



**ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY**

**AIR QUALITY CLASS II SYNTHETIC MINOR PERMIT**

**COMPANY:** *Rosemont Copper Company*  
**FACILITY:** **Rosemont Copper Company**  
**PERMIT #:** *55223*  
**DATE ISSUED:**  
**EXPIRY DATE:**

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**SUMMARY**

This Class II synthetic minor permit is issued to Rosemont Copper Company for the construction and operation of an open pit copper mine, milling, leaching, and solvent extraction/electrowinning facility to be located at 21900 S Sonoita Highway, Vail, Arizona 85641, which is approximately 30 miles southeast of Tucson, west of State Highway 83, in Pima County, Arizona. The facility is accepting voluntary emissions limitations to stay below major source thresholds. Consequently, a Class II synthetic minor permit is being processed for this facility.

This permit is issued in accordance with an assertion of jurisdiction pursuant to Arizona Revised Statutes (ARS) 49-402, 49-426 and applicable provision of the State Implementation Plan. It contains requirements from the Arizona Administrative Code, Title 18, Chapter 2, Pima County Code, Title 17, Code of Federal Regulations (CFR) and applicable State Implementation Plan requirements.

All definitions, terms, and conditions used in this permit conform to those in the Arizona Administrative Code R18-2-101 et. Seq. (A.A.C.) and 40 Code of Federal Regulations (CFR).

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## ATTACHMENT "A": GENERAL PROVISIONS

### Air Quality Control Permit No. 55223 For Rosemont Copper Company

#### I. PERMIT EXPIRATION AND RENEWAL

[ARS § 49-426.F; A.A.C. R18-2-304.C.2, & -306.A.1]

- A. This permit is valid for a period of five years from the date of issuance.
- B. The Permittee shall submit an application for renewal of this permit at least 6 months, but not more than 18 months, prior to the date of permit expiration.

#### II. COMPLIANCE WITH PERMIT CONDITIONS

[A.A.C. R18-2-306.A.8.a & b]

- A. The Permittee shall comply with all conditions of this permit including all applicable requirements of the Arizona air quality statutes A.R.S Title 49, Chapter 3, Pima County and Arizona air quality rules. Any permit noncompliance constitutes a violation of the Arizona Revised Statutes and is grounds for enforcement action; for permit termination, revocation and reissuance, or revision; or for denial of a permit renewal application. In addition, noncompliance with any federally enforceable requirement constitutes a violation of the Clean Air Act.
- B. It shall not be a defense for a Permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

#### III. PERMIT REVISION, REOPENING, REVOCATION AND REISSUANCE, OR TERMINATION FOR CAUSE

[A.A.C. R18-2-306.A.8.c, -321.A.1.c-d, & -321.A.2]

- A. The permit may be revised, reopened, revoked and reissued, or terminated for cause. The filing of a request by the Permittee for a permit revision, revocation and reissuance, termination, or of a notification of planned changes or anticipated noncompliance does not stay any permit condition.
- B. The permit shall be reopened and revised under any of the following circumstances
  1. The Director or the Administrator determines that the permit contains a material mistake or that inaccurate statements were made in establishing the emissions standards or other terms or conditions of the permit.
  2. The Director or the Administrator determines that the permit needs to be revised or revoked to assure compliance with the applicable requirements.
- C. Proceedings to reopen and reissue a permit, including appeal of any final action relating to a permit reopening, shall follow the same procedures as apply to initial permit issuance and shall affect only those parts of the permit for which cause to reopen exists. Such

reopenings shall be made as expeditiously as practicable. Permit reopenings shall not result in a resetting of the five-year permit term.

**IV. POSTING OF PERMIT**

[A.A.C. R18-2-315]

- A.** The Permittee shall post this permit or a certificate of permit issuance where the facility is located in such a manner as to be clearly visible and accessible. All equipment covered by this permit shall be clearly marked with one of the following:
  - 1. Current permit number; or
  - 2. Serial number or other equipment ID number that is also listed in the permit to identify that piece of equipment.
- B.** A copy of the complete permit shall be kept on site.

**V. FEE PAYMENT**

[A.A.C. R18-2-306.A.9 & -326]

The Permittee shall pay fees to the Director pursuant to ARS § 49-426(E) and A.A.C. R18-2-326.

**VI. ANNUAL EMISSION INVENTORY QUESTIONNAIRE**

[A.A.C. R18-2-327.A & B]

- A.** The Permittee shall complete and submit to the Director an annual emissions inventory questionnaire. The questionnaire is due by March 31st or ninety days after the Director makes the inventory form available each year, whichever occurs later, and shall include emission information for the previous calendar year.
- B.** The questionnaire shall be on a form provided by the Director and shall include the information required by A.A.C. R18-2-327.

**VII. COMPLIANCE CERTIFICATION**

[A.A.C. R18-2-309.2.a, -309.2.c-d, and -309.5.d]

- A.** The Permittee shall submit a compliance certification to the Director semiannually which describes the compliance status of the source with respect to each permit condition. The first certification shall be submitted no later than May 15<sup>th</sup>, and shall report the compliance status of the source during the period between October 1<sup>st</sup> of the previous year and March 31<sup>st</sup> of the current year. The second certification shall be submitted no later than November 15<sup>th</sup>, and shall report the compliance status of the source during the period between April 1<sup>st</sup> and September 30<sup>th</sup> of the current year.

The compliance certifications shall include the following:

- 1. Identification of each term or condition of the permit that is the basis of the certification;
- 2. Identification of the methods or other means used by the owner or operator for determining the compliance status with each term and condition during the certification period;

3. The status of compliance with the terms and conditions of the permit for the period covered by the certification, including whether compliance during the period was continuous or intermittent. The certification shall be based on the methods or means designated in Condition VII.A.2 above. The certifications shall identify each deviation and take it into account for consideration in the compliance certification;
  4. All instances of deviations from permit requirements reported pursuant to Condition XII.B of this Attachment; and
  5. Other facts the Director may require to determine the compliance status of the source.
- B.** A progress report on all outstanding compliance schedules shall be submitted every six months beginning with six months after permit issuance.

**VIII. CERTIFICATION OF TRUTH, ACCURACY AND COMPLETENESS**

[A.A.C. R18-2-304.H]

Any document required to be submitted by this permit, including reports, shall contain a certification by a responsible official of truth, accuracy, and completeness. This certification shall state that, based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate, and complete.

**IX. INSPECTION AND ENTRY**

[A.A.C. R18-2-309.4]

Upon presentation of proper credentials, the Permittee shall allow the Director or the authorized representative of the Director to:

- A.** Enter upon the Permittee's premises where a source is located, emissions-related activity is conducted, or where records are required to be kept under the conditions of the permit;
- B.** Have access to and copy, at reasonable times, any records that are required to be kept under the conditions of the permit;
- C.** Inspect, at reasonable times, any facilities, equipment (including monitoring and air pollution control equipment), practices, or operations regulated or required under the permit;
- D.** Sample or monitor, at reasonable times, substances or parameters for the purpose of assuring compliance with the permit or other applicable requirements; and
- E.** Record any inspection by use of written, electronic, magnetic and photographic media.

**X. PERMIT REVISION PURSUANT TO FEDERAL HAZARDOUS AIR POLLUTANT STANDARD**

[A.A.C. R18-2-304.C]

If this source becomes subject to a standard promulgated by the Administrator pursuant to Section 112(d) of the Act, then the Permittee shall, within twelve months of the date on which the standard

is promulgated, submit an application for a permit revision demonstrating how the source will comply with the standard.

## **XI. ACCIDENTAL RELEASE PROGRAM**

[40 CFR Part 68]

If this source becomes subject to the provisions of 40 CFR Part 68, then the Permittee shall comply with these provisions according to the time line specified in 40 CFR Part 68.

## **XII. EXCESS EMISSIONS, PERMIT DEVIATIONS, AND EMERGENCY REPORTING**

[A.A.C. R18-2-310.01.A & -310.01.B]

### **A. Excess Emissions Reporting**

#### **1. Excess emissions shall be reported as follows:**

a. The Permittee shall report to the Director any emissions in excess of the limits established by this permit. Such report shall be in two parts as specified below:

- (1) Notification by telephone or facsimile within 24 hours of the time when the Permittee first learned of the occurrence of excess emissions including all available information from Condition XII.A.1.b below.
- (2) Detailed written notification by submission of an excess emissions report within 72 hours of the notification pursuant to Condition XII.A.1.a.(1) above.

b. The report shall contain the following information:

- (1) Identity of each stack or other emission point where the excess emissions occurred;
- (2) Magnitude of the excess emissions expressed in the units of the applicable emission limitation and the operating data and calculations used in determining the magnitude of the excess emissions;
- (3) Date, time and duration, or expected duration, of the excess emissions;
- (4) Identity of the equipment from which the excess emissions emanated;
- (5) Nature and cause of such emissions;
- (6) If the excess emissions were the result of a malfunction, steps taken to remedy the malfunction and the steps taken or planned to prevent the recurrence of such malfunctions; and

(7) Steps taken to limit the excess emissions. If the excess emissions resulted from start-up or malfunction, the report shall contain a list of the steps taken to comply with the permit procedures.

2. In the case of continuous or recurring excess emissions, the notification requirements of this Section shall be satisfied if the source provides the required notification after excess emissions are first detected and includes in such notification an estimate of the time the excess emissions will continue. Excess emissions occurring after the estimated time period, or changes in the nature of the emissions as originally reported, shall require additional notification pursuant to Condition XII.A.1 above.

[A.A.C. R18-2-310.01.C]

**B. Permit Deviations Reporting**

[A.A.C. R18-2-306.A.5.b]

The Permittee shall promptly report deviations from permit requirements, including those attributable to upset conditions as defined in the permit, the probable cause of such deviations, and any corrective actions or preventive measures taken. Prompt reporting shall mean that the report was submitted to the Director/Control Officer by certified mail, facsimile, or hand delivery within two working days of the time when the owner or operator first learned of the occurrence of a deviation from a permit requirement.

**C. Emergency Provision**

[A.A.C. R18-2-306.E]

1. An “emergency” means any situation arising from sudden and reasonable unforeseeable events beyond the control of the source, including acts of God, that require immediate corrective action to restore normal operation, and that causes the source to exceed a technology-based emission limitation under the permit, due to unavoidable increases in emissions attributable to the emergency. An emergency shall not include noncompliance to the extent caused by improperly designed equipment, lack of preventative maintenance, careless or improper operation, or operator error.

2. An emergency constitutes an affirmative defense to an action brought for noncompliance with such technology-based emission limitations if Condition XII.C.3 is met.

3. The affirmative defense of emergency shall be demonstrated through properly signed, contemporaneous operating logs, or other relevant evidence that:

a. An emergency occurred and that the Permittee can identify the cause(s) of the emergency;

b. The permitted facility was being properly operated at the time;

c. During the period of the emergency, the Permittee took all reasonable steps to minimize levels of emissions that exceeded the emissions standards or other requirements in the permit; and

- d. The Permittee submitted notice of the emergency to the Director by certified mail, facsimile, or hand delivery within two working days of the time when emission limitations were exceeded due to the emergency. This notice shall contain a description of the emergency, any steps taken to mitigate emissions, and corrective action taken.
4. In any enforcement proceeding, the Permittee seeking to establish the occurrence of an emergency has the burden of proof.
5. This provision is in addition to any emergency or upset provision contained in any applicable requirement.

**D. Compliance Schedule**

[ARS § 49-426.I.5]

For any excess emission or permit deviation that cannot be corrected within 72 hours, the Permittee is required to submit a compliance schedule to the Director within 21 days of such occurrence. The compliance schedule shall include a schedule of remedial measures, including an enforceable sequence of actions with milestones, leading to compliance with the permit terms or conditions that have been violated.

**E. Affirmative Defenses for Excess Emissions Due to Malfunctions, Startup, and Shutdown**

[A.A.C. R18-2-310]

1. Applicability

This rule establishes affirmative defenses for certain emissions in excess of an emission standard or limitation and applies to all emission standards or limitations except for standards or limitations:

- a. Promulgated pursuant to Sections 111 or 112 of the Act;
- b. Promulgated pursuant to Titles IV or VI of the Clean Air Act;
- c. Contained in any Prevention of Significant Deterioration (PSD) or New Source Review (NSR) permit issued by the U.S. EPA;
- d. Contained in A.A.C. R18-2-715.F; or
- e. Included in a permit to meet the requirements of A.A.C. R18-2-406.A.5.

2. Affirmative Defense for Malfunctions

Emissions in excess of an applicable emission limitation due to malfunction shall constitute a violation. When emissions in excess of an applicable emission limitation are due to a malfunction, the Permittee has an affirmative defense to a civil or administrative enforcement proceeding based on that violation, other than a judicial action seeking injunctive relief, if the Permittee has complied with the reporting requirements of A.A.C. R18-2-310.01 and has demonstrated all of the following:

- a. The excess emissions resulted from a sudden and unavoidable breakdown of process equipment or air pollution control equipment beyond the reasonable control of the Permittee;
- b. The air pollution control equipment, process equipment, or processes were at all times maintained and operated in a manner consistent with good practice for minimizing emissions;
- c. If repairs were required, the repairs were made in an expeditious fashion when the applicable emission limitations were being exceeded. Off-shift labor and overtime were utilized where practicable to ensure that the repairs were made as expeditiously as possible. If off-shift labor and overtime were not utilized, the Permittee satisfactorily demonstrated that the measures were impracticable;
- d. The amount and duration of the excess emissions (including any bypass operation) were minimized to the maximum extent practicable during periods of such emissions;
- e. All reasonable steps were taken to minimize the impact of the excess emissions on ambient air quality;
- f. The excess emissions were not part of a recurring pattern indicative of inadequate design, operation, or maintenance;
- g. During the period of excess emissions there were no exceedances of the relevant ambient air quality standards established in Title 18, Chapter 2, Article 2 of the Arizona Administrative Code that could be attributed to the emitting source;
- h. The excess emissions did not stem from any activity or event that could have been foreseen and avoided, or planned, and could not have been avoided by better operations and maintenance practices;
- i. All emissions monitoring systems were kept in operation if at all practicable; and
- j. The Permittee's actions in response to the excess emissions were documented by contemporaneous records

3. Affirmative Defense for Startup and Shutdown

- a. Except as provided in Condition XII.E.3.b below, and unless otherwise provided for in the applicable requirement, emissions in excess of an applicable emission limitation due to startup and shutdown shall constitute a violation. When emissions in excess of an applicable emission limitation are due to startup and shutdown, the Permittee has an affirmative defense to a civil or administrative enforcement proceeding based on that violation, other than a judicial action seeking injunctive relief, if the Permittee has complied with the reporting requirements of A.A.C. R18-2-310.01 and has demonstrated all of the following:

- (1) The excess emissions could not have been prevented through careful and prudent planning and design;
- (2) If the excess emissions were the result of a bypass of control equipment, the bypass was unavoidable to prevent loss of life, personal injury, or severe damage to air pollution control equipment, production equipment, or other property;
- (3) The air pollution control equipment, process equipment, or processes were at all times maintained and operated in a manner consistent with good practice for minimizing emissions;
- (4) The amount and duration of the excess emissions (including any bypass operation) were minimized to the maximum extent practicable during periods of such emissions;
- (5) All reasonable steps were taken to minimize the impact of the excess emissions on ambient air quality;
- (6) During the period of excess emissions there were no exceedances of the relevant ambient air quality standards established in Title 18, Chapter 2, Article 2 of the Arizona Administrative Code that could be attributed to the emitting source;
- (7) All emissions monitoring systems were kept in operation if at all practicable; and
- (8) Contemporaneous records documented the Permittee's actions in response to the excess emissions.
  - b. If excess emissions occur due to a malfunction during routine startup and shutdown, then those instances shall be treated as other malfunctions subject to Condition XII.E.2 above.

4. Affirmative Defense for Malfunctions During Scheduled Maintenance

If excess emissions occur due to a malfunction during scheduled maintenance, then those instances will be treated as other malfunctions subject to Condition XII.E.2 above.

5. Demonstration of Reasonable and Practicable Measures

For an affirmative defense under Condition XII.E.2 or XII.E.3 above, the Permittee shall demonstrate, through submission of the data and information required by Condition XII.E and A.A.C. R18-2-310.01, that all reasonable and practicable measures within the Permittee's control were implemented to prevent the occurrence of the excess emissions.

### **XIII. RECORD KEEPING REQUIREMENTS**

[A.A.C. R18-2-306.A.4]

- A.** The Permittee shall keep records of all required monitoring information including, but not limited to, the following:
  - 1. The date, place as defined in the permit, and time of sampling or measurements;
  - 2. The date(s) analyses were performed;
  - 3. The name of the company or entity that performed the analyses;
  - 4. A description of the analytical techniques or methods used;
  - 5. The results of such analyses; and
  - 6. The operating conditions as existing at the time of sampling or measurement.
- B.** The Permittee shall retain records of all required monitoring data and support information for a period of at least 5 years from the date of the monitoring sample, measurement, report, or application. Support information includes all calibration and maintenance records and all original strip-chart recordings or other data recordings for continuous monitoring instrumentation, and copies of all reports required by the permit.
- C.** All required records shall be maintained either in an unchangeable electronic format or in a handwritten logbook utilizing indelible ink.

### **XIV. REPORTING REQUIREMENTS**

[A.A.C. R18-2-306.A.5.a]

The Permittee shall submit the following reports:

- A.** Compliance certifications in accordance with Section VII of Attachment “A”.
- B.** Excess emission; permit deviation, and emergency reports in accordance with Section XII of Attachment “A”.
- C.** Other reports required by any condition of Attachment “B”.

### **XV. DUTY TO PROVIDE INFORMATION**

[A.A.C. R18-2-304.G & -306.A.8.e]

- A.** The Permittee shall furnish to the Director, within a reasonable time, any information that the Director may request in writing to determine whether cause exists for revising, revoking and reissuing, or terminating the permit, or to determine compliance with the permit. Upon request, the Permittee shall also furnish to the Director copies of records required to be kept by the permit. For information claimed to be confidential, the Permittee shall furnish an additional copy of such records directly to the Administrator along with a claim of confidentiality.

- B.** If the Permittee has failed to submit any relevant facts or has submitted incorrect information in the permit application, the Permittee shall, upon becoming aware of such failure or incorrect submittal, promptly submit such supplementary facts or corrected information.

## **XVI. PERMIT AMENDMENT OR REVISION**

[A.A.C. R18-2-317.01, -318, -319, & -320]

The Permittee shall apply for a permit amendment or revision for changes to the facility which do not qualify for a facility change without revision under Section XVII, as follows:

- A.** Facility Changes that Require a Permit Revision - Class II (A.A.C. R18-2-317.01);
- B.** Administrative Permit Amendment (A.A.C. R18-2-318);
- C.** Minor Permit Revision (A.A.C. R18-2-319); and
- D.** Significant Permit Revision (A.A.C. R18-2-320)

The applicability and requirements for such action are defined in the above referenced regulations.

## **XVII. FACILITY CHANGE WITHOUT A PERMIT REVISION**

[A.A.C. R18-2-306.A.4 & -317.02]

- A.** Except for a physical change or change in the method of operation at a Class II source requiring a permit revision under A.A.C. R18-2-317.01, or a change subject to logging or notice requirements in Conditions XVII.B and XVII.C below, a change at a Class II source shall not be subject to revision, notice, or logging requirements under this Section.
- B.** Except as otherwise provided in the conditions applicable to an emissions cap created under A.A.C. R18-2-306.02, the following changes may be made if the source keeps on site records of the changes according to Appendix 3 of the Arizona Administrative Code:
  - 1. Implementing an alternative operating scenario, including raw materials changes;
  - 2. Changing process equipment, operating procedures, or making any other physical change if the permit requires the change to be logged;
  - 3. Engaging in any new insignificant activity listed in A.A.C. R18-2-101.57.a through A.A.C. R18-2-101.57.i but not listed in the permit;
  - 4. Replacing an item of air pollution control equipment listed in the permit with an identical (same model, different serial number) item. The Director may require verification of efficiency of the new equipment by performance tests; and
  - 5. A change that results in a decrease in actual emissions if the source wants to claim credit for the decrease in determining whether the source has a net emissions increase for any purpose. The logged information shall include a description of the change that will produce the decrease in actual emissions. A decrease that has not been logged is creditable only if the decrease is quantifiable, enforceable, and otherwise qualifies as a creditable decrease.

