

Production Blasting Plan

As Required By: Mitigation Measures FS-N-01

October 2018

Prepared by:

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HUDBAY

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Monitoring and Reporting Schedule

<i>Task Schedule</i>	<i>Purpose/Description/ Timing</i>	<i>Pre-Mining Period/ Construction Phase¹</i>		<i>Active Mining Phase¹/ Operations Phase¹</i>		<i>Closure Phase¹</i>	
		<i>D</i>	<i>A</i>	<i>D</i>	<i>A</i>	<i>D</i>	<i>A</i>
Record blasting statistics (date/time/tonnage, etc.)	Ensure compliance with permit limitations	X		X		X	
Reporting	To Forest Service		X		X		X

D = Daily; A = Annually; ¹ = Also applies to large ground breaking blasts using production blasting methods.

Revision Log

<i>Revision Number</i>	<i>Revision Lead</i>	<i>Purpose of Revision</i>	<i>Revision Date</i>
1	Rosemont	Based on Forest Service review of June 2017 MPO submittal.	March 2018
2	Rosemont	Based on Forest Service review of March 2018 MPO submittal.	June 2018
3	Rosemont	Added Data Management Language per FS	October 2018

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1.0 PLAN OBJECTIVE AND DESCRIPTION

This *Production Blasting Plan* (Plan) was developed as a mitigation and monitoring measure (Mitigation Measure) requirement of the U.S. Forest Service's (USFS, Forest Service) Coronado National Forest (Coronado) Final Environmental Impact Statement (FEIS; USFS, 2013) for the Rosemont Copper Project (Project). The Mitigation Measure requirement is specified as "FS-N-01: Management techniques to reduce potential noise impacts from blasting" on page B-67 in Appendix B of the FEIS. Corrections to any of the mitigation measures listed in Appendix B are provided in an Errata to the FEIS (USFS, 2017a). The Record of Decision (ROD; USFS, 2017b) for the Rosemont Project also lists the required mitigation measures.

In their Objection responses, the Forest Service issued the following requirement that will alter the language of mitigation requirement FS-N-01 in Appendix B: Change wording of the FS-N-01 mitigation measure [PR 047511_6, p. B-67]: "Air quality related blasting restrictions are specified in the Air Quality Class II Synthetic Minor Permit issued by the Arizona Department of Environmental Quality. Additional blasting restrictions were established focused on noise management techniques, including generally limiting blasting to once per day, during daylight hours; and sequenced blasting using time-delay technology."

Rosemont Copper Company (Rosemont) will be required to submit renewal applications for the air permit every five years during operations, the first of which will include an amendment to reflect the selected alternative in the FEIS. Therefore, Rosemont will abide by the conditions in the Air Quality Control Permit in force and applicable at the time. Rosemont will report to both ADEQ and the Forest Service accordingly.

Monitoring for Mitigation Measure FS-N-01 will begin in the Pre-Mining Period when large scale production blasts commence and continue through the Active Mining Phase/Operations Phase. No large-scale production blasting is anticipated during the Final Reclamation and Closure Phase (Closure Phase).

1.1 PLAN OBJECTIVE

The objective of Mitigation Measure FS-N-01 is to:

- Reduce the impacts from blasting noise.

This Plan does not cover non-production blasting such as the use of construction explosives such as dynamite. Incidental blasting using construction explosives are generally limited in large-scale mining environments such as at the Rosemont Project. Blasting of this sort may be needed during construction and for high wall definition during operations. Blasting of large boulders would be another limited application for construction explosives. However, the use of production blasting techniques may also be used as part of the construction activities regarding earthmoving.

Other Forest Service mitigation measures and/or other permits/requirements/certifications associated with blasting related issues include:

- FS-HM-01: Hazardous materials containment and management. This mitigation measure calls for an explosives and blasting management procedure to be implemented to ensure that best management practices are applied. Also included is the handling of ammonium nitrate and other explosive materials to minimize loss or spillage. This measure cites a variety of agencies that have regulations defining what materials are classified as hazardous and how they should be transported, handled, and stored. These agencies include the U.S. Environmental Protection Agency, the U.S. Department of Transportation, Arizona Department of Environmental Quality (ADEQ), Pima County Department of Environmental Quality, and the Mine Safety and Health Administration (MSHA). See pages B-65 and B-66 in Appendix B of the FEIS.
- FS-PHS-02: Preparation of emergency response and contingency plans, including a fire plan.

