

Chapter 1. Purpose of and Need for Action

1 Introduction

2 Land managers for the Coronado National Forest (the Coronado), an administrative unit of the
3 U.S. Department of Agriculture Forest Service (Forest Service), prepared this final environmental
4 impact statement (FEIS) to evaluate the potential effects of activities proposed in a preliminary mine
5 plan of operations (MPO) (WestLand Resources Inc. 2007) submitted by Augusta Resource
6 Corporation (Augusta Resource), the parent company of Rosemont Copper Company (Rosemont
7 Copper), for development of the Rosemont ore deposit.

8 The preliminary MPO presented in this document addresses activities proposed on lands administered
9 by the Forest Service for which Federal decisions are required.

10 Rosemont Copper's preliminary MPO describes proposed construction, operation, reclamation, and
11 closure of an open-pit mine to extract locatable minerals such as copper, molybdenum, and silver.¹
12 The preliminary MPO also describes associated infrastructure and ancillary facilities. Associated
13 infrastructure consists of haul roads, access roads, and maintenance roads, ore transportation systems,
14 ore processing facilities, waste rock and tailings areas, leach facilities, and electrical and water
15 transmission lines. Ancillary facilities consist of various buildings integral to the operations
16 (i.e., administration building, employee change house, warehouse, analytical laboratory, vehicle
17 servicing facilities, storage facilities, guard house, and truck scale).

18 The proposed mine site is located on the east side of the Santa Rita Mountains of the Nogales Ranger
19 District, approximately 30 miles south of Tucson, Arizona (figure 1). Activity is proposed on
20 approximately 995 acres of private land owned by Rosemont Copper, 3,670 acres of National Forest
21 System (NFS) land, and 75 acres of Arizona State Land Department land administered as a State
22 Trust. The mine life, including construction, operation, reclamation, and closure, is approximately
23 24.5 to 30 years and may include beneficial and adverse impacts on the human environment.²

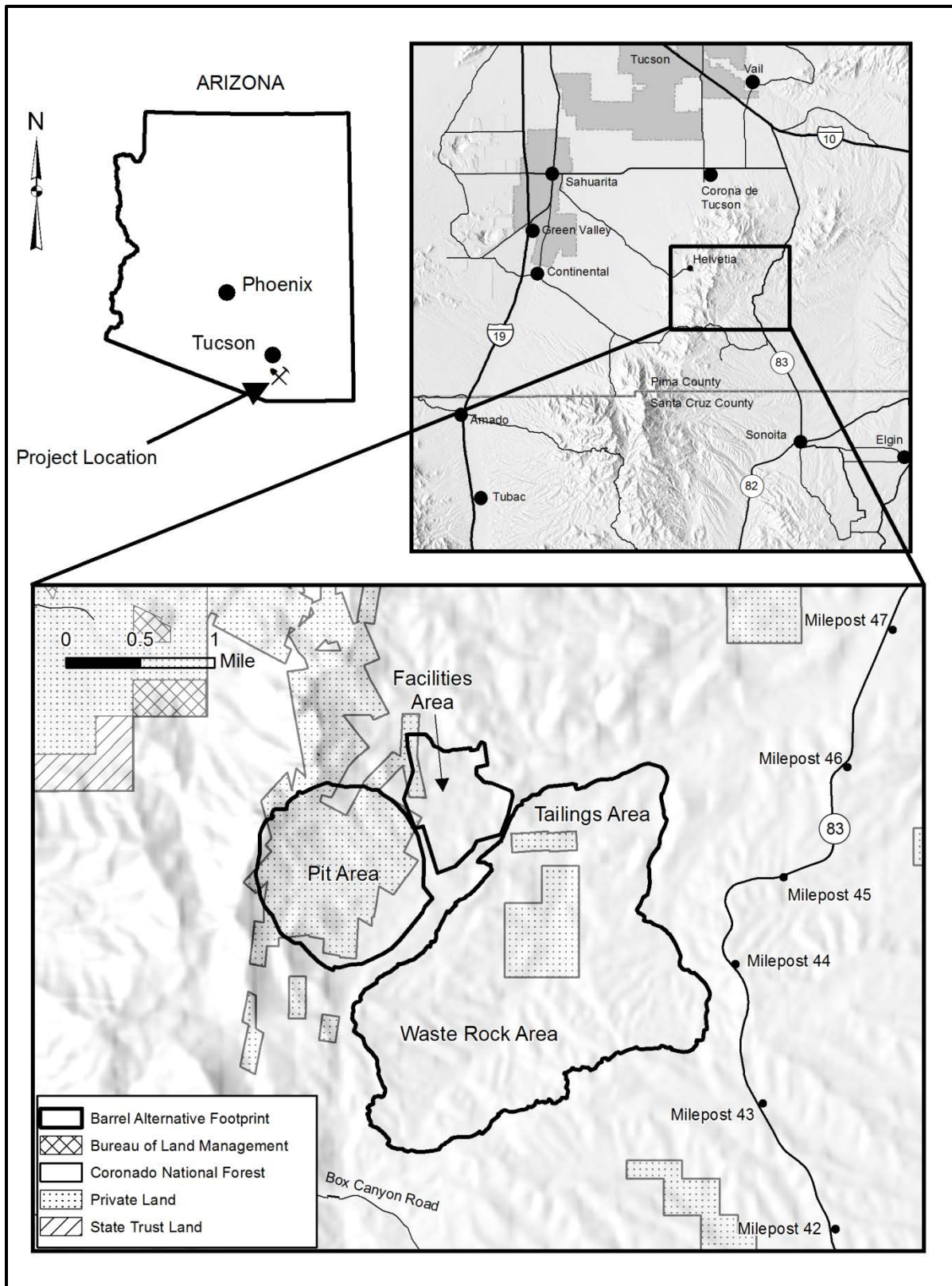
24 Two Federal agencies have authority regarding the preliminary MPO approval and permitting
25 process: the Forest Service and U.S. Army Corps of Engineers (USACE). The Forest Service is the
26 lead agency conducting the National Environmental Policy Act (NEPA) review of the MPO. There
27 are 17 cooperating Federal, State, and local agencies with jurisdiction or special expertise related to
28 aspects of the preliminary MPO, including the USACE.³

29 The preliminary MPO was concurrently submitted by Rosemont Copper to the Bureau of Land
30 Management (BLM) for review and approval. This is because the MPO initially included an electrical
31 transmission line, water pipeline, and access road that were proposed to cross BLM-administered
32 lands. Because on June 12, 2012, the Arizona Corporation Commission (ACC) selected an electrical
33 transmission line pathway that does not cross land administered by the BLM, Rosemont Copper
34 subsequently withdrew the MPO from consideration by the BLM.

¹ Trace amounts of gold are anticipated to be recovered during the offsite refining processes; however, recovery rates are not expected to be significant.

