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Victoria, B.C. May 7

64

Exploratory Drilling Program for a Ground Water Supply
at proposed Institution Site near Parksville.

0239013

General

A field investigation was made of the geology and ground-water possibilities at the proposed institution site south of Parksville, Vancouver Island, and five drill hole sites were selected for an exploratory drilling program near the site. The investigation was made at the request of the Department of Public Works, Victoria, B.C. Most of the institution site area is situated on the south side of Little Mountain and north of Morrison Creek.

Notes on the geology of this area are included at the end of the report.

Comments on Drill Hole Sites Selected (see maps for locations)

The five sites were selected in advance to enable easements to be taken out prior to commencing the drilling program. Information from the first holes to be drilled may however necessitate relocating one or more of the present sites. In discussions with Mr. Simpson, Department of Public Works it is understood that the first hole to be drilled, Site No. 1, is to be at the actual building site. It is also understood that a storage tank will probably be located near the north west side of Little Mountain. Drill hole sites 2 to 5 have been located reasonably close to this side of Little Mountain. It is suggested that the drill holes should penetrate the entire thickness of the Quadra sand and gravel sediments; where present, and the holes should be continued further into impervious clays and preferably down to bedrock. The casing and screen could always be withdrawn to the best sections, at the completion of the hole.

Site No. 2 is located at the northwest corner of the property site. Although Quadra sands and gravel are known to occur immediately to the north, bedrock is however found at or near to the surface both to the east and west of this site. (see map and additional notes on geology) Water for the drilling is available at the present time in a swamp immediately east of the site, and also at the swamp outlet on Bellevue Road, about 1200 feet north of the site ('W' on map).

Site No. 3 is located on the southeast corner lot of Bellevue Road and the Alberni Highway. Quadra sands and gravels are known to occur immediately to the east and west of this site. Well records from sites adjacent to the Alberni Highway (just west of the map area) indicate there

Memo to Mr. V. Raudsepp

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may be a possible thickening of Quadra sediments eastward towards the site area. A spring on Quadra sediments located north of the railway line (see map) is reported to deliver 275,000 gallons per day to the Parksville community. Other smaller springs are located nearby at the Parksville Railway Station. Water for drilling could be obtained from the small creek at W. (see map) or alternatively from the springs previously mentioned.

Site No. 4 is located on the east side of Popham Road adjacent to the transmission line clearing on lot 3(?). Known deposits of Quadra sands and gravels occur immediately to the north of this site. Water for drilling is at present available at this site, where a small creek crosses Popham Road.

Site No. 5 (optional) This site is located to the north east of Little Mountain (see map). Quadra sands and gravels are known to occur downhill from this site near the railway line. Water for drilling would have to be trucked, from one of the locations previously mentioned.

ENGLISHMAN RIVER SITE

The possibility of locating a well on the Englishman River floodplain does not appear to be as favourable as anticipated prior to this field investigation. As I have described in the additional geology notes, bedrock is found to be exposed on the floor of Morrison Creek and at places further downstream in Englishman River (see map). This would indicate a very shallow veneer of silts sands and gravels at many places on the river floodplain. A site here, does not appear to be as favourable as those located near Little Mountain. Access is possible further downstream in Englishman River by the jeep road along the transmission line clearing. A site might be selected near this road on the floodplain, but care would have to be taken to try and avoid placing the site in areas backfilled with silt and clay, or in areas exposed to periodic flooding.

J.C.F.

J. C. Foweraker
Geological Engineer.

JCF/ih

Additional Notes - Geology

The area of the Institution site near Parksville is covered by the G.S.C. Map 1112A, Surficial Geology of Horne Lake and Parksville Map Areas, Vancouver Island, by J. G. Fyles, Memoir 318, 1963.