Requirements for a fire plan include precautions for blasting. See page B-67 in Appendix B of the FEIS.

- Alcohol, Tobacco, Firearms and Explosives (ATF) Authorization. This authorization will cover all types of blasting agents. The location of explosives storage and background checks and licensing of personnel are also covered in the authorization.

1.2 PLAN DESCRIPTION

The remainder of this Plan includes the following sections:

- Section 2.0: Monitoring and Reporting;
- Section 3.0: Closure and Bond Release;
- Section 4.0: Data Management; and
- Section 5.0: References.

As noted in Section 1.1, this Plan covers large-scale production blasting only. Blasting agents used in production blasting will generally either be:

- Ammonium nitrate (AN) prill mixed with fuel oil (FO) (ANFO) when blasting in dry conditions; or
- Heavy ANFO (HANFO) or a slurry (emulsion) when blasting in wet conditions.

The following management techniques are anticipated in order to reduce noise impacts, increase the efficiency of the blast, and/or comply with other permits/agency regulations:

- Generally limiting production blasting to once per day;
- Limiting production blasting to daylight hours;
- Sequenced production blasting using time-delay technology. This results in a series of explosions separated by milliseconds in one blast event, which minimizes noise and maximizes effectiveness; and
- Limiting ANFO usage, as permitted by the Air Quality Control Permit.

2.0 MONITORING AND REPORTING

Monitoring and reporting components for Mitigation Measure FS-N-01 are listed below.

2.1 MONITORING

Monitoring for Mitigation Measure FS-N-01 will consist of recording information on each production blast. The following information will be included in the record:

- Number of blasts;
- Day and time of the blast;
- Information describing sequencing techniques employed; and
- Amount of ANFO used per blast.

Recordkeeping and training associated with regulations set up by the Bureau of Alcohol, Tobacco, and Firearms (BATF) as well as the Mine Safety and Health Administration (MSHA) will also be required. As appropriate, information for those reports will be gathered at the same time as specific information is gathered on production blasting for the Forest Service.

2.2 REPORTING

Reporting on Mitigation Measure FS-N-01 to the Forest Service will include the following information:

- Blasting times (date and hour); and
- ANFO usage (tonnage) per blast.

3.0 CLOSURE AND BOND RELEASE

This section addresses closure activities associated with this Plan as well as the approach for funding of those activities and bond release of those funds. If bonding is set for one year or less (i.e., simply completing testwork or finalizing reporting) no bond release is proposed. For longer periods, the bonding terms and application for bond release, as well as the mechanism for that release, are included.

3.1 INTERIM CLOSURE

There are no interim closure activities associated with this measure.

3.2 FINAL CLOSURE

There are no final closure activities associated with this measure.

3.3 BOND RELEASE

There is no bonding associated with this measure.

4.0 DATA MANAGEMENT

Rosemont currently maintains data in various formats including logbooks, electronic logbooks, spreadsheets, hardcopy and database formats. Rosemont will collaborate with the Forest Service to ensure that the reporting format used will satisfy reporting requirements and that Forest Service concurs with the format prior to the first reporting deadline. It is Rosemont's intent that, ultimately, a robust database will be used to house all data collected for the various monitoring programs. Numeric data ultimately will be stored in a database and spatial data will be maintained in an ESRI database.

Depending upon the type of data to be reported, Rosemont will develop custom reports displaying required information in table or figure format. Electronic submittals will be provided in pdf format to provide a permanent record of the submittal and "raw" data will be maintained on-site for review by the Forest Service. If the Forest Service requests numeric data, it may include information such as cumulative results documenting the monitoring history and include baseline data for the resource.

Electronic submittals will be made on the reporting period specified. Reports will be submitted in hardcopy form with a duplicate electronic pdf file. Delivery of the electronic files will depend upon the size of the file and will either be made via email, via a CD/DVD or thumb drive, or via a website set up and maintained for delivery of files to the Forest Service. Details regarding access will need to be worked out so transmittals can take place seamlessly.

5.0 REFERENCES

USFS, 2013. *Final Environmental Impact Statement for Rosemont Copper Project, Appendix B Mitigation and Monitoring Plan*. December 2013.

2017a. *Errata – Rosemont Copper Project Final Environmental Impact Statement*. April 26, 2017.

2017b. *Record of Decision – Rosemont Copper Project and Amendment of the Coronado Land and Resource Management Plan*. June 2017.