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Technical Memorandum

To:	Kathy Arnold	**From:**	Mike Thornbrue
Company:	Rosemont Copper Company	**Date:**	January 14, 2010
Re:	Prescriptive BADCT Closure for the Heap Leach Facility Ponds	**Doc #:**	004/10-320807-5.3
CC:	David Krizek, P.E. (Tetra Tech)		

The purpose of this technical memorandum is to document the Prescriptive Best Available Demonstrated Control Technology (BADCT) closure recommendations for the ponds associated with the Heap Leach Facility (HLF) for the proposed Rosemont Copper Project (Project). These recommendations are based on the Arizona Mining BADCT Guidance Manual published by the Arizona Department of Environmental Quality (ADEQ) (2004). There are three (3) ponds associated with the HLF: the Stormwater Pond, the Pregnant Leach Solution (PLS) Pond, and the Raffinate Pond.

Based on the Mine Plan of Operations (WestLand Resources, 2007), the leach grade oxide ore delivery to the pad will be completed by approximate operation Year 6. By about operation Year 10, the heap and the ponds located at the base of the Heap Leach Pad (PLS and Stormwater Ponds) will be covered with waste rock. Closure of these ponds will be required prior to placement of the waste rock.

Depending on whether drain-down from the heap is still continuing at this time (approximate operational Year 10), the former PLS and Stormwater Ponds may be converted to treatment basins. A discussion of these treatment basins is provided in a separate technical memorandum. Previous analysis has indicated that residual drain-down seepage will be less than ten (10) gallons per minute approximately two (2) to three (3) years following the cessation of leaching.

1.0 General Prescriptive BADCT Pond Closure

A general closure strategy for the HLF ponds was developed based on the Arizona Mining BADCT Guidance Manual (ADEQ, 2004) and submitted to ADEQ as part of the Aquifer Protection Permit (APP) application (Tetra Tech, 2009). The following sections provide a more detailed closure strategy for each pond.

2.0 Stormwater Pond BADCT Closure Strategy

The Stormwater Pond is considered a bermed non-stormwater pond by Prescriptive BADCT standards. The pond will be closed using the following procedures:

- Any contained solutions will be allowed to evaporate (in the pond or on top of the spent ore) or pumped into the PLS Pond and incorporated into the solution flowing to the Solvent Extraction – Electro-Winning (SW–EW) Plant for processing or possible treatment and/or incorporation into the sulfide ore circuit;

- Any residues remaining on the high-density, polyethylene (HDPE) liner will be collected and incorporated into the sulfide ore processing circuit, to recover metals in the residue such as copper and molybdenum, or be placed on top of the spent ore. Residue is defined as any solids collected on the liner to a thickness of greater than 1/4-inch or which can readily be removed by physical means such as sweeping or high pressure water sprays;

- The HDPE liner will be inspected for visual signs of liner damage, liner defects, or impact by leakage through the liner system;

    - If there is no evidence of past leakage, the HDPE liner and the GCL will be removed for appropriate disposal;

    - Where inspection reveals presence of one (1) or more holes or tears or defective seams, the HDPE liner and GCL will be removed and the underlying surface inspected for visual signs of impact. ADEQ may require sampling and analysis of the underlying material to determine whether the potential impact poses a threat to groundwater quality. If required, soil remediation will be conducted to prevent groundwater impact;

- The HDPE liner will either be sent to an approved off-site recycler or it will be placed in a proposed on-site Waste Management Area. If the GCL cannot be recycled, it will also be placed in the Waste Management Area; and

- The former Stormwater Pond will either be encapsulated with waste rock or converted to a treatment basin for possible on-going drain-down seepage from the heap, and then encapsulated with waste rock.

3.0 PLS Pond BADCT Closure Strategy

The PLS Pond is considered a bermed process solution pond by Prescriptive BADCT standards. The pond will be closed using the following procedures:

- Any contained solutions will be allowed to evaporate (in the pond or on top of the spent ore) or pumped to the SW–EW Plant for processing or possible treatment and/or incorporation into the sulfide ore circuit;

- Any residues remaining on the top HDPE liner will be collected and incorporated into the sulfide ore processing circuit, to recover metals in the residue such as copper and molybdenum, or be placed on top of the spent ore;

- The top HDPE liner and geonet will be removed, including the Leak Collection and Recovery System (LCRS). The top HDPE liner and geonet will either be sent to an approved off-site recycler or will be placed in the Waste Management Area. Piping, etc., associated with the LRCS will either be sent to an approved off-site recycler or will be placed in the Waste Management Area. Drain rock from the LRCS sump will be placed on top of the spent ore;

- The bottom LLDPE liner will be inspected for visual signs of liner damage, liner defects, or impact by leakage through the liner system;

    - If there is no evidence of past leakage, the LLDPE liner and the GCL will be removed for appropriate recycling or disposal;

    - Where inspection reveals presence of one (1) or more holes or tears or defective seams, the LLDPE liner and GCL will be removed and the underlying surface inspected for visual signs of impact. ADEQ may require sampling and analysis of the underlying material to determine whether the potential impact poses a threat to groundwater quality. If required, soil remediation will be conducted to prevent groundwater impact;

- The LLDPE liner will either be sent to an approved off-site recycler or it will be placed in the Waste Management Area. If the GCL cannot be recycled, it will also be placed in the Waste Management Area; and

- The former PLS Pond will either be encapsulated with waste rock or converted to a treatment basin for possible on-going drain-down seepage from the heap, and then encapsulated with waste rock.

4.0 Raffinate Pond BADCT Closure Strategy

The Raffinate Pond is considered a bermed process solution pond by Prescriptive BADCT standards. The pond will be closed using the following procedures:

- Any contained solutions will be allowed to evaporate (in the pond or on top of the spent ore) or possibly treated and/or incorporated into the sulfide ore circuit;

- Any residues remaining on the top HDPE liner will be collected and incorporated into the sulfide ore processing circuit, to recover metals in the residue such as copper and molybdenum, or be placed on top of the spent ore;

- The top HDPE liner and geonet will be removed, including the LCRS. The top HDPE liner and geonet will either be sent to an approved off-site recycler or will be placed in the Waste Management Area. Piping, etc., associated with the LRCS will either be sent

to an approved off-site recycler or will be placed in the Waste Management Area. Drain rock from the LRCS sump will be placed on top of the spent ore;

- The bottom LLDPE liner will be inspected for visual signs of liner damage, liner defects, or impact by leakage through the liner system;
    - If there is no evidence of past leakage, the LLDPE liner and the GCL will be removed for appropriate recycling or disposal;
    - Where inspection reveals presence of one or more holes or tears or defective seams, the LLDPE liner and GCL will be removed and the underlying surface inspected for visual signs of impact. ADEQ may require sampling and analysis of the underlying material to determine whether the potential impact poses a threat to groundwater quality. If required, soil remediation will be conducted to prevent groundwater impact;
- The LLDPE liner will either be sent to an approved off-site recycler or it will be placed in the Waste Management Area. If the GCL cannot be recycled, it will also be placed in the Waste Management Area; and
- The area will be graded to drain surface runoff and minimize precipitation infiltration.

5.0 REFERENCES

ADEQ, 2004. *Arizona Mining BADCT Guidance Manual, Aquifer Protection Program*. Publication TB-04-01.

Tetra Tech, 2009. *Aquifer Protection Permit Application.* Prepared for Rosemont Copper Company. Report Dated February 2009.

WestLand Resources, Inc. (2007) *Rosemont Project Mine Plan of Operations.* Prepared for Augusta Resource Corporation. Report Dated July 11, 2007.