

Early Exploration Plan Activity Information

Activities That Require an Early Exploration Plan:

- Line cutting that is a width of 1.5 metres or less;
- Geophysical surveys on the ground requiring the use of a generator;
- Mechanized stripping a total surface area of less than 100 square metres within a 200-metre radius;
- Excavation of bedrock that removes one cubic metre and up to three cubic metres of material within a 200-metre radius;
- Use of a drill that weighs less than 150 kilograms.

Provincial Standards for Early Exploration

All early exploration activities that require an exploration plan or permit must comply with the Provincial Standards for Early Exploration. There are three parts to these standards:

1. Rules for carrying out exploration plan activities;
2. Rules for carrying out exploration permit activities;
3. Rules for rehabilitation of exploration plan and exploration permit activities.

For the most up to date information on the rules for carrying out these exploration and rehabilitation activities, please refer to the following links:

- [The Mining Act](#)
- [Exploration Plans and Exploration Permits Regulation](#)
- [Provincial Standards for Early Exploration](#)

Note: an exploration plan does not relieve a proponent from complying with any other requirements with respect to their exploration activities set out under the Mining Act or any other Act.

Ministry of Northern Development and Mines Office Contact Numbers

For more information about early exploration plans and permits, please contact our Mineral Exploration and Development staff at one of the following offices:

Toll Free: 1-888-415-9845

Sudbury: (705) 670-5815

Timmins: (705) 235-1625

1. Line Cutting (Less Than 1.5 Metre Width)

Line cutting, of less than 1.5 metre width, is done to prepare an area of mineral potential for further geological or geophysical activities. This activity may also be known as “cutting a grid”. A grid is cut to provide known coordinates in an identifiable framework on the ground. Once the grid is cut, further exploration surveys can be carried out such as electromagnetic surveys and soil sampling programs.

A grid consists of evenly spaced, “cut lines” that intersect at right angles. Grid lines are cut using axes, machetes or chainsaws. The lines are accurately located using a global positioning system (GPS), compass bearings and survey transits and are measured and picketed (wood pickets, displaying coordinates, driven into the ground) at specific intervals along their lengths.



Photo 1: Example of line cutting less than 1.5 metres wide.

Potential Disturbance

Where there is ground cover present, an individual (line-cutter) walks through the bush in a straight line cutting trees and vegetation less than a 1.5 metre corridor with an axe, machete or chainsaw. Underbrush is cleared along the line and wood pickets are driven into the ground. Coordinates are written on the pickets. The length and spacing of the lines may depend on the type of survey planned as well as the size of the area of interest.

Provincial Standards for Early Exploration

Line-cutting programs must comply with provincial standards while working and rehabilitation requirements upon completion:

- all line cutting is to be done using hand-held tools.

2. Geophysical Surveys Using a Generator

A geophysical survey is the measurement of specific rock properties, such as gravity, magnetism, voltage, electromagnetism or resistivity, within bedrock and zones of mineralization and/or ore. Explorers use these properties as hints to determine the composition of a rock when it is impossible to physically observe the rock because of the presence of overburden. The electromagnetic properties of minerals or ores will be different from bedrock that does not have zones of minerals or ores.

Geophysical surveys used in mineral exploration often require generators to operate the equipment.

Ground surveys such as induced polarization (IP) surveys involve laying out kilometres of thin wire and placing small metal rods into the ground. At the end of the survey companies will recover these materials used and remove them from the site.



Photo 2: Laying out wire for ground geophysical induced polarization (IP) survey using cut line.

Potential Disturbance

The impact of surveys on the land will vary depending on the scope of the survey, how long it takes to complete, what equipment is used and how many workers are involved.

Control grids made by line cutting are usually needed to complete the survey. These cut lines are generally less than 1.5 meters in width.

The proponent of an exploration plan can provide the best information about the footprint of a specific geophysical survey.

Provincial Standards for Early Exploration

Geophysical surveys using a generator must comply with the following requirements while carrying out the activity:

- Signs must be posted at exploration access points to warn people of a potential electrical hazard. Signs must be left in place for the duration of the survey activity.



