

SHEET 21H

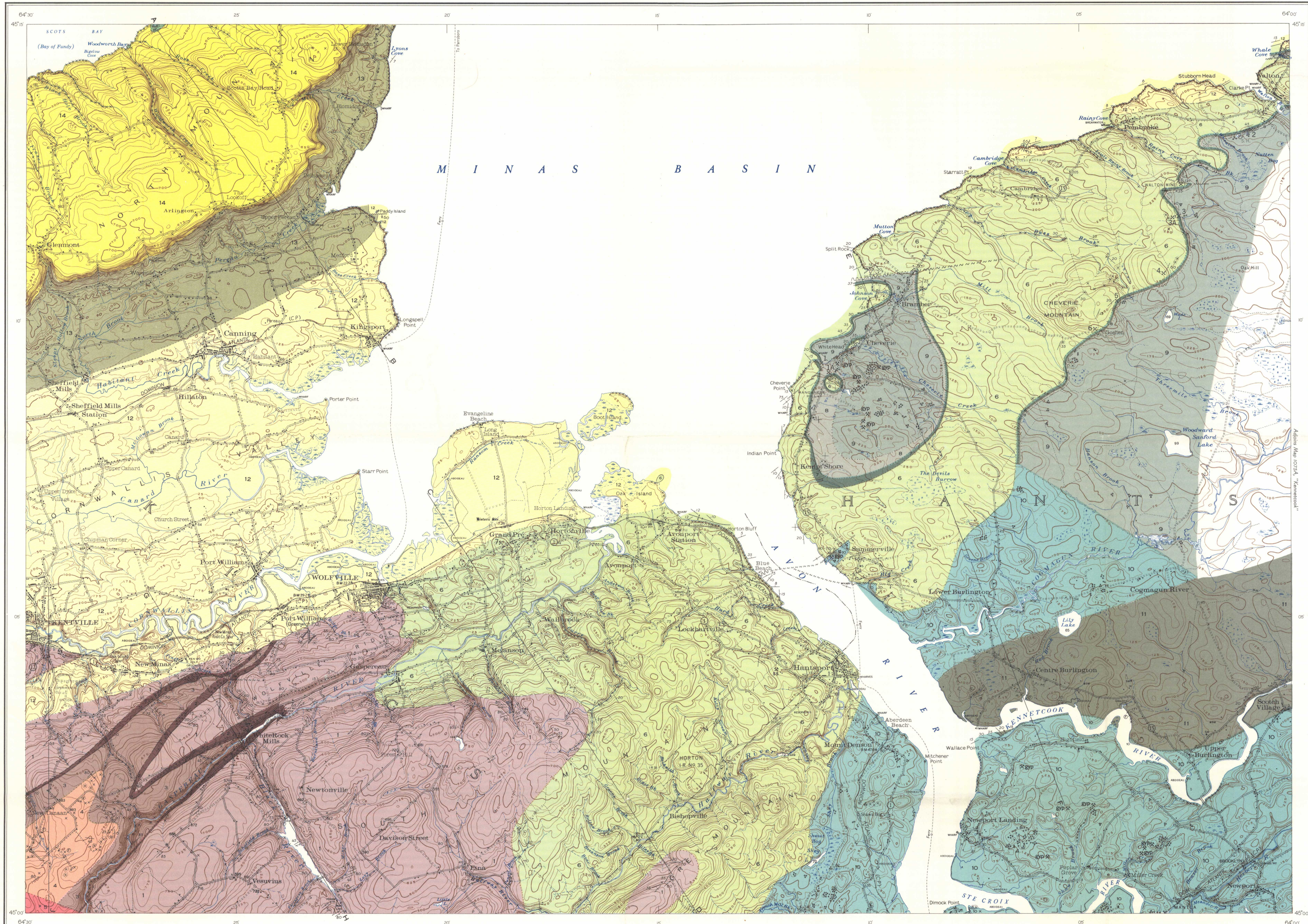
LEGEND

- MESOZOIC**
- 15 SCOTS BAY FORMATION: arenaceous limestone and calcareous sandstone
 - 14 NORTH MOUNTAIN BASALT: basic lava
 - ANNAPOLIS FORMATION (12, 13)
 - 13 BLOMIDON SHALE: red shale and argillaceous sandstone
 - 12 WOLFVILLE SANDSTONE: red conglomerate and sandstone; minor red shale
- PENNSYLVANIAN (?)**
- 11 SCOTCH VILLAGE FORMATION: buff-weathering grey sandstone
- MISSISSIPPIAN**
- WINDSOR GROUP (7-10)
 - 9 Red shale, limestone, gypsum, anhydrite, and salt
 - 8 PEMBROKE FORMATION: limestone conglomerate and limestone; minor sandstone and shale
 - 10 Red shale, limestone, gypsum, anhydrite, and salt
 - 7 MACUMBER FORMATION: thinly bedded, arenaceous limestone
- PALEOZOIC**
- HORTON GROUP
 - 6 Grey and red shale, siltstone, sandstone, and arkose
 - DEVONIAN
 - 5 Porphyritic granite
 - SILURIAN
 - 4 NEW CANAAN FORMATION: marine breccia; minor siltstone and slate
 - 3 KENTVILLE FORMATION: slate and minor siltstone
 - 2 WHITE ROCK FORMATION: quartzite and interbedded slate
 - ORDOVICIAN
 - MEGUMA GROUP
 - 1 HALIFAX FORMATION: slate and minor siltstone

- Outcrop or area of outcrop
Bedding (horizontal, inclined, vertical, overturned)
Cleavage (inclined, vertical)
Fault (defined, approximate, assumed)
Fault (solid circle indicates downthrow side)
Fault (arrow indicates dip)
Fault zone (width indicated)
Anticline (arrow indicates direction of plunge)
Fossil locality
Quarry or mine (gypsum, gypsum, sandstone, ss)
Abandoned prospect
Sink-hole
Observed sink-hole topography (used to delimit areas underlain by gypsum and anhydrite, and to a lesser extent limestone)

- ABANDONED PROSPECTS**
- | | |
|---------------|-------------|
| MANGANESE | IRON |
| 1,1A Macumber | 6 Goshen |
| 2 Stephens | 7 Grand Pré |
| 3,3A Sturgis | |
| 4 Tomlinson | |
| 5 Lantz | |

Geology by D. G. Crosby, 1949, 1950
To accompany G. S. C. Memoir 325 by D. G. Crosby
