perimeter fence with a trailhead that would be located off of the primary access road, as shown in figure 9 in chapter 2 of the FEIS. Area roads that are outside the perimeter fence that would either be reconnected or decommissioned are shown in figure 12 in chapter 2 of the FEIS. The Sycamore Connector Road would be about 3,432 feet long.

#### **5.1.4 Alternative 3 – Phased Tailings**

The Phased Tailings Alternative was developed to respond to significant issues regarding potential negative effects of the proposed action on water and visual resources. Alternative 3 (see figure 13 in chapter 2 of the FEIS) contains a number of features in common with the proposed action. However, several features have been modified and designed to better respond to the issues, including:

- Reversing the phased placement of the dry-stack tailings to leave the McCleary Canyon drainage open for approximately 10 years longer;
- Refining the plant site, including redesigning the coarse ore stockpile to a dome structure and associated conveyor;
- Realigning the primary access road to avoid Scholefield Canyon; and
- Redesigning the stormwater management.

While this alternative would contain measures to minimize adverse environmental impacts on NFS surface resources, it would not do so as well as the selected action.

At the end of mine life, the final waste rock and tailings facilities would occupy the same location as the proposed action. This would reduce the short-term impact on surface water flow by allowing the McCleary Canyon drainage to remain open for approximately 10 years longer than it would under the proposed action.

The primary access road was redesigned to follow an alignment that both shortens the road and reduces its visibility from SR 83. This realignment avoids Scholefield Canyon and would reduce impacts to riparian vegetation and cultural resources. The new alignment intersects SR 83 at the same location as in the proposed action but is 3.2 miles long (see figure 13 in chapter 2 of the FEIS).

While the location of the plant site would be the same as that of the proposed action, the Phased Tailings Alternative relocates some facilities to address geotechnical concerns regarding differential settlement (see figure 14 in chapter 2 of the FEIS). These modifications provide secondary containment opportunities for process solutions, where possible, and add stormwater catchments.

The Phased Tailings Alternative adds a double liner with a leak collection and removal system to the process water temporary storage pond and improves the containment of process water and separation of process water from stormwater. In addition, the Phased Tailings Alternative modifies the design of the coarse ore stockpile to a geodesic dome structure and associated conveyor systems to avoid encroaching on a population of the Forest Service sensitive plant species, Coleman's coral-root, a wild orchid.

A redesigned process water pond has a double liner with leak collection and removal system over a geosynthetic clay liner, and the temporary storage pond has a single liner over a geosynthetic clay liner. A settling basin upstream of the process water containment has been included to provide containment for tailings settlement, if necessary, and to allow excess water to flow into the process water pond. Additionally, the leaching system barren solution pond was relocated upgradient of the process water pond to provide containment opportunities.

This alternative includes a minimum 20-foot-thick final cap of waste rock atop the heap leach rather than the 50-foot minimum cap specified by the proposed action. A cap of 20 feet is considered sufficient as long as ponding is not occurring above the heap leach.

A series of flowthrough drains beneath the tailings and waste rock facilities would replace the central drain and attenuation pond of the proposed action. These are rock drain structures placed in the natural drainage channels designed to pass stormwater beneath the tailings and waste rock facilities. The Phased Tailings Alternative redesigns the diversion and stormwater management system to incorporate a more conservative design to reduce the potential for failure during unusually high precipitation events. During both operations and postclosure, stormwater would be stored on top and on the benches of the waste rock and tailings facilities and would not be discharged downstream except in extreme events.

The stormwater storage basins on the top and benches of the waste rock facility are designed to store the 500-year, 24-hour storm event. The stormwater storage basins on the top of the closed tailings facility are designed to store the 1,000-year, 24-hour storm event. Runoff from the plant site and the diversion west of the open pit would also be retained. This alternative would maintain flow from above the plant site by diverting it into upper McCleary Canyon both during operations and postclosure.

Because this alternative would not encroach on the McCleary drainage for the tailings facility until around year 10, those portions would not begin reclamation until reclamation of other portions of the tailings and waste rock facilities have long been underway. Therefore, the entire outer edge of the facilities would not be consistent in the reclamation phasing.

The Arizona National Scenic Trail would be realigned just outside the perimeter fence with a trailhead that would be located off of the primary access road, as shown in figure 13 in chapter 2 of the FEIS. Area roads that are outside the perimeter fence that would either be reconnected or decommissioned are shown in figure 16 in chapter 2 of the FEIS. The Sycamore Connector Road would be about 12,184 feet long.

#### **5.1.5 Alternative 5 – Barrel Trail Alternative**

The Barrel Trail Alternative (see figure 21 in chapter 2 of the FEIS) was developed to respond to significant issues regarding potential impacts on visual resources and the surface water component of water resources. This alternative incorporates gentler and more varied slopes. While this alternative would contain measures to minimize adverse environmental impacts on NFS surface resources, it would not do so as well as the selected action.

The Barrel Trail Alternative would place all tailings and waste rock in upper Barrel, Trail, and Wasp Canyons. This alternative is similar to the selected action in that it would permanently avoid placing mine waste in McCleary Canyon to reduce effects on surface water flows to Barrel Canyon. A more varied topography is proposed to more closely replicate a natural landform than the other action alternatives. However, this alternative would expand the footprint of the tailings and waste rock facilities.

The Barrel Trail Alternative would incorporate a waste rock perimeter buttress that would completely surround the dry-stack tailings. The heap leach facility would be located in the same place as for the other alternatives. The primary access road from SR 83 would be the same as for the Phased Tailings Alternative, except that the tailings conveyor system would require modification to accommodate the relocated tailings facility.

The general style for diversion and stormwater control structures would be similar to that of the Phased Tailings Alternative, except that the valley incorporated in the final mine waste landform would carry stormwater to Barrel Canyon instead of using the rock drop structures proposed under the Phased Tailings Alternative. However, engineering concepts available thus far indicate that rock drop structures and hardened channels would be required to manage the facility without incurring excess erosion (see figure 22 in chapter 2 of the FEIS). The Barrel Trail Alternative would use flowthrough drains, similar to the Phased Tailings Alternative.

With the Barrel Trail Alternative, concurrent reclamation could be delayed because of the need to rehandle material in order to form the final topography at closure. Reclamation time frame would be similar to that of the Phased Tailings Alternative.

The Arizona National Scenic Trail alignment for this alternative is located east of SR 83 (see figure ROD-3). Area roads that are outside the perimeter fence that would either be reconnected or decommissioned are the same as for the selected action (see figure ROD-4). The Sycamore Connector Road would be about 12,184 feet long.

#### **5.1.6 Alternative 6 – Scholefield-McCleary Alternative**

The Scholefield-McCleary Alternative (see figure 23 in chapter 2 of the FEIS) was developed to respond to significant issues regarding potential impacts on cultural resources, riparian habitat resources, and the surface water component of water resources that would arise from placing the tailings and waste rock in the McCleary and/or Barrel Canyon drainages. While this alternative

would contain measures to minimize adverse environmental impacts on NFS surface resources, it would not do so as well as the selected action.

The Scholefield-McCleary Alternative would place all tailings and the majority of waste rock north of the McCleary Canyon drainage channel. The dry-stack tailings would occupy Scholefield Canyon and an unnamed tributary drainage. Waste rock would be placed on the northern slope of McCleary Canyon above the drainage bottom and extend to the north on top of the tailings. Some waste rock would be placed in Barrel Canyon on top of and next to the heap leach facility. A series of conveyors would be required to carry the dry-stack tailings over the ridge into Scholefield Canyon. As currently expected, these conveyors would be elevated and would run through portions of McCleary Canyon east, then north around the footprint to the tailings facility (see figure 23 in chapter 2 of the FEIS). The conveyors would require lighting and a small one-lane maintenance road.

Because of the relocation of mine waste to Scholefield Canyon, which is the site of the primary access road for the proposed action and other action alternatives, the road would be realigned, as shown in figures 23 and 24 in chapter 2 of the FEIS. The primary access road would intersect SR 83 between mileposts 41 and 42 and would be 2.8 miles long.

Diversion and stormwater control facilities would be designed to the same criteria used for the Phased Tailings Alternative, although there would not be any flowthrough drains. The heap leach facility and surrounding waste rock facility would use the same stormwater control design criteria as the Phased Tailings Alternative.

In order to maintain concurrent reclamation of final outer slopes, waste rock would initially be placed in berms along the outside edge of the waste rock facility near SR 83 and later placed behind the berms. Because of the ultimate height and slope of this alternative, it is likely that reclamation efforts would require more time to implement, resulting in longer reclamation phasing. It is also likely that reclamation efforts for this alternative would focus on slope stability and structural integrity and may be delayed or altered for safety reasons during final design.

The Scholefield-McCleary Alternative is the most problematic with respect to concurrent reclamation, with constraints caused by its having greater slopes, greater safety concerns, and less soil salvage material. The conveyor system located east of the waste rock and tailings facilities would also likely be removed and the area reclaimed during final closure activities.

The heap leach facility would be located in Barrel Canyon, as it would for the proposed action, the Barrel Trail Alternative, and the Phased Tailing Alternative. Reclamation of the heap leach pad would be similar to the Phased Tailings Alternative.

The Arizona National Scenic Trail alignment analyzed as part of this alternative is the same as for the Barrel Trail Alternative and is located east of SR 83 (see figure ROD-3).

Area roads that are outside the perimeter fence that would either be reconnected or decommissioned are the same as for the selected action (see figure ROD-4). The Sycamore Connector Road would not be constructed with this alternative.



**Table 1. Soil disturbance by alternative**

	<b>Alternative 2 Proposed Action</b>	<b>Alternative 3 Phased Tailings</b>	<b>Alternative 4 Barrel (Selected Action)</b>	<b>Alternative 5 Barrel Trail</b>	<b>Alternative 6 Scholefield- McCleary</b>
Total Acres Excluded from Public Access (within perimeter fence)	6,177	6,073	6,990	6,994	8,889
Acres Disturbed					
• Within security fence	4,387	4,308	4,228	4,688	5,045
• Primary access road	263	194	226	225	192
• Utility line corridor	899	897	899	899	899
• New roads outside security fence	39	59	39	39	1
• Decommissioning of roads outside security fence	14	12	20	17	42
• Arizona Trail reroute	11	11	19	19	19
<b>Total Acres Disturbed</b>	<b>5,612</b>	<b>5,481</b>	<b>5,431</b>	<b>5,888</b>	<b>6,197</b>
Disturbance Acreage by Land Ownership					
• BLM*	3	3	3	3	3
• Private	1,200	1,172	1,197	1,167	1,131
• State	574	574	574	574	574
• Forest Service	3,835	3,734	3,653	4,140	4,488

\* Note that the BLM land is included because it falls within the utility line corridor analyzed in the FEIS, but final construction is not expected to actually disturb any BLM land.

## 5.2 Alternatives Considered but Eliminated from Detailed Study

NEPA, the CWA, the Organic Administration Act, and Forest Service regulations (36 CFR 228) governing mineral development on NFS lands provide guidance regarding alternatives development. Reasonable alternatives include those “that are practical or feasible from technical and economic standpoints and using common sense, rather than simply desirable from the standpoint of the applicant.”<sup>16</sup> The selection of alternatives under Council on Environmental Quality (CEQ) criteria includes consideration of a reasonable range of alternatives that meet the project purpose and need and are economically and technically feasible.

A number of alternatives and alternative themes were evaluated but eliminated from detailed study. These alternatives included mining other locations; using alternate mining methods; backfilling and partially backfilling the open pit; modifying the life of the mine; changing the scheduled hours of operation; suspending operations during high wind events; using alternate water supply sources; modifying the transportation of workers, supplies, and shipments; using a natural gas pipeline instead of an electrical transmission line; performing a land exchange; downsizing the electrical transmission line; and burying the electrical transmission line. A more detailed discussion of these alternatives appears in the FEIS (chapter 2, pp. 100–114, under “Alternatives Considered but

<sup>16</sup> Council on Environmental Quality. 1981. NEPA’s Forty Most Asked Questions. Available at: <https://energy.gov/sites/prod/files/G-CEQ-40Questions.pdf>. Accessed March 9, 2017.

Eliminated from Detailed Study”), along with the rationale for dismissal. These potential alternatives were identified as a result of public participation as well as agency concerns. The six alternatives considered in the FEIS present a range of reasonable alternatives designed to address the significant issues identified by the Forest Service.

## **6.0 Public Involvement and Agency Collaboration**

### **6.1 Public Scoping**

On March 13, 2008, the Coronado began soliciting comments on the preliminary MPO with publication in the Federal Register of a “Notice of Intent to Prepare an Environmental Impact Statement” (Federal Register 73(50):13527–13529). The notice of intent summarized the proposed action and stated that the impacts of the proposed action, including a reclamation plan, amendment to the Coronado forest plan, and connected actions, would be evaluated in the EIS. Six open house public meetings were held: March 18, 2008 (Tucson, Arizona); March 19, 2008 (Green Valley, Arizona); March 20, 2008 (Patagonia, Arizona); April 5, 2008 (Vail, Arizona); April 22, 2008 (Sahuarita, Arizona); and April 23, 2008 (Elgin, Arizona). Approximately 1,000 people attended the open houses. Oral and written comments were solicited at the meetings and accepted on a toll-free phone line and by mail, hand delivery, facsimile, and email throughout the initial 30-day scoping period.

On April 29, 2008, a “Revised Notice of Intent to Prepare an Environmental Impact Statement” was published in the Federal Register (73(83):23181). This notice announced a change in the duration of the scoping comment period and provided information regarding three public hearings. The scoping comment period was extended to July 14, 2008, for a total scoping comment period of 120 days.

The following public hearings were held: May 12, 2008 (Elgin, Arizona); June 7, 2008 (Sahuarita, Arizona); and June 30, 2008 (Tucson, Arizona). Both oral testimony and written comments were collected at the public hearings. Oral testimony was professionally audio-recorded and documented by a court reporter. A total of 860 people signed in at the public hearings, with 169 people presenting formal oral comments. On June 27, 2008, in response to public concerns about constraints limiting hearing attendance and participation, the Coronado hosted a toll-free phone hotline for use by the public to provide comments. A total of 302 people left recorded comments, which were transcribed and included in the project record.

The Coronado received 11,082 comment submittals during the scoping comment period, 70 percent of which were postcards, petitions, and form-letter submittals. Approximately 16,000 discrete comments were identified among those received. In addition, submittals received during the scoping period from March 13, 2008, through August 1, 2008, were recorded and analyzed. A systematic process referred to as content analysis was used to organize the contents of the submittals.

Twelve significant issues were identified after content analysis of the scoping comments. These issues are described in chapter 1 of the FEIS, and summarized in section 2.3 of this ROD. Consideration of these issues led, in part, to the development of alternatives to the proposed action that are considered in this FEIS (see chapter 2) and the approach used for impacts analyses reported in chapter 3 of the FEIS. Detailed records about this process are contained in the project record.

## 6.2 Public Review of the Draft EIS

On October 19, 2011, a “Notice of Availability of Draft Environmental Impact Statement” for the Rosemont Copper Project DEIS was published in the Federal Register (76(202):64893–64894). The notice of availability began a 90-day public comment period. On January 19, 2012, with the publication of a notice in the Federal Register, the Forest Supervisor extended the formal comment period for the DEIS through January 31, 2012, because a technical problem with the electronic mail inbox for public comments resulted in the rejection of some comments for a brief period of time on January 18, 2012.

Seven open public meetings were held: November 12, 2011 (Tucson, Arizona); November 19, 2011 (Vail, Arizona); December 1, 2011 (Vail, Arizona); December 7, 2011 (Benson, Arizona); December 8, 2011 (Green Valley, Arizona); December 10, 2011 (Elgin, Arizona); and January 14, 2012 (Sahuarita, Arizona). The first six meetings consisted of both an informational and an oral comment session. The seventh meeting was an oral comment session. Coronado ID team resource specialists staffed the informational sessions to answer questions and provide information pertinent to the DEIS. Oral comment sessions allowed the public to provide oral comments directly to the Coronado Forest Supervisor, Coronado Deputy Forest Supervisor, and/or Nogales District Ranger. Oral comments were professionally audio-recorded and documented by a court reporter.

Oral and written comments were also accepted by mail, email, hand delivery, facsimile, and telephone recording, as well as through the project Web site, throughout the formal public involvement period. Documentation of the formal DEIS comment process is contained in the project record. Comments were received from individuals; tribal governments; Federal, State, and local agencies; organized interest groups; and businesses. The Coronado received more than 25,000 submissions during the DEIS comment period. Content analysis was used to categorize the nature of comments received by issue and concern. Appendix G of the FEIS contains Forest Service responses to comments received on the DEIS (note that appendix G has been republished on the RosemontEIS.us website in response to objection resolution). Detailed records about this process are contained in the project record.

Comments received on the DEIS helped to inform the decision in a number of ways, including but not limited to, the following:

- The issues and their measurement factors were refined and clarified;
- Analysis methodologies were modified and improved for a number of resources;
- Information provided helped to better describe existing conditions;
- The analysis of the effects of the no action alternative was broadened in response to comments;
- Several of the action alternatives were modified in response to comments and suggestions;
- Public comments and input from agencies and tribes contributed to development of a number of mitigation and monitoring measures; and
- Information provided helped to identify past, present, and reasonably foreseeable actions that were incorporated into cumulative impact analysis.

Overall, changes and modifications made in response to comments and information received during the DEIS comment process led to improved analysis and disclosure of impacts that were taken into

consideration in making my decision. They also led to development of many mitigation measures that will reduce potential environmental impacts and monitoring measures that will be used to ensure that the project is implemented in accordance with this decision.

### **6.3 Public Objection of the FEIS and Draft ROD**

As previously mentioned, a public objection period followed publication of the legal notice of objection period for the Rosemont Copper Mine Project FEIS and draft ROD. The Regional Forester issued his response letter to eligible objectors on June 13, 2014, in which he detailed his determination that the Rosemont Copper Project is in compliance with laws, regulations, policies, and the forest plan and directed the Coronado Forest Supervisor to address a number of specific items. Refer to appendix B of this document for a more thorough discussion.

### **6.4 Tribal Consultation**

Several regulations require that Federal agencies consult on a government-to-government basis with federally recognized Native American tribes having traditional interests in and/or ties to the lands potentially affected by a proposed action and alternatives. Federal land management agencies, including the Forest Service, are required to consult with American Indian tribes not only under mandated law but also under the U.S. Government's trust responsibility to tribal nations. The Coronado commenced official consultation with 12 tribes in March 2006 upon receiving notice of Rosemont Copper's intent to file a preliminary MPO. Another letter was sent to the tribes in March 2008 giving notice that the project was continuing. Details of tribal consultation are summarized in the "Cultural Resources" resource section in chapter 3 and in appendix E of the FEIS.

While there are no tribal reservations within or near the Rosemont project area, and there would be no direct or indirect impacts to tribal lands, the Tohono O'odham Nation maintains deep and significant cultural, spiritual, social, physical, and holy ties to the Santa Rita Mountains, known in their native language as *Ce:wi Duag*. Other American Indian tribes, including the Ak Chin Indian Community, Fort Sill Apache Tribe, Gila River Indian Community, Hopi Tribe, Mescalero Apache Tribe, Pascua Yaqui Tribe, Salt River Pima-Maricopa Indian Community, San Carlos Apache Tribe, White Mountain Apache Tribe, Yavapai-Apache Nation, and Pueblo of Zuni, are also recognized as stakeholders with interest in and association to the Santa Rita Mountains. *Ce:wi Duag* has been determined by Arizona SHPO to be eligible for inclusion in the NRHP as a traditional cultural property. The Tohono O'odham Nation is often deferred to and considered the lead tribal entity with regard to activities and projects associated with the Santa Rita Mountains.

Either my staff, Supervisor Upchurch, or I met personally with tribal representatives on more than 25 separate occasions concerning the Rosemont Copper Project. These meetings consisted of field trips, formal consultation meetings, interviews, and presentations to Tribal Councils and other tribal groups. Mitigation recommendations and project concerns from the tribes were identified and integrated into the EIS (see the "Cultural Resources" resource section in chapter 3 of the FEIS; and mitigation measures FS-CR-01 through FS-CR-11 in appendix B of the FEIS). The Tohono O'odham Nation and Pascua Yaqui Tribe have passed formal tribal resolutions opposing the Rosemont Copper Project. Implementation of the project will be completed, to the extent feasible, with respect toward the values inherent in *Ce:wi Duag* Traditional Cultural Property and in compliance with applicable laws and regulations. While consultation with tribes was integral in development of all cultural resource mitigation measures described earlier in this document and in

appendix B of the FEIS, I consider mitigation measures FS-CR-07 through FS-CR-10 to be examples of ways the project will be implemented with respect to tribal values, to the extent feasible.

Consultation with the Arizona SHPO and ACHP has been completed, and a finding was made that the project would result in adverse effects on historic properties. See section 8.18 of this document for a discussion of NHPA Section 106 compliance.