**C.** Except as provided in the conditions applicable to an emissions cap created under A.A.C. R18-2-306.02, the following changes may be made if the source provides written notice to the Department in advance of the change as provided below:

1. Replacing an item of air pollution control equipment listed in the permit with one that is not identical but that is substantially similar and has the same or better pollutant removal efficiency: 7 days. The Director may require verification of efficiency of the new equipment by performance tests;
2. A physical change or change in the method of operation that increases actual emissions more than 10% of the major source threshold for any conventional pollutant but does not require a permit revision: 7 days;
3. Replacing an item of air pollution control equipment listed in the permit with one that is not substantially similar but that has the same or better efficiency: 30 days. The Director may require verification of efficiency of the new equipment by performance tests;
4. A change that would trigger an applicable requirement that already exists in the permit: 30 days unless otherwise required by the applicable requirement;
5. A change that amounts to reconstruction of the source or an affected facility: 7 days. For the purposes of this subsection, reconstruction of a source or an affected facility shall be presumed if the fixed capital cost of the new components exceeds 50% of the fixed capital cost of a comparable entirely new source or affected facility and the changes to the components have occurred over the 12 consecutive months beginning with commencement of construction; and
6. A change that will result in the emissions of a new regulated air pollutant above an applicable regulatory threshold but that does not trigger a new applicable requirement for that source category: 30 days. For purposes of this requirement, an applicable regulatory threshold for a conventional air pollutant shall be 10% of the applicable major source threshold for that pollutant.

**D.** For each change under Condition XVII.C above, the written notice shall be by certified mail or hand delivery and shall be received by the Director the minimum amount of time in advance of the change. Notifications of changes associated with emergency conditions, such as malfunctions necessitating the replacement of equipment, may be provided with less than required notice, but must be provided as far in advance of the change, or if advance notification is not practicable, as soon after the change as possible. The written notice shall include:

1. When the proposed change will occur;
2. A description of the change;
3. Any change in emissions of regulated air pollutants; and
4. Any permit term or condition that is no longer applicable as a result of the change.

- E.** A source may implement any change in Condition XVII.C above without the required notice by applying for a minor permit revision under A.A.C. R18-2-319 and complying with subsection A.A.C. R18-2-319.D.2 and A.A.C. R18-2-319.G.
- F.** The permit shield described in A.A.C. R18-2-325 shall not apply to any change made under this Section, other than implementation of an alternate operating scenario under Condition XVII.B.1.
- G.** Notwithstanding any other part of this Section, the Director may require a permit to be revised for any change that, when considered together with any other changes submitted by the same source under this Section over the term of the permit, constitutes a change under subsection A.A.C. R18-2-317.01.A.
- H.** If a source change is described under both Conditions XVII.B and XVII.C above, the source shall comply with Condition XVII.C above. If a source change is described under both Condition XVII.C above and A.A.C. R18-2-317.01.B, the source shall comply with A.A.C. R18-2-317.01.B.
- I.** A copy of all logs required under Condition XVII.B shall be filed with the Director within 30 days after each anniversary of the permit issuance date. If no changes were made at the source requiring logging, a statement to that effect shall be filed instead.
- J.** Logging Requirements [A.A.C. R18-2-306.A.4]
1. Each log entry required by a change under Condition XVII.B shall include at least the following information:
    - a. A description of the change, including:
      - (1) A description of any process change;
      - (2) A description of any equipment change, including both old and new equipment descriptions, model numbers, and serial numbers, or any other unique equipment ID number; and
      - (3) A description of any process material change.
    - b. The date and time that the change occurred.
    - c. The provision of A.A.C. R18-2-317.02.B that authorizes the change to be made with logging.
    - d. The date the entry was made and the first and last name of the person making the entry.
  2. Logs shall be kept for 5 years from the date created. Logging shall be performed in indelible ink in a bound log book with sequentially number pages, or in any other form, including electronic format, approved by the Director.

## XVIII. TESTING REQUIREMENTS

[A.A.C. R18-2-312]

**A.** The Permittee shall conduct performance tests as specified in the permit and at such other times as may be required by the Director.

**B.** Operational Conditions During Testing

Tests shall be conducted during operation at the maximum possible capacity of each unit under representative operational conditions unless other conditions are required by the applicable test method or in this permit. With prior written approval from the Director, testing may be performed at a lower rate. Operations during periods of start-up, shutdown, and malfunction (as defined in A.A.C. R18-2-101) shall not constitute representative operational conditions unless otherwise specified in the applicable standard.

**C.** Tests shall be conducted and data reduced in accordance with the test methods and procedures contained in the Arizona Testing Manual unless modified by the Director pursuant to A.A.C. R18-2-312.B.

**D.** Test Plan

At least 14 calendar days prior to performing a test, the Permittee shall submit a test plan to the Director in accordance with A.A.C. R18-2-312.B and the Arizona Testing Manual. This test plan must include the following:

1. Test duration;
2. Test location(s);
3. Test method(s); and
4. Source operation and other parameters that may affect test results.

**E.** Stack Sampling Facilities

The Permittee shall provide, or cause to be provided, performance testing facilities as follows:

1. Sampling ports adequate for test methods applicable to the facility;
2. Safe sampling platform(s);
3. Safe access to sampling platform(s); and
4. Utilities for sampling and testing equipment.

**F.** Interpretation of Final Results

Each performance test shall consist of three separate runs using the applicable test method.

Each run shall be conducted for the time and under the conditions specified in the applicable standard. For the purpose of determining compliance with an applicable standard, the arithmetic mean of the results of the three runs shall apply. In the event that a sample is accidentally lost or conditions occur in which one of the three runs is required to be discontinued because of forced shutdown, failure of an irreplaceable portion of the sample train, extreme meteorological conditions, or other circumstances beyond the Permittee's control, compliance may, upon the Director's approval, be determined using the arithmetic mean of the results of the other two runs. If the Director or the Director's designee is present, tests may only be stopped with the Director's or such designee's approval. If the Director or the Director's designee is not present, tests may only be stopped for good cause. Good cause includes: forced shutdown, failure of an irreplaceable portion of the sample train, extreme meteorological conditions, or other circumstances beyond the Permittee's control. Termination of any test without good cause after the first run is commenced shall constitute a failure of the test. Supporting documentation, which demonstrates good cause, must be submitted.

**G. Report of Final Test Results**

A written report of the results of all performance tests shall be submitted to the Director within 30 days after the test is performed. The report shall be submitted in accordance with the Arizona Testing Manual and A.A.C. R18-2-312.A.

**XIX. PROPERTY RIGHTS**

[A.A.C. R18-2-306.A.8.d]

This permit does not convey any property rights of any sort, or any exclusive privilege.

**XX. SEVERABILITY CLAUSE**

[A.A.C. R18-2-306.A.7]

The provisions of this permit are severable. In the event of a challenge to any portion of this permit, or if any portion of this permit is held invalid, the remaining permit conditions remain valid and in force.

**XXI. PERMIT SHIELD**

[A.A.C. R18-2-325]

Compliance with the conditions of this permit shall be deemed compliance with all applicable requirements identified in the portions of this permit subtitled "Permit Shield". The permit shield shall not apply to any minor revisions pursuant to Condition XVI.C of this Attachment and any facility changes without a permit revision pursuant to Section XVII of this Attachment.

**XXII. APPLICABILITY OF NSPS/NESHAP GENERAL PROVISIONS**

[40 CFR Part 60, Part 63]

For all equipment subject to a New Source Performance Standard, the Permittee shall comply with all applicable requirements contained in Subpart A of Title 40, Chapter 60 and Chapter 63 of the Code of Federal Regulations.

## ATTACHMENT “B”: SPECIFIC CONDITIONS

### Air Quality Control Permit No. 55223 For Rosemont Copper Company

#### I. RELATIONSHIP OF PERMIT TO APPLICABLE STATE IMPLEMENTATION PLAN

This permit is issued pursuant to the provisions of the Arizona Revised Statutes (ARS) and constitutes an installation permit for the purpose of the applicable State Implementation Plan.

[ARS § 49-404.c and -426]

#### II. FACILITY WIDE REQUIREMENTS

##### A. Operating Limitations

1. Upon start-up of operations, the Permittee shall have a person on site or on-call that is certified in EPA Reference Method 9 for the observation and evaluation of visible emissions. [A.A.C. R18-2-306.A.3.c]
2. The Permittee shall operate and maintain all equipment identified in Attachment “C” in accordance with vendor-supplied operations and maintenance instructions. If vendor-supplied operations and maintenance instructions are not available or not applicable, the Permittee shall prepare an Operation and Maintenance Plan (O&M) at least 90 days prior to the start-up of operations, which provides adequate information to properly operate and maintain the equipment. The Permittee shall operate the equipment in accordance with the O&M plan. [A.A.C. R18-2-306.A.3.c]
3. The Permittee shall perform comprehensive annual preventative maintenance checks on all dust control equipment used at the facility. [A.A.C. R18-2-306.A.2]
4. Nothing in this Attachment shall be so construed as to prevent the utilization of measurements from emissions monitoring devices or techniques not designated as performance tests as evidence of compliance with applicable good maintenance and operating requirements. [A.A.C. R18-2-312(I)]
5. The Permittee shall comply with the dust control plan included in Attachment “D” of this permit to control particulate matter emissions from activities identified in the dust control plan. The Permittee may implement proposed changes to the dust control plan upon submission to the Director if necessary to minimize fugitive dust. Nothing in this permit prohibits the Permittee from implementing additional dust control measures not set forth in the dust control plan. [A.A.C. R18-2-306.A.2]
6. The Permittee shall limit the amount of rock mined (waste rock and ore combined) to no more than 359,500 tons per day as calculated on a rolling 24-hour basis.  
[A.A.C. R18-2-306.01 and -331.A.3.a]  
[Material Permit Conditions are indicated by underline and italics]
7. The Permittee shall limit the amount of Ammonium Nitrate and Fuel Oil (ANFO) used during blasting to no more than 52 tons per day.  
[A.A.C. R18-2-306.A.2 and -331.A.3.a]  
[Material Permit Conditions are indicated by underline and italics]
8. The Permittee shall not cause or permit emissions from malodorous matter during

processing, storing, use or transporting to cross a property line between the facility and a residential, recreational, institutional, education, retail sales, hotel, or business premise without minimizing the emissions by applying good modern practices. Malodorous matter shall include but not be limited to paints, acids, alkalis, pesticides, fertilizer, and manure. [Pima SIP Rule 344]

9. Visibility Limiting Standard [Pima County SIP Rule 343]

- a. The Permittee shall not cause or permit the airborne diffusion of visible emissions, including fugitive dust, beyond the property boundary line within which the emissions become airborne. Within actual practice, the airborne diffusion of visible emissions across property lines shall be prevented by appropriately controlling the emissions at the point of discharge, or ceasing entirely the activity or operation which is causing or contributing to the emissions.
- b. Condition II.A.9.a. above shall not apply when wind speeds exceed twenty-five (25) miles per hour as estimated by a certified visible emissions evaluator using the Beaufort Scale of Wind-Speed equivalents, or as recorded by a U.S. weather Bureau Stations or a U.S. government military installation. This exception does not apply to the demolition, destruction, transport, or pulverization of structures containing friable asbestos materials, and all dust-producing activities associated with such sources shall be halted when the wind is causing or contributing visible emissions to cross beyond the property lines within which the emissions discharge.
- c. Any disregard of, neglect of, or inattention to other controls required herein, during any time when this condition is in effect, shall automatically waive the exception and such relaxation of controls shall be a violation to the generation of airborne particulate matter from undisturbed land.

**B. Visible Emissions Observation Methodology** [A.A.C.R18-2-306.A.3.c]

The Permittee shall comply with the Visible Emissions Observation requirements referenced in the later sections of this permit using the methodology stated below:

- 1. At least 30 days prior to start of operations, the Permittee shall submit a visual observation plan to be approved by the Director. The observation plan shall identify a central lookout station or multiple observation points, as appropriate, from where the visible emission sources shall be monitored. When multiple observation points are used, all the visible emission sources associated with each observation point shall be specifically identified within the observation plan.
- 2. A certified Method 9 observer shall conduct a visual survey of visible emissions from the emission sources under normal representative operating conditions. The survey shall be conducted at the frequency specified in the permit conditions that refer to this procedure. The Permittee shall keep a record of the name of the observer, the date and time on which the observation was made, the location(s) of the observation, and the results of the observation.
- 3. If the observer sees a plume from a visible emission source that on an instantaneous basis appears to exceed the applicable opacity standard, then the

observer shall, if practicable, take a six-minute Method 9 observation of the plume.

4. If the six-minute opacity of the plume is less than the applicable opacity standard, then the observer shall make a record of the following:
  - a. Location, date, and time of the observation; and
  - b. The results of the Method 9 observation.
5. If the six-minute opacity of the plume exceeds the applicable opacity standard, then the Permittee shall do the following:
  - a. Adjust or repair the controls or equipment to reduce opacity to below the applicable opacity standard;
  - b. Report as an excess emission in accordance with Section XII of Attachment "A" of this permit; and
  - c. Conduct a six-minute Method 9 observation reading within 48 hours after taking corrective action. The results of this observation, date, time, and location shall be recorded.

### **C. Monitoring, Recordkeeping, and Reporting Requirements**

1. The Permittee shall keep records of dates and times when blasting is conducted and the amount of ANFO used during each blast. The records of each day's blasting activity shall be available in a central log no later than 5:00pm the following business day. [A.A.C. R18-2-306.A.3.c]
2. The Permittee shall record the hourly and rolling 24-hour total of mined rock (ore and waste rock). The Permittee shall record the daily total of mined rock (ore and waste rock) as the sum of the following: concentrate ore loaded plus leach ore loaded plus waste rock loaded, all in tons. The annual average, rolled daily, shall be calculated by summing the day's mined rock plus the sum of the previous 364 days' mined rock and dividing that sum by 365. The records of each day's mined rock total and annual average, rolled daily, shall be available in a central log no later than 5:00 pm the following business day. [A.A.C. R18-2-306.A.3.c]
3. The Permittee shall maintain, on-site, records of the manufacturer's specifications or O&M plan for all equipment listed in Attachment "C" of this permit. [A.A.C. R18-2-306.A.4]
4. All records, analyses, and reports required by this permit shall be retained for a minimum of five years from the date of generation. The most recent two years of data shall be kept on-site. All records shall be made available for inspection by authorized Department personnel during normal working hours. [A.A.C. R18-2-306.A.4]
5. The Permittee shall conduct a daily visible emissions survey at places where the facility fugitive dust generating activities are within 300 feet of the property boundary line in accordance with EPA Reference Method 22. Unless such emissions are observed to cross the property boundary line, the Permittee shall

follow the excess emissions reporting procedures in Section XII of Attachment “A” of this permit. [A.A.C R18-2-306.A.4]

6. At the time the compliance certifications required by Section VII of Attachment “A” are submitted, the Permittee shall submit summary reports of all monitoring activities required by this Attachment performed in the same six month period as applied to the compliance certification period. The summary report shall identify each monitoring activity, state whether monitoring was conducted as required by the permit, list any deviations with dates, nature of the deviation and any explanation and/or corrective action, and identify any exceedances to excursions of relevant standards. [A.A.C.R18-2-306.A.5]
7. The Permittee shall notify the Director in writing within 30 days of purchase of the equipment listed in Attachment “C”. Equipment purchases within a specified period may be grouped and reported together. This notification shall contain all the information required to complete Attachment “C”. [A.A.C.R18-2-306.A.3.c]

### **III. METALLIC MINERAL PROCESSING SUBJECT TO NEW SOURCE PERFORMANCE STANDARDS (NSPS) SUBPART LL**

#### **A. Applicability**

This Section is applicable to equipment identified in Attachment “C” as subject to New Source Performance Standards (NSPS), 40 CFR 60 Subpart LL (“Subpart LL”).

#### **B. Notification Requirements**

The Permittee shall furnish to the Director written notification as follows:

1. A notification of the date of construction of an affected facility is commenced postmarked no later than 30 days after such date. This condition is satisfied by the notice given pursuant to Condition II.C.7 above. [40 CFR 60.7(a)(1)]
2. A notification of the actual date of initial startup of an affected facility postmarked within 15 days after such date. [40 CFR 60.7(a)(3)]
3. A notification of the anticipated date for conducting the opacity observations required by 40 CFR 60.11(e)(1) of this part. The notification shall also include, if appropriate, a request for the Director to provide a visible emissions reader during a performance test. The notification shall be postmarked not less than 30 days prior to such date. [40 CFR 60.7(a)(6)]

#### **C. Operating Requirements**

At all times, including periods of startup, shutdown, and malfunction, the Permittee shall, to the extent practicable, maintain and operate any affected facility in a manner consistent with good air pollution control practice for minimizing emissions. Determination of whether acceptable operating and maintenance procedures are being used will be based on information available to the Director which may include, but is not limited to, monitoring results, opacity observations, review of operating and maintenance procedures, and inspection of the source. [40 CFR 60.11(d)]

**D. Particulate Matter**

1. Emission Limitations

a. On and after the date on which the performance test required to be conducted by 40 CFR 60.8 is completed, the Permittee shall not cause to be discharged into the atmosphere from equipment subject to this Section but not identified under Table 1, any stack emissions that contain particulate matter in excess of 0.05 grams per dry standard cubic meter.

[40 CFR 60.382(a)(1)]

b. On and after the date on which the performance test required to be conducted by 40 CFR 60.8 is completed, the Permittee shall not cause to be discharged into the atmosphere from the control devices any emissions which contain particulate matter less than 10 microns (PM<sub>10</sub>) in excess of the limits identified in the table below corresponding to each control device:

[A.A.C. R18-2-306.01 and -331.A.3.a]

[Material Permit Conditions are indicated by underline and italics]

**Table 1: Emissions Limits**

<i>Emission Unit ID</i>	<i>Emission Points Controlled</i>	<i>PM<sub>10</sub> Emissions Limit</i>
<u>PCL01</u>	<u>Process Equipment</u> <ul style="list-style-type: none"> <li>• <u>Primary Crusher</u></li> </ul> <u>Material Handling Emission Points:</u> <ul style="list-style-type: none"> <li>• <u>Crusher Discharge Hopper to Crusher Discharge Feeder</u></li> <li>• <u>Crusher Discharge Feeder to Stockpile Feed Conveyor No.1</u></li> </ul>	<u>0.64 lbs/hour</u>
<u>PCL03</u>	<u>Material Handling Emission Points:</u> <ul style="list-style-type: none"> <li>• <u>Stockpile Feed Conveyor No. 2 to Covered Coarse Ore Stockpile</u></li> </ul>	<u>1.47 lbs/hour</u>
<u>PCL02</u>	<u>Material Handling Emission Points:</u> <ul style="list-style-type: none"> <li>• <u>Stockpile Feed Conveyor No. 1 to Stockpile Feed Conveyor No. 2</u></li> </ul>	<u>0.36 lbs/hour</u>
<u>PCL04</u>	<u>Process Equipment:</u> <ul style="list-style-type: none"> <li>• <u>Pebble Crusher</u></li> </ul> <u>Material Handling Emission Points:</u> <ul style="list-style-type: none"> <li>• <u>Pebble Conveyor No.2 to SAG Oversize Surge Bin</u></li> <li>• <u>SAG Oversize Surge Bin to Pebble Crusher Feeder</u></li> <li>• <u>Pebble Crusher to Pebble Conveyor No. 3</u></li> </ul>	<u>0.32 lbs/hour</u>
<u>PCL05</u>	<u>Material Handling Emission Points:</u> <ul style="list-style-type: none"> <li>• <u>Copper Concentrate Conveyor to Copper Concentrate Loadout Stockpile</u></li> <li>• <u>Copper Concentrate Loadout Stockpile to Shipment Truck via Front End Loader</u></li> </ul>	<u>1.78 lbs/hour</u>
<u>PCL06</u>	<u>Material Handling Emission Points:</u> <ul style="list-style-type: none"> <li>• <u>Copper Concentrate Conveyor to Copper Concentrate Loadout Stockpile</u></li> </ul>	<u>1.78 lbs/hour</u>

	<ul style="list-style-type: none"> <li><u>Copper Concentrate Loadout Stockpile to Shipment Truck via Front End Loader</u></li> </ul>	
<u>PCL07</u>	<u>Process Equipment:</u> <ul style="list-style-type: none"> <li><u>Molybdenum Concentrate Dryer</u></li> </ul>	<u>0.014 lbs/hour</u>
<b>Emission Unit ID</b>	<b>Emission Points Controlled</b>	<b>PM<sub>10</sub> Emissions Limit</b>
<u>PCL08</u>	<u>Material Handling Emission Points:</u> <ul style="list-style-type: none"> <li><u>Molybdenum Concentrate Dryer to Molybdenum Concentrate Bin</u></li> <li><u>Copper Concentrate Conveyor to Molybdenum Packaging and Weigh System</u></li> </ul>	<u>0.053 lbs/hour</u>
<u>PCL12</u>	<u>Material Handling Emission Points:</u> <ul style="list-style-type: none"> <li><u>Reclaim Conveyor to SAG Mill Feed Conveyor</u></li> <li><u>Pebble Crusher No. 3 to SAG Mill Feed Conveyor</u></li> </ul>	<u>0.46 lbs/hour</u>

2. Air Pollution Control Requirements

The Permittee shall install the following control equipment prior to start-up of the corresponding process unit(s) and shall operate it at all times any of the corresponding process unit(s) is in operation.

a. The Permittee shall install, operate and maintain cartridge filter dust collector (PCL01) to control particulate matter emissions from the following sources:

- (1) Primary Crusher;
- (2) Material Transfer from Crusher Discharge Hopper to Crusher Discharge Feeder;
- (3) Material Transfer from Crusher Discharge Feeder to Stockpile Feed Conveyor No.1.