Cartography by the Geological Survey of Canada, 1952
Base-map by the Army Survey Establishment, R. C. E. Department of National Defence, 1953
Approximate magnetic declination, 22° 30' West, decreasing 2.2" annually



DESCRIPTIVE NOTES

The map-area is one of variable relief, and is readily divided into four topographical divisions: (1) the south highlands in the southwestern part, which commonly reach 700 feet in elevation; (2) the north highlands in the northwestern part, with most of the summit level at elevations between 600 and 675 feet; (3) the Carboniferous uplands in the eastern and central parts, with an average elevation of 200 to 250 feet; and (4) the Triassic lowlands between the south and north highlands and merging with the Carboniferous uplands to the east, with an average elevation of 50 to 75 feet. Each of these divisions is closely related to the underlying rock divisions and structures.

The oldest rocks are the metamorphosed sediments, some 15,000 feet thick, that underlie the south highlands. These rocks are subdivided as follows (oldest to youngest): the Halifax Formation (1), a succession of slate and minor siltstone, tentatively correlated with the upper part of the Meguma group; the White Rock Formation (2), quartzite and slate; the Kentville Formation (3), slate and minor siltstone; and the New Canaan Formation (4), marine breccia and minor siltstone and slate. The Halifax and White Rock Formations are conformable, as are the Kentville and New Canaan Formations. The White Rock and Kentville Formations appear structurally conformable, but the nature of the contact could not be definitely established. Fossils found in 1950 indicate that these metamorphosed rocks are of Palaeozoic age—an Ordovician age is indicated for the lowermost unit, the Halifax Formation, and a Silurian age for the uppermost unit, the New Canaan Formation.