## **6.5 Cooperating Agency Consultation**

Consultation with Federal and State agencies occurred throughout the EIS preparation process. This included inviting 33 Federal, State, and local agencies to participate as cooperating agencies (see list of cooperating agencies on pp. ix–x of this document). Seventeen agencies ultimately accepted and participated as official cooperating agencies: Department of Defense – Air Force; USACE; National Park Service (NPS), Saguaro National Park; Smithsonian Astrophysical Observatory, Fred Lawrence Whipple Observatory; BLM, Tucson Field Office; AGFD; ADEQ; Arizona Department of Mines and Mineral Resources; ADOT; ADWR; Arizona Geological Survey; ASLD; Arizona State Mine Inspector; Arizona State Parks; City of Tucson; Pima County; and Town of Sahuarita. The Tohono O’odham Nation also signed an agreement to participate as a cooperating agency. The Coronado held regular meetings with cooperating agencies and solicited their review and comment at key points of the process, including prior to release of the DEIS and FEIS. In addition to interaction with cooperating agencies, the Coronado consulted with the USFWS regarding compliance with Section 7 of the ESA; and Arizona SHPO, ACHP, and others regarding compliance with Section 106 of the NHPA. The Coronado also worked closely with the USACE, EPA, and ADEQ regarding permits under their purview. In addition, the Coronado worked closely with staff from Saguaro National Park concerning impacts that could affect the park.

Information and suggestions provided by the cooperating agencies was used to clarify aspects of the alternatives; modify analysis methods to more accurately predict environmental impacts; develop mitigation and monitoring measures; and better understand divergent scientific viewpoints regarding a number of environmental issues. Overall, information provided and changes and modifications made in response to cooperating agency contributions led to improved analysis, a more thorough disclosure of impacts, and a better understanding of scientific viewpoints, which I took into consideration in making my decision.

## **6.6 Federal Agency Consultation**

As mentioned above, the Coronado consulted with numerous Federal agencies throughout the EIS preparation process, including EPA, USACE, USFWS, BLM, NPS, ACHP, and USGS. Many of these agencies reviewed the DEIS provided comments based on their review. These consultations helped to inform the decisions detailed in this ROD.

In an effort to consider new information and improve the accuracy and/or reduce the uncertainty of the analysis associated with the biological assessment (BA) and BO that was prepared for the FEIS, the Coronado met with EPA, USFWS, BLM, and other agencies at least 29 times in the months following release of the FEIS. In particular, the Forest Service was focused on improving the uncertainty related to impacts within the Las Cienegas NCA and in the riparian areas along Empire Gulch and Cienega Creek. In order to better document baseline conditions and refine the hydrologic analyses related to riparian areas in the Las Cienegas NCA and along Empire Gulch and Cienega Creek, the Coronado invited numerous Federal agencies to participate in meetings in a renewed

effort to exchange information and enlist their resource expertise. This exchange brought forward numerous documents, field data, and analyses not previously provided to the Coronado, some of which was new information that must be considered under NEPA regulations at 40 CFR 1502.9. Consideration of this new information is documented in the May 22, 2015, SIR, which is described in section 1.2 of this document. Table A1 in appendix A of the SIR describes the meetings and other coordination efforts between Federal agencies during consideration of new information and preparation of an SBA. None of this new information was considered significant, nor did it require substantial changes in the project; therefore, a supplemental EIS was not required.

## **6.7 Professional Disagreement and Scientific Uncertainty**

In making my decision to select the Barrel Alternative for implementation, I considered relevant scientific information, public concerns and opposing viewpoints, scientific uncertainty, and risk, which are discussed in the resource sections in chapter 3 of the FEIS. I am aware that there is incomplete or unavailable information for some resource analyses (also discussed in the resource sections in chapter 3 of the FEIS), as well as professional disagreement among resource professionals both within the Forest Service and with other groups and agencies. In an effort to understand scientific uncertainty and resolve professional disagreement, both Supervisor Upchurch and I have sought out and considered the professional opinions of resource specialists from the Forest Service, other Federal agencies, private industry, and third-party consultants.

The greatest areas of professional disagreement and scientific controversy have focused on potential impacts to caves, technical aspects of groundwater modeling, riparian impacts, and air quality. Following is a brief discussion of each of these areas and how the Forest Service attempted to resolve and disclose the scientific uncertainty.

### **6.7.1 Caves**

Professional disagreement was focused not only on the potential for mining to directly impact undiscovered caves in the project area, but also the potential that dewatering of the local aquifer could impact existing known cave resources. Because analysis of cave resources requires focused knowledge, experts were consulted for their professional opinion in this area (Hoag, Peachey, et al. 2012). Also, after a number of cooperating agencies expressed interest in this area, the Forest Supervisor attended several field trips focused on cave issues and hosted a meeting to exchange ideas and expertise in order to inform the analysis and the decision maker (Garrett 2012a).

Occurrences of cave resources are closely tied to the geological units in which they are contained. The probability of finding cave resources can be broadly predicted from the geological units present at or near the surface. Geological mapping conducted by USGS and additional information provided by Rosemont Copper (Ferguson 2009; Ferguson et al. 2009; Johnson and Ferguson 2007; Tetra Tech 2007c, 2009c) were consulted to identify the geological units that occur within the project area. The Arizona Geological Survey reviewed 2007 and 2009 geotechnical reports by Tetra Tech and “did not find any deficiencies, gaps, or errors in any of the sections that our geologic staff reviewed” (Arizona Geological Survey 2010).

After considering all available information and scientific viewpoints, Supervisor Upchurch determined that the geological formations in the Rosemont area have low potential for caves and that existing known caves were unlikely to be affected by the hydrologic changes induced by the project. Therefore, it is unlikely that either known or unknown cave resources would be impacted. In order to

ensure protection of cave resources, my decision to select the Barrel Alternative for implementation includes mitigation measure FS-GMP-02, “Upon discovery of a cave or sinkhole, suspension of operations pending Forest Service review.” See FEIS, appendix B, pp. B-7 to B-8, for details. I have reviewed pertinent information and been briefed by my staff on this issue, and concur with Supervisor Upchurch’s determinations.

### 6.7.2 Groundwater Modeling

Supervisor Upchurch determined that groundwater modeling is a necessary and appropriate tool for predicting impacts from the proposed mine. In applying groundwater modeling, both Supervisor Upchurch and I have considered the viewpoints of experts from the Forest Service, other Federal agencies, cooperating agencies, the public, private industry, and third-party consultants. However, professional disagreement remains related to the groundwater modeling analysis, primarily with respect to regional hydrogeology and how aquifer properties have been characterized, model boundary conditions, and the need for additional hydrogeologic investigation.

A robust groundwater analysis has been conducted that considered three different groundwater models and a wide range of sensitivity analyses, and incorporated a system of independent peer review of the groundwater models.<sup>17</sup> In order to investigate specific points of disagreement, following publication of the DEIS, Supervisor Upchurch requested and received expert opinions on a wide variety of groundwater modeling comments raised by the public, cooperating agencies, and Forest Service specialists (Hoag, Bird, et al. 2012; Hoag, Peachey, et al. 2012; Hoag, Sieber, et al. 2012; Kline et al. 2012; Ugorets, Cope, and Hoag 2012; Ugorets, Cope, and Sieber 2012). Supervisor Upchurch also convened one conference call (Garrett 2012d) and two expert panel meetings (Garrett 2012g, 2012h) in order to bring specialists from a variety of backgrounds together face-to-face to openly discuss different viewpoints regarding the groundwater models used in the analysis. Supervisor Upchurch also convened two other meetings focused in part on the specific hydrologic issues of regional aquifer connectivity (Garrett 2012a) and assessing riparian impacts from groundwater drawdown (Garrett 2012b). Both Supervisor Upchurch and I continued exploration of professional disagreements about the groundwater modeling that arose after publication of the FEIS as part of Section 7 consultation (Garrett 2015, “Summary of Forest Service Consideration of Specific Issues of the Specified Groundwater Models”).<sup>18</sup>

After considering all available information and scientific viewpoints, I concur with Supervisor Upchurch that the groundwater models are reasonable and acceptable for use, albeit with a full understanding of their limitations. I have determined that the groundwater models are being used with appropriate caution, that a variety of strategies have been adopted to balance the uncertainties associated with any groundwater modeling, and that these approaches allow for a robust examination and disclosure of the potential impacts of the project.

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<sup>17</sup> Garrett, C. 2013. *Proposed Rosemont Copper Project Environmental Impact Statement Process Memorandum to File: Overview of Water Resource Process*. Prepared on behalf of U.S. Forest Service, Coronado National Forest, Arizona. December 6, 2013.

<sup>18</sup> Garrett, C. 2015. *Summary of Forest Service Consideration of Specific Issues of the Specified Groundwater Models*. Technical Memorandum to File. Tucson, Arizona: SWCA Environmental Consultants. September 23, 2015.

### **6.7.3 Riparian**

The manner in which impacts to riparian areas have been analyzed in the EIS, particularly related to Cienega Creek and Empire Gulch, has been a point of discussion for much of the life of the project, and numerous comments were received from both cooperating agencies and the public.

Appropriately, the riparian analysis, which includes impacts to springs, perennial streams, Outstanding Arizona Waters, and riparian vegetation, has evolved throughout the project. The most significant changes occurred between the DEIS and FEIS, and included consolidation of all riparian analysis into a single new section in the EIS. In response to concerns on the riparian analysis and concerns about impacts to the Las Cienegas NCA, the Forest Supervisor directed Coronado staff to collaborate directly with the EPA to ensure that the EIS adequately described the expected impacts along Cienega Creek and Empire Gulch. This resulted in a quantitative analysis that incorporated a wide range of possible outcomes based on the groundwater models, as well as plain-language discussion about the importance of these riparian areas and the effect the mine might have. After publication of the FEIS, the Coronado received a substantial amount of new information concerning riparian resources. In collaboration with specialists from multiple Federal agencies, including the BLM, USGS, EPA, and USFWS, the riparian analysis was further reviewed and refined based on this new information. The conclusions resulting from analyzing the new information were similar to those originally published in the FEIS. The analysis of new information is described in the Rosemont Copper Project SIR dated May 22, 2015.

It is my determination that the analysis of riparian impacts has been robust, has incorporated a wide range of professional opinions from experts in the field, has used the best available information, and provides a reasonable analysis of potential impacts, given the many uncertainties.

### **6.7.4 Air Quality**

The air quality analysis has involved complex modeling of air impacts, with potential impacts from the proposed mine affecting a wide variety of issues, including potential exceedance of air standards, impacts to public health, visibility, and nitrogen deposition within national parks.

From early in the process, the Forest Service worked with other agencies to help refine and critique the air quality analysis, including the NPS and the Smithsonian (Mt. Hopkins Observatory). Other agencies (EPA, Pima County) later provided with specific comments on the DEIS. Following the DEIS, NPS, EPA, Pima County, and the Smithsonian were further consulted on a variety of issues regarding air modeling protocols. Once modeling protocols were determined to be appropriate by Forest Service specialists and modeling conducted, consultation with several of these agencies continued with respect to the interpretation of modeling results, specifically the potential impacts to Saguaro National Park and the Mt. Hopkins Observatory, and the potential for developing mitigation for these impacts.

Supervisor Upchurch determined, and I concur, based on input from the ID team, that the air modeling was conducted in a reasonable manner and is adequate to describe the expected impacts from the proposed mine. Further, all reasonable mitigation measures were investigated and, if practical, applied to the project.



## **7.0 Compatibility with Goals of Other Entities**

Compatibility with regional, State, and local plans, policies, and controls is discussed on pp. 1142–1151 of the FEIS. I am aware that the Rosemont Copper Project does not contribute to meeting the goals of a number of plans and policies of other Federal agencies, and local governments. The following plans, policies, and controls were identified through coordination with and comments by Federal, State, and local agencies, and governments. While there could be other entities whose goals apply to the Rosemont project area and surrounding lands, the ones summarized here and addressed in further detail in the FEIS are the public agencies and tribes that brought forward their concerns.

### **7.1 Las Cienegas National Conservation Area Resource Management Plan**

Las Cienegas NCA is administered by the BLM. The Coronado worked closely with the BLM throughout all aspects of the Rosemont NEPA process. While the Coronado ID team made an initial determination of compatibility of the project with the Las Cienegas NCA Resource Management Plan, a BLM official reviewed and concurred with the findings presented below.<sup>19</sup>

The Las Cienegas NCA Resource Management Plan lists a number of goals for management of the Conservation Area. Predicted impacts from the Rosemont Copper Project would be inconsistent with a number of these goals, including goals to maintain and improve watershed health; maintain and improve native wildlife habitats and populations; maintain and restore native plant diversity and abundance; protect water quantity; and maintain the region's scenic beauty and open spaces. While the selected action contains a number of mitigation measures to reduce impacts, potential impacts are not expected to be completely offset. Therefore, the conflict between implementation of the Rosemont Copper Project and achieving the goals of the resource management plan cannot be rectified.

### **7.2 Cienega Creek Wild and Scenic River Eligibility**

In December 1994, the BLM approved the “Final Arizona Statewide Wild and Scenic Rivers Legislative Environmental Impact Statement,” which determined that two segments totaling 10.5 miles of Cienega Creek were suitable for recommending to Congress for inclusion in the National Wild and Scenic River System because the river is free flowing and has outstandingly remarkable essential habitat for the Gila topminnow.

While some impacts to the outstandingly remarkable essential habitat for the Gila topminnow could occur in Empire Gulch, these impacts would not occur in the foreseeable future. Groundwater drawdown could affect stream flow in Empire Gulch. This would reduce the amount of water that Empire Gulch contributes to Cienega Creek. Indirect impacts on the Gila topminnow could occur in Empire Gulch, where groundwater drawdown is modeled to occur. These impacts would not affect the free-flowing nature of the 10.5 miles of Cienega Creek deemed suitable for inclusion in the National Wild and Scenic River System, but these impacts have the potential to affect the outstandingly remarkable essential habitat for the Gila topminnow.

Analysis of impacts disclosed in the FEIS indicated that noticeable reductions in stream flow in Cienega Creek would not occur for hundreds of years after closure and, once occurring, would not

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<sup>19</sup> Email correspondence between Margie DeRose, Coronado National Forest, and Dan Moore, BLM, June 4, 2013.

result in widespread absence of flow along Cienega Creek. In addition, the BO concludes that “the modeled groundwater decline at key reach EG1 (in Empire Gulch) is not likely to impact Gila topminnow, at least certainly not in the near term” (BO, p. 113). The BO concludes, “After reviewing the current status of the Gila topminnow, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is the FWS’s biological opinion that the proposed action is not likely to jeopardize the continued existence of the Gila topminnow” (BO, p. 116).

Based on the analysis presented in the FEIS and the conclusion of impacts disclosed in the BO, I find that implementation of the selected action is unlikely to affect the suitability determination for Cienega Creek.

### **7.3 Saguaro National Park Management Plan**

The Coronado worked closely with Saguaro National Park during analysis of air quality impacts.

The NPS expressed concerns regarding predicted air quality related value impacts to Saguaro National Park from emissions associated with the proposed Rosemont Copper Mine. Visibility impacts are of particular concern, considering that Saguaro National Park will not meet the regional haze goals under the ADEQ proposed regional haze state implementation plan. The NPS is also concerned about the predicted nitrogen deposition in Saguaro National Park.

Mitigation measures to control fugitive dust have been developed and are required as conditions of the air quality permit. All practicable mitigation measures designed to reduce fugitive dust emissions from the project will be required (FEIS, appendix B, mitigation measures OA-AQ-01, OA-AQ-02, OA-AQ-03, OA-AQ-04, OA-AQ-05, and OA-AQ-11, pp. B-76 to B-83). Technological changes to engines on heavy mine equipment continue to reduce NO<sub>x</sub> emissions, and the use of improved lower-emission engines are required under the air quality permit (FEIS, appendix B, mitigation measure OA-AQ-9, pp. B-81 and B-82). In the SIR dated May 22, 2015, updated emission factors obtained from Caterpillar were evaluated. Since the FEIS analysis was conducted, NO<sub>x</sub> emissions were reduced by 3.3 percent due to technological improvements in engines. While impacts from nitrogen deposition will remain, this situation does not violate Federal, State, or county air quality laws or regulations.

### **7.4 Patagonia-Sonoita Scenic Road Corridor Management Plan**

The “Corridor Management Plan for the Patagonia-Sonoita Scenic Road” was completed in 2003 to encourage collaborative community planning for the road and to provide strategies to preserve the visual and cultural-historic resources along the road (Wheat Scharf Associates 2003). The corridor management plan describes the existing conditions and opportunities for the road, defines the six intrinsic qualities as archaeological, cultural, historic, natural, recreational, and scenic resources, and lays out strategies to preserve and enhance the intrinsic qualities that draw residents and visitors to the corridor. It defines the measure of scenic quality as “how memorable, distinctive, uninterrupted, and unified” the view is perceived to be (Wheat Scharf Associates 2003).

The Rosemont Copper Project could conflict to some degree with each of the intrinsic qualities that were considered when designating the corridor. While mitigation measures could reduce the impacts, conflicts would remain.

## **7.5 Pima County Sonoran Desert Conservation Plan**

As a cooperating agency, Pima County was involved throughout the Rosemont NEPA process. Pima County provided comments on draft versions of the FEIS that were made available to cooperating agencies, and their comments were taken into account in the following determination.

The “Sonoran Desert Conservation Plan” is meant to guide all future land use decisions of Pima County, as well as where public money is spent by Pima County to conserve open space, how cultural and historic resources are protected, and how our Western lifestyle continues.

The “Sonoran Desert Conservation Plan” identifies critical habitat and biological corridors; riparian resources; ranch conservation lands; mountain peaks and natural preserves; and cultural resources. The area that could be impacted by the Rosemont Copper Mine contains biological core areas and multiple use areas; priority archaeological sites, priority archaeological site complexes, archaeological sensitivity zones, and NRHP properties; and existing natural preserves (i.e., the Coronado National Forest).

As stated in the resource sections in chapter 3 of the FEIS, impacts have been mitigated to the degree practicable; however, conflicts with aspects of the “Sonoran Desert Conservation Plan” would remain.

## **7.6 Town of Sahuarita General Plan**

The Town of Sahuarita “General Plan” is a comprehensive, long-term guide to the Town’s future in 20 years, setting forth a vision for Sahuarita to aspire to and providing goals and policies. The intent of the “General Plan” is to carefully manage change as Sahuarita grows into the future. The “General Plan” incorporates some flexibility to enable the Town to adapt to unanticipated future conditions.

The Town of Sahuarita provided comments to the Coronado regarding consistency of the Rosemont Copper Project with the Town’s “General Plan.” Rosemont Copper has entered into an agreement with the Town of Sahuarita (Town of Sahuarita and Rosemont Copper Company 2013) that addresses many of their concerns. Specific responses to each issue raised by the Town of Sahuarita are included in the FEIS.

## **7.7 Santa Cruz County Comprehensive Plan**

Santa Cruz County provided comments to the Coronado regarding consistency of the Rosemont Copper Project with their General Plan. Their comments were taken into account in the following determination.

No land within Santa Cruz County would be directly impacted by the Rosemont Copper Project; however, indirect impacts would occur from the project that may not be consistent with some of the goals of the Northeast Santa Cruz County Character Area. Specific responses to each issue raised by Santa Cruz County are included in the FEIS.

## **7.8 United States Army Fort Huachuca**

The Rosemont Copper project area is located within the Fort Huachuca Sentinel Landscape, an area in which the Departments of Agriculture, Defense, and the Interior are working with partners to align resources and implement a comprehensive, multiple-tool approach to promoting and sustaining

compatible land uses in a manner that protects nearby military test and training needs while benefiting all partners and landowners.

The Rosemont Copper Project falls within the boundaries of the Buffalo Soldier ETR. The Coronado coordinated with Fort Huachuca to ensure that all ramifications of the Rosemont Copper Project had been considered with respect to military operations.

After conferring with Fort Huachuca and other mission partners, Buffalo Soldier ETR managers determined that the Rosemont Copper Project should pose no threat to the electromagnetic environment on Fort Huachuca, nor should it have any adverse impact to the installation's Electronic Proving Ground or training missions.

## **8.0 Findings Required by Laws, Regulations, Policy, and Direction**

Several Federal laws and regulations apply to the Forest Service decision to approve an MPO as proposed, or to require changes and additions to the preliminary MPO. As required by NEPA, an EIS describing the potential "significant environmental effects" that may result from this decision, and several alternatives, has been prepared. The scope of the action, a reasonable range of alternatives, and site-specific environmental effects were assessed in the EIS as required. The FEIS was prepared in accordance with regulations implementing NEPA (40 CFR 1500–1508).

This decision is consistent with the requirement of the National Forest Management Act (NFMA) (36 CFR 219), Forest Service locatable mineral regulations (36 CFR 228, Subpart A), the 1897 Organic Administration Act (30 Stat. 11), 1872 Mining Law (30 U.S.C. 21 et seq.), the 1955 Multiple-Use Mining Act (30 U.S.C. 612), the 1970 Mining and Mineral Policy Act (Public Law (PL) 91-631), and other applicable State and Federal statutes as described below.

### **8.1 Organic Administration Act of 1897**

The Organic Administration Act, as amended, authorizes the Forest Service to regulate use and occupancy, such as mineral operations, on NFS lands and to develop mineral regulations. The Forest Service's mineral regulations are promulgated at 36 CFR 228, Subpart A (see sections 3.1 and 3.1.2 above). The regulations apply to operations conducted under the U.S. mining laws as they affect surface resources on NFS lands under the jurisdiction of the Secretary of Agriculture. Compliance with the Forest Service's mineral regulations is discussed in the next sections.

The selected action includes feasible and practicable measures to minimize adverse environmental impacts to NFS surface resources (see FEIS appendix B and section 4.3.2 in this document) to ensure compliance with applicable environmental laws and regulation. Therefore, I find that the selected action complies with the 1897 Organic Administration Act, as amended.

### **8.2 General Mining Act of 1872**

The 1872 General Mining Act, as amended, gives U.S. citizens the right to explore, locate mining claims, make discoveries, patent claims, and develop mines on NFS lands open to mineral entry.