[A.A.C. R18-2-306.01 and -331.A.3.d and e]  
[Material Permit Conditions are indicated by underline and italics]

b. The Permittee shall install, operate and maintain cartridge filter dust collector (PCL03) to control particulate matter emissions from the following material transfer points:

- (1) Stockpile Feed Conveyor No. 2 to Covered Coarse Ore Stockpile;  
and

[A.A.C. R18-2-306.01 and -331.A.3.d and e]  
[Material Permit Conditions are indicated by underline and italics]

c. The Permittee shall install, operate and maintain cartridge filter dust collector (PCL02) to control particulate matter emissions during material transfer from Stockpile Feed Conveyor No. 1 to Stockpile Feed Conveyor No. 2.

[A.A.C. R18-2-306.01 and -331.A.3.d and e]

[Material Permit Conditions are indicated by underline and italics]

d. The Permittee shall install, operate and maintain cartridge filter dust collector (PCL04) to control particulate matter emissions from the following sources:

(1) Pebble Crusher;

(2) Material Transfer from Pebble Conveyor No.2 to SAG Oversize Surge Bin;

(3) Material Transfer from SAG Oversize Surge Bin to Pebble Crusher Feeder; and

(4) Material Transfer from Pebble Crusher to Pebble Conveyor No. 3.

[A.A.C. R18-2-306.01 and -331.A.3.d and e]

[Material Permit Conditions are indicated by underline and italics]

e. The Permittee shall install, operate and maintain cartridge filter dust collectors (PCL05 and PCL06) to control particulate matter emissions during material transfer from:

(1) Copper Concentrate Conveyor to Copper Concentrate Loadout Stockpile; and

(2) Copper Concentrate Loadout Stockpile to Shipment Truck via Front End Loader.

[A.A.C. R18-2-306.01 and -331.A.3.d and e]

[Material Permit Conditions are indicated by underline and italics]

f. The Permittee shall install, operate and maintain a scrubber and an electrostatic precipitator in series (PCL07) to control particulate matter emissions from the Molybdenum Concentrate Dryer.

[A.A.C. R18-2-306.01 and -331.A.3.d and e]

[Material Permit Conditions are indicated by underline and italics]

g. The Permittee shall install, operate and maintain cartridge filter dust collector (PCL08) to control particulate matter emissions during material transfer from:

(1) Molybdenum Concentrate Dryer to Molybdenum Concentrate Bin; and

(2) Copper Concentrate Conveyor to Molybdenum Packaging and Weigh System.

[A.A.C. R18-2-306.01 and -331.A.3.d and e]

[Material Permit Conditions are indicated by underline and italics]

h. The Permittee shall install, operate and maintain cartridge filter dust collector (PCL12) to control particulate matter emissions from the following sources:

(1) Reclaim Conveyor to SAG Mill Feed Conveyor; and

(2) Pebble Crusher No. 3 to SAG Mill Feed Conveyor

[A.A.C. R18-2-306.01 and -331.A.3.d and e]

[Material Permit Conditions are indicated by underline and italics]

- i. The material that is fine enough to contribute to  $PM_{10}$  emissions that accumulates around process equipment shall be minimized. At points where such material does accumulate, it shall be collected and removed either manually or by using a vacuum equipped truck as expeditiously as practicable. Clean-up shall be performed on an as-needed basis.

[A.A.C. R18-2-306.A.2 and -331.A.3.e]

[Material Permit Conditions are indicated by underline and italics]

- j. The Permittee shall install, operate and maintain water sprays to control particulate matter emissions from process sources.

[A.A.C. R18-2-306.01 and -331.A.3.d and e]

[Material Permit Conditions are indicated by underline and italics]

- k. The Permittee shall install chutes at the conveyor-to-conveyor transfer points to minimize particulate emissions.

[A.A.C. R18-2-306.A.2 and -331.A.3.d]

[Material Permit Conditions are indicated by underline and italics]

- l. The Permittee shall install rubber sealing strips and rubber curtains on all material transfer associated with the affected facilities to minimize fugitive emissions.

[A.A.C. R18-2-306.01 and -331.A.3.d]

[Material Permit Conditions are indicated by underline and italics]

3. Monitoring, Recordkeeping, and Reporting Requirements

- a. The Permittee shall install, calibrate, maintain, and operate a monitoring device for the continuous measurement of the change in pressure of the gas stream through the operating scrubber. The monitoring device must be certified by the manufacturer to be accurate within  $\pm 250$  pascals ( $\pm 1$  inch water) gauge pressure and must be calibrated on an annual basis in accordance with manufacturer's instructions.

[40 CFR 60.384(a) and A.A.C. R18-2-331.A.3.c]

[Material Permit Conditions are indicated by underline and italics]

- b. The Permittee shall install, calibrate, maintain, and operate a monitoring device for the continuous measurement of the scrubbing liquid flow rate to the operating scrubber PCL07. The monitoring device must be certified by the manufacturer to be accurate within  $\pm 5$  percent of design scrubbing liquid flow rate and must be calibrated on at least an annual basis in accordance with manufacturer's instructions.

[40 CFR 60.384(b) and A.A.C. R18-2-331.A.3.c]

[Material Permit Conditions are indicated by underline and italics]

- c. The Permittee shall record on a weekly basis the measurements of both the change in pressure of the gas stream across each operating scrubber and the scrubbing liquid flow rate. [40 CFR 60.385(b)]

- d. The Permittee shall submit semi-annual reports of occurrences when the measurements of the scrubber pressure loss (or gain) or liquid flow rate differ by more than  $\pm 30$  percent from the average obtained during the most

recent performance test. These reports shall be postmarked within 30 days following the end of the second and fourth calendar quarters.

[40 CFR 60.385(c) and (d)]

e. The Permittee shall use the monitoring devices required by Conditions III.D.3.a and b to determine the pressure loss of the gas stream through the scrubber PCL07 and the scrubber (PCL07) liquid flow rate at any time during each particulate matter performance test run and the average of the three determinations shall be computed. [40 CFR 60.386(c)]

f. The Permittee shall continuously measure and record the electrostatic precipitator primary and secondary voltage and current and either alarm them or check once per shift. If an excursion from the manufacture's specifications is detected, the Permittee shall commence corrective action no later than the following shift to return the unit to proper operation. Proper operation shall be restored as expeditiously as practicable.

[A.A.C. R18-2-306.A.3.c]

#### 4. Testing Requirements

a. Within 60 days of achieving the maximum production rate at the facility, but no later than 180 days after initial start-up, the Permittee shall conduct an initial performance tests for emissions of particulate matter from the stacks of the control equipment. Subsequent tests shall be performed annually. [40 CFR 60.8(a) and 60.386(a)]

b. EPA Reference Method 5, 17 or 201A shall be used to determine the concentration of particulate matter emissions from the control equipment stacks as specified in 40 CFR 51, Appendix M. Unless using Method 201A, all particulate matter measurements using Method 5 shall be considered to have an aerodynamic diameter less than 10 microns. The performance test shall be used to demonstrate compliance with the voluntarily accepted limits. The sampling volume for each run shall be at least 1.7 dscm (60 dscf). The sampling probe and filter holder of Method 5 may be operated without heaters if the gas stream being sampled is at ambient temperature. For gas streams above ambient temperature, the Method 5 sampling train shall be operated with a probe and filter temperature slightly above the effluent temperature (up to a maximum filter temperature of 121°C (250°F) in order to prevent water condensation on the filter. [40 CFR 60.386(b)(1)]

#### 5. Permit Shield

Compliance with the conditions of this Section shall be deemed compliance with 40 CFR 60.382(a)(1), 60.386(a), and 60.386(b)(1). [A.A.C. R18-2-325]

### E. Opacity

#### 1. Emission Limitations

a. On and after the date on which the performance test required to be conducted by 40 CFR 60.8 is completed, the Permittee shall not cause to be discharged into the atmosphere from equipment subject to this Section, any stack emissions that exhibit greater than 7 percent opacity, unless the

stack emissions stack emissions are discharged from unit using a wet scrubbing emission control device (PCL07).

[40 CFR 60.382(a)(2), A.A.C. R18-2-331A.3.f]

[Material Permit Conditions are indicated by underline and italics]

- b. On or after the sixtieth day after achieving the maximum production rate at which the affected facility will be operated but not later than 180 days after initial startup, the Permittee shall not cause to be discharged into the atmosphere from an affected facility subject to NSPS Subpart LL any process fugitive emissions that exhibit greater than 10 percent opacity.

[40 CFR 60.382(b) and A.A.C. R18-2-331A.3.f]

[Material Permit Conditions are indicated by underline and italics]

- c. The opacity standards set forth in Conditions III.E.1.a & b shall apply at all times except during periods of startup, shutdown, and malfunction.

[40 CFR 60.11(c)]

- d. The Permittee shall not cause, allow or permit the effluent from affected wet scrubber (NSPS applicable) PCL07 stack to have an average optical density equal to or greater than 20 percent opacity.

[PCC 17.16.040]

2. Monitoring, Reporting and Recordkeeping Requirements

[A.A.C. R18-2-306.A.3.c and 306.A.4]

A certified Method 9 observer shall conduct a weekly visual survey of emissions from the dust collector stacks and from process fugitive emissions covered by this Section during normal operation mode. The survey shall be conducted in accordance with the Visible Emissions Observations Methodology identified in Condition II.B of this Attachment.

3. Testing Requirements

- a. For the purpose of demonstrating initial compliance with Conditions III.E.1.a and b, opacity observations shall be conducted concurrently with the initial performance test required in Condition III.D.3.a above, except as allowed in 40 CFR 60.11(e)(1). The minimum total time of observations shall be 3 hours (thirty 6-minute averages).

[40 CFR 60.11(b) and 386(b)(2)]

- b. EPA Reference Method 9 and the procedures in 40 CFR 60.11 shall be used to determine opacity from stack emissions and process fugitive emissions. The observer shall read opacity only when emissions are clearly identified as emanating solely from the affected facility being observed.

[40 CFR 60.386(b)(2)]

4. Permit Shield

Compliance with the conditions of this Section shall be deemed compliance with 40 CFR 60.382(a)(2), 60.382(b), 60.386(b)(2) and P.C.C 17.16.040.

[A.A.C. R18-2-325]

#### IV. METALLIC MINERAL PROCESSING NOT SUBJECT TO NSPS SUBPART LL

##### A. Applicability

This Section applies to the metallic mineral processing equipment identified in Attachment "C" as subject to A.A.C. R18-2-721.

## B. Operational Requirements

1. The Permittee shall maintain records of the daily process rate and hours of operation of all material handling equipment. [A.A.C. R18-2-721.F]

2. Permit Shield

Compliance with the conditions of this Section shall be deemed compliance with A.A.C. R18-2-721.F. [A.A.C. R18-2-325]

## C. Particulate Matter

1. Emission Limitations

a. The Permittee shall not cause, allow or permit the discharge of particulate matter into the atmosphere in any one hour from any process source subject to the provisions of this Section in total quantities in excess of the amounts calculated by one of the following equations:

(1) For process sources having a process weight rate of 60,000 pounds per hour (30 tons per hour) or less, the maximum allowable emissions shall be determined by the following equation:

$$E = 3.59P^{0.62}$$

Where:

E = the maximum allowable particulate emissions rate in pounds-mass per hour.

P = the process weight rate in tons-mass per hour.

[AZ SIP R9-3-521.A.2.a]

(2) For process sources having a process weight rate greater than 60,000 pounds per hour (30 tons per hour), the maximum allowable emissions shall be determined by the following equation:

$$E = 17.31P^{0.16}$$

Where E and P are defined above.

[AZ SIP R9-3-521.A.2.b]

b. For purposes of this Section, the total process weight from all similar units employing a similar type process shall be used in determining the maximum allowable emissions of particulate matter.

[AZ SIP R9-3-521.A.4]

2. Air Pollution Control Equipment

- a. The material that is fine enough to contribute to  $PM_{10}$  emissions that accumulates around process equipment shall be minimized. At points where such material does accumulate, it shall be collected and removed either manually or by using a vacuum equipped truck as expeditiously as practicable. Clean-up shall be performed on an as-needed basis.

[A.A.C. R18-2-306.A.2 and -331.A.3.e]

[Material Permit Conditions are indicated by underline and italics]

- b. The Permittee shall install, operate and maintain water sprays to control particulate matter emissions from process sources.

[A.A.C. R18-2-306.01 and -331.A.3.d and e]

[Material Permit Conditions are indicated by underline and italics]

- c. The Permittee shall install chutes at the conveyor-to-conveyor transfer points to minimize particulate emissions.

[A.A.C. R18-2-306.A.2 and -331.A.3.d and e]

[Material Permit Conditions are indicated by underline and italics]

- d. The Permittee shall install, operate and maintain cartridge filter dust collectors (PCL09, PCL10 & PCL11) to control particulate matter emissions from the analytical laboratory building.

[A.A.C. R18-2-306.01 and -331.A.3.d and e]

[Material Permit Conditions are indicated by underline and italics]

3. Permit Shield

Compliance with the conditions of this Section shall be deemed compliance with AZ SIP R9-3-521.

[A.A.C. R18-2-325]

**D. Opacity**

1. Emission Limitations

- a. The opacity of any plume or effluent from any process source shall not be greater than 20%.

[A.A.C. R18-2-702.B.3]

- b. If the presence of uncombined water is the only reason for an exceedance of the visible emissions requirements in Condition IV.D.1.a above, the exceedance shall not constitute a violation of the applicable opacity limit.

[A.A.C. R18-2-702.C]

2. Monitoring, Reporting and Recordkeeping Requirements

[A.A.C. R18-2-306.A.3.c and 306.A.4]

A certified Method 9 observer shall conduct a weekly visual survey of emissions from all sources covered by this Section while they are in operation and in accordance with the Visible Emissions Observations Methodology identified in Condition II.B of this Attachment.

3. Permit Shield

Compliance with the conditions of this Section shall be deemed compliance with A.A.C. R18-2-702.B.3 and 702.C.

[A.A.C. R18-2-325]

**V. BOILER AT SOLVENT EXTRACTION/ ELECTROWINNING (SX/EW) PROCESS**

**A. Applicability**

This Section applies to the SX/EW boiler as identified in the equipment list in Attachment “C” of this permit.

**B. Fuel Limitations**

1. The Permittee shall burn only diesel fuel with a sulfur content of 0.05% or less in the boiler. [A.A.C. R18-2-306.A.2]

2. Recordkeeping Requirements

The Permittee shall maintain fuel supplier documentation or certifications to demonstrate compliance with the fuel limitations above. [A.A.C. R18-2-306.A.3.c]

**C. Particulate Matter**

1. Emission Limitation

The Permittee shall not cause, allow or permit the emission of particulate matter, caused by combustion of fuel, from the boiler in excess of the amounts calculated by the following equation:

$$E = 1.02Q^{0.769}$$

Where:

E = the maximum allowable particulate emissions rate in pounds-mass per hour

Q = the heat input in million Btu per hour.

[A.A.C.R18-2-724.C.1]

2. Permit Shield

Compliance with this Section shall be deemed compliance with A.A.C.R18-2-724.C.1. [A.A.C. R18-2-325]

**D. Opacity**

1. Emission Limitations

The Permittee shall not cause, allow or permit the opacity of any plume or effluent from the boiler to exceed 15 percent. [A.A.C.R18-2-724.J]

2. Monitoring, Recordkeeping and Reporting Requirements

a. The Permittee shall report all six-minute periods in which the opacity of any plume or effluent exceeds 15 percent. [A.A.C.R18-2-724.J]

b. A certified EPA Reference Method 9 observer shall conduct a weekly survey of visible emissions emanating from the stack of the boiler when in

operation. If the opacity of the emissions observed appears on an instantaneous basis to exceed 15%, the observer shall conduct a certified EPA Reference Method 9 observation. The Permittee shall keep records of the initial survey and any EPA Reference Method 9 observations performed. These records shall include the emission point observed, location of observer, name of observer, date and time of observation, and the results of the observation. If the observation shows a Method 9 opacity reading in excess of 15%, the Permittee shall report this to ADEQ as an excess emission and initiate appropriate corrective action to reduce the opacity below 15%. The Permittee shall keep a record of the corrective action performed.

[A.A.C. R18-2-306.A.3.c, .306.A.4.a and 306.A.5]

3. Permit Shield

Compliance with this Section shall be deemed compliance with A.A.C.R18-2-724.J. [A.A.C. R18-2-325]

**E. Sulfur Dioxide**

1. Emission Limitation

The Permittee shall not cause to be discharged into the atmosphere from the boiler any emissions that contain more than 1.0 pounds of sulfur dioxide per million Btu heat input. [A.A.C.R18-2-724.E]

2. Permit Shield

Compliance with this Section shall be deemed compliance with A.A.C.R18-2-724.E. [A.A.C. R18-2-325]

**F. Hazardous Air Pollutants**

1. Applicability

This Section applies to the oil-fired boiler as identified in the equipment list in Attachment "C". [40 CFR 63.11194]

2. Operating Requirements

a. The Permittee shall operate and maintain the boiler, including associated air pollution control equipment and monitoring equipment, in a manner consistent with safety and good air pollution control practices for minimizing emissions. Determination of whether such operation and maintenance procedures are being used will be based on information available to the Director or Administrator that may include, but is not limited to, monitoring results, review of operation and maintenance procedures, review of operation and maintenance records, and inspection of the source. [40 CFR 63.11205(a)]

b. Work-Practice Standard [40 CFR 63.11201(b)]

(1) Initial Boiler Tune-up

The Permittee shall conduct an initial boiler tune-up according to the procedures stated in Condition V.F.2.c and 40 CFR 63.7(a)(2)(ix) within 180 calendar days after startup.

[40 CFR 63.11210(d), 11214(d)]

(2) Subsequent Boiler Tune-ups

Each subsequent tune-up shall be conducted biennially and shall be conducted no more than 25 months after the previous tune-up.

