ASSESSMENT FOR PRESENCE OF KARST TOPOGRAPHY

PROPOSED RESIDENTIAL DEVELOPMENT

PART LOTS 22 AND 23, CONCESSION 2 SCD (KEPPEL)

COMMUNITY OF SHALLOW LAKE

TOWNSHIP OF GEORGIAN BLUFFS, GREY COUNTY

Prepared for:

Sunset View Farms & Investments Ltd.
320091 Sideroad 25
Shallow Lake, ON N0H 2K0

Prepared by:

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Project No. 21-112

August 2025

21-112

August 28, 2025

Sunset View Farms & Investments Ltd.
320091 Sideroad 25
Shallow Lake, Ontario
N0H 2K0

Attention: Mr. Christian Nagel

RE: Assessment for Presence of Karst Topography, Proposed Residential Development
Part Lots 22 and 23, Concession 2 SCD (Keppel)
Community of Shallow Lake
Township of Georgian Bluffs, Grey County

Dear Sir,

This report provides the results of an assessment for the presence of karst topography at the property described as Part of Lot 23, Concession 2 South of Centre Diagonal (SCD) in the geographic Township of Keppel and Part of Lot 1, Judge's Plan 857 (Keppel), now located in the community of Shallow Lake in the Township of Georgian Bluffs. The assessment was carried out in support of a proposal to develop a 27-lot residential subdivision on the 8.1-hectare property.

We trust that this report meets your present requirements. If we can be of additional assistance in this regard, please do not hesitate to contact this office.

GSS Engineering Consultants Ltd.

W. Brad Benson, P.Eng.
Senior Hydrogeologist

WBB/bb

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1.0 INTRODUCTION

1.1 General

This report provides the results of an assessment for the presence of karst topography carried out by GSS Engineering Consultants Ltd. (GSS) on behalf of Sunset View Farms & Investments Ltd. (the Owner) to support a proposed residential development on an 8.14-hectare (20.1-acre) parcel of land located in Parts of Lots 22 and 23, Concession 2 South of the Centre Diagonal (SCD), Geographic Township of Keppel, now in the Township of Georgian Bluffs (hereafter referred to as the Site). The Site is legally described as Part of Lot 23, Concession 2 SCD (Keppel) and Part of Lot 1, Judge's Plan 857 (Keppel). This report also addresses the mapped location of a petroleum well on the Site that was identified in conjunction with the assessment for karst topography.

The Site is located within the defined Settlement Area for the community of Shallow Lake and is zoned as Planned Development Zone (PD). The current use of the Site is predominantly agricultural cropland, with a treed area located in the eastern portion of the Site.

1.2 Background and Planning Requirements

Karst Topography

The southern portion of the Site is located within a mapped karst area identified as a constraint in Appendix A of the County of Grey Official Plan (consolidated August 9, 2024). A karst area was defined in Section 9.18 Definitions of the Official Plan (OP) as follows:

> *Karst Area is applied to those lands which possess or are expected to possess shallow overburden with karst topography. Shallow overburden applies to those lands displaying less than one metre of natural soil over bedrock while karst topography is a geologic feature found in limestone formations which may be fissures, caves, sinkholes and springs. The combination of the two features have the potential of being extremely sensitive, thus requiring further in-depth study through an environmental impact study prior to any development being permitted.*

Section 7.5, Karst Areas, of the Grey County OP provided the following additional information with respect to Karst Areas:

> *Karst Areas are a development constraint area that is shown on Appendix A. Karst topography generally forms on limestone and dolostone plains and is marked by sink or karst holes, interspersed with abrupt ridges and irregular protuberant bedrock that is commonly underlain by caverns and solution-enhanced joints and bedding planes that influence the flow of surface and groundwaters. Due to the nature of its formation, karst terrains are ephemeral and are controlled by past and present climatic and local weather conditions. Due to its geological nature, karst topography presents a potential hazard to human safety which must be mitigated through development controls and approvals.*

Areas shown on the Appendix A to this Plan as being karst topography are considered to be potential development constraint areas. It is recognized that the mapping is approximate and identifies areas of potential environmental constraint to development that must be addressed prior to development occurring. Development shall generally be directed to areas outside of karst topography unless the effects and risk to public safety are minor so as to be managed or mitigated.