Photo 3: Technician laying wire for an induced polarization (IP) survey.

3. Mechanized Surface Stripping

Mechanized surface stripping uses heavy equipment to remove vegetation and soil (overburden) from bedrock. Next, pressurized water pumps and hoses, similar to those used to fight forest fires, may then be used to remove remaining soil and debris from the rock surface. The exposed bare rock can reveal information about the presence of minerals. This information is used to draw geological maps that can inform and guide future exploration.



Photo 4: Small area less than 100 square metres stripped, washed and sampled.

Mechanized surface stripping is commonly done when there is not enough exposed bedrock for geologists to examine adequately. Stripping is often used to uncover zones of mineral enrichment identified by geophysical surveys.

Potential Disturbance

Equipment such as bulldozers, backhoes or excavators may be used depending on the amount of soil covering the bedrock. Sometimes forest harvest equipment, such as a chainsaw or skidder may be needed to remove trees prior to stripping. The soil is removed from the bedrock and is set beside the cleared area. The site is usually left to grow back naturally, and in some cases is reseeded.

Washing an outcrop requires water to be pumped to the stripped area. The water, which may be drawn from lakes, rivers or streams, is pumped at high pressure to wash away remaining soil.

Access trails may be blazed to provide access to the location for people and equipment.



Photo 5: Various techniques including power washing used to strip and wash overburden.

Provincial Standards for Early Exploration

Surface stripping programs must comply with the following requirements while carrying out the activity:

- Stockpile all the stripped overburden on the site in a safe and stable manner, separately from waste rock.

Surface stripping programs must comply with the following requirements upon completion of the activity:

- Disturbed overburden must be contoured to a stable angle of repose;
- Stripped areas if not backfilled must be contoured to a stable angle of repose.

4. Pitting and Trenching

Pitting and trenching are conducted to get a greater visual understanding of the rock. Heavy equipment is used to remove the surface soil and expose the bedrock (stripping). Trenches or pits are then excavated or blasted into the rock to expose more of the mineralized zones for sampling and testing.

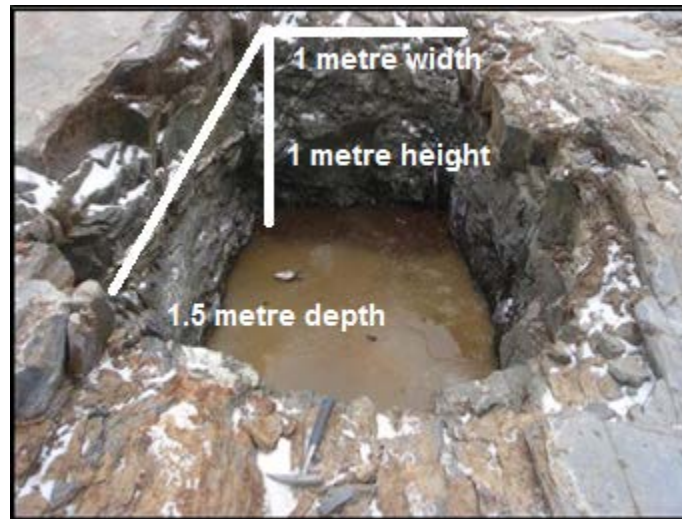


Photo 6: Example of a pit less than 3 cubic metres. Sample would be taken from pit walls.

Potential Disturbance

Pits are shallow holes while trenches are generally longer, linear and of variable depth. Rock and soil removed from the trench or pit is stored on site. Some rock samples will be sent for further testing. Excavation can be either by hand, mechanical digger or by bulldozer on sloping ground.



Photo 7: Channel sampling in a small trench less than 3 cubic metres that has also been stripped.