[40 CFR 63.11223(a)]

c. Tune-up Procedures

The Permittee shall conduct a boiler tune-up according to the following procedures:

- (1) As applicable, inspect the burner, and clean or replace any components of the burner as necessary (this may be delayed until the next scheduled unit shutdown, but the burner must be inspected at least once every 36 months).
- (2) Inspects the flame pattern, as applicable, and adjust the burner as necessary to optimize the flame pattern. The adjustment should be consistent with the manufacturer's specifications, if available.
- (3) Inspect the system controlling the air-to-fuel ratio, as applicable, and ensure that it is correctly calibrated and functioning properly.
- (4) Optimize total emissions of carbon monoxide. This optimization should be consistent with the manufacturer's specifications, if available.
- (5) Measure the concentrations in the effluent stream of carbon monoxide in parts per million, by volume, and oxygen in volume percent, before and after the adjustments are made (measurements may be either on a dry or wet basis, as long as it is the same basis before and after the adjustments are made).
- (6) Maintain onsite and submit, if requested by the Director or Administrator, biennial report containing the information in the following conditions
  - (a) The concentrations of CO in the effluent stream in parts per million, by volume, and oxygen in volume percent, measured before and after the tune-up of the boiler.
  - (b) A description of any corrective actions taken as a part of the tune-up of the boiler.
  - (c) The type and amount of fuel used over the 12 months prior to the biennial tune-up of the boiler.
- (7) If the unit is not operating on the required date for a tune-up, the

tune-up must be conducted within one week of startup.

[40 CFR 63.11223(b)]

4. Notification, Reporting and Recordkeeping Requirements

- a. As required in 40 CFR 63.9(b)(2), the Permittee shall submit the initial notification within 120 calendar days upon boiler startup.

[40 CFR 63.11225(a)(2)]

- b. The Permittee shall submit a Notice of Compliance Status in accordance with 40 CFR 63.9(h) no later than 120 days of boiler startup and shall include certification(s) of compliance statement signed by a responsible official that the facility complies with the requirements of Condition V.F.2.b to conduct an initial tune-up of the boiler.

[40 CFR 63.11225(a)(4)]

- c. The Permittee shall keep the following records to document continuous compliance conformance with the tune up requirements:

(1) Records shall identify the date of boiler tune-up, the procedures followed for the tune-up, and the manufacturer's specifications to which the boiler was tuned.

(2) Records shall document the fuel type(s) used monthly in the boiler, including, but not limited to, a description of the fuel and the total fuel usage amount with units of measure.

[40 CFR 63.11225(c)(2)]

- d. The Permittee shall maintain onsite and submit, if requested by the Director or Administrator, a biennial report containing the following information about the tune-ups.

(1) The concentrations of CO in the effluent stream in parts per million, by volume, and oxygen in volume percent, measured before and after the tune-up of the boiler.

(2) A description of any corrective actions taken as a part of the tune-up of the boiler.

(3) The type and amount of fuel used over the 12 months prior to the biennial tune-up of the boiler.

(4) Records of occurrence, duration, and corrective action taken for each malfunction of the boiler.

[40 CFR 63.11223(b)(6), 11225(c)(4), and -(c)(5)]

5. Permit Shield

Compliance with this Section shall be deemed compliance 40 CFR 63.11205(a), -63.11201(b), 63.11214(d), 63.11223(a), -11223(b), -11223(b)(6), 63.11225(a)(2), -11225(a)(4), -11225(c)(2), (c)4, (c)5, and 63.11223(b)(6),.

## VI. SOLVENT EXTRACTION / ELECTROWINNING (SX/EW) PROCESS

### A. Applicability

This Section applies to the equipment used in the SX/EW process as identified in the equipment list in Attachment “C” of this permit.

### B. Emission Limitations

#### 1. Opacity

The Permittee shall not cause, allow or permit visible emissions from the SX/EW process in excess of 20% opacity, as measured by EPA Reference Method 9.

[A.A.C. R18-2-702.B]

#### 2. Volatile Organic Compounds

a. Materials including solvents or other volatile compounds, acids and alkalis utilized shall be processed, stored, used and transported in such a manner and by such means that they will not evaporate, leak, escape or be otherwise discharged into the ambient air so as to cause or contribute to air pollution. Where means are available to reduce effectively the contribution to air pollution from evaporation, leakage or discharge, the installation and use of such control methods, devices or other equipment shall be mandatory.

[A.A.C. R18-2-730.F]

b. Where a stack, vent or other outlet is at such a level that fumes, gas mist, odor, smoke, vapor or any combination thereof constituting air pollution is discharged to adjoining property, the Director may require the installation of abatement equipment or the alteration of such stack, vent or other outlet by the Permittee to a degree that will adequately dilute, reduce or eliminate the discharge of air pollution to adjoining property.

[A.A.C. R18-2-730.G]

c. The Permittee shall not cause or permit the emission of gaseous or odorous materials from equipment, operations, and premises under its control in such quantities or concentrations as to cause air pollution.

[A.A.C. R18-2-730.D]

### C. Air Pollution Control Requirements

1. *The Permittee shall install, operate and maintain two scrubbers at all times the electrowinning process is in operation to control emissions of sulfuric acid in the electrowinning process.*

[A.A.C. R18-2-306.A.2 and -331.A.3.d and e]

[Material permit conditions are indicated by underline and italics]

2. The Permittee shall add sulfuric acid to the leach pad either through low-pressure wobblers or a drip system to minimize acid mist emissions.

[A.A.C. R18-2-306.A.2]

3. *The Permittee shall install, maintain and use covers in the designed fashion on the SX mixer settler tanks to control acid mist emissions from the Solution Extraction Plant.*

[A.A.C. R18-2-306.A.2 and -331.A.3.d and e]  
[Material permit conditions are indicated by underline and italics]

4. *The Permittee shall use one or more of the following methods to control emissions from the Electrowinning Tankhouse Cells:*

- a. *Foam;*  
b. *Dispersion Balls/Poly Balls;*  
c. *Surfactants;*  
d. *Other effective means of controlling sulfuric acid emissions approved by the Director.*

[A.A.C. R18-2-306.A.2 and -331.A.3.e]  
[Material Permit Conditions are indicated by underline and italics]

**D. Recordkeeping Requirements**

The Permittee shall keep a record of the method that is used to control emissions from the electrowinning tankhouse cells. [A.A.C. R18-2-306.A.4.a]

**E. Permit Shield**

Compliance with the conditions of this Section shall be deemed compliance with A.A.C. R18-2-730.D, F, G and -702.B. [A.A.C. R18-2-325]

**VII. INTERNAL COMBUSTION ENGINES (ICE)**

**A. Applicability**

This Section is applicable to the generator identified as subject to New Source Performance Standards (NSPS) Subpart IIII in the equipment list in Attachment "C".

**B. General Requirements**

1. The Permittee shall not install any new stationary compression ignition internal combustion engine (CI ICE) (excluding fire pump engines) that does not meet the applicable requirements for 2007 model year engines. [40 CFR 60.4208]
2. An emergency CI ICE shall be limited to emergency situations and required testing and maintenance only such as to produce power for critical networks or equipment (including power supplied to portions of a facility) when electric power from the local utility (or the normal power source, if the facility runs on its own power production) is interrupted, or used to pump water in the case of fire or flood, etc. Stationary CI ICE used to supply power to an electric grid or that supply power as part of a financial arrangement with another entity shall not be considered to be emergency engines. Notwithstanding the foregoing, emergency stationary ICE may be operated for the purpose of maintenance checks and readiness testing, provided that the tests are recommended by Federal, State or local government, the

manufacturer, the vendor, or the insurance company associated with the engine. Maintenance checks and readiness testing of such units is limited to 100 hours per year. There is no time limit on the use of emergency stationary ICE in emergency situations. The owner or operator may petition the Administrator for approval of additional hours to be used for maintenance checks and readiness testing, but a petition is not required if the owner or operator maintains records indicating that Federal, State, or local standards require maintenance and testing of emergency ICE beyond 100 hours per year. Emergency stationary ICE may operate up to 50 hours per year in non-emergency situations, but those 50 hours are counted towards the 100 hours per year provided for maintenance and testing. The 50 hours per year for non-emergency situations cannot be used for peak shaving or to generate income for a facility to supply power to an electric grid or otherwise supply non-emergency power as part of a financial arrangement with another entity. For owners and operators of emergency engines, any operation other than emergency operation, maintenance and testing, and operation in non-emergency situations for 50 hours per year, as permitted in this condition, is prohibited.

[40 CFR 60.4219, 60.4211(f)]

### C. Operating Requirements

1. *The Permittee shall not operate any emergency CI ICE for any reason other than emergency operation, or maintenance and testing, and in non-emergency situations for no more than 50 hours per year.* [40 CF 60.4211(f), A.A.C.R18-2-331.A.3.a]  
[Material permit conditions are indicated by underline and italics]

2. *The Permittee shall install a non-resettable hour meter prior to startup of the engine.*  
[40 CFR 60.4209(a), A.A.C.R18-2-331.A.3.a]  
[Material Permit Conditions are indicated by underline and italics]

3. The Permittee shall operate and maintain the CI ICE and the control device according to the manufacturer's written instructions, over the entire life of the engine.  
[40 CFR 60.4211(a), 60.4206]

4. The Permittee shall only change those engine settings that are permitted by the manufacturer.  
[40 CFR 60.4211(a)]

5. The Permittee shall meet the applicable requirements of 40 CFR Part 89, 94 and 1068.  
[40 CFR 60.4211(a)]

6. The Permittee may operate the stationary ICE for the purpose of maintenance checks and readiness testing, provided that the tests are recommended by Federal, State, or local government, the manufacturer, the vendor, or the insurance company associated with the engine.  
[40 CFR 60.4211(f)]

7. Maintenance checks and readiness testing of such units is limited to 100 hours per year. The Permittee may petition the Administrator and the Director for approval of additional hours to be used for maintenance checks and readiness testing, but a petition is not required if the Permittee maintains records indicating that Federal, State, or local standards require maintenance and testing of emergency ICE beyond 100 hours per year. The Permittee may operate the emergency stationary ICE for up to 50 hours per year in non-emergency situations, but those 50 hours are counted towards the 100 hours per year provided for maintenance and testing.  
[40 CFR 60.4211(f)]

8. Permit Shield

Compliance with the conditions of this Section shall be deemed compliance with 40 CFR 60.4206, 60.4209(a), 60.4211(a) and (f). [A.A.C. R18-2-325]

**D. Fuel Requirements**

1. The Permittee shall use only diesel fuel that meets the requirements of nonroad diesel fuel listed in 40 CFR 80.510(b) and listed below:
    - a. Sulfur content: 15 ppm maximum; and
    - b. A minimum cetane index of 40 or a maximum aromatic content of 35 volume percent. [40 CFR 60.4207(b)]
  2. Permit Shield [40 CFR 60.4207(b)]
- Compliance with the conditions of this Section shall be deemed compliance with 40 CFR 60.4207(b). [A.A.C. R18-2-325]

**E. Emission Limitations and Standards**

1. The Permittee shall comply with the emission standards listed in the corresponding applicable regulations as stated in the Table below:

**Table: Emission Standards for Emergency ICE** [40 CFR 60.4205(a), (b), (c), and (f)]

Engine Type	Displacement (Liters per cylinder)	Applicable regulations
Non-Fire Pump Engines	Less than 30	New Nonroad engines in 40 CFR 60.4202
Fire Pump	Less than 30	Table 4 of 40 CFR Part 60 Subpart III

2. Permit Shield [A.A.C. R18-2-325]
- Compliance with the conditions of this Section shall be deemed compliance with 40 CFR 60.4205(a), 40 CFR 60.4205(b), 40 CFR 60.4205(f), and 40 CFR 60.4205(c).

## **F. Compliance Requirements**

1. The Permittee operating a 2007 model year and later stationary CI ICE or a CI fire pump engine that is manufactured during or after the model year that applies to the fire pump engine power rating in Table 3 of 40 CFR Part 60, Subpart IIII, shall comply by purchasing an engine certified to the emission standards in 40 CFR 60.4205(b) or (c), as applicable, for the same model year and maximum (or in the case of fire pumps, NFPA nameplate) engine power. The engine must be installed and configured according to the manufacturer's specifications. [40 CFR 60.4211 (c)]

2. If the Permittee does not install, configure, operate, and maintain the CI ICE and control device according to the manufacturer's emission-related written instructions, or change the emission-related setting in a way that is not permitted by the manufacturer, the Permittee shall demonstrate compliance as following:

a. CI ICE less than 100 HP

The Permittee shall keep a maintenance plan and records of conducted maintenance to demonstrate compliance and shall, to the extent practicable, maintain and operate the engine in a manner consistent with good air pollution control practice for minimizing emissions. In addition, the Permittee shall conduct an initial performance test to demonstrate compliance with the applicable emission standards within 1 year of such action.

b. CI ICE greater than 500 HP

The Permittee shall keep a maintenance plan and records of conducted maintenance to demonstrate compliance and shall, to the extent practicable, maintain and operate the engine in a manner consistent with good air pollution control practice for minimizing emissions. In addition, the Permittee shall conduct an initial performance test to demonstrate compliance with the applicable emission standards within 1 year of startup, or within 1 year after changing any non-permitted emission-related setting on the engine. Subsequent tests shall be conducted every 8760 hours of engine operation or 3 years, whichever comes first.

[40 CFR 60.4211(g)]

3. Permit Shield

Compliance with the conditions of this Section shall be deemed compliance with 40 CFR 60.4211(c), and 40 CFR 60.4211(g). [A.A.C.R18-2-325]

## **G. Recordkeeping Requirements**

[40 CFR 60.4214(b)]

1. Starting with model years in Table 5 of 40 CFR Subpart IIII, the Permittee operating an emergency ICE that does not meet the standards applicable to non-emergency engines in the applicable model year, shall keep records of the operation of the engine in emergency and non-emergency service that are recorded through the non-resettable hour meter.

2. The Permittee shall record the dates and start and stop times when the ICE is operated and the reason it was in operation during that time.
3. Permit Shield

Compliance with the conditions of this Section shall be deemed compliance with 40 CFR 60.4214(b). [A.A.C. R18-2-325]

## VIII. FUGITIVE DUST REQUIREMENTS

### A. Applicability

This Section applies to any source of fugitive dust at the facility.

### B. Particulate Matter and Opacity

#### 1. Open Areas, Roadways & Streets, Storage Piles, and Material Handling

##### a. Emission Limitations

- (1) Opacity of emissions from any fugitive dust non-point source shall not be greater than 40% measured in accordance with the Arizona Testing Manual, Reference Method 9. [A.A.C. R18-2-614]

- (2) The Permittee shall not cause, allow or permit visible emissions from any fugitive dust point source, in excess of 20 percent opacity. [A.A.C-R18-2-702.B]

- (4) The Permittee shall employ the following reasonable precautions to prevent excessive amounts of particulate matter from becoming airborne:

- (a) Keep dust and other types of air contaminants to a minimum in an open area where construction operations, repair operations, demolition activities, clearing operations, leveling operations, or any earth moving or excavating activities are taking place, by good modern practices such as using an approved dust suppressant or adhesive soil stabilizer, paving, covering, landscaping, continuous wetting, detouring, barring access, or other acceptable means; [A.A.C. R18-2-604.A]

- (b) Keep dust to a minimum from driveways, parking areas, and vacant lots where motor vehicular activity occurs by using an approved dust suppressant, or adhesive soil stabilizer, or by paving, or by barring access to the property, or by other acceptable means; [A.A.C. R18-2-604.B]

- (c) Keep dust and other particulates to a minimum by employing dust suppressants, temporary paving, detouring, wetting down or by other reasonable means when a roadway is repaired, constructed, or reconstructed; [A.A.C. R18-2-605.A]
  - (d) Take reasonable precautions, such as wetting, applying dust suppressants, or covering the load when transporting material likely to give rise to airborne dust; [A.A.C. R18-2-605.B; PCC 17.16.050.A]
  - (e) Take reasonable precautions, such as the use of spray bars, wetting agents, dust suppressants, covering the load, and hoods when crushing, handling, or conveying material likely to give rise to airborne dust; [A.A.C. R18-2-606; PCC 17.16.100.A]
  - (f) Take reasonable precautions such as chemical stabilization, wetting, or covering when organic or inorganic dust producing material is being stacked, piled, or otherwise stored; [A.A.C. R18-2-607.A]
  - (g) Operate stacking and reclaiming machinery utilized at storage piles at all times with a minimum fall of material, or with the use of spray bars and wetting agents; [A.A.C. R18-2-607.B]
  - (h) Any other method as proposed by the Permittee and approved by the Director. [A.A.C. R18-2-306.A.3.c]
- (5) The Permittee shall not construct a new unpaved service road or unpaved haul roads. [A.A.C. R18-2-306.A.3]

b. Air Pollution Control Requirements

- (1) *The Permittee shall pave the entrance road leading to RCC and all industrial roads within the facility.* [A.A.C. R18-2-306.01 and -331.A.3. d]  
[Material Permit Conditions are indicated by underline and italics]
- (2) *Water, or an equivalent control, shall be used to control visible emissions from haul roads and storage piles.* [A.A.C. R18-2-306.A.2 and -331.A.3.e]  
[Material Permit Conditions are indicated by underline and italics]
- (3) *The Permittee shall comply with the dust control measures identified in the Dust Control Plan specified in Attachment "D" of this permit.* [A.A.C. R18-2-306.A.2 and -331.A.3.e]  
[Material Permit Conditions are indicated by underline and italics]
- (4) *The Permittee shall use appropriate means, such as berms, signs or other effective procedures, to restrict traffic usage to the treated areas.* Should there be a rock spill on a roadway such that traffic is blocked, the Permittee shall clean up the spill; under no

circumstances is traffic to be diverted to untreated areas to avoid the spill. This condition does not prohibit cleanup equipment from using untreated areas in the course of cleanup activities.

[A.A.C. R18-2-306.A.2 and -331.A.3.d and e]

[Material Permit Conditions are indicated by underline and italics]

(5) Tailings Construction Plan (TCP)

- (a) At least 90 days prior to startup of operations, the Permittee shall submit a dry tailings management plan to minimize fugitive dust from the mine. Upon approval by the Director, the Permittee shall comply with the plan. Any revisions shall be first approved by the Director. This condition does not preclude the Permittee from implementing additional, consistent dust controls.

[A.A.C. R18-2-306.A.2 and -331.A.3.e]

[Material Permit Conditions are indicated by underline and italics]

- (b) The TCP shall address the following operational requirements:

- 1) Tailings dust control during normal non-perimeter buttress construction operations;
- 2) Tailings dust control during perimeter buttress construction;

- (c) If the Director determines that the TCP does not provide adequate air pollution control or that the air pollution techniques are no longer effective in controlling fugitive emissions, then the Director may require the Permittee to make appropriate changes to the TCP.

[A.A.C. R18-2-306.A.c.3]

- (6) The Permittee shall effectively control dust emissions from the transportation of materials by covering stock loads in open-bodied trucks, limiting vehicular speeds, or other equivalently effective controls.

[P.C.C. 17.16.100.C]

c. Speed Limits on Haul Roads

- (1) The Permittee shall post and enforce a speed limit of 35 mph for all vehicles travelling on the property.

[A.A.C. R18-2-306.A.2]

- (2) Notwithstanding (1) above, the average speed for haul trucks shall not exceed 15 mph.

[A.A.C. R18-2-306.A.2]

d. Monitoring Requirements

- (1) The Permittee shall utilize haul-truck speed governors and Payload Management Reports to comply with the average speed limit in Condition VIII.B.1.c.(2). The Payload Management Reports will be available no later than 5:00pm the following business day.

[A.A.C. R18-2-306.A.2 and 306.A.3.c]

(2) The Permittee shall maintain records of the dates on which any of the activities listed in Conditions VIII.B.1.a.(4)(a) through VIII.B.1.a.(4)(h) above were performed and the control measures that were utilized. [A.A.C. R18-2-306.A.3.c]

(3) Opacity Monitoring Requirements

(a) A certified Method 9 observer shall conduct a weekly visual survey of visible emissions from the fugitive dust sources. The survey shall be conducted in accordance with the Visible Emissions Observations Methodology identified in Condition II.B of this Attachment.

(b) The Permittee shall conduct visible emissions checks on each process/unit including mineral tailings for no less than twice daily at or near perimeter buttress construction locations with construction equipment in actual normal operating mode on the perimeter buttress construction and no more than weekly at all other non-perimeter buttress construction locations and times. The checks shall be conducted from strategic locations to be identified and submitted to the Director. The locations shall be identified as an attachment to the TCP titled Fugitive Lookout Points.

(c) When wind speeds at or above 15 mph, or gusts at or above 20 mph are forecast, the Permittee shall physically inspect tailings for easily eroded areas, loose soils, weakened areas of the surface crust of the tailings dam, and or cracks in the crust. Results of the inspection(s) including but not limited to any control measures used or corrective actions taken shall be noted on a schematic of the tailings dam with approximate locations of physical points and other distinguishing features, such as dividers.