Section 7.5, Karst Areas, of the Grey County OP provided the following guidance for addressing Karst Areas:

In areas mapped as 'Karst Area' on Appendix A, it will be necessary for the proponent of any planning application to provide an assessment of the proposed area of development. Often, this can be accomplished by on-site test holes, however in some circumstances broader landscape features may indicate karst and may indicate the need for further assessment/confirmation. Depending on the site and the scale of the development, an environmental impact study, Hydrogeological or Karst Study, completed by a qualified individual may be required.

(1) In determining if the constraint feature is present, the proponent shall dig two test holes in the location of the proposed main building (e.g. in the northwest and southeast corners), one test hole in the location of the proposed sewage system, and one test hole in the proposed location of each accessory structure. The test holes shall be inspected by a qualified municipal or conservation authority official, or a qualified third party consultant, capable of determining karst features. A brief report of the findings is then to be prepared and submitted to the County of Grey and local municipality.

(2) If the test holes reveal shallow overburden, less than one metre in depth, above fractured bedrock, or if broader landform features indicative of karst are observed on the landscape, a study by a qualified individual shall be prepared to assess impacts and mitigation measures relating to the proposed development.

For the development of a single dwelling or accessory building the scale of the potential environmental impact, hydrogeological or karst studies may be limited. However for larger developments, including plans of subdivision, or commercial / industrial developments with the potential for greater impacts, a more robust study will be required by a qualified individual. In areas where full municipal water and sewer services are already installed, the Karst Area test hole/study requirements will not apply for new fully serviced development, save and except for proposed developments that by their nature or operation, could accidentally spill contaminants into sinkholes or disappearing streams.

Karst is included in the definition of hazardous sites in the Provincial Policy Statement, 2020 as follows:

Hazardous sites: means property or lands that could be unsafe for development and site alteration due to naturally occurring hazards. These may include unstable soils (sensitive marine clays [leda], organic soils) or unstable bedrock (karst topography).

Section 5(F), Karst Topography Assessment Report, of the Township of Georgian Bluffs Official Plan (February 2014) stated the following:

> *Where the presence of karst topography has been identified by the County of Grey mapping or by qualified individuals, a preliminary assessment by a 'qualified professional' and at the expense of the proponent will be required in order to support any major new development or redevelopment proposal. The assessment shall first, determine the extent of the feature and secondly, assess the implications of development and propose appropriate mitigation measures. The assessment shall include test pit excavation on the site in the location of the proposed development to determine the depth of surface and subsoil materials and verify the presence and extent of karst topography. The extent of the report and the qualifications of the author are at the discretion of the County of Grey.*

Petroleum Wells

Appendix A of the Grey County OP indicated the presence of a "plugged petroleum well" in the eastern portion of the Site. Another plugged petroleum well was shown at a location approximately 380 m north-northwest of the northwest corner of the Site, in the west half of Lot 23, Concession 2 SCD.

The presence of petroleum wells was discussed in Section 5.8.1 Background of Section 5.8 Oil and Gas Resources in the Grey County OP. Paragraph 1 in Section 5.8.1 noted the following:

> *Planning decisions shall take into consideration the locations of petroleum wells as identified on Appendix A. Petroleum well locations on Appendix A may not be accurate. It is recommended that proponents refer to the Ontario Oil, Gas, and Salt Resources Library for the most up to date information and specific feature details including estimated accuracy of well locations.*

Subsection c) of Paragraph 1 noted that "if possible, buildings should not be constructed directly on top of any known abandoned or plugged petroleum wells".

1.3 Definitions and Scope of Work

In a report by the Ontario Geological Survey entitled “Karst of Southern Ontario and Manitoulin Island”, Brunton and Dodge (2008) provided the following description for karst:

> *Karst is a term used to describe landscapes that display distinctive features resulting from chemical dissolution and precipitation of bedrock known as carbonates (e.g., limestone, dolostone and marble), gypsum and salt. Such landscapes are typified by a wide range of closed-surface depressions, a well-developed underground drainage system and a paucity of surface streams. The highly varied interactions among chemical, physical and biological processes have a broad range of geological effects including dissolution, precipitation, sedimentation, subterranean collapse and/or ground subsidence. Diagnostic features include karren of various forms, sinkholes (dolines), caves, sinking streams and large springs resulting from solutional interactions of varied surface and groundwaters, which may exit to entrenched effluent streams.*