Rosemont Copper has patented mining claims and unpatented mining claims that cover the proposed mine development on private and NFS lands. The selected action and the additional requirements described in this ROD demonstrate that the project area can be developed in a manner that meets the

required applicable laws. Therefore, I find that the selected action meets the intent of the 1872 General Mining Act, as amended.

### **8.3 Mining and Minerals Policy Act of 1970**

This act states that the continuing policy of the Federal Government is to foster and encourage private enterprise in the development of economically sound and stable domestic mining and minerals industries and the orderly economic development of domestic mineral resources.

I find that the Coronado has met the objective of the Mining and Minerals Policy Act of 1970, as amended, by proposing to approve the MPO as outlined in the preferred alternative of the FEIS and as modified in the selected action described in this ROD. The Coronado has ensured that the development and production of this mineral resource will be conducted in an environmentally sensitive manner, that these activities are integrated with the Coronado forest plan as amended, and that they are compatible with other resources. The Coronado has achieved this by developing alternatives to the proposed action in response to resource issues and requiring the mitigations and monitoring described in FEIS appendix B and summarized in section 4.3.2 of this document, requirements described in section 4.3.1 of this document, and the terms and conditions of the April 28, 2016, BO.

I find that the selected action meets the intent of the 1970 Mining and Minerals Policy Act, as amended.

### **8.4 Multiple Surface Use Mining Act of 1955**

This law amended the General Mining Act of 1972. The primary changes included:

- Common varieties of minerals such as sand, gravel, stone, pumice, pumicite, and cinders were removed from mineral entry. These common materials are now considered salable minerals that require either a sales contract or a free-use permit from the appropriate federal land management agency
- Limitations were placed on claimants' surface rights and authority given to the federal land management agencies to manage surface resources, including surface vegetative material.
- Mining claimants shall not use claims for any purposes other than mining related, including prospecting, mining, processing operations, and/or uses reasonably incident thereto.

The Forest Service has ensured that all proposed mining activities and the use of surface resources are in compliance with this law. Disposal of vegetative material is directed by the Forest Service. Rosemont Copper's MPO focuses on mining copper, which is not a common-variety mineral. Rosemont Copper's use of NFS surface resources for waste rock and tailings, etc., complies with this law.

I have reviewed the proponent's MPO and determined that this project, as described in this ROD, complies with the Multiple Surface Use Mining Act of 1955.

### **8.5 36 CFR 228, Subpart A**

Forest Service regulations (36 CFR 228, Subpart A) apply to locatable mineral operations conducted under the U.S. mining laws as they affect surface resources on NFS lands under the jurisdiction of the

Secretary of Agriculture. It is the purpose of these regulations to set forth rules and procedures through which use of the surface of NFS lands in connection with operations authorized by the U.S. mining laws (30 U.S.C. 21–54), which confer a statutory right to enter upon the public lands to search for minerals, shall be conducted so as to minimize adverse environmental impacts on NFS surface resources. Operations are defined as all functions, work, and activities in conjunction with prospecting, exploring, developing, mining, or processing of mineral resources, and all uses reasonably incident thereto, including roads and other means of access on lands subject to the regulation in this part, regardless of whether said operations take place on or off mining claims (36 CFR 228.3(a)).

In accepting, processing, and reviewing the MPO under NEPA with the intent to approve the Barrel Alternative with the mitigation, monitoring, and requirements in this ROD, I find that the decision for the selected action will be in compliance with the regulations at 36 CFR 228 Subpart A.

## **8.6 National Forest Management Act of 1976**

The NFMA requires that all development, maintenance, permits, contracts, and other instruments for the use and occupancy of NFS land be consistent with forest land and resource management plans.

### **8.6.1 Rosemont Copper Project**

While mineral development, such as described in the selected action, is not regulated by NFMA, or by the forest plan, which was developed and revised pursuant to NFMA (16 U.S.C. 528, 16 U.S.C. 1604(e), 36 CFR 219.1), per se, an approved plan of operations cannot be inconsistent with applicable forest plan standards and guidelines. However, 16 U.S.C. 478 bars the Forest Service from prohibiting locatable mineral operations on lands subject to the U.S. mining laws either directly or by regulation amounting to a prohibition. Therefore, if applicable Coronado forest plan standards and guidelines would not unreasonably restrict mining operations conducted pursuant to U.S. mining laws, the approved MPO must reflect that direction. If the forest plan purports to prohibit locatable mineral operations on lands open to U.S. mining laws, or if the direction would effectively amount to a prohibition of operations conducted pursuant to those laws for reasons such as the technical impossibility of complying with that direction, or the prohibitive cost of complying with that direction, then the forest plan standards and guidelines must give way in light of 16 U.S.C. 478.

The selected action is consistent with the 1986 Coronado forest plan minerals management objective to “support environmentally sound energy and minerals development and reclamation.” It is also consistent with the following Forest-wide standards and guidelines for minerals:

- Access for exploration and development of locatable mineral resources will be analyzed in response to a proposed operating plan. Potential impacts to consider in reviewing proposed mining operating plans.
- Mining and leasing activities will be allowed within the framework of applicable laws and regulations, including environmental laws and regulations designed to mitigate the impacts of mining activities. Emphasis should be on gaining cooperation and control through the use of operating plans and bonds for rehabilitation to protect and restore surface resources.

However, the selected action is inconsistent with many other aspects of the 1986 Coronado forest plan. My decision to amend the 1986 Coronado forest plan addresses inconsistencies of the selected action with other current standards and guidelines. The forest plan amendment will create a new MA,

with new standards and guidelines. The activities associated with the Rosemont Copper Project will comply with the Coronado forest plan, as amended. Therefore, I find that the selected action meets the intent of the National Forest Management Act.

### **8.6.2 Forest Plan Finding of Nonsignificant Amendment**

Under the NFMA (16 U.S.C. 1604(f)(4)), forest plans may “be amended in any manner whatsoever after final adoption after public notice.” Federal regulations at 36 CFR 219.17(b)(2) allow forests to use the provisions of the planning regulations in effect before November 9, 2000 (i.e., the 1982 Planning Regulations) in order to amend forest plans. In using the 1982 regulations, the responsible official shall, in accordance with FSM 1926.5 (the Forest Service land and resource management planning manual dealing with plan amendments using the 1982 Planning Regulations):

(1) determine whether proposed changes to a land management plan are significant or not significant in accordance with the requirements of sections FSM 1926.51 and 1926.52; (2) document the determination of whether the change is significant or not significant in a decision document; and (3) provide appropriate public notification of the decision prior to implementing the changes.

The Coronado proposes to amend its forest plan in order to address the inconsistencies of the proposed project with current standards and guidelines. The proposed forest plan amendment would create a new MA for which direction specific to copper mining would apply. The MA and its standards and guidelines apply only to the Rosemont area and would not affect activities outside the Rosemont area. This amendment would be in effect for the life of the 1986 forest plan.

FSM 1926.51 provides a framework for determining whether a proposed change to a forest plan is or is not significant. The Forest Supervisor has evaluated the proposed changes to management direction to determine whether they constitute a significant amendment to the Coronado forest plan. This evaluation addresses the Rosemont Copper proposed action and all action alternatives. The following discussion provides the rationale for the four criteria in the determination of significance as outlined in FSM 1926.51.

#### **1. Actions that do not significantly alter the multiple-use goals and objectives for long-term land and resource management.**

The proposed amendment to the forest plan does not alter any of the multiple-use goals and objectives for long-term land and resource management. The amendment proposes changes in management direction to address mining and associated activities to occur in the Rosemont area only. Adoption of this amendment will allow activities that are inconsistent with a number of forest-wide standards and guidelines. However, these activities are restricted to the Rosemont area and will not have wide-ranging effects across the Coronado National Forest. While environmental effects could extend beyond the Rosemont area, as disclosed in chapter 3 of the FEIS, they are not expected to significantly alter the multiple-use goals and objectives of the forest plan as a whole.

#### **2. Adjustments of management area boundaries or management prescriptions resulting from further on-site analysis when the adjustments do not cause significant changes in the multiple-use goals and objectives for long-term land and resource management.**

MA boundaries will be adjusted for MAs 1, 4, and 7 with this amendment. Management prescriptions for these MAs will not change. The changes are not expected to cause

significant changes in the multiple-use goals and objectives for long-term land and resource management.

**3. Minor changes in standards and guidelines.**

The proposed amendment to the forest plan adopts new standards and guidelines for MA 16, which is a new MA. When compared with the existing standards and guidelines for MAs 1, 4, and 7, changes go beyond what could be considered minor. However, when considered on a forest-wide basis, changes will be minor because they apply to the proposed MA 16 area only, which constitutes only 0.61 percent of the net acres of the Coronado National Forest (based on net forest acres of 1,726,514 from forest plan table 2a; and net MA 16 acres of 10,531 derived from geographic information system (GIS) data).

**4. Opportunities for additional projects or activities that will contribute to achievement of the management prescription.**

The proposed amendment establishes a new MA and thus a new management prescription. It provides opportunities for mining and associated activities that have impacts that are both beneficial and detrimental, as described in chapter 3 of the FEIS.

Evaluation of the four examples of amendments that are not significant does not conclusively determine whether the proposed amendment is significant. Therefore, the two examples given in FSM 1926.52 as indicative of circumstances that may cause a significant change to a land management plan have also been evaluated:

**1. Changes that would significantly alter the long-term relationship between levels of multiple-use goods and services originally projected (see section 219.10(e) of the planning regulations in effect before November 9, 2000 (see 36 CFR parts 200 to 299, revised as of July 1, 2000)).**

The proposed amendment will not significantly alter the long-term relationship between levels of multiple-use goods and services originally projected in the Coronado forest plan. As described in chapter 3 of the Rosemont Copper Project FEIS, the project could reduce grazing capacity and livestock use; dispersed and wildlife recreation use; and water yield. It could also reduce the number of acres meeting visual quality objectives, and reduce air and water quality. However, these effects will take place only within and adjacent to the Rosemont mining area (MA 16). When considered in the context of the 1,726,514-acre Coronado National Forest planning area, the effects will not be significant.

Refer to chapter 3 of the FEIS for details regarding environmental effects of the proposed action and action alternatives.

**2. Changes that may have an important effect on the entire land management plan or affect land and resources throughout a large portion of the planning area during the planning period.**

The proposed amendment affects only a small portion of the Coronado National Forest, which is the planning area for the forest plan. While the effects are substantial, they are highly localized and will not have a significant effect on the entire land management plan,



nor will they affect land and resources throughout a large portion of the forest plan planning area.

Therefore, based on the information summarized above, it is my determination that this will not constitute a significant amendment to the Coronado forest plan. Separate from this action, the Coronado is currently in the process of revising the 1986 forest plan pursuant to the planning regulations at 36 CFR Part 219. It is expected that the ROD for the Coronado forest plan revision, when completed, will include transition language addressing ongoing activities approved under the previous forest plan. The ROD may direct the forest to review existing and ongoing activities, such as the Rosemont Copper Project, to evaluate consistency with the provisions of the new forest plan. If any changes to the project or forest plan are needed as a result of that review, those changes will be evaluated in accordance with NEPA, NFMA, and all other applicable laws at that time.

## **8.7 National Environmental Policy Act of 1970**

NEPA declares a national environmental policy and promotes consideration of environmental concerns by Federal agencies in decision making. Procedures and regulations issued by the CEQ, as authorized under NEPA, direct implementation of NEPA by federal agencies. CEQ regulations are promulgated at 40 CFR 1500–1508; U.S. Department of Agriculture NEPA regulations are at 7 CFR 1b; and the Forest Service’s NEPA regulations are at 36 CFR 220. Forest Service direction pertaining to implementation of NEPA and CEQ regulations is contained in chapter 20 of Forest Service Handbook 1909.15 (Environmental Policy and Procedures).

To meet the requirements under NEPA and the 1986 Coronado forest plan, the Coronado has prepared the Rosemont Copper Project FEIS. I find that the Rosemont Copper Project FEIS complies with the procedural and analytical requirements of the National Environmental Policy Act.

## **8.8 Endangered Species Act of 1973**

Section 7(a)(2) of the ESA requires Federal agencies to consult with the USFWS, as appropriate, to ensure that their actions do not jeopardize the continued existence of species listed as threatened or endangered under the ESA, or destroy or adversely modify their critical habitat. A BA and three SBAs were completed that identified potential threats from project actions that could affect federally listed threatened or endangered species. The BA and SBAs were transmitted to USFWS to initiate formal consultation on the determination of effects. The USFWS issued a BO for impacts to listed species on April 28, 2016. The BO included specific conservation measures, reasonable and prudent measures, and terms and conditions that apply to approval of the MPO.

The Forest Service prepared an SBA on federally listed terrestrial and aquatic threatened and endangered species. The Forest Service found that the selected action MAY AFFECT, AND IS LIKELY TO ADVERSELY AFFECT the following federally threatened or endangered species:

- Lesser long-nosed bat, listed as endangered. Critical habitat has not been proposed or designated for this species. The USFWS found that the selected action is not likely to jeopardize the continued existence of the lesser long-nosed bat. The USFWS issued an incidental take statement for take of lesser long-nosed bats. The USFWS also included non-discretionary reasonable and prudent measures and terms and conditions that will be implemented.

- Jaguar, listed as endangered with designated critical habitat within the action area. The USFWS found that the selected action is not likely to jeopardize the continued existence of the jaguar and is not likely to destroy or adversely modify proposed critical habitat. The USFWS issued an incidental take statement for indirect take of jaguar. The USFWS also included non-discretionary reasonable and prudent measures and terms and conditions that will be implemented.
- Ocelot, listed as endangered. Critical habitat has not been proposed or designated for this species. The USFWS found that the selected action is not likely to jeopardize the continued existence of the ocelot. The USFWS issued an incidental take statement for take of ocelot. The USFWS also included non-discretionary reasonable and prudent measures and terms and conditions that will be implemented.
- Pima pineapple cactus, listed as endangered. Critical habitat has not been proposed or designated for this species. The USFWS found that the selected action is not likely to jeopardize the continued existence of the Pima pineapple cactus.
- Chiricahua leopard frog, listed as threatened with designated critical habitat within the action area. The USFWS found that the selected action is not likely to jeopardize the continued existence of the Chiricahua leopard frog and is not likely to destroy or adversely modify designated critical habitat. The USFWS issued an incidental take statement for take of Chiricahua leopard frog. The USFWS also included non-discretionary reasonable and prudent measures and terms and conditions that will be implemented.
- Gila chub, listed as endangered with designated critical habitat within the action area. The USFWS found that the selected action is not likely to jeopardize the continued existence of the Gila chub, nor is it likely to destroy or adversely modify designated critical habitat. The USFWS issued an incidental take statement for indirect take of Gila chub. The USFWS also included non-discretionary reasonable and prudent measures and terms and conditions that will be implemented.
- Gila topminnow, listed as endangered. Critical habitat has not been proposed or designated for this species. The USFWS found that the selected action is not likely to jeopardize the continued existence of the Gila topminnow. The USFWS issued an incidental take statement for indirect take of Gila topminnow. The USFWS also included non-discretionary reasonable and prudent measures and terms and conditions that will be implemented.
- Huachuca water umbel, listed as endangered with designated critical habitat (but not in the action area). The USFWS found that the selected action is not likely to jeopardize the continued existence of the Huachuca water umbel.
- Desert pupfish, listed as endangered with designated critical habitat (but not in the action area). The USFWS found that the selected action is not likely to jeopardize the continued existence of the desert pupfish. The USFWS issued an incidental take statement for indirect take of desert pupfish. The USFWS also included non-discretionary reasonable and prudent measures and terms and conditions that will be implemented.
- Northern Mexican gartersnake, listed as threatened with proposed critical habitat within the action area. The USFWS found that the selected action is not likely to jeopardize the continued existence of the northern Mexican gartersnake nor destroy or adversely modify its proposed critical habitat. The USFWS issued an incidental take statement for indirect take of northern Mexican gartersnake. The USFWS also included non-discretionary reasonable and prudent measures and terms and conditions that will be implemented.

- Western yellow-billed cuckoo, listed as threatened with proposed critical habitat within the action area. The USFWS found that the selected action is not likely to jeopardize the continued existence of the yellow-billed cuckoo nor destroy or adversely modify its proposed critical habitat. The USFWS issued an incidental take statement for take of yellow-billed cuckoo. The USFWS also included non-discretionary reasonable and prudent measures and terms and conditions that will be implemented.
- Southwestern willow flycatcher, listed as endangered with designated critical habitat within the action area. The USFWS found that the selected action is not likely to jeopardize the continued existence of the southwestern willow flycatcher nor destroy or adversely modify its designated critical habitat. The USFWS issued an incidental take statement for indirect take of the southwestern willow flycatcher. The USFWS also included non-discretionary reasonable and prudent measures and terms and conditions that will be implemented.

The Forest Service found that the selected action **MAY AFFECT, BUT IS NOT LIKELY TO ADVERSELY AFFECT** the threatened Mexican spotted owl. The USFWS concurred with this determination.

The Forest Service found that the selected action will have **NO EFFECT** on the endangered Mexican gray wolf.

Based on the conclusions summarized above as supported in the USFWS's BO, I find that the selected action meets the Endangered Species Act.

## **8.9 Regional Forester's Sensitive Species**

As described in FSM 2670.12, the Forest Service will do the following: (1) manage "habitats for all existing native and desired nonnative plants, fish, and wildlife species in order to maintain at least viable populations of such species;" and (2) avoid actions that "may cause a species to become threatened or endangered."

The Forest Service prepared a biological evaluation on species designated as sensitive by the Region 3 Regional Forester. The Coronado found that the selected action **MAY IMPACT INDIVIDUALS BUT IS NOT LIKELY TO RESULT IN A DOWNWARD TREND TOWARD FEDERAL LISTING AS THREATENED OR ENDANGERED OR A LOSS OF POPULATION VIABILITY** for the following plant species: Arid throne fleabane, Arizona coralroot, Arizona giant sedge, Arizona manihot, Bartram stonecrop, Beardless chinchweed, Broadleaf ground cherry, Chihuahuan sedge, Chiricahua Mountain brookweed, Coleman's coral-root, Huachuca golden aster, Lemmon milkweed, Lemmon's lupine, Lemmon's stevia, Lemon lily, Metcalfe's tick-trefoil, Nodding blue-eyed grass, Pima Indian mallow, Santa Rita yellowshow, Santa Cruz striped agave, Sonoran noseburn, Southwestern (Box Canyon) muhly, Sycamore Canyon (Weeping) muhly, and Tumamoc globeberry.

The Forest Service found that the selected action **MAY IMPACT INDIVIDUALS BUT IS NOT LIKELY TO RESULT IN A DOWNWARD TREND TOWARD FEDERAL LISTING AS THREATENED OR ENDANGERED OR A LOSS OF POPULATION VIABILITY** for the following amphibian species: Great Plains narrow-mouthed toad, lowland leopard frog, and western barking frog.

The Forest Service found that the selected action **MAY IMPACT INDIVIDUALS BUT IS NOT LIKELY TO RESULT IN A DOWNWARD TREND TOWARD FEDERAL LISTING AS**

THREATENED OR ENDANGERED OR A LOSS OF POPULATION VIABILITY for the following reptile species: Arizona ridge-nosed rattlesnake, giant spotted whiptail, Gila monster, green ratsnake, mountain skink, Slevin's bunchgrass lizard, and Sonoran Desert tortoise.

The Forest Service found that the selected action MAY IMPACT INDIVIDUALS BUT IS NOT LIKELY TO RESULT IN A DOWNWARD TREND TOWARD FEDERAL LISTING AS THREATENED OR ENDANGERED OR A LOSS OF POPULATION VIABILITY for the following bird species: Abert's towhee, American peregrine falcon, Arizona grasshopper sparrow, Baird's sparrow, broad-billed hummingbird, buff-collared nightjar, cactus ferruginous pygmy-owl, common blackhawk, elegant trogon, Gould's turkey, Lucifer hummingbird, northern beardless- tyrannulet, northern goshawk, northern gray hawk, varied bunting, violet-crowned hummingbird, and whiskered screech-owl.

Forest Service found that the selected action MAY IMPACT INDIVIDUALS BUT IS NOT LIKELY TO RESULT IN A DOWNWARD TREND TOWARD FEDERAL LISTING AS THREATENED OR ENDANGERED OR A LOSS OF POPULATION VIABILITY for the following fish species: longfin dace.

Forest Service found that the selected action MAY IMPACT INDIVIDUALS BUT IS NOT LIKELY TO RESULT IN A DOWNWARD TREND TOWARD FEDERAL LISTING AS THREATENED OR ENDANGERED OR A LOSS OF POPULATION VIABILITY for the following invertebrate species: Cestus skipper.

Forest Service found that the selected action MAY IMPACT INDIVIDUALS BUT IS NOT LIKELY TO RESULT IN A DOWNWARD TREND TOWARD FEDERAL LISTING AS THREATENED OR ENDANGERED OR A LOSS OF POPULATION VIABILITY for the following mammal species: Allen's big-eared bat, Arizona shrew, California leaf-nosed bat, Cockrum's desert shrew, fulvous harvest mouse, greater western mastiff bat, hooded skunk, Merriam's Mouse, Mexican long-tongued bat, northern pygmy mouse, pale Townsend's big-eared bat, Plains harvest mouse, pocketed free-tailed bat, western red bat, western yellow bat, white-nosed coati, and yellow-nosed cotton rat.

I find the selected action meets the direction in FSM 2670.12 regarding sensitive species as described in the biological evaluation.