[A.A.C. R18-2-306.A.3.c]

(4) Mineral Tailings

(a) The Permittee shall follow all the monitoring provisions identified in the approved TCP. [A.A.C. R18-2-306.A.3.c]

(b) The Permittee shall review the TCP annually for its effectiveness in controlling fugitive emissions. The review shall be submitted to the Director by January 31<sup>st</sup> of each year (covering the period January 1<sup>st</sup> through December 31<sup>st</sup> of the previous year). If the review of the plan shows ineffectiveness in controlling emissions, the Permittee shall submit a revised plan for approval by April 1 following the annual review. The revised TCP shall show improved methods/techniques for reducing emissions in order to minimize or prevent further violations. The annual review shall take into account past compliance issues, resolved/unresolved including

validated complaints reported the Department and propose how those issues can be avoided in the future. Recommendations or stricter requirements will be prescribed by the Department should the Permittee's annual review show that changes are required but not proposed by the Permittee. [A.A.C. R18-2-306.A.3.c]

e. Recordkeeping Requirements [A.A.C.R18-2-306.A.3.c]

- (1) The Permittee shall record the results of the required monitoring as detailed in the approved TCP.
- (2) When the forecast wind speeds are at or above 15 mph, or gusts are at or above 20mph, the Permittee shall maintain a record of all meteorological forecasts for Tucson AZ, including tailing inspections and control measures used and corrective actions taken to demonstrate compliance with the emission limitations.
- (3) The Permittee shall maintain a copy of watering schedules per shift basis.

f. Permit Shield

Compliance with the conditions of this Section shall be deemed compliance with A.A.C. R18-2-604.A and B, 605.A and B, 606, 607.A and B, 614, 702.B and P.C.C17.16.040.A.1, 17.16.100.A&C., 17.16.050.A, and Pima County SIP Rule 343. [A.A.C. R18-2-325]

## IX. GASOLINE STORAGE AND DISPENSING

### A. Applicability

1. This Section applies to the following:
  - a. Gasoline Dispensing Facilities (GDFs), Storage tanks at the GDFs listed in Equipment List, Attachment "C", associated equipment components in vapor or liquid gasoline service, pressure/vacuum vents on gasoline storage tanks, and equipment necessary to unload product from cargo tanks into storage tanks at GDFs. The equipment used for the refueling of motor vehicles is not covered. [40 CFR 63.11111 (a), (b), & (c), and 63. 11112(a)]
  - b. Each gasoline cargo tank during the delivery of product to a GDF. [40 CFR 63.11111(a)]
2. Definition of Monthly Throughput

Monthly throughput means the total volume of gasoline that is loaded into, or dispensed from, all gasoline storage tanks at each GDF during a month. Monthly throughput is calculated by summing the volume of gasoline loaded into, or dispensed from, all gasoline storage tanks at each GDF during the current day, plus the total volume of gasoline loaded into, or dispensed from, all gasoline storage tanks at each GDF during the previous 364 days, and then dividing that sum by 12. [40 CFR 63.11132]

### B. Operating Requirements

1. The Permittee shall at all times, operate and maintain any affected source, including associated air pollution control equipment and monitoring equipment, in a manner consistent with safety and good air pollution control practices for minimizing emissions. Determination of whether such operation and maintenance procedures are being used will be based on information available to the Administrator which may include, but is not limited to, monitoring results, review of operation and maintenance procedures, review of operation and maintenance records, and inspection of the source. [40 CFR 63.11115(a)]
2. The Permittee shall not allow gasoline to be handled in a manner that would result in vapor releases to the atmosphere for extended periods of time. Measures to be taken include, but are not limited to, the following:
  - a. Minimize gasoline spills;
  - b. Clean up spills as expeditiously as practicable;
  - c. Cover all open gasoline containers and all gasoline storage tank fill-pipes with a gasket seal when not in use;
  - d. Minimize gasoline sent to open waste collection systems that collect and transport gasoline to reclamation and recycling devices, such as oil/water separators. [40 CFR 63.11117(a)]
3. Submerged Fill Pipes [40 CFR 63.11116(b)]
  - a. The Permittee shall only load gasoline into storage tanks by utilizing submerged fill pipes that are no more than 6 inches from the bottom of the storage tank.
  - b. If the submerged fill pipes do not meet the specifications specified above, the Permittee shall demonstrate that the liquid level in the tank is always above the entire opening of the fill pipe. Documentation providing such demonstration must be made available for inspection by the Director or Administrator's delegated representative during the course of a site visit.
4. If any GDF referenced above increases the monthly throughput over 100,000 gallons per month, the Permittee shall comply with new applicable provisions of Subpart CCCCCC within 3 years of the GDF unit becoming subject to the new requirements. [40 CFR 63.11113(c)]
5. All gasoline storage tanks shall be equipped with a submerged filling device, or acceptable equivalent, for the control of hydrocarbon emissions. [A.A.C. R18-2-710.B]
6. All pumps and compressors which handle volatile organic compounds (VOCs) shall be equipped with mechanical seals or other equipment of equal efficiency to prevent the release of organic contaminants into the atmosphere. [A.A.C. R18-2-710.D]

**C. Recordkeeping Requirements**

[A.A.C. R18-2-710.E.3]

1. The Permittee shall maintain monthly record of the gasoline throughput of each

GDF as detailed in Condition IX.A.2.

[A.A.C. R18-2-306.A.3.c]

2. The Permittee shall have records available within 24 hours of request by the Director or Administrator documenting the gasoline throughput. [40 CFR 63.11117(d)]
3. The Permittee shall, for the gasoline storage tanks, maintain a file of the typical Reid vapor pressure of gasoline stored and of dates of storage. Dates on which the storage vessel is empty shall be shown. [A.A.C. R18-2-710.E.1]
4. If the gasoline stored has a true vapor pressure greater than 470 mm Hg (9.1 psia), the Permittee shall record the average monthly temperature, and true vapor pressure of gasoline at such temperature. [A.A.C. R18-2-710.E.2.b]
5. The average monthly storage temperature shall be an arithmetic average calculated for each calendar month, or portion thereof, if storage is for less than a month, from bulk liquid storage temperature determined at least once every seven days.
6. The true vapor pressure shall be determined by the procedures in American Petroleum Institute Bulletin 2517, amended as of February 1980 (and no future editions), which is incorporated herein by reference and on file with the Office of the Secretary of State. This procedure is dependent upon determination of the storage temperature and the Reid vapor pressure, which requires sampling of the petroleum liquids in the storage vessels. Unless the Director requires in specific cases that the stored petroleum liquid be sampled, the true vapor pressure may be determined by using the average monthly storage temperature and the typical Reid vapor pressure. For those liquids for which certified specifications limiting the Reid vapor pressure exist, the Reid vapor pressure may be used. For other liquids, supporting analytical data must be made available upon request to the Director when typical Reid vapor pressure is used. [A.A.C. R18-2-710.E.4]

#### **D. Permit Shield**

Compliance with the conditions of this Section shall be deemed compliance with A.A.C. R18-2-710.B, D, E.1, E.2.b, E.3 and E.4, 40 CFR 63.11111(a),(b),(c), 40 CFR 63.11112(a), 63.11113(c), 40 CFR 63.11115(a), 40 CFR 63.11116(b), and 40 CFR 63.11117(a), (d).

[A.A.C. R18-2-325]

### **X. STORAGE TANKS**

#### **A. Applicability**

This Section is applicable to the storage tanks identified in the equipment list in Attachment "C" of this permit.

#### **B. Operating Requirements**

1. The Permittee shall not emit gaseous or odorous materials from the diesel storage tanks in such quantities or concentrations as to cause air pollution. [A.A.C.R18-2-730.D]
2. Materials including solvents or other volatile compounds, paints, acids, and alkalies shall be processed, stored, used and transported in such a manner and by such means that they will not evaporate, leak, escape or be otherwise discharged into the ambient air so as to cause or contribute to air pollution. Where means are

available to reduce effectively the contribution to air pollution from evaporation, leakage or discharge, the installation and use of such control methods, devices, or equipment shall be mandatory.

[A.A.C. R18-2-730.F]

3. Where a stack, vent, or other outlet is at such a level that odor, smoke, vapor or any combination thereof constituting air pollution is discharged to adjoining property, the Director may require the installation of abatement equipment or the alteration of such stack, vent, or other outlet by the Permittee to a degree that will adequately dilute, reduce, or eliminate the discharge of air pollution into adjoining property.

[A.A.C. R18-2-730.G]

### **C. Permit Shield**

Compliance with the conditions of this Section shall be deemed compliance with A.A.C. R18-2-730.D, -730.F, and -730.G.

[A.A.C. R18-2-325]

## **XI. OTHER PERIODIC ACTIVITY REQUIREMENTS**

### **A. Abrasive Blasting**

Particulate Matter and Opacity

#### **1. Emission Limitations**

- a. The Permittee shall not cause or allow sandblasting or other abrasive blasting without minimizing dust emissions to the atmosphere through the use of good modern practices. Good modern practices include:

- (1) wet blasting;
- (2) effective enclosures with necessary dust collecting equipment; or
- (3) any other method approved by the Director.

[A.A.C. R18-2-726]

#### **b. Opacity**

The Permittee shall not cause, allow or permit visible emissions from sandblasting or other abrasive blasting operations in excess of 20% opacity, as measured by EPA Reference Method 9.

[A.A.C. R18-2-702.B]

#### **2. Monitoring and Recordkeeping Requirement**

Each time an abrasive blasting project is conducted, the Permittee shall keep records of the following:

- a. The date the project was conducted;
- b. The duration of the project; and
- c. Type of control measures employed.

[A.A.C. R18-2-306.A.3.c]

3. Permit Shield

Compliance with this Section shall be deemed compliance with A.A.C. R18-2-726,  
A.A.C. R18-2-702.B. [A.A.C.R18-2-325]

**B. Use of Paints**

1. Volatile Organic Compounds

a. Emission Limitations

While performing spray painting operations, the Permittee shall comply with the following requirements:

- (1) The Permittee shall not conduct or cause to be conducted any spray painting operation without minimizing organic solvent emissions. Such operations, other than architectural coating and spot painting, shall be conducted in an enclosed area equipped with controls containing no less than 96 percent of the overspray. [A.A.C.R18-2-727.A]

- (2) The Permittee or their designated contractor shall not either:

(a) Employ, apply, evaporate, or dry any architectural coating containing photochemically reactive solvents for industrial or commercial purposes; or

(b) Thin or dilute any architectural coating with a photochemically reactive solvent. [A.A.C.R18-2-727.B]

- (3) For the purposes of Condition XI.B.1.a.(2), a photochemically reactive solvent shall be any solvent with an aggregate of more than 20 percent of its total volume composed of the chemical compounds classified in Conditions XI.B.1.a.(3).(a) through XI.B.1.a.(3).(c) below, or which exceeds any of the following percentage composition limitations, referred to the total volume of solvent:

(a) A combination of the following types of compounds having an olefinic or cyclo-olefinic type of unsaturation-hydrocarbons, alcohols, aldehydes, esters, ethers, or ketones: 5 percent.

(b) A combination of aromatic compounds with eight or more carbon atoms to the molecule except ethylbenzene: 8 percent.

(c) A combination of ethylbenzene, ketones having branched hydrocarbon structures, trichloroethylene or toluene: 20 percent. [A.A.C.R18-2-727.C]

- (4) Whenever any organic solvent or any constituent of an organic solvent may be classified from its chemical structure into more than one of the groups of organic compounds described in Conditions XI.B.1.a.(3)(a) through XI.B.1.a.(3)(c) above, it shall be considered to be a member of the group having the least allowable percent of the total volume of solvents.

[A.A.C.R18-2-727.D]

b. Monitoring and Recordkeeping Requirements

- (1) Each time a spray painting project is conducted, the Permittee shall keep records of the following:
- (a) The date the project was conducted;
  - (b) The duration of the project;
  - (c) Type of control measures employed;
  - (d) Material Safety Data Sheets for all paints and solvents used in the project; and
  - (e) The amount of paint consumed during the project.
- (2) Architectural coating and spot painting projects shall be exempt from the recordkeeping requirements of Condition X.B.1.b.(1) above.

[A.A.C. R18-2-306.A.3.c]

c. Permit Shield

Compliance with this Section shall be deemed compliance with A.A.C.R18-2-727.A, B, C, and D.

[A.A.C.R18-2-325]

2. Opacity

a. Emission Limitations

The Permittee shall not cause, allow or permit visible emissions from painting operations in excess of 20% opacity, as measured by EPA Reference Method 9.

[A.A.C. R18-2-702.B]

b. Permit Shield

Compliance with the conditions of this Section shall be deemed compliance with A.A.C.R18-2-702.B.

[A.A.C. R18-2-325]

**C. Demolition/Renovation - Hazardous Air Pollutants**

1. Emission Limitations

The Permittee shall comply with all of the requirements of 40 CFR 61 Subpart M (National Emissions Standards for Hazardous Air Pollutants - Asbestos). Notices shall be filed with the Pima County Department of Environmental Quality.

[A.A.C. R18-2-1101.A.8]

2. Monitoring and Recordkeeping Requirement

The Permittee shall keep all required records in a file. The required records shall include the “NESHAP Notification for Renovation and Demolition Activities” form and all supporting documents. [A.A.C. R18-2-306.A.3.c]

3. Permit Shield

Compliance with the conditions of this Section shall be deemed compliance with A.A.C. R18-2-1101.A.8. [A.A.C. R18-2-325]

## **XII. MOBILE SOURCE REQUIREMENTS**

### **A. Applicability**

The requirements of this Section are applicable to mobile sources which either move while emitting air contaminants or are frequently moved during the course of their utilization but are not classified as motor vehicles, agricultural vehicles, or agricultural equipment used in normal farm operations. Mobile sources shall not include portable sources as defined in A.A.C. R18-2-101.90. [A.A.C.R18-2-801.A]

### **B. Particulate Matter and Opacity**

1. Emission Limitations

a. Off-Road Machinery

The Permittee shall not cause, allow, or permit to be emitted into the atmosphere from any off-road machinery, smoke for any period greater than ten consecutive seconds, the opacity of which exceeds 40%. Visible emissions when starting cold equipment shall be exempt from this requirement for the first ten minutes. Off-road machinery shall include trucks, graders, scrapers, rollers, and other construction and mining machinery not normally driven on a completed public roadway. [A.A.C.R18-2-802.A and -802.B]

b. Roadway and Site Cleaning Machinery

(1) The Permittee shall not cause, allow or permit to be emitted into the atmosphere from any roadway and site cleaning machinery smoke or dust for any period greater than ten consecutive seconds, the opacity of which exceeds 40%. Visible emissions when starting cold equipment shall be exempt from this requirement for the first ten minutes. [A.A.C.R18-2-804.A]

(2) The Permittee shall take reasonable precautions, such as the use of dust suppressants, before the cleaning of a site, roadway, or alley. Earth or other material shall be removed from paved streets onto which earth or other material has been transported by trucking or earth moving equipment, erosion by water or by other means.

c. Unless otherwise specified, no mobile source shall emit smoke or dust the opacity of which exceeds 40%. [A.A.C.R18-2-801.B]

2. Recordkeeping Requirement

The Permittee shall keep a record of all emissions related maintenance activities performed on the Permittee's mobile sources stationed at the facility as per manufacturer's specifications. [A.A.C.R18-2-306.A.5.a]

3. Permit Shield

[A.A.C.R18-2-325]

Compliance with this Section shall be deemed compliance with A.A.C. R18-2-801.A and B, A.A.C. R18-2-802.A and B, and A.A.C. R18-2-804.A and B.

**XIII. PUBLIC ACCESS RESTRICTIONS**

At least 90 days prior to beginning construction of the mine, the Permittee shall submit to the Director a Public Access Restriction Plan (Plan) that include measures such as fencing, natural topographic barriers, signage, security patrols, and access restrictions to adjacent private property to restrict public access to the RCC site. The Plan shall be implemented within 30 days after approval by the Director.

[A.A.C.R18-2-306.A.2]

## ATTACHMENT “C”: EQUIPMENT LIST

### Air Quality Control Permit No. 55223 For Rosemont Copper Company

Equipment	Qty	Max Capacity	Make / Model	Date of Manufacture	Equipment ID / Serial Number	NSPS / A.A.C
<b>Primary Crushing, Conveying, Coarse Ore Storage, &amp; Reclaim Conveying</b>						
Crusher Dump Hopper	1	680 tons			H-CPp	NSPS Subpart LL
Primary Crusher	1	6950 tons per hour			PCr	NSPS Subpart LL
Crusher Discharge Hopper	1	725 tons			H-CDs	NSPS Subpart LL
Crusher Discharge Feeder	1	25' L x 96" W			F-CD	NSPS Subpart LL
Stockpile Feed Conveyor No. 1	1	2690' L x 60" W			CV-SF1	NSPS Subpart LL
Crushing Area Dust Collector	1	18,000 acfm	Cartridge Filter		PCL01/ PC-CADC	NSPS Subpart LL
Stockpile Feed Conveyor No. 2	1	2690' L x 60" W			CV-SF2	NSPS Subpart LL
Reclaim Feeders	1	20' L X 48" W			F-R1/R4	NSPS Subpart LL
Reclaim Conveyors	1	932' L X 60" W			CV-R	NSPS Subpart LL
Stockpile Feed Conveyor Transfer Point Dust Collector	1	10,000 acfm	Cartridge Filter		PCL02/ PC-SFCDC	NSPS Subpart LL
Stockpile Area and Reclaim Tunnel Dust Collector	1	41,500 acfm	Cartridge Filter		PCL03/ PC-SARTDC	NSPS Subpart LL
SAG Mill Feed Conveyor	1	660' L x 60" W			CV-SMF	NSPS Subpart LL
SAG Mill	1	36' D x 17.5' EGL			M-SAG	NSPS Subpart LL
Trommel Screen	1	16' L x 16' W	Polysius		Sn-T	NSPS Subpart LL
Pebble Conveyor No.1	1	135.5' L x 60" W			CV-Pb1	NSPS Subpart LL
Pebble Wash Screen	1	10' L x 20' W			Sn-PbW	NSPS Subpart LL
Pebble Conveyor No.1	1	675' L x 36" W			CV-Pb2	NSPS Subpart LL
SAG Oversize Surge Bin	1	500 Tons			B-SAGOS	NSPS Subpart LL
SAG Feed Conveyor Dust Collector	1	13,000 acfm	Cartridge Filter		PCL12 / PC-SFCDC	NSPS Subpart LL
Pebble Crusher Feeder	1	31.5' x 48" W			F-PbC	NSPS Subpart LL
Pebble Crusher	1	1,771 tons per hour			PbC	NSPS Subpart LL

Equipment	Qty	Max Capacity	Make / Model	Date of Manufacture	Equipment ID / Serial Number	NSPS / A.A.C.
Pebble Conveyor No.3	1	170.5' x 36" W			CV-Pb3	NSPS Subpart LL
Pebble Crusher Area Dust Collector	1	9000 acfm	Cartridge Filter		PCL04 / PC-SFDC	NSPS Subpart LL
Ball Mills	2	26' D x 40' EGL			M-B1/B2	NSPS Subpart LL
<b>Flotation, Regrind, and Concentration</b>						
Copper/ Molybdenum/ Tailings Flootation and Concentrating Equipment (Flotation cells, column cells, thickeners, filters)	N/A	N/A			Various	A.A.C. 721
Copper Regrind Mills	2	11'-8" L x 13'-4" W			M-CR1/CR2	NSPS Subpart LL
Molybdenum Regrind Mill	1	4' L x 4'-4" W			M-MR	NSPS Subpart LL
Molybdenum Cleaner Regrind Mill	1	4 tons per hour			M-MCR	NSPS Subpart LL
Molybdenum Cleaner Area Scrubber	1	12,500 acfm			PC-MCAS	A.A.C. 730
<b>Copper Concentrate Dewatering and Stacking</b>						
Filter Feed Trash Screen	1	60" L x 48" W			Sn-FFT	NSPS Subpart LL
Copper Concentrate Loadout Building	1	175' L x 101' W x 60' H			BD-CCL	NSPS Subpart LL
Copper Concentrate Conveyor	1	330' L x 24" W			CV-CC	NSPS Subpart LL
Copper Concentrate Dust Collectors	2	50,000 acfm each	Cartridge Filter		PCL05 & PCL06 PC-CCDC1/ PC-CCDC2	NSPS Subpart LL
<b>Molybdenum Dewatering and Packing</b>						
Molybdenum Concentrate Dryer	1	N/A				NSPS Subpart LL
Molybdenum Scrubber	1				PC-MS	NSPS Subpart LL
Electrostatic Precipitator	1	139 acfm			PC-EP	NSPS Subpart LL
Molybdenum Concentrate Bin	1				B-MC	NSPS Subpart LL
Molybdenum Dust Collector	1	1,500 acfm	Cartridge Filter		PCL08/ PC-MDC	NSPS Subpart LL
Molybdenum Concentrator Hopper	1	20 ft <sup>3</sup>			H-MC	NSPS Subpart LL
Molybdenum Concentrate Conveyor	1	90 tons per hour			CV-MC	NSPS Subpart LL
Molybdenum Packing & Weigh System	1	Variable			MPS	NSPS Subpart LL

