



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105-3901

July 25, 2016

Michael Langley, Senior Project Manager
U.S. Army Corps of Engineers, Los Angeles District
Regulatory Division, Arizona Branch
3636 N. Central Avenue, Suite 900
Phoenix, AZ 85012-1939

Subject: Draft Environmental Impact Statement (EIS)
Lone Star Ore Body Development Project, Graham County Arizona
[CEQ EIS No. 20160126]

Dear Mr. Langley:

The U.S. Environmental Protection Agency (EPA) has reviewed the above referenced document. Our review and comments are provided pursuant to the National Environmental Policy Act (NEPA), the Council on Environmental Quality (CEQ) NEPA Implementation Regulations at 40 CFR 1500-1508, and our NEPA review authority under Section 309 of the Clean Air Act.

The Proposed Action would allow development of the mineral resources associated with the Lone Star Ore Body (the Project), located on lands owned and managed by Freeport McMoRan Safford, Inc. (FMSI), and adjacent to its existing copper mining operations in Safford, Arizona. According to the Draft EIS, development of these mineral resources would require rock stockpiles, a heap leach stockpile, additional roads, and stormwater management facilities, in addition to the open pit itself. The U.S. Army Corps of Engineers (Corps) proposes to issue a permit to allow the discharge of dredged or fill materials into waters of the U.S. (WUS) during the mining process, pursuant to Section 404 of the Clean Water Act (CWA). EPA and the Corps share responsibility for implementing CWA section 404, and EPA participated as a cooperating agency in the development of this Draft EIS. As explained in our letter accepting the Corps' invitation to be a cooperating agency, our status as such does not imply endorsement of any alternative nor alter our statutory obligation to independently review and comment on the Draft EIS.

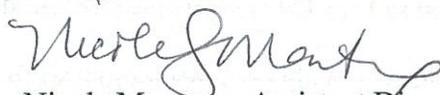
The Draft EIS evaluates three alternatives: Alternative 1 Proposed Action, Alternative 2 (identified as the "Pivot Option" in the CWA 404(b)(1) analysis), and the No Action Alternative. The Corps did not identify a preferred alternative; however, we note that the Corps' 404(b)(1) alternatives analysis identifies Alternative 2 as the Least Environmentally Damaging Practicable Alternative (LEDPA). Under the Clean Water Act, only the LEDPA can be permitted.

When a lead agency elects not to identify a preferred alternative in the Draft EIS, it is EPA policy to rate each alternative. Based on our review, EPA is rating Alternative 1 as

Environmental Objections – Insufficient Information (EO-2; see enclosed “Summary of EPA Rating Definitions”). Alternative 1 would result in impacts to 90 acres of WUS, at least some of which the Corps has determined would be avoidable. Because Alternative 1 has been determined not to be the LEDPA, it is ineligible for permitting under CWA section 404. In addition, the proposed mitigation for Alternative 1 is not compensatory. It relies on a functional assessment that is not scientifically meaningful and, therefore, cannot be used to determine how much compensatory mitigation is required. As proposed, the mitigation is not commensurate with the amount and type of impact that would result from the proposed action, and it would result in a net loss of acreage and function, contrary to the “Compensatory Mitigation for Losses of Aquatic Resources, Final Rule” (40 CFR Part 230 Subpart J). While Alternative 2 would result in impacts to fewer acres of WUS (76 acres) and has been identified as the LEDPA, the mitigation proposed for that alternative is the same as that proposed for Alternative 1; therefore, we are rating Alternative 2 *EO-2*, as well. EPA is rating the No Action Alternative as *Lack of Objections (LO)*. Our detailed comments are enclosed; these include recommendations to address our objections to Alternative 2 as well as additional concerns.

We appreciate the opportunity to review this Draft EIS. EPA would like to work with the Corps to minimize the potential environmental impacts of this project on the environment. We request a copy of the Final EIS when it is filed with our Washington, D.C. office. If you have any questions, please call Kathleen Goforth at (415) 972-3521 or Jamey Watt at (415) 972-3175.

Sincerely,



Nicole Moutoux, Assistant Director
Enforcement Division

Enclosures: (1) EPA’s Summary of Rating Definitions and Follow-Up Action
(2) EPA’s Detailed Comments

SUMMARY OF EPA RATING DEFINITIONS*

This rating system was developed as a means to summarize the U.S. Environmental Protection Agency's (EPA) level of concern with a proposed action. The ratings are a combination of alphabetical categories for evaluation of the environmental impacts of the proposal and numerical categories for evaluation of the adequacy of the Environmental Impact Statement (EIS).

