

## MACKENZIE AND MILL SITE AREAS

### INTRODUCTION:

The Mackenzie and Mill Site areas are located near the southern end of the Brandywine Property just on the north side of Brandywine Creek. The site is marked by a concrete foundation that was once a mill for processing ore from the nearby Silver Tunnel.

The geology of the Mackenzie area consists of two major rock formations. The oldest formation is the metamorphosed remains of a volcanoclastic sequence now known as the Callaghan Creek Roof Pendant. The second formation is a variably composed intrusive body belonging to the Coast Plutonic Complex. The only subordinate rock type in the area is a white to buff coloured, acidic volcanic rock now referred to as a felsite dyke. There are three felsite dykes mapped in the Mackenzie area, but possibly more.

### WORK HISTORY:

#### PRE 1970:

The first recorded staking in the area was in 1918 and most of the original crown grants were located in 1923. Mr. Martial Levasseur began acquiring the various properties in 1962 and in 1965 formed a new company called Van Silver Explorations. In 1967 he went public and his latest company Van Silver Mines Ltd began raising money to fund exploration on the property.

The Ministry of Mines details work done on various other showings as early as 1938 but there is no mention of the Mill Site or Mackenzie areas.

#### 1970:

The first detailed program to encompass the Mackenzie area was initiated by Noranda Explorations Ltd in 1970 after they reached an option agreement with Van Silver Mines. Noranda proposed a program that was to include a geochemistry survey, geophysics survey and later a diamond drill program.

### GEOCHEMISTRY:

During the latter part of 1970 Noranda laid out their plans for a property wide grid comprised of 3 miles of north south baseline and 45.8 miles of east west grid lines. It states in their report that they were sampling the C-horizon where possible at intervals of 200 feet. Their analyses for copper, zinc and silver were done in house at the Noranda Lab in Vancouver.

Their best results came in the Mackenzie area where strong anomalies in all three elements were noted. The Noranda data has been obtained and the maps are stored in the bullpen. The Noranda data suggests extremely high background values for silver and lead which were not found during the 1988 PDI program.

### COMMENTS:

There is no mention of any lead geochemistry in their report but we did receive a lead posted data map. The Noranda anomalies in the area, when compared

to our 1988 data, show a much larger anomaly in both area and magnitude. One possible reason for this could be the clear cut logging in the area that post dated the Noranda survey. A key point to note is that there was no gold geochemistry done at this time.

#### **GEOPHYSICS:**

Shortly after completing the soil survey Noranda embarked on a property scale geophysics program that included an electromagnetic survey (VLF, JEM and CEM) as well as induced polarization and resistivity surveys. The VLF survey covered 47.4 grid miles the JEM survey covered 12.4 and the CEM survey covered approximately 5 miles. The variable frequency I.P. survey covered 4.7 grid miles.

The VLF survey covered the whole grid, the JEM and CEM surveys did encompass the Mackenzie area and the plotted maps are stored in the bullpen. There was one line of I.P. (L 122N) done in the area. This line would correlate approximately to line 58N of the 1988 PDI grid.

#### **COMMENTS:**

The JEM and CEM surveys are characteristic tools used in massive sulphide exploration and the two methods were applied only to specific areas of the property. Therefore, Noranda must have had a massive sulphide target in mind and looked at the Mackenzie area as a possible extension to the Tedi Zone.

#### **DRILLING:**

Post dating the geochemistry and geophysics programs Noranda drilled three diamond drill holes in the Mackenzie area.

Drill holes NB 8 to 10 have been plotted on our metric base and the drill logs have been obtained. There were no specific targets stated in the drill logs but some interpretive remarks can be made. The locations of the drill holes have been roughly converted to coordinates compatible with the 1988 PDI grid, they are as follows.

<u>Drill hole</u>	<u>Length (ft)</u>	<u>PDI Grid Coords</u>
NB-8	227	5970N-4830E
NB-9	400	5790N-5570E
NB-10	401	5700N-5380E

#### **NB-8:**

This hole appears to have been located on the basis of their geophysics survey and was oriented in such a way as to intercept and test a very strong VLF conductor running in a north south direction. The geology of the hole is made up of weakly foliated diorite, white fine grained felsite dykes and a strongly foliated sericitic schist. The hole measured 227 feet of which 64 feet was sampled for Au and Ag and a portion of these intervals were also sampled for Pb and Zn.