Equipment	Qty	Max Capacity	Make / Model	Date of Manufacture	Equipment ID / Serial Number	NSPS / A.A.C.
<b>Tailings Dewatering and Placement</b>						
Tailings Belt Feeders	14				F-T1/T14	A.A.C 730
Fixed Tailings Conveyor No. 1	1				CV-F1	A.A.C 730
Fixed Tailings Conveyor No. 2	1				CV-F2	A.A.C 730
Fixed Tailings Conveyor No. 3	1				CV-F3	A.A.C 730
Relocatable Conveyors	2				CV-R1/R2	A.A.C 730
Shiftable Conveyors with Cross Conveyor Trippers	2				CV-S1/S2	A.A.C 730
Belt Wagon Conveyor on Crawlers (moveable)	1				CV-BW1	A.A.C 730
Spreader Crawler Mounted Conveyors (movable)	2				CV-SP1/SP2	A.A.C 730
<b>Solvent Extraction and Electrowinning</b>						
SX Primary Mix Tanks	4	7.75' D x 9.75' H			T-E1P, E1PP, E2P, S1P	A.A.C 730
SX Secondary Mix Tanks	4	9.5' D x 9.75' H			T-E1S, E1PS, E2S, S1S	A.A.C 730
SX Tertiary Mix Tanks	3	9.5' D x 9.75'			T-E1T, E1PT, E2T	A.A.C 730
SX Settlers	4	64' L x 33' W x 3.33' H			ES-E1, E1P, E2, SS-S1	A.A.C 730
Electrowinning Commercial Cells	30	22' L x 4' W X 5' H			EWCC	A.A.C 730
Cell Ventilation Wet Scrubbers	2	5000 acfm each			PC-EWCVS1/ EWCV3	A.A.C 730
<b>Fuel Burning Equipment</b>						
Diesel Electrowinning Hot Water Generator	1	6.0 MMBtu per hour			HWG	A.A.C 703
Thickener Area Emergency Generator	1	1000 kilowatt			TEG	NSPS Subpart III
PLS Pond Area Emergency Generator	1	1000 kilowatt			PEG	NSPS Subpart III
Main Substation Emergency Generator	1	750 kilowatt			MEG	NSPS Subpart III
Administration Building Emergency Generator	1	750 kilowatt			AEG	NSPS Subpart III
Electrowinning Building Emergency Generator	1	50 kilowatt			EWEG	NSPS Subpart III
Primary Crusher Fire Water Pump	1	400 horsepower			PCFWP	NSPS Subpart III
SX/EW Fire Water Pump	1	400 horsepower			SXFWP	NSPS Subpart III

Equipment	Qty	Max Capacity	Make / Model	Date of Manufacture	Equipment ID / Serial Number	NSPS / A.A.C.
<b>Miscellaneous Sources</b>						
Bulk Pebble Lime Silo	1				S-BPL	A.A.C 730
Bulk Pebble Lime Silo Screw Conveyor	1				C-BPLS	A.A.C 730
Bulk Pebble Lime Silo Bin Vent	1	750 / 1750 acfm			PC-BPLBV	A.A.C 730
Lime Storage Bin Vent	1				B-L	A.A.C 730
Lime Storage Bin Vent	1	750 / 1750 acfm			PC-LSBV	A.A.C 730
Lime Transfer Screw Conveyors	1				CV-LTS1/2	A.A.C 730
Lime Slakers	1				T-LS1/2	A.A.C 730
Lime Slaker Scrubber	1	500 acfm			PC-LSS	A.A.C 730
Sodium Metascilicate Storage Bin	1				B-SM	A.A.C 730
Sodium Metascilicate Storage Bin Vent	1				PC-SMSBV	A.A.C 730
Flocculant Storage Bin 1	1				B-F1	A.A.C 730
Flocculant Storage Bin 2	1				B-F2	A.A.C 730
Guar Feeder	1				F-Gu	A.A.C 730
Cobalt Sulfate Feeder	1				F-CoS	A.A.C 730
<b>Tanks</b>						
C7 Distribution Tank	1	11,845 gallons			T-C7D	A.A.C 730
MIBC Storage Tank	1	11,845 gallons			T-MIBCS	A.A.C 730
Diesel Fuel Storage Tanks – heavy Vehicles	2	100,000 gallons			T-DFS-HV1/HV2	A.A.C 730
Gasoline Storage Tank	1	10,000 gallons				A.A.C 710
Mix Tank	1	1,692 gallons				A.A.C 710
<b>Other Pollution Control Equipment</b>						
Laboratory Dust Collectors	3	10,000 acfm each			PC-L1/L3	A.A.C 721
Laboratory Wet Scrubber	1	9,000 acfm			PC-LWS	A.A.C.721

**NOTE:**

All missing equipment data will be updated upon purchase of equipment

**ATTACHMENT “D”: DUST CONTROL PLAN**

**Air Quality Control Permit No. 55223  
For  
*Rosemont Copper Company***

*(See Attached)*

DRAFT

**APPENDIX E**  
**DUST CONTROL PLAN**

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## **E.1 INTRODUCTION**

As described in the Calculation Methodology presented in the Emission Inventory Information, Volume I, a 90% control efficiency is utilized during the calculation of fugitive dust emissions from regularly traveled unpaved haul roads servicing the open pit as well as from the general facility roads around the RCP. Additionally, the RCP plans to implement reasonable dust control measures to prevent excessive fugitive emissions from open areas and storage piles created by the mining operations. This document constitutes the RCP's dust control plan for achieving a 90% control of fugitive dust emissions from unpaved roads and preventing excessive fugitive emissions from open areas.

## E.2 FUGITIVE DUST EMISSIONS FROM UNPAVED ROADS

### E.2.1 Unpaved Road Network

The RCP has a network of unpaved haul roads for transporting concentrating ore, leaching ore, and waste rock from the open pit mine to the primary crushing area, leaching area, and waste rock areas, respectively. Additionally, the RCP has general roads around the facility used by support vehicles. Site diagrams of the RCP are presented in Appendix D. Primary roads include: (a) haul roads located in the pit, (b) haul roads for transporting concentrating ore from the pit to the primary crusher/run of mine stockpile, (c) haul roads for transporting leaching ore from the pit to the leach pad, (d) haul roads for transporting waste rock from the pit to the waste rock storage area, and (e) general facility roads around the RCP for support vehicles.

The RCP dust control plan for unpaved roads includes the use of chemical dust suppressants and/or road watering. The control efficiency achieved by chemical dust suppressants depends upon the strength of the ground inventory, whereas the control efficiency achieved by watering depends upon the amount of water that is used (gallons/yd<sup>2</sup>) and the traffic volume. Since the chemical dust suppressant usage does not depend on traffic volumes, the ground inventory value determined for a 90% control efficiency can be applied on a periodic basis to any unpaved road at the facility, regardless of the rate of vehicles traveling on the road. However, because the control efficiency achieved by unpaved road watering depends upon traffic volume, in this dust control plan, the haul trucks traveling on haul roads during Year 5 operations at the RCP (the year when haul road travel rates are greatest) is used as an example in determining the application intensity of water used to control fugitive emissions. Additionally, the road network at the RCP is divided into four categories to account for each road network category having a different maximum traffic volume.

During actual operation, the RCP will evaluate the haul truck traffic rates at different time periods throughout the life of the mine to correctly identify the application intensity needed for road watering to achieve a 90% control efficiency on haul roads. Also, the RCP will evaluate the traffic rate of support vehicles to determine the water application intensity needed to control the general unpaved facility roads to a 90% control efficiency.

The calculation methodology used to estimate traffic volume is presented in Appendix E1. The road network categories and the average hourly haul truck traffic rates at the maximum production, assuming operations of 24 hours per day, are presented below:

- a) Roadways that will be used to transport concentrating ore, leaching ore, and waste rock from the mining location inside the pit to the exit point of the pit. These roadways are expected to experience an average traffic rate of 120.0 vehicles per hour;
- b) Roadways that will be used to transport concentrating ore from the exit of the pit to the primary crusher dump hopper / run of mine stockpile. These roadways are estimated to experience an average traffic rate of 30.0 vehicles per hour;
- c) Roadways that will be used to transport leaching ore from the exit of the pit to the leaching area. These roadways are estimated to experience an average traffic rate of 2.0 vehicles per hour; and

- d) Roadways that will be used to transport waste rock from the exit of the pit to the waste rock storage area. These roadways are estimated to experience an average traffic rate of 88.0 vehicles per hour.

## **E.2.2 Description of Dust Control Plans**

Optimal dust control measures depend upon the characteristics of the road network and its use, and upon meteorological considerations. Additionally, dust control measures are continuously evolving with new products becoming available on a regular basis. In order to provide flexibility to change dust control measures while achieving the desired control efficiency, this document proposes three programs, each designed to achieve a 90% control of PM<sub>10</sub> emissions. The RCP dust control plan includes the flexibility to alternate from one dust control program to another or to use a separate dust control program for an individual roadway system.

The RCP dust control plan ensures that at least a 90% control of PM<sub>10</sub> emissions is achieved on the unpaved road network. The RCP is also required to maintain no greater than a 40% or 20% opacity for all non-point sources (see Table 4.1). A 90% control efficiency is considered sufficient to ensure that the 40% or 20% opacity limit will be met.

### **E.2.2.1 Dust Control Program A**

Dust Control Program A consists of the application of sufficient chemical dust suppressant to achieve a ground inventory of 0.25 gallons/yard<sup>2</sup> with a reapplication frequency of 1-month (where reapplication frequency refers to the time interval between applications used to maintain a specific ground inventory). The term “ground inventory” represents the residual accumulation of a dust suppressant from previous applications. (For a detailed definition of “ground inventory” see page 3-20 of *Fugitive Dust Background Document and Technical Information Document for Best Available Control Measures*, EPA-450/2-92-004, in Appendix E2). Dust suppressants which could be used for this purpose include, among others, lignosulfonates, petroleum resins, asphalt emulsions, and acrylic cement.

### **E.2.2.2 Dust Control Program B**

Dust Control Program B consists of periodic watering in sufficient amounts to achieve 90% control for PM<sub>10</sub>. The program will be applied only during days with precipitation of less than 0.01 inches. The water application intensities necessary to achieve a 90% particulate control efficiency during daylight and nighttime hours are presented in Tables E.2.1 and E.2.2, respectively. The roadway network categories are presented in Section E.2.1 and a description on how the application intensities are calculated is presented in Section E.4.2.

**Table E.2.1 Average Hourly Watering Requirements During Daylight Hours for Dust Control Program B**

Roadway System Category	Average Traffic Volume (vehicles/hour)	Average Hourly Application Intensity During Daylight Hours Required to Achieve a 90% Control Efficiency for Fugitive Dust Emissions <sup>a</sup>	
		liters/meter <sup>2</sup>	gallons/yard <sup>2</sup>
From Mining Location to Pit Boundary	120.0	4.87	1.08
From Pit Boundary to Primary Crusher Dump Hopper / Run of Mine Stockpile	30.0	1.22	0.27
From Pit Boundary to Leach Pad	2.0	0.08	0.02
From Pit Boundary to Waste Rock Storage Area	88.0	3.57	0.79

<sup>a</sup> The model predicts a 90% control efficiency regardless whether the water application intensity is met with a single hourly application, multiple applications during the 1-hour period, or greater application intensities for less frequent applications.

**Table E.2.2 Average Hourly Watering Requirements During Nighttime Hours for Dust Control Program B**

Roadway System Category	Average Traffic Volume (vehicles/hour)	Average Hourly Application Intensity During Daylight Hours Required to Achieve a 90% Control Efficiency for Fugitive Dust Emissions <sup>a</sup>	
		liters/meter <sup>2</sup>	gallons/yard <sup>2</sup>
From Mining Location to Pit Boundary	120.0	2.43	0.54
From Pit Boundary to Primary Crusher Dump Hopper / Run of Mine Stockpile	30.0	0.61	0.13
From Pit Boundary to Leach Pad	2.0	0.04	0.009
From Pit Boundary to Waste Rock Storage Area	88.0	1.79	0.39

<sup>a</sup> The model predicts a 90% control efficiency regardless whether the water application intensity is met with a single hourly application, multiple applications during the 1-hour period, or greater application intensities for less frequent applications.

### E.2.2.3 Dust Control Program C

Dust Control Program C consists of the application of sufficient chemical dust suppressant to achieve a ground inventory of 0.05 gallons/yard<sup>2</sup> with a 1-month reapplication frequency (the ground inventory of 0.05 gallons/yard<sup>2</sup> provides a base control efficiency of 62%.) plus periodic watering to increase the base control efficiency achieved by chemical dust suppressants alone to 90%. A summary of the

roadway traffic volume and corresponding annual average watering requirements of Dust Control Program C is presented in Table E.2.3 (Daylight Hours) and Table E.2.4 (Nighttime Hours). If any type of water adhesion enhancing material, such as a surfactant, is used with Dust Control Program C, application intensities will be re-evaluated.

**Table E.2.3 Average Hourly Watering Requirements During Daylight Hours for Dust Control Program C**

Roadway System Category	Average Traffic Volume (vehicles/hour)	Average Hourly Application Intensity During Daylight Hours Required to Achieve a 90% Control Efficiency for Fugitive Dust Emissions <sup>a</sup>	
		liters/meter <sup>2</sup>	gallons/yard <sup>2</sup>
From Mining Location to Pit Boundary	120.0	1.85	0.41
From Pit Boundary to Primary Crusher Dump Hopper / Run of Mine Stockpile	30.0	0.46	0.10
From Pit Boundary to Leach Pad	2.0	0.03	0.007
From Pit Boundary to Waste Rock Storage Area	88.0	1.36	0.30

<sup>a</sup> The model predicts a 90% control efficiency regardless whether the water application intensity is met with a single hourly application, multiple applications during the 1-hour period, or greater application intensities for less frequent applications.

**Table E.2.4 Average Hourly Watering Requirements During Nighttime Hours for Dust Control Program C**

Roadway System Category	Average Traffic Volume (vehicles/hour)	Average Hourly Application Intensity During Daylight Hours Required to Achieve a 90% Control Efficiency for Fugitive Dust Emissions <sup>a</sup>	
		liters/meter <sup>2</sup>	gallons/yard <sup>2</sup>
From Mining Location to Pit Boundary	120.0	0.93	0.20
From Pit Boundary to Primary Crusher Dump Hopper / Run of Mine Stockpile	30.0	0.23	0.05
From Pit Boundary to Leach Pad	2.0	0.02	0.003
From Pit Boundary to Waste Rock Storage Area	88.0	0.68	0.15

<sup>a</sup> The model predicts a 90% control efficiency regardless whether the water application intensity is met with a single hourly application, multiple applications during the 1-hour period, or greater application intensities for less frequent applications.

## **E.3 PLAN FOR THE CONTROL OF FUGITIVE DUST EMISSIONS FROM OPEN AREAS AND STORAGE PILES**

### ***E.3.1 Open Areas and Storage Piles***

Open areas and storage piles include mined areas, overburden storage areas, as well as waste rock storage areas. Open areas and storage areas which are subject to generating fugitive emissions exclude ore, waste rock, and other similar areas because these areas are characterized by a low silt content and therefore, are not dust producing areas. Consequently, dust control measures are not necessary for such areas.

### ***E.3.2 Description of Dust Control Plan***

Open areas and storage piles which are in active use and subject to generating fugitive emissions will be controlled by the application of water as required by Title 18, Chapter 2, Article 6 of the A.A.C. and Chapter 17.16, Article III of the P.C.C.. Open areas and storage piles which are not actively used will be controlled by applying the methods required by A.A.C. R18-2-604 and R18-2-607 and P.C.C. Sections 17.16.080 and 17.16.110, respectively. This includes the application of sufficient chemical dust suppressant and/or water to develop and maintain a visible crust. Periodic inspections of the open areas will be performed to evaluate the condition of the visible crust and, if necessary, additional chemical dust suppressant and/or water will be applied. Other means which may be applied include use of an adhesive soil stabilizer, paving covering, landscaping, detouring, or other acceptable means. Access to such areas will also be minimized by the construction of berms or other barriers to prevent re-disturbance of the areas.

## **E.4 DEMONSTRATION THAT THE DUST CONTROL PLAN WILL PROVIDE A 90% CONTROL EFFICIENCY**

### ***E.4.1 Dust Control Program A***

The control efficiency of a chemical dust suppressant is dependent upon the ground inventory of the dust suppressant and the frequency between applications. A model developed by EPA, and published in *Fugitive Dust Background Document and Technical Information Document for Best Available Control Measures* (see Appendix E2), provides the relationship between these parameters and PM<sub>10</sub> control performance for dust suppressants in general. A graph representing this model is presented in Figure E.4.1.

The sufficiency of Dust Control Program A to achieve a control efficiency of 90% for PM<sub>10</sub> is verified by considering this figure. Using a chemical dust suppressant, a ground inventory of 0.25 gallons/yd<sup>2</sup> with a 1-month reapplication frequency will provide a control efficiency for PM<sub>10</sub> of 90%. It should be noted that the model for PM<sub>10</sub> control efficiency of petroleum-based dust suppressants published in the AP-42, Section 13.2.2 (11/06), agrees with the EPA model used to determine the sufficiency of Dust Control Program A.

The control efficiencies in the above mentioned models are averages and not maximums. Therefore, it can be assumed that using a chemical dust suppressant with a ground inventory of 0.25 gallons/yd<sup>2</sup> could result in control efficiencies higher than 90%.