## **8.10 Migratory Bird Treaty Act of 1918, and Executive Order 13186**

The Migratory Bird Treaty Act, as amended, makes it illegal for anyone to take, possess, import, export, transport, sell, purchase, barter, or offer for sale, purchase, or barter, any migratory bird, or the parts, nests, or eggs of such a bird except under the terms of a valid permit issued pursuant to Federal regulations.

Executive Order (EO) 13186 requires analysis of effects of federal actions on migratory birds as part of the environmental analysis process. Under a memorandum of understanding between the Forest Service and the USFWS, the Forest Service will evaluate the effects on migratory birds, focusing first on species of management concern, along with their priority habitats and key risk factors.

While the selected action will result in take of migratory bird species, approval of a final MPO has been determined to be in compliance with requirements of the Migratory Bird Treaty Act (see the "Biological Resources" resource section in chapter 3 of the FEIS) and EO 13186. Therefore, I find the selected action meets the intent of the Migratory Bird Treaty Act, as amended.

### **8.11 Water Pollution Control Act of 1972 (Clean Water Act)**

The Federal Water Pollution Control Act of 1972 (PL 92-500) as amended in 1977 (PL 95-217) and 1987 (PL 100-4) is also known as the CWA. The CWA establishes a non-degradation policy for all federally proposed projects to be accomplished through planning, application, and monitoring of BMPs. Identification of BMPs is mandated by Section 319 of the Water Quality Act of 1987, which states, “It is national policy that programs for the control of non-point sources of pollution be developed and implemented.” Sediment control BMPs are required for road construction and maintenance. The stormwater permit(s), if needed, will also require BMPs for operational control of runoff and sediment.

The Forest Service is responsible for ensuring that mine operators on NFS lands obtain the proper permits and certifications to demonstrate they comply with applicable Federal and State water quality standards, including regulations issued pursuant to the CWA. My decision to approve the MPO requires that the proponent obtain 401 certification from the ADEQ, unless the ADEQ waives its issuance. Furthermore, if the USACE determines that a permit is required, the proponent must obtain the Section 404 permit to be in compliance with the CWA. The issuance of the 401 certification and/or other applicable water quality permits, along with the USACE’s permit decision and conditions on the 404 permit, constitute compliance with CWA requirements. Therefore, with these conditions in place, I find that the selected action would meet the Clean Water Act.

### **8.12 Clean Air Act of 1963**

The CAA, as amended, is designed to control air pollution on a national level by establishing a Federal program for monitoring and controlling air pollution by regulating air emissions from stationary and mobile sources. The Forest Service is responsible for ensuring that mine operators on NFS lands comply with applicable Federal and State air quality standards, including the CAA requirements. Consequently, the proponent will be required to obtain a State of Arizona air quality permit for operation of certain equipment.

The ADEQ air quality class II synthetic minor permit (referred to as the air quality permit) for the Rosemont Copper Project was issued in January 2013. Issuance of the permit underwent court review (see section 9.2.2 of this document for further detail), but was ultimately upheld by the Arizona Court of Appeals in July 2016.

The final MPO will be in compliance with State and Federal CAA requirements. Therefore, I find that the selected action meets the Clean Air Act, as amended.

### **8.13 Federal Noxious Weed Act of 1974 and Invasive Species (Executive Order 12112)**

The Noxious Weed Act was established for the control and eradication of noxious weeds, and the regulation of the movement in interstate or foreign commerce of noxious weeds and potential carriers thereof, and for other purposes. Similarly, EO 13112 directs Federal agencies (in part) to prevent the introduction of invasive species; provide for their control; and minimize the economic, ecological, and human health impacts that invasive species cause.

The proponent is required as a condition of the final MPO to update their invasive species management plan in coordination with the Coronado. Preparation and implementation of this plan will meet the requirements of the Noxious Weed Act. The invasive species management plan will address

the treatment and control of noxious weeds throughout all mine and transmission line facilities. Therefore, I find that the selected alternative and transmission line comply with EO 13112 and the Federal Weed Act.

#### **8.14 Wetlands (Executive Order 11990)**

EO 11990 requires Federal agencies to avoid, to the extent possible, the long- and short-term adverse effects associated with the destruction or modification of wetlands. Federal agencies must find that there is no practicable alternative to new construction located in wetlands, and that the selected action includes all practicable measures to minimize harm to wetlands. Agencies may take into account economic, environmental, and other pertinent factors in making this finding.

Section 404 of the CWA authorizes the USACE to issue permits for activities that will result in the placement of dredged or fill material in WUS. Before a permit can be issued, Section 404(b)(1) guidelines require that projects avoid impacts to the extent possible, minimize impacts that cannot be avoided, and provide compensatory mitigation for impacts that occur. The selected action is estimated to directly impact a total of 40.0 acres of potentially jurisdictional WUS. The proponent will be required by conditions in the final MPO to obtain Section 404 approval from the USACE prior to impacting the potentially jurisdictional WUS, if the USACE determines that a permit is required. The issuance of the 404 permit will affirm my finding that the selected action complies with Executive Order 11990.

#### **8.15 Floodplains (Executive Order 11988)**

EO 11988, as amended by EO 13690, requires Federal agencies to avoid to the extent possible the long- and short-term adverse impacts associated with the occupancy and modification of floodplains and to avoid direct and indirect support of floodplain development wherever there is a practicable alternative. Federal agencies must take floodplain management into account, consistent with the Federal Flood Risk Management Standard, when formulating or evaluating water and land use plans and require land and water resources use appropriate to the degree of flood hazard involved.

Operations under the final MPO will have limited impacts to floodplains. The only construction activities that will occur within a floodplain are associated with the utility corridor. These activities are necessary for the project, and no feasible alternative to their implementation was identified in the EIS analysis.

Due to the limited area of impacted floodplains, I find that approval of the Rosemont Copper MPO will be in compliance with Executive Order 11988.

#### **8.16 Environmental Justice (Executive Order 12898)**

EO 12898 requires Federal agencies to identify and address, as appropriate, disproportionately high and adverse human health or environmental effects on minority and low-income populations when implementing their respective programs, including American Indian programs. The Rosemont Copper Project FEIS analysis of environmental justice follows the CEQ's guidance on environmental justice, the EPA's guidance on environmental justice, and the U.S. Department of Agriculture's regulation on environmental justice. The U.S. Department of Agriculture's regulation indicates that an effect on a minority or a low-income population is disproportionately high and adverse if the adverse effect is appreciably more severe or greater in magnitude than the adverse effect that will be suffered by the nonminority population and/or non-low-income population.

The Coronado's approval of the final MPO will result in disproportionate adverse environmental effects on the Tohono O'odham Nation and the other consulting tribes with interests in the project area, which qualify as minority or low-income communities (FEIS, table 238, p. 1123). During consultation with Native American tribes, the Tohono O'odham Nation and the Pascua Yaqui Tribe (environmental justice communities because of low-income and minority percentages) expressed concern over the potential disturbance of ancestral villages, human remains, sacred sites, and traditional resource-collection areas that would be impacted by all of the action alternatives. The Tohono O'odham Nation and the Pascua Yaqui Tribe also expressed concern over issues relating to water, air, wildlife, vegetation, scenery, and other resources they consider integral to their heritage.

Although the physical boundaries of the reservations of the Tohono O'odham Nation and the Pascua Yaqui Tribe are not within the Rosemont Copper project area boundary, disturbance of the sites within the project area would result in a disproportionate impact to the Tohono O'odham Nation and the Pascua Yaqui Tribe, given their historical connection to the land. The potential impacts to archaeological and cultural sites are directly related to the concerns that the Tohono O'odham Nation expressed regarding the United Nations Declaration on the Rights of Indigenous Peoples, and the potential impacts to the Tohono O'odham Nation's and the Pascua Yaqui Tribe's cultural identity and religious practices. Compliance with existing laws and regulations, including Section 106 of the NHPA and the Native American Graves Protection and Repatriation Act, may alleviate some of the adverse impacts to the Tohono O'odham Nation and the Pascua Yaqui Tribe, to the point where the impacts would no longer be disproportionate to the community. However, given the known presence of ancestral villages, human remains, sacred sites, and traditional resource collection areas and the Tohono O'odham Nation's statement that disturbance would cause spiritual harm to the earth and to the people present now and in the future, it is unlikely that compliance and/or mitigation would substantially relieve the disproportionality of the impacts to the Tohono O'odham Nation and the Pascua Yaqui Tribe. These effects would also apply to the other consulting tribes with interests in the project area.

The Hispanic communities of Santa Cruz County, South Tucson, and Rio Rico meet criteria for environmental justice communities, but are not expected to experience disproportionate impacts. Refer to the "Socioeconomics and Environmental Justice" resource section in chapter 3 of the FEIS for further details.

I find that the selected action complies with Executive Order 12898.

### **8.17 Planning for Federal Sustainability in the Next Decade (Executive Order 13514)**

This EO, signed on October 5, 2009, makes reduction of greenhouse gas emissions a priority for Federal agencies. The selected action is responsive to this EO by including an analysis of the impacts to climate change from increased greenhouse gases in the FEIS.

### **8.18 National Historic Preservation Act of 1966**

Section 106 of the NHPA and its implementing regulations under 36 CFR 800 require all Federal agencies to consider effects of Federal actions on cultural resources eligible for or listed in the NRHP. Traditional cultural properties are also protected under Section 106 of the NHPA.

In a letter dated February 15, 2013, the Arizona SHPO concurred with the Coronado regarding the area of potential effects (APE) and that the project would result in adverse effects on historic properties. The Forest Service completed a cultural resource survey of the APE of operations under the final MPO in compliance with the requirements of Section 106 of the NHPA (16 U.S.C. 470 et seq.) and the Forest Service Region 3 Programmatic Agreement with SHPO. An MOA was developed and agreed to by a number of signatories, including the Coronado, Rosemont Copper, Arizona SHPO, ACHP, and others. The MOA is provided in appendix D of the FEIS.

Based on the consolation described above, I find that the selected action complies with the National Historic Preservation Act, as amended.

### **8.19 Tribal Consultation and Coordination (Executive Order 13175) and Consultation with Tribes on Indian Sacred Sites (Executive Order 13007)**

EO 13176 directs executive departments and Federal agencies to engage in regular and meaningful consultation and collaboration with tribal officials in the development of Federal policies that have tribal implications, and are responsible for strengthening the government-to-government relationship between the United States and Indian tribes.

The Coronado consulted with 12 tribes during the development of the EIS. Ten of these tribes actively participated in consultation activities. Primary consultation between the Forest Service and tribal entities has included meetings, field visits, conference calls, phone calls, and letters. The tribes were consulted prior to and throughout the planning process for this project. The Coronado received comments from consulting tribes during the scoping process, during various meetings and fieldtrips, and in response to the DEIS. Written correspondence is located in the project record; a listing of meetings and field trips can be found in appendix E of the FEIS.

EO 13007 requires Federal agencies, to the extent practicable, to accommodate access to and use of sacred sites by Indian religious practitioners, and to avoid adversely affecting the physical integrity of such sacred sites. As described in section 6.4 of this document, both Supervisor Upchurch and I consulted with tribes regarding impacts to sacred sites. While sacred sites will be impacted by the selected action (see the “Cultural Resources” resource section in chapter 3 of the FEIS and section 3.1.4.6 of this document), mitigation measures have been developed to reduce impacts to the extent practicable, including allowing continued access to sites during mine operations (see FS-CR-01 through FS-CR-11 in appendix B of the FEIS and in section 4.3.2.16 of this document).

I find that the selected action complies with Executive Orders 13176 and 13007.

### **8.20 American Indian Religious Freedom Act of 1978 and Religious Freedom Restoration Act of 1993**

The American Indian Religious Freedom Act states that no Federal lands may be managed in a manner that undermines and frustrates a traditional Native American religion or religious practice, except management decisions for those lands where it is necessary to protect a compelling government interest. The law states, “In making such a management decision, the Federal agency shall attempt to accommodate the various competing interests and shall, to the greatest extent feasible, select the course of action that is least intrusive on traditional Native religions or religious practices.”



The Religious Freedom Restoration Act states that the government shall not substantially burden a person's exercise of religion, with the following exception. A government may substantially burden a person's exercise of religion only if it demonstrates that application of the burden to the person:

(1) is in furtherance of a compelling governmental interest; and (2) is the least restrictive means of furthering that compelling governmental interest. The act allows for judicial relief for a person whose religious exercise has been burdened in violation of this section act.

The Forest Service has a responsibility to ensure that decisions affecting NFS lands do not substantially burden the rights of Native Americans and others to practice their religion.

The Rosemont Copper Project restricts public access to NFS lands within the perimeter fence to ensure public safety. This is necessary because of the many ongoing hazards that will be present in this area from mining and associated activities. In order to minimize the burden to Native American religious practices on these lands, I have required through mitigation measures that the proponent to provide access to Native Americans to springs, vision sites, other sacred sites, and resource collection areas within the project area on a case-by-case basis. This requirement is described in FS-CR-07 in section 4.3.2.16 of this document. Therefore, I find that the selected action complies with the American Indian Religious Freedom Act and Religious Freedom Restoration Act.

## **9.0 Implementation of the MPO**

### **9.1 Forest Service Requirements**

In accordance with 36 CFR 228.5(b), the Forest Service will approve the operations so long as such operations are conducted so as to minimize environmental impacts. The Forest Service has sole authority to approve and administer the MPO to standard. Approval of the MPO does not constitute recognition or certification of ownership to any person. Furthermore, approval of the MPO does not constitute recognition or certification of the validity of any mining claim to which it may relate or to the mineral character of the land on which it lies.

The proposed operations outlined in the final MPO cannot commence on NFS lands without signed written approval from the Forest Service. This decision document does not approve commencement of operations; rather, it indicates my intent to approve the final MPO once the following three criteria have been met.

#### **9.1.1 Submittal of Final MPO with ROD Requirements**

The proponent will submit a signed, revised MPO that incorporates all of the requirements, design features, and mitigations outlined in this ROD that have been determined necessary to minimize adverse impacts on surface resources. Note that some of the Forest Service requirements include the submittal and approval of a series of plans that outline additional details for the operation under the selected action. The Forest Service will review all design, monitoring, and mitigation plans to ensure consistency with FEIS and ROD requirements, and to ensure they have been incorporated into the MPO prior to MPO approval.

In accordance with 36 CFR 228.5(b), pending final approval of the MPO, the authorized officer will approve such operations as may be necessary for timely compliance with the requirements of Federal and State laws, so long as such operations are conducted so that they minimize environmental impacts as prescribed by the authorized officer in accordance with the standards contained in 36 CFR 228.8.

### **9.1.2 Financial Assurance (Reclamation Bond)**

A reclamation bond is a guarantee of faithful performance with the terms and conditions outlined in the final MPO, including the requirements of the ROD. The bond amount is the agencies' estimated cost to complete site reclamation in the event that the operator cannot or will not perform the required reclamation.

The Forest Service is authorized and will require the proponent to furnish a bond or other financial assurance for the MPO (36 CFR 228.13). The Forest Service has developed guidance (2004) for calculating the amount of financial assurance required for mining projects, and it must be developed or reviewed by a Certified Locatable Minerals Administrator. This guidance includes costs to remove structures, regrade and recontour the surface, replace soil, and revegetate the reclaimed land, and it accounts for costs for long-term monitoring and maintenance costs, if such were to be required to meet applicable laws and regulations.

The bond ensures reclamation of surface disturbances to prevent or control damage to the environment. All operations shall be conducted so that, where feasible, they minimize adverse environmental impacts on national forest surface resources, including the following (see 36 CFR 228.8): Air Quality, Water Quality, Solid Wastes, Scenic Values, Fisheries and Wildlife Habitat, Roads, and Reclamation. In addition, bonding will include funds for mitigation of cultural sites disturbed by project activities if implementation is delayed or not completed.

The financial assurance will also include necessary administrative and overhead costs to complete the reclamation if the company were unable or unwilling to do so.

The financial assurance will be required in a readily available bond instrument (i.e., surety bond, irrevocable letter of credit, certificate of deposit, or cash) payable to the Forest Service. The Forest Service reviews reclamation bonds annually for adequacy (FSM 2817.24b), and a comprehensive bond review will be conducted at least every 3 years or at the direction of the responsible Forest Service officer. In the event that an approved plan of operations is modified, the authorized officer will review the initial bond for adequacy and, if necessary, will adjust the bond to conform to the operations plan as modified. Title 36 CFR 228.13(c) says, "In the event that an approved plan of operations is modified in accordance with § 228.4 (d) and (e), the authorized officer will review the initial bond for adequacy and, if necessary, will adjust the bond to conform to the plan as modified."

When reclamation has been completed, the authorized official will notify the proponent that performance under the bond has been completed. When the Forest Service has accepted any portion of the reclamation, the authorized official will notify the proponent of such acceptance and reduce proportionally the amount of the bond thereafter to be required with respect to the remaining reclamation (36 CFR 228.13(d)).

Selection of the bond period may be based on some logical stage of mine development, such as construction, certain facilities' implementation, and/or closure. Initial bond estimates are typically based on the engineering plans for construction, and it is likely that the initial bond for this project will be calculated to cover the construction period (approximately 2 years), with the first periodic review planned for 1 year after construction begins (total estimate of 3 years after the start of construction). The Forest Service process does not require calculation of the bond prior to publication of the FEIS or completion of the NEPA process, as the bond must reflect all activities and mitigations required under the selected action of this decision.

Bond release is performance based and is granted or denied based on the agencies' evaluation. Performance criteria for activities and actions covered by the bond shall be developed and established in the MPO. These criteria must be met prior to bond release unless otherwise agreed to by the Forest Service.

There is no specific time frame for bond release once reclamation activities have been completed. When the Coronado has accepted as completed any portion of the reclamation, the authorized officer shall notify the operator of such acceptance and adjust the amount of bond thereafter to be required with respect to the remaining reclamation.

When reclamation has been completed in accordance with 36 CFR 228.8(g), the authorized official will notify the proponent that performance under the bond has been completed.

Because this project is on both private and Federal lands, both the Forest Service and the Arizona State Mine Inspector have financial assurance and/or bonding requirements. The Arizona State Mine Inspector has expressed an interest in working cooperatively with the Coronado to bond for the project, covering the private lands as well.

Mitigation under Section 404 of the CWA also requires financial assurance. ADEQ requires a permit and bonding as part of the APP for closure and groundwater protection. The proponent has submitted calculations in section 13 of their APP application that include all reclamation costs, including bonds for the Forest Service, Arizona State Mine Inspector, and ADEQ.

### **9.1.3 Clean Water Act 401 Certification**

As stated in FSM 2817.23a, both the Forest Service and the proponent have CWA requirements to meet. The Forest Service cannot authorize an MPO until the CWA 401 certification has been obtained or waived by the designated entity. Furthermore, the Forest Service may not authorize an MPO if the designated entity denies the certification. Therefore, the proponent must provide a copy of the 401 certification to the Forest Service prior to MPO approval. On February 3, 2015, ADEQ issued a 401 certification for the Forest Service's selected action as described in the FEIS and draft ROD, under the condition that the USACE issue a 404 permit for the project.

The proponent must review the 401 certification to ensure that it is compatible with the selected action described in this ROD, and provide a 401 certification to the Coronado that reflects the decisions made in this document.

## **9.2 Other Permits, Licenses, and Authorizations**

Approval of the MPO does not relieve the proponent of the responsibility to comply with other applicable Federal or State laws, rules, or regulations. The proponent must obtain a number of permits provided by other agencies before they can commence with operations on federally administered lands. However approval of this ROD and the final MPO may occur prior to issuance of these permits. Permits and authorizations that may apply to this project are summarized in table 3 in the FEIS on pp. 56–59. Table 3 is not intended to be exhaustive, but rather to highlight the major permits and authorizations that may apply.

The Coronado may accept certification and other approvals issued by State or other Federal agencies as evidence of compliance with similar or parallel requirements of regulations governing mining activities on the national forests. Besides the Forest Service, other agencies that require permits for the

Rosemont Copper Project are: ADEQ, USACE, U.S. Department of Transportation (USDOT), ADWR, ADOT, ASLD, Arizona State Mine Inspector, Arizona Corporation Commission (ACC), Arizona Department of Agriculture (ADA), Town of Sahuarita, and Pima County. Following are descriptions of the current status of selected key permits.<sup>20</sup>

### **9.2.1 Federal Permits, Licenses and Authorizations**

1. At the request of the proponent, USACE reviewed a preliminary delineation for potentially jurisdictional WUS submitted in accordance with regulatory guidance letter no. 08-02. The USACE has determined that potentially jurisdictional WUS are present within the proposed project area. These waters are discussed in the FEIS in the “Surface Water Quality” resource section in chapter 3. USACE project-specific (individual) 404 permit(s) are required for the discharge of dredged or fill material into WUS above a minimal threshold. The proponent chose to assume that the potentially jurisdictional WUS identified will require a 404 permit, and has applied for an individual 404 permit from the USACE. The proponent and the USACE have agreed to treat the potentially jurisdictional WUS as jurisdictional for the purposes of permitting the project; a formal approved jurisdictional delineation has not been requested by the proponent and therefore has not been issued by the USACE. The USACE has indicated that it will rely on the FEIS prepared by the Forest Service, and will issue a ROD that will determine whether or not to issue a permit allowing Rosemont Copper to conduct dredge and fill within WUS (CWA Section 404 permit). To date, this permit has not been issued. The proponent must have an issued permit in order to conduct project activities within the boundaries of WUS that have been determined to be jurisdictional under the CWA.
2. USDOT hazardous materials transportation permit, which governs the transport of hazardous materials as defined by the USDOT. Requires specific employee training and security and contingency planning.
3. EPA hazardous waste identification number authorizes facilities to generate and transport offsite hazardous waste in quantities in excess of 100 kilograms per month (or those that generate acute hazardous waste in quantities exceeding 1 kilogram per month). Requires specific employee training, inspections, and contingency planning.