ENVIRONMENTAL IMPACT OF THE ACTION

"LO" (Lack of Objections)

The EPA review has not identified any potential environmental impacts requiring substantive changes to the proposal. The review may have disclosed opportunities for application of mitigation measures that could be accomplished with no more than minor changes to the proposal.

"EC" (Environmental Concerns)

The EPA review has identified environmental impacts that should be avoided in order to fully protect the environment. Corrective measures may require changes to the preferred alternative or application of mitigation measures that can reduce the environmental impact. EPA would like to work with the lead agency to reduce these impacts.

"EO" (Environmental Objections)

The EPA review has identified significant environmental impacts that should be avoided in order to provide adequate protection for the environment. Corrective measures may require substantial changes to the preferred alternative or consideration of some other project alternative (including the no action alternative or a new alternative). EPA intends to work with the lead agency to reduce these impacts.

"EU" (Environmentally Unsatisfactory)

The EPA review has identified adverse environmental impacts that are of sufficient magnitude that they are unsatisfactory from the standpoint of public health or welfare or environmental quality. The EPA intends to work with the lead agency to reduce these impacts. If the potentially unsatisfactory impacts are not corrected at the final EIS stage, this proposal will be recommended for referral to the Council on Environmental Quality (CEQ).

ADEQUACY OF THE IMPACT STATEMENT

"Category 1" (Adequate)

EPA believes the draft EIS adequately sets forth the environmental impact(s) of the preferred alternative and those of the alternatives reasonably available to the project or action. No further analysis or data collection is necessary, but the reviewer may suggest the addition of clarifying language or information.

"Category 2" (Insufficient Information)

The draft EIS does not contain sufficient information for EPA to fully assess environmental impacts that should be avoided in order to fully protect the environment, or the EPA reviewer has identified new reasonably available alternatives that are within the spectrum of alternatives analysed in the draft EIS, which could reduce the environmental impacts of the action. The identified additional information, data, analyses, or discussion should be included in the final EIS.

"Category 3" (Inadequate)

EPA does not believe that the draft EIS adequately assesses potentially significant environmental impacts of the action, or the EPA reviewer has identified new, reasonably available alternatives that are outside of the spectrum of alternatives analysed in the draft EIS, which should be analysed in order to reduce the potentially significant environmental impacts. EPA believes that the identified additional information, data, analyses, or discussions are of such a magnitude that they should have full public review at a draft stage. EPA does not believe that the draft EIS is adequate for the purposes of the NEPA and/or Section 309 review, and thus should be formally revised and made available for public comment in a supplemental or revised draft EIS. On the basis of the potential significant impacts involved, this proposal could be a candidate for referral to the CEQ.

*From EPA Manual 1640, Policy and Procedures for the Review of Federal Actions Impacting the Environment.

**U.S. EPA Detailed Comments on the Draft Environmental Impact Statement for the
Lone Star Ore Body Development Project,
Graham County, Arizona – July 25, 2016**

Proposed Mitigation of Impacts to Waters of the United States

Functional Assessment Methodology

Based on the information provided in the Public Notice and the Corps' Draft EIS, the Lone Star Project has not demonstrated compliance with the "Compensatory Mitigation for Losses of Aquatic Resources, Final Rule" (40 CFR Part 230 Subpart J). Specifically, it has not been demonstrated that the proposed compensatory mitigation for direct and secondary project impacts would adequately replace functions and acreage that would be eliminated by the project. The mitigation proposal is based on a qualitative functional assessment of aquatic resources, in which waters on the project site were categorized as either low-gradient braided ephemeral drainages (Ephemeral Class A) or moderate to high-gradient, relatively straight ephemeral drainages (Ephemeral Class B).¹ These waters and the waters at the mitigation site, which has perennial waters and upland terrace, were scored qualitatively using a list of 11 hydrologic, chemical and biotic functions developed for each drainage class subjectively rated on a scale from "0" (non-functional condition) to "5" (highly functional system). The functional assessment scoring system used does not provide any meaningful comparison of the functions of different types of jurisdictional waters across the proposed project and mitigation sites, and systematically favors the ecological functions at the mitigation site over the functions that would be lost as a result of placing fill in waters at the project site. For this reason, EPA believes that the functional assessment included in the Draft EIS does not constitute an "appropriate functional or condition assessment method" to assess the loss of aquatic function (33 CFR 332.3 (f)(1)).