# CHEMICAL DUST SUPPRESSANT CONTROL EFFICIENCY MODEL

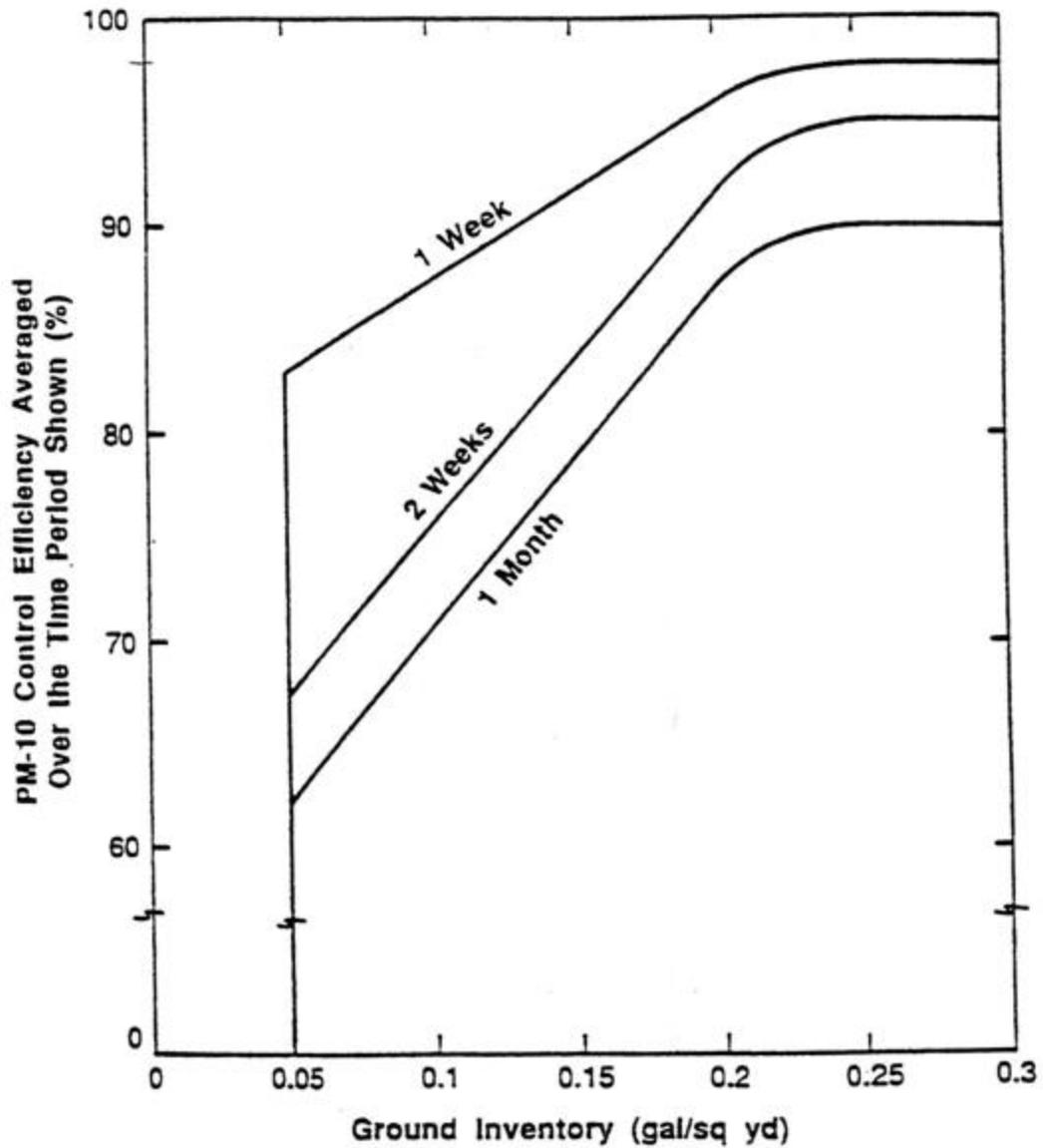


Figure E.4.1 Model for Control Efficiency of PM<sub>10</sub> when Using Chemical Dust Suppressants.

### **E.4.2 Dust Control Program B**

The application intensity of water during daylight and nighttime hours required to achieve a 90% control efficiency for each road category is calculated using an empirical model developed by EPA (*Control of Open Fugitive Sources*, EPA-U50/3-88-008, September, 1988, presented in Appendix E3). The following equations were derived from this model:

$$i = \frac{0.8 \times p \times d \times t}{(100 - W_c)} \quad \text{Equation 1}$$

$$p = 0.0049 \times \text{PER} \quad \text{Equation 2}$$

where:

- i = application intensity (liters/m<sup>2</sup>);
- p = potential average hourly daytime evaporation rate (mm/hr, 0.507 for Tucson, AZ);
- d = average hourly daytime traffic (vehicles/hr; see Section E.2.1);
- t = time between applications (hours, 1 for hourly applications)
- W<sub>c</sub> = average particulate control efficiency (%; 90 in this case); and
- PER = mean annual pan evaporation rate (inches/year, 103.51 for Tucson, AZ from Western Region Climate Center data from 1894-2005).

As shown by Equation 1, the application intensity is dependent upon the pan evaporation rate. Because the pan evaporation rate differs between daytime and nighttime conditions, as well as meteorological conditions, application intensities will also vary with daylight hours and nighttime hours and with meteorological conditions. Nighttime hour application intensities are calculated assuming the average hourly nighttime pan evaporation rate is equal to 50% of the average hourly daytime pan evaporation rate.

The application intensity required to achieve a 90% control efficiency is calculated using Equation 1. However, the application intensities are for illustration purposes due to the varying conditions of evaporation rates and traffic volumes. A summary of the input variables and resulting application intensities during daylight hours and nighttime hours derived from the above equation are presented in Tables E.4.1 and E.4.2, respectively.

The application intensities in Tables E.4.1 and E.4.2 are based upon an hourly frequency of application. The RCP may reduce the frequency of application by increasing the application intensity. A frequency of once every two hours, for example, would require that the application intensities in Tables E.4.1 and E.4.2 to be increased by a factor of 2.

**Table E.4.1 Summary of Data Used to Verify Dust Control Program B During Daylight Hours**

Roadway System Category	Variables				Average Hourly Water Application Intensity (i) <sup>a</sup>	
	Wc (%)	p (mm/h)	d (vehicles/hour)	t (hours)	liters/meter <sup>2</sup>	gallons/yard <sup>2</sup>
From Mining Location to Pit Boundary	90	0.507	120.0	1.0	4.87	1.08
From Pit Boundary to Primary Crusher Dump Hopper / Run of Mine Stockpile	90	0.507	30.0	1.0	1.22	0.27
From Pit Boundary to Leach Pad	90	0.507	2.0	1.0	0.08	0.02
From Pit Boundary to Waste Rock Storage Area	90	0.507	88.0	1.0	3.57	0.79

<sup>a</sup> The model predicts a 90% control efficiency regardless whether the water application intensity is met with a single hourly application, multiple applications during the 1-hour period, or greater application intensities for less frequent applications.

**Table E.4.2 Summary of Data Used to Verify Dust Control Program B During Nighttime Hours**

Roadway System Category	Variables				Average Hourly Water Application Intensity (i) <sup>a</sup>	
	Wc (%)	p (mm/h)	d (vehicles/hour)	t (hours)	liters/meter <sup>2</sup>	gallons/yard <sup>2</sup>
From Mining Location to Pit Boundary	90	0.254	120.0	1.0	2.43	0.54
From Pit Boundary to Primary Crusher Dump Hopper / Run of Mine Stockpile	90	0.254	30.0	1.0	0.61	0.13
From Pit Boundary to Leach Pad	90	0.254	2.0	1.0	0.04	0.009
From Pit Boundary to Waste Rock Storage Area	90	0.254	88.0	1.0	1.79	0.39

<sup>a</sup> The model predicts a 90% control efficiency regardless whether the water application intensity is met with a single hourly application, multiple applications during the 1-hour period, or greater application intensities for less frequent applications.

It should be noted that the pan evaporation rates used to calculate the application intensities in Tables E.4.1 and E.4.2 represent annual averages which, when used with Equation 1, will result in an application intensity that is too high for winter months and too low for summer months. Actual application intensities will be determined based on actual pan evaporation rates as determined for the different climatological periods of the year. Additionally, the calculated intensities are based on the maximum mine production rates. Lower production rates characterized by lower traffic rates will be characterized by lower application intensities. If any type of water adhesion enhancing material, such as a surfactant, is used with Dust Control Plan B, application intensities will be reevaluated.

### **E.4.3 Dust Control Program C**

The sufficiency of Dust Control Program C to achieve a control efficiency of 90% for fugitive dust emissions is verified by considering Figure E.4.1. Using a chemical dust suppressant, a ground inventory of 0.05 gallons/yard<sup>2</sup> with a 1-month reapplication frequency provides a control efficiency of 62% for PM<sub>10</sub>. The additional 28% control necessary to increase the control efficiency to 90% will be attained through periodic watering. The control efficiency of the watering program,  $W_c$ , necessary to increase the chemical dust suppressant control efficiency,  $CDS_c$ , of 62% to a combined dust suppressant/watering control efficiency of 90% is derived from the following equation:

$$W_c = \left( \frac{\text{Additional Control Necessary (\%)}}{(100\% - CDS_c)} \right) \times 100\% \quad \text{Equation 3}$$

$$W_c = \left( \frac{28\%}{(100\% - 62\%)} \right) \times 100\%$$

$$W_c = 73.7\%$$

This value, 73.7%, is used in conjunction with the model described in Section E.4.2 to determine the average application intensity of watering that is necessary to achieve a 73.7% control efficiency. A summary of the input variables and resulting hourly application intensities during daylight and nighttime hours derived from the model is given in Tables E.4.3 and E.4.4, respectively.

**Table E.4.3 Summary of Data Used to Verify Dust Control Program C During Daylight Hours**

Roadway System Category	Variables				Average Hourly Water Application Intensity (i) <sup>a</sup>	
	Wc (%)	p (mm/h)	d (vehicles/hour)	t (hours)	liters/meter <sup>2</sup>	gallons/yard <sup>2</sup>
From Mining Location to Pit Boundary	73.7	0.507	120.0	1.0	1.85	0.41
From Pit Boundary to Primary Crusher Dump Hopper / Run of Mine Stockpile	73.7	0.507	30.0	1.0	0.46	0.10
From Pit Boundary to Leach Pad	73.7	0.507	2.0	1.0	0.03	0.007
From Pit Boundary to Waste Rock Storage Area	73.7	0.507	88.0	1.0	1.36	0.30

<sup>a</sup> The model predicts a 90% control efficiency regardless whether the water application intensity is met with a single hourly application, multiple applications during the 1-hour period, or greater application intensities for less frequent applications.

**Table E.4.4 Summary of Data Used to Verify Dust Control Program C During Nighttime Hours**

Roadway System Category	Variables				Average Hourly Water Application Intensity (i) <sup>a</sup>	
	Wc (%)	p (mm/h)	d (vehicles/hour)	t (hours)	liters/meter <sup>2</sup>	gallons/yard <sup>2</sup>
From Mining Location to Pit Boundary	73.7	0.254	120.0	1.0	0.93	0.20
From Pit Boundary to Primary Crusher Dump Hopper / Run of Mine Stockpile	73.7	0.254	30.0	1.0	0.23	0.05
From Pit Boundary to Leach Pad	73.7	0.254	2.0	1.0	0.02	0.003
From Pit Boundary to Waste Rock Storage Area	73.7	0.254	88.0	1.0	0.68	0.15

<sup>a</sup> The model predicts a 90% control efficiency regardless whether the water application intensity is met with a single hourly application, multiple applications during the 1-hour period, or greater application intensities for less frequent applications.

## **E.5 DEMONSTRATION OF COMPLIANCE WITH THE REQUIREMENTS OF ARTICLE 6 OF THE A.A.C. AND CHAPTER 17.16, ARTICLE III OF THE P.C.C.**

Section R18-2-604 of the A.A.C. and Section 17.16.080 of the P.C.C. require, in part, that fugitive dust from open areas be kept to a minimum by good modern practices such as using an approved dust suppressant.

Section E.3 of this document describes the control measures for wind-blown fugitive dust from open areas and storage piles at the RCP. By developing and maintaining a visible crust on the soil in all open areas and applicable storage piles, implementing best management practices (e.g., watering), and minimizing access to these areas, the RCP Dust Control Plan complies with the requirements of Article 6 of the A.A.C and Chapter 17.16, Article III of the P.C.C. for the control of fugitive dust emissions from open areas and storage piles.

## **E.6 PERIODIC REAPPLICATION**

### ***E.6.1 Chemical Dust Suppressants***

Dust control programs that utilize chemical dust suppressants require periodic application of the chemical dust suppressant in order to replenish dust suppressants that are removed from the road due to the abrasion of the vehicles on the treated road surface. Each successive application will correspond to:

- a) The manufacturer's recommendation if available; or
- b) If manufacturer's recommendations are not available, the amount necessary to completely replenish the initial ground inventory every six months.

### ***E.6.2 Road Watering***

The frequency of reapplication of water used in Dust Control Programs B and C will depend upon the operational plans of the RCP. The frequency can be hourly, less frequent or more frequent, depending upon the traffic density, meteorological conditions, and operational considerations. The application intensities for water should be treated as annual averages as some days will require a greater water application whereas others will require a lesser water application due to seasonal climatic condition changes. The models introduced in Sections E.4.2 and E.4.3 predict the same control efficiency independent of whether the water is applied during one pass per hour of the water truck or during multiple passes during the 1-hour period. Additionally, watering will not be required for days when natural precipitation equals or exceeds 0.01 inches or when roads are moist due to recent rain, as the control efficiency during such days is assumed to be 100% by AP-42.

## **E.7 RECORD KEEPING REQUIREMENTS**

### ***E.7.1 Records of the Application of Chemical Dust Suppressants***

Records will be maintained demonstrating the RCP's compliance with the initial chemical dust suppressant ground inventory required by Dust Control Programs A and C by recording the information necessary to demonstrate a 90% control efficiency.

### ***E.7.2 Records of Reapplication of Chemical Dust Suppressants***

Records will be maintained demonstrating the RCP's compliance with the periodic reapplication of dust suppressants to replace losses as identified in Section E.6.1. Records will be maintained concurrently with the records described in Section E.7.1.

### ***E.7.3 Records of Application of Water***

Records will be maintained demonstrating the RCP's compliance with the watering requirements of Dust Control Programs B and C by recording the information necessary to demonstrate a 90% control efficiency.

**APPENDIX E1**

**ROADWAY NETWORK TRAFFIC VOLUME  
CALCULATION METHODOLOGY**

## E1. ROADWAY SYSTEM TRAFFIC VOLUME CALCULATION METHODOLOGY

Because the control efficiency of unpaved road watering is dependent upon traffic volume, the roadway system at the RCP was divided into four road network categories based on average hourly traffic rates. Traffic volume estimates for the road network categories are calculating by dividing the anticipated hourly amount of material transferred by the haul trucks on each road network category by the average haul truck load (250 tons) and multiplying this number by two to account for the haul trucks returning empty to the mining location. This methodology is shown in the following equation:

$$\text{Traffic Volume} \left( \frac{\text{vehicles}}{\text{hour}} \right) = \left( \text{Material Transferred by Haul Trucks} \left( \frac{\text{tons}}{\text{hour}} \right) \times \frac{1 \text{ trip}}{250 \text{ tons}} \times \frac{2 \text{ passes}}{\text{trip}} \right)$$

The process rates and resulting traffic volume estimates for each roadway system are listed in Table E1.1. The traffic volumes in this table are presented for Year 5 operations at the RCP. However, since process rates vary hourly, daily, and annually, traffic volumes will be monitored on an on-going basis so that accurate water application intensities are determined and a 90% control efficiency will be met.

**Table E1.1 Summary of Data Used to Calculate Roadway System Traffic Volume (Year 5)**

Roadway System Category	Maximum Process Rate (tons/hour)	Traffic Volume (vehicles/hour)
From Mining Location to Pit Boundary	15,000	120.0
From Pit Boundary to Primary Crusher Dump Hopper / Run of Mine Stockpile	3,750	30.0
From Pit Boundary to Leach Pad	250	2.0
From Pit Boundary to Waste Rock Storage Area	11,000	88.0

**APPENDIX E2**

**EXCERPT FROM**

***FUGITIVE DUST BACKGROUND DOCUMENT AND TECHNICAL  
INFORMATION DOCUMENT FOR BEST AVAILABLE CONTROL  
MEASURES, EPA - 450/2-92-004, SEPTEMBER 1992***

United States  
Environmental Protection  
Agency

Office of Air Quality  
Planning and Standards  
Research Triangle Park, NC 27711

EPA-450/2-92-004  
September 1992

Air



# FUGITIVE DUST BACKGROUND DOCUMENT AND TECHNICAL INFORMATION DOCUMENT FOR BEST AVAILABLE CONTROL MEASURES

*...distributed as another  
membership service by the  
American Mining Congress*



### 3.1.2.2 Water Flushing of Roads--

Street flushers remove surface materials from roads and parking lots using high pressure water sprays. Some systems supplement the cleaning with broom sweeping after flushing. Unlike the two sweeping methods, flushing faces some obvious drawbacks in terms of water usage, potential water pollution, and the frequent need to return to the water source. However, flushing generally tends to be more effective in controlling particulate emissions.

Equations to estimate instantaneous control efficiency values are given in Table 3-1. Note that water flushing and flushing followed by broom sweeping represent the two most effective control methods (on the basis of field emission measurements) given in that table.

In the case of winter sanding, dust generation potential can be reduced if the fine materials left on roadways after pavement drying are cleaned up promptly and without further spreading and resuspension. Prompt cleaning also keeps abrasives from being ground into small particles by road traffic or freeze/thawing. Quick cleanup may not be mandated, however, if a new snowstorm is likely. Cleanup using combination water flushing/broom sweeping is recommended as soon as possible after a storm when above-freezing temperatures keep the flushing water from freezing on the roadway. If the road is already wet, flushing may not be required.

## 3.2 UNPAVED ROADS

There are numerous control options for unpaved travel surfaces, as shown in Table 3-5. Note that the controls fall into the three general categories of source extent reductions, surface improvements, and surface treatment. Each of these is discussed in greater detail in the following sections.

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TABLE 3-5. CONTROL TECHNIQUES FOR UNPAVED TRAVEL SURFACES<sup>a</sup>

Source extent reduction:	Speed reduction
	Traffic reduction
Source improvement:	Paving
	Gravel surface
Surface treatment:	Watering
	Chemical stabilization

<sup>a</sup> Table entries reflect EPA draft guidance on urban fugitive dust control.

### 3.2.1 Source Extent Reductions

These controls either limit the amount of traffic on a road to reduce the PM-10 emission rate or lower speeds to reduce the emission factor value given by Equation (2-6). Examples could include ride share programs, restriction of roads to certain vehicle types, or strict enforcement of speed limits. In any instance, the control afforded by these measures is readily obtained by the application of the equation.

### 3.2.2 Surface Improvements

These controls alter the road surface. Unlike surface treatments (discussed below), these improvements are largely "one-shot" control methods; that is, periodic retreatments are not normally required.

The most obvious surface improvement is, of course, paving an unpaved road. This option is expensive and is probably most applicable to high volume (more than a few hundred passes per day) public roads and industrial plant roads that are not subject to very heavy vehicles (e.g., slag pot carriers, haul trucks, etc.) or spillage of material in transport. Control efficiency estimates can be obtained by applying the information of Section 3-1.

Other improvement methods cover the road surface material with another material of lower silt content (e.g., covering a dirt road with gravel or slag, or using a "road carpet" under ballast). Because Equation (2-6) shows a linear relationship between the emission factor and the silt content of the road surface, any reduction in the silt value is accompanied by an equivalent reduction in emissions. This type of improvement is initially much less expensive than paving; however, maintenance (such as grading and spot reapplication of the cover material) may be required.

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Finally, vegetative cover has been proposed as a surface improvement for very low traffic volume roads (i.e., access roads to agricultural fields). Even though vehicle related emissions from such a road would be quite low, this method will also reduce wind erosion of the road surface.

### 3.2.3 Surface Treatments

Surface treatment refers to those control techniques which require periodic reapplications. Treatments fall into the two main categories of (1) wet suppression (i.e., watering, possibly with surfactants or other additives), which keeps the surface wet to control emissions, and (2) chemical stabilization, which attempts to change the physical (and, hence, the emissions) characteristics of the roadway. Necessary reapplication frequencies may range from several minutes for plain water under hot, summertime conditions to several weeks (or months) for chemicals.

Water is usually applied to unpaved roads using a truck with a gravity or pressure feed. This is only a temporary measure, and periodic reapplications are necessary to achieve any substantial level of control efficiency. Some increase in overall control efficiency is afforded by wetting agents which reduce surface tension.

Chemical dust suppressants, on the other hand, have much less frequent reapplication requirements. These suppressants are designed to alter the roadway, such as cementing loose material into a fairly impervious surface (thus simulating a paved surface) or forming a surface which attracts and retains moisture (thus simulating wet suppression).

Chemical dust suppressants are generally applied to the road surface as a water solution of the agent. The degree of control achieved is a direct function of the application intensity (volume of solution per area), dilution ratio, and frequency

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(number of applications per unit time) of the chemical applied to the surface and also depends on the type and number of vehicles using the road.

#### 3.2.3.1 Watering--

The control efficiency of unpaved road watering depends upon: (a) the amount of water applied per unit area of road surface, (b) the time between reapplications, (c) traffic volume during that period, and (d) prevailing meteorological conditions during the period. All of these factors affect the road surface moisture content. The control efficiency relationship shown in Figure 3-1 is buried in field tests conducted at a coal-fired power plant. Surface moisture grab samples over the daily watering cycle along with the daily traffic flow cycle are needed to determine an average control efficiency using this figure. The low control efficiency for watering of unpaved roads and the need for frequent (almost daily) reapplication preclude the use of watering as possible BACM.