### **9.2.2 State Permits, Licenses, and Authorizations**

1. ADEQ authorized an air quality class II synthetic minor permit on January 21, 2013, that applies to emissions from activities during operations. This permit requires inspection, sampling, monitoring, contingency/emergency planning, notification, reporting, and compliance certification. State permits may be modified after approval to reflect changes in the selected action.
2. An AZPDES multisector general permit was authorized by ADEQ on February 7, 2013. As a requirement of this permit, a SWPPP must be developed and submitted to ADEQ for review. An AZPDES permit must be obtained prior to the discharge of any pollutant, including stormwater from construction areas, to WUS. ADEQ may require a separate AZPDES construction general permit and SWPPP for temporary construction activities. State permits may be modified after approval to reflect changes in the selected action.

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<sup>20</sup> Also see table 3 on pp. 56–58 in the FEIS and table A-2 in appendix A of this document.

3. ADEQ APP regulates the direct or indirect addition of pollutants to groundwater. This permit was issued on April 3, 2012, and will require updating to reflect the selected action. The APP specifies best available demonstrated control technology (design criteria and/or operation practices) to control discharge of pollutants to groundwater and establishes aquifer water quality limits enforced at points of compliance specified for the facility. It requires monitoring, reporting, contingency planning, and financial assurance. State permits may be modified after approval to reflect changes in the selected action.
4. ADEQ authorized a CWA section 401 water quality certification on February 3, 2015, under the condition that the USACE issue a 404 permit for the project.
5. ADEQ Hazardous Waste Management Program governs the management of hazardous waste (including transport and disposal). Requirements differ somewhat, depending on the volume and nature of hazardous waste generated; however, in general, it requires inspection, training, and contingency/emergency planning.
6. ACC Certificate of Environmental Compatibility (CEC) regulates the placement of electrical transmission lines and ensures compliance with ARS 40-360. This permit was issued on June 12, 2012.
7. ADA agriculture land clearing permit authorizes disturbance and clearing of State protected native plants, as required under the Arizona Native Plant Law.
8. ADOT ROW encroachment permit authorizes the construction of the intersections for the primary access road in the ROW of SR 83.
9. ADWR Mineral Extraction and Metallurgical Processing Groundwater Withdrawal Permit No. 59-215979.0000 authorizes withdrawal of groundwater. This permit was issued on January 18, 2008, and is good for 20 years; at that time, the proponent must reapply.
10. ASLD will issue multiple permits to allow water and electrical supply lines to be constructed and operated on ASLD administered lands.
11. ADWR water storage permits. The proponent currently has three water storage permits with ADWR. Note that the proponent is not required by ADWR to store water, but they have elected to store water in the Tucson Active Management Area. As of December 31, 2014, their long-term storage balance was 42,593.02 acre-feet of Central Arizona Project credits.

### **9.2.3 Local Permits, Licenses, and Authorizations**

1. Pima County air activity permits may apply for certain activities associated with the project.
2. The Town of Sahuarita issued a license for ROW encroachment on June 24, 2013, to allow the proponent to encroach on portions of the Town of Sahuarita's ROW for the purpose of construction, installation, operation, maintenance, and repair of a water delivery pipeline and related facilities. See section 4.3.2.17 of this document for further detail.

## **9.3 Procedures for Change During Implementation**

### **9.3.1 Modifications to MPO**

Modifications to the MPO may be proposed either by the proponent or requested by the Forest Service due to reasons such as unforeseen significant impacts to surface resources. The monitoring plan described in appendix B of the FEIS and in this ROD contains monitoring specifically designed to identify whether impacts of the project are within those projected in the impact analysis disclosed in

the FEIS. The Coronado will evaluate the results of project implementation monitoring, including field verification, on a regular basis and determine whether the monitoring plan is effective in determining project impacts. The Coronado may change aspects of the monitoring plan at any time in order to make the plan more effective at determining project impacts.

If a modification is proposed, it will be reviewed by the Forest Service and a determination made whether additional NEPA action is necessary. Connected or interrelated proposed changes regarding particular areas or specific activities will be considered together in making this determination. The cumulative impacts of these changes will also be considered.

### **9.3.2 Non-compliance with MPO**

Should the proponent be non-compliant with the MPO, which would include non-compliance with the requirements of the USFWS BO or SHPO MOA, the Forest Service would take appropriate action, which could include enforcement or consultation with the appropriate agency to determine whether further action may be needed. If an operator fails to comply with the regulations or the approved MPO and the non-compliance is unnecessarily or unreasonably causing injury, loss, or damage to surface resources, the authorized officer shall serve a notice of non-compliance upon the operator in accordance with 36 CFR 228.7. Furthermore, if the proponent is notified of non-compliance by another permitting agency, the proponent is responsible for notifying the Forest Service of the situation in a timely manner. Acting within its authority, the Forest Service will review the situation and determine whether and what action may be needed by the Forest Service.

### **9.3.3 Interim Management**

The proponent will submit a conceptual interim closure plan as part of the final MPO, identifying the actions to be taken to secure and stabilize the site in the event that operations temporarily cease.

Upon approval of the final MPO and commencement of construction, the proponent will be required to execute the interim closure plan no later than 90 days after cessation of operations (i.e., blasting and ore extraction, ore processing, or production of concentrate), or an alternative time frame approved by the Forest Supervisor. In addition, no later than 90 days after cessation of operations, the proponent will submit for approval by the Coronado an updated detailed interim closure plan that meets the requirements of CFR 228.10, and includes specific actions to be taken to secure and stabilize the site, a date for recommencement of operations with a revised mine life schedule, or a date for implementation of final reclamation and closure.

Upon approval of the updated interim closure plan, the proponent will execute the updated plan in lieu of the conceptual interim closure plan in the MPO. At this time, the proponent will need to ensure compliance with requirements under 36 CFR 228.10 for cessation of operations, including the requirement for submittal of annual statements (36 CFR 228.10(c)). The proponent will also supply annually an updated interim closure plan for approval by the Forest Service. For the duration of interim closure activities, the Forest Service may also choose to conduct annual bond reviews and recalculations, regardless of the previous planned bonding schedule.

The Forest Service may direct the proponent to implement final reclamation and closure plans in the event that the proponent is in non-compliance with requirements contained in the ROD and final MPO, including required monitoring, best management practices, mitigation, and security, or in the event that the approved dates contained in the updated interim closure plan for recommencement of operations or implementation of final reclamation and closure have been exceeded.

## 10.0 Effective Date

In accordance with 36 CFR 218.11(b), the ROD may be signed when all concerns and instructions identified by the reviewing officer in the objection response letter have been addressed. At this time, all items directed by the Regional Forester following the 2014 objection period have been accomplished, including completion of the USFWS consultation reinitiation (BO, April 2016), and preparation of a project errata. In addition, two SIRs were prepared in May 2015 and July 2016 to address new information and changed conditions.

Furthermore, implementation may begin following the approval of the MPO. As stated above in section 9.1, written MPO approval can be obtained once the following three criteria have been met: submittal of the final MPO with the ROD requirements incorporated; submittal of an acceptable financial assurance bond (36 CFR 228.13); and proof of CWA Section 401 certification (FSM 2817.23a).

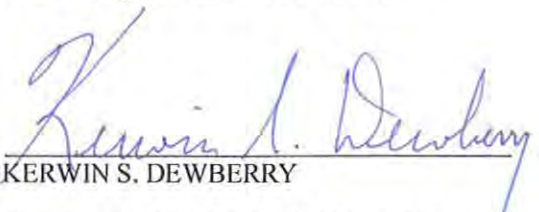
## 11.0 Project Information


The Rosemont Copper Project FEIS, ROD, and supporting documentation can be found on the project website at <http://rosemonteis.us>. For further information on this project or the decision, please contact:

Mindy Sue Vogel  
Geologist  
NFS-WO Minerals & Geology Management  
Minerals & Geology Program Manager & Rosemont Project Manager 2012–2017  
1617 Cole Boulevard  
Lakewood, Colorado 80401  
Phone: (303) 275-5250  
Email: [msvogel@fs.fed.us](mailto:msvogel@fs.fed.us)

Sarah Elizabeth Baxter  
Geologist  
Mineral Resources Project Manager  
Rosemont Copper Project Manager – 2017 to present  
Coronado National Forest  
300 West Congress Street  
Tucson, Arizona 85701  
Phone: (520) 388-8348  
Email: [sbaxter@fs.fed.us](mailto:sbaxter@fs.fed.us)

## 12.0 Signature and Date

  
KERWIN S. DEWBERRY  
Forest Supervisor, Coronado National Forest

  
Date

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# Appendix A

## Detailed Description of the Selected Action

### A-1 Mine Facilities and Activities

Blasting and drilling activities will occur in the mine pit. The waste rock and tailings will be transported from the mine pit and processed within the corresponding facilities (figure A-1).

A perimeter fence and security fence will be built to encompass the primary mining and processing operations and facilities, excluding portions of the access roads and utility lines. Further information is provided under the “Perimeter and Security Fences” section below.

### A-2 Pit

An estimated 18 to 24 months will be needed to prepare for full-scale mining operations, including stripping overlying rock, constructing access and haul roads, clearing and grubbing the pit and tailings and waste rock facilities, and training work crews. Open-pit mining will be used to excavate ore to recover copper, molybdenum, and silver. The roughly circular open-pit mine will measure, at end of mine life, up to 6,500 feet in diameter, with a final depth of up to 3,000 feet (3,050 feet above mean sea level), depending on the elevation of the pit rim. Pit slope angles between in-pit roads will be controlled by rock strength and will range between 33 and 50 degrees. The pit will disturb about 955 acres, of which 590 acres will be on private land and 365 acres will be on NFS lands.

### A-3 Blasting and Drilling

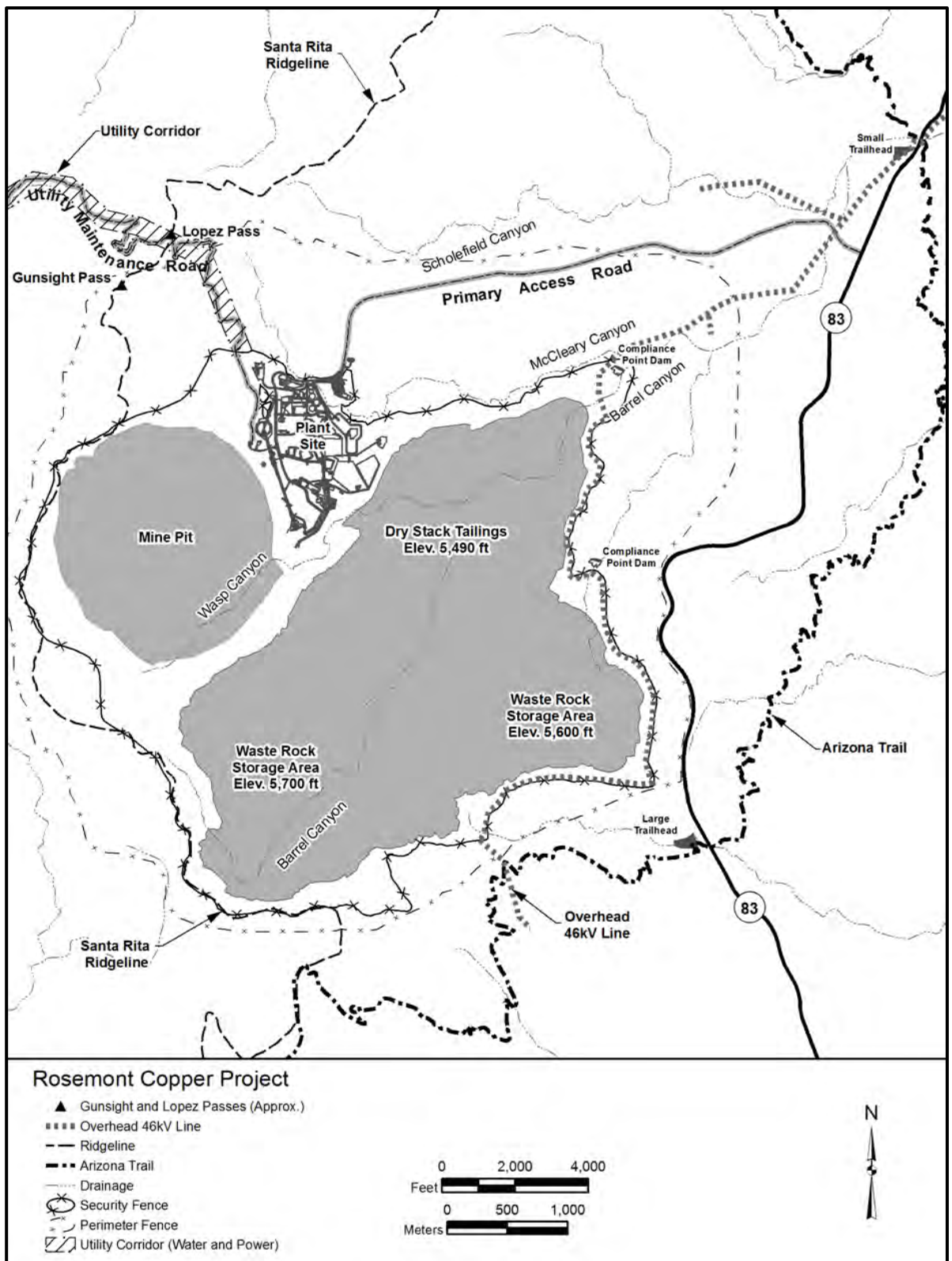
Explosives storage, transport, and use will adhere to all rules, regulations, and safety standards. Once a day on average, an ammonium nitrate and fuel oil explosive will be detonated in the mine pit. This will occur during daylight hours only, generally between 9 a.m. and 4 p.m. Dry bulk ammonium nitrate will be transported for use from storage silos at the adjacent plant site. Blasting detonators, such as caps, delays, cord, and boosters, will be stored in special magazines and transported to the pit in separate vehicles.

If wet-hole blasting is necessary, an emulsion and/or slurry will be transported to the pit from onsite storage tanks. Mixed ammonium nitrate and fuel oil will be loaded and transported using special trucks designed for that purpose.

### A-4 Mineral Processing

The Rosemont deposit is primarily sulfide minerals with a cap of oxide minerals nearer the surface. The mineral material will be mined over 20 to 25 years at an average rate of 75,000 tons per day.

The Rosemont deposit is primarily sulfide ore with a cap of oxide ore nearer the surface. Most of the oxide minerals will be removed in the first 6 to 7 years of the project, while sulfide minerals will be produced throughout the mine operation. Disposal of waste rock will include processes to segregate and encapsulate waste rock believed to have the potential for acid rock drainage by waste rock that has acid-buffering characteristics. Testing of waste rock for acid rock drainage potential is required (see mitigation measure FS-GW-03 in appendix B of the FEIS).



**Figure A-1. Selected action footprint. (Modifications may be made to ensure that the landform and plant facilities comply with this decision; see requirement #26 in section 4.3.1.)**

Exploratory drilling by Rosemont Copper has occurred on private and NFS lands, beginning in 2006 and continuing to 2015. Characterization of the mineral deposit has been updated several times during this period. The most recent analysis resulted in mineral resource and updated metallurgical test work being completed, with estimated, measured, and indicated mineral resources of 919.3 million tons of sulfide mineral and 63.4 million tons of oxide minerals. There were inferred resources of 138.6 million tons of sulfide and 1 million tons of oxide ores. Because the latest feasibility study completed for the selected action does not include oxide ore processing, a portion of the oxide mineralization (65 million tons) is instead categorized as waste rock. These mineral resources consist of proven and probable mineral reserves of nearly 661.4 million tons of sulfide. The most recent feasibility study states that “the ultimate pit is currently under-optimized because of the capacity limitations of the tailings storage facility,” meaning that when the pit reaches a depth of 3,050 feet above mean sea level, removal of additional mineral material will be constrained because of the volume limitations of tailings and waste rock facility designs and footprints.

#### **A-4.1 Oxide Ore Process**

In the selected action, the oxide ore that has a high enough grade would be processed along with the sulfide ore. The lower grade oxide ore would not be processed and would be disposed of as waste rock (estimated at 65 million tons). See the FEIS, pp. 32–35, for further information.

The selected action contains a materials testing program and waste rock segregation plan to ensure that placement of potentially acid-generating waste rock is not on the outer slopes or other areas subject to contact with stormwater (FEIS, p. 393). As a whole, the body of waste rock is expected to have little potential for acid rock drainage, as there are significant quantities of acid neutralizing rock and relatively little potentially acid-generating waste rock. However, proper placement of these two types of waste rock is necessary to take advantage of the acid neutralization potential. The waste rock segregation plan will be incorporated into the design of the facility and will be informed by continued monitoring and testing of waste rock for acid-generating potential as it is developed from the mine and placed into the waste rock facility (FEIS, p. 397). In addition, mitigation and monitoring measure OA-GW-02 requires monitoring to ensure that placement of waste rock, potentially acid-generating, and non-acid-generating rock types complies with placement requirements and approved waste rock segregation plan in the APP (see OA-GW-02 in appendix B of the FEIS).

#### **A-4.2 Sulfide Ore Process**

Sulfide ore will be sent through a circuit of crushers, grinding mills, and ball mills to reduce the rock size to the consistency of sand. A flotation circuit will separate the copper and molybdenum sulfides from the waste material to create a concentrate. The concentrates will then be dewatered, thickened, filtered, and loaded for shipment. The waste or tailings from the sulfide ore processing will be dewatered using large-capacity pressure filters, which will essentially squeeze the water out of the tailings to create a dry cake with a moisture content of 12 to 18 percent. The filtered tailings will then be conveyed to and placed in the dry-stack tailings disposal facility, while the water will return to the process for recycled use.

##### ***A-4.2.1 Process Water Temporary Storage Pond***

The process water temporary storage pond facility is a component of the sulfide ore process and will be regulated under the APP. The facility will be divided into two sections (ponds), termed the process water and the temporary storage ponds. In general, the reservoir in the process water pond will be

managed to optimize containment of recirculated water, and the temporary storage pond will be kept at low fill levels to optimize room for stormwater runoff. Incline-mounted or barge pumps in each pond will pump captured recirculated process water and stormwater to the process circuit. The pumps will also allow each pond to be emptied for inspection.

Process water will be retained in a double-lined surface impoundment with a capacity of 70 million gallons, which will store 3 days of water reclaimed from the tailings filters and mixed with fresh water from Rosemont Copper's supply wells near Sahuarita. Three days' storage will allow for some flexibility and emergency storage in case of a service interruption at the plant facilities. Additionally, during operations, if ponded stormwater on the top surface of the dry-stack tailings facilities exceeds timely evaporation, it will be pumped to the process water pond to limit infiltration to the tailings.

The temporary storage portion will be a single-lined surface impoundment that will receive stormwater runoff from the plant site area, including a small drainage basin located west of the pond. As currently designed, the temporary storage portion will provide containment of a 100-year, 24-hour storm event. This pond will have a storage capacity of approximately 38 million gallons. Under the APP, this pond will need to be emptied of stormwater within 60 days.

A double liner with a leak collection and removal system is added to the process water temporary storage pond, which improves the containment of process water and separation of process water from stormwater. Construction details for the process water temporary storage pond liners are discussed in the "Groundwater Quality and Geochemistry" resource section in chapter 3 of the FEIS.

## **A-5 Waste Rock and Tailings Placement**

Waste rock will be placed in areas outside the open pit. Dewatered tailings will be sent via conveyor belt to the unlined dry-stack tailings disposal area, where they will be deposited, stacked, and compacted. Ultimately, the tailings will be encapsulated, or covered completely, by a thick layer of waste rock.

### **A-5.1 Waste Rock and Tailings Facilities**

The selected action will place all of the tailings and waste rock in upper Barrel Canyon and the lower portion of Wasp Canyon, prohibiting disposal of mine tailings or waste in McCleary Canyon. This change will permanently maintain the contribution of surface water flow from McCleary Canyon to the Barrel Canyon drainage system, albeit in a somewhat decreased capacity during operations because runoff from the plant site is required to be retained. It will also increase the drainage area that may be diverted through the McCleary Canyon channel, in contrast to the proposed action and the Phased Tailings Alternative.

The selected action incorporates a waste rock perimeter buttress that will completely surround the dry-stack tailings.

### **A-5.2 Ore, Waste Rock, and Tailings Transport**

Transportation of ore, waste rock, and tailings will occur only in the mine area, which will be closed to the public for safety reasons. Ore and waste rock will be moved in large, off-highway haul trucks. Roads for the haul trucks will be constructed both within the open pit and between the pit and the plant and tailings and waste rock facilities. In accordance with MSHA regulations (30 CFR 1-199), haul roads will be approximately 125 feet wide, including safety berms and drainage ditches, and from 10

to 12 percent slope or less. Maximum truck speed will be 35 miles per hour. Haul roads will be temporary and will regularly be moved based on where materials are proposed to be placed. These temporary roads will be gradually covered by waste rock as it is placed. Any temporary haul roads remaining after all waste rock has been placed will be decommissioned unless the Coronado determines that they are desirable for future management or other purposes.

