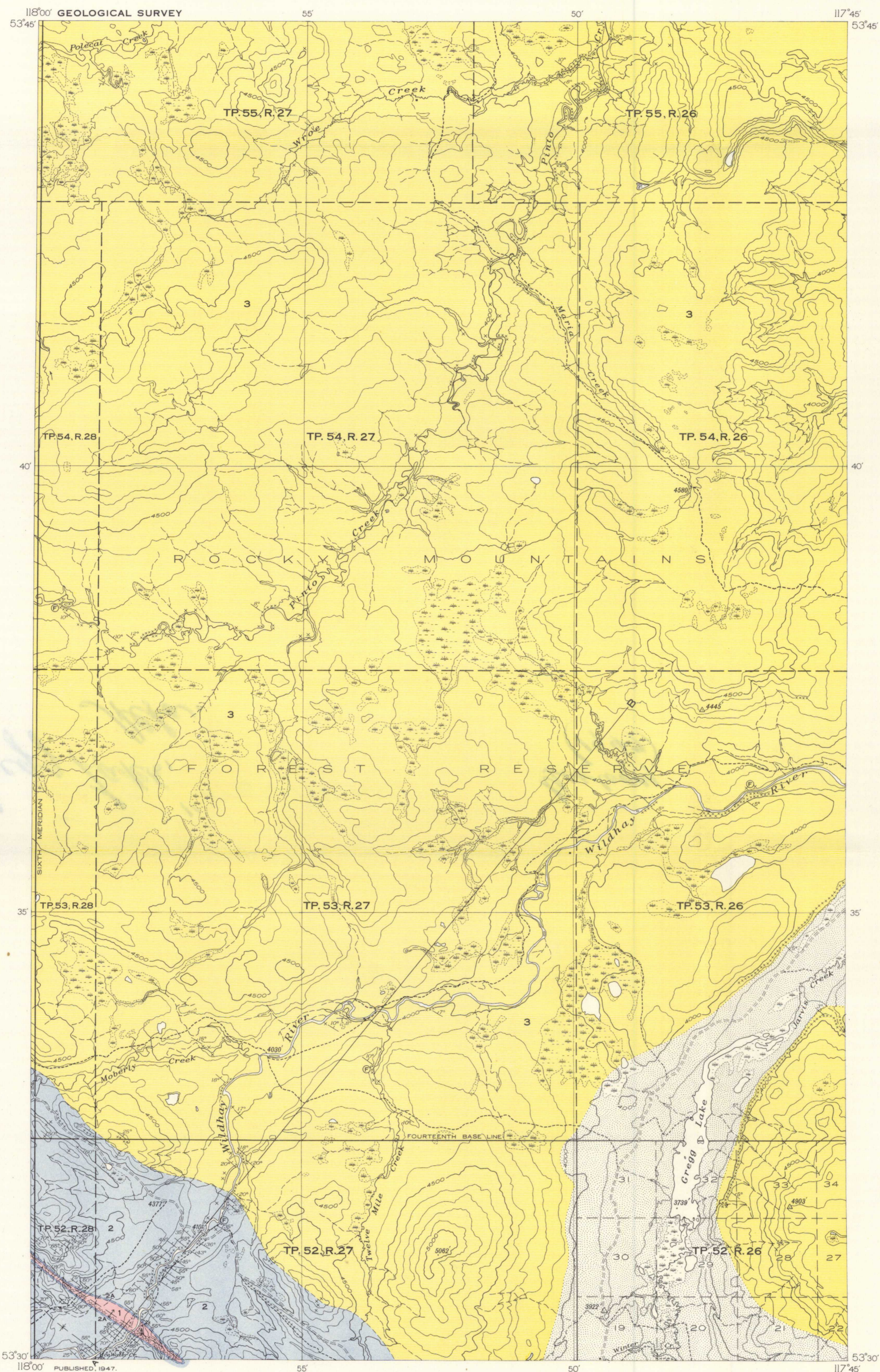




Structure-section along line A-B



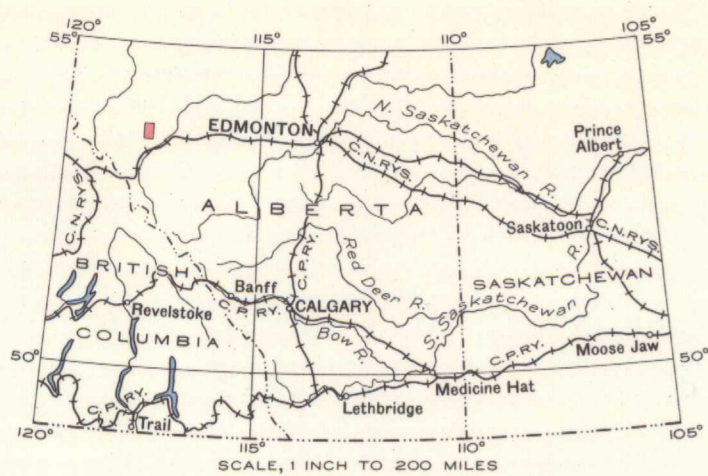
LEGEND

- CENOZOIC**
- TERTIARY PALEOCENE**
 - 3 Sandstone, clayey shale, minor conglomerate, ash beds, and coal
 - CRETACEOUS UPPER CRETACEOUS**
 - 2 BRAZEAU FORMATION: sandstone, shale, pebble conglomerate, minor coal seams
 - 2A Solomon sandstone member at the base
 - 1 WAPIABI FORMATION: shale and sandy shale

- Heavily drift-covered area
- Small outcrop, area of outcrop
- Bedding (inclined)
- Fault (approximate)
- Axis (anticlinal, synclinal)
- Fossil locality
- Road not well travelled
- Bush road or trail
- Building
- Triangulation station
- Township boundary (surveyed)
- Township boundary (unsurveyed)
- Section lines
- Intermittent stream
- Marsh
- Contours (interval 100 feet)
- Depression contour
- Height in feet above mean sea-level

Geology by E. J. W. Irish, 1945.

