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Technical Memorandum

Scholefield Tailings and McCleary Waste Alternative Noise Analysis

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1.0 Introduction

This Technical Memorandum was prepared by Tetra Tech and presents a Noise Analysis for the Scholefield Tailings and McCleary Waste Alternative being considered in the US Forest Service Environmental Impact Statement (EIS) for the proposed Rosemont Copper Project (Project). This analysis assesses the potential impacts that the Scholefield Tailings and McCleary Waste Alternative would have on noise conditions.

Tetra Tech published a comprehensive Supplemental Noise Study Report in April of 2009 that was based on the facility layouts in the Mine Plan of Operations (MPO). The Noise Study provided data on existing noise levels in the vicinity of the Project and noise levels measured at an active copper mine such as blasting and other operational activities. Modeling of the blasting vibrations was also performed. Noise effect contouring in the April 2009 study was based on the MPO facility layouts.

The following provides a comparison between the MPO and the Scholefield Tailings and McCleary Waste Alternative facility layouts:

- The top surface of the Dry Stack Tailings Facility would be about 5,250 feet above mean sea level (amsl) for the MPO, and about 5,400 feet amsl for the Scholefield Tailings and McCleary Waste Alternative. The Dry Stack Tailings Facility for Scholefield Tailings and McCleary Waste Alternative would have a footprint of about 1,215 acres compared to 870 acres under the MPO.
- The top surface of the Waste Rock Storage Facility would be about 5,450 feet amsl for the MPO. The Scholefield Tailings and McCleary Waste Alternative would have a Waste Rock Storage Area with a top elevation of 5,500 feet amsl. The footprint of the



Waste Rock Storage Area would be about 1,300 acres under the Scholefield Tailings and McCleary Waste Alternative, compared to 2,000 acres for the MPO.

- The Heap Leach Pad for the MPO would be constructed in two (2) phases. The leach pad for the Scholefield Tailings and McCleary Waste Alternative would be constructed in a single phase and would have a smaller total footprint than under the MPO. Under the MPO, the closed heaps would eventually be covered with waste rock within the Waste Rock Storage Area. Under the Scholefield Tailings and McCleary Waste Alternative, the heap is a stand-a-lone facility. Closure of the heap would include regrading prior to placement of a closure cover.
- Under the Scholefield Tailings and McCleary Waste Alternative the combined footprints of the Waste Rock Storage Area and Dry Stack Tailings Facility (about 2,515 acres) would be somewhat smaller than the combined footprints under the MPO (about 2,870 acres). The location and shape of the combined Waste Rock Storage Area and Dry Stack Tailings Facility, under the Scholefield Tailings and McCleary Waste Alternative, would be quite different from the combined footprint under the MPO. Under this alternative, the Waste Rock Storage Area and the Dry Stack Tailings Facility would both be located northeast of the Plant Site.
- The location and size of the Open Pit would be the same under both the MPO and the Scholefield Tailings and McCleary Waste Alternative.
- Under the Scholefield Tailings and McCleary Waste Alternative, the Plant Site facilities would have a slightly different configuration and footprint than under the MPO.
- The Scholefield Tailings and McCleary Waste Alternative would have a different Primary Access Road alignment than that proposed in the MPO. The Primary Access Road for the Scholefield Tailings and McCleary Waste Alternative would join State Route 83 (SR 83) about one (1) mile south of the location proposed for the MPO.

The differences between the Scholefield Tailings and McCleary Waste Alternative and the MPO are primarily differences in the location and shape of the Waste Rock Storage Area and the Dry Stack Tailings Facility. Other features of this alternative are similar to those proposed for the MPO. Consequently, most of the noise and vibration impact discussions, and the associated noise contour figures in the April 2009 Noise Study, are applicable to the Scholefield Tailings and McCleary Waste Alternative. Differences in the location and shape of the combined Waste Rock Storage Area and Dry Stack Tailings Facility would, however, result in changes in the potential locations for equipment operations under this alternative.

The following sections of this Technical Memorandum explain which results of the April 2009 Noise Study are still applicable to the Scholefield Tailings and McCleary Waste Alternative, including which results would change under this alternative.