² The draft environmental impact statement (DEIS) gave the mine life as 20 to 25 years. However, this only refers to the operational mine life, and it has been corrected in the FEIS. The stages of mine life are as follows: premining (18 to 24 months), active mining (20 to 25 years), final reclamation and closure activities (3 years), and postclosure (indefinite).

³ The relationships between cooperating agencies and the Forest Service are governed by signed memoranda of understanding; these can be found in the project record.



1

2 **Figure 1. Project location and Barrel Alternative footprint**

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1 **Changes from the Draft Environmental Impact Statement**

2 In response to public and agency comments on the DEIS, a number of changes were made to
3 chapter 1.

- 4 • Minor edits were made to improve clarity and correct misspellings and grammatical errors.
- 5 • Language related to the decision authority of the BLM was removed.
- 6 • Minor changes to the organization of some sections were made to improve clarity.
- 7 • An additional issue statement was added for transportation. Transportation issues were
8 addressed in several nontransportation issue statements and factors in the DEIS. However, in
9 response to public comments and to improve clarity, this topic is now addressed in a separate
10 issue statement.
- 11 • Minor changes were made to clarify the duration of the various phases of mine life, as well as
12 the overall mine life.
- 13 • Minor changes to the wording of issue statements and factors were made to improve clarity.

14 Many comments on the DEIS expressed disagreement with its discussion of the responsible official's
15 decision space. The laws and regulations that define the decision space for this mining project were
16 reviewed in response to these comments. The Forest Service determined that the interpretation
17 described in the DEIS is accurate.

18 Several comments asked that the Forest Service reconsider its purpose and need statement.
19 The purpose of and need for action stated in this chapter was reviewed in light of current regulations
20 and policy, and the Forest Service determined that the statement in the DEIS was appropriate.
21 One paragraph dealing with applicable laws and regulations that was in the "Purpose of and Need for
22 Action" section of chapter 1 of the DEIS was moved to the "Decision Framework" section of chapter
23 1 of the FEIS for improved clarity.

24 **Document Structure**

25 The Coronado and its consultants prepared this document in compliance with NEPA and other
26 relevant laws, regulations, and policies. This document discloses the direct, indirect, and cumulative
27 environmental consequences that would result from the Coronado's approval of the preliminary MPO
28 or alternatives to it. This document considers a necessary amendment to the "Coronado National
29 Forest Land and Resource Management Plan," as amended (forest plan) (U.S. Forest Service 1986),
30 which governs overall management of the Coronado National Forest.

31 This document is organized into two volumes and a series of appendices: volume 1, which includes
32 an Executive Summary, chapters 1 and 2, and portions of chapter 3; volume 2, which includes
33 portions of chapter 3, chapters 4 through 7; and the Index. The general contents of volumes 1 and 2
34 are as follows:

35 **Volume 1:**

- 36 • *Chapter 1. Purpose of and Need for Action:* Chapter 1 focuses on the underlying need to
37 which the lead agency (Forest Service) is responding in proposing the action and alternatives,
38 the framework in which decisions will be made by the Forest Service and the USACE, and
39 the significant issues associated with the proposed action.

- 1 • *Chapter 2. Alternatives, Including the Proposed Action:* Chapter 2 describes the proposed
2 action, along with the alternatives considered in detail. Action alternatives were developed
3 based on significant issues raised by the public, Coronado resource specialists, and other
4 agencies. The no action alternative is included in the range of alternatives considered in
5 detail. Chapter 2 identifies the Coronado’s preferred alternative, as well as alternatives
6 considered but eliminated from detailed study. The chapter concludes with a summary that
7 compares the environmental consequences of each alternative, based on the effects disclosed
8 in chapter 3.
- 9 • *Chapter 3. Affected Environment and Environmental Consequences:* Chapter 3 describes the
10 affected environment and the environmental consequences associated with the proposed
11 action and the alternatives considered in detail. The resources described under the affected
12 environment headings represent baseline environmental conditions, incorporating past and
13 present actions, for determining potential impacts. Environmental consequences are the
14 potential direct and indirect effects of each alternative and, where applicable, account for
15 mitigation measures included in the proposal and alternatives. Reasonably foreseeable actions
16 are considered in combination with the effects of each alternative to define the potential for
17 cumulative effects. Cumulative effects reflect the findings of resource-specific analyses of
18 additive impacts from any relevant past, present, and reasonably foreseeable actions.
19 Irreversible and irretrievable commitments of resources, the relationship between short-term
20 uses and long-term productivity of the environment, and adverse environmental impacts that
21 cannot be avoided are disclosed in a section at the end of chapter 3. Chapter 3 provides the
22 analyses for the comparison summary presented in chapter 2.

23 **Volume 2:**

- 24 • *Chapter 3. Affected Environment and Environmental Consequences (continued)*
- 25 • *Chapter 4. Agencies Consulted:* Chapter 4 identifies the cooperating agencies and consulting
26 agencies, including tribal governments, involved during the development of this document.
- 27 • *Chapter 5. List of Preparers:* Chapter 5 identifies the individuals responsible for the
28 development of this document.
- 29 • *Chapter 6. Literature Cited:* Chapter 6 provides a list of literature cited in this document.
- 30 • *Chapter 7. Glossary:* The glossary provides definitions of terms used in this document.
- 31 • *Index:* The index provides page numbers by topic within this document.

32 **Appendices:**

33 Each appendix provides detailed information in support of the analyses and conclusions reported
34 in chapter 3. In this EIS, appendices include the following:

- 35 A. U.S. Army Corps of Engineers’ Section 404(b)(1) Alternatives Analysis
- 36 B. Mitigation and Monitoring Plan (includes U.S. Army Corps of Engineers’ Habitat
37 Mitigation Plan)
- 38 C. Visual Simulations (on compact disc (CD))
- 39 D. Memorandum of Agreement with Arizona State Historic Preservation Office
- 40 E. Tribal Consultation
- 41 F. U.S. Fish and Wildlife Service Biological Opinion
- 42 G. Summary of Response to Comments on the DEIS (comments and responses on DVD)

1 The analyses conducted for this project reflect the best available science.⁴ Supporting documentation
 2 is found in the project record, located at the Coronado Supervisor's Office (Tucson, Arizona).
 3 Documents are available to the public in accordance with the provisions of the Freedom of
 4 Information Act (5 United States Code (U.S.C.) 552), as amended, including its exemptions.

5 The information furnished in this document, along with supporting documentation contained in the
 6 project record, provides site-specific information and conclusions that inform responsible Federal
 7 officials prior to their rendering reasoned decisions. In compliance with 40 Code of Federal
 8 Regulations (CFR) 1502.21, the environmental impact statement (EIS) should briefly describe
 9 material incorporated by reference for the sake of brevity. Hence, all material incorporated in the EIS
 10 by reference is contained in the project record. Effects are discussed in proportion to their
 11 significance, with emphasis on items deemed most useful to decisionmakers and the public.

