



Water gets **REUSED** not **ABUSED**

RECYCLING REDUCES DRAW OF FRESH WATER

By Russell Noble

Despite recent economic challenges, Northern Ontario remains a land of natural riches. Today, the Hemlo area, approximately 350 km east of Thunder Bay, is one of the more active gold mining districts in Ontario, and the Hemlo Property, owned and operated by Barrick Gold Corp., continues to produce gold at an impressive rate.

From its David Bell, an underground mine, and the Williams open-pit mine, the company produced 275,000 ounces of gold in 2009. Hemlo's estimated proven and probable mineral reserves as of December 31, 2009, were 1.3 million ounces.

The two Hemlo mines share milling, processing and tailings facilities where ores from the two mines are co-mingled and fed to a standard grind, leach and carbon-in-pulp extraction circuit located on the Williams property.

As with all mines, water is a critical concern for the Hemlo project, and monitoring water usage for

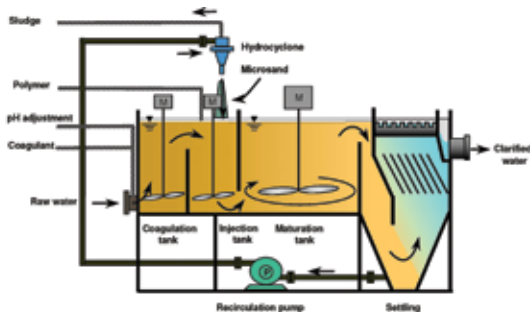
ore processing, dust suppression and other activities is a top priority.

Most Ontario mines obtain water from on-site stormwater capture or by pumping surface or groundwater resources. At Hemlo, they have opted to maximize the use of reclaimed and recycled water wherever possible.

"The mill requires a lot of water because the ore is processed in a slurry form and water is continuously sent out to our tailings with the tails," says Dave Schmidt, Barrick's Project Coordinator. "The pond has a storage volume of approximately 10 million cubic meters. This water initially contains a very low level of cyanide when it leaves the mill. A divider dam segregates the pond, and the tailings are deposited on one side.

Sunlight breaks down the cyanide through a natural process within a week and, afterwards, the water is diverted to the polishing side of the pond where it is reclaimed and brought back for use in the mill."

A compact, yet highly efficient reclamation system has been installed at Barrick's Hemlo Property to recycle water for site process purposes.



The reclaimed water from the tailings pond can only be used in the mill, whereas water required for other uses at Hemlo must be drawn at a rate of 100 m³ per hour from nearby Cedar Creek.

Recognizing that this amount of water drawn from the creek was too high, Hemlo's water management team focused on other sources, including the reclaimed

or recycled water mentioned earlier, or installing a pumping system that recycles stormwater runoff collected in storm ponds. The runoff water reduces the amount of water drawn from the creek by as much as 75%, but it can only be used as a seasonal solution because the ponds freeze solid in the winter months.

Schmidt says the system works well, but

because it's a seasonal solution, the company sought additional improvements toward its goal of using only recycled water.

The Hemlo team reviewed several other treatment options and recently installed a system from Veolia Water Solutions & Technologies Canada.

David Oliphant, Director of Industrial Sales for Veolia, explained that the system Barrick chose features a high-rate, sand-ballasted flocculation and clarification process for removing metals in a portion of its tailings water. Oliphant said that following treatment, the recycled water can then be reused as site process water.

The system, called the ACTIFLO process, has been successful in removing regulated metals well below the current Certificates of Approval limits, and the clarified water quality also met and/or exceeded the effluent criteria regarding additional metals and Total Suspended Solids (TSS).

Hemlo installed the new system inside the mill building and now approximately 20% of the reclaimed tailings water is directed to the process for clarification and metals removal.

"We essentially tap into the reclaim pipeline that brings water back from the tailings basin to the mill and we run it through the ACTIFLO at 100 cubic metres per hour for process water," said David Schmidt. "Changes are planned for the pump house that will increase the flow to 120 cubic metres per hour."

Because the process unit itself has a relatively small footprint (10m x 10m), Barrick was able to install it in the mill's former compressor room, after removing low pressure compressors that were no longer needed due to an earlier process change.

The compact size also eliminated the need for a separate building to house the unit, reducing costs significantly. Installing it in the mill using existing infrastructure not only reduced installation costs but having the system downstairs in the mill building makes monitoring and maintenance more convenient.

The system has been in operation for just over a year now and it's been running 24 hours a day, seven days a week, without any major issues and is now providing 100 % of the William's mine site process water needs with the exception of potable water.

CMJ

THE REVOLUTION IN MINING

"700 units sold in Canada since 2004"



- 72 models
- 90 attachments
- 20' to 85' height
- 5,000 to 22,000 lb lifting cap.
- 40 km/h, up to 140 hp
- Fits anywhere as low as: 5'10"
- Up to 65% in fuel savings
- Hydrostatic class 1 transmission
- Extra large cab



Imported in Canada by

MANULIFT.CA

Canada's only trusted reference in telehandler technology

Toll-free: (877) 641-8355