Sulfide ore will be transported from the pit to a crusher in mine haul trucks; following crushing, the sulfide ore will be transported via conveyors to the grinding and flotation unit. Dewatered tailings will be transported using a conveyor system from the dewatering plant to the tailings facility for final placement. The conveyors will transfer the tailings to a radial stacker, and then the tailings will be spread and compacted by a dozer. The compacted tailings will be encapsulated by a perimeter buttress formed of waste rock and a waste rock “cap” that will be placed by haul trucks traveling on haul roads. Between 3 to 5 feet of waste rock will be placed on the top surface of the tailings facility during closure, which will be covered with an estimated 1 foot of growth media.

## **A-6 Plant Site and Support Facilities**

Facilities necessary to support mining and ore processing operations include buildings and structures, such as administration buildings, change house, warehouse with laydown yards, analytical laboratory, light vehicle and process maintenance building, mine truck shop, mine truck wash and lube facility, powder magazines and ammonium nitrate storage, main guard shack with truck scale, and fuel and lubricant storage and dispensing facilities.

### **A-6.1 Plant Site**

The selected action eliminates the oxide ore processing buildings and instead uses that land for materials laydown yards, as shown in figure A-2. It also relocates some facilities to address geotechnical concerns regarding differential settlement. These modifications also provide secondary containment opportunities for process solutions, where possible, should there be interrupted operations, and add stormwater catchments, where necessary. In addition, the design of the coarse ore stockpile is modified to a 400-foot covered geodesic dome structure and associated conveyor systems, to avoid encroaching on a population of the Forest Service sensitive plant species, Coleman’s coral-root, a wild orchid (see FS-BR-02 in appendix B of the FEIS).

### **A-6.2 Lighting**

The selected action contains an updated lighting mitigation plan that mitigates the lighting system that was proposed in the preliminary MPO through its inclusion of the following components:

- Full cut-off, solid-state light-emitting diode (LED) lighting systems;
- High fitted target efficacy lighting systems and optics;
- Specific-purpose lighting systems with optics that match task requirements;
- Adaptive lighting controls to dim or extinguish lighting when not needed and to provide immediate “instant on” emergency or operational lighting;
- Where color rendering light is needed, use of color-tuned solid-state light sources for superior energy efficiency and optical control with attenuated short wavelengths to minimize Rayleigh scattering;

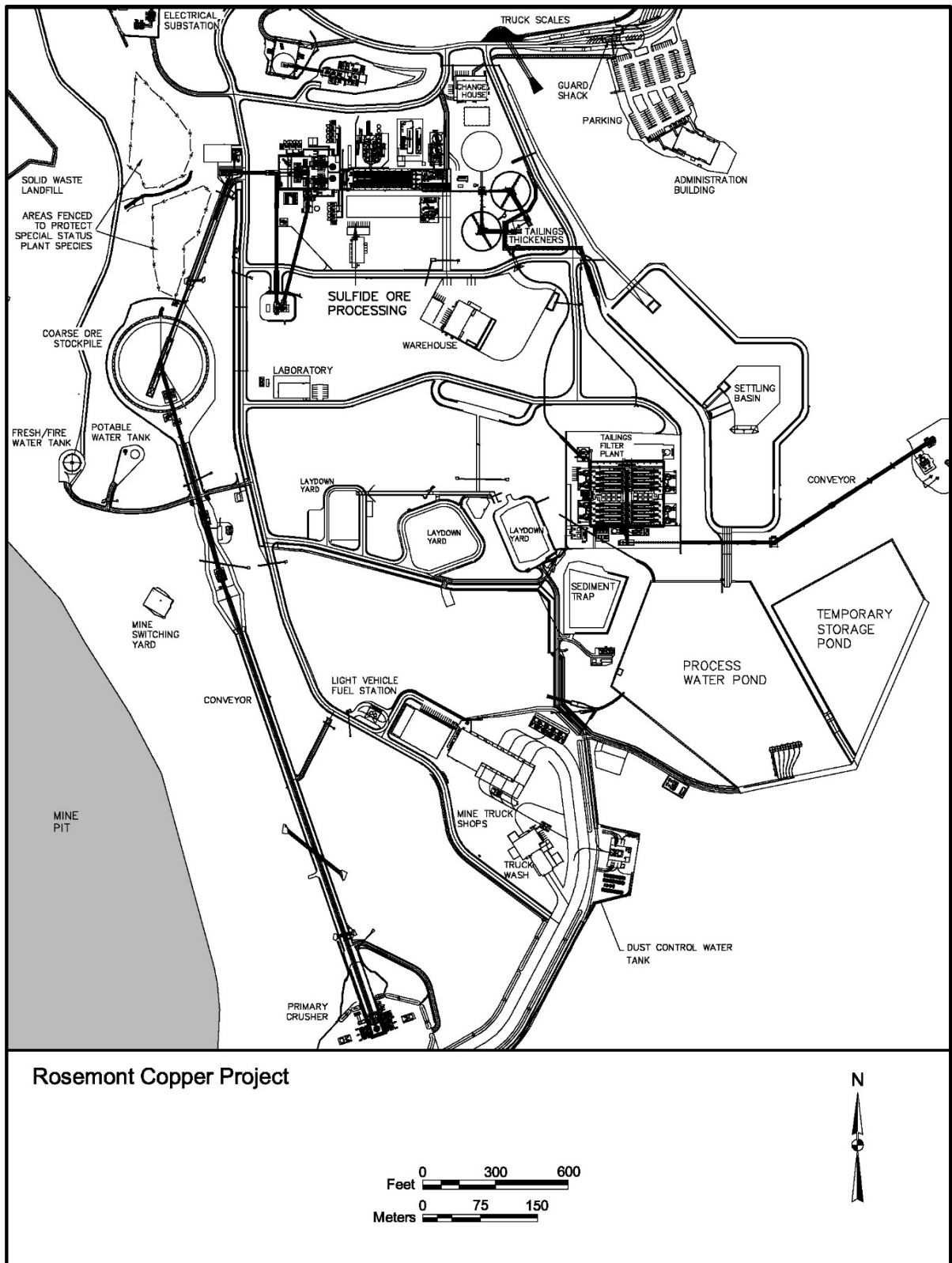


Figure A-2. Selected action plant site. (Modifications may be made to ensure that the landform and plant facilities comply with this ROD; see requirement #26 in section 4.3.1.)

- Where color rendering light is not needed, use of narrow-band solid-state lighting to emulate low-pressure sodium but with superior optical and electrical control; and
- Color-adaptive lighting to shift from narrow-band amber emissions to higher color rendering light when color rendering is needed.

The primary access road and onsite roadways will be not be continuously lighted, and will use narrow-band LED lighting fixtures to light conflict points.

Elevated hazard areas, such as the mine process area and pit, will mostly require high-pressure sodium lighting or solid-state LED lighting fixtures that will be aimed and shielded to minimize light pollution. These fixtures will be located around the buildings in the process areas and concentrated around areas in the pit where large shovels are actively being operated. With a total of three shovels, three drills, and two loaders with various sized lamps, there will numerous beam-shaped LED fixtures that will direct more useful light to tasks. The only narrow-band lighting fixtures in this area will be used at a refueling site and explosives storage facility.

According to the detailed site general electrical design that was based on the lighting plan proposed by Rosemont Copper before the DEIS, there will be a total of 12 200-watt and 475 90-watt low-pressure sodium fixtures, and there will be 19 200-watt, 86 90-watt, 11 70-watt, 21 50-watt, and 334 35-watt high-pressure sodium fixtures. Although the mitigation will implement different fixtures, it is not expected that the number of fixtures will decrease; instead, there will be a more focused lighting pattern.

Further discussion of the updated lighting mitigation plan is included in the following locations in the FEIS: appendix B, “Mitigation and Monitoring Plan;” and in the “Dark Skies” resource section in chapter 3. Impacts associated with artificial night lighting are described in a variety of resource sections in chapter 3.

### **A-6.3 Solid, Hazardous, and Sanitary Waste**

Solid waste will be recycled as appropriate and feasible. Nonrecyclable, nonhazardous waste will be disposed of at an onsite landfill located on about 2 acres of Rosemont Copper’s private land.

Activities at the landfill will be regulated by the APP for Rosemont Copper Mine facilities.

The excavated depth of the landfill will range from 5 to 43 feet, with a minimum excavation elevation of approximately 5,190 feet above mean sea level; maximum height of the landfill at closure will be no more than 5,280 feet above mean sea level. All putrescent materials or other items that cannot be disposed of at that location will be transported offsite for disposal by a commercial vendor.

Hazardous waste will be handled and disposed of in accordance with Resource Conservation and Recovery Act regulations. The Resource Conservation and Recovery Act gives the EPA the authority to control hazardous waste from “cradle to grave.” This includes the generation, transportation, treatment, storage, and disposal of hazardous waste. The project will produce less than 220 pounds of hazardous waste each month and will qualify as a conditionally exempt small quantity generator. No hazardous waste will properly be disposed of onsite. All hazardous waste will be stored and then transported by licensed haulers for disposal at regulated facilities.

Sanitary waste will be treated in onsite septic systems, with leach fields located in the vicinity of each building. During the construction phase and where necessary during operations, portable toilets will be

used in various locations throughout the plant and mine sites. The portable toilets will be serviced by a commercial sanitation company and the waste removed for disposal offsite.

#### **A-6.4 Perimeter and Security Fences**

A perimeter fence will be built to encompass the primary mining and processing operations and facilities, excluding portions of the access roads and utility lines. It will provide a zone restricted from public access and locations for environmental compliance monitoring. The fence will be standard four-strand barbed wire, although the bottom wire will be bare, in accordance with BLM and AGFD fencing standards. Access for fence construction will be by all-terrain vehicle or on horseback to avoid the need for a road. There will be signage on the perimeter fence stating that entrance into the project area is prohibited.

A security fence and security patrol road will be located within the perimeter fence, approximately 750 feet from the toe of the slope of the waste rock and tailings facilities. The road will be a one-lane gravel or native surface road used for patrols, fence maintenance, monitoring, and general mine related access.

A guard shack will be located where the primary mine access road intersects the security fence. Near the guard shack, the fence will be chain-link and 6 feet high, with barbed wire along the top. Other areas farther away from the primary mine access road will be enclosed by a standard four-strand barbed wire fence with a bare bottom wire to provide a secondary safety barrier, with signage to help ensure public safety and to provide access to APP points of compliance.

The fencing at the mine and facilities will exclude public use from NFS land within the perimeter fence during the 24.5- to 30-year mine life. The configuration of the perimeter and security fences and security road is depicted in figure A-1. A legal closure order for the area within the perimeter fence will be issued by the Coronado.

The perimeter and security fences will be removed following closure after considering grazing and safety needs. The security road may be partially or completely reclaimed as part of mine closure and reclamation, depending on the need for postmine administrative access for maintenance or monitoring purposes. Portions of the site, will likely remain fenced off and closed to the public indefinitely for safety reasons, or as required by the Arizona State Mine Inspector. The portion of the mine pit on NFS lands will be fenced and signed to restrict public access.

### **A-7 Ancillary Facilities and Activities**

#### **A-7.1 Utility Lines (Electrical and Water Supply)**

On June 12, 2012, the ACC approved a CEC authorizing the construction of a 138-kV electrical transmission line and associated facilities from the proposed Toro switchyard (located near Sahuarita) to the Rosemont substation (located at the mine). The water supply and electric transmission lines and utility maintenance road will be co-located in order to reduce impacts. The final alignment of all three components (see figure ROD-2).

##### **A-7.1.1 Power Supply**

The total power requirement for the project is 108 to 112 megawatts, which requires a minimum transmission voltage of 138 kV. The transmission line will be an aboveground single-circuit 138-kV nonreflective transmission line provided from a link attached to existing transmission lines on the



South substation loop. The transmission line will extend from the proposed Toro switchyard 13 miles to the proposed Rosemont substation, held on double-circuit capable Core 10 standard steel (rust-colored) monopole structures with typical heights of 75 to 150 feet. The route will generally parallel the existing South Santa Rita Road before entering private land held by Rosemont Copper (table A-1). The alignment will then continue east over the ridge and cross the ridgeline at Lopez Pass (see figure ROD-2). The corridor width for the entire project route will be 500 feet and will include an associated 14-foot-wide unpaved maintenance road.

**Table A-1. Landownership or management of the utility corridor**

	Forest Service	BLM	ASLD	Private
Electrical transmission line (feet)	2,787	0	47,881	18,393
Water supply line (feet)	5079	0	65,881	32,849
Utility corridor (acres)	38	3*	574	302

\* While the corridor for analysis includes some land within BLM jurisdiction, Rosemont Copper withdrew the BLM MPO, and lands administered by the BLM will not be disturbed or otherwise affected by construction, maintenance, or removal of utility facilities.

Power needed to operate the water pump stations (described below) will be supplied by an electrical line from the Rosemont substation, back over the same poles as the transmission line to the pump station buildings. The electrical line spanning pump stations two and three will be an underground line, at the request of ASLD.

During mine closure, the electric transmission line will be removed from NFS land and disturbed areas reclaimed and revegetated with native vegetation. Removal of the electric transmission line on private and ASLD land is outside the jurisdiction of the Forest Service. However, the CEC states that once service is no longer needed, “Applicant shall file a plan for removal of the transmission line.” This decision also states that all costs associated with the line removal will be charged to Rosemont Copper, and proof of funds for these costs is required.

In addition to traditional electrical service from Tucson Electric Power, Rosemont Copper plans to use solar technologies, such as passive solar installations, to power the administration buildings and potentially other areas.

#### ***A-7.1.2 Power Distribution Line Relocation***

A 46-kV electrical distribution line that currently runs north-south through the project area will require realignment. Relocation will include the establishment of new electrical poles (similar to those found in residential areas) along the inside of the security fence where needed. The line will be strung on those poles and connected to the existing line.

No interruptions in service is expected. Ground disturbance associated with relocation of this line will occur within the security fence perimeter, which is an area already considered disturbed for the purposes of the effects analysis; therefore, no additional ground disturbance will occur with this relocation.

### **A-7.1.3 Water Supply Pipeline**

A 20- to 24-inch carbon steel water pipeline will be constructed. The pipeline will require trenching, ranging from 30 to 52 inches wide, and will receive a minimum soil cover of 36 inches within the State land easement and on NFS lands, and 24 inches of cover on private property. While it is expected that most drainage crossings will only require backfill of the previously removed material, some crossings may require nonerosive material, such as concrete, below calculated scour depth where wash composition is soil and gravel. Where rock prohibits burial, the pipeline will be placed above the rock and covered with soil, as previously specified, depending on slope, topography, and the availability of cover material.

The pipe bedding requirements will follow the manufacturer's recommendations. Air/vacuum release valves will be installed in the pipeline at intervals of approximately 3,000 feet and at elevation changes of 250 feet. Construction of the pipeline will include up to four booster stations that will consist of concrete basins, vertical turbine pumps, and a pneumatic tank housed within secured buildings or structures and requiring power, as described above. The reservoirs and pump stations will be built outside jurisdictional WUS.

### **A-7.1.4 Water Supply**

During construction of the water supply pipeline, water will be drawn from existing wells in and around the project site in order to supply construction activities. It is estimated that approximately 600 to 900 gallons per minute will be necessary to support facility construction.

The project is permitted by the ADWR to draw up to 6,000 acre-feet<sup>21</sup> per year. However, it is currently estimated that the project will use between 4,700 and 5,400 acre-feet per year of fresh water, for a total use over the mine life of approximately 100,000 acre-feet. Water will be pumped from four to six wells located on land owned or leased by Rosemont Copper near the community of Sahuarita in the Santa Cruz Valley at a maximum rate of 5,000 gallons per minute (total pumpage).

Well locations, proposed pipeline route, and pipeline route are shown in figure ROD-2. Four booster stations will be needed to maintain water flow in the line.

Total fresh water to be used during operation is estimated to be about 4.8 million gallons per day. Most of this will be supplied by groundwater wells in the Santa Cruz Valley. Much smaller quantities will be obtained from stormwater and pit dewatering on the mine site. Water will primarily be allocated to ore processing. Other water uses will include dust control, fire protection, drinking water, sanitary waste management, and other miscellaneous uses. It is estimated that up to 18,500 acre-feet could be obtained from pit dewatering over the life of the mine. Water acquired through pit dewatering will either be used in processing or dust control. Because the quality of the water supply is expected to approach potable standards, it will not require any additional processing to be used in various mining processes.

Where feasible, an estimated 37 million gallons of water per day will be reclaimed from a variety of uses on the mine and returned for use in processing. Water used to process ore (referred to as process water) and other water impacted by the project will be controlled as described below.

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<sup>21</sup> Note: 1 acre-foot equals 325,851 gallons.

### **A-7.1.5 Water Control**

The primary water control objective will be to reduce the risk of discharging potentially contaminated water into the environment. Water control will be applied to: (1) process water, (2) groundwater, and (3) stormwater that comes into contact with process facilities or tailings.

### **A-7.1.6 Process Water**

Figure 6 in chapter 2 of the FEIS is a schematic diagram of the process water control system that shows the basic water circuits during processing of sulfide ore. Control of process water will consist of containing the process water in engineered structures, such as tanks, pipes, sumps, lined ponds, lined ditches and maintaining the water content of the dry-stack tailings at a level that minimizes seepage from the dry-stack tailings facility. The engineering design and performance of the various process water control facilities, including seepage and leakage monitoring and recovery, will meet or exceed the best available demonstrated control technology criteria used by ADEQ and will be regulated under the APP that was issued on April 3, 2012. Details of best available demonstrated control technologies are discussed in the “Groundwater Quality and Geochemistry” resource section in chapter 3 of the FEIS.

### **A-7.1.7 Groundwater**

The groundwater control system will include both activities and facilities designed to protect and monitor the quality of the groundwater in the area, as well as the investigation and modeling used to predict the response of the groundwater systems to both the withdrawal of groundwater and the influence of seepage and leakage from the project facilities. Implementation of groundwater control requirements will be monitored as part of the APP that has been issued by the ADEQ, as well as additional monitoring required by the Coronado (see appendix B in the FEIS).

Protection of groundwater quality at the mine site during operations will primarily be achieved by using the process water controls described above. Included in these is monitoring of the seepage and leakage detection systems that are part of facility design, as required by the APP.

Of particular importance to long-term groundwater and surface water protection is the acid rock drainage protection and monitoring program. Monitoring to ensure that offsite groundwater quality is not impacted beyond the level allowed by the APP will be accomplished at specific groundwater monitoring wells required by the APP, at additional monitoring wells required by the Coronado, and by applying best available demonstrated control technology (i.e., engineering controls and practices).

Protection of water quality following mine closure will be achieved by closure and reclamation of the process facilities, elimination of or reduction in acid rock drainage generation in the tailings and waste rock from the design and operation of the facilities, monitoring and testing required by the APP following mine closure, and capture of possible impacted mine site groundwater by localized groundwater flowing into the pit.

### **A-7.1.8 Stormwater Controls**

Stormwater (contact water) from the mine pit, ore processing facilities, and mine maintenance plant areas will be prohibited from surface discharge under the stormwater permit during operations.

Stormwater allowed to be discharged, such as that from the waste rock facility and waste rock buttresses around the tailings facility, will be routed to sediment control structures, where any offsite

overflow discharge point will be monitored for chemical and sediment content in accordance with an ADEQ mining stormwater general permit. Runoff from tailings is not prohibited from downstream discharge under the stormwater permit, but it will be contained onsite, along with other contact water.

The top surface of the dry-stack tailings will be exposed to precipitation only during operations. All tailings will be covered with waste rock at closure. The general design concept for managing stormwater from the dry-stack tailings facility is to minimize infiltration of water in the tailings and prevent discharge of stormwater that comes in contact with the tailings. This will be accomplished by constructing uniform lifts of dry tailings that are buttressed by waste rock. The buttresses will be built around the tailings surface for containment and erosion control. The top of the tailings facility will be relatively impervious. That is, precipitation is expected to remain on top of the tailings facility to evaporate. If water ponds on top of the tailings facility, it will be pumped to the process water temporary storage pond to limit infiltration into the tailings facility. Diversion channels will be constructed to direct surface runoff that has not contacted tailings from the outer waste rock shell slopes into either sediment ponds or adjacent drainages to a sediment control structure. The selected action permits no storage of stormwater on the top or benches of the waste rock/tailings landform postclosure. Instead, waste rock and tailings facilities will shed runoff after closure. The tops of the facilities will be graded to discharge stormwater to the lower benches, which in turn are designed to move stormwater laterally along the benches until it reaches several concrete drop structures. The runoff from these drop structures will either be discharged into the natural washes (Barrel Canyon or a tributary) or discharged into a diversion channel that will carry runoff along the toe of the waste rock and tailings facilities and then will discharge that runoff into the natural washes (figure A-3). In this manner, as much water as possible will be allowed to flow downstream after reclamation is complete.

Stormwater from above the mine pit will be diverted around the pit and plant site. During operations, stormwater that falls within the mine pit and associated disturbed areas, especially stormwater that comes into contact with ore, will be contained onsite and used for mining and processing purposes. Postclosure, any stormwater that enters the pit will contribute to the pit lake.

Flowthrough drains beneath the tailings and waste rock facilities are not part of the selected action because of concerns about intermingling of stormwater and tailings seepage and long-term maintenance. The small ridge just east of the plant site will be eliminated postclosure in order to enable stormwater from the reclaimed plant site area to be diverted to flow into McCleary Canyon via a surface channel.

Precipitation that comes into contact with waste rock does not need to be retained but can be released downstream. Regardless of this, much of the runoff from the waste rock facilities will be retained, with the exception of the perimeter waste rock buttresses. For perimeter buttresses, concurrent reclamation and appropriate BMPs will progress up the outer slopes as the buttresses are constructed. This will limit erosion potential and will allow noncontact runoff to discharge to downgradient sediment ponds and eventually to the watershed.

