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MARGINAL NOTES FOR EVA AND SUMMERS TOWNSHIPS

Location: Eva and Summers Townships are located east of Lake Nipigon and form part of the "Sturgeon River Gold Belt". The city of Thunder Bay is approximately 120 miles to the southwest via Highway 11.

The Trans-Canada Northern Route (Highway 11), Canadian National Railway line and Trans-Canada natural gas pipeline cross through the southeastern part of the map-area. Highway 580 provides access to Lake Nipigon. An airport with scheduled air service is located 20 miles to the east of the map-area.

Accommodation and supplies are available at Beardmore.

Mineral Exploration: Gold, iron and sulphur have been the main exploration interests in the map-area.

Geological mapping, geophysical surveying, trenching, sampling and diamond drilling for gold have been carried out in many parts of the area over the past 45 years. The first gold discovery in the area was in 1925¹ near the site of the Northern Empire Mine. Production at this property was from 1934 to 1942. In 1936, a pilot shaft on the Lerner Spooner Gold Mines Limited property was sunk to a depth of 303 feet². The Leitch Gold Mine was in production from 1936 to 1965 and the adjacent property of Sand River Gold Mines Limited was in production from 1937 to 1942. Leitch Gold Mines Limited purchased the Sand River property in 1954³ and extended their underground workings along the westward-plunging ore shoots.

Exploration for sulphur (pyrite) east of the Leitch Mine consisted of mapping and drilling of the present Freeport Sulphur Company property by Macassa Mines Limited in 1951 and by Candela Development Company Limited from 1952 to 1954³.

The main investigation of iron deposits was from 1900 to 1922, during which time several test holes were drilled.

Many claim groups, including patented and leased claims, are currently held in the map-area.

General Geology: The oldest rocks in the map-area are meta-volcanic and metasediments of early Precambrian age.

The sedimentary rocks form three east-northeast-trending belts and consist dominantly of interbedded greywacke, sandstone, siltstone and argillite. Thin lenses of conglomerate are present across the central part of the map-area. Thin bands of magnetite, hematite and jasper are interbedded with the sedimentary rocks.

Volcanic rocks form two belts lying parallel to the sedimentary units and consist mainly of massive basaltic to dacitic types with extensive bodies of amygdaloidal lavas along with pillow lavas and volcanic breccias. Felsic to intermediate volcanic breccia and flows were found in the Poplar Point region.

Lenticular bodies of dioritic rocks cut both the sedimentary and volcanic rocks. A westward-dipping intrusive diorite sheet of Proterozoic age crops out along the eastern boundary of the map-area and has been traced westward by subsurface mapping to the Leitch Gold Mine area⁶. Diorite overlies sedimentary rocks along the Lake Nipigon shoreline. North-trending diabase dikes are present throughout the map-area.

Structural Geology: The sedimentary and volcanic rocks in the map-area form part of a fold belt. Sediments throughout most of the area are overturned to the north. Rock cleavage cuts across bedding in the Leitch Gold Mine area, and west-plunging drag folds are abundant.

Scarps are formed where the major east-west faults cut the diabase ridge at the east border of the map-area.

Economic Geology: Gold, silver, sulphur, iron, sand and gravel occur within the map-area.

Gold: Gold occurs in narrow fracture-filling quartz veins in volcanic and sedimentary rocks.

The Leitch Mine was developed to a depth of 4,525 feet⁴ following westward-raking quartz veins occupying fractures in fine-grained sedimentary rocks. The producing veins varied from a few inches to two feet in width. A total of 867,291 oz. Au and 31,775 oz. Ag was produced from 920,745 tons of ore milled². The Sand River Mine produced 50,065 oz. Au and 3,628 oz. Ag from 157,870 tons of ore milled². A clean-up of the Leitch mine site has been under way since 1966. A total of 234 oz. Au and 17 oz. Ag was recovered during the period 1966-67⁵.

The Northern Empire Mine produced a total of 149,493 oz. Au and 19,803 oz. Ag from 425,866 tons of ore milled². All production came from above the 1900-foot level⁵. Gold was present in quartz veins cutting volcanic rocks which in stoped sections averaged two feet in thickness⁶.

Sulphides: A brecciated pyrite zone in intermediate to mafic volcanic rocks has been traced for over two and one half miles along strike in the northern part of Summers Township. Drilling of this zone on the Freeport Sulphur property indicates a grade of about 15 percent sulphur over an average width of 80 feet⁷. Exploration for sulphides along and below the pyrite zone-diorite sheet contact by deep diamond drilling may be warranted.

Abundant sulphide zones with pyrite, arsenopyrite, chalcocite, and magnetite occur south and southwest of Beardmore. A graphitic zone with pyrite nodules and minor chalcocite was found by the field party in the Blackwater River south of Beardmore.

