

TR5-199-203

SUPPLEMENTARY REPORT

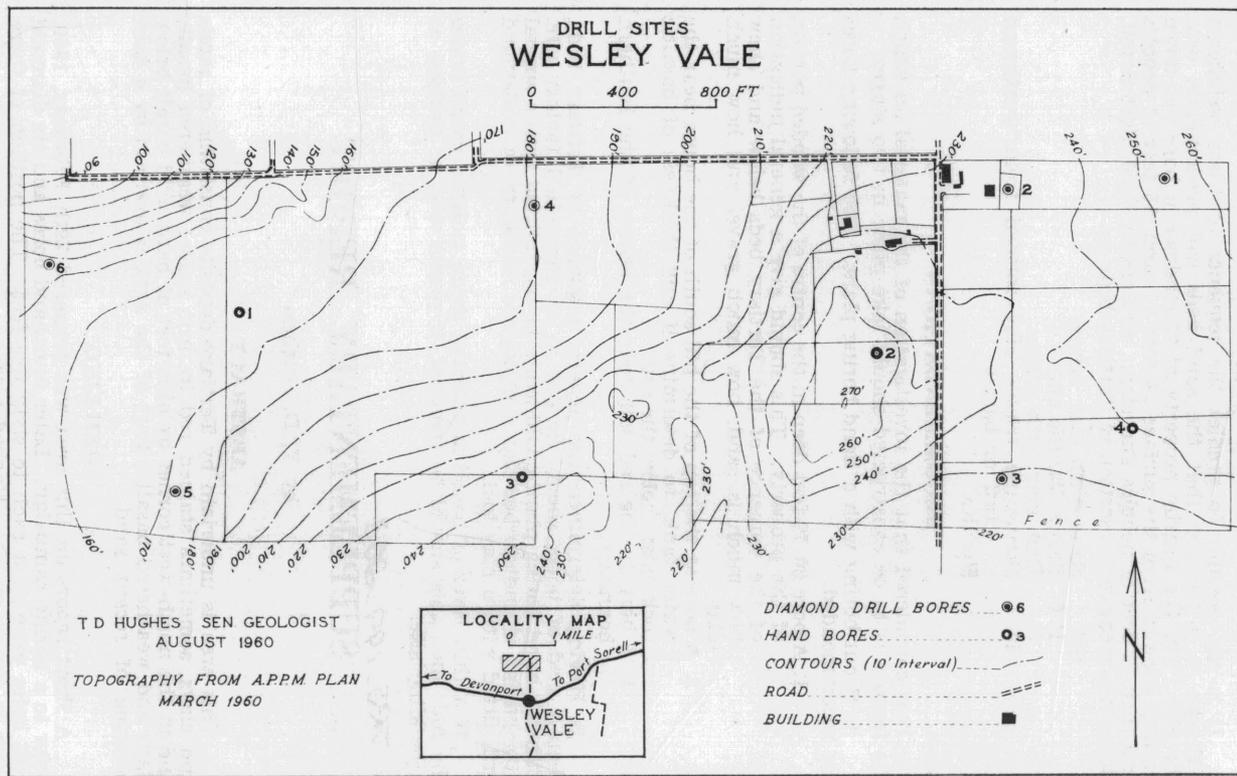
by T. D. Hughes.

ABSTRACT

This area is underlain by Tertiary deposits consisting of sands and clays, sometimes stained red by iron oxide, weathered basalt, and in the north-west corner by nine feet of hard solid basalt below clays and weathered basalt. Part of the area is overlain by a thin covering of recent sand.

DRILLING

A short report on this area was prepared 29th February, 1960, prior to a boring campaign. Later four hand bores and six diamond drill holes were sunk each to sixty-five feet. The position of these bores is shown on the attached plan.



Hand Bores**No. 1—**

- 0'-6" Sandy loam, stained by vegetation and iron oxide.
- 6'-8'6" Mainly sand—stained and partially cemented with iron oxide.
- 8'6"-32' Grey and brown clay—little sand.
- 32'-33' Fine grey sand.
- 33'-46' Brown sand with some clay.
- 46'-47' Grey sandy clay.
- 47'-63' Mottled brown and grey sandy clay.
- 63'-64'6" Brown clay.
- 64'6" Brown and grey fine sand with small basalt chips.

No. 2—

- White and brownish-red mottled clay. Very similar over whole hole except some surface sand in first few feet. No difference at bottom where water came in.

No. 3—

- 10'-10' Grey clay and red sandy clay.
- 10'-13' Red sandy clay.
- 13'-17' Red clay.
- 17'-66' As in No. 2.

No. 4—

- 0'-4' Grey sand.
- 4'-14' Grey brown sandy clay.
- 14'-36' Fine brown sand with grey and red patches—little clay.
- 36'-66' As in No. 2.

Diamond Drill Bores**No. 1.—**

- 0'-8' Red clay.
- 8'-57' Red, white and yellow mottled clay as in hand bores Nos. 2-4.
- 57'-65' Sedimentary clay—pinkish yellow.

No. 2—

- 0'-2' Pink surface sand.
- 2'-6' Brown sand—some clay.
- 6'-9' Mottled clay.
- 9'-11' Coarse brown sand.
- 11'-19' Mottled clay.
- 19'-35' Brown sandy clay.
- 35'-37' Plastic pink clay.
- 37'-65' Mottled clay.

No. 3—

- 0'-2' Surface sand.
- 2'-4' Yellow sand becoming more iron stained.
- 4'-12' Grey, yellow and red sandy clay.
- 12'-20' Yellow brown sand.
- 20'-26' Grey, yellow and red sandy clay.
- 26'-44' Mottled clay.
- 44'-65' Reddish clay—more sedimentary—some sandy patches.

No. 4—

- 0'-20' Grey sand, some brown coloration.
- 20'-24' Grey clay with some brown patches—compacted.
- 24'-26' Light brown sand.
- 26'-29' Clay—first yellow becoming brown and red.
- 29'-35' Brown sandy clay.
- 35'-45' Yellow brown sand with some clay.
- 45'-55' Coarser red brown sand.
- 55'-65' Fine yellow—brown sand and clay.

No. 5—

- 0'-15' Grey sand with some clay, gradually increasing.
- 15'-18' Grey sandy clay.
- 18'-20' Brown clay gradually becoming more sandy.
- 20'-24' Grey sand.
- 24'-30' Yellow sandy clay.
- 30'-45' Yellow, red sand and clay.
- 45'-57' Yellow sandy clay.
- 57'-60' Quartz gravel.
- 60'-65' Greywacke sand with clay, in places cemented with secondary iron.

No. 6—

- 0'-15' Grey sand with gradually more clay.
- 15'-17' Grey white clay—little sand.
- 17'-18' Grey sand—little clay.
- 18'-21' Grey and yellow sand—little clay.
- 21'-35' Mottled clay.
- 35'-46' Weathered basalt.
- 46'-55' Hard solid basalt.
- 55'-56' Hard black baked clay.
- 56'-65' Black sand, tuff and some lava.

Geological Notes

Except for a thin cover of recent sand, thicker in Hand Drill No. 1 and Diamond Drill Nos. 4, 5, and 6, the drilling has revealed typical Tertiary sediments and lava flows. Recognizable basalt only occurs in Diamond Drill No. 6 but the clay described as mottled (white, red, brown and yellow) is probably a basalt weathered in situ and not alluvial clays merely stained by iron oxide solutions derived from basalt, weathered away from above. It is unusual certainly for basalt to weather completely to a clay for over sixty feet as in Hand Drill No. 2 but the resemblance of this material to weathered basalt in Diamond Drill No. 6 is striking. This weathered basalt then occurs in Hand Drill No. 2 (0'-66') No. 3 (17'-66'), No. 4 (36'-66') Diamond Drill Nos. 1 (8'-57') 2 (6'-9', 11'-19', 37'-65') 3 (26'-44') and 6. The sediments, although compacted to a degree, are not consolidated and no rock, as such, occurs. Local cementing by iron oxide, sometimes gives small hard patches. The clay beneath the basalt in Diamond Drill 6 has been baked and hardened and mixed with volcanic debris. Compaction has resulted from the weight of several hundred feet of sediments since removed from the existing surface, but the presence of much sand in the clay prevents the appearance of solid compacted clay beds. It is the beds of pure sand, however, that appear to be the greatest danger in constructional work. These sand beds are good aquifers and under certain seasonal conditions or upon the addition of drainage waters to the

area will become perched water tables and lubricate clay beds above and below. These sandy beds occur in Hand Drill No. 1 (32'-33') and Diamond Drill Nos. 2 (9'-11') 3 (12'-20') 4 (24'-33') 5 (20'-24') and 6 (17'-18'). The distinction between sand and clay beds is elsewhere not definite, much of the sediments being a mixture of the two. The sand beds are not expected to persist at the same level over wide areas.

It should be pointed out that these Tertiary beds, alternating clay and sand, are very similar to those at Lawrence Vale, near Launceston, where serious slips have occurred. However, these Launceston beds dip at fairly steep angles and the topography is itself steep. Here at Wesley Vale, with no steep hillsides the same difficulties should not be experienced. However, designers should bear this fact in mind, make provision for adequate drainage of surface water and avoid heavy buildings in the north-western part of the area, in the vicinity of Bore No. 6, where the slope is sufficient to cause care with these types of strata.

APPENDIX

by G. Everard.

Clays collected by Senior Geologist T. D. Hughes at Wesley Vale are described hereunder.

No. 1 Bore Hole—

Mottled white and reddish and yellowish brown clay.

Under the microscope the white material consists of thin flakes with fibrolamellar structure, low birefringence and refractive index slightly above that of clove oil.

The yellow and red materials are similar and show progressive staining by iron oxides.

No quartz was observed.

No. 1 Bore Hole 62'-65'—

Brown clay with white patches. Under the microscope this material was similar to the foregoing.

No. 2 Bore Hole—

Grey, yellow and reddish brown clay, all containing minute white patches of relatively pure clay mineral.

The grey material contains clay mineral and grains of quartz and feldspar with opaque clay coatings.

The yellow material contains concentric and unoriented fibrolamellar aggregates of material with low refractive index and birefringence. Quartz is present in very small amount or entirely absent. The red clay is similar but more deeply stained by limonite.