Map No. 1

HYDROGEOLOGY OF THE TRURO AREA

NOVA SCOTIA

DEPARTMENT OF MINES, NOVA SCOTIA

1972

SCALE IN MILES 0 1 2 3 4

LEGEND

SYMBOLS

- Watershed boundary
- Bedrock contact
- Fault (approximate, assumed)
- Strike and dip of bedding (45)
- Surficial deposit boundary
- Test hole location and number (Water sample Index No.) T.H. 393 (104)
- Sample location, drilled well, dug well, spring 5, 6, 12
- Sample location of surface water (No. of samples) 86 (12)
- Drill hole (Dept. of Highways) D.H. 6
- Roads (trail)
- Stream
- Lake
- Marsh or swamp
- Building
- Railways
- Contour interval 25 feet 600
- Sink hole or sink-hole topography

Bedrock geology compiled from maps by I. M. Stevenson, 1950, 1951, (11E6), D. G. Benson, 1960, 1961 (11E7) and L. V. Brandon, 1963.
Surficial geology mapped by T. W. Hennigar, 1966, 1967, with reference to soil maps of Colchester County (R. E. Wicklund and G. R. Smith 1948).

CENOZOIC

QUATERNARY

RECENT

- Salt marsh and tidal flat
- Dykeland
- Stream alluvium
- Peat and muck

PLEISTOCENE

- Ice - contact stratified drift
- Kame
- Kame terrace
- Kame field
- Esker
- Outwash sand and gravel
- Lacustrine silt and clay
- Sandy till
- Hummocky moraine
- Clay till

MESOZOIC

TRIASSIC

7 FUNDY GROUP: Wolfville Formation; red sandstone and conglomerate

PALAEOZOIC

CARBONIFEROUS

PENNSYLVANIAN

6 CUMBERLAND AND/OR PICTOU GROUP
Brown, green, and grey conglomerate, sandstone, shale

5 RIVERSDALE GROUP
Mainly grey, fissle, shale; shaly sandstone

MISSISSIPPIAN

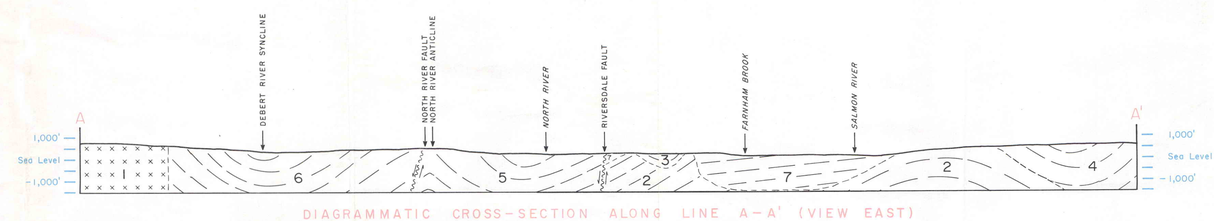
4 CANSO GROUP
Red and grey sandstone, shale

3 WINDSOR GROUP
Grey limestone; red and green shale; gypsum and anhydrite

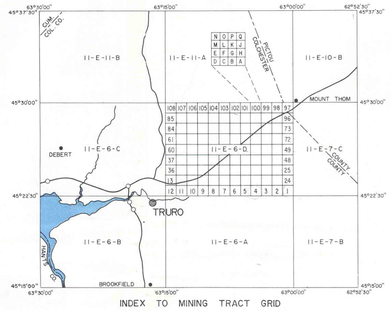
2 HORTON GROUP
Red and grey sandstone, grit, shale

PRE-CARBONIFEROUS (?)

1 Cobequid Complex
Igneous, metamorphic and sedimentary rocks



DIAGRAMMATIC CROSS-SECTION ALONG LINE A-A' (VIEW EAST)



INDEX TO MINING TRACT GRID

TABLE OF WELL AND SPRING DATA*

Index No.	Depth (feet)	Water level (feet)	Yield (igpm)**
1 (118)	60	10.6	7***
2		spring	
3			
4	67		
5			
6	63	8	
7			
8	83	18	
9			
10			
11	130	33	
12		spring	
13			
14	16		
15			
16			
17	9.5	2.8	
18	8.3	5.5	
19			
20	16.2	10.6	
21		spring	
22	12.1	6.2	
23	120		235**
24	204	5	
25		spring	
26	39	12	
27	125	26	
28	160	3	
29			
30	95		
31		spring	
32	12	12	
33	95	15	
34			
35	33	5	
36	77		
37			
38			
39	55		
40	75		
41	18		
42			
43		spring	
44	42		
45	71	12	
46	75		
47	50	11	
48	82	17	
49	25		
50	65		
51	240		
52	50		
53	31	15.2	
54	81	17	
55	65		
56	65		
58		spring	
59	100		
60	205		
61	298	65	55**
62 (123, 126, 132)	57	19	30**
63 (112)	145	40	75**
64	17	8	
65		spring	
66	15		
67		spring	
68			
69	100		
70	90	30	
71	100		
72	22		
73	100		
74	250		
75	121	20	
76	100		
77	50	10	
78	22	19	
79		spring	
80	87		
81			
82			
83	70		
84		spring	
85	140		
95	476		235**
(108)			
96	200	8	15**
97	175	7	3**
98		12	
99	148	7	8**
100	711	27	
101	30	8	200***
(124, 125)			
102	57	19	50***
103	30	6	200***
(127, 129, 130, 131)			
104	50	4	2100***
(134, 135, 136)			
105	30	6	295***
(121)			
106	191	overflow	30**
107	400	overflow	280**
(109, 116)			
110			
111	238	12	250**
(120)			
113			
114	128	24	120**
115	153	22	500**
117		spring	
119	22	8	
120	14		
122			

*chemical analyses are listed in Appendix D for each of the above samples.

