

**OBJECTIVE**

Removal of heavy metals from mine impacted waters

TECHNOLOGY

ChemSulphide®

PLANT CAPACITY

3,600 m³/day

LOCATION

Northern BC, Canada

BQE WATER SCOPE

Evaluation of treatment options, process design, plant automation, fabrication and installation support, commissioning and ongoing operations support

Project Overview

Amid a climate of challenging commodity prices and heightened regulatory scrutiny in the province, the Silvertip Mine in Northern BC is an underground operation set to begin production in Q4 2016. BQE Water worked with the mine owner to develop a cost-effective water treatment solution that is integrated with the overall site water management plan.

Water Treatment Solution

The water at Silvertip is neutral to slightly alkali with very low levels of metals requiring removal to comply with BC water quality guidelines. HDS lime treatment was considered early in the project and written into permit applications but the inability to meet ultra-low ppb discharge levels for several constituents of concern ruled it out. Lime relies on one degree of freedom in the treatment process and a single pH set point is inadequate when multiple metals need to meet ultra-low limits simultaneously.

To treat the Silvertip water, ChemSulphide® was selected for its ability to:

- Meet ultra-low limits for constituents of concern
- Be constructed as a portable water treatment plant using standard shipping containers
- Have a small plant footprint
- Minimize solids residue generation
- Treat a wide range of feed water quality due to its flexibility and robustness from having three degrees of freedom in the process control
- Provide cost-efficient mine water treatment

The ChemSulphide® process is a selective treatment that targets only the constituents of concern for removal while allowing all other non-toxic and/or natural mineral constituents in the plant feed to pass through the treatment process. Its selective nature results in reduced chemical and power consumption while avoiding excessive waste residue generation. At Silvertip, the solids precipitated from the mine water can be blended with the zinc concentrate produced in the mill or added to the paste backfill used in the mining operation to leave as little impact to the land as possible and to minimize long-term liabilities.