Active stormwater management will continue after the mine closes, as required by the mining stormwater general permit and the erosion control provisions of the mine land reclamation plan, administered by the Arizona State Mine Inspector. The Arizona State Mine Inspector has jurisdiction for reclamation under 27 ARS Chapter 5; this is the Reclamation Act statute for reclamation of hardrock mining, which pertains to private lands with more than 5 acres of mining disturbance.

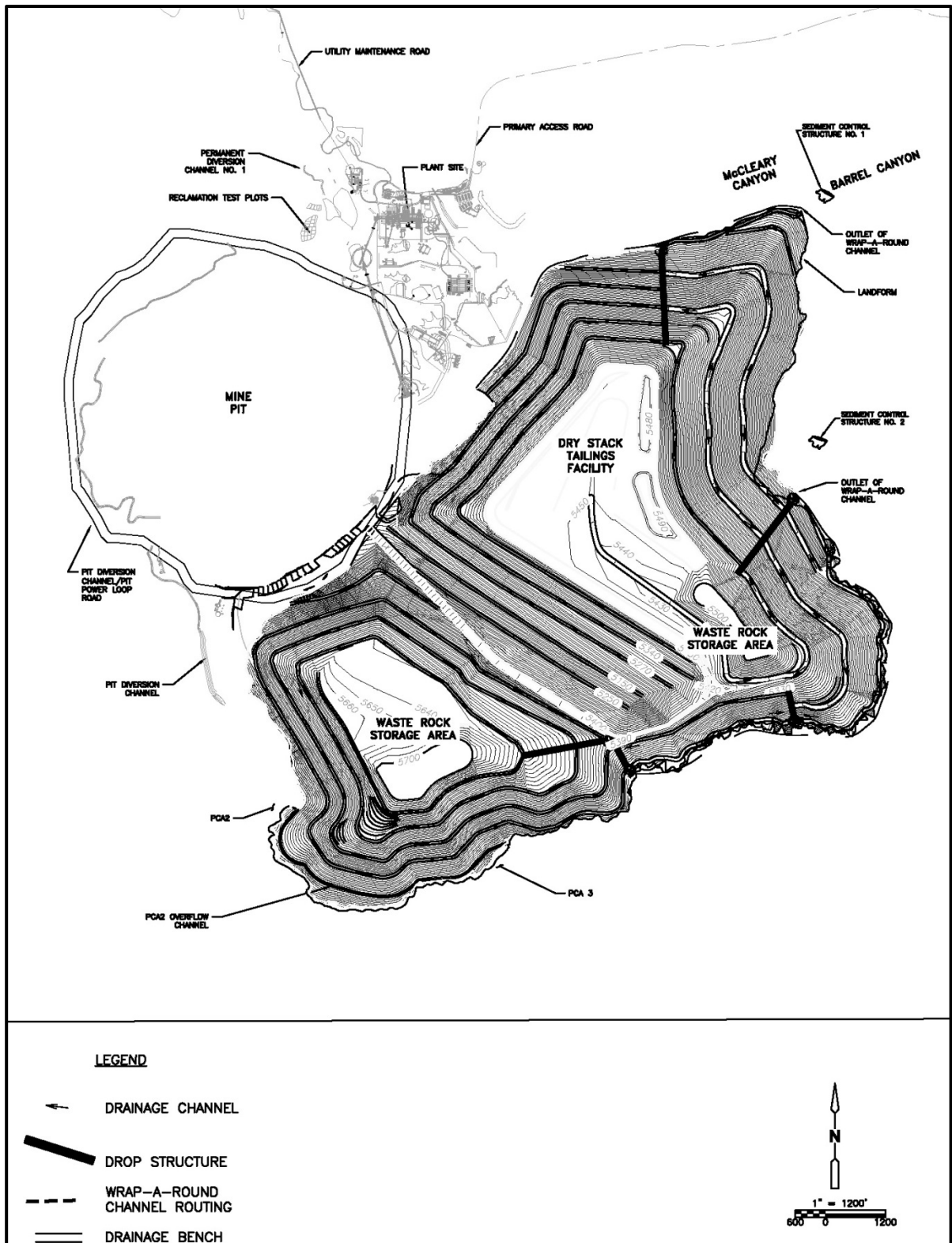


Figure A-3. Selected action stormwater concept

#### **A-7.1.9 Compliance Point Dam**

Two compliance point dams will serve as the final onsite location where stormwater can be monitored. It is what is referred to in many technical documents as a “sediment control structure.”

Each dam will be approximately 6 feet tall and approximately 100 to 200 feet wide and will have a storage capacity of approximately 2 acre-feet. It will be constructed during the premining phase using inert waste rock as an ADWR nonjurisdictional, unlined embankment. Normally, the area behind the embankment will be empty. During storm events, water will be temporarily impounded and slowly released through the porous rock-fill dam. Large storm events may overtop the dam and proceed downstream. If the dam is destroyed by an overtopping event, it will be rebuilt. The compliance point dam will be evaluated after closure of the project facilities. The dam will be removed if it is determined that subsequent discharges will meet Arizona Surface Water Quality Standards.

Access to the dam will use existing Forest Service roads to minimize additional surface disturbance.

#### **A-8 Primary Access Road**

A new two-lane paved road, referred to as the “primary access road,” will be constructed to provide primary access between SR 83 and the mine. The primary access road will leave SR 83 along a straight section of the State highway. At the intersection, SR 83 will be widened, and new lanes will be added.

Compared with the preliminary MPO, the primary access road was redesigned to follow a revised alignment that both shortens the road and reduces its visibility from SR 83. This realignment avoids Scholefield Canyon and will reduce impacts to riparian vegetation and cultural resources. The new alignment intersects SR 83 at the same location as in the proposed action but is 3.2 miles long, as shown in figure A-1.

Public use will be restricted on portions of the primary access road at the perimeter fenceline during construction, operation, and closure of the mine because of safety considerations but will be reopened to the public after closure. The primary access road will be subject to periodic short-term restriction of public use for maintenance and to protect public safety. Restricted areas will be indicated by signage, gates, and/or a security guard shack located near the plant site. Segments of the primary access road will be added to the Coronado’s NFSR inventory.

#### **A-9 Utility Maintenance Road**

Referred to as the “secondary access road” in the DEIS, a better understanding of this road and its function resulted in its being renamed the “utility maintenance road.” This road will be located within the utility corridor to serve as access to the power supply line, water supply line, and water booster pump stations (see figure ROD-2). The road will consist of two discrete segments: one from the plant site, over Lopez Pass, to a major wash on private land; and another from the supply well area near Sahuarita to the other side of the major wash, generally following the electrical transmission and water line location. Overall, this road will require about 11.5 miles of new construction and 4.5 miles of reconstruction or upgrade to an existing road. Refer to figure ROD-2 for a map of the utility maintenance road.

A gravel road will be constructed from the plant site to Lopez Pass to serve as a maintenance road for the utility supply lines. The existing road over Lopez Pass (NFSR 505) is on NFS land and private

land. While NFSR 505 is considered a Forest Service system road, the Forest Service does not have legal access across private land. There are small portions of the new road construction that overlap existing NFSR 505, and those will be reconstructed as part of the utility maintenance road. However, most of the alignment will require new construction from the plant site to its western terminus. The rocky, hilly portion of the road will be reconstructed, and a new road will be created that will run west across private land. The road will intercept a major wash at its western terminus. There are no plans to construct a crossing of this wash, which would require an engineered structure. The second segment of the utility maintenance road will begin at the area of mine water supply wells near Sahuarita and follow the location of the electrical transmission and water lines. This road segment will cross land administered by the ASLD and private lands and will generally parallel Country Club and Santa Rita Roads.

Where the water pipeline to the mine travels under Santa Rita Road, the utility maintenance road intersects the public roadway. It will be gated here to prevent unauthorized access. Because there are different mine water supply well locations, the utility maintenance road will include spurs that extend to these locations as required. The waterline segment to the northernmost well will not require a new road and will use the existing adjacent Santa Rita Road for construction and maintenance until it intersects with Country Club Road.

A ROW permit from ASLD is required for the sections of the utility maintenance road and utility corridor on State land. A ROW application has been filed; the ROW permit itself will not be issued until approval of the project by the Forest Service. The sections of the road within the ASLD ROW will be new construction. ASLD will also decide at a later date whether they intend to require an additional fence between the utility maintenance road and the rest of the Santa Rita Experimental Range. The Town of Sahuarita also signed an agreement with Rosemont Copper allowing use of a portion of its current ROW alongside Santa Rita Road (Town of Sahuarita and Rosemont Copper 2013). This license agreement provides access to the northernmost well via Santa Rita Road. Use of Santa Rita Road for construction, maintenance, or crossing of the water line may require additional permitting by Pima County.

The utility maintenance road will be required to meet MSHA standards by including truck axle-high berms (anticipated to be about 3 feet high) on the sides of certain sections of roadway located on Rosemont Copper private lands. Some road reconstruction will be on NFS lands before the road intersects private lands, and the Coronado will negotiate with MSHA to accommodate safety while minimizing impacts to NFS surface resources. Otherwise, the segments on ASLD and will be a standard 14-foot-wide native surface road without any additional MSHA requirements.

The utility maintenance road will be closed to the public during construction and operation of the mine, and portions may be reopened to the public after closure, depending on safety concerns. It is the intent of the Coronado to restore public access over Lopez Pass. However, a section of this road crosses private land, and there is currently no legal right of public access. While the Coronado will work with the landowner to secure a permanent public easement for this segment of road, it is unknown at this time whether or for how long legal public access will be available. The portions of this road on private lands may remain after the pipeline and booster stations are removed. For sections on State land, ASLD will ultimately decide which portions will be retained, removed, or revegetated through their ROW permitting process.

## **A-10 Other Area Roads**

Area roads that are outside the perimeter fence that will either be reconnected or decommissioned are shown in figure ROD-4. All NFSRs within the perimeter fence not used for mining activities will be decommissioned during the premining phase (within the first 18–24 months). A short section of new temporary road (about 700 feet in length, disturbing an estimated 0.2 acre) and use of a segment of NFSR 4064 will be necessary for installing and accessing air quality monitoring equipment to be located at the perimeter fence.

Actual decommissioning activities could range from closing and abandoning the road, to activities such as scarifying the road surface to discourage motorized use and promote vegetative recovery, to full topographic recontouring. For the sake of analyzing impacts, it is assumed that all miles of NFSRs within the perimeter fence will be actively decommissioned, and the acreage of these roads is contained in disturbance calculations used for various impact analyses (see table 11 in chapter 2 of the FEIS). NFSRs that are cut off by the perimeter fence will either be decommissioned, rerouted to connect to another area road, or have a turnaround area constructed exterior to the fenceline. New roads will be added as NFSRs, while decommissioned roads will be removed as NFSRs. Within the project area, the Forest Service was granted a ROW from ASARCO Corporation in 1993 for NFSRs 231, 4051, and 4064, for the portions that cross private land. These ROWs remain valid, although title of the underlying land is now held by Rosemont Copper. These roads will be decommissioned.

New road segments designed to connect remnant NFSRs include the construction of a new road from the primary access road to unauthorized road 4050-0.36R-1 (which intersects NFSR 4050 about 0.3 mile farther west), in order to continue to provide legal public access to the Sycamore Canyon area once the unauthorized road is adopted as an NFSR. The completed pair of road segments are referred to as the “Sycamore Connector Road” is about 12,184 feet long and will impact about 26 acres.

Because some Open-Authorized-Restricted roads, which are only open to motorized use by permittees and administrative use, are typically used in the project area for access to grazing allotments, these will mostly remain intact to allow administrative and permitted use postclosure. Construction of the Sycamore Connector Road will be required to be completed within 1 year of the date on which public access to NFSR 4050 is cut off due to mine related activities. During operations, Rosemont Copper will be responsible for providing access, in some form, to the grazing lease holders for management of their allotments and to the Coronado for permit administration.

## **A-11 Mine Life and Alternative Production Schedule**

Mining production plans were developed through the end of year 21.3 based on proven and probable mineral reserves. Table A-2 provides a crosswalk between the production timing and the mine life used for the analysis in the FEIS.



**Table A-2. Mine life and anticipated production schedule for the selected action**

<b>Mine Life Phasing (expected time frame)</b>	<b>Cumulative Timing</b>	<b>Description of Activities</b>	<b>Detailed Timeline for Alternative</b>	<b>Sulfide Ore (1,000 tons)</b>	<b>Waste Rock (1,000 tons)</b>
Premining (18 to 24 months)	1.5 to 2 years	Clear vegetation; stockpile soil; construct facilities; construct primary access road; construct electrical and water lines and segments of utility maintenance road; construct fences; decommission roads; begin construction of pit; begin construction of perimeter buttress with waste rock; construct monitor wells	22 months	0	98,859
Active mining (20 to 25 years)	21.5 to 27 years	Continue pit development; continue construction of perimeter buttress; conduct mineral processing; construct tailings facility; perform concurrent reclamation activities (includes revegetation); haul products; construct stormwater drainage facilities	Year 1 Year 2 Year 3 Year 4 Year 5 Year 6 Year 7 Years 8 through 10 Years 11 through 15 Years 16 through 19	24,080 27,372 27,375 27,375 28,470 30,660 32,120 96,360 163,520 204,097	88,169 69,944 82,165 95,980 74,569 63,412 62,094 269,243 260,736 83,996
Final reclamation and closure (3 years)	24.5 to 30 years	All mineral processing has been completed; remove plant site facilities; finish reclamation; stain pit walls; finish drainage structures; remove perimeter fence; remove electrical lines on NFS land	Not Applicable	Not Applicable	Not Applicable
<b>Total</b>				<b>661,429</b>	<b>1,249,161</b>

Note: Totals for sulfide ore include stockpiled ore.

## A-12 Transportation on State Route 83

Mine related traffic on SR 83 during operation will consist of trucks carrying supplies to the project, trucks carrying concentrate and copper cathodes from the project, and employee traffic. Equipment and construction material deliveries to the site will be in addition to large-truck trips. Major equipment arriving by rail may be received at the Port of Tucson, which is located near Vail, Arizona, to the west of the project area. Table A-3 shows Rosemont Copper's estimate of the large-truck shipments for the selected action on a year 1 and year 20 weekday of the operations phase.

**Table A-3. Large-truck trip per weekday data**

<b>Materials</b>	<b>Round Trips per Day</b>
Copper concentrate	50
Materials (e.g., lime, fuels, etc.)	19
<b>Total</b>	<b>69</b>

Copper concentrate shipments will form the largest number of routine truck shipments for both the selected action and MPO, with approximately 50 round trips per day 7 days per week, respectively. Because the project area will have limited onsite parking during the premining phase, all anticipated daily worker commuter trips will be by bus. More specifically, the estimated 1,250 workers needed during construction will require 37 daily round trips by bus. During operation, worker commuter trips will vary from approximately 266 (weekend) to 311 (weekday) round trips per day. Worker commutes for the operations phase are assumed to be one trip per worker (assuming no carpooling or busing). The largest concentrated volume of mine traffic during a 24-hour period will occur during workforce shift change during the operations phase. Shift changes will vary between 6 a.m. to 8 a.m. and 4 p.m. to 6 p.m.

The primary mine access road includes a new intersection with SR 83 that requires an ADOT encroachment permit. The existing two-lane SR 83 roadway will be reconstructed to include a northbound left-turn lane, a southbound right-turn lane, and a merging northbound acceleration lane. All intersection improvements will occur between mileposts 46.63 and 47.14. Portland cement concrete will form the surface approximately 100 to 200 feet north and south of the intersection and the access road turnout. Asphaltic concrete will be used for the remainder of the project alignment.

To improve drainage from the intersection, Rosemont Copper will upgrade current drainage structures in the area in accordance with ADOT requirements. The project will also include a turnout connecting to an NFS unpaved roadway and temporary pavement during construction. In addition, three existing bus pullouts on SR 83 at mileposts 47.9, 49.2, and 52 will be paved.

As part of the encroachment permit for the primary access road, the proponent has agreed with ADOT to fund a lump sum amount to perform or implement the design, construction, and maintenance of road improvements to SR 83 elsewhere. These improvements are considered as a connected action (see “Connected Actions” in section 4.2 of this document), and ADOT has indicated that these improvements will consist of a 3-inch asphalt-concrete overlay, guardrail reconstruction, pavement markings, and shoulder buildup from the primary access road intersection north to milepost 58.5.

After this ROD is issued, it is expected that ADOT will issue an encroachment permit for improvements to the Rosemont Junction intersection serving NFSR 231. Rosemont Junction will provide temporary access to the mine site during the premining period to the project site while the intersection for the primary access road is being constructed. The intersection upgrades for this temporary construction route consist of improvements to the turnout for Rosemont Junction (South Helvetia Road) at milepost 46.63 on SR 83. The improvements include raising Rosemont Junction to match existing pavement. It also includes the installation of new cattle guards and fencing to guide traffic to the newly widened, gravel padded Rosemont Junction. Stormwater and sediment controls are also designed as part of the overall improvement plans. An estimated 200 feet of NFSR 231 on NFS land beyond the ADOT easement will be reconstructed to match the intersection and grade to the existing road. This reconstruction will result in an estimated 0.37 acre of disturbance.

Note that ADOT has indicated they intend to defer their final contractual agreement for these improvements pending final approval of this ROD by the Forest Service.

### **A-13 Arizona National Scenic Trail**

The Las Colinas portion of the Arizona National Scenic Trail runs through the project area. Approximately 10 miles of trail will be relocated to the east side of SR 83 to accommodate the project and the demand for use of the trail (figure A-4). It will require construction of about 13 miles of new trail. It will be built to the same standard as the current trail: built with a 24-inch tread, and cleared from 6 to 8 feet wide and 10 to 12 feet high to accommodate multiple uses, such as hiking, biking, and horseback riding. These actions include periodic maintenance of the trail and associated facilities. The trail will be pioneered and available to public use prior to closing the existing trail (refer to “Mitigation Effectiveness” in the “Recreation and Wilderness” resource section in chapter 3 and appendix B in the FEIS for further information).

This action includes the potential construction of trailheads at Oak Tree Canyon and at the intersection of SR 83 and Hidden Valley Ranch Road. The trailhead at Oak Tree Canyon, analyzed to be up to 3.7 acres, could potentially be designed to accommodate up to 18 passenger vehicles and 12 horse trailers and will include a bathroom and water source for pack stock and wildlife. The facility analyzed includes a gravel parking surface, perimeter fence, and gates and signs to deter OHV use. The Hidden Valley Ranch Road trailhead, analyzed to be up to 2.5 acres, may accommodate up to eight passenger vehicles and four horse trailers on a gravel parking surface, a post and rail fence, and gates and signage to deter OHV use. These facilities were analyzed in the FEIS. They would be new facilities, and are not replacements for existing facilities that would be rendered unusable by the selected action. The Coronado will consider the level of use of this segment of the Arizona National Scenic Trail along with other factors, and determine whether these facilities are needed at this time. The Coronado could decide to build the facilities as described and analyzed; build facilities with smaller footprints and impacts than those analyzed; or determine that no additional facilities are needed.

Metal gates, signs, and fencing would be used to deter OHV use on the trail, and gates would be used to accommodate equestrian and mountain bike crossing in areas where there are existing fence lines. Fencing would be extended from the trail gate near Oak Tree/Davidson Canyons in order to properly protect the corridor. Signage consistent with the Arizona National Scenic Trail would be installed, as well as detour and construction signage should construction take place. Note that Rosemont Copper entered into an agreement with the Arizona Trail Association on July 10, 2012, in which Rosemont Copper agreed to provide an amount not to exceed \$650,000 for the construction of approximately 10 miles of the Arizona Trail (rerouted segment describe above) along with associated facilities. See mitigation measure FS-RW-01 in the FEIS, p. B-63, for more information, and the Rosemont Copper Project Errata for edits to this mitigation measure.

### **A-14 Reclamation and Closure**

Reclamation of the project will be administered and regulated by the Coronado (36 CFR 228) on NFS lands; administered and regulated on private land by the Arizona State Mine Inspector (ARS 27-901 et seq., as amended); and regulated by the ADEQ (ARS 49-241 through 49-252; and Arizona Administrative Code 18-9-101 through 403).