A valid assessment does not classify ephemeral systems as inherently "lower functioning" compared to intermittent or perennial systems that evolved in a completely different climatological and physiographic setting. Fundamental to the development of a functional assessment is the recognition that some classes of waters naturally perform certain ecological functions at different levels or intensities, and through slightly different processes, than others. It is critical to accurately describe functions for each class of waters that occur within the proposed impact site and mitigation site, and to compare waters within each class to others within the same class. Comparison of the functions of Ephemeral Class A and B waters at the project site with Emery Mitigation Site perennial waters is not meaningful for the purpose of computing functional assessment scores because those waters perform different functions in different contexts. For example, the "Ephemeral Class B" waters received a low score ("1") for sediment transport/regulation in comparison to a high score ("5") in Areas A and B at the Emery Site, yet both provide sediment transport functions as expected for their given subclasses.

Recommendation: Require the applicant to revise the compensatory mitigation proposal based on a revised functional assessment that appropriately characterizes and assesses the functions that would be lost at the project site and those expected to be produced at the

¹ Clean Water Act Section 404 Conceptual Mitigation Plan Lone Star Ore Body Development Project (Mitigation Plan) prepared by WestLand Resources dated February 19, 2016. Appendix B, Draft EIS.

mitigation site(s), using a regional reference framework that allows the use of a relative, rather than absolute, scale.

Risks and Uncertainties regarding the Proposed Mitigation

Compensatory mitigation requirements must be commensurate with the amount and type of impacts associated with a 404 CWA permit. (40 CFR 290.93 (a)). The Mitigation Plan provides inadequate information about the existing condition of the proposed mitigation site to assess its suitability for compensatory mitigation. No information is provided on the reach and extent of jurisdictional waters at the mitigation site and, based on the aerial photo (Figure 7) and site description, the waters on the site appear to be primarily non-jurisdictional. Additional issues regarding the proposed mitigation include the following:

- Area A is proposed for riparian restoration. The boundaries of Area A appear to be based on property lines rather than site conditions. Detailed information on the grading and contouring to remove existing manmade structures and how removal of these features would improve the hydrology of the mitigation site is needed. The Mitigation Plan provides no information on depth to groundwater. Planting success is highly unlikely due to the lack of irrigation and the use of gel packs. EPA believes that five-year management and monitoring will not be sufficient to determine mitigation success.
- Area B is proposed for tamarisk control and riparian enhancement. In the absence of a comprehensive plan to remove tamarisk from the watershed, or a commitment by the applicant to continue removing it from the site in perpetuity, tamarisk will reoccur.
- Area C, is proposed for buffer preservation; however, it is located on the interior of the Emery Site. Buffering typically occurs on the edge of a site to protect the site from external perturbations. The proposed protection of Area C would function like preservation, rather than as a buffer, and neither the Mitigation Plan nor the Draft EIS explains why this would be compensatory.

The mitigation proposed for impacts to waters from the Lone Star Ore Body Development Project is not commensurate with the earlier mitigation approved for the Dos Pobres/San Juan Project located at the same mine complex². For that project, direct impacts to 21.4 acres and secondary impacts to 114.6 acres of ephemeral tributaries to the Gila River were offset through a larger compensatory mitigation plan, also at the Emery Mitigation Site, that included the restoration of 30 acres of riparian habitat (1:1 ratio), enhancement of 18 acres of riparian and wetland habitat (3:1 ratio), and preservation of 160 acres of riparian habitat (5:1 ratio). EPA recognizes the preservation value at the Emery mitigation site, but believes that the high risk and uncertainty associated with the proposed restoration and enhancement of habitat at that site warrants a greater mitigation ratio than is proposed.

Recommendation: Require a ratio greater than one-to-one to account for the method of compensatory mitigation (*e.g.*, preservation); the likelihood of success; differences

² Dos Pobres/San Juan Project Clean Water Act Section 404 Mitigation and Monitoring Plan prepared by WestLand Resources, Inc., dated December 27, 2002. Appendix F Dos Pobres/San Juan Project Final EIS dated December, 2003.

between the functions lost at the impact site and the functions expected to be produced by the compensatory mitigation project; temporal losses of aquatic resource functions; the difficulty of restoring and establishing the desired aquatic resource type and functions; and/or the distance between the affected aquatic resources and the compensation site (40 CFR 230.93(f)). Since similar mitigation was conducted for the Dos Pobres/San Juan project, summarize previous monitoring reports for that mitigation and evaluate its success. Determine whether this type of mitigation would suitably serve as compensation for the Lone Star project.

