Short Course Offered at 2018 NLMRW

Due to circumstances beyond our control, the previously offered short course entitled Adaptive Management Plans for Quartz Mining Proponents has been cancelled.

The one short course offered is: Rehabilitation of Historic Mine Workings – A Phased Approach

Date: Monday, September 10, 2018
Course Length: 1-day 8:30am-4:30pm
Course Cost: The registration fee is $300.
Enrolment: minimum of 20 and maximum of 50
Coffee and Lunch: will be provided as part of the course fees
Materials: Handouts and reference material will be supplied

Rehabilitation of Historic Mine Workings – A Phased Approach

LEFT: Backfill in an underground stope;
RIGHT: Surface subsidence due to old coal mine workings.

Presenters:

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Course Objectives

This course aims to walk participants through the process of investigating, mitigating, and rehabilitating hazards associated with abandoned, orphaned or historic mines. With these old mine workings the typical issues are around unmitigated hazards that can present themselves in two ways – gradually or as a sudden event. These hazards can include open mine voids on surface, land subsidence, sinkholes, etc. The problems associated with these sites can be complex and difficult to manage from a technical, environmental and especially economic perspective. The mechanisms of surface impacts can be difficult to understand in general and then assessing hazards and suitable mitigation/remediation efforts to limit risk is even more complex. In some cases, there is considerable uncertainty around the accuracy/availability of the geometry of the mine workings and the geology. Challenges such as historical mine plans along with physical constraints like limited safe underground access, access for equipment and logistics, and proximity to local communities with the overarching umbrella of potential adverse environmental impacts are common.

Over the last decade, robust processes have been developed to cut through the complexity and develop solutions to manage or remove these hazards while optimizing costs and timelines. Recent experience has shown that developing a holistic site wide investigation and rehabilitation approach can result in benefits to both the mineral rights holder, government, and/or the general public/landowners in the area of the hazards, resulting in cost savings and/or less intrusive rehabilitation methods.

Course Outline

The course will cover four main technical components:

- Session 1: Stability assessment of underground mine openings
- Session 2: Remediation options for hazard mitigation
- Session 3: Backfill system development
- Session 4: Execution of stabilization options

Session 1: Stability assessment of voids, openings and workings

Stability assessments are generally completed using an iterative/phased approach. This session will discuss the phased approach to stability assessments:

- Data gathering and validation
- Desktop stability and data gap assessments
- Planning and execution of the physical investigation
- Stability assessments
- Identification of what mine openings require rehabilitation

Session 2: Options development for hazard mitigation and risk management

In order to optimize the mitigation and/or rehabilitation effort required to address hazards posed by historical mining activity, it is important to develop an overall rehabilitation strategy for a site including end land-uses. This can be achieved in a phased approach. It is also important to develop rehabilitation priorities as these may markedly impact cost and schedule. This session will discuss:

- Potential rehabilitation option identification
- Order of magnitude costing and data gap/advantage/disadvantage assessment
- Detailed option design and assessment
- Prioritizing rehabilitation methods and developing a rehabilitation strategy

Session 3: Backfill system development

One of the remediation options available is backfilling voids to limit the progression of any failure and reduce or remove the potential for surface impacts. There are multiple types and methods for applying backfill in these situations. This session will discuss:

- Backfill type / method assessment
- Testing programs and recipe development
- Planning and sequencing strategy development
- QA/QC planning

Session 4: Execution of stabilization options

This is the actual site execution phase of the work. There are ways to phase the execution that can help manage costs and schedule. This session will discuss:

- Execution planning
- Labour, Materials, Equipment required
- Site examples