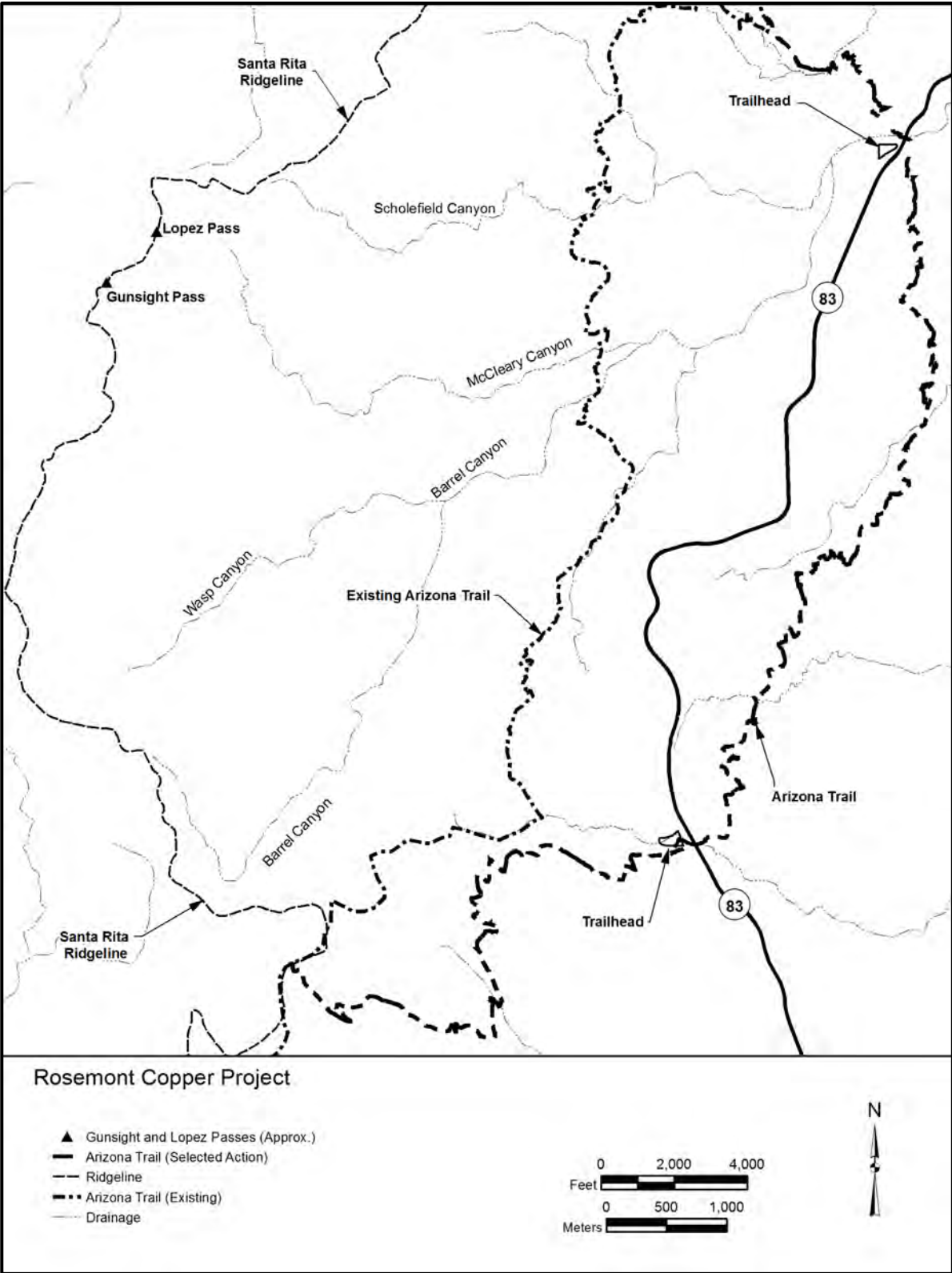


Figure A-4. Arizona National Scenic Trail relocations

Reclamation and closure plans have developed as the NEPA process has progressed. The 2007 preliminary MPO included a conceptual reclamation and closure plan, which was updated in 2010 for the other action alternatives. Following publication of the DEIS and in part in response to public comments received, the reclamation and closure plan was updated to focus solely on the preferred alternative (now the selected action). This latest reclamation and closure plan provides details for the phasing and locations for reclamation activities, details of postclosure site water management, and preliminary calculations of reclamation and closure costs.

Reclamation and closure consists of several components, including but not limited to:

- Removal of all equipment and buildings;
- Capping the top of the tailings facility with waste rock upon closure;
- Removal of pond liners as deemed appropriate under the APP;
- Final regrading and revegetation of the plant and mill site areas upon closure;
- Final regrading and revegetation of any access roads requiring closure;
- Removal of electric supply line, water supply line, and related facilities from NFS lands;
- Revegetation of utility corridors where removal causes soil disturbance;
- Final regrading and revegetation of the landform that encompasses the waste rock and tailings facilities;
- Removal of perimeter and security fencing, and signing as needed;
- Construction of fencing and/or berms for safety considerations, including around the open pit;
- Identification of postclosure land use;
- Establishment of postclosure access roads; and
- Reestablishment of downstream drainage and surface water flow.

Several considerations were incorporated into mine design to facilitate later reclamation and closure. These include managing operations to minimize environmental impacts, constraining disturbances to a minimum number of drainages to minimize downstream hydrologic disturbance, constructing waste rock buttresses to allow for concurrent reclamation of outer slopes, and using appropriate technology to minimize the generation of impacted water.

With the exception of most roads within the plant site, access roads into the project area will remain after closure. Specifically, the primary access road and portions of the utility maintenance road will remain, and a road will be maintained through the plant site to access the waste rock/tailings landform for monitoring and maintenance. Roads may also remain on top of and around the toe of the waste rock/tailings landform to allow for postclosure monitoring activities, use of the land for grazing, or other purposes.

Postmine land use of NFS lands will follow the direction in the forest plan that is in place at that time. Postmining/closure reclamation objectives for Rosemont Copper's private land could include dispersed recreation, wildlife habitat, and ranching.

At closure, fence construction for the mine pit will be a barbed wire with warning signs. Arizona Administrative Code R11-2-401 specifies measures that include fencing and signage. Additionally, Rosemont Copper will construct structures to provide additional safety protections if needed, such as berms around the pit, possible “tank traps” as necessary to restrict road access, and upgraded fencing (i.e., chain link) if necessary on steeper slope areas above the pit or other areas.

Operating facilities will be demolished and removed, and building foundations will be demolished, covered with soil, and graded or removed. All areas will be surveyed for the presence of contaminants, and any contaminated soils, reagents, or fuels will be disposed of offsite at licensed facilities.

With respect to revegetation of the waste rock and tailings landforms, Rosemont Copper will be responsible for designing and implementing revegetation procedures. The Coronado, however, will define the criteria that must be met for revegetation to be considered a success, and all designs and techniques must be approved by the Coronado. Planned revegetation techniques, expected success criteria, and details of how concurrent revegetation of these areas will be phased are described in the “Soils and Revegetation” resource section in chapter 3 of the FEIS. In order to assess the potential success of the revegetation plans, the Coronado has considered the results of greenhouse studies and onsite reclamation plots conducted by Rosemont Copper. These results are also summarized in chapter 3 of the FEIS.

#### **A-14.1 Phasing of Concurrent Reclamation**

In order to maintain concurrent reclamation of final outer slopes, waste rock will initially be placed in buttress along the outside edge of the waste rock facility, followed by waste rock and tailings placement behind the buttress. A large portion of the waste rock perimeter buttresses that surround the tailings facility and the waste rock facility itself will be concurrently reclaimed by year 10; these areas will begin to discharge water downstream as reclamation is completed. The upper benches and tops of the waste rock and tailings facilities will be reclaimed beginning in year 16 but will not be completely reclaimed until the mine is fully closed. The volume of soil that can be salvaged from the site to be used later for cover during reclamation activities is estimated at 2.8 million cubic yards.

#### **A-15 Impact Summary**

The following table shows the basic elements of disturbance for the selected action. The acres of disturbance provided in table A-4 were determined using the best available information and GIS modeling. The results were used in all impact analyses in the FEIS that included surface disturbance.

**Table A-4. Disturbance elements**

<b>Disturbance Element</b>	<b>Selected Action</b>
<b>Security fence disturbance</b> area – all area within security fence	4,228 acres
<b>Primary access road corridor</b> – 600 feet wide to allow for designed cut areas (outside security fence)	226 acres

<b>Disturbance Element</b>	<b>Selected Action</b>
<b>Utility line corridor</b> – 500 feet wide for transmission with others co-located – water line and utility maintenance road – 150-foot corridor where not within transmission line, except for the designated 30- to 40-foot easement or ROW (outside security fence)	889 acres
<b>Road disturbance</b> – outside security fence	
New Roads – 100 feet wide	39 acres
Decommissioned Roads – 14 feet wide	20 acres
<b>Arizona National Scenic Trail</b> – 8 feet wide trail plus trailheads	19 acres
<b>Total Disturbance Area</b>	5,431 acres
<b>Total Area Excluded from Public Access</b> – within the perimeter fence	6,990 acres





# Appendix B

## Regional Forester Review of Objections

On December 31, 2013, the Coronado Forest Supervisor published the legal notice of objection period for the Rosemont Copper Mine Project FEIS and draft ROD in accordance with 36 CFR 218. By the close of the objection filing period on February 14, 2014, objection letters had been received from 114 objectors. Of those, 101 objectors were determined to be eligible. Regional Forester Calvin Joyner issued his response letter to eligible objectors on June 13, 2014, in which he detailed his determination that the Rosemont Copper Mine Project is in compliance with laws, regulations, policies, and the forest plan.

After reviewing eligible objections to the Rosemont Copper Mine Project FEIS and draft ROD, the Regional Forester provided a number of instructions to the Coronado Forest Supervisor that must be completed before signing the ROD. A number of the instructions pertained to clarifications to sections of the draft ROD, while others were corrections to be made in an errata. Details regarding changes made to this ROD in response to instructions from the Regional Forester are detailed below:

1. *Consultation with USFWS: I am instructing the Forest Supervisor to take actions necessary to complete the consultation he committed to in his May 23, 2014 letter to USFWS. Following consultation, the Forest Supervisor shall review the FEIS to determine the appropriate level of documentation required under NEPA. Whether any further public process will occur before a Final ROD is signed is dependent on whether a revision or supplement to the FEIS is necessary.*

Formal consultation between the Coronado and USFWS was reinitiated on May 26, 2015, and completed on April 28, 2016, when the USFWS issued a BO. Details of this consultation are described in section 1.2 of this document, and the outcome of consultation and the BO are addressed in section 8.8, “The Endangered Species Act of 1973.” The FEIS has been reviewed in light of the BO, and changes are reflected in this ROD, the Rosemont Copper Project Errata and Rosemont SIR dated May 22, 2015. The Forest Supervisor determined that while these changes are considered new information, they did not require substantial changes in the proposed action nor was it considered significant new information under 40 CFR 1502.9(c) since it did not reveal any new or changed environmental impacts that were not previously evaluated and considered. A revision or supplement to the FEIS is not necessary (see Rosemont SIR, dated June 2016).

2. *New Information: Consider new information contained in objections. Some objectors provided articles and other attachments for review claiming it was “new information” not previously considered. For example, Jimmy Pepper cites RMRS “Vulnerability of US Water Supply to Shortage...” The Forest Supervisor should review articles attached to objections prior to issuing a Final ROD to determine if there is new information that would require additional NEPA analysis.*

A review of potential new information contained in eligible objections was conducted. The process and results are summarized in the SIR dated May 22, 2015, and further supported by documentation contained in the project record. The conclusion of this review was that consideration of objection attachments did not result in modification or changes to any analysis methodology or conclusion of impacts disclosed in the FEIS. The Forest

Supervisor found that no significant new circumstances or information relevant to the environmental concerns and bearing on the proposed action or its impacts were found that would require a supplement or revision of the Rosemont FEIS.

3. *Response to Comments: Republish Appendix G to include all Public Concern Statements and responses (not a subset as is currently printed). Also, to meet the requirements of Section 102(c) of NEPA, include scanned copies of actual letters received by Federal, State, and local agencies and elected officials.*

Appendix G has been republished and was posted to the RosemontEIS.us website on November 11, 2015. CDs are available upon request by the public. The republished appendix G contains all Public Concern Statements and responses, along with scanned copies of letters received from Federal, State, and local agencies and elected officials.

4. *ROD: In the ROD, change the wording of mitigation measure FS-N-01 to state: “Air quality related blasting restrictions are specified in the Air Quality Class II Synthetic Minor Permit issued by the Arizona Department of Environmental Quality. Additional blasting restrictions were established focused on noise management techniques, including generally limiting blasting to once per day, during daylight hours; and sequenced blasting using time-delay technology.”*

The specified clarifying language has been added to the ROD (mitigation measure FS-N-01, section 4.3.2.14) as well as to the Rosemont Copper Project Errata.

5. *Errata: In Table 29, Air Quality Laws, Ordinances, Regulations, and Standards, under the “applicability” column of the row titled “National Emission Standards for Hazardous Air Pollutants (NESHAP), 40 CFR 61 and 63,” change the wording to state, “Based on the estimated, maximum potential emissions for the proposed mine operation, the Rosemont Copper Project would not be a “major HAP source” as annual HAP emissions are modeled at 3.37 tpy. However, applicable NESHAPs pertaining to the boiler, emergency engine and storage tanks would apply.”*

Table 29 has been corrected as instructed through inclusion of the wording provided in the Rosemont Copper Project Errata.

6. *Errata: Change a typographical error in mitigation measure OA-AQ-02 in Appendix B, page B-77, from “concentrated” to “concentrate.”*

Mitigation measure OA-AQ-02 has been corrected as instructed through inclusion of the wording provided in the Rosemont Copper Project Errata.

7. *ROD: Change a typographical error in mitigation measure OA-AQ-03 “Dust control for open areas and storage piles” [Appendix B, p. B-78] to state, “These activities include application and reapplication of chemical dust suppressant and/or water as defined in ADEQ Air Quality Class II Synthetic Minor Permit.”*

This typographical error has been corrected by including language in the ROD and Rosemont Copper Project Errata. Refer to section 4.3.2.3 of this ROD and the Rosemont Copper Project Errata for details.

8. *Errata: Strike the following statement from the FEIS, page 1045: “Investment Company’s groves may have the potential to decrease the amount of water available to the San Xavier district of the Tohono O’odham Nation.” This does not relate to cultural resources within the APE.*

The language noted above has been stricken through inclusion in the Rosemont Copper Project Errata.

9. *ROD: Add additional discussion of the disproportionate effects to the Tribal Communities in the “Environmental Justice” section.*

This discussion has been added. See section 8.16 of this ROD.

10. *ROD: Language should be incorporated into the ROD that acknowledges the Forest’s responsibilities under the Religious Freedom Restoration Act and American Indian Religious Freedom Act, and the Forest’s commitment to allowing access to the area where possible, and to not restrict the Tribes’ religious practices.*

This discussion has been added. See section 8.20 of this ROD.

11. *ROD: Consider Mine Safety and Health Administration lighting requirements in mitigation measure FS-DS-02.*

A discussion of MSHA lighting requirements has been added. See section 4.3.2.9 of this ROD for that discussion.

12. *Errata: Correct the statement on page 1122 of the FEIS that says there are “six communities who have the potential to be disproportionately impacted.” Only five communities are listed.*

A correction has been made in the Rosemont Copper Project Errata that corrects this language.

13. *Errata: Clarify whether conclusions about “disproportionate adverse impacts on the Tohono O’odham Nation” on page 1131 of the FEIS also apply to the Pascua Yaqui Tribe, and make the correction if necessary. This applies to the discussion of environmental justice on page 1142 as well.*

The FEIS has been corrected by including a statement in the Rosemont Copper Project Errata indicating that disproportionate adverse impacts also apply to the Pascua Yaqui Tribe.

14. *ROD: Consider adding text to the environmental justice summary on page 63 that states, “The Hispanic communities of Santa Cruz County, South Tucson, and Rio Rico meet criteria for environmental justice communities but are not expected to experience disproportionate impacts.” This would clarify confusion noted in objection issues.*

This discussion has been added. See section 8.16 of this ROD.

15. *Errata: Correct the 707.5 million ton figure shown in the anticipated production schedule in Table 7, page 82 of the FEIS, in the Draft ROD on pages 28 and A-18, Table 2. Also change the 667.2 million ton reserve figure shown on page 33 of the FEIS to 661.4 million tons. The final ROD should include the correct numbers.*

The noted corrections have been made in the Rosemont Copper Project Errata. The corrected numbers are listed in section 4.1 in this ROD.

16. *ROD: To address monitoring concerns, consider including info in the ROD about public availability of monitoring results or directing the public to regulatory agency websites.*

This information has been added to this ROD. See requirement #20 in section 4.3.1 of this ROD.

17. *Record: Add the Draft Programmatic Environmental Impact Statement for the Revision of the Coronado National Forest Land and Resource Management Plan to the record.*

The noted document has been added to the Rosemont project record.

18. *ROD: Clarify that the paleontology mitigation measure is primarily aimed at recognizing vertebrate fossils but that other fossil assemblages may occur.*

This has been clarified in the ROD. See FS-GMP-01 in section 4.3.2.1 of this ROD for details.

19. *ROD: Change wording in mitigation FS-BR-21 to include a statement similar to that contained in FS-RW-02 that future land uses under the restrictive covenant or conservation easements developed will be coordinated with the nature, purposes, and primary uses of the Arizona National Scenic Trail (ANST) corridor for hikers, mountain bikes, and equestrians. This would ensure that the nature, purposes, and uses are accommodated on the ANST and for the connecting trail from the Hidden Valley Ranch Road trailhead.*

The referenced language has been corrected in this ROD through adding language to mitigation measure FS-BR-21.

Refer to section 4.3.2.7 of this ROD and the Rosemont Copper Project Errata for details.

20. *ROD: Clarify proposed mitigation FS-RW-03 by discussing whether designation or construction of additional roads, motorized routes, or semi-primitive recreation opportunity settings would be included in any future planning effort.*

Clarifying language has been added to mitigation measure FS-RW-03. Refer to section 4.3.2.11 of this ROD and the Rosemont Copper Project Errata for details.

21. *ROD: Clarify that the in-lieu fee program is not the only possible use of the water at Pantano Dam.*

Clarification has been added to mitigation measure FS-SSR-01. Please refer to section 4.3.2.6 of this ROD and the Rosemont Copper Project Errata for details.

22. *ROD: The weather station currently located in the pit area could be disturbed by mining activities. In the ROD, clarify that an alternative weather station location could be selected.*

This has been clarified. See requirement #24 in section 4.3.1 in this ROD. It is also included in the Rosemont Copper Project Errata.

23. *ROD: Clarify mitigation of groundwater impact costs to homeowners by referencing more details about the mechanics of the Well Owners Agreements (and sign ups), as well as the licensing agreement with Sahuarita in the mitigation measures section of the socioeconomic section. Readers appear to be confused about this mitigation aspect for property/well owners.*

This has been clarified. See section 4.3.2.17 in this ROD for details.

24. *Errata: To address errors noted by objection 0057-MEAA, make the following edits on page 1103 of the FEIS:*

*“Labor income, which included employee wages but excludes benefits, is estimated to be \$23 million in Pima County for direct labor income and \$57 million for indirect and induced labor income for a total of \$81 million in labor income (accounting for rounding) during the active mining phase under the AE model (Applied Economics 2011). In Pima, Santa Cruz, and Cochise Counties combined, the labor income during the active mining phase is estimated to be \$28 million per year in direct labor income (which included benefits) and \$26 million per year in indirect and induced labor income for a total of \$55 million in labor income under the Forest Service model (Gebert n.d. [2011]). A range of wages would be expected among those employed by the mine, from the lower wages of a general laborer to the higher wages of the project management staff and technical advisors. According to Rosemont Copper, the average annual income for a Rosemont Copper employee would be approximately \$60,000.”*

The above language has been added to the Rosemont Copper Project Errata.

25. *Errata: Delete the statement on page 1102 of the FEIS concluding that “the number of jobs (approximately 800 attributed to recreation on the CNF) are not expected to change during mine construction.”*

This language has been stricken through inclusion in the Rosemont Copper Project Errata.

26. *ROD: Add language regarding differences between the Applied Economics (AE) and Forest Service input output models to the FEIS to ease concerns from readers about why the results are different for these two models:*

*“Industry sectors used in the two models differed in some cases for analysis of non-labor indirect expenditures (indirect impacts from supply purchases from local vendors). For example, the AE model assigned more local purchases of equipment, supplies, and services to retail, as well as the labor-intensive repair and maintenance sectors, while the Forest Service model allocated more of those purchases to wholesale sectors. Differences were most pronounced for purchase of fuel, equipment repair and maintenance, resulting in indirect impacts six times greater for the AE model versus the Forest Service model. These differences account, in large part, for the differences and apparent inconsistency between the relatively higher indirect/induced impacts under the AE model and the relatively lower impacts under the Forest Service model, despite the larger impact area assumed for the Forest Service model. Neither method is incorrect since there is uncertainty about how future expenditures will be distributed, but use of retail sectors results in larger multipliers and impacts, while use of wholesale sectors results in smaller, more conservative multipliers. Results from both models are presented in the FEIS (pp. 1,101 to 1,104) to provide a range of possible impacts (that also reflects a range of scale), rather than single absolute numbers.*

*Induced jobs, during construction were higher for the Forest Service model because 'benefits' were assumed to be included in labor income (the AE model assumed no benefits and therefore lower labor income available for local spending)."*

The language contained in the Regional Forester's direction has been added. See section 3.1.4.11.1 in this ROD.

27. *Surface Water Resources - Mitigation (FS-SWR-4) - At the Pima County resolution meeting, the County suggested that storm water (run-on) from outside the pit area, rather than be diverted to an infiltration pond, could be run (via a "perimeter channel"), downstream to the watershed. They acknowledged this would be costly but believed it was feasible. The Forest Supervisor should discuss the legal and practical feasibility of some method of routing this clean storm water to the watershed below to see if Rosemont wishes to propose such a change to its plans.*

The Forest Supervisor reviewed the proposed changes to stormwater management and discussed them with the proponent. The review is summarized in a briefing paper that is located in the project record.<sup>22</sup> As a result of the review, the Forest Supervisor determined that the Pima County proposal is neither legally or practically feasible, and the proponent has declined to voluntarily propose such a change to its plans.

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<sup>22</sup> Garrett, C. 2016. *Proposed Rosemont Copper Project Environmental Impact Statement Process Memorandum to File: Analysis and Decision for Pima County Stormwater Objections*. Prepared on behalf of U.S. Forest Service, Coronado National Forest, Arizona. May 5, 2016.