Mitigation for Indirect Effects

Freeport McMoRan Safford, Inc. does not propose mitigation for indirect effects, based on its evaluation of the downstream monitoring program for Dos Pobres; however, the Draft EIS provides only limited details on the downstream monitoring program for Dos Pobres. It appears there were only three monitoring visits for this program, and it is not clear what parameters were monitored.

Recommendation: In the Final EIS, provide additional information on the Dos Pobres downstream monitoring program if it is going to be used as a basis for Lone Star mitigation efforts. Further discussion is needed of the monitoring protocol to clarify whether it addressed changes in hydrology patterns, increases in sedimentation, groundwater recharge, and other impacts, such as wildlife movement. Discuss the Dos Pobres waste rock sampling results in terms of the potential to increase concentrations of heavy metals to downstream waters.

Groundwater Resources

Impacts on Groundwater Quantity

The discussion of groundwater quantity impacts, especially in Tables ES-2 and 2-9, does not clearly differentiate between impacts caused by the existing mine activities at the Dos Pobres and San Juan pits and the potential future impacts of the Lone Star Ore Body Development project.

Recommendation: Clearly characterize existing groundwater quantity conditions in the Final EIS. Describe the potential impacts of Lone Star activities on groundwater quantity, and clearly articulate how those impacts would be cumulative for a certain period of time, given the interaction between the effects of Dos Pobres and San Juan operations, as those activities come to an end, and the beginning of Lone Star operations.

Characterization of Aquifers

The Draft EIS presents limited information on project area aquifer systems and current/future groundwater conditions. The three aquifers in the study area are discussed individually and only limited water quantity/quality data are provided for each. It is important to understand how these three groundwater systems are interconnected to each other and to nearby valuable surface water resources, such as the Gila River, springs, and drinking water/irrigation resources.

Recommendation: In the Final EIS, thoroughly characterize all aquifers in the project area. Discuss the individual characteristics of each aquifer and how the aquifers are

interconnected to one another and the surrounding environment. Provide maps and figures depicting the aquifers individually and in relation to each other, and include monitoring well and pumping well locations in aquifer figures. Provide summary data tables showing water chemistry parameters at monitoring well locations, and pumping history at pumping well locations. Describe where and how each aquifer is recharged.

Existing Groundwater Data

The Draft EIS does not mention or reference any relevant water quality monitoring data collected over the many years of Dos Pobres and San Juan mining operations. Robust data sets are available as part of the existing mining activities, which should serve as excellent analogs for the Lone Star project. The Draft EIS mentions the existence of a U.S. Geological Survey Model, Monitor, and Mitigate (3M) Program; however, few results from the 3M program are presented, and there is no discussion of available monitoring results or measured changes to water quality over time due to existing mining activity.

Recommendation: Provide summary data tables of information about existing water quality conditions in the local aquifers, based on available data from the currently operating mine. Summarize results from the 3M Program and describe existing water conditions at the two operating pits and the proposed project area.

Fallowing Program

The Draft EIS lacks a clear explanation of why and how the FMSI “fallowing program” was originally created to mitigate impacts to the Gila River from mining activities at the Dos Pobres and San Juan pits, and how that program can, with no changes, also mitigate the newly proposed Lone Star activities.

Recommendation: Explain, in the Final EIS, the initial intent of the fallowing program, and discuss its suitability and capacity to mitigate for additional/cumulative impacts from the proposed Lone Star Ore Body Development project. Provide details on how the fallowing program would offset future groundwater drawdown impacts that models predict would occur for hundreds of years.

- Consider presenting a chart or table of predicted groundwater flows to the Gila River over time, comparing the following flows: baseline (including effects from Dos Pobres/San Juan pumping), flows resulting from the proposed action, cumulative effects with the baseline and proposed action, offset to reduced flows provided by the current fallowing program, and offset to further flow reductions (if necessary).
- Discuss whether additional mitigation would be required for impacts to groundwater flows, whether sufficient land is available to offset further flow reductions through fallowing, whether other mitigation is available, and the likelihood of implementing further fallowing or other mitigation.

