

LEGEND

- CRETACEOUS**
UPPER CRETACEOUS
- 3 BEARPAW FORMATION: dark shale with many concretions
 - 2 OLDMAN FORMATION: pale grey shale and sandstone; thin coal seams near top
 - 1 FOREMOST FORMATION: light grey sandstone, brown shale, coal seams and oyster beds

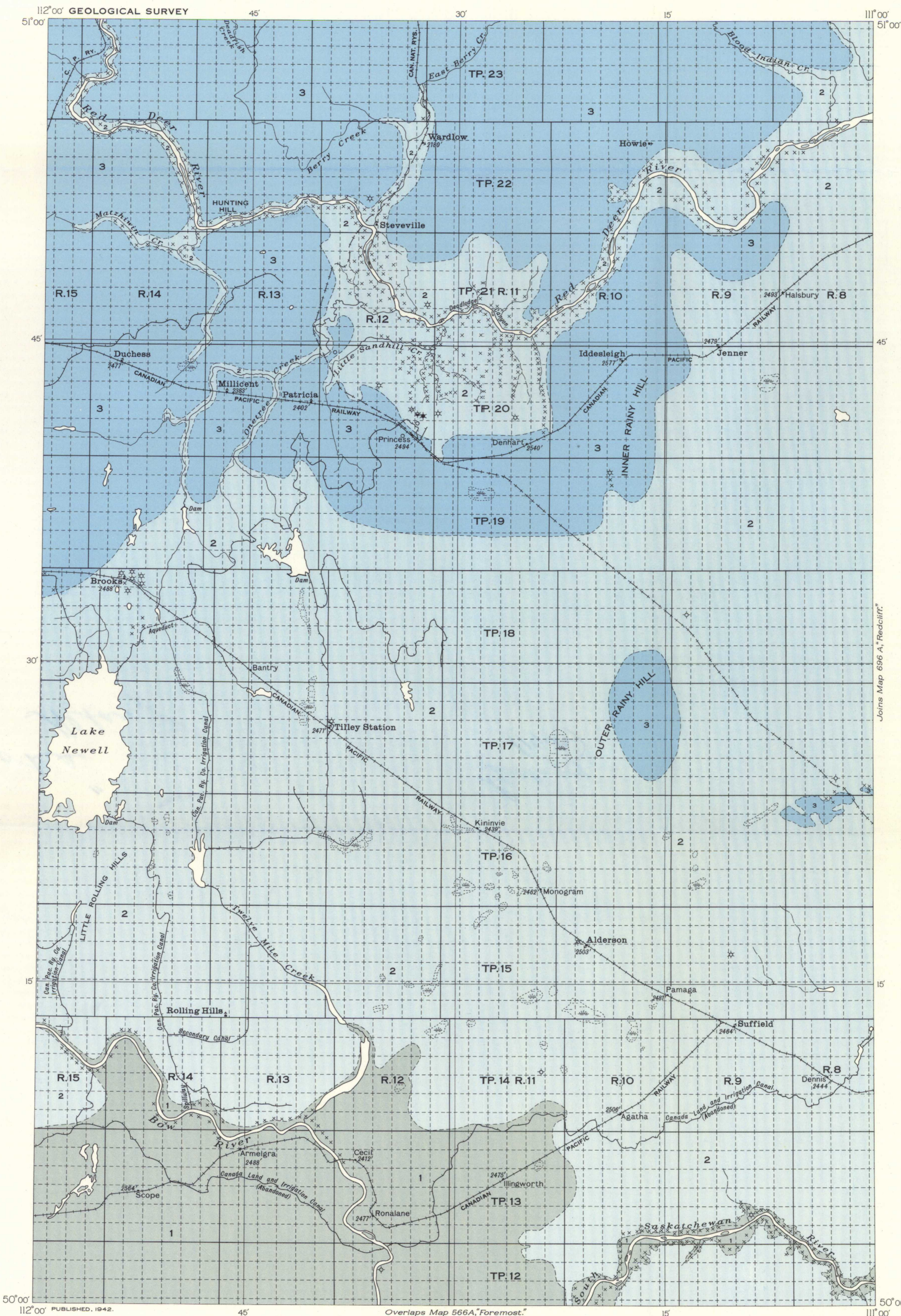
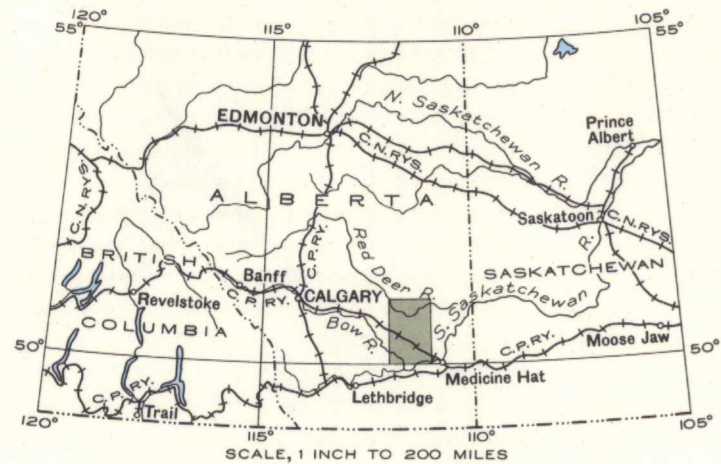
- Areas of rock outcrop..... x
Well (oil and gas)..... *
Well (gas)..... ☆
Well (gas, with show of oil)..... ☆
Well (abandoned gas well)..... ☆
Well (dry hole)..... ☆
Well (location or drilling)..... ○
- Post Office..... †
Railway Station and Post Office..... †
Abandoned railway grade..... —+—+—+—+—
Irrigation canal..... —+—+—+—+—
Township boundary..... —+—+—+—+—
Section line..... —+—+—+—+—
Intermittent stream..... —+—+—+—+—
Marsh..... —+—+—+—+—
Height in feet above Mean sea-level..... 2488'

Geology by J. S. Stewart 1940, 1941.

