



NSCC SHELBURNE CAMPUS COMMUNITY WELL PROJECT

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NSCC Applied Research
August, 2021

Rural residents of southwestern Nova Scotia have been burdened with recurring drought conditions affecting well water supplies since 2016. Climate change modelling for the region has predicted conditions will worsen and this is supported by exponential change evident over the past several years. Prevalent use of shallow dug wells in the region contributes to their tendency to go dry in Summer and Fall and makes them susceptible to contamination also.

Illustrative of what people are enduring is provided by NSCC's involvement in a residential water quality study in the disadvantaged, mostly Black community of South Shelburne in 2018. Twenty-three wells were sampled, twenty of which were dug as opposed to deeper drilled wells. All twenty dug wells tested positive for total coliform bacteria signifying unsanitary water unfit for human consumption. Nine of the dug wells tested positive for *E. coli* indicating recent fecal contamination. Seven of nineteen dug wells to be sampled on September 16 were dry.

In 2019 Elliot Page agreed to provide \$25000 to fund the installation of a community drilled well and to provide up to \$5000 annually for operation and maintenance in perpetuity once he learned of the need in the community. (SaltWire, May 14, 2021). A tentative deal between a community activist group SEED (the South End Environmental Injustice Society) and the Town of Shelburne to facilitate this has since fallen through. However, Elliot Page has reiterated his funding support for any project that SEED and the community deems suitable to relieve water security stress.

Municipal units in eastern Shelburne County have lobbied the Nova Scotia Department of Municipal Affairs and Housing in support of sustainable and long-term assistance for residents with well water shortages in the area. It was directed by the Shared Services Team of the three municipal units of eastern Shelburne County that includes the Municipality of the County of Shelburne, the Town of Shelburne, and the Town of Lockport. A **SaltWire** article reporting on this initiative emphasizes that the "new normal" for many area residents "can be an excessive struggle and financial burden on their quality of life, medical conditions and mental health" (SaltWire, July 22, 2021).

In 2018 NSCC Applied Research realized the existence of an abandoned drilled water well on the NSCC Shelburne Campus once used to support Aquaculture programming. The following Campus well data is derived from Nova Scotia Environment's Well Logs Database:

- Water Well Test Rate: 40 imperial gallons per minute (~260000 litres per day)
- Well Diameter: 8 inches

The test rate of 260000 litres per day is a very substantial yield for a drilled well in the region where yields are often very low and commonly insufficient even for a single dwelling. The industrial size eight-inch well diameter can support the high well yield reported.

The Campus raw well water chemistry has been tested by an accredited laboratory verifying there is no arsenic which is common in the area. In addition, a portable water treatment system designed and commissioned onsite by NSCC Applied Research has proven the water can be

treated to satisfy Canadian Drinking Water Quality Guidelines including for coliform bacteria, total iron, total manganese, and turbidity found present at elevated levels in the raw water.