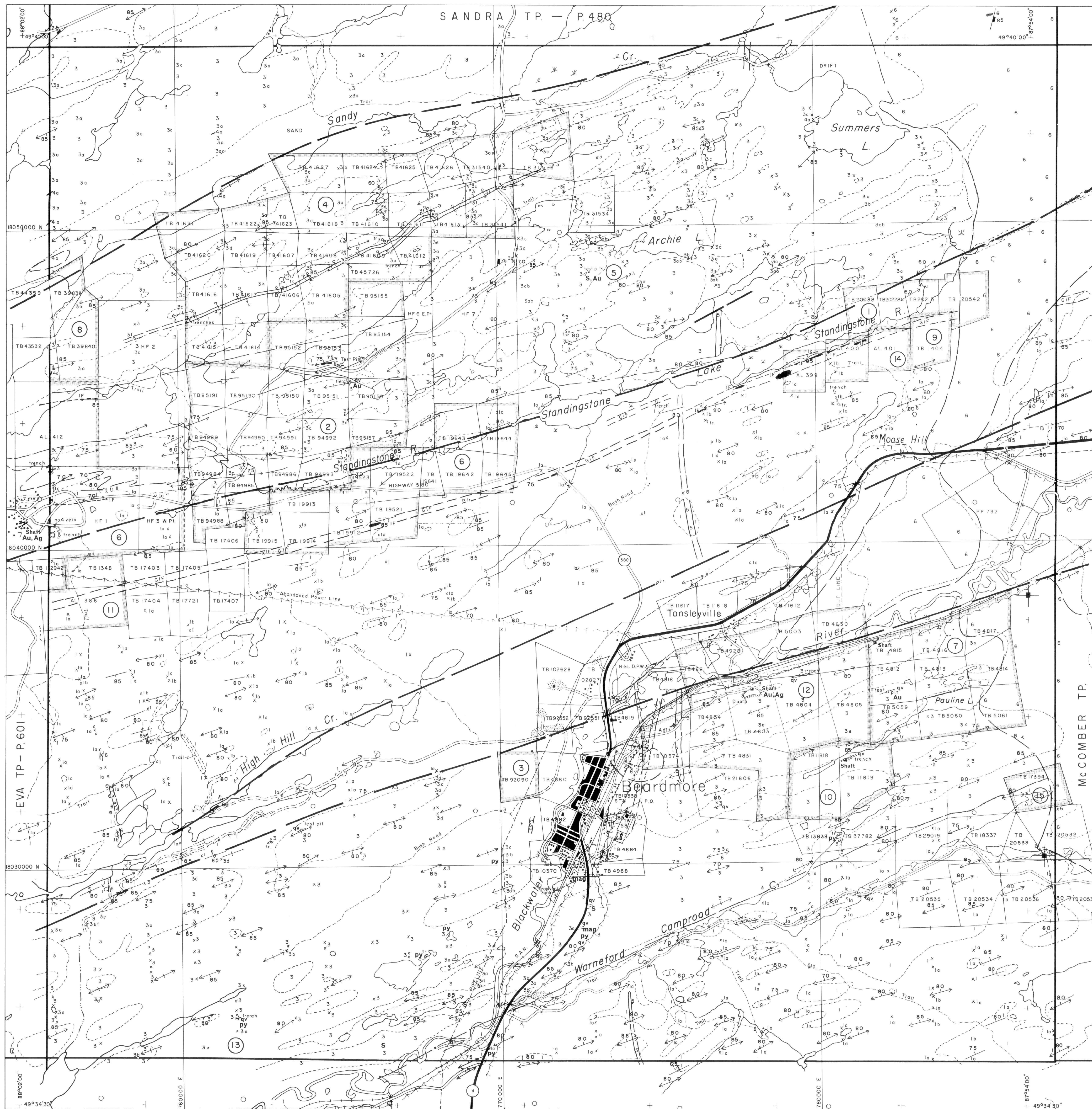
Iron: Iron formation near the Leitch Mine consists of jasper and hematite with minor magnetite. A deposit, 1,200 feet long and 50 feet wide, on AL14, Eva Township, has been reported to contain 3.5 million tons, to a depth of 600 feet, averaging 33.5 percent Fe, 0.118 percent P, 0.01 percent S and 43.5 percent SiO₂. An additional 5 million tons averaging 30 percent Fe was outlined on AL16⁸.

Iron formation extends east-northeast across the central part of the map-area and consists of thin bands of jasper and magnetite. Exposures from a few feet up to 60 feet wide were observed by the field party. Widths of up to 550 feet have been reported and a sample taken over 82 feet averaged 30.06 percent Fe⁸.

Sand and Gravel: Thick deposits of sand and gravel occur in the central part of the map-area. The Ontario Department of Highways maintains gravel reserves in Summers Township.

