Unexpected Events at Closed ARD Sites

BC MEND Conference- Vancouver
December 2013
Glencore Zinc Canada Closed Sites

- Mattabi Geco/Willroy
- Matagami Normetal
- Brunswick Heath Steele
- Errington
## Closure Dates

<table>
<thead>
<tr>
<th>Site</th>
<th>Location</th>
<th>Closure Date</th>
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</thead>
<tbody>
<tr>
<td>Heath Steele/ Stratmat</td>
<td>Miramichi, NB</td>
<td>1999/ 1995</td>
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<tr>
<td>Normetal</td>
<td>Normetal, PQ</td>
<td>1980</td>
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<tr>
<td>Geco/ Willroy</td>
<td>Manitouwadge, ON</td>
<td>1995/ 1977</td>
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<td>Mattabi/ Lyon Lake</td>
<td>Ignace, ON</td>
<td>1988</td>
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<td>Errington</td>
<td>Sudbury, ON</td>
<td>Circa 1950</td>
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<td>Matagami Closed Sites</td>
<td>Matagami, PQ</td>
<td>Various</td>
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<tr>
<td>Brunswick Mine 6/12</td>
<td>Bathurst, NB</td>
<td>1983/2013</td>
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<tr>
<td>Blue Hill</td>
<td>Blue Hill Maine</td>
<td>1977</td>
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</tbody>
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All are old mines and strongly acid generating
Normetal Background

- Former Kerr Addison site, zinc, lead producer
- Closed in 1980, sold to another company in 1985 after partial reclamation
- Received a letter from the Province of Quebec in 1998 after changes to the Mining Act ordering us to reclaim the site
- Reached an agreement with Ministry of Natural Resources; reclaim site $20 million and maintain for 5 years then MNR would give us a release from the site
- Now in the process of handing site back to MRN
Normetal Before
Normetal Project

• Excavate eroded tailings from site and move to tailings basin
• Re-grade tailings basin and banks
• HDPE cover on tailings followed by bio-solids and vegetation
• Construct toe drains to collect seepage from tailings
• Construct diversion ditches and discharge ditches from toe drains
Unexpected Events

- Letter from MNR informing us we were still responsible for site 13 years after sale of site to third party
- Local farmer harvesting hay from site, damaging cover
- Village never accessed $70,000 fund initiated for them to do eco friendly projects on site
- Construct ATV trails on tailings to reduce damage from ATV traffic
- MNR gave permission for a third party to explore the site including drilling on HDPE liner
Normetal After
Kerramerican Blue Hill Mine
Blue Hill Site
Blue Hill History

• Underground zinc mine began operation in 1971 as a joint venture (60/40) between Keradamex (a wholly owned subsidiary of Kerramerican) and Black Hawk Mining
• Mining ceased in 1977 for economic reasons
• Site closure completed by 1984
Regulatory Overview

• 1985- Maine DEP approved 1984 closure
• 1999- Maine DEP notified Kerramerican that corrective action was necessary at Blue Hill site, and that Kerramerican was a PRP
• 2000- Kerramerican entered into voluntary negotiations with Maine DEP to investigate and remediate the site
• 2002- Maine DEP approves Remedial Investigation
• 2003- Maine DEP approves Feasibility Study
• 2004- Kerramerican submits Remedial Action Plan to Maine DEP, revises plan based on DEP comments
Risk Transfer Concept

• Wind-up Kerramerican corporate entity, exit Maine
• Cap all environmental costs, eliminate future cost overrun and tort liability risks
• Transfer liability, management, remediation and long-term care responsibilities to EMSOURCE, U.S.-based environmental risk transfer company
Liability Transfer

• Regulatory release for Kerramerican, assignment of responsibility to EMSOURCE via Consent Decree
• Contractual transfer of environmental liabilities to EMSOURCE
• Insurance protection for cost overruns, unknown conditions, legal defense, and 3rd party claims
• Kerramerican preserves right to pursue contribution from Black Hawk and Dennison
Agreement with EMSOURCE

- EMSOURCE assumes site liabilities (Consent Decree liabilities and third party claims related to environmental conditions)
- EMSOURCE assumes project ownership, procures environmental insurance policy to cover cost overruns and respond to 3rd party claims related to environmental conditions
- Kerramerican pays expected cost of remedy plus O&M, DEP oversight, insurance premium and EMSOURCE liability assumption/project ownership fee
Blue Hill Plant Site 2011
Geco- Fox Creek Crown Pillar

Background

- Crown pillar was to be mined in early 1990’s
- Series of chimney caves occurred prior to mining resulted in collapse of much of the crown pillar in 1994
- Emergency remediation program started in January 1994 to pump backfill into the stope
- CMS performed after filling indicated fill was near top of cave zone
Fox Creek Crown Pillar Background -2

• Annual site risk assessment in 2004 indicated that stability of crown pillar should be investigated

• Desktop study indicated that crown pillar would fail if backfill (tech foam) failed

• Holes drilled into crown pillar in 2006 found a void in the backfill large enough to eventually cause failure and a 6 m thick crown pillar with low RQD numbers
Geco Site- Fox Creek
Section View of Geco Mine
2013 Fox Creek Remediation Program

• Drill a series of holes to define extent and size of void, crown pillar now 4 m thick
• Enlarge selected holes for introduction of backfill
• Stockpile of minus 2 inch material on site
• Batching plant on site to mix gravel with 4% cement to back fill void
Drill Program to Define Void
Filled Void

Looking Southwest

SLOUGH region above continuous void.