Porphyritic granite (5), part of the large Devonian batholith that underlies much of the western part of Nova Scotia, intrudes the foregoing rocks in the southwestern corner of the map-area.

Carboniferous strata underlie the northeastern part of the south highlands and almost all the eastern half of the map-area—the Carboniferous uplands. They are separated from the older rocks by an angular unconformity. These strata are subdivided as follows (oldest to youngest): the Horton Group (6), consisting of about 4,000 feet of grey and red shales, siltstone, sandstone, and grit; the Windsor Group (7-10), some 2,000 feet of red shale, limestone, gypsum, anhydrite, and salt; and the Scotch Village Formation (11), some 800 feet of buff-weathering light grey sandstone. In the northeastern part of the map-area, two formations at the base of the Windsor Group—the basal Macumber Formation (7) and the Pembroke Formation (8)—can be mapped separately. The former consists of thinly bedded limestone; the latter, limestone conglomerate and limestone, and minor sandstone and shale. The upper part of the Windsor (9) could not be subdivided for mapping purposes. The Horton and Windsor Groups are conformable and of Mississippian age. The Scotch Village Formation may be of Pennsylvanian age. The Windsor-Scotch Village contact is exposed for only a short distance, but the two rock units appear conformable.

Soft red conglomerate, grit, sandstone, and shale of the Triassic-aged Annapolis Formation underlie the Cornwallis Valley (the Triassic lowlands) between the north and south highlands. These rocks extend under the Minas Basin and occur at many places along the shore of the north-eastern part of the map-area. The Annapolis Formation is separated from older rocks by an angular unconformity, and is subdivided into two members—a lower Wolfville sandstone (12), about 2,400 feet thick, and an upper Blomidon shale (13), about 800 feet thick. A sequence of basic lava-flows, about 80 feet thick—the Triassic-aged North Mountain basalt (14)—overlies the Blomidon shale with structural conformity and caps North Mountain (the "North Mountain highlands") in the northern border of the Cornwallis Valley. A few small, isolated synclines of arenaceous limestone and calcareous sandstone, up to 15 feet thick, which constitute the Scots Bay Formation (15), rest discordantly upon the North Mountain basalt on the shore of the Bay of Fundy. They are the youngest consolidated rocks in the map-area.

Glacial drift covers much of the map-area, particularly the west-central and eastern parts. It reaches known thicknesses of 75 feet. The Wolfville map-area is structurally complex as regards the Palaeozoic rocks. This is especially apparent in those localized areas where exposures are common—along parts of the shore and some stream valleys. The general scarcity of outcrops and marker horizons greatly hinders the tracing of structural features inland, particularly in the areas underlain by Windsor and Horton strata. The structural picture in the case of the Windsor Group is further complicated by expansion effects of sulphate beds during hydration, and probably also by salt-solution effects. The structure of the Horton Group is more complex to the northeast. On the west side of Avon River, Horton strata are gently folded, whereas to the northeast at Walton, they have been thrown into sharp-angled recumbent folds and are displaced by innumerable faults. On the map it was not possible to represent all or even most of the many faults and folds apparent at some of the localities where exposures are common. In particular, strike and dip symbols have been omitted for areas of intense deformation underlain by incompetent Windsor strata and dark shales and siltstones of the Horton Group, such as along much of the shoreline from Walton to Split Rock.