Base-map prepared by the Topographical Survey, 1941, from Federal Government maps published in 1914 and 1922, revised from aerial photographs taken by the Royal Canadian Air Force in May and September, 1938. Cartography by the Drafting and Reproducing Division, 1942.

DIAGRAM OF TOWNSHIP SHOWING NUMBERING OF SECTIONS

31	32	33	34	35	36
30	29	28	27	26	25
19	20	21	22	23	24
18	17	16	15	14	13
7	8	9	10	11	12
6	5	4	3	2	1



DESCRIPTIVE NOTES

The oldest exposed rocks are those of the Foremost formation. Beneath it, as indicated by rock samples obtained during the drilling of deep wells, lies some 2,250 feet of, chiefly, marine shales of Upper Cretaceous age. The upper part of this assemblage corresponds to the Pakowki formation beneath which lie beds equivalent in age to the sandstones of the Milk River formation typically developed in areas to the south. The lowermost 1,400 feet or so consists of dark grey shales, the base of which marks the base of the Upper Cretaceous. These shales correspond, in large part or entirely, with the Alberta formation as defined in southernmost Alberta. Underlying Mesozoic strata consist of about 385 feet of sandstones and shales that, presumably, represent the Blairmore and Kootenay (Lower Cretaceous) and Fernie (Jurassic) formations of more western areas. The Mesozoic rocks rest on cherty limestones of Palaeozoic age. The Palaeozoic strata have a total thickness of 2,942 feet and consist mainly of limestone and shale. In one well that penetrates the entire section fossil evidence indicates the presence of formations of at least Mississippian, Devonian, and Cambrian ages. The section rests on quartz diorite that is believed to be of Precambrian age.

The FOREMOST formation (1) is mainly composed of brackish water sediments. The base of the formation is not exposed but the Foremost is not less than 250 feet thick. One continuous section on South Saskatchewan River measured 226 feet. The uppermost 100 feet includes much carbonaceous shale and many thin coal seams. One seam of workable thickness is mined at several places to supply a local market. The lower part of the formation consists of brown to grey sandstones and sandy shales with bands of ironstone and several beds made up largely of oyster shells.

The OLDMAN formation (2) is of freshwater origin and is composed mainly of pale grey to buff sandstones and sandy shales with numerous ironstone bands. Thin coaly beds and carbonaceous shales occur in the upper part. The formation is well exposed in the 'Bad Lands' and in the gorge along Red Deer River below Steveville. A complete section, 306 feet thick, is exposed at Rapid Narrows on South Saskatchewan River in the adjoining Redcliff map-area. The Oldman formation is famous for its rich vertebrate fauna and remains of large dinosaurs are common. Most of the material collected so far has come from the 'Bad Lands' along Red Deer Valley below Steveville.

The BEARPAW formation (3) consists of dark grey shale of marine origin. It is the youngest formation in the region and has been eroded from much of the map-area. The best exposures occur along Red Deer Valley but even there the greater part of the formation is missing and in no place is more than the lower 50 feet exposed. The Bearpaw shales disintegrate readily into clay and near the upland surface merge into the glacial deposits. On many steep slopes they are involved with underlying Oldman beds in large slumps of the magnitude of landslides.

The structure of the bedrock is a broad, northeast-trending anticline plunging gently northeastward, the strata having a dip of only a few feet to the mile. Sufficient information is not available to determine structural details but the general dip between widely separate points can be closely measured. Along South Saskatchewan River, from range 10 eastward, a workable coal seam shows an eastward dip of seven feet to the mile. Along the west boundary of range 10, between South Saskatchewan and Red Deer Rivers, the strata have a northward dip of over seven feet a mile, but between township 16 and Red Deer River, the dip lowers to five feet a mile along the same line. On Red Deer River, from Steveville northwest to Hutton Ferry, the base of the Bearpaw has a northwest dip of six feet to the mile. Steeper dips hold over short distances but no subsidiary folds were observed.

Oil and gas in commercial quantity was encountered in the Princess No. 2 well (L.S. 2, sec. 13, tp. 20, rge. 12). The main oil and gas horizon lay at a depth of 3,245 to 3,265 feet, in the upper part of the Palaeozoic limestone. Gas in quantity has been encountered in several wells in the region surrounding this well. It occurs at various horizons below the lower part of the Alberta formation in reservoirs that appear to be, in some cases, local sand lenses in shales and, in other instances, local porous zones in limestone.

MAP 695A
BROOKS
ALBERTA

Scale, 1/4 inch to 4 Miles
Approximate magnetic declination, 20° to 22° East.

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