Brunton (2013) provided guidelines for geological and geotechnical investigations in Ontario karst terrains for karst and hazard lands mitigation. That report noted that local knowledge of Quaternary geology, soil materials, and underlying bedrock type and mineralogy/chemistry was necessary to provide an idea of relative susceptibility to karstification and to address the relative karst hazards and risks for a given area. That document further noted that there is no right or wrong answer regarding the optimum thickness of soil and overburden sediments above bedrock that would be required to reduce or eliminate the risk of sinkhole development where there is potential for the interaction of aggressive groundwaters and more susceptible bedrock.

Brunton (2013) noted that a “best practices” approach to addressing karst hazards should be carried out in a staged manner, one that involves a general geologic- and geomorphologic-data-gathering desktop investigation (Phase 1 study) that would progress to a more detailed field-based study (Phase 2) to quantify and qualify identified karst terrain hazards. This assessment was carried out in general accordance with the guidelines for Phase 1, Preliminary Work – Desktop Study and Initial Site Visit (Brunton, 2013) and included the following components:

- Review of current and historical topographic mapping for the vicinity of the Site;
- Review of geological mapping and reports for the vicinity of the Site;
- Review of available provincial water well records for the vicinity of the Site;
- Review of current and historical aerial photographs and imagery of the Site;
- Review of reports and mapping for karst in southern Ontario as it related to the Site; and
- Reconnaissance visits to the Site.

The guidelines indicated that Phase 2 (field-based investigation work) would typically only commence should karst features and/or karst terrain characteristics be identified during Phase 1. To address the requirements of the Township and County Official Plans and to identify the depth to bedrock at the Site, a test pit investigation was also carried out at the Site in conjunction with this assessment.

2.0 PHYSICAL SETTING

2.1 Site Description and Proposed Development

The Site is located on the north side of Princess Street (Highway 6) near the west edge of the community of Shallow Lake, as shown on **Figure 1**. Princess Street is oriented in a roughly northwest-southeast direction adjacent to the Site. For the purpose of identifying directions in this report, north was generally considered to be perpendicular to Princess Street.

Based on the plan of survey for the proposed development (Callon Dietz Incorporated, September 2022), the area of the Site is 8.14 ha (20.1 ac). The majority of the Site is roughly rectangular-shaped, with a relatively narrow strip extending south to Princess Street where there was 34 m of frontage. Most of the Site is located within what was originally Lot 22, Concession 2 SCD of the Township of Keppel, within a parcel described as Lot 1, Judge's Plan 857. A 0.28 ha, rectangular-shaped area on the west side of the south portion of the Site extended westerly into Lot 23, Concession 2 SCD. All of the Site was located within the identified limit of settlement area for Shallow Lake. The Site has no assigned municipal address. Information on Grey County Maps indicated that the current zoning of the Site was Planned Development (PD). The Site Owner also owned the adjacent 24-ha (59-ac) property to the north and northwest of the Site in the west half of Lot 22 and east half of Lot 23.

The proposed development for the Site consists of twenty-seven (27) residential lots, consisting of 26 lots for single-family houses and one lot for a proposed fourplex. The development will be accessible from a through street originating at the current end of Main Street and terminating near the north end of Howe Drive. All of the proposed properties in the subdivision were shown to front onto that street. The development will be serviced with the municipal water supply and individual private sewage systems. A stormwater management pond (SWMP) is proposed for the northeast corner of the Site.

2.2 Land Use and Topography

Current land use in the vicinity of the Site is shown on the aerial image on **Figure 2**. Much of the western portion of the Site (approximately 4.9 ha) currently consists of cultivated farmland, accessed from Princess Street. Review of historical aerial imagery, described subsequently in Section 4.0, indicated that the farmland portion of the Site had been cultivated since prior to 1938. The eastern portion of the Site (approximately 3.2 ha) is currently wooded and was identified as Significant Woodland on mapping from Appendix B of the Grey County OP. Historical imagery dating back to 1938 did not show evidence of cultivation on that portion of the Site, although approximately the northern two-thirds was not treed in 1938 and appeared to be crossed by two stone fencerows.