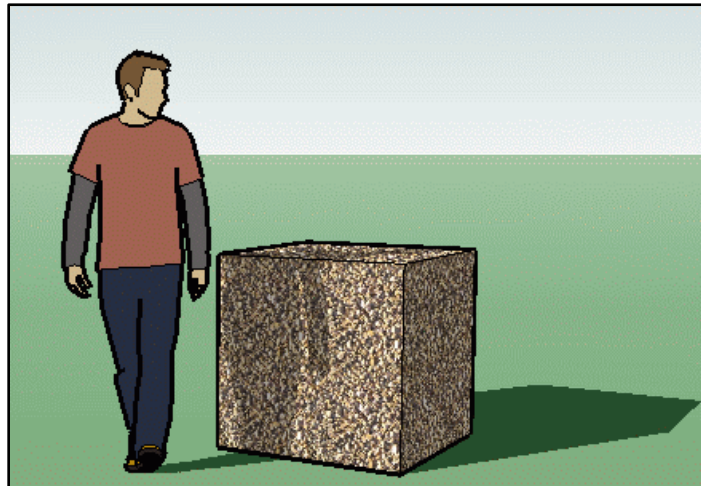


Photo 8: Illustration of approximately one cubic metre.

Provincial Standards for Early Exploration

Pitting and trenching programs must comply with the following requirements upon completion of the activity:

- All pit walls or man-made vertical rock faces greater than three metres in height must be backfilled or contoured to a stable angle of repose;
- All pits with walls greater than three metres in height that are not backfilled must be sloped to provide at least one exit ramp;
- Disturbed bedrock must be stockpiled on site in a safe and stable manner.

5. Drilling

Drilling is often critical to mineral exploration. There are several types of drilling that may be used in trying to understand a mineral deposit:

- Diamond drilling, which is able to drill through and extract very hard bedrock, is the most common type of drilling conducted in Ontario. It produces cylindrical samples of rock called core;
- Reverse circulation, or rotary drilling, which produces rock chips;
- Overburden drilling is conducted to sample glacial deposits;
- Auger drilling is used to sample soils for geotechnical purposes.

Drilling locations are selected (targeted) using the results from previous exploration activities, such as:

- Prospecting;
- geological mapping, and
- geophysical surveys.

Drilling activities provide samples taken from below the surface. Testing the samples determines the properties of the soil and rocks, including mineral and metal content.



Photo 9: Small backpack drill.

Photo 10: “Winkie” drill.

Drills range in size. Smaller units, which can weigh less than 150 kilograms, are called backpack, packsack or “Winkie” drills. One or more individuals can carry these portable units into remote locations.

Diamond drills use a hollow bit whose surface contains industrial grade diamonds. Drilling produces a long cylinder of rock referred to as core.

Core is stored in specially shaped core boxes. A technician and geologist will then examine the core and make notes on the physical appearance of the rock.

Potential Disturbance

Drills that weigh less than 150 kilograms require minimal ground clearing to safely operate. Some types of smaller drills, such as backpack drills, pump water down the hole to cool the bit and rinse away cuttings and ground rock. Water may be pumped from lakes, rivers or streams, as well as from water canisters. The water is pumped through hoses to the drill. Sumps may be dug which will allow the ground-up rock particles to settle.

Drill holes that produce water require cementing of the casing for safety purposes and to control groundwater flow.

Provincial Standards for Early Exploration

Drilling programs that require an exploration plan must comply with the following requirements while carrying out the activity:

- When a drill rig is removed and taken to a new location the following must occur:
 - Capping and Sealing Drill Holes: a drill hole that produces water (artesian), or encounters an underground mine opening or solution cavities, must be
 - sealed at the surface and into the upper bedrock by grouting the upper 30 metres of bedrock or the entire depth of the hole, whichever is lesser; or
 - capped with a screw-on or bolt on cap.
- Marking Drill Holes – all drill hole locations where casings are not removed must be marked with durable reflective markers that are clearly visible in all seasons.
- Drill Core: drill core samples must be stored more than 30 metres from any permanent water body or waterway.

Drilling programs that require an exploration plan must comply with all of the above requirements upon completion of the activity and in addition the following requirements:

- Drilling Fluids and Cuttings: all drilling fluids, cuttings and mud left on site must be contained more than 30 metres from any permanent water body or waterway.
- Drill Core: where drill core is left on the exploration site it must be cross-piled in an orderly manner. The height must be less than 1.5 metres and located more than 30 metres from any permanent water body or waterway.