2.0 Blast Noise and Blast Vibration Impacts

The Open Pit would be in the same location and operated in the same manner under both the MPO and the Scholefield Tailings and McCleary Waste Alternative. Blasting events would be limited to one (1) event per day. Daily explosives usage is also expected to be the same under both scenarios.

In addition, differences in the location, maximum height, and shape of the combined footprints of the Waste Rock Storage Area and the Dry Stack Tailings Facility would produce only minor localized shielding differences for blast noise under the MPO and the Scholefield Tailings and McCleary Waste Alternative. For in-pit blasting in particular, the pit walls would provide much more effective terrain shielding than would the Waste Rock Storage Area and Dry Stack Tailing Facility. Blast noise effects at the closest noise-sensitive receptor locations would not be significantly affected by differences in the location, shape, or height of the combined footprints of the Waste Rock Storage Area and the Dry Stack Tailings Facility under the MPO and the Scholefield Tailings and McCleary Waste Alternative.

Because blasting events would be similar under both the MPO and the Scholefield Tailings and McCleary Waste Alternative, groundborne vibrations would also be the same. Thus, the discussions and associated noise contour figures for blast noise and blast-related vibrations, as presented in the April 2009 Noise Study, would be applicable to the Scholefield Tailings and McCleary Waste Alternative.

3.0 Construction Noise Impacts

Although the Plant Site would still be in the same general area, under the Scholefield Tailings and McCleary Waste Alternative, the Plant Site facilities would have a slightly different configuration and footprint than that of the MPO. However, there would be little if any difference in the construction activity noise levels between the MPO and the Scholefield Tailings and McCleary Waste Alternative. As noted in the April 2009 Noise Study, construction noise levels would attenuate to background noise levels over a relatively short distance and would not create any noise impacts at the nearest existing residences. Therefore, the discussions and associated noise contour figure for construction noise impacts presented in the April 2009 Noise Study would be applicable to the Scholefield Tailings and McCleary Waste Alternative.

4.0 Equipment Operation Noise Impacts

As discussed in the April 2009 Noise Study, operational noise levels from the Plant Site area would be similar to the maximum construction noise levels. Operational noise levels are expected to attenuate to background noise levels over a distance of about two (2) miles and would therefore not create any noise impacts at the nearest existing residences or along SR 83.

As indicated in Section 1.0, the combined footprints of the Waste Rock Storage Area and Dry Stack Tailings Facility under the Scholefield Tailings and McCleary Waste Alternative (about 2,515 acres) would be somewhat smaller than the combined footprints under the MPO (about 2,870 acres). Maximum elevations of these facilities would be somewhat higher under the



Scholefield Tailings and McCleary Waste Alternative than under the MPO. The most important differences between the MPO and the Scholefield Tailings and McCleary Waste Alternative would be the location and shape of the combined Waste Rock Storage Area and Dry Stack Tailings footprints. In addition, the Heap Leach Facility would be separated from the Waste Rock Storage Area and Dry Stack Tailings Facility under the Scholefield Tailings and McCleary Waste Alternative.

Figure 1 presents operational equipment noise contours for the Scholefield Tailings and McCleary Waste Alternative. Actual noise generation by equipment working on the Waste Rock Storage Area and the Dry Stack Tailings Facility would be the same as for the MPO, but potential equipment locations would be different due to differences in the facility footprint.

Haul trucks and other equipment working at the southern end of the Waste Rock Storage Area would be in a location about 2.75 miles further north than under the MPO. Compared to the MPO, the Waste Rock Storage Area under the Scholefield Tailings and McCleary Waste Alternative would be further from homes along Singing Valley Road, but somewhat closer to homes along State Route 83 (SR 83) to the northeast of the Project area. Figure 1 shows the noise contours for equipment operating at the south end of the Waste Rock Storage Area. As noted in the April 2009 Noise Study, existing minimum noise levels in the Project area are estimated to be about 30 to 40 dBA, and average noise levels were generally 37 to 45 dBA. Noise levels from intermittent equipment operations at the southern end of the Waste Rock Storage Area would be reduced to levels that are less than existing background noise levels at the closest residences along Singing Valley Road.

