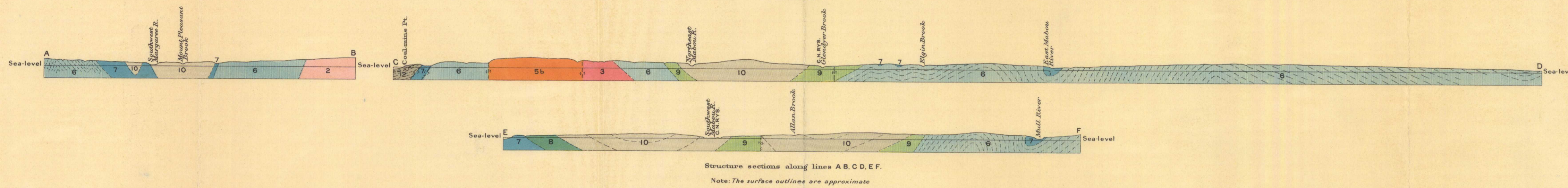


Issued 1933



LEGEND

RECENT AND PLEISTOCENE
Recent alluvium and glacial drift

CARBONIFEROUS (?)
13 **BROAD COVE**
Red shale, sandstone and conglomerate

CARBONIFEROUS PENNSYLVANIAN
12 **INVERNESS**
Grey sandstone, arkose and conglomerate, grey shale with intercalated coal seams

PALAEZOIC
11 **PORT HOOD**
Grey, argillaceous sandstone alternating with red shale, interbedded sandstone and shale bearing coal seams

10 **MABOU**
Red sandstone and shale interbedded with grey sandstone and shale thin limestone beds

9 **WINDSOR** (undivided)

8 **UPPER WINDSOR**
Red shale and sandstone, gypsum and anhydrite, limestone

7 **LOWER WINDSOR**
Red shale and sandstone, gypsum and anhydrite, limestone

6 **HORTON**
Grey shale and sandstone, red shale, sandstone and conglomerate, grey arkose, limestone, dykes and sills of diabase

PALAEZOIC PRECAMBRIAN ?
5a, 5b, 5c
5a: Diabase, basalt, rhyolite, tuff, red shale, sandstone, conglomerate
5b: Quartzite with numerous dyke intrusions
5c: Rhyolite

