

①  
2011 01 12

**ROSEMONT MINE OUTDOOR LIGHTING &  
PIMA COUNTY OUTDOOR LIGHTING CODE  
TECHNICAL MEMO**

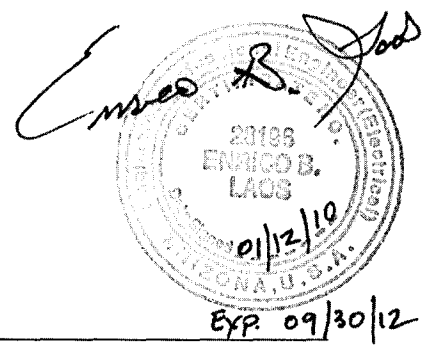
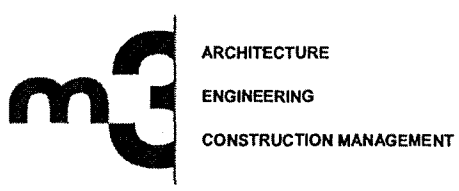
**TAILINGS CONVEYOR OPTION 'SCHOLEFIELD CANYON'**

**ROSEMONT PROJECT  
M3-PN08036**

**Prepared for**

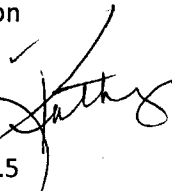
**ROSEMONT COPPER COMPANY**

**January, 2010**



## Memorandum

---

**To:** Beverly Everson  
**Cc:** Tom Furgason ✓  
**From:** Kathy Arnold   
**Doc #:** 003/10 - 15.3.5  
**Subject:** Transmittal of Technical Memoranda and Pit Lake Report  
**Date:** February 8, 2010

---

Rosemont Copper is pleased to transmit the following twenty technical memoranda and one report:

1. Rosemont Hydrology Method Justification, a Tetra Tech memo dated January 7, 2010;
2. Barrel Only alternative –
  - a. Noise Analysis, a Tetra Tech memo dated January 15, 2010
  - b. Traffic Analysis, a Tetra Tech memo dated January 8, 2010
  - c. Geochemical Characterization of Facilities, a Tetra Tech memo dated January 10, 2010
  - d. Lighting, an M3 memo dated December 2009
3. Barrel and McCleary alternative –
  - a. Noise Analysis, a Tetra Tech memo dated January 9, 2010
  - b. Traffic Analysis, a Tetra Tech memo dated December 15, 2009
  - c. Geochemical Characterization of Facilities, a Tetra Tech memo dated December 16, 2009
  - d. Lighting, an M3 memo dated December 2009
4. Scholefield Tailings and McCleary Waste alternative –
  - a. Noise Analysis, a Tetra Tech memo dated January 15, 2010
  - b. Traffic Analysis, a Tetra Tech memo dated January 12, 2010
  - c. Geochemical Characterization of Facilities, a Tetra Tech memo dated January 10, 2010
  - d. Lighting, an M3 memo dated January 2010
5. Sycamore Tailings and Barrel Waste alternative –
  - a. Noise Analysis, a Tetra Tech memo dated January 15, 2010
  - b. Traffic Analysis, a Tetra Tech memo dated January 9, 2010
  - c. Geochemical Characterization of Facilities, a Tetra Tech memo dated January 10, 2010
  - d. Lighting, an M3 memo dated January 2010
6. Partial Backfill alternative –
  - a. Noise Analysis, a Tetra Tech memo dated January 23, 2010
  - b. Traffic Analysis, a Tetra Tech memo dated January 9, 2010
  - c. Geochemical Characterization of Facilities, a Tetra Tech memo dated January 10, 2010
7. Geochemical Pit Lake Predictive Model, prepared by Tetra Tech and dated February 2010

As per your request, I am transmitting three hardcopies and two disks (disks contain tech memos only) directly to the Forest Service and two copies and one disk directly to SWCA. The Pit Lake report includes a copy of the report on a CD on the inside of the back cover of each report.

## TABLE OF CONTENTS

1	Background .....	1
2	Tailings Conveyor, Optional Tailings Stack Location in Scholefield Canyon .....	1
	2.1 Results .....	1
3	Conclusions.....	2

## ATTACHMENTS

- 000-EL-312 - Site General, Electrical, Lighting Compliance Plan, Scholefield Canyon
- 000-EL-319 - Site General, Electrical, Area & Road Lighting, Designation, Scholefield Canyon



## 1 Background

This Technical Memo is being issued to describe the impact of the proposed Outdoor Lighting at the Rosemont Mine. The information and results in this Technical Memo are to show the results for using the Scholefield Canyon as the depository for the mine tailings.