Equipment working at the north end of the Dry Stack Tailings Facility would be closer to homes located along SR 83 northeast of the Project site than would be the case under the MPO. Figure 1 shows noise contours for equipment operating at the north end of the Dry Stack Tailings Facility. Noise from such equipment operations would not result in any significant noise impacts at the nearest noise-sensitive locations.

The Scholefield Tailings and McCleary Waste Alternative would have a conveyor and stacker system along the eastern side of the Dry Stack Tailings Facility. Noise levels from such equipment are typically about 60 dBA at a distance of 50 feet, much lower than the noise levels generated by haul trucks, graders, loaders, and other heavy equipment. Noise levels from the conveyor system would be reduced to less than 40 dBA at a distance of about 940 feet, and would be below minimum background noise levels at distances beyond 2,000 feet. Because the conveyor system would have minimal noise impacts, Figure 1 does not include noise contours for the conveyor system.

The Heap Leach Facility for this alternative would be separated from the Waste Rock Storage Area and the Dry Stack Tailings Facility. Equipment operations would occur only during the earlier years of mine operation. Figure 1 shows noise contours for equipment operating at the Heap Leach Facility. Noise from such equipment operations would be reduced to about 30 dBA at the closest residences along Singing Valley Road, a level that would generally be less than existing background noise levels.

Compared to the MPO, maximum equipment operation noise levels at the closest residences along Singing Valley Road would drop from about 39 dBA to 30 dBA or less, and maximum



equipment operation noise levels at the closest residences near SR 83 northeast of the Project would remain below existing minimum background noise levels.

5.0 Traffic Noise Impacts

The Scholefield Tailings and McCleary Waste Alternative would not alter the basic employment level or operating material requirements for the Project as described in the MPO. Consequently, the MPO and the Scholefield Tailings and McCleary Waste Alternative would be expected to have the same traffic generation. This alternative would, however, alter the routing of the proposed Primary Access Road. The Primary Access Road under the Scholefield Tailings and McCleary Waste Alternative would join SR 83 at a location about one (1) mile south of the location proposed in the MPO, and would follow a different alignment to the Plant Site. Truck traffic serving the Project would travel about one (1) mile further south on SR 83 under this alternative than would be the case under the MPO. Because there are no noise-sensitive receptor locations along this section of SR 83, and no noise-sensitive receptor locations along either alignment for the Primary Access Road, the change in the access road location would not result in significant changes in traffic noise effects. Therefore, the discussions and noise contour figures, as presented in the April 2009 Noise Study, would be applicable to this alternative.

6.0 Conclusion

A review of operational and facility changes was performed between the MPO and the Scholefield Tailings and McCleary Waste Alternative being considered in the EIS process. Because the facilities, operations, and anticipated traffic patterns are generally the same for both scenarios, most of the discussions, noise contour figures, and analysis results presented in the April 2009 Noise Study are applicable to the Scholefield Tailings and McCleary Waste Alternative. Revised noise contours (Figure 1) were prepared to illustrate maximum equipment operation noise conditions under the Scholefield Tailings and McCleary Waste Alternative. Equipment operation noise levels under this alternative generally would be less than existing background noise levels at the closest residences along Singing Valley Road and at the closest residences northeast of the Project. Consequently, intermittent equipment operation noise levels under the Scholefield Tailings and McCleary Waste Alternative would not be audible at the closest residences northeast or southeast of the Project. In addition, the change in Primary Access Road location under this alternative would not significantly change the traffic noise impacts as presented in the April 2009 Noise Study.