Surface Water Resources

Sedimentation and Erosion

As noted in the Draft EIS, upgradient from the project area, the Gila River is impaired by suspended sediment (pg. 3.2-12). The Draft EIS provides a qualitative assessment of how increased flows in Gila River tributary Talley Wash, caused by the Lone Star project, would be expected to affect the amount of suspended sediment discharged to the Gila. It predicts that the increased flows in Talley Wash would “cause elevated levels of channel erosion and instability compared to the current condition,” but “would remain less than or similar to the modelled pre-mine flows,” thereby resulting in effects “similar to historic conditions.” While acknowledging that “increased sedimentation effects compared to current conditions would be expected downstream from the diversions that increase flows to near the pre-mining conditions,” the document predicts, that, “because there is low-gradient terrain (causing sediment to be deposited) between the Project Area and the confluence with the Gila River, and because the Gila River would have elevated flows and sediment loads from stormflows, adverse impacts to the Gila River would not be expected from changes in stormwater runoff patterns” (pg. 3.2-15).

The potential for increased sedimentation and erosional impacts from the diversion of flows is not adequately analyzed. Reductions in sediment delivery from construction of stormwater dams may degrade water quality by altering the stream bed, creating soil scour in some downstream areas and aggradation in others. Downstream water will attempt to come into equilibrium by increasing sediment discharge downstream of the dams, creating scour. Total suspended sediment may increase in surface water flows in some reaches. With regard to channel modifications (e.g., Talley Wash, Draft EIS, p. 3.2-17), it should be noted that sediment may travel in suspension at steeper slopes, and as bed-load at shallower slopes downstream.³

Recommendation: In the Final EIS, either support any qualitative sediment predictions with quantitative modeling results or consider that the building of stormwater diversions and dams has the potential to contribute to increased sediment loads and suspended sediment reaching the Gila River. Evaluate whether these actions would contribute to any further impacts to the river. Discuss how the current Stormwater Pollution Prevention Plan monitors these sediment concerns and how monitoring efforts would be coordinated with state permitting actions.

Springs

The Draft EIS provides minimal information on springs in the area. Spring locations are noted on Page 3.2-10, but no other information is presented.

Recommendation: Provide, in the Final EIS, information on springs in and around the Safford area, including how these springs may be impacted by groundwater pumping at

³ “Ultimately, as headwater streams equilibrate to the new flow regime and their importance as a sediment source declines, channel entrenchment will likely shift further and further downstream. The cumulative effect of many entrenching channels is a significant increase in sediment load in downstream waters.” Levick, L. D., Fonseca, J., Goodrich, D., Hernandez, M, Semmens, D., Stromberg, J., Leidy, R., Apodaca, M., Guertin, D.P., Tluczek, M., Kepner, W., 2008. The ecological and hydrological significance of ephemeral and intermittent streams in the arid and semi-arid American southwest. U.S. Environmental Protection Agency and USDA/ARS Southwest Watershed Research Center, EPA/600/R-08/134, ARS/233046, p.34.

the mine. Discuss water quality characteristics of the springs and their roles with respect to vegetation and wildlife.

Zero Discharge Design Standards

The Draft EIS does not identify what regulatory design standard(s) is appropriate for “zero discharge” mine facilities. Certain structures are designed to have capacity for a 100-year/24-hour event while others have a 100-year/10-day event capacity (pg. 3.2-14).

Recommendation: Explain the regulations and engineering standards applicable to mine facility design. Describe the expected performance of the proposed facilities if they were designed for a larger, yet reasonably foreseeable, event, such as the maximum probable event, compared to their performance as currently designed.

Impacts of increased flows on transportation infrastructure

The Draft EIS states on page 3.2-15 that increases in surface water flows are anticipated in some drainages and there could be negative effects on existing road and bridge infrastructure used to transport a high volume of hazardous waste material via trucks.

Recommendation: Consider periodic evaluations of road and bridge structural conditions and outline a plan for such activities in the Final EIS.

Minimization of Impacts to Waters of the United States

Heap Leach Pad

According to the Draft EIS, under both of the action alternatives, the design of the heap leach pad “provides for the ability to accommodate the effective leaching of an additional volume of 200 million tons of ore over the currently identified mineral resource.” The Draft EIS states that the purpose of this additional capacity is to allow for uncertainties regarding the size of the ore body and other contingencies that may arise during the leaching operation. Given that, of all the elements of the proposed project, the heap leach pad would have the greatest impact on WUS, every effort should be made to design the pad to achieve maximum avoidance of waters. Compared to Alternative 1, Alternative 2 would avoid 14 acres of WUS by shifting the orientation of the pad. Neither the Draft EIS nor the 404(b)(1) analysis evaluates any other means of reducing the magnitude of the impacts of the heap leach pad to WUS.

