

» CASE STUDY

Raglan Mine, Quebec (Xstrata)

PROJECT OBJECTIVES	Environmental remediation and nickel recovery from acid mine drainage and other contaminated sources.	
PROJECT SIZE	· 6,000 m ³ /day flow	
TECHNOLOGY	ChemSulphide® plant	
COST	\$1.8 million Cdn (2003)	
RESULTS	2009 Operating Results	2010 Operating Results
	· 915,000 m ³ of water treated	· 1,066,000 m ³ of water treated
	· 24,000 lbs of Ni recovered	· 30,000 lbs of Ni recovered

BioteQ’s sulphide precipitation process has been applied at Xstrata’s Raglan Mine site, an active nickel mine located in the Canadian north. The BioteQ plant, built in 2003, replaced a low-density sludge lime treatment plant and reduced operating costs by one-half. The plant operates seasonally, typically from late spring to fall due to the harsh northern winter conditions which makes water unavailable for processing until the spring thaw.

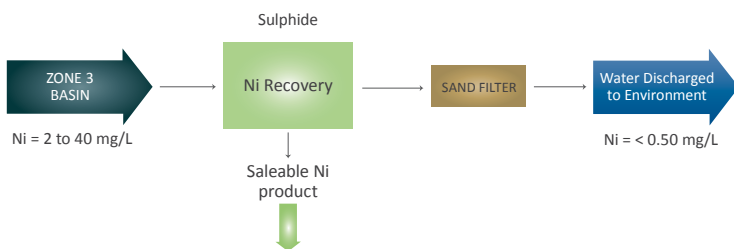
The water treatment plant is operated by BioteQ, recovering a high-grade nickel concentrate that is refined into useful products, and producing clean water that meets very strict water quality criteria for discharge directly to local receiving waters (*see Table 1*). The undiluted effluent consistently passes bioassay testing for toxicity using trout and daphnia. Most importantly, BioteQ’s plant does not produce any metal-laden sludge that would otherwise create an ongoing waste disposal concern in the pristine northern environment.

BioteQ provided process design, plant supply and construction, commissioning and training, and continues to provide ongoing operating services at the site. BioteQ’s proven technology and operating expertise ensure reliable and consistent water treatment operations that meet ISO 14001 standards for environmental compliance.

Table 1: Raglan Mine Water Chemistry

PARAMETER	FEED CHEMISTRY	EFFLUENT TARGETS	ACTUAL RESULTS
pH	6.4 to 8.0	6.0 to 9.5	~ 7.9
Nickel	13 to 30 mg/L	0.50 mg/L	< 0.25 mg/L
Total suspended solids	variable	15.0 mg/L	< 1.0 mg/L

Figure 1: Raglan Mine Process Flowsheet



Sulphide precipitation technology is robust for variations in temperature, water chemistry and flow. BioteQ’s Raglan facility replaced a lime treatment plant and has delivered consistent and reliable operating results for environmental compliance.



The Raglan plants produces clean water that meets strict water quality criteria for direct discharge to the sensitive northern environment.

BioteQ’s ChemSulphide® plant “... has increased treatment capacity and speed, generated revenues from waste product and extended treatment time frames. More importantly, it is able to treat water to a ‘cleaner than clean’ state for safe discharge to the environment.”

- Martin Beauséjour
Senior Engineer–Mining Projects, Xstrata
Huge Mines Produces Clean Water Too
Canadian Mining Journal
February/March 2010