12 **Background**

13 The current preliminary MPO (WestLand Resources Inc. 2007) for the Rosemont Copper Project is
 14 the latest in an extensive history of copper prospecting and development in this area of southern
 15 Arizona. Copper production in the Santa Rita Mountains began in the 1880s and continued until the
 16 1950s. Previous mining activity on the east side of the Santa Rita Mountains supported operation of
 17 the Rosemont smelter in the Rosemont mining district. Previous mining activity on the west side of
 18 the Santa Rita Mountains supported operation of the Columbia smelter at Helvetia in the Helvetia
 19 mining district. Although several exploration projects have been undertaken, there has been no recent
 20 production of copper at or near this location. The rising value of copper over the past several years
 21 has increased the economic viability of mining the Rosemont ore deposit.

22 In July 2007, Rosemont Copper submitted a preliminary MPO to the Coronado, requesting approval
 23 to construct, operate, reclaim, and close an open-pit mine on and adjacent to NFS lands administered
 24 by the Coronado for development of the Rosemont ore deposit. The Forest Service's review of the
 25 preliminary MPO identified the need for additional information. In February 2008, a supplemental
 26 preliminary MPO was accepted for environmental review by the Coronado.

27 At the request of Rosemont Copper, the USACE reviewed a preliminary delineation for potentially
 28 jurisdictional waters of the United States (WUS) submitted in accordance with regulatory guidance
 29 letter no. 08-02. The USACE has determined that potentially jurisdictional WUS are present within
 30 the proposed project area. These waters are discussed in the "Surface Water Quality" section of
 31 chapter 3.

32 **Purpose of and Need for Action**

33 The following section briefly describes the underlying purpose and need to which the Coronado is
 34 responding in proposing the alternatives, including the proposed action (40 CFR 1502.13).
 35 The Coronado's overall purpose and need is to process Rosemont Copper's MPO. Rosemont Copper
 36 is entitled to conduct operations that are reasonably incidental to exploration and development of
 37 mineral deposits on its mining claims pursuant to applicable U.S. laws and regulations and is

⁴ What constitutes best available science might vary over time and across scientific disciplines. Agency regulations require that public information be of "high quality" because "accurate scientific analysis, expert agency comments, and public scrutiny are essential to implementing NEPA" (see 40 CFR 1500.1(b), 1502.9(b), 1502.22, and 1502.24).

1 asserting its right under the General Mining Law to mine and remove the mineral deposit subject to
2 regulatory laws.

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

- 4 • Respond to Rosemont Copper’s proposed MPO to develop and mine the Rosemont copper,
5 molybdenum, and silver deposit;
- 6 • Ensure that the selected alternative would comply with other applicable Federal and State
7 laws and regulations;
- 8 • Ensure that the selected alternative, where feasible, would minimize adverse environmental
9 impacts on NFS surface resources; and
- 10 • Ensure that measures would be included that provide for reclamation of the surface
11 disturbance.

12 The role of the Coronado under its primary authorities in the Organic Administration Act, Locatable
13 Regulations (36 CFR 228 Subpart A), and the Multiple-Use Mining Act is to ensure that mining
14 activities minimize adverse environmental effects on NFS lands and comply with all applicable
15 environmental laws. The Coronado has no authority to unreasonably circumscribe or prohibit
16 reasonably necessary activities under the General Mining Law that are otherwise lawful. Through the
17 Mining and Mineral Policy Act, Congress has stated that it is the continuing policy of the Federal
18 Government, in the national interest, to foster and encourage private enterprise in:

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

24 The Coronado is evaluating the proposed action at this time in order to comply with its statutory
25 obligations (see below) to respond to Rosemont Copper’s preliminary MPO in a timely manner.
26 The actions proposed in this FEIS describe the development of the Rosemont ore deposit owned
27 and/or claimed by Rosemont Copper in a manner that: (1) complies with Federal, State, and local
28 laws and regulations, (2) reduces adverse environmental impacts on NFS lands, and (3) is the least
29 environmentally damaging practicable alternative in accordance with 40 CFR 230 as it pertains to
30 Section 404 of the Clean Water Act (CWA).

31 The purpose of and need for action is based on statutes, regulations, and policies that govern mining
32 on NFS lands, as follows:

- 33 • The General Mining Law of 1872 confers a statutory right for claimants to enter upon public
34 lands open to location, stake mining claims in pursuit of locatable minerals, and conduct
35 mining activities in compliance with Federal and State statutes and regulations.
- 36 • The 1897 Organic Administration Act grants the Secretary of Agriculture the authority to
37 regulate the occupancy and use of NFS lands. It provides the public with continuing rights to
38 conduct mining activities under general mining laws and in compliance with rules and
39 regulations applicable to NFS lands. It also recognizes the rights of miners and prospectors to
40 access NFS lands for prospecting, locating, and developing mineral resources.

- 1 • The Multiple-Use Mining Act of 1955 confirms that citizens may conduct mining activities
2 on public lands, locate necessary facilities, and conduct reasonable and incidental uses to
3 mining on public lands, including NFS lands.
- 4 • The Multiple-Use Sustained-Yield Act of 1960 requires that NFS lands be administered in a
5 manner that includes consideration of relative values of various resources as part of
6 management decisions. Furthermore, it specifies that nothing in the act be construed to affect
7 the use of mineral resources on NFS lands.
- 8 • The 1970 Mining and Minerals Policy Act established the Federal Government’s policy for
9 mineral development “to foster and encourage private enterprise in the development of
10 economically sound and stable industries and in the orderly development of domestic
11 resources to help assure satisfaction of industrial, security, and environmental needs.”
- 12 • Forest Service mining regulations at 36 CFR 228 Subpart A provides direction on the
13 administration of locatable mineral operations on NFS lands.

14 With regard to mining, one goal of the Coronado forest plan is to “support environmentally sound
15 energy and minerals development and reclamation” (U.S. Forest Service 1986:11). The forest is
16 meeting this goal by considering the preliminary MPO and disclosing the potential environmental
17 impacts that would result if it is approved. Other goals, objectives, standards and guidelines in the
18 forest plan are also applicable to the proposed action. An initial evaluation of the preliminary MPO
19 with regard to the elements of the forest plan indicates that certain aspects of the preliminary MPO
20 are inconsistent with plan guidance. An amendment to the forest plan is proposed and included in this
21 FEIS. The amendment would create a new forest management area for which specific standards and
22 guidelines would be established relative to a large-scale mining operation. The amendment would
23 ensure the project’s consistency with the forest plan should the preliminary MPO or another action
24 alternative be selected and approved.