4 **Granite**

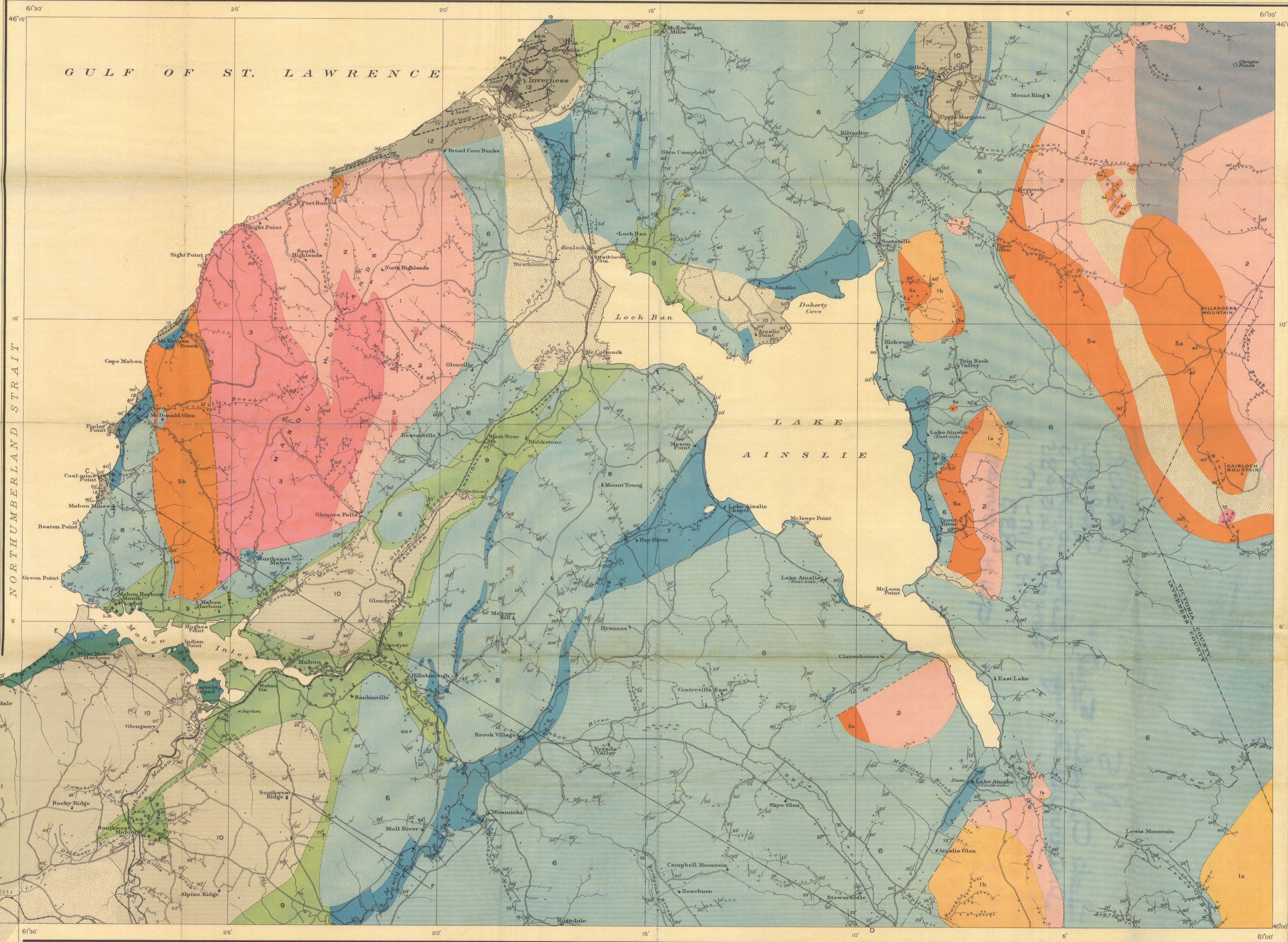
3 **Granodiorite, diorite, gabbro, and limestone**

2 **Shearolite**

PALAEZOIC PRECAMBRIAN ?
1a, 1b
1a: Quartzite, minor amounts of limestone
1b: Quartzite with numerous dyke intrusions

Symbols

Geological boundary (position definite)
Geological boundary (position approximate)
Fault (position definite)
Fault (position approximate)
Coal seam
Siding (inclined, overthrown, vertical, horizontal)
Sikstensity (strike, inclined, vertical)
Glacial stria
Rock masses
Limestone outcrop
Gypsum outcrop
Forest locality
Quarry



PHYSICAL FEATURES
The area presents a picturesque variety of wooded hills, narrow gorges and broad cleared valleys. Between Mabou highlands (elevation 1,000 feet) on the west and the upland country east of lake Ainslie, wide valleys separated by low ridges and rounded hills stretch northeastward through the central part of the area but are crossed by the valleys of the two Mabou rivers and by the basin of lake Ainslie. The lake is about 100 feet above sea level, its wide northern part is flanked by gradually rising ground but its restricted southern part lies between steep-sided hills which form part of the western margin of the upland district to the east. On this upland large mossy barrens occur and the streams are sluggish but their gradients rapidly increase toward the border of the upland, where they flow swiftly through rocky defiles and gorges. Mabou highlands are well drained and are deeply dissected by numerous V-shaped valleys.

GEOLOGY
The GEORGE RIVER quartzites are drab-coloured, schistose rocks in which bedding is difficult to recognize. They are intruded by rocks ranging in composition from diorite to granite. These granitic rocks are believed to be Precambrian, but their relation to the Cambrian strata in southeastern Cape Breton is not known. They are believed to be related in origin, although granite stocks and syenite dykes intrude the diorite. The diorite is of medium grain and composed of light and dark minerals in about equal amounts; locally it is sheared to a dark green, fine-grained schist and on the eastern side of Mabou highlands is intruded by porphyritic syenite dykes that are also sheared. The granodiorite is grey and of medium grain; it outcrops on the southwest shore of lake Ainslie and in the neighbouring hills. The granite is red and coarse grained; it occupies a wide area on Mount Pleasant, where it intrudes diorite, which on tributaries of Big brook, is altered near the granite boundary.