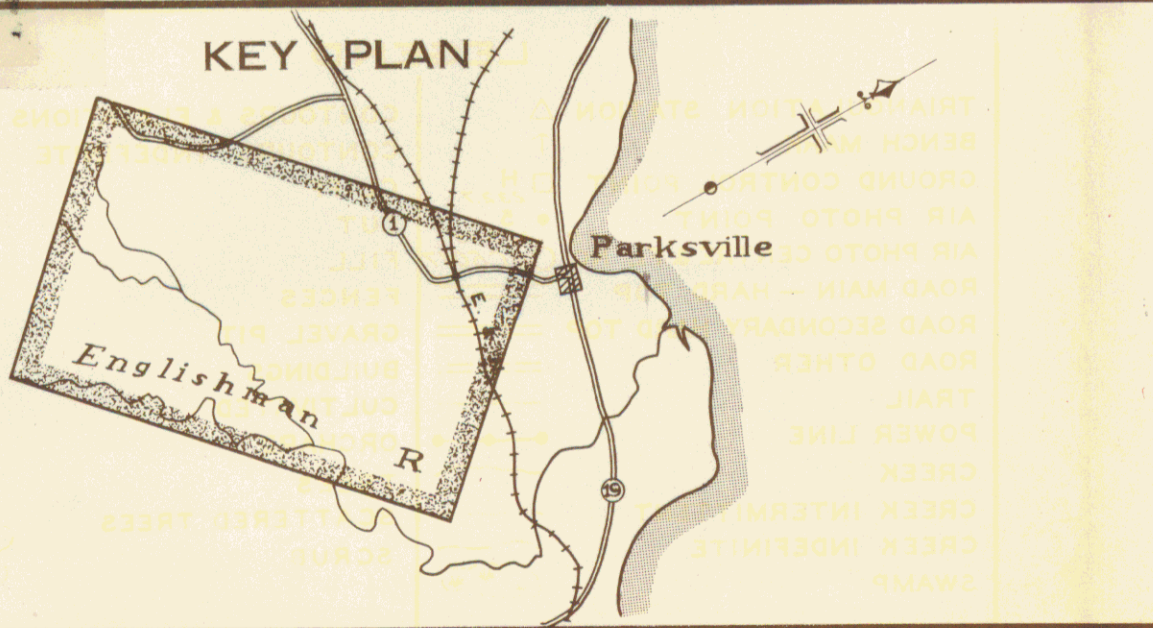
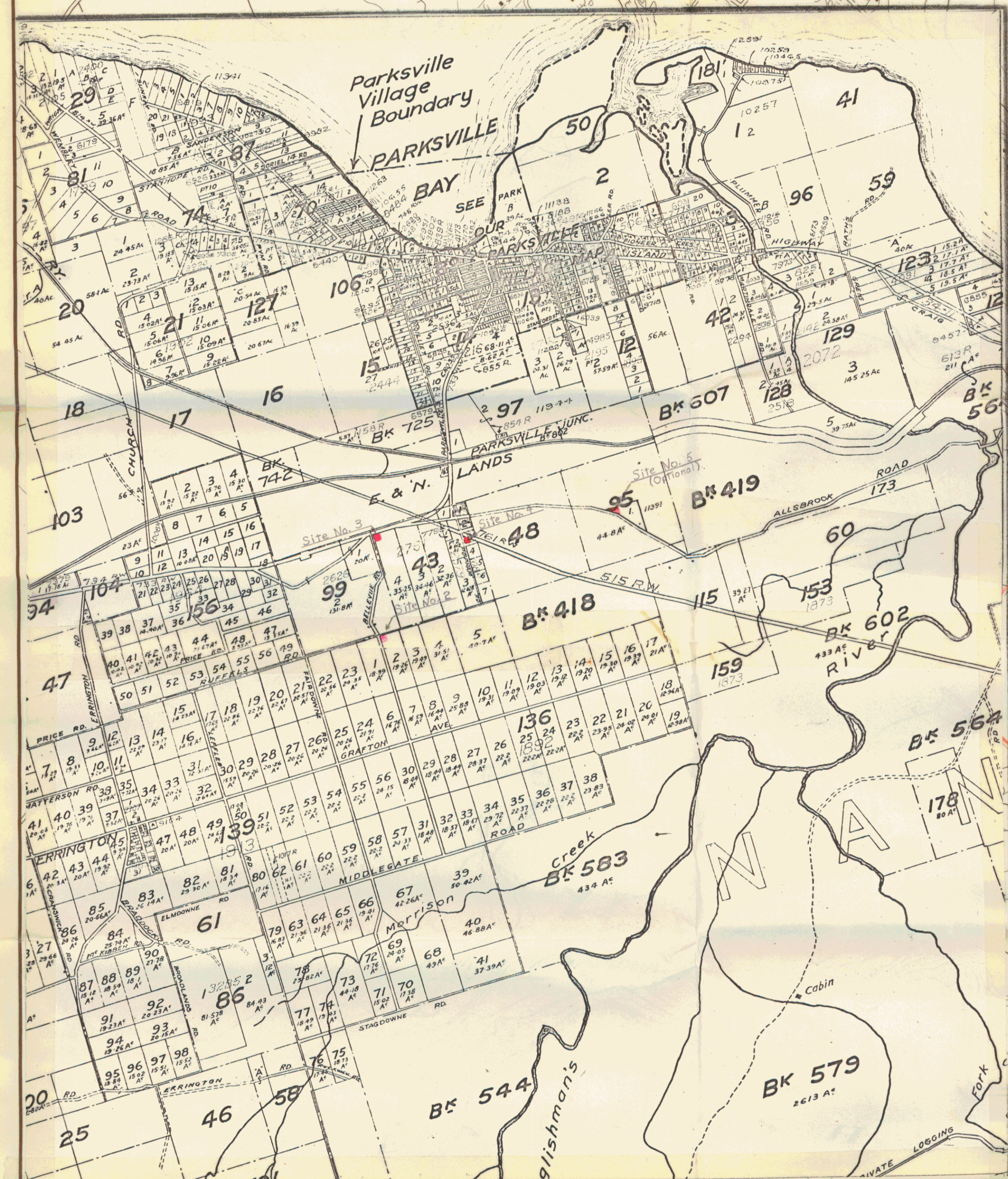
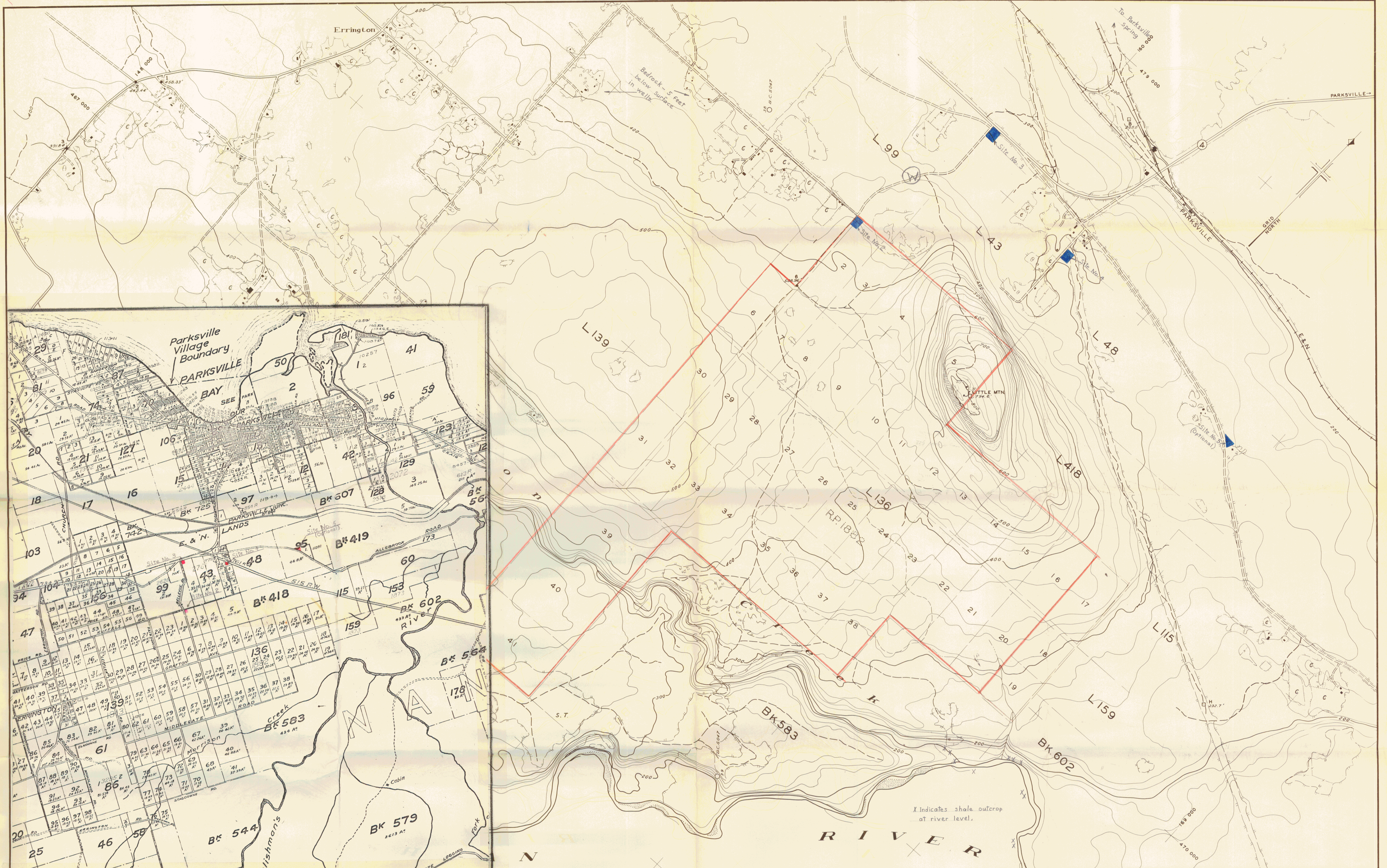
Conglomerates of the Nanaimo Group - Upper Cretaceous age are found to outcrop conspicuously on Little Mountain. Shales of the same Upper Cretaceous age are exposed on the northern slopes of the hill situated on lot 139 to the south west of Little Mountain.

Shales are also found at a depth of five feet in wells located to the north of this same hill. (see map) Shale is also exposed in Morrison Creek, and also outcrops in places downstream on either side of Englishman River. The outcrops occur further downstream than is shown on Fyles' map. In many cases the shale is fairly flat lying.

Most of the institution site area below 500 feet elevation is covered by a marine veneer complex about 5 feet thick, and consists of stony gravel, gravel sand, silt, clay, and stony loam. Thicker marine deposits in silt, clay, stony clay, sand and sandy gravel may be present at proposed drill hole site No. 5, and possibly at sites 2, 3, and 4 also. Underlying the marine deposits are a variable thickness of ground moraine deposits, till, lenses of gravel, sand and silt. Logs from wells located alongside the Alberni Highway, just to the west of the map area indicate the till can be up to 20 feet thick in the area of the selected sites. Underlying the ground moraine deposits, and in places directly beneath the marine veneer are areas of sand and gravel of the Quadra sediments which are the important aquifer in this region. The suggested drill hole sites are selected so as to penetrate this aquifer, if possible. The thickness of the Quadra sediments will vary considerably depending on location. Well records indicate the thickness approaches 80 - 90 feet and the gravel quarries indicate thickness in excess of 100 feet. South of the area the Quadra sands appear to pinch out.



J.C. Foweraker.



LEGEND

TRIANGULATION STATION	△	CONTOURS & ELEVATIONS	— 100'
BENCH MARK	⊕	CONTOURS INDEFINITE	—
GROUND CONTROL POINT	□	CLIFF	—
AIR PHOTO POINT	⊙	CUT	—
AIR PHOTO CENTRE & FL NO.	⊙	FILL	—
ROAD MAIN - HARD TOP	—	FENCES	—
ROAD SECONDARY HARD TOP	—	GRAVEL PIT	—
ROAD OTHER	—	BUILDINGS	—
TRAIL	—	CULTIVATED	—
POWER LINE	—	ORCHARD	—
CREEK	—	TREES	—
CREEK INTERMITTENT	—	SCATTERED TREES	—
CREEK INDEFINITE	—	SCRUB	—
SWAMP	—		

NOTES

GRID ORIGIN - REFERRED TO 48°00' 125°00'

DATUM OF ELEVATIONS - GEODETIC B.M.S.

CONTOUR INTERVAL 20'

AIR PHOTOS - B.C. GOV'T. 1962

GROUND CONTROL BY - K.M. BRIDGE, B.C.L.S.

COMPILED BY: K.ELSH	CHECKED BY: J.C.C.
TRACED BY: R.A.P.	REVISED:

BRITISH COLUMBIA
 DEPARTMENT OF LANDS AND FORESTS
 SURVEYS & MAPPING BRANCH
 TOPOGRAPHIC DIVISION
PARKSVILLE BUILDING SITE
 Scale: 1 Inch = 600 Feet

DATE: MARCH 1964 DRAWING NO. M158