The assays for this hole were separated into two blocks and the geology of the two sampled sections is as follows. Interval 1 from 62 to 77 feet consisted of a grey felsic schist with some talc alteration on shear planes. Mineralization consisted of moderate to weak disseminated pyrite, pyrite on fracture surfaces and a few scattered sphalerite crystals associated with quartz veinlets. Interval 2 from 95 to 148 feet consisted of predominantly felsic dyke material. Mineralization in the dyke can be described as scattered pyrite along fractures with minor associated galena and sphalerite.

The results for interval 1 showed a high Au value of 0.03 oz/t and Pb, Zn values of 0.02 percent and 0.90 percent respectively, the high Ag value was 0.50

oz/t. Interval 2, the felsite dyke, returned a high Au value of 0.02 oz/t, a high Ag value of 0.80 oz/t and base metal values of 0.01 percent Pb and 0.78 percent Zn.

**NB-9:**

This hole, located at the Mill Site, was also collared on the basis of their VLF survey. The VLF located a second strong conductor, also running north south, approximately 600 meters east of the previously mentioned conductor. The hole was not collared on top of the anomaly but to the south, presumably with hopes of intersecting the southern extension. A felsite dyke is also located about 60 meters to the east of the diamond drill hole collar and was also a probable target.

The geology of NB-9 consisted mainly of diorite with noted propylitic alteration throughout. Subordinate rock types consisted of some small andesite dykes, a zone of felsite dykes and some gouge zones containing talc and kaolinite. The hole was 400 feet long and a total of 70 feet was sampled in 13 samples. The sample intervals appear to have been chosen solely on the basis of visible mineralization other than pyrite. The samples were analyzed for Au, Ag, Cu, Pb and Zn and the most interesting results are as follows; A sample of grey, schistose, altered diorite containing a kaolinitic gouge zone returned 0.10 percent Pb and 0.30 percent Zn. This was the best assay value for the hole. There were no Au or Ag values above trace amounts.

**NB-10:**

This hole was collared at the base of the steep slope that marks the beginning of the Mill Site. There is no clearly defined target for this hole but the whole area is geochemically anomalous in Ag, Pb and Zn. The VLF anomaly tested by NB-9 does extend to the southwest and possibly encompasses the location of NB-10. It is possible that the location was chosen on the basis of ground geology, namely, the altered gouge zone that was examined at the Mill Site by E.K., R.P. and R.B. on August 11, 1988. A sample of this gouge zone ran 196 ppm Zn, 203 ppm Pb, 1.8 ppm Ag, 34 ppm As and 20 ppb Au.

The geology of the hole is summarized as follows; diorite with noted talc and chlorite alteration, felsite dykes with foliated, altered (talc) contacts. The hole measured 401 feet and the sampling was sporadic and again determined by visible mineralization or alteration. A total of 5 samples totalling 24 feet was all the sampling that was done. There were no Au values above trace limits, a high Ag value of 0.20 oz/t, and no significant base metals were all the results returned.

**COMMENTS:**

The Noranda drill program in the Mackenzie area appears to have had a massive sulphide target as the primary objective. The JEM and CEM surveys support this theory as well. It is possible that Noranda was looking for an extension to the Tedi Zone massive sulphide showing that occurs north of the Mackenzie area. Given the magnitude of the soil anomalies in the area, the target must have looked quite attractive. This theory would also explain why only the core with visible base metal mineralization was sampled.

1974: A small drill program this year done presumably by Martial Levasseur consisted of five diamond drill holes done in the Mackenzie area. The holes and their approximate PDI grid coordinates are as follows.

Drill Hole   Length (ft)   PDI Grid Coords

MC-1	503	5865N-5430E
MC-2	184	6240N-5450E
MC-3	179	6275N-5355E
MC-4	239	6115N-5010E
MC-5	354	5780N-5600E

This program seems to have had a different target. All the holes except MC-5 seem to have been specifically oriented to be perpendicular to local shear zones or foliation. MC-5 was drilled to intercept the same felsite dyke that was tested by Noranda's drill hole NB-9.

We did not receive any original drill logs for the MC program, only the re-logged versions done by Cominco at a later date. The program was more comprehensive in the fact that virtually all the core was sampled for Ag, Au, Cu, Pb and Zn. The logs are available, to look at the geology in detail, so only a short summary listing some of the more interesting results will be given.

#### MC-1:

The most interesting results came toward the end of the hole from 415 feet to 442 feet which consisted of a white, sugary felsite dyke with trace amounts of base metal sulphides. The above interval was divided into three samples that ran 0.22, 0.30 and 0.04 oz/t Ag over intervals of 8, 10 and 9 feet with only trace amounts of gold. A second sample from 447 to 453 ft. containing a mixture of altered andesite and diorite ran 0.88 oz/t Ag again with only trace amounts of gold.