References:

1. Horwood, H.C. 1948: General structural relationships of ore deposits in the Little Long Lac-Sturgeon River area, in Structural Geology of Canadian Ore Deposits; C.I.M.M., p.377-384.
2. Statistical files, Ontario Dept. Mines.
3. Sinclair, D.C., Tower, W.O., Bayne, A.S., Cooper, D.F., Weir, E.G., Webster, A.R. 1937: Mines of Ontario in 1936; Ontario Dept. Mines, Vol. 46, pt.1, p.203.
4. Ferguson, S.A. 1967: Leitch Gold Mines Limited, surface plan of eastern part of property, parts of Eva and Summers Townships, District of Thunder Bay; Ontario Dept. Mines, Prel. Geol. Map P.484.
5. Company reports by Sherman Tough, Ontario Dept. Mines files, Thunder Bay.
6. Benedict, P.C., and Titcombe, J.A. 1948: The Northern Empire Mine; in Structural Geology of Canadian Ore Deposits; C.I.M.M., p.389-399.
7. Hewitt, D.F. 1967: Pyrite deposits of Ontario; Ontario Dept. Mines, Mineral Resources Circ. No. 5, p.51.
8. Sklanka, Roman 1968: Iron deposits of Ontario; Ontario Dept. Mines, Mineral Resources Circ. No. 11, p.377-378.



SUMMERS TOWNSHIP

DISTRICT OF THUNDER BAY
Scale 1 inch to 1/2 mile
NTS Reference: 52 H/9, 42 E/12
ODM-GSC Aeromagnetic Maps: 2128G, 2135G
ODM Geological Compilation Series Map: 2102

LEGEND FOR EVA AND SUMMERS TOWNSHIPS

- CENOZOIC**
RECENT
Lake, stream and swamp deposits
Sand, gravel, clay
- PRECAMBRIAN**
PROTEROZOIC
6 Diabase
5 Porphyritic diabase
- INTRUSIVE CONTACT**
- ARCHAIC**
INTRUSIVE ROCKS
4 Quartz diorite, diorite, minor granitic rocks
4a Quartz feldspar porphyry
4b Fine-grained felsic to mafic dikes
- INTRUSIVE CONTACT**
- METAVOLCANICS AND METASEDIMENTS^a**
3 Mafic to intermediate metavolcanics, undifferentiated
3a Amygdaloidal lava
3b Pillow lava
3c Volcanic breccia and agglomerate
3d Tuff and tuffaceous schist
3e Coarse-grained lava^b
3f Pyritic iron formation, chert, gossan
- FELSIC TO INTERMEDIATE METAVOLCANICS**
2 Felsic to intermediate metavolcanics, undifferentiated
2a Volcanic breccia
2b Massive and flow banded lava
- Metasediments**
1 Greywacke, siltstone, argillite, undifferentiated
1a Greywacke
1b Intermediate sandstone, siltstone, argillite, slate
1c Conglomerate
- IP** Iron formation

^a Rocks in these groups are subdivided lithologically and the order does not imply age relationships within or among groups.
^b These may in part be rocks intrusive into the lava sequence.
A short black bar is used where in places a rock unit is too narrow to be shown separately.
The letter "G" preceding a rock unit number, for example "G2", indicates interpretation from geophysical data in drift-covered or unmapped areas.

GEOLOGICAL AND MINING SYMBOLS

- Glacial striae.
- Small bedrock outcrop.
- Area of bedrock outcrop.
- Bedding, top unknown; (inclined, vertical).
- Bedding, top indicated by arrow; (inclined, vertical, overturned).
- Bedding, top (arrow) from grain gradation; (inclined, vertical, overturned).
- Lava flow; top (arrow) from pillow shape and packing.
- Schistosity; (horizontal, inclined, vertical).
- Lineation with plunge.
- Geological boundary, observed.
- Geological boundary, position interpreted.
- Geological boundary, deduced from geophysics.
- Fault; (observed, assumed).
- Jointing; (horizontal, inclined, vertical).
- Drag folds with plunge.
- Drill hole; (projected vertically).
- Quartz vein.
- Shaft.

METAL AND MINERAL REFERENCE

- Ag Silver
Au Gold
mag Magnetite
py Pyrite
S Sulphides

LIST OF PROPERTIES

1. Burt, A.W.
2. Falconbridge Nickel Mines Limited
3. Fimmen, T.H.
4. Freeport Sulphur Company
5. Jones, E.V., & Simpsons, J.P.
6. Leitch Gold Mines Limited
7. Leslie, H.T.
8. Little Long Lac Gold Mines Ltd., The
9. Martyn, G.W.
10. McWilliams, D.B.
11. Rayner, G.W., Est.
12. Regan, J.E., & Lauber, R.C.
13. Kentz, A.
14. Madison, I.L.
15. Zimle, E.L.

SOURCES OF INFORMATION

Geology by W.O. Mackasey, 1969.
Geology is not tied to surveyed lines.
Laird, H.C. 1936: The western part of the Sturgeon River area; Ontario Dept. Mines, Vol. XLV, pt. 2, p.60-117.
Peach, P.A. 1951: Preliminary report on the geology of the Blackwater-Beardmore area; Ontario Dept. Mines, Prel. Rep. 1951-7, 6p.
Ontario Department of Mines, Maps 45a, P.484, P.485. Base maps derived from maps of the Forest Resources Inventory, Ontario Department of Lands and Forests.
Position of surveyed lines is approximate only.
Assessment work files, Ontario Dept. Mines, Thunder Bay.
Magnetic declination was approximately 2%, 1969.
Issued 1970.