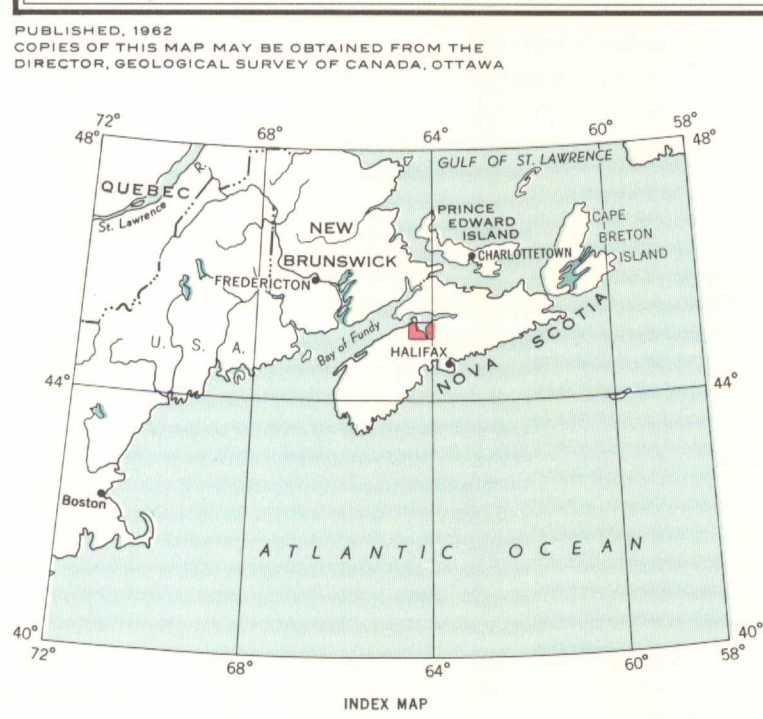
Major folds in the map-area conform to the northeasterly, Appalachian trend. Pre-Carboniferous folds were accentuated by forces that folded the Carboniferous strata, but fold axes of both correspond. Although many of the minor folds conform to the regional northeasterly trend, there are many east-west folds as well. Except for minor irregularities, Triassic rocks dip 5-10° NW. North Mountain basalt dips into the Bay of Fundy along the north side of North Mountain, and curves around into Cape Split farther to the north, forming the east-west Bay of Fundy syncline, which plunges gently west. The axis of this feature passes through Scots Bay, just north of the map-area.

High-angle faults occur in many parts of the area, but only those faults that affected construction of the map are plotted.

Thick gypsum beds within the Windsor Group form extensive and valuable deposits in the eastern part of the map-area. Gypsum is currently quarried by Canadian Gypsum Company Limited in the Windsor district and by National Gypsum (Canada) Limited in the Cheverie district. In 1959 Canadian Gypsum mined 2,653,424 tons from their quarries in the Windsor district; the oldest of these quarries are just beyond the southern border of the map-area. This output was a little more than half the total gypsum production of Nova Scotia.

One of the largest known barite deposits in the world has been mined since 1941 at the Walton mine, 2½ miles southwest of Walton. The present owner is Magnet Cove Barium Corporation. Barite ore was obtained from an open pit for several years, but production is now obtained from underground workings. Recently, developments have been focused on the argentiferous sulphate mineralization associated with replacement processes, predominantly the latter, with replacement of limestone and, to a lesser extent, sandstone and shale. Principal access for the mineralizing solutions appears to have been along an east-trending normal fault zone.

A number of abandoned manganese prospects are present in the eastern half of the map-area at or near the Horton-Windsor contact. The deposits consist of the oxides pyrolusite and subordinate mangite and psilomelane, which occur mainly as replacement masses in Pembroke limestone-conglomerate. Lesser amounts are present as fracture fillings in Pembroke and underlying Macumber strata, and in some localities manganese oxides occur along joints and bedding planes in Horton strata.



MAP 1128A
GEOLOGY
WOLFVILLE
NOVA SCOTIA
Scale: One Inch to One Mile = 1/63,360
Miles 0 1 2 3

- LEGEND**
- Main highway
 - Other roads
 - Trail
 - Building
 - Bridge
 - Church
 - School
 - Post Office
 - County boundary
 - Horizontal control point
 - Marsh
 - Intermittent stream
 - Contours (interval 25 feet)
 - Height in feet above mean sea-level

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