The 2006 Pima County Outdoor Lighting Code is the Code in effect regulating the amount of light permitted outdoors within the City of Tucson and Pima County. The Code describes several Lighting Areas that are centered on the various astronomical telescope facilities located within Pima County. The Rosemont Mine is within an area of Pima County that is the most restrictive Lighting Area of the Code, namely, Area 'E1a.' The maximum amount of light within the Area 'E1a' is 18,000 lumens per acre for Low Pressure Sodium (LPS) type outdoor lighting and 3,000 lumens per acre for High Pressure Sodium (HPS) type outdoor lighting with an additional restriction of 3,000 lumens per lamp maximum for HPS.

The mine is exempt from complying with the Pima County Outdoor Lighting Code, however, Rosemont Copper plans to operate within the intent of the Pima County Outdoor Lighting Code as long as mine safety and operations are not compromised. To these ends, the mine outdoor lighting design was given special attention, and the results are discussed below.

## 2 Tailings Conveyor, Optional Tailings Stack Location in Scholefield Canyon

The tailings conveyors in this Option are to be routed so that the process tailings are deposited in Scholefield Canyon. As in other options, the entire length of the conveyor will be lit for safety. LPS lamps will be utilized to comply with the Pima County Outdoor Lighting Code.

The conveyor routing for the Scholefield Canyon Tailings location adds approximately 25,400 feet to the length of the Conveyor, for a total conveyor length of approximately 30,600 feet. Total LPS light fixtures on the conveyor will be approximately 1,055. The resulting lumens per acre for the Rosemont Mine site will be approximately 4,600 (25.6% of the 18,000 lumens/acre allowed).

The 1,493 HPS lighting lumens per acre for the Rosemont Mine is not anticipated to change with this Option.

### 2.1 Results

Total acreage of the Rosemont Mine Site: 4,415 acres

#### High Pressure Sodium Lamp Lumens

Maximum Lumens per Acre:	3,000
Total HPS lumens allowed @ 3,000 lumens/acre:	13,245,000
Current Total Lumens proposed:	6,590,250
Current Total Per-Cent of Maximum Allowed:	49.8%
Current Proposed Average Lumens per Acre:	1,493

**Low Pressure Sodium Lamp Lumens**

Maximum Lumens per Acre:	18,000
Total LPS lumens allowed @ 18,000 lumens/acre:	79,470,000
Current Total Lumens proposed:	20,248,800
Current Total Per-Cent of Maximum Allowed:	25.5%
Current Proposed Average Lumens per Acre:	4,587

**Xenon Lamp Lumens**

Maximum Lumens per Acre:	No limit established
Total Xenon lumens allowed:	No limit established
Current Total Lumens proposed:	78,000
Current Total Per-Cent of Maximum Allowed:	No limit established
Current Proposed Average Lumens per Acre:	18

**3 Conclusions**

The Scholefield Canyon option for the location of the tailings stack does not result in exceeding the Pima County Outdoor Lighting Code. The total LPS lumens/acre is approximately 25.5% of the allowed 18,000 lumens per acre with no change in the High Pressure Sodium lumens per acre.

LPS type outdoor lighting is a very attractive light (lamp) source to use in pursuit of compliance with the Pima County Outdoor Lighting Code. M3 recommends very careful use of LPS type outdoor lighting at the mine site for the following reasons.

A concern in using LPS lighting is that of a potential safety hazard, which could occur if personnel are injured, are bleeding, and the first responders can not see by the color of the liquid that it is blood. LPS light masks all colors, and especially reds. All colors appear gray under LPS lighting. To address that issue, the more hazardous locations that require frequent visits by mine personnel have been provided with the better color-rendering lighting of the HPS lamp.

The total lumens as presented in this Report are based on preliminary design information available at the time the report was written. Final actual total lumens may vary slightly from these values as the design of the mine is completed. Nevertheless, Rosemont Copper has a commitment to make every effort to remain compliant with the Pima County Outdoor Lighting Code as final design decisions are made. Further, Rosemont Copper is working with heavy equipment manufacturers and lighting manufacturers to identify light sources and shielding methods to further limit any light pollution.