Base-map surveyed in 1944, and compiled 1945, by the Topographical Survey with air photographs taken in 1943. Cartography by the Drafting and Reproducing Division, 1946.



DESCRIPTIVE NOTES

Glacial and fluvio-glacial deposits cover most of the map-area, and bedrock exposures are confined mainly to stream canyons. These outcrops indicate that except in the southwest corner, which includes a small area of dark marine shales, the map-area is underlain by a thick succession of non-marine, sedimentary strata of Upper Cretaceous and Paleocene age.

The Wapiabi formation (1), of which only the upper part is exposed, consists of dark grey, sandy shale and black, fissile shale. Numerous, small, yellow weathering, clay-ironstone concretions occur in parts of the shale. These range from 3 to 8 inches in diameter, are usually spherical, and contain considerable carbonate both as a core and as a network of veinlets.

The Brazeau formation (2), exposed in the southwest corner of the map-area, conformably overlies the Wapiabi shale. Its base is represented by a bed of hard, fine-grained, greenish grey, brown weathering sandstone, termed the Solomon sandstone (2A). This member is an excellent horizon marker, and is approximately 110 feet thick at Wildhay River.

The Solomon sandstone is succeeded by 75 to 100 feet of dark greyish green sandstone and sandy shale containing many poorly preserved plant remains. Overlying this zone are the typical and distinctive pebble beds of the Brazeau formation; the lower of these are true, massive, pebble conglomerates, but above them, stratigraphically, the amount of conglomerate decreases and sandstone predominates, with only thin beds and lenses of conglomerate. These beds consist of pebbles of chert and quartzite, averaging one-half inch in diameter, in a sandy matrix. They constitute a zone about 2,000 feet thick, which is gradational upward into sandstone.

The remainder of the formation consists of about 4,800 feet of interbedded sandstone and shale, with minor amounts of pebble conglomerate, a few ash beds, and a few thin coal seams. The sandstone is predominantly light to dark grey, weathers greenish grey to buff, and much of it is crossbedded. Most of the sandstone contains much feldspar; some beds contain abundant minute fragments of lignitic material. The sandstones are comparatively soft and weather readily. The interbedded shales are mainly grey and greenish grey, but include some black carbonaceous beds.

The upper part of the Brazeau formation may be equivalent in age to the Edmonton of areas farther south and east in Alberta, but cannot be separated lithologically from underlying strata.

Strata of Paleocene age (3) occupy about nine-tenths of the map-area, and overlie the Brazeau formation conformably.

The Entrance conglomerate at the base of the Paleocene succession is not well exposed in this area, and does not have the same value as an horizon marker that it has in the Entrance map-area to the southeast. For this reason it has not been mapped separately. Where exposed, the conglomerate has a thickness of between 15 and 20 feet, and consists of closely packed, well-rounded pebbles of quartzite and chert in a sandy matrix. The pebbles are up to 6 inches in diameter, but average about 2 inches.

Overlying the Entrance conglomerate is a thick succession of interbedded sandstone and shales with minor beds of conglomerate and volcanic ash. Some thin coal seams also occur. Much of the sandstone is crossbedded, and is generally rather coarse. It is brown-grey to grey, and weathers greenish grey and brown; brown and buff weathering sandstones are much more common than in the Brazeau formation. Most of the shale is greenish grey and rather clayey. The conglomerate beds consist of pebbles and cobbles of quartzite up to 6 inches in diameter, and range from one pebble or cobble in thickness to beds 5 feet thick. Scattered pebbles from 1/2 inch to 4 inches in diameter are common in nearly all of the sandstone, as are also carbonized remains of wood fragments. Only a few thin coal seams are exposed.

Fossil plants were collected from the localities shown on Twelve Mile Creek, Wildhay River, and Pinto Creek, and were reported to be indicative of Paleocene age.

The most conspicuous structure is a faulted anticline trending northwest parallel to the strike of the formations in the southwest corner of the map-area. Both limbs of the fold consist of strata of the Brazeau formation and, mainly due to erosion of Wildhay River Valley, the upper part of the underlying Wapiabi beds has been exposed along the axis. These Wapiabi black shales are intensely crumpled and faulted. The fold, is asymmetrical; strata on the northeast limb, at the Wapiabi-Brazeau contact, dip 50 degrees to the northeast, whereas beds at the contact on the southwest limb are either vertical or dip at high angles. Dips decrease both towards the northeast and southwest. Intense shearing on the southwest limb, in a zone including the Solomon sandstone and 150 feet of strata overlying it, indicates some movement, and has been interpreted as a small, southwest-dipping thrust fault.

The anticline is flanked on the southwest by an asymmetrical syncline, beds on the northeast limb having steeper dips than those on the southwest limb. The axis of the structure strikes northwesterly roughly parallel with that of the anticline.

To the northeast of the anticline the strata dip to the northeast at progressively lower angles, and in the extreme northeast corner of the map-area are nearly horizontal.

No oil wells have been drilled in the Gregg Lake map-area, and surface mapping shows only one structure of possible interest. This is the northwest-trending anticline in the southwest corner.

Coal seams up to 6 inches thick are exposed in both the Brazeau and overlying formations. Seams of mineable thickness occur at Drinnan to the southeast, and may continue into the Gregg Lake map-area, but if so they have not been found.

MAP 899A

GREGG LAKE
WEST OF FIFTH MERIDIAN
ALBERTA

Scale, 63,360 or 1 Inch to 1 Mile
Miles

Approximate magnetic declination, 26°40' East.

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