The volcanic group (symbol 5) is older than the Carboniferous and younger than the granitic rocks, but since volcanism occurred several times in eastern North America in late Precambrian and early Cambrian it is impossible to assign these rocks to a definite period or to determine their relative ages. Rhyolite (5a) is the dominant rock in the bare hills east of lake Ainslie, and gives place to basic flows and dykes further east. Unstratified brown to red crystalline tuffs and breccias constitute the principal rock (5b) of Mabou highlands; andesite flows lie along the southern base of the hills. The Horton strata (6,000 feet) are a thick group of irregularly intertonguing lenses of clastic rocks that were deposited along the flood plains of streams and gave place to the Horton strata. Unstratified brown to red crystalline tuffs and breccias constitute the principal rock (5b) of Mabou highlands; andesite flows lie along the southern base of the hills. The Horton strata (6,000 feet) are a thick group of irregularly intertonguing lenses of clastic rocks that were deposited along the flood plains of streams and gave place to the Horton strata. Unstratified brown to red crystalline tuffs and breccias constitute the principal rock (5b) of Mabou highlands; andesite flows lie along the southern base of the hills.

MINERAL RESOURCES
The pre-Carboniferous rocks contain veins of barite associated with calcite and fluorite, that pinch and swell to a maximum thickness of 16 feet. The best known occurrences are in rhyolite (5a) and associated rocks along the east side of lake Ainslie, and have been developed by short inclines and tunnels. Barite also occurs along the post-Pennsylvanian fault west of the Mabou coal mine and in the surface deposits between the mine and McKinnon brook.

Small petroleum seepages at lake Ainslie issue from Horton strata which have been folded and deeply denuded; any oil originally contained in these rocks here would therefore slowly escape.

The Windsor strata contain numerous gypsum and anhydrite beds. The thickest, a 3,000-foot bed lies stratigraphically 100 feet above the base of the series at Mabou Mines and at Mabou Harbour, but is absent from this horizon on Mull river. Other gypsum beds varying up to 50 feet are widely distributed throughout the area. The gypsum is largely a surface alteration of anhydrite, but the depth of alteration is variable and difficult to predetermine. The Windsor series also contains numerous dolomite and limestone beds varying up to 40 feet in thickness. They usually dip steeply and are therefore not suitable to large-scale quarrying operations, but furnish an unequatable supply for local agricultural purposes.

The Pennsylvanian strata contain considerable reserves of coal in submarine basins at Port Hood, Mabou and Inverness. At Port Hood the principal seam is 6 feet thick and has been mined by several shallow workings and by one deep mine, which has remained flooded since 1911. Another 6-foot seam is reported to lie 500 feet above the known seam and to outcrop at low tide north of the small pier at Harbour View post office. The Mabou field is broken into several fault blocks, the largest of which is south from Coal-mine point, where seven steeply dipping seams, representing 45 feet of coal, occur. The 15-foot and 8-foot seams have been mined but the workings are now flooded. The pitch of the seams, which at the surface is steep, becomes gentle with depth. At Inverness twelve 7-foot seams have been mined since 1900 in the submarine area north of Inverness. More recently the 13-foot seam, which contains several benches of coal separated by good fire clay, has been developed from No. 4 slope. At Port Bay a 1-foot seam is reported but has not been traced over to Broad Cove river. The Pennsylvanian strata also contain sandstone suitable for building purposes and grindstones, and a limited amount of shale suitable for brick making.

MAP 282 A
LAKE AINSLIE SHEET
INVERNESS COUNTY
NOVA SCOTIA

Scale, 63,360 or 1 inch to 1 Mile
Scale, 1 inch to 200 Miles

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Legend

Road and buildings	Dropped
Road not well travelled	Bore hole
Fuel	Lighthouse
Railway	Triangulation station
Church	Wharf
School	County boundary
Post office	Stream (flow disappearing in places)
Quarry	Marsh
Mine tunnel	Rapid or fall

RELATED PUBLICATIONS
REPORT OF PROGRESS, 1922-23-24: Report on the Geology of Northern Cape Breton; by Hugh Fletcher.
SUMMARY REPORT, 1925, PART C: Prospects for petroleum in lake Ainslie district, Cape Breton Island, with notes on the occurrence of Barite and Granite; by W. A. Bell.

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