Contours at 5 m intervals shown on a Ministry of Natural Resources (MNR) 1:10,000 Ontario Base Map (OBM) indicated that the ground surface in the vicinity of the Site sloped down in an easterly direction. Contours at 0.5 m intervals derived for the Site on Ontario AgMaps similarly indicated that the ground surface on the Site declined in an easterly direction, from elevation 241.5 m at the southwest corner, adjacent to the community centre, to elevation 237 m at the northeast

corner, with an average slope of approximately 1 m per 100 m. GSS inferred surface drainage across the Site to be in a due easterly direction.

The Site was bordered to the north and northwest by additional cultivated farmland owned by the Site Owner. The southern portion of the Site was bordered to the west by the Shallow Lake & District Community Centre, which contained an arena, ball diamond, and recreational facilities. Review of historical aerial images indicated that the original arena building was constructed on cultivated agricultural land between 1974 and 1987, most likely in 1977 based on the associated water well record. On the south side of the Site, closest to Princess Street, the west part was bordered by a wellness and fitness centre and the east part was bordered by residential properties fronting onto Princess Street. Aerial imagery indicated that the fitness centre building was constructed between 2015 and 2020 on previously cultivated land. What appeared to be the original farmhouse and ancillary buildings for the Site and associated property were previously located west of the current fitness centre. The houses on Princess Street immediately south of the Site appeared to have been constructed in the period between 1954 and 1974. A 2-storey apartment building, constructed between 1954 and 1964, was located south of the southeast corner of the Site and was accessed from Main Street. A 12-lot residential development on Maplewood Crescent, located on the south side of Princess Street south of the Site, was constructed in approximately 1987. Residential properties and a commercial property were located on the south side of Princess Street, south of the Site. To the east, the Site was bordered by single-family residential properties fronting onto Howe Drive. Review of aerial imagery indicated that the houses on those properties were constructed in the period between 2010 and 2020.

2.3 Surface Water Features

Current and historical topographic mapping was reviewed to identify surface water features in the vicinity of the Site.

A 1945 topographic map (Department of National Defence, 1:63,360) indicated the presence of Park Head Creek flowing in a southerly direction approximately 300 m east of the Site, from McNab Lake to Shallow Lake, similar to the current configuration. McNab Lake was located approximately 1,900 m north-northeast of the Site and Shallow Lake was located approximately 700 m south of the Site. Crossings of Park Head Creek in both east-west and north-south directions were shown on the Concession 1 SCD road allowance, near the northeast corner of Lot 22, Concession 2 SCD. Beyond Shallow Lake, Park Head Creek continued in a westerly direction and discharged into the Sauble River. An 1880 map of Sarawak and Keppel Townships from the Grey County supplement of the "Illustrated Atlas of the Dominion of Canada" (H. Beldon & Co, 1880), available online through the McGill University Library Canadian County Atlas Digital Project, showed McNab Lake north of the Site and Park Head Creek east of the Site with locations and configuration similar to the 1945 topographic map.

On the 1945 topographic mapping, both McNab Lake and Shallow Lake were identified as "drained". The drained condition of those lakes was considered to potentially be related to historical mining of marl, as described in the Ontario Department of Mines Industrial Mineral Report (IMR) 28 "Marl in Ontario" (Guillet, 1969). That report noted that marl was dredged from

the south end of McNab Lake from 1902 to 1911. The lake was reportedly drained at the time of the dredging, but the Grey Sauble Conservation Authority (GSCA) reportedly raised the water level by 0.9 m in 1960 (Guillet, 1969). The same report noted that marl was dredged from Shallow Lake by various companies in the period from 1889 to 1914. The lake was reportedly drained during the dredging operations. Review of relatively recent aerial imagery in conjunction with this assessment indicated that in some years Shallow Lake was partially dry in late summer.

No on-Site watercourses or water bodies were indicated on the 1945 topographic map. The map showed Hepworth Creek flowing in a southwesterly direction approximately 350 m west of McNab Lake in a separate subwatershed. That creek was shown to stop at a location approximately 2,000 m northeast of Hepworth and 2,400 m northwest of the Site, with the notation "stream goes under ground". Approximately 4,300 m west of that location, and 2,500 m northwest of Hepworth, a spring was identified as the source of a west-flowing, unnamed watercourse, discharging into the Sauble River. That watercourse is currently known as Spring Creek. It is currently believed that Hepworth Creek sinks in a suffusion doline (or sinkhole) at a location southwest of Skinner's Marsh and resurges at Spring Creek (Buck, et al, 2003; Worthington, 2009; Cowell, 2020).