** indicates estimated well yield as reported on well drillers' log.

*** yield determined from data collected during pumping test of 24 hours duration or longer.

(118) Indicates Index No. of water sample in Appendix D.

INDEX MAP

NOTES ON THE POTENTIAL FOR GROUNDWATER SUPPLIES

The following outline is a summary of information in Report 72-1. In general the quality of groundwater is good to excellent except in areas underlain by Windsor Group rocks which usually contain groundwater too hard and with too many dissolved solids for most uses. Drilled wells constructed near the Cobequid Bay in any geologic unit may yield water deteriorating in quality with time due to salt water intrusion, such wells may yield brackish water from the start where the surrounding land has low relief. Yields are given in imperial gallons per minute (igpm).

INDIVIDUAL WELLS MAY YIELD FROM 10 to 1,000 + IGPM

(Outwash Sand and Gravel)

Properly constructed individual screened wells developed in outwash sand and gravel aquifers, in areas where recharge is available through a hydrologic connection with a surface source, may yield over 1,000 igpm. The water quality is excellent with respect to both chemical and bacteriological content. These sand and gravel deposits generally consist of coarse, well sorted materials of varying thickness and depth. In areas of limiting saturated thickness the well yields are adversely affected and may only yield little more water than that required for a domestic supply. In the lower portions of the North River and Salmon River flood plains there are wells yielding water high in chlorides. Therefore careful consideration must be given to the type, location and pumping schedule of wells drilled in these areas as protection against salt water intrusion. Waters from these sand and gravel deposits range from about 50 to 150 ppm hardness.

INDIVIDUAL WELLS MAY YIELD FROM 5 to 500 IGPM

(Fundy Group, Ice Contact Deposits)

Wells with a hundred feet of saturated thickness in the Fundy Group should penetrate enough water-bearing sandstone and conglomerate beds to produce between 50 and 300 igpm. Along the south part of this Group it is reported that wells drilled to the basal unit and into the Horton Group encounter a very good water-bearing zone apparently at the contact. High capacity wells in these soft Triassic sediments should be screened to prevent formation collapse and the subsequent pumping of sand. Water quality is generally good, although slightly hard, ranging up to about 250 ppm.

In areas where ice contact deposits have sufficient saturated thickness and a direct source of recharge screened wells may be developed to produce up to several hundred igpm of very good quality water.

INDIVIDUAL WELLS MAY YIELD FROM 2 to 20 + IGPM

(Horton Group; Canso Group; Riversdale Group; Cumberland and/or Pictou Group)

Wells penetrating the coarser sediments of the Horton Group (these comprise the Horton Bluff Formation which consists mainly of sandstones and conglomerates) may yield in excess of 20 igpm, mainly through fracture permeability. The yield of wells drilled into the finer sediments of the Horton Group (those units making up the Cheverie Formation which consists of mainly siltstones and shales) depend almost entirely on the movement of water into the well through fracture flow. As a result the yield may vary from that which is scarcely enough for a domestic supply up to something greater than 20 igpm. The quality of water yielded by the Horton Group is good, with a total hardness of generally less than 100 ppm.

Wells drilled into the Riversdale and Canso Groups, which consist mainly of sandstones and shales, should yield from 2 to over 20 igpm. Both groups of sediments yield water mainly through fracture flow which results in variable yields from area to area. The chemical quality of water from these two Groups is also highly variable. Analyses of samples from the Riversdale Group showed a variation in hardness from 31 to 511 ppm, while samples from the Canso Group varied from about 54 to 200 ppm hardness.

The movement of water through rocks in the Cumberland and/or Pictou Group is mainly along joints and bedding planes. The yield to wells penetrating these water-bearing zones may vary from about 2 to over 25 igpm of good quality water. Hardness ranges up to about 150 ppm while iron is generally less than about .15 ppm.

INDIVIDUAL WELLS MAY YIELD FROM 1 to 10 IGPM

(Cobequid Complex; Windsor Group; Glacial Till)

The fracture permeability in the igneous, metamorphic and sedimentary rocks of the Cobequid Complex is not likely to yield more than a domestic supply to wells. The quality of water should be excellent.

Wells constructed in Windsor limestone, gypsum and anhydrite may penetrate enough fractures and/or solution channels to yield variable amounts of water which may be over 10 igpm. Waters from limestones will be hard but probably usable (hardness 200 + ppm); waters from gypsum and anhydrite will be excessively hard (to a hardness of 1,000 + ppm). Yields from wells in shale vary from 0 (failure) to little more than a domestic supply (1 to 3 igpm) which will be hard and often contain high amounts of chloride (salt) and iron. Undesirable amounts of iron can be expected from groundwaters high in sulphate because such waters corrode well casings and pumps.

Wells constructed in glacial till seldom yield more than a domestic supply. Dug wells constructed in these materials should be deep enough so that the bottom of the well is at least five feet below the lowest expected depth of the water table during a dry summer. Water quality will be quite similar to that of the groundwater from the underlying bedrock.

SURFICIAL DEPOSITS WHICH NORMALLY DO NOT CONTAIN USABLE GROUNDWATER SUPPLIES

(Salt Marsh and Tidal Flat, Dykeland, Peat and Muck)

To accompany Nova Scotia Department of Mines Groundwater Section Report 72-1 by T.W.Hennigar.

Colour Separation by Atlantic Air Survey (1963) Ltd.