25 **Proposed Action in Brief**

26 The NEPA process begins with a proposed action, in this case the preliminary MPO submitted by
27 Rosemont Copper. It should be noted that the proposed action is one of several alternatives
28 considered in the FEIS. The *proposed action* should not be confused with the *preferred alternative*,
29 which is identified in chapter 2 and is the agency’s current preference for implementation based on
30 the current analysis, or with the *selected action*, which is identified in the record of decision (ROD).

31 The agency’s proposed action is to approve the preliminary MPO for construction, operation with
32 concurrent reclamation, and closure of an open-pit copper, molybdenum, and silver mine.

33 The following elements, which are integral to the project, are included in the proposed action:

- 34 • Ore transportation equipment;
- 35 • Ore processing facilities;
- 36 • Waste rock and tailings facilities;
- 37 • Leach facilities;
- 38 • Road construction;
- 39 • Road maintenance;
- 40 • Electrical and water transmission lines;
- 41 • Various buildings;

- 1 • Mitigation measures to avoid, reduce, or compensate for potential environmental impacts;
- 2 • Resource monitoring during premining, active mining, and reclamation and closure phases;
- 3 and
- 4 • Labor requirements for premining, active mining, and reclamation and closure phases.

5 **Connected Actions**

6 The Council on Environmental Quality defines connected actions as actions that are closely related
7 and that: (1) automatically trigger other actions that may require EISs; (2) cannot or will not proceed
8 unless other actions are taken previously or simultaneously; or (3) are interdependent parts of a larger
9 action and depend on the larger action for their justification (40 CFR 1508.25). The Coronado has
10 determined that the following are connected actions that must be evaluated as part of this NEPA
11 review. Additional details of these connected actions are provided in chapter 2.

12 **Electrical Transmission Line**

13 A 138-kilovolt (kV) electrical transmission line and associated facilities would be constructed from
14 the proposed Toro switchyard to the Rosemont substation. Because this decision is made by the ACC,
15 the same transmission line alignment applies to every alternative.

16 **Water Supply Pipeline**

17 A water supply pipeline and ancillary facilities would be constructed to convey mine supply water
18 from supply wells near Sahuarita to the mine site. This pipeline would be co-located with the
19 electrical transmission line and buried where possible. Ancillary facilities include four pump stations
20 and an electrical distribution line that would run from the Rosemont substation to the pump stations
21 on the same towers as the electrical transmission line. Because this supply pipeline was proposed to
22 be co-located with the transmission line, the same alignment applies to all alternatives.

23 **Electrical Distribution Line**

24 An existing 46-kV electrical distribution line that currently provides electrical power to Rosemont
25 Ranch and other private lands is located in an area where tailings and waste rock facilities would be
26 constructed. Therefore, this distribution line would be relocated within the security fence where
27 necessary. The portion of the distribution line that would require relocation varies by alternative,
28 as described in chapter 2.

29 **Arizona National Scenic Trail Reroute**

30 The Las Colinas portion of the Arizona National Scenic Trail currently runs through the project area.
31 Approximately 10 miles of existing trail would be relocated in order to accommodate both the
32 Rosemont Copper Project and continued use of the trail. The portion of the trail to be relocated varies
33 by alternative, as described in chapter 2.

34 **State Route 83 Highway Maintenance and Improvements**

35 The Arizona Department of Transportation (ADOT) has determined that a number of road
36 maintenance and improvement actions would be required to mitigate increased traffic on State Route
37 (SR) 83 associated with the combination of mine activities and anticipated population growth. These

1 actions include a 3-inch pavement overlay from the intersection of the primary access road to the
2 junction with Interstate (I-) 10; associated striping, raising of guardrails, and resigning; and paving of
3 three existing pullouts to safely accommodate school buses. All actions on NFS lands would occur
4 within the ADOT easement. Because these actions would be required by ADOT, they would apply
5 equally to all alternatives.

6 A detailed summary of the proposed action, including connected actions, is presented in chapter 2,
7 along with the other action alternatives considered in detail and the no action alternative.
8 The documents that make up the complete preliminary MPO are filed in the project record.

9 **Decision Framework**

10 The Forest Service is the lead agency in the preparation of this document, in accordance with the
11 Council on Environmental Quality regulations for implementing NEPA at 40 CFR 1501.5.
12 The USACE is a Federal cooperating agency with decisions to be made based on this environmental
13 review. Other agencies are also participating in this review as cooperating agencies, but they will not
14 have a decision to render on this EIS. A list of cooperating agencies can be found in the project
15 record.

16 **Forest Service**

17 The Forest Supervisor of the Coronado National Forest, as the lead agency responsible official for
18 this environmental review of the MPO, determined that preparation of an EIS was required because
19 approving the preliminary MPO could have significant impacts on the human environment (40 CFR
20 1500). The Coronado Forest Supervisor will consider the beneficial and adverse impacts of each
21 alternative in determining reasonable measures to impose on the MPO for the protection of Coronado
22 National Forest resources.

23 The forest supervisor's decision space is constrained by Forest Service regulations that govern
24 locatable mineral activities on NFS lands (36 CFR 228 Subpart A) and related laws and regulations
25 promulgated by other agencies. These regulations and Federal mining laws (see above) require that
26 the Forest Service respond to parties who submit applications for approval to conduct mining
27 operations on or otherwise use NFS lands in conjunction with mining for part or all of their planned
28 actions. Certain proposed mining activities require submittal of a preliminary MPO. In accordance
29 with regulations at 36 CFR 228.5, the submittal of an MPO by Rosemont Copper triggered Forest
30 Service consideration of whether to approve the preliminary MPO or to require changes or additions
31 deemed necessary to meet the requirements of the regulations for environmental protection set forth
32 in 36 CFR 228.8.

33 The Forest Service can reasonably regulate mining activities to protect surface resources, but there
34 are statutory and constitutional limits to its discretion when reviewing and approving an MPO. This
35 means that the Forest Service cannot categorically prohibit mining or deny reasonable and legal
36 mineral operations under the law.

37 Using the analysis in this FEIS and supporting documentation, the forest supervisor will make the
38 following decisions regarding NFS lands:

- 39 1. Determine whether to approve the preliminary MPO as submitted by Rosemont Copper or
40 another alternative considered in detail in the FEIS. The final decision may be to approve a

1 hybrid of various components of the alternatives considered. Whichever action alternative is
2 selected, it must minimize adverse impacts while allowing development of the mineral
3 resource.

4 2. Determine whether to approve the preliminary MPO with needed changes or additions that
5 are necessary to satisfy regulations.

6 3. Determine the appropriate type and amount of financial assurance (bonding) to cover the
7 costs of reclamation.

8 4. Determine whether approval of the MPO would be consistent with the forest plan, or whether
9 one or more amendments to the forest plan would be required.

10 Regarding item 3, prior to approval of the final MPO, the forest supervisor will require financial
11 assurance or a reclamation bond to ensure that NFS lands and resources involved with the mining
12 operation are reclaimed in accordance with the approved MPO and reclamation requirements
13 (36 CFR 228.8 and 228.13). In accordance with Forest Service policy, the operator would be required
14 to furnish financial assurance or a reclamation bond prior to approval of a final MPO (U.S. Forest
15 Service 2004). Calculation of the bond amount would occur following approval of the ROD, when
16 sufficient information is known about the decision with which to adequately perform the calculation.

17 Concurrent with the public release of this FEIS, the forest supervisor will sign a ROD. The ROD will
18 identify changes or additions to the preliminary MPO necessary to reduce, eliminate, or compensate
19 for adverse environmental impacts from the proposed mineral development on NFS lands, as well as
20 any required amendments to the forest plan. This decision is subject to 36 CFR 215, "Notice,
21 Comment, and Appeal," and 36 CFR 251 Subpart C, "Appeal of Decisions Relating to Occupancy
22 and Use of National Forest System Lands." Rosemont Copper may appeal the decision pursuant to
23 36 CFR 215 or 251 (not both); they may appeal the calculation of the bond amount under 36 CFR
24 251. Other parties who have provided substantive comments on the DEIS may appeal the decision
25 pursuant to 36 CFR 215. For the forest plan amendment conducted under the 1982 planning
26 regulations, the responsible official has elected to use the "Optional Procedures Available during the
27 Planning Rule Transition Period" (the former 36 CFR 217 appeal procedures that were in effect
28 before November 9, 2000, as accessed through the prior planning regulation transition provisions at
29 36 CFR 219.35 Appendix A, revised as of July 1, 2010).

30 Following resolution of any appeals of the ROD, Rosemont Copper will be required to modify the
31 preliminary MPO to align with the description of the selected alternative in the ROD and resubmit it
32 to the Forest Service for approval, along with the required reclamation bond or other specified
33 financial assurance. After the Forest Service has determined that the post-appeal, revised MPO is
34 satisfactory and that the bond or financial assurance instrument is acceptable, it will notify Rosemont
35 Copper that the MPO has been approved. Implementation of actions that affect NFS lands and
36 resources may not commence until a final MPO is approved and bonding is in place.

37 **U.S. Army Corps of Engineers**

38 The USACE is a cooperating Federal agency in this NEPA review. The USACE regulates the
39 discharge of dredged and/or fill material into jurisdictional WUS, including wetlands, under Section
40 404 of the CWA.

41 A Section 404 of the CWA individual permit is required for the discharge of dredged and/or fill
42 material into jurisdictional WUS (33 CFR 323), regardless of whether the activity is on public or

1 private lands. In accordance with the CWA Section 404(b)(1) guidelines (40 CFR 230), the USACE
 2 may permit only the least environmentally damaging practicable alternative in light of cost, logistics,
 3 and technology.

4 On December 6, 2011, the USACE issued a public notice (SPL-2008-00816-MB) concerning the
 5 agency's regulatory action for the proposed Rosemont Copper open-pit copper mine. The public was
 6 invited to comment on the proposed work. The initial comment period was from December 6, 2011,
 7 to January 5, 2012, and the comment period was subsequently extended to January 19, 2012.

8 Appendix A of this FEIS provides the "U.S. Army Corps of Engineers' Section 404(b)(1) Alternatives
 9 Analysis," which was completed in addition to the alternatives analysis disclosed in this FEIS.

10 The analysis defines the general project purpose as "to mine copper" and the overall project purpose
 11 as "to mine copper using conventional open-pit mining and sulfide (mill and concentrate) and oxide
 12 (leach and solvent extraction and electrowinning) ore processing to produce copper and/or copper
 13 precursors, silver, and molybdenum within the mining district of southeastern Arizona (Pinal, Gila,
 14 Greenlee, Graham, Cochise, Santa Cruz, and Pinal Counties)."

15 Based on the USACE's public interest review, the determination of the least environmentally
 16 damaging practicable alternative in the Section 404(b)(1) alternatives analysis, and the environmental
 17 analysis in this FEIS and supporting documentation, the USACE Los Angeles District Commander
 18 will decide whether to:

- 19 1. Issue Rosemont Copper a CWA Section 404 individual permit for the discharge of dredged
 20 and/or fill material into WUS for the MPO; or
- 21 2. Issue Rosemont Copper a CWA Section 404 individual permit with modifications or special
 22 conditions; or
- 23 3. Deny the CWA Section 404 individual permit.

24 Following issuance of the FEIS, the USACE will prepare a ROD regarding the Section 404 permit.
 25 The USACE administrative appeals process allows the applicant to appeal a denied permit or a
 26 proffered permit that the applicant has declined. Details on this process are contained in 33 CFR 331,
 27 "Administrative Appeals Process."

28 **Arizona Corporation Commission**

29 The proposed action requires the construction of an electric power transmission line across lands not
 30 administered by a Federal agency, as well as NFS lands. The Coronado has determined that this is a
 31 connected action that must be evaluated as part of this NEPA review because the sole purpose of the
 32 transmission line is to support the mine. According to 40 Arizona Revised Statutes (ARS), Chapter 2,
 33 Article 6.2, the ACC established a line siting committee to create procedures in order to provide
 34 review of proposed siting transmission and generating facilities.

35 Utilities providers, in this case Tucson Electric Power Company, are subject to
 36 commission/committee jurisdiction and are required to make an application with the commission for
 37 a Certificate of Environmental Compatibility (CEC). The committee considered, during public
 38 hearings, the matters contained in the application relative to a series of factors specified in ARS
 39 40-360.06. Following these deliberations, the committee made a recommendation to the commission
 40 regarding the CEC. The ACC approved a CEC for the Rosemont Copper Project on June 12, 2012.
 41 Further details of the location of the transmission line are provided in chapter 2.

1 The ACC is a State agency; therefore, it does not have authority over the Federal agencies' decisions
2 discussed above. The Forest Service has the authority to site the lines on lands it administers. Siting
3 authority on private and State lands lies with the ACC. However, the Forest Service and the
4 commission/committee have coordinated on the siting of the transmission line to ensure that the
5 locations on NFS and non-NFS lands are compatible.

6 **Tribal Consultation**

7 Several regulations require that Federal agencies consult on a government-to-government basis with
8 federally recognized Native American tribes having traditional interests in and/or ties to the lands
9 potentially affected by a proposed action and alternatives. The Coronado commenced official
10 consultation with 12 tribes in March 2008 upon notice of Rosemont Copper's intent to file a
11 preliminary MPO. The process and results are detailed in "An Ethnohistory of the Rosemont Copper
12 Project Area in the Eastern Santa Rita Mountains, Pima County, Arizona" (Griset 2011). Details of
13 tribal consultation are summarized in the "Cultural Resources" section in chapter 3 and in appendix E
14 of this FEIS.

15 **Public Involvement**

16 **Scoping**

17 The Coronado's efforts to solicit comments on the proposal and the corresponding public
18 participation are described in detail in "Scoping Summary Report #1, Extent of Public Participation"
19 (U.S. Forest Service 2009).

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

31 On April 29, 2008, a "Corrected Notice of Intent to Prepare an Environmental Impact Statement" was
32 published in the Federal Register (73(83):23181). This notice announced a change in the duration of
33 the scoping comment period and provided information regarding three public hearings. The scoping
34 comment period was extended to July 14, 2008, for a total scoping comment period of 120 days.
35 The public hearings were held as follows: May 12, 2008 (Elgin, Arizona); June 7, 2008 (Sahuarita,
36 Arizona); and June 30, 2008 (Tucson, Arizona). Both oral testimony and written comments were
37 collected at the public hearings. Oral testimony was professionally audio-recorded and documented
38 by a court reporter. A total of 860 people signed in at the public hearings, with 169 people presenting
39 formal oral comments.

40 On June 27, 2008, in response to public concerns about constraints limiting hearing attendance and
41 participation, the Coronado hosted a toll-free phone hotline for use by the public to provide

1 comments. A total of 302 people left recorded comments, which were transcribed for the project
2 record.

3 Comments were received from members of Congress and tribal governments; Federal, State, and
4 local agencies; organized interest groups; businesses; and individuals. The Coronado received 11,082
5 comment submittals during the scoping comment period, 70 percent of which were postcards,
6 petitions, and form-letter submittals. Approximately 16,000 discrete comments were identified among
7 those received. In addition, submittals received during the scoping period from March 13, 2008,
8 through August 1, 2008, were recorded and analyzed. A systematic process referred to as content
9 analysis was used to organize the contents of the submittals. Detailed records about this process are
10 contained in the project record in Scoping Summary Reports #1, #2, and #3.

11 Twelve significant⁵ issues were identified after content analysis of the scoping comments.
12 Consideration of these issues led, in part, to the development of alternatives to the proposed action
13 that are considered in this FEIS and the approach used for impacts analyses reported in chapter 3.

14 Public concerns that will be addressed by regulatory agencies during plan and permit approval
15 processes and routine disclosures (see chapter 3) were not considered to be significant issues. For
16 instance, a cumulative effects analysis is required for all resource areas (see chapter 3); therefore,
17 “cumulative effects analysis” is not in and of itself considered a significant issue. Many public
18 comments submitted during the scoping period suggested alternative components that were either
19 considered in detail or eliminated from detailed analysis (see chapter 2).

20 Finally, certain comments were determined to be outside the scope of this FEIS for one or more of the
21 following reasons: they did not reflect a legitimate cause and effect relationship supported by
22 scientific evidence; they were not relevant to the decision to be made; they were outside the Forest
23 Service’s or USACE’s authority; or they were already decided by law, regulation, or policy.
24 The issues raised in these comments were dismissed from further consideration.

25 **Public Review of the Draft Environmental Impact Statement**

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

33 Seven open public meetings were held as follows: November 12, 2011 (Tucson, Arizona); November
34 19, 2011 (Vail, Arizona); December 1, 2011 (Vail, Arizona); December 7, 2011 (Benson, Arizona);
35 December 8, 2011 (Green Valley, Arizona); December 10, 2011 (Elgin, Arizona); and January 14,
36 2012 (Sahuarita, Arizona). The first six meetings consisted of both an informational and an oral
37 comment session. The seventh meeting was an oral comment session. Coronado interdisciplinary
38 team (ID team) resource specialists staffed the informational sessions to answer questions and
39 provide information pertinent to the DEIS. Oral comment sessions allowed the public to provide oral

⁵ “Significant” issues do not equate to or necessarily result in “significant” impacts. The term is used synonymously with “key” or “relevant” in the context of an analysis of comments received during a NEPA review.

1 comments to the Coronado Forest Supervisor, Coronado Deputy Forest Supervisor, and/or Nogales
2 District Ranger. Oral comments were professionally audio-recorded and documented by a court
3 reporter.

4 Oral and written comments were also accepted by mail, email, hand delivery, facsimile, and
5 telephone recording, as well as through the project Web site, throughout the formal public
6 involvement period. Documentation of the formal DEIS comment process is contained in the project
7 record. Comments were received from individuals; tribal governments; Federal, State, and local
8 agencies; organized interest groups; and businesses. The Coronado received more than 25,000
9 submissions during the DEIS comment period. Content analysis was once again completed to
10 categorize the nature of comments received by issue and concern.

11 Appendix G contains a summary of Forest Service responses to comments received on the DEIS.
12 Detailed records about this process are contained in the project record.

13 **Issues**

14 A content analysis of scoping comments from tribes, agencies, organizations, and the public by the
15 Coronado ID team identified 12 significant issues to address in the environmental impacts analysis.
16 Those issues and concerns that are not among these 12 and those that have been covered by prior
17 environmental review are discussed only briefly or eliminated from detailed study (40 CFR
18 1500.1(b), 1500.2(b), 1500.4(c), 1501.7(3), 1502.2(b), and 1506.3). An issue is defined as a point of
19 disagreement, debate, or dispute with a proposed activity based on some anticipated effect. Issues are
20 described in terms of cause and effect; that is, if an action occurs, an impact could result. Issues are
21 addressed by describing comparative factors that provide a way to describe, compare, and contrast the
22 effects of the proposed action and other alternatives, including no action. Significant issues are used
23 to formulate alternatives to the proposed action, develop elements or components of the alternatives,
24 develop mitigation measures, and analyze environmental effects. A summary of significant issues for
25 this project follows.

26 **Issue 1: Impact on Land Stability and Soil Productivity**

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

36 **Issue 1 Factors for Alternative Comparison**

- 37 1. Qualitative assessment of long-term stability of tailings and waste rock facilities, including
38 expected results of reclamation
- 39 2. Acres and quantitative level of disturbance leading to lost soil productivity
- 40 3. Qualitative assessment of the potential for revegetation of tailings and waste rock facilities

- 1 4. Qualitative evaluation of alteration of soil productivity and soil development
- 2 5. Tons per year of sediment delivery to Davidson Canyon, Cienega Creek, or other streams and
- 3 washes, compared with background sediment loading

4 **Issue 2: Impact on Air Quality**

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

10 The emission of greenhouse gases has been implicated in global climate change, and the policy of the
11 Federal Government is to reduce these emissions when possible (Executive Order 13514).
12 Greenhouse gases are those in the atmosphere that retain heat. They are natural and keep the earth
13 from becoming too cold. The specific gases known as greenhouse gases are carbon dioxide (CO₂),
14 methane (CH₄), nitrous oxide (N₂O), and fluorocarbons. CH₄, N₂O, and fluorinated gases would be
15 emitted by the project; however, the anticipated level of emissions of these gases is much smaller
16 than the level of CO₂ emissions associated with the project.

17 **Issue 2 Factors for Alternative Comparison**

- 18 1. Particulate emission estimates, compared with background and threshold (particulate matter
19 less than or equal to 2.5 microns in diameter (PM_{2.5}) and particulate matter less than or equal
20 to 10 microns in diameter (PM₁₀))
- 21 2. Greenhouse gas emission estimates, compared with background (tons) during premining,
22 active mining, and final reclamation and closure phases
- 23 3. Volatile organic compound (VOC) and nitrogen oxide (NO_x) emissions and emissions rates
24 to air
- 25 4. Quantitative assessment of the ability to meet air quality standards
- 26 5. Qualitative assessment of the potential for degradation to Class I airsheds

27 **Issue 3: Impact on Water Resources**

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

32 **Issue 3A: East Side Groundwater Availability**

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

35 **Issue 3A Factors for Alternative Comparison**

- 36 1. Direction and feet of change in water table level, including annual average, range, and rate,
37 compared with background

- 1 2. Impairment of mountain-front groundwater recharge function
- 2 3. Geographic extent in which water resources may be impacted
- 3 4. Duration of the effect (in years)
- 4 5. Comparison of mine pit water loss by evaporation with overall basin water balance
- 5 6. Potential reduction in subsurface groundwater outflow from Davidson Canyon to Cienega
- 6 Creek
- 7 7. Approximate number of wells within the geographic extent of the impact

8 **Issue 3B: West Side Groundwater Availability**

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

12 ***Issue 3B Factors for Alternative Comparison***

- 13 1. Water needed for operations from the Santa Cruz Valley and comparison with other water
14 uses and basin water balance, measured in acre-feet
- 15 2. Direction and feet of change in water table level, including annual average and range and
16 rate, compared with background
- 17 3. Geographic extent in which water resources may be impacted
- 18 4. Duration of the effect (in years)
- 19 5. Potential for subsidence to occur as a result of groundwater withdrawal
- 20 6. Approximate number of wells within the geographic extent of the impact

21 **Issue 3C: Groundwater Quality**

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

27 ***Issue 3C Factors for Alternative Comparison***

- 28 1. Ability to meet Arizona Aquifer Water Quality Standards at points of compliance designated
29 in the aquifer protection permit
- 30 2. Ability to demonstrate best available demonstrated control technology⁶

⁶ Use of best available demonstrated control technology is required by the aquifer protection permit. The purpose is to employ engineering controls, processes, operating methods, or other alternatives to reduce discharge of pollutants to the greatest degree achievable before they reach the aquifer. Refer to the “Groundwater Quality and Geochemistry” section in chapter 3 for further information.

1 **Issue 3D: Surface Water Availability**

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

6 ***Issue 3D Factors for Alternative Comparison***

- 7 1. Quantitative assessment of water released and available for beneficial uses, measured as
8 percent reduction from baseline
- 9 2. Number of stream miles changed from intermittent/perennial flow status to ephemeral flow
10 status as a result of the project
- 11 3. Quantitative assessment of potential lowering of the water table/reduced groundwater flow to
12 Davidson Canyon and Cienega Creek that results in permanent changes in flow patterns and
13 that may affect their Outstanding Arizona Water designations and current designated uses
- 14 4. Number of stock watering tanks that would be unavailable
- 15 5. Change in volume, frequency, and magnitude of runoff from the project area
- 16 6. Change in recharge of the aquifer by runoff

17 **Issue 3E: Surface Water Quality**

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

25 ***Issue 3E Factors for Alternative Comparison***

- 26 1. Ability to meet Arizona Surface Water Quality Standards
- 27 2. Change in geomorphology and characteristics of downstream channels
- 28 3. Acres and locations that may be affected by surface water quality impacts and the duration
29 (in years) of those impacts
- 30 4. Acres of potentially jurisdictional WUS impacted

31 **Issue 4: Impact on Seeps, Springs, and Riparian Vegetation**

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

1 **Issue 4 Factors for Alternative Comparison**

- 2 1. Acres of riparian areas disturbed, by vegetation classification
3 2. Number of seeps and springs degraded or lost
4 3. Change in the function of riparian areas
5 4. Qualitative assessment of ability to meet legal and regulatory requirements for riparian areas

6 **Issue 5: Impact on Plants and Animals**

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

12 **Issue 5A: Vegetation**

13 The pit, plant, tailings and waste rock facilities, road and utility corridors, and other facilities have the
14 potential to permanently change vegetation, and reclamation may not restore vegetation to preproject
15 conditions.

16 **Issue 5A Factor for Alternative Comparison**

- 17 1. Acres of terrestrial vegetation permanently lost or altered, by vegetation type

18 **Issue 5B: Habitat Loss**

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

22 **Issue 5B Factors for Alternative Comparison**

- 23 1. Acres by type of terrestrial and aquatic habitat lost, altered, or indirectly impacted
24 2. Qualitative assessment of impacts on aquatic habitats and surface water that supports wildlife
25 and plants such as stock tanks, seeps, and springs
26 3. Qualitative assessment of how changes in the function of riparian areas could impact wildlife
27 habitat

28 **Issue 5C: Nonnative Species**

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

33

1 **Issue 5C Factor for Alternative Comparison**

- 2 1. Acres of disturbance that could create conditions conducive for invasive species

3 **Issue 5D: Wildlife Movement**

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

7 **Issue 5D Factors for Alternative Comparison**

- 8 1. Qualitative assessment of the change in movement corridors and connectivity between
9 wildlife habitats
10 2. Qualitative assessment of mortality of various animal species resulting from increased
11 volume of traffic related to mine operations

12 **Issue 5E: Special Status Species**

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

16 **Issue 5E Factors for Alternative Comparison**

- 17 1. Acres of habitat disturbed for each special status species, including impacts to designated and
18 proposed critical habitat
19 2. Potential to affect the population viability of any species

20 **Issue 5F: Animal Behavior**

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

24 **Issue 5F Factors for Alternative Comparison**

- 25 1. Acres of habitat impacted from noise, vibration, and light
26 2. Qualitative assessment of effects on wildlife behavior from noise, vibration, and light

27 **Issue 6: Impact on Cultural Resources**

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

1 Ranching and mining communities also have attachments to the area that began in the late 19th
2 century and continue through the present. Comments submitted during public scoping identified
3 impacts on the historic rural landscape as an issue, as well as impacts on traditional resource
4 collecting areas and recreation venues. Historic human burials may yet be found in areas not
5 excavated during previous archaeological investigations.

6 **Issue 6A: Impacts on Historic Properties**

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

15 ***Issue 6A Factors for Alternative Comparison***

- 16 1. Number of National Register of Historic Places eligible historic properties, including
17 traditional cultural properties, sacred sites, and other landscape-scale properties, buried,
18 destroyed, or damaged
- 19 2. Potential for vibrations to damage historic structures in adjacent areas
- 20 3. Qualitative assessment of impacts on historic properties

21 **Issue 6B: Disturbance of Human Remains**

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

31 ***Issue 6B Factors for Alternative Comparison***

- 32 1. Number of impacted prehistoric sites known/likely to have human remains
- 33 2. Number of historic period sites likely to have human remains

34 **Issue 6C: Sacred Sites**

35 Several Federal laws direct Federal land management agencies, to the extent permitted by law and not
36 clearly inconsistent with essential agency functions, to accommodate access to and use of Native
37 American sacred sites, to avoid affecting the physical integrity of such sites wherever possible, and to
38 temporarily close NFS land for traditional and cultural purposes. Tribal consultation has identified
39 springs, high vision points, and many natural resources in the project area as having sacred

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

3 **Issue 6C Factors for Alternative Comparison**

- 4 1. Number of sacred springs impacted
- 5 2. Qualitative assessment of the impacts on Native Americans of desecration of land, springs,
 6 burials, and sacred sites

7 **Issue 6D: Traditional Resource Collecting Areas**

8 Native Americans and the ranching, mining, and Mexican American communities use the Rosemont
 9 area to collect and process natural resources for food, medicines, firewood, and traditional crafts.
 10 Proposed mine activities, from premining through final reclamation and closure, could preclude
 11 access to or destroy or degrade these types of resources.

12 **Issue 6D Factors for Alternative Comparison**

- 13 1. Acres of traditional resource collection areas impacted
- 14 2. Qualitative assessment of the impacts on other non-tribal communities in the region in terms
 15 of impacts on resources, such as historical townsites, cemeteries, mines, ranches, and
 16 homesteads

17 **Issue 7: Impact on Visual Resources**

18 This issue focuses on the visual impacts that would result from the proposed mine pit, placement of
 19 tailings and waste rock facilities, and development and use of other facilities. The proposed mine
 20 tailings and waste rock facilities would create significant changes to the landscape. The facilities may
 21 block valued mountain views. The processing plant, roads, and utility corridor could also affect visual
 22 resources in the area. The character of the SR 83 designated scenic corridor and the views from it
 23 may change. The ability for the area to meet assigned scenic integrity objectives in the forest plan
 24 could potentially be reduced. The scenic quality of the landscape may be permanently degraded.

25 **Issue 7 Factors for Alternative Comparison**

- 26 1. Acres that would no longer meet current forest plan scenic integrity objectives designations
- 27 2. Qualitative assessment/degree of change in landscape character from analysis viewpoints
 28 over time
- 29 3. Miles of SR 83 with direct line-of-sight views of the project area
- 30 4. Miles of project area visibility along concern level 1 and 2 roads and trails

31 **Issue 8: Impact on Dark Skies and Astronomy**

32 This issue relates to the potential for the mine operation and facilities to reduce night sky visibility.
 33 Many area residents, recreationists, research and amateur astronomers, and stargazers value the
 34 current dark skies in the area. Increased light and air particulates from mine related facilities,
 35 equipment, vehicles, and processes have the potential to diminish dark skies. The increased sky glow
 36 could reduce the visibility of celestial objects, particularly the faint ones, which are often the subject

1 of scientific study. Key observation points and the Smithsonian Institution’s Fred Lawrence Whipple
2 Observatory could be adversely affected.

3 **Issue 8 Factor for Alternative Comparison**

- 4 1. Increase in sky brightness resulting from mine facility and vehicle lighting

5 **Issue 9: Impact on Recreation**

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

11 **Issue 9 Factors for Alternative Comparison**

- 12 1. Acres that would no longer meet current forest plan Recreation Opportunity Spectrum
13 designations
14 2. Acres of the Coronado National Forest that would be unavailable for recreational use and
15 miles of NFS roads lost
16 3. Qualitative assessment of potential for noise to reach recreation areas, i.e., audio “footprint”
17 4. Qualitative assessment of impacts on solitude in designated Wilderness and other
18 backcountry areas
19 5. Hunter-days lost (quantity based on number of permits available and number of days in
20 season)
21 6. Miles of Arizona National Scenic Trail relocated
22 7. Qualitative assessment of increased pressure on other areas, including roads and
23 trails/trailheads

24 **Issue 10: Impact on Public Health and Safety**

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

31 **Issue 10 Factors for Alternative Comparison**

- 32 1. Qualitative assessment of public health risk from mine operations and facilities
33 2. Qualitative assessment of public health risk from geological hazards
34 3. Qualitative assessment of public health risk from noise and vibration
35 4. Quantitative assessment of ability to meet air quality standards for human health
36 5. Quantitative assessment of the potential change in traffic accidents
37 6. Trip count per day for all hazardous materials and qualitative assessment of potential effects

- 1 7. Qualitative assessment of impacts on local emergency response to accidents or spills on
2 public roadways

3 **Issue 11: Impacts on Social and Economic Resources**

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

7 **Issue 11A: Regional Socioeconomics**

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

12 ***Issue 11A Factors for Alternative Comparison***

- 13 1. Change in employment over time
14 2. Change in property values over time
15 3. Change in tax base per year over time
16 4. Change in demand and cost for State road maintenance over time
17 5. Change in demand and cost for emergency services over time
18 6. Quantitative assessment of change in tourism and recreation revenue over time
19 7. Qualitative assessment of economic effect on the astronomy industry

20 **Issue 11B: Rural Landscapes**

21 The mine operation may not conform to the quality of life expectations as expressed by the forest
22 plan and Federal, State, and local regulations and ordinances. Commenters expressed concerns about
23 modification of rural historic landscapes and local ranching traditions, which are important to local
24 residents and visitors. Commenters also expressed a need to assess impacts on quality of life,
25 including the economic nature of these rural landscapes.

26 ***Issue 11B Factors for Alternative Comparison***

- 27 1. Qualitative assessment of the ability to meet rural landscape expectations as expressed by
28 Federal, State, and local plans
29 2. Quantitative assessment of economic effects on amenity-based relocation

30 **Issue 12: Impact on Transportation/Access**

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

1 **Issue 12 Factors for Alternative Comparison**

- 2 1. Change in type and pattern of traffic by road and vehicle type
- 3 2. Quantitative assessment of the change in level of service on potential highway routes
- 4 3. Quantitative assessment of roads decommissioned by the mine and roads whose access is
- 5 restricted by mine operations