#### 3.2.3.2 Chemical Treatments--

As noted, some chemicals (most notably salts) simulate wet suppression by attracting and retaining moisture on the road surface. These methods are often supplemented by some watering. It is recommended that control efficiency estimates be obtained using Figure 3-1 and enforcement be based on grab sample moisture contents.

The more common chemical dust suppressants form a hard cemented surface. It is this type of suppressant that is considered below.

Besides water, petroleum resins (such as Coherex®) have historically been the products most widely used in industry. However, considerable interest has been shown at both the plant and corporate level in alternative chemical dust suppressants. As a result of this continued interest, several new dust

# WATERING CONTROL EFFICIENCY ESTIMATES

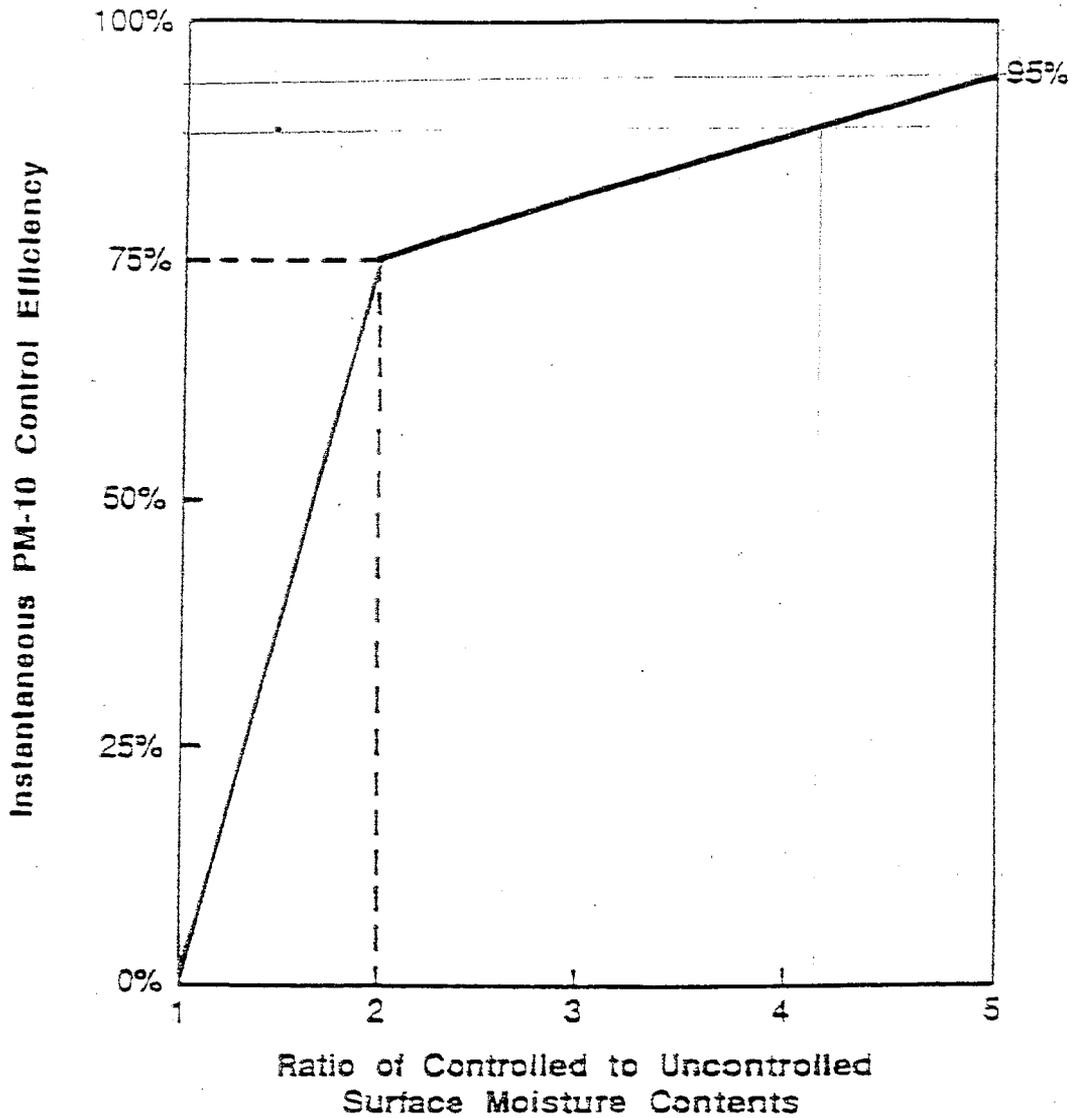


Figure 3-1. Watering Control Effectiveness for Unpaved Travel Surfaces.

suppressants have been introduced. These have included asphalt emulsions, acrylics, and adhesives. In addition, the generic petroleum resin formulations developed at the Mellon Institute with funding from the American Iron and Steel Institute (AISI) have gained considerable attention. These generic suppressants were designed to be produced on-site at iron and steel plants. On-site production of this type of suppressant in quantities commonly used in iron and steel plants has been estimated to reduce chemical costs by approximately 50 percent (Russell and Caruso, 1984).

In an earlier test report, average performance curves were generated for four chemical dust suppressants: (a) a commercially available petroleum resin, (b) a generic petroleum resin for on-site production at an industrial facility, (c) an acrylic cement, and (d) an asphalt emulsion (Muleski and Cowherd, 1987). (Note that at the time of the testing program, these suppressant types accounted for the majority of the market share in the iron and steel industry.) The results of this program were combined with other test results to develop a model to estimate time-averaged PM-10 control performance. This model is illustrated in Figure 3-2. Several items are to be noted:

- The term "ground inventory" is a measure of residual effects from previous applications. Ground inventory is found by adding together the total volume (per unit area) of concentrate (not solution) since the start of the dust control season. An example is provided below.
- Note that no credit for control is assigned until the ground inventory exceeds 0.05 gal/yd<sup>2</sup>.
- Because suppressants must be periodically reapplied to unpaved roads, use of the time-average values given in the figure are appropriate. Recommended minimum reapplication frequencies (as well as alternatives) are discussed later in this section.

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# CHEMICAL DUST SUPPRESSANT CONTROL EFFICIENCY MODEL

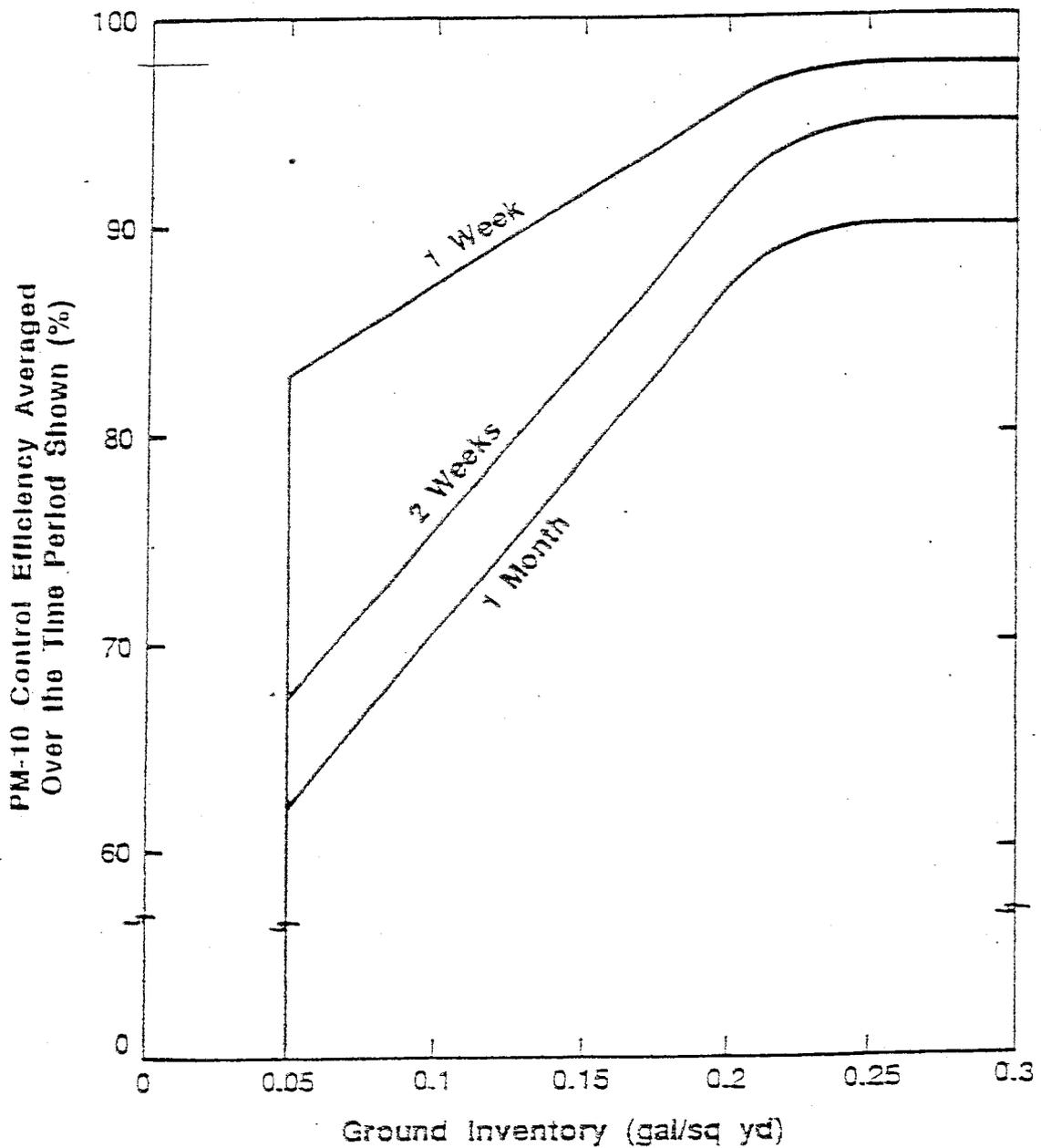


Figure 3-2. Average PM10 control efficiency for chemical suppressants.

Figure 3-2 represents an average of the four suppressants given above. The basis of the methodology lies in a similar model for petroleum resins only (Muleski and Cowherd, 1987). However, agreement between the control efficiency estimates given by Figure 3-2 and available field measurements is reasonably good.

As an example of the use of Figure 3-2, suppose the Equation (2-6) has been used to estimate a PM-10 emission factor of 2.0 kg/VKT. Further, suppose that starting on May 1, the road is treated with 0.25 gal/yd<sup>2</sup> of a (1 part chemical to 5 parts water) solution on the first of each month until October. In this instance, the following average controlled emission factors are found:

Period	Ground inventory Y, gal/yd <sup>2</sup>	Average control efficiency Y, percent <sup>a</sup>	Average controlled emission factor, kg/VKT
May	0.042	0	2.0
June	0.083	68	0.64
July	0.12	75	0.50
August	0.17	82	0.36
September	0.21	88	0.24

<sup>a</sup> From Figure 3-1; zero efficiency assigned if ground inventory is less than 0.05 gal/yd<sup>2</sup>.

In formulating dust control plans for chemical dust suppressants, additional topics must be considered. These are briefly discussed below.

3.2.3.2.1 Use of Paved Road Controls on Chemically Treated Unpaved Roads--Repeated use of chemical dust suppressants tend, over time, to form fairly impervious surfaces on unpaved roads. The resulting surface may permit the use of paved road cleaning techniques to reduce aggregate loading due to spillage and track-

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on. A field program conducted tests on surfaces that had been flushed and vacuumed 3 days earlier (Muleski and Cowherd, 1987). (The surfaces themselves had last been chemically treated 70 days before.) Control efficiency values of 90 percent or more (based on the uncontrolled emission factor of the unpaved roads) were found for each particulate size fraction considered.

The use of paved road techniques for "housekeeping" purposes would appear to have the benefits of both high control (referenced to an uncontrolled unpaved road) and potentially relatively low cost (compared to follow-up chemical applications). Generally, it is recommended that these methods not be employed until the ground inventory exceeds approximately 0.2 gal/yd<sup>2</sup> (0.9 L/m<sup>2</sup>). Plant personnel should, of course, first examine the use of paved road techniques on chemically-treated surfaces in limited areas prior to implementing a full-scale program.

3.2.3.2.2 Minimum Reapplication Frequency--Because unpaved roads in industry are often used for the movement of materials and are often surrounded by additional unpaved travel areas, spillage and carryout onto the chemically treated road required periodic "housekeeping" activities. In addition, gradual abrasion of the treated surface by traffic will result in loose material on the surface which should be controlled.

It is recommended that at least dilute reapplications be employed every month to control loose surface material unless paved road control techniques are used (as described above). More frequent reapplications would be required if spillage and track-on pose particular problems for a road.

3.2.3.2.3 Weather Considerations--Roads generally have higher moisture contents during cooler periods due to decreased evaporation. Small increases in surface moisture may result in large increases in control efficiency (as referenced to the dry

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summertime conditions inherent in the AP-42 unpaved road predictive equation). In addition, application of chemical dust suppressants during cooler periods of the year may be inadvisable for traffic safety reasons.

Weather-related application schedules should be considered prior to implementing any control program. Responsible parties and regulatory agency personnel should work closely in making this joint determination.

Compared to the other open dust sources discussed in this manual, there is a wealth of cost information available for chemical dust suppressants on unpaved roads. Note that many salt products are delivered and applied by the same truck. For those products, costs are easily obtained by contacting a local distributor.

### 3.3 STORAGE PILES

The control techniques applicable to storage piles fall into distinct categories as related to materials handling operations (including traffic around piles) and wind erosion. In both cases, the control can be achieved by: (a) source extent reduction, (b) source improvement related to work practices and transfer equipment (load-in and load-out operations), and (c) surface treatment. These control options are summarized in Table 3-6. The efficiency of these controls ties back to the emission factor relationships presented earlier in this section.

In most cases, good work practices which confine freshly exposed material provide substantial opportunities for emission reduction without the need for investment in a control application program. For example, pile activity, loading and unloading, can be confined to leeward (downwind) side of the pile. This statement also applies to areas around the pile as well as the pile itself. In particular, spillage of material caused by pile load-out and maintenance equipment can add a large

**APPENDIX E3**

**EXCERPT FROM  
*CONTROL OF OPEN FUGITIVE DUST SOURCES,*  
EPA-U50/3-88-008, SEPTEMBER, 1988**

CONTROL OF OPEN FUGITIVE DUST SOURCES

Midwest Research Institute  
Kansas City, MO

Sep 88

U.S. DEPARTMENT OF COMMERCE  
National Technical Information Service

**NTIS**<sup>®</sup>

### 3.3.3 Surface Treatments

3.3.3.1 Watering. The control efficiency of unpaved road watering depends upon (a) the amount of water applied per unit area of road surface, (b) the time between reapplications, (c) traffic volume during that period, and (d) prevailing meteorological conditions during the period. While several investigations have estimated or studied watering efficiencies, few have specified all the factors listed above.

An empirical model for the performance of watering as a control technique has been developed.<sup>8</sup> The supporting data base consists of 14 tests performed in four states during five different summer and fall months. The model is:

$$C = 100 - \frac{0.8 p d t}{i} \quad (3-2)$$

where: C = average control efficiency, percent

P = potential average hourly daytime evaporation rate, mm/h

d = average hourly daytime traffic rate, (h<sup>-1</sup>)

i = application intensity, L/m<sup>2</sup>

t = time between applications, h

Estimates of the potential average hourly daytime evaporation rate may be obtained from

$$P = \begin{array}{l} 0.0049 \times (\text{value in Figure 3-2}) \text{ for annual conditions} \\ 0.0065 \times (\text{value in Figure 3-2}) \text{ for summer conditions} \end{array}$$

An alternative approach (which is potentially suitable for a regulatory format) is shown as Figure 3-3. This figure is adapted from 11 field tests conducted at a coal-fired power plant. Measured control efficiencies did not correlate well with either time or vehicle passes after application. However, this is believed due to reduced evening evaporation (logistics delayed the start of testing until 3 p.m. and testing continued through the early evening). Surface moisture grab samples were taken throughout the testing period, and not surprisingly, these show a strong correlation with control efficiency.

Figure 3-3 shows that between the average uncontrolled moisture content and a value of twice that, a small increase in moisture content results in a large increase in control efficiency. Beyond this point, control efficiency grows slowly with increased moisture content. Although

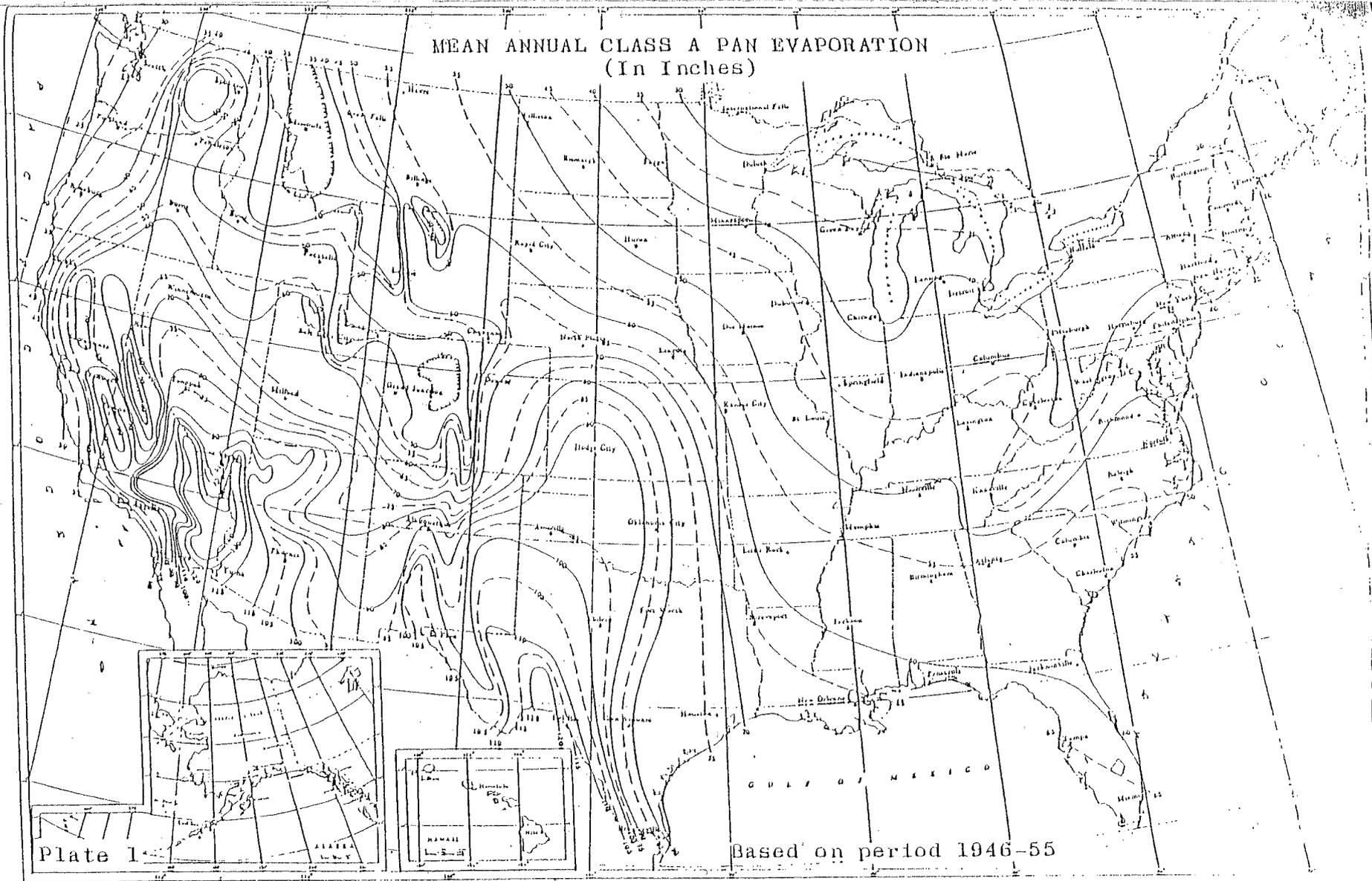


Figure 3-2. Annual evaporation data.<sup>2</sup>