2018 South Shelburne study area in parentheses. Shelburne Campus well indicated by the pin. (Google, 2020.)

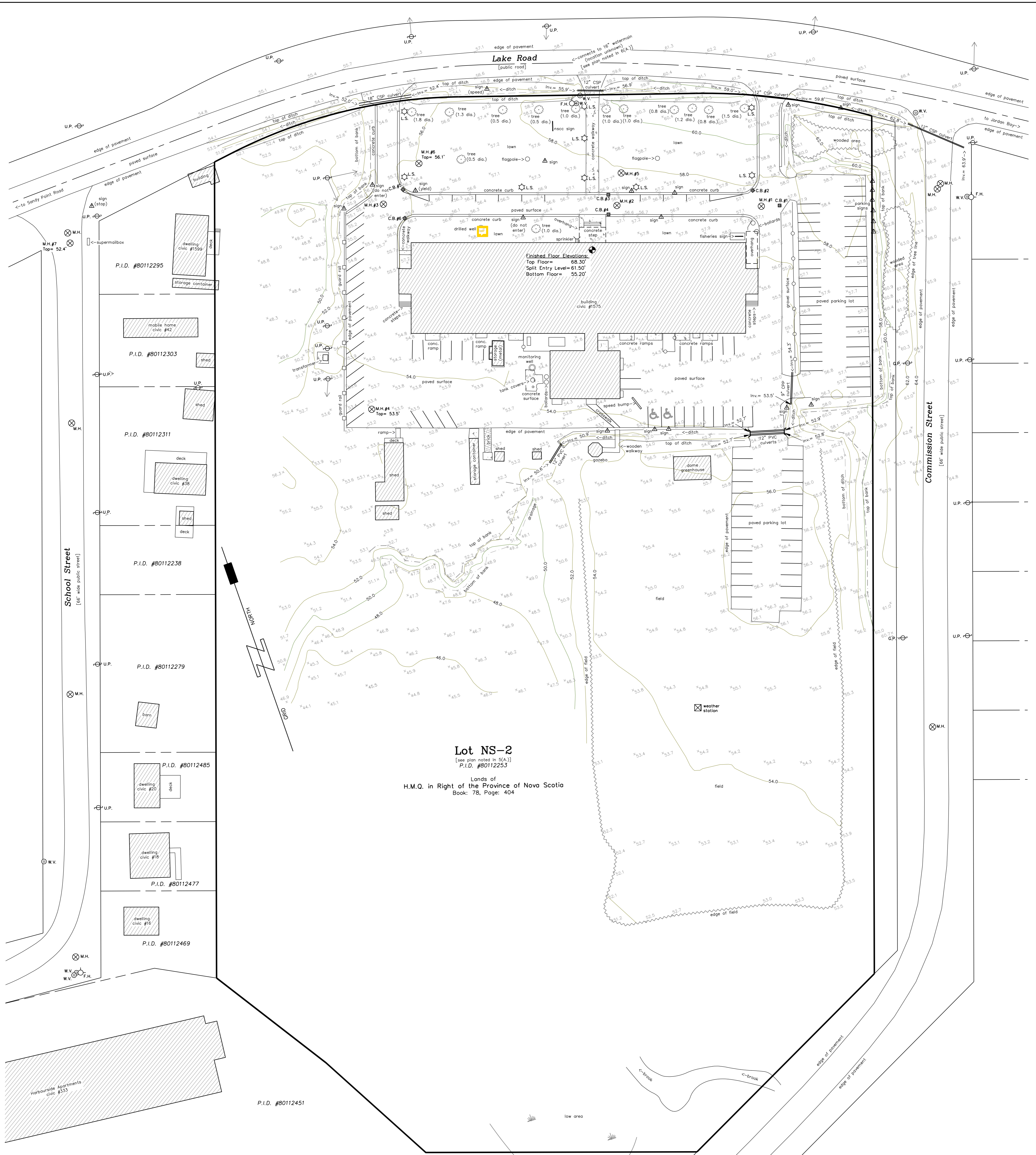
The Shelburne Campus well water has the potential to serve as a community water supply. The water can be sent offsite to a dispensing station to eliminate public traffic flow on Campus. It could be operated on a cost recovery basis as a registered water supply with Nova Scotia Environment with operation and maintenance assumed, for example, by the Shared Services Team of Eastern Shelburne County or other entity. Examples of such dispensing stations are in the Town of Liverpool, the Town of Yarmouth along with a privately-run operation in Ardoise. The funding offer from Elliot Page could be applied as he suggested and there may be potential financing avenues accessible to the Shared Services Team of the local municipal units.

The Shelburne Campus Community Well project is an innovation intended to help alleviate water security stress in the surrounding geographic area. It could also be used to showcase the portable water treatment technology for implementation in other rural and remote communities in southwestern Nova Scotia and elsewhere including First Nations communities and as an emergency measures response mechanism generally. A suitable partnership in this initiative could include the NSCC, SEED, and regional municipal units.

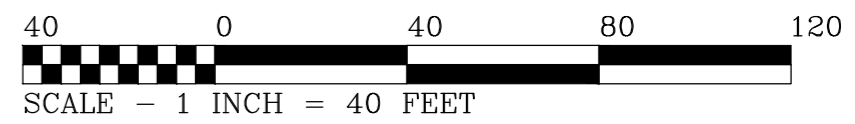
References

SaltWire. (May 14, 2021). *Former Shelburne town dumpsite 'a ticking timebomb in the Black community' says SEED*. Retrieved from: <https://www.saltwire.com/nova-scotia/communities/former-shelburne-town-dumpsite-a-ticking-timebomb-in-the-black-community-says-seed-100587217/> on August 18, 2021.

SaltWire. (July 22, 2021). *Municipality of Shelburne pushing for more provincial support to deal with chronic drought conditions*. Retrieved from: <https://www.saltwire.com/atlantic-canada/news/municipality-of-shelburne-pushing-for-more-provincial-support-to-deal-with-chronic-drought-conditions-100613960/> on August 18, 2021.



Lot NS-2
 [see plan noted in 5(A.3)]
 P.I.D. #80112253
 Lands of
 H.M.Q. in Right of the Province of Nova Scotia
 Book: 78, Page: 404



LEGEND:

