



SUPERIOR WATERSHED PARTNERSHIP

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Community Environmental Monitoring Program (CEMP) Monitoring Report – December 6, 2013

RE: Uranium Summary Report

Type of Monitoring (Permit Verification or Additional): Verification Monitoring – Mine Permit

Summary: Follow up to uranium finding at Eagle Mine during first quarter 2013

Chronology:

- March 12, 2013 Initial discovery of uranium by SWP/CEMP in water sampled from the Temporary Development Rock Storage Area (TDRSA) Leak Detection Sump (see April 5, 2013 Monitoring Report for additional information)

- April 5, 2013 CEMP/Eagle Mine report findings of uranium to Mining Journal and public

- April 8, 2013 CEMP/Eagle Mine follow up sampling confirms the Water Treatment Plant (WTP) effectively removes uranium from the water prior to discharge. CEMP communicates additional findings to Mining Journal and public

- April – Sept. 2013 CEMP/Eagle Mine continue follow up uranium sampling and analysis

Details:

This report summarizes monitoring/analysis conducted by CEMP and Eagle Mine following the initial finding of uranium during routine water quality monitoring in early 2013. Table 1 summarizes the results of uranium sampling at Eagle Mine by location. Results are also shown by location in Figure 1.

Table 1 - Uranium Sampling Results by Location

Location	Date Sampled	Matrix	CEMP Result	Eagle Mine Result
TDRSA Contact Water Sump	3/13/2013	Water	Non-detect	0.13 ug/L (ppb)
TDRSA Leak Detection Sump	3/13/2013	Water	61 ug/L (ppb)	56 ug/L (ppb)
Water Treatment Plant Influent	4/2/2013	Water	0.44 ug/L (ppb)	0.47 ug/L (ppb)
Water Treatment Plant Effluent	4/2/2013	Water	Non-detect	Non-detect
Water Treatment Plant Filter Press	3/13/2013 4/8/2013	Solid	N/A 3.01 mg/kg-dry	2.5 mg/kg-dry 1.9 mg/kg-dry

Location	Date Sampled	Matrix	CEMP Result	Eagle Mine Result
Water Treatment Plant Crystallizer	3/13/2013 4/8/2013	Solid	N/A Non-detect	Non-detect Non-detect
TDRSA Sump Aggregate	7/30/2012	Aggregate	N/A	1.42 ppm
Underground Road Aggregate ¹	4/30/2013	Aggregate	N/A	1.33 ppm
Underground Road Aggregate Stockpile ²	4/30/2013	Aggregate	N/A	2.66 ppm
Mine Development Rock Samples	3/2012-4/2013 (49 Samples)	Mine Rock	N/A	Average Result 2.75 ppm (Min 0.19 ppm, Max: 6.53 ppm)

Bold indicates value over U.S. EPA Maximum Contaminant Limit (30 ug/L or ppb)

¹Composite from Passing Bay #1 and #3 and Muckbay #8 in the Mine Decline Tunnel

²Composite of five locations from the aggregate stockpile located near the guardhouse

In Summary:

Results of additional monitoring by CEMP and Eagle Mine confirmed the following:

- Small quantities of naturally occurring uranium have been detected in water and rock at the Eagle Mine (see Table 1 and Figure 1). Concentrations found are similar to those occurring in other areas of the Upper Peninsula.
- The most likely source of the uranium detected in the TDRSA Leak Detection Sump is commercial rock (aggregate) that was brought on-site and used to construct the TDRSA liner system. This aggregate rock was also used in construction of the mine decline tunnel.
- In addition to the commercial rock brought on-site during construction, review of Eagle Mine data indicates that uranium is also present in the Mine Development Rock (rock removed during construction of the mine tunnel and stored on the TDRSA).
- Uranium at the Eagle Mine is removed from mine water through reverse osmosis and ion exchange at the Water Treatment Plant. Treated water that is discharged to the Treated Water Infiltration System (TWIS) does not contain uranium. All solids resulting from the water treatment system that contain uranium are disposed of at the Marquette County Landfill and or at a commercial landfill in eastern Wisconsin.

The U.S. EPA Maximum Contamination Limit for uranium in public drinking water is 30ug/L. One microgram/Liter (ug/L) = 1 ppb.

One drop of ink in a large tanker truck full of water would be an ink concentration of 1 part per billion (ppb).

Four drops of ink in a 55-gallon barrel of water would be an ink concentration of 1 part per million (ppm).

CEMP Actions:

CEMP has concluded that uranium concentrations are naturally occurring and not threatening the environment or human health at this time. The CEMP will continue to monitor for uranium at Eagle Mine under the renewed Groundwater Discharge Permit (when final) under its verification monitoring program. This is expected to commence during the first quarter of 2014.

Figure 1 – Uranium Sampling Results by Location

