

GIANT MINE CLOSURE

Risk Assessment

Northwest Territories, Canada

Client:

Robertson
GeoConsultants, Inc.

Contract Value:

\$25,000

Performance Period:

2008

Technical Areas:

- Remediation
- Water Resources
- Financial and Risk Management

Successes:

Established a defensible systematic approach to evaluating flooding risks, combined with the risks of increased mine waste accumulation and the release of arsenic trioxide from the chambers



BACKGROUND

The Giant Mine, located in Yellowknife, Northwest Territories in Canada, is currently undergoing closure by Indian and Northern Affairs, Canada. The mine includes both open pit and underground workings. Arsenic trioxide dust from the onsite roaster was deposited in portions of the underground workings behind concrete bulkheads. Permanent closure of the mine includes freezing of the arsenic trioxide chambers, demolition of the surface facilities, flooding of the underground mine workings, mine water treatment, creek diversions, and the capping of tailings disposal areas.

As closure permitting and construction are expected to take between five and ten years, Indian and Northern Affairs assembled a team of experts to complete a risk assessment for the pre-closure conditions and to recommend mitigation measures as advancements of permanent closure elements.

SES ROLE

SES was retained as one of the expert panel members to lead assessment of the surface water and mine flooding risks and to provide technical input to the groundwater and underground mine risk evaluations. SES used a systematic approach to assessing risks associated with creek flooding into the open pits during high snow melt periods, the occurrence of ice jams, or due to rock falls into the creek. SES also evaluated the consequences to underground mine water levels and the effectiveness of the arsenic trioxide containment by the concrete bulkheads. SES assisted in identifying risk mitigation measures and the development of the costs of these measures.



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