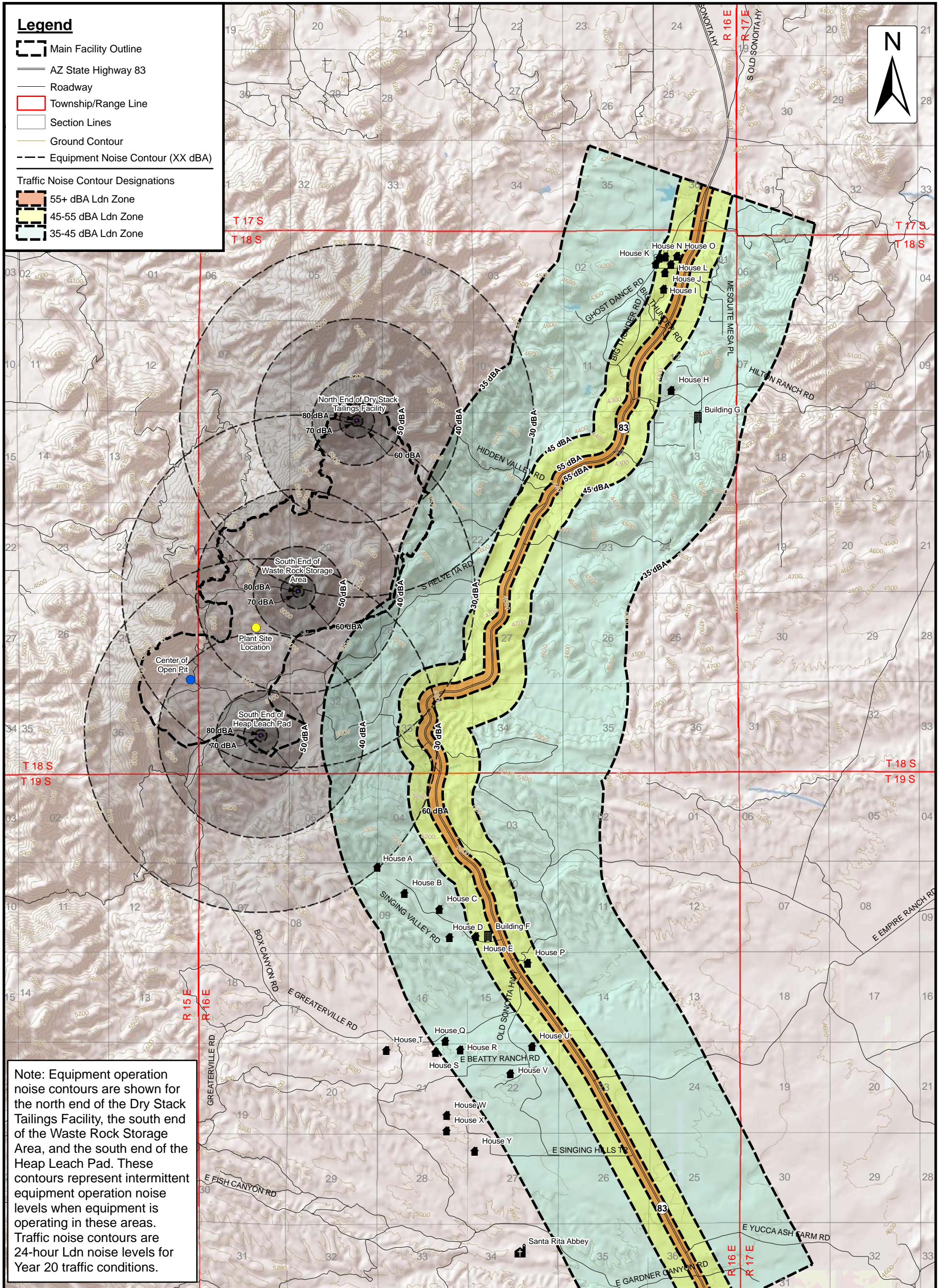


REFERENCES

Tetra Tech (2009) *Supplemental Noise Study, Rosemont Copper Project*. Prepared for Rosemont Copper Company. Report Dated April, 2009

WestLand (2007) *Rosemont Project Mine Plan of Operations*. Prepared for Rosemont Copper Company. Report Dated June, 2007

FIGURE



4,000 2,000 0 4,000 8,000 Feet

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FIGURE 1
SCHOLEFIELD TAILINGS AND McCLEARY WASTE ALTERNATIVE
ROSEMONT COPPER PROJECT NOISE ANALYSIS