On the 2002 topographic mapping (MNR OBM), the closest watercourse to the Site was Park Head Creek, shown approximately 310 m east-southeast of the northeast corner of the Site at the closest point, generally as indicated on the 1945 mapping. A relatively large wetland area was shown on the east side of Park Head Creek. The creek and associated wetland were shown at approximate elevation 223 m east of the Site. As previously noted, surface drainage on the Site was inferred to be in an easterly direction toward the creek. Drainage mapping generated using the MNR Ontario Watershed Information Tool (OWIT) indicated that the entire Site was located within the drainage area for Park Head Creek north of Princess Street (Highway 6). A drainage divide was indicated approximately 250 m west of the Site in Lot 23, where the lands to the west were shown to drain into the Sauble River or associated small tributaries, downstream from the outlet of Park Head Creek.

Drainage features in the vicinity of the Site were highlighted on annotated copies of two 1954 aerial images, available online from the McMaster University Library. A copy of the combined images for the vicinity of the Site is shown on Figure A-1 in **Appendix A** and is discussed in Section 4.0, Review of Aerial Imagery. In addition to a notation at the location where Hepworth Creek "goes underground", the 1954 image showed a similar notation for a portion of Davidson Creek, at a location approximately 2.5 km east-southeast of the Shallow Lake water body. None of the information reviewed indicated that Park Head Creek flowed underground in the vicinity of the Site.

3.0 GEOLOGICAL SETTING

3.1 Quaternary (Overburden) Geology

Quaternary (near-surface overburden) geology in the vicinity of the Site was shown on Ontario Geological Survey (OGS) Map P.2559 (Sharpe and Jamieson, 1982). Marginal notes on the map indicated that regional physiography for the Site was that of a drumlinized till plain, cut into by a series of glacial lakes. Approximately the southern two-thirds of the Site was located within an area identified as exposed bedrock, described as Amabel Formation dolostone (Eramosa Member – bituminous). The exposed bedrock was shown extending off Site to the west, south, and east, with a narrow tongue extending south to the margin of the Shallow Lake water body. The northern portion of the Site was shown to be located within an extensive deposit of Bruce till (stoney, sandy silt) that extended north and west of the Site. Immediately east of Howe Drive, opposite the south half of the Site, the Quaternary geology mapping identified a large glaciolacustrine (deep-water) deposit consisting of silty clay and clay. The seamless, GIS-based, surficial geology mapping for Southern Ontario developed by the OGS, originally in 2003 and revised in 2010 (OGS MRD-128 and MRD-128-REV), was consistent with the 1982 Quaternary geology mapping for the vicinity of the Site. The surficial geology mapping for the vicinity of the Site (OGS MRD-128-REV) is shown on **Figure 3**.

Drift thickness contour mapping (Sharpe, 1982) identified an area of exposed bedrock in the southern portion of the Site corresponding to the Quaternary geology mapping. The overburden thickness over the remainder of the Site was shown to be between 0 and 7.6 m (25 feet). Additional information on the depth to bedrock at the Site is provided in Section 6.0, Subsurface Investigation. Bedrock topography mapping (Sharpe, 1982) indicated the presence of a local bedrock high located approximately 1 km north-northwest of the Site. From there, the bedrock surface on and in the immediate vicinity of the Site was shown to generally slope in a south-southeasterly direction.