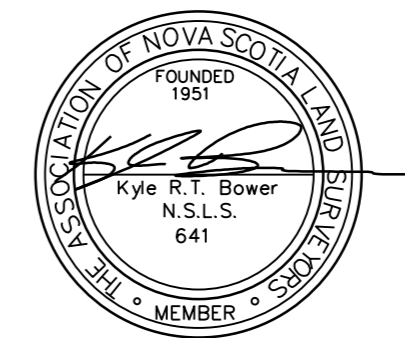
SURVEY MARKER	S.M. ●
NOVA SCOTIA HIGH PRECISION NETWORK MONUMENT	N.S.H.P.N. ▲
LOW AREA	Low Area Symbol
UTILITY POLE	U.P. ○
GUY POLE	G.P. ○
GUY WIRE	G.W. ---
MANHOLE	M.H. ⊗
CATCH BASIN	C.B. ⊗
WATER VALVE	W.V. ⊗
LIGHT STANDARD	L.S. ⊗
FIRE HYDRANT	F.H. ⊗
SIGN POST	Sign Post Symbol
TREE AND DIAMETER	Tree Symbol (1.1 dia.)
SPOT ELEVATION	Spot Elevation Symbol (x 50.00)
N.S. PROPERTY IDENTIFICATION NUMBER	P.I.D. #000000000
GLOBAL NAVIGATION SATELLITE SYSTEM	G.N.S.S. ---
RIGHT OF WAY	R-O-W ---
HER MAJESTY THE QUEEN	H.M.Q. ---
LAND REGISTRATION OFFICE	L.R.O. ---
PIPE ELEVATION	Inv. ---
CORRUGATED STEEL PIPE	CSP ---
CORRUGATED PLASTIC PIPE	CPP ---
POLYVINYL CHLORIDE	PVC ---
CONCRETE	Conc. ---
OVERHEAD UTILITY LINES	Overhead Utility Lines ---
SITE BOUNDARY	Site Boundary ---
EDGE OF GRAVEL	Edge of Gravel ---
SANITARY SEWER	SAN ---
STORM SEWER	STM ---
WATERLINE	W ---
CONDUIT	C ---
CHAIN LINK FENCE	Chain Link Fence ---
BUILDING	Building ---

- NOTES:**
- (1) ALL GRID BEARINGS SHOWN HEREON WERE DERIVED FROM THE NOVA SCOTIA COORDINATE REFERENCING SYSTEM BASED ON THE NOVA SCOTIA 3rd MODIFIED TRANSVERSE MERCATOR PROJECTION, ZONE 5, CENTRAL MERIDIAN 64°-30' WEST LONGITUDE. THE HORIZONTAL REFERENCE FRAME USED HEREON IS BASED ON THE NORTH AMERICAN DATUM OF 1983 (NAD83), EPOCH 2010.0 (G.N.S.S. OBSERVATIONS).
 - (2) ALL ELEVATIONS SHOWN HEREON ARE DERIVED FROM NOVA SCOTIA HIGH PRECISION NETWORK MONUMENT #224562, ELEVATION: 12.79 FEET (CANADIAN GEODETIC VERTICAL DATUM OF 2013).
 - (3) ALL DIMENSIONS SHOWN HEREON ARE IMPERIAL UNITS UNLESS OTHERWISE STATED.
 - (4) CONTOUR INTERVAL IS 2.0 FEET.
 - (5) DURING THE COURSE OF THIS SURVEY, REFERENCE WAS MADE TO THE FOLLOWING SURVEY PLANS:
 (A.) ACKER & DOUCETTE SURVEYING INC. PLAN #062AD2019 DATED JULY 19, 2019.
 - (6) UNDERGROUND SERVICE INFORMATION SHOWN HEREON OBTAINED FROM FIELD SURVEYS AND VARIOUS DESIGN DRAWINGS. CONTACT SHOULD BE MADE WITH ALL UTILITY OPERATORS TO CONFIRM THE SERVICES SHOWN HEREON AND FOR OTHER SERVICES WHICH MAY EXIST BEFORE CONSTRUCTION COMMENCES. REFERENCE WAS MADE TO THE FOLLOWING DESIGN DRAWINGS:
 (A.) SITE PLAN SHOWING WATER LINES - SHELburne WATER SUPPLY FOR ROSEWAY HOSPITAL COMPLEX, SCHOOL FOR BOYS, AND INDUSTRIAL PARK, PREPARED BY NOVA SCOTIA DEPARTMENT OF PUBLIC WORKS, DATED FEBRUARY 16, 1978; L.R.O. PLAN #721
 - (7) DIGITAL DATA SUPPLIED FROM THIS SURVEY MUST BE USED IN CONJUNCTION WITH THIS PLAN. USERS ARE ADVISED TO CONFIRM THE ACCURACY OF INFORMATION NOT EXPRESSLY INDICATED ON THIS SITE PLAN.

SITE PLAN SHOWING TOPOGRAPHIC FEATURES ON LANDS OF
H.M.Q. IN RIGHT OF THE PROVINCE OF NOVA SCOTIA

LOCATED AT
 CIVIC #1575 LAKE ROAD, SANDY POINT,
 SHELburne COUNTY, NOVA SCOTIA

DRAFTED BY TAYLER F. SMITH ON JUNE 3-24, 2019.



— NOTE —
 THIS SITE SURVEY WAS EXECUTED UNDER
 THE DIRECTION OF KYLE R.T. BOWER, NOVA
 SCOTIA LAND SURVEYOR.

SHEET 1 OF 2
 (SITE AND TOPOGRAPHIC SURVEY)

SCALE: 1 INCH = 40 FEET

DATE: JUNE 24, 2019

Job #074-19 CST018AD2019

Acker & Doucette Surveying Inc.
 Nova Scotia Land Surveyors & Professional Engineers

Yarmouth County Office P.O. Box 64 Tusket Nova Scotia, B0W 3M0 phone: (902) 648-2186 fax: (902) 648-0185 www.adsurveying.ca	Shelburne County Office P.O. Box 367 Shelburne Nova Scotia, B0T 1W0 phone: (902) 875-2110 fax: (902) 648-0185 info@adsurveying.ca
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