#### MC-2:

The most significant point in this hole is not the assays but the mention of a limestone band occurring within the altered volcanic package. The interval occurs between 117 and 143 feet, with the best assay coming from the upper contact (0.1 oz/t Ag, 0.02 % Cu, 0.25 % Pb, 0.38 % Zn and trace Au). The limestone could be significant because we have a documented gold anomaly elsewhere on the property known to be associated with a small limestone band.

#### MC-3:

This hole consisted of mainly diorite with a few bands of volcanic material of which none had any thickness of over 6 feet. A small felsite dyke occurred at 154 feet but was only 6 feet thick. There was no silver above 0.4 oz/t and the base metal assays were all below 0.13 %.

#### MC-4:

The purpose for this drill hole was to test a shear zone within the diorite, exposed in a road cut. The shear as it is marked on the geology map, is oriented at approximately 045 degrees (no dip shown). A chip sample across the zone assayed the following; 0.056 oz/t Au, 1.05 oz/t Ag, 1.32 % Pb and 1.26 % Zn. The hole intersected a felsite dyke at 96 ft. but returned no significant values. From 181 to 201 feet the hole traversed a shear zone described as sheared, altered, talcose rock. The zone contains patchy base metal sulphides throughout as well as a one foot thick vein containing 5% galena and sphalerite and up to 5% pyrite. The assay for the five foot interval containing the vein was 15.1 oz/t Ag, 0.12 oz/t Au, 0.44 % Pb and 1.20 % Zn. The hole continued another 15 feet and then stopped in weakly sheared diorite.

#### MC-5:

This hole was located down near the Mill Site, adjacent to a felsite body accompanied by a talcose gouge zone. In this area the felsite dyke invades the metavolcanic package and the hole does not encounter any intrusive rock until 270 feet. Overall the alteration found in this hole is much more pervasive and stronger than that encountered in any previous hole. Another point is that in this hole there is mention of brecciated and broken rock possibly associated with the intruding felsite dyke. Assays to note are, a three foot intersection between 28-31 feet that ran 2.8 oz/t Ag, 0.82 oz/t Au, 0.52 % Pb and 1.28 % Zn. There is no detailed description of the sample intervals given.

#### COMMENTS:

Subsequent conversation with M. Levasseur revealed that the MC drill program was initiated for assessment purposes rather than to test specific targets.

The evaluation of the Mackenzie data has strongly emphasized the need for an updated geological map. What became evident is the number of felsite dykes encountered in the drilling of which there is very little surface knowledge. If the dykes or their environments do host mineralization there might be potential for a larger tonnage target because the dykes seem to appear as swarms rather than isolated bodies. Another point to note is that the best results all came from intervals that contained some of the remnant volcanoclastics, usually near the volcanic / intrusive contact.

1978: On April 10, 1978 Cominco entered into an agreement with Van Silver Mines to perform various exploration activities on the Brandywine Property. Cominco drilled one hole in the Mackenzie area to test the shear zone located on the road just above the Mill Site. (DDH B-8) Roughly converted, the hole would have been located approximately at 6040N-5260E on the PDI grid.

#### B-8:

The rock type encountered throughout the 215 foot hole is logged as granodiorite. Sphalerite mineralization and silicification were noted to occur in small shear zones and were assayed for Au and Ag, one of these shears assayed 0.71 oz/t Ag and just above trace Au.

The foliation within the intrusive was noted as 30 degrees near the top and 70 degrees at the bottom whether this is related to the intrusive body or to proximal structures could prove to be an exploration parameter.

#### COMMENTS:

This short hole was located on the basis of surficial examination of the exposures along the road cut. The poor results of this hole seem to indicate that the better values come from areas containing the metavolcanics or a combination of intrusive and metavolcanics rather than just the intrusive.

1979: During this year the company's holdings were reorganized into Silver Tusk Mines Ltd. and an option was granted to Brett Holdings Ltd. who then transferred the interests to Brandy Resources Inc. Brandy Resources subsequently carried out exploration programs in 1980, 1981 and in 1983. The extent of their work was the completion of two soil surveys, one grid was located west of the Astra showing, the other grid was located about 2 km. south of the Mill Site and adjacent to Brandywine Falls Provincial Park.

The areas of the property covered by Brandy Resources do not overlap with any of the current PDI work but their data should be reviewed before planning any

additional work.

**SUMMARY:**

The Cominco drill hole marks the end of the work history for the Mackenzie area as far as we can deduce from the current data.

The area has been covered with 40 m soil samples by PDI in 1988 and probably should be reduced to 20 m intervals. The area must be mapped in detail in order to fully evaluate our geochemical data before advancing on to the next phase.