3.2 Paleozoic (Bedrock) Geology

Paleozoic (bedrock) geology in the vicinity of the Site was shown on OGS Preliminary Map P.3236 (Armstrong, 1993). The bedrock underlying the Site was mapped as Guelph Formation dolostone, Lithofacies G_c – light grey-tan to brown, tabular bedded. The mapping showed the presence of a "Drill hole site" approximately 140 m north of the Site, in Lot 23. GSS inferred that this drill hole was associated with petroleum exploration well H000032, as discussed subsequently in Section 3.3. To the east of the Site, approximately east of Howe Drive, the 1993 Paleozoic geology mapping indicated the presence of Guelph Formation Eramosa member dolostone, light tan to tan-grey with darker, more bituminous layers. The seamless, GIS-based, Paleozoic geology mapping for southern Ontario published by the OGS in 2007 (Armstrong and Dodge) similarly showed the Site to be underlain by Guelph Formation dolostone. A bedrock outcrop was mapped approximately 120 m south of the southeast corner of the Site. That mapping did not separately identify the Eramosa member. Based on the proximity to the mapped boundary between the Guelph Formation dolostone and the underlying Eramosa dolostone

shown on the 1993 mapping, GSS inferred that the near-surface Guelph Formation stratum on the Site would be relatively thin.

Two diamond drill holes (DDH) advanced by the OGS in 2009 to characterize the early Silurian bedrock stratigraphy in the Niagara Escarpment region (Brunton and Brintnell, 2020) were identified in the vicinity of the Site. OGS DDH 12a-09 was advanced to a depth of 76 m at a location 3.5 km southwest of the Site, on the west side of Bruce Road 10, just north of Park Head. OGS DDH 13-09 was advanced to depth of 52 m at a location 5 km southeast of the Site, on the south side of Highway 6 near the community of Cruickshank. Both drill holes were located in areas where the upper bedrock was shown as Eramosa member bituminous dolostone of the Guelph Formation on the 1993 geological mapping (Armstrong, 1993) and Guelph Formation dolostone on the 2007 regional GIS mapping (Armstrong and Dodge, 2007). Copies of the stratigraphic and geophysical logs for DDH 12a-09 and 13-09 are provided in **Appendix B**.

Historically, there was a long-standing debate in geological references as to whether the Eramosa member was the upper member of the underlying Amabel Formation or the lower member of the overlying Guelph Formation. The 1993 Paleozoic geology mapping referenced above (Armstrong, 1993) included the Eramosa member in the Guelph Formation, as did the 2007 regional bedrock mapping (Armstrong and Dodge, 2007). More recently, Brunton (2009) revised the Early Silurian sequence stratigraphic and sedimentologic framework and characterization of dolostone and calcareous shale rock units along the Niagara Escarpment. Brunton (2009) noted that the Eramosa lithofacies constituted a regionally persistent and distinctive rock unit that acts as a regional aquitard where the basal Vinemount member is present, and therefore recommended that the Eramosa member be elevated to formational rank. Subdivision of the Eramosa Formation into three members was proposed: Stone Road, Reformatory Quarry, and Vinemount, based on fossil content, lithology, and sedimentary structures. The classifications recommended by Brunton (2009) have subsequently been adopted.

The Eramosa Formation is sequentially underlain by the Goat Island and Gasport Formations. The Gasport Formation, together with the lower member of the Goat Island Formation and the underlying Irondequoit Formation, largely represent what was previously identified as the Amabel Formation (Brunton, 2009). Regionally, the Guelph Formation was considered to constitute an unconfined bedrock aquifer while the deeper Gasport Formation was considered to constitute the main confined bedrock aquifer (Brunton, 2009). As noted above, where the basal Vinemount member is present, the Eramosa Formation was considered to act as a regional aquitard (Brunton, 2009).

The stratigraphic log for DDH 12a-09 southwest of the Site indicated that Eramosa Formation bedrock was encountered from surface to a depth of 31.5 m, consisting of approximately 12.5 m of the Reformatory Quarry member and 19 m of the lower Vinemount member. The underlying Goat Island Formation was approximately 15 m thick. Flow profiling data shown on the geophysical log for DDH 12a identified two primary water-producing zones: (1) at the interface between the Eramosa Vinemount member and the underlying Goat Island Ancaster member at a depth of 31.8 m, and (2) within the Irondequoit, Rockway, and Merritton (IRM) Formations at a depth of 65 m. FLUTe hydraulic conductivity data for the Eramosa Formation indicated hydraulic

conductivity values typically between 10^{-4} and 10^{-5} m/s but did not indicate the presence of highly conductive zones.

The log for DDH 13-09 southeast of the Site indicated that beneath approximately 1 m of overburden, the upper bedrock consisted of approximately 3 m of the Vinemount member of the Eramosa Formation and 14 m of the underlying Goat Island Formation. There were no flow profiling data for DDH 13-09. The FLUTe and packer test hydraulic conductivity data for DDH 13 indicated hydraulic conductivity values less than 10^{-5} m/s with no evidence of highly conductive zones in the bedrock. The highest hydraulic conductivity values were measured in the Ancaster member of the Goat Island Formation at a depth of approximately 12.5 m.

Based on the information reviewed, it was considered that the upper bedrock stratigraphy at the Site was likely to consist of a relatively thin stratum of Guelph Formation dolostone, sequentially underlain by the Eramosa Formation (Reformatory Quarry and Vinemount members), Goat Island Formation (Ancaster and Niagara Falls members), and Gasport Formation. The Goat Island Formation was considered likely to be the main water supply unit, with the Eramosa Formation acting as a lower-permeability confining unit.

3.3 Petroleum Well Records

Appendix A of the Grey County OP indicated the presence of a "plugged petroleum well" within the treed area in the eastern portion of the Site, at the approximate location shown on **Figure 4**. Another plugged petroleum well was shown at a location approximately 380 m north-northwest of the northwest corner of the Site, in the west half of Lot 23, Concession 2 SCD.

GSS initially viewed the online petroleum well map maintained by the Oil, Gas and Salt Resources (OGSR) Library to obtain information on the petroleum well shown on the Site. On the OGSR map, a petroleum well at the location on the Site shown in Appendix A of the Grey County OP was identified as Forbes No. 1, with reference number T006737. The well located approximately 380 m north-northwest of the Site was identified as Imperial Oil No. 527 – W. Radb, with reference number H000032. Copies of the well card and plugging record for each well available from the OGSR online well map are included in **Appendix C**. Information from the well cards is summarized in **Table 3.1**, on the following page.

The information obtained indicated that Well H000032, drilled in 1955, was located in Lot 22, although the mapped location shown on the OGSR wells map and in Appendix A of the OP was in Lot 23. GSS considered the mapped location of Well T006737, drilled in 1985, to be suspect as it was within an area on the Site that was shown to be heavily treed on the 1974 and 1987 aerial images. Both wells were identified as abandoned, which the MNR defined as a well which was officially plugged and abandoned.

GSS contacted the OGSR Library and requested copies of the available records on file for Well T006737. In response to that request, 23 scanned pages of documents in PDF format were obtained. Selected pages from that package are included in Appendix C.

Table 3.1: Summary of Petroleum Well Information

Well Card Info	Licence # T006737	Licence # H000032
Well Name	Forbes No. 1	Imperial Oil No. 527 – W. Radbourne No. 1
Operator	J.E. English General Drilling & Well Servicing Ltd.	Imperial Oil Ltd.
County / Township	Grey / Keppel	Grey / Keppel
Lot / Concession	22 / II	22 / IIS
Well Type	Dry Hole	Gas Show
Classification	DPT (Deeper Pool Test Well)	NPW (New-Pool Wildcat Well)
Well Mode	Abandoned Well	Abandoned Well
Target	Ordovician Group (Gull River Fm)	Precambrian Group
Licence Issued	1985-05-08	--
Total Depth (TD) Date	1985-08-09	1955-08-09
Ground Elevation (m)	240.00	240.18
True Vertical Depth (m)	481.50	497.43
Plugging Date	1985-08-19	1955-09-27

Four separate applications were made for Licence # T006737, the original one in 1980 and then three additional applications for deepening in 1982, 1983, and 1985. A copy of the original application is included in Appendix C. The property owner was shown as W. Radbourne and the applicant was Terry Forbes. Also included in Appendix C are copies of the original completion and plugging records.

A legal survey of the well location was included in the information provided by the OGSR. From our review of the survey plan, it was considered that the dimension of 256 m north of the south lot line that was shown on the well documents and recorded in the OGSR database was actually the distance from the boundary line between the Township of Keppel and the former Village of Shallow Lake. The survey plan indicated that the well was located 725.6 m north of the south lot line at Princess Street. That would place the well approximately 250 m north of the Site, in the northeast corner of the current cultivated field on the adjacent property to the north in the west half of Lot 22. The actual well location inferred by GSS is shown on Figure 4. That interpretation was consistent with the sketch plan provided in Appendix C, which showed Forbes #1 to be located in the north half of Lot 22, Concession 2 SCD, north of the Shallow Lake village limits.

