

Remediation of Abandoned Mine Openings January 1, 2016, to March 31, 2017

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Introduction

There are more than 7,500 abandoned mine openings in Nova Scotia, many of which are located on Crown land. Since 2001, the Abandoned Mine Opening (AMO) Remediation Program, managed jointly by the Geoscience and Mines Branch and the Regional Services Branch of the Department of Natural Resources (DNR), has invested about \$840,000 to remediate the most hazardous of these openings on Crown land. During the summer of 2016 DNR staff evaluated approximately 950 AMOs, and about \$30,000 was invested in this program to remediate AMOs on seven sites.

Background

The AMO Remediation Program is overseen by a steering committee comprising the executive directors of the Geoscience and Mines, Regional Services, and Land Services branches of the Department of Natural Resources. Implementation of the program has, historically, been managed by a working group consisting of Geoscience and Mines staff, three regional geologists and one regional resource manager. However, staff changes over the years have resulted in regional geologist vacancies in all three regions. Therefore, as of March 31, 2017, the working group consists of a regional resource manager and Geoscience and Mines staff.

The Department of Transportation and Infrastructure Renewal (TIR) and the Department of Internal Services also play major roles in the AMO Remediation Program, both in carrying out work with their own crews (specifically TIR) and in tendering and managing contracted work.

The Geoscience and Mines Branch conducts field programs to inspect the AMOs on Crown land on a regular basis. Operating on a three-year cycle, almost every AMO on Crown land in the province is inspected and the degree of hazard assessed. Warning signage and flagging are upgraded as needed.

The Geoscience and Mines Branch maintains a database of the known abandoned mine openings in the province (both on private and Crown lands). This database is available online at <http://novascotia.ca/natr/meb/geoscience-online/about-database-amo.asp>.

In May 2016, version 6 of the Nova Scotia Abandoned Mine Openings Database was released (Hennick and Poole, 2016). This is an update to the 2013 version 5 and contains an additional 135 mine openings not previously documented. With the utilization of GPS and GIS technology over the past number of years, updates to the AMO database are ongoing.

Methods

The methods used to remediate AMOs on Crown land include excavating, backfilling, fencing, and placement of concrete caps and steel grates over mine openings. In the past 15 years the program has backfilled about 650 AMOs, fenced 50, capped 7 mine openings and placed 4 grates to protect bat habitat. In addition, about 150 AMOs on Crown lands have been addressed through partnerships with private operators. Work has been carried out at 42 different sites throughout the province. Remediation work completed in 2016 is provided in Figure 1 and Table 1.

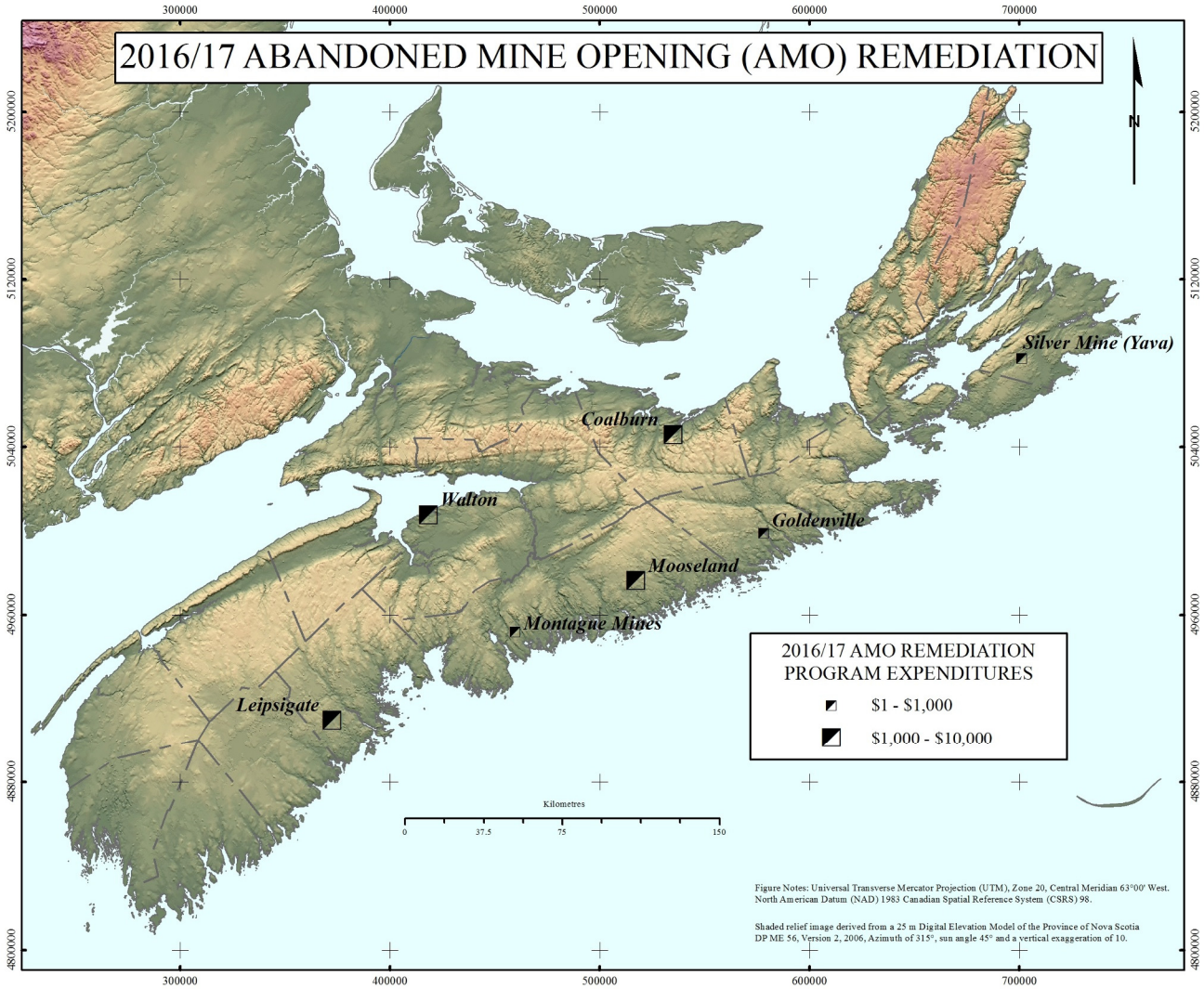


Figure 1. Locations of abandoned mine openings on Crown land that were part of the remediation program in 2016-17.

Conclusions and Recommendations

All forty Type I (inescapable) AMOs and about 40% of the Type II (escapable, but very hazardous) AMOs known to exist on Crown land in Nova Scotia have now been remediated. Approximately 700 potentially hazardous mine openings on Crown land remain to be remediated; however, 55% of those are either located in very remote areas or are in such a condition that they pose little or no risk to public safety at this time.

It is recommended that the Geoscience and Mines and the Regional Services branches of the

Department of Natural Resources continue to remediate abandoned mine openings on Crown land in the province and monitor those that have already been remediated.

Reference

Hennick, E. and Poole, J., 2016. DP ME 10, version 6, 2016. Nova Scotia abandoned mine opening database; Nova Scotia Department of Natural Resources, Digital Product DP ME 10. <<https://novascotia.ca/natr/meb/download/dp010.asp>>

Table 1. Location and remediation work completed in 2016.

Central Region	Work performed in 2016
Coalburn	TIR refilled one AMO (the Marsh Pit), which had previously been backfilled in 2004 (Fig. 2a, b). This former production shaft is located in close proximity to a walking trail.
Montague Mines	Snow fencing was installed around the Montague Gold Mines Ltd. Skerry Manway. Previously installed chain-link fencing is collapsing into the shaft and will require replacement in 2017.
Mooseland	A contractor backfilled 30 AMOs and 1 prospect pit. A previously filled shaft was topped up.
Walton (Stephen’s Mine)	A contractor backfilled seven AMOs and removed approximately 20 tonnes of domestic garbage that had been dumped into several of the openings over the years.
Eastern Region	
Goldenville	A contractor topped up five previously filled AMOs, two of which were very hazardous.
Silver Mine (Yava)	A contractor welded a piece of sheet metal over a hole in the galvanized rib-culvert of which the upper part of the decline is constructed. Previous repairs to this same opening were conducted in 2010 and 2012.
Western Region	
Leipsigate	TIR backfilled 13 AMOs



Figure 2. Marsh Pit at Coalburn before refilling (a) and after (b).