Recommendation: In the Final EIS, evaluate the feasibility and impacts of additional measures to reduce the impacts of the heap leach pad on WUS. For example, consider whether the estimate of the ore body could be further refined so as to reduce uncertainties and minimize the amount of additional capacity that the pad design would need to accommodate beyond that which would be needed for the currently identified mineral resource. Evaluate, also, the feasibility of phasing the construction of the heap leach pad such that the initial phase would accommodate only the currently identified mineral resource, and additional capacity would be added only if needed. Disclose the extent to which such measures could reduce the environmental impacts of the heap leach pad, particularly with respect to avoidance or minimization of impacts to WUS.

Rock Stockpile

The Purpose and Need for the proposed action is to develop the mineral resources associated with the Lone Star ore body, which is described elsewhere in the document as constituting 785 million tons of leachable ore; however, substantial project elements, identical in both action alternatives, are designed to allow mining of additional resources in the future. For example, with respect to the development rock stockpile, the Draft EIS states that "... the design of the Lone Star Pit includes a 1,100-foot setback to accommodate the potential future mining of sulfide ore located beneath the leachable ore body." The impact of this setback on WUS is not disclosed, and neither the Draft EIS nor the 404(b)(1) Alternatives Analysis evaluates any alternatives that do not include such a setback. Although such setbacks are common practice in the mining industry, the Draft EIS states that mining of the sulfide ore is not reasonably foreseeable, and it appears that a design that does not include such a setback could meet the stated Purpose and Need for the Lone Star project.

Recommendation: In the Final EIS, disclose the extent to which the environmental impacts of the project, particularly with respect to WUS, could be reduced by eliminating the 1,100-foot setback of the development rock stockpile, and consider modifying the project design in that manner.

Haul Road

The Draft EIS, on page 2-6, states that "The Proposed Action would involve construction of a haul road between the Lone Star Pit and the existing crushing facilities (Figure 2-1). This road would be unpaved with a drivable road surface of approximately 210 feet in width. The full width of the road footprint would vary along the length of the road, reaching a maximum of approximately 750 feet near the Lone Star Pit." The overall footprint of the haul road would be approximately 250 acres and impact approximately 3 acres of WUS.

Recommendation: With respect to new road construction activities and impacts on WUS, address the following points in a Final EIS:

- Clarify if the road widths proposed are the minimum allowed by mine safety regulations, and if not, explain the need for the proposed road size.
- Identify minimization measures associated with road design that would be committed to/required as part of the permit.
- Quantify any reduction of impacts to WUS that could be achieved by reducing the road width.

Hazardous Materials

The Hazardous Materials Storage, Handling, and Transport section of the Draft EIS states that 40 to 70 tanker truck deliveries of sulfuric acid per day are expected for the Lone Star Ore Body Development project. Table 2-4 shows the same number of deliveries for current activities. The Draft EIS does not discuss whether there will be any overlap of the current activities (for Dos Pobres and San Juan pits) and Lone Star activities. If there would be any overlap, then the potential exists for up to 140 tanker truck deliveries of sulfuric acid every day.

Recommendation: Clarify the delivery frequencies of all hazardous materials and discuss the risks to the public and the environment from the use of public roads and bridge crossings over the Gila River.

Cumulative Impacts

The Draft EIS, as currently written, reads as if there is a future intent to mine the sulfide-bearing ore, sometimes referred to as “known mineral resources,” at the Dos Pobres, San Juan, and Lone Star pits. The potential for such future mining is identified as the reason placing Lone Star development rock in Dos Pobres pit is not considered, why there is no plan to backfill the Lone Star pit during reclamation, and why a 1,100-foot setback on the development rock placement around the Lone Star pit is proposed.

Recommendation: Because many components of the Lone Star project are designed to accommodate future mining of the sulfide-bearing ore, such mining from all three pits is a reasonably foreseeable future action that should be considered in the cumulative impact analysis of the Final EIS.

FMSI has operated the Dos Pobres and San Juan pits for more than 10 years. During that time, surface water, groundwater, and air monitoring data have been collected from existing monitoring locations, yet the Draft EIS lacks environmental information that is available from those existing operations.

Recommendation: Incorporate existing data from the Dos Pobres and San Juan operations to evaluate future and cumulative impacts of the proposed action.

Geochemistry

The Draft EIS lacks detail on the geochemistry at the project area and the analytical procedures used to characterize it. The Draft EIS relies solely on references to the Material Characterization Report and the Lone Star Pit Lake Report. Furthermore, the Draft EIS does not provide geochemistry information on the nearby Dos Pobres and San Juan pit areas, which provide an excellent analog for potential acid rock generation and metals leaching from the Lone Star project. As noted by the Global Acid Rock Drainage (GARD) Guide⁴, analog sites or historical mining wastes located on the property of interest are valuable in ARD prediction, especially those that have been thoroughly characterized and monitored for water quality and have many similar characteristics as the site in need of prediction.

Recommendation: In the Final EIS, characterize existing data from the Dos Pobres and San Juan waste rock piles and ore. Discuss the usefulness of this existing information for the Lone Star project. Include:

⁴ The International Network for Acid Prevention (INAP), 2009. Global Acid Rock Drainage Guide (GARD Guide). <http://www.gardguide.com/>.

- All Dos Pobres/San Juan geochemical characterization that is relevant to the Lone Star project; and
- A history of all monitoring results associated with the existing mine(s) and quality and quantity of water resources, including springs, seepage, surface water, and groundwater at points of compliance and other locations.

The Draft EIS, on page 3.1-8, states that stormwater runoff and pit lake water are “unlikely to produce acid rock drainage.” The basis for this statement is unclear.

Recommendation: In the geochemistry section of the Final EIS, provide a detailed analysis of the potential for acid rock drainage. Along with laboratory analysis of Lone Star-specific geochemistry samples, include acid rock drainage sampling from the existing development rock piles at Dos Pobres and San Juan pits.

Services

The Draft EIS states: “The changes at the mouth of Talley Wash and subsequent increases in sediment loads may temporarily affect downstream channels and road crossings during storm events similar to pre-mine conditions, but would be minimal relative to the flows and suspended sediment levels in the river during high runoff events. There is an electrical substation located along Talley Wash on the south side of Safford Bryce Road that was constructed after development of the existing mine, and this facility could experience adverse impacts from the increased stormflows.” (pg. 3.-17) It is unclear how this substation might be affected, or whether the effects due to the proposed project could result in an interruption of service.

Recommendation: Discuss the range of potential adverse impacts to the substation that could result from the proposed action and discuss options for avoidance. Determine potential mitigation measures that could reduce impacts or compensate for unavoidable impacts to the substation, and require them as part of the permit.

Migratory Birds

The Draft EIS states “If avoidance [of active migratory bird nests] is not practicable, other appropriate mitigation measures would be employed to prevent bird mortality” (pg. 2-17). It is unclear whether mitigation measures would be sufficient to avoid nest “take” because specific measures are not identified.

Recommendation: Identify in the Final EIS the specific mitigation measures that would be employed to ensure that unpermitted nest “take” does not occur when avoidance is not practicable. Coordinate with U.S. Fish and Wildlife Service and/or Arizona Game and Fish Department to ensure that mitigation measures are appropriate to avoid nest “take” and to determine whether a “take” permit may be required.

Closure/Post-Closure/Reclamation

The Draft EIS indicates that the closure of the heap leach facility will initially be actively managed until draindown constituent concentrations are stabilized and below levels of concern; thereafter the facility would be passively managed. The Draft EIS provides only very conceptual information on these processes and indicates that the Reclamation and Closure Plan would be revised and completed at a future time according to state requirements.

The NEPA process is intended to consider the entire life and potential impacts of a proposed action. Improper or poorly executed reclamation and closure can lead to severe and irretrievable environmental impacts, and has done so at other mine sites, including those in the state of Arizona. Because information regarding reclamation and closure is critical to the evaluation of potential environmental impacts, it should be disclosed in the Draft EIS.

Recommendation: Provide more detailed information on the entire life cycle management and monitoring requirements of the heap leach facility in the Final EIS. Specify which commitments are enforceable. Include as much information as possible on the closure and post-closure monitoring plans. The plans should describe monitoring requirements, mitigation actions that would be taken if destabilization or contamination is detected, and action thresholds and triggers. The plans also should identify who would be responsible for implementing and enforcing these actions, and explain how they would be funded. Include the Reclamation and Closure Plan as an appendix to the Final EIS.

Climate Change

The EPA notes that the Draft EIS estimates annual greenhouse gas (GHG) emissions from the proposed project alternatives, including the emissions from blasting, leaching processes, stationary combustion, portable engines (including emergency firewater pumps, emergency generators, light towers), and vehicle tailpipe emissions. However, there are a few aspects of the analysis that could be made clearer.

The Draft EIS compares expected project emissions with estimated emissions at the state and national scale. The Draft EIS also compares the expected project-level GHG emissions with major industrial sectors in Arizona.

Recommendation: The Final EIS should not include these types of comparisons. These comparisons, as well as the comparative approach used in the GHG Impact Assessment Criteria, obscure rather than explain the impact of the proposal's GHG emissions under NEPA. Climate change is a global problem resulting from the emissions of many individual sources whose impacts are cumulative. GHGs from individual sources, such as the mine proposal, have impacts that are global in scale and long-lasting. The environmental impacts are best described by using emissions as a proxy to compare the proposal, alternatives, and potential mitigation.

The document mentions the Arizona Climate Change Action Plan, comparing the project's emissions with the State's projected emissions in the Plan. However, the document does not

describe how the project's emissions would be consistent with or conflict with the Plan. It also does not identify other potentially applicable plans or other climate change-related planning efforts.

Recommendation: Explain how the project relates to the State plan. Identify and briefly describe relevant goals or climate change-related plans, and evaluate whether the project is consistent with or conflicts with the goals or objectives of such plans.

Table 3.9-7 and the supporting analysis reasonably simplifies the calculations used for determining the year in which the most emissions are expected by not including those emissions expected to be the same in all years, which are identified as acid plant emissions, wind erosion of stockpiles, fuel burning equipment, crushing and screening plant processing, and emissions related to the portable stemming, the road base plant, and supporting traffic. However, in the following table, Table 3.9-8, it is not clear whether the non-variable emissions are included in the modeling for the facility-wide GHG emissions in the worst case scenario for air quality impacts.

Recommendation: Clarify whether total emissions (Table 3.9-8) from all indirect, direct, constant, and variable sources are included in the calculations for air emissions in every year and in the modeling of air quality impacts in the Draft EIS. If they were not included, update the Final EIS analysis for total GHG emissions and the modeling and interpretation of air quality impacts to include all emissions. Include text or a table in the Final EIS that shows total aggregate emissions over the life of the mine.

The Draft EIS includes some information on the potential climate changes at the mine site (page 3.9-25), but the document does not discuss the implications of these changes for the environmental effects resulting from the project, nor does it consider whether these changes might result in higher cumulative impacts. For instance, the Draft EIS does not discuss whether increased temperatures and changes to precipitation would affect the steady-state conditions of the pit lake, result in a slower rebound for the water table, or reduce the potential for successful establishment of vegetation during reclamation.

Recommendation: In the Final EIS, discuss if and how climate change at the area affected by the mine could result in cumulative impacts, change the environmental effects due to mining, or increase the risk of hazardous discharges.

The Draft EIS analyzes changes to the 10-year and 100-year events in creeks and washes affected by the proposed project alternatives, but does not discuss how climate change may interact with these changes. Most climate change modeling predicts that the southwestern U.S. is expected to become warmer and drier in the future. Paradoxically, it is also likely to experience more flooding. Therefore, a discussion of how the range of reasonably foreseeable changes to the precipitation regime in the area could contribute to the Draft EIS-predicted increases in flows is an important analysis to include to determine the significance of cumulative impacts from the project.

Recommendation: Include an analysis of the potential for more flooding and whether this may result in more significant cumulative impacts to flood risks. Also, address

whether climate change increases the risk that facilities designed for zero discharge will not be able to contain reasonably foreseeable/maximum probable events.

The project is designed as a zero-discharge facility, with various facilities designed for the 100-year/10-day or 100-year/24-hour event. We recommend that the Final EIS further explain the justification for this engineering capacity and address whether any facilities will be designed for potentially larger events, such as the maximum probable event taking into account the effects of climate change on the precipitation regime.

Recommendation: Compare how flood and hazardous discharge risks vary with designing the mine facilities to current engineering criteria versus reasonably foreseeable maximum probable events.

The Draft EIS reiterates some potential mitigation measures to reduce GHG emissions offered by EPA in our scoping comments (3.9-25), but does not discuss how effective they could be in reducing emissions, whether they would be required, how they might be monitored for effectiveness, or whether there are other mitigation measures that are applicable.

Recommendation: In the Final EIS, identify and describe practicable measures for reducing and mitigating GHG emissions and climate change effects, such as evaluating opportunities for energy efficiency, lower GHG technology, and use of renewable energy.

- Disclose GHG reductions associated with such measures and commit to implementation of practicable mitigation measures that would reduce project-related GHG emissions in the Record of Decision.
- Identify the responsible party for implementing, funding, and monitoring each mitigation measure adopted as part of the project.