The legal survey plan was prepared in 1980 and showed the “new well site” to be 15 m east of an “old well site”, indicating that Well T006737 was drilled near an older historical well. That suggested to GSS that Well H000032, reportedly drilled at a location in Lot 22 in 1955, was located in the northeast corner of Lot 22 near T006737, approximately 450 m southeast of the location shown in Appendix A of the Grey County OP. The inferred location of H000032 is also shown on Figure 4.

Paleozoic geology at the location of Well T006737 was mapped as Guelph Formation dolostone (Armstrong, 1993), the same as the Site. The well was reportedly drilled to a total depth of 1420 ft (432.8 m) and was recorded as a dry hole. There was reported to be a “smell” of gas at 430 m. The driller's log indicated that bedrock was encountered at a depth of 20.3 metres below ground surface (mbgs). The upper bedrock was recorded as grey limestone at 20.3 m, grey and blue limestone at 32.5 m, grey limestone at 41.7 m, grey and brown limestone at 52.6 m, and blue shale at 60.0 m. Water was reportedly encountered in the rock at depths of 8 and 20 mbgs. A geological description of the upper encountered bedrock in the well was recorded by an MNR geologist (D.K. Parker) as shown below:

Formation or Member	Top (m KB)	Top (mbgs)	Elevation (m)
Wiarton/Colpoy Bay	21.3	20.3	219.7
Lions Head	36.0	35.0	205.0
Fossil Hill	48.0	47.0	193.0
Dyer Bay	56.4	55.4	184.6
Cabot Head	61.0	60.0	180.0

Notes: (m KB) – metres below kelly bushing; (mbgs) – metres below ground surface

This description generally followed the Silurian stratigraphy presented by Liberty and Bolton (1971). The upper units (Wiarton, Colpoy Bay and Lions Head members) generally corresponded to what was previously described as the Amabel Formation. The record did not indicate the presence of the surficial Guelph Formation and/or the Eramosa member.

4.0 REVIEW OF AERIAL IMAGERY

Available aerial photographs and imagery obtained for the area of the Site were examined for information on ground conditions and surface drainage in the vicinity of the Site and evidence of the potential presence or absence of karst features. Historical aerial images from 1938, 1964, 1974, 1987, and 1995 were obtained from the National Air Photo Library (NAPL), with 1938 being the earliest identified aerial image. An aerial image from 1954 (original scale 1:63,360) was downloaded from the McMaster University Library website and printed copies of aerial images from 1966 were viewed at the Grey Roots Museum archives. Aerial imagery from the Grey County Interactive GIS Map website and Google Earth was also examined. A list of the images examined is provided below.

Image Date	Original Scale	Source
1938-06-04	1:20,000	NAPL
1954	1:63,360	McMaster University Library
1964-08-06	1:30,000	NAPL
1966	1:40,000	Grey Roots Museum Archive
1974-04-19	1:35,000	NAPL
1987-11-15	1:50,000	NAPL
1995-04-16	1:50,000	NAPL
2006	N/A	Grey County Maps
2010	N/A	Grey County Maps
2012-03-20	N/A	Google Earth
2012-05-14	N/A	Google Earth
2014-02-16	N/A	Google Earth
2014-03-29	N/A	Google Earth
2015	N/A	Grey County Maps
2020	N/A	Grey County Maps
2021-05-28	N/A	Google Earth

On the 1938 image, much of the Site appeared to be cultivated fields. The northern portion of the current treed area was not treed but did not appear to be cultivated; it was possibly covered with grasses or scrub brush. The southern portion of the current treed area appeared to be treed in 1938. Two linear features, possibly stone fencerows, crossed the Site in a northwest-southeast direction. A portion of the current residential area on the west side of the current Howe Drive appeared to be cultivated fields. South of that area, in the area of the first two residential lots, there appeared to be an irregular-shaped bare area with no vegetation. Conditions north of the cultivated area on the west side of the current Howe Drive appeared to be similar to conditions on the eastern, currently treed, portion of the Site. Park Head Creek was visible in approximately

its current configuration within a treed area east of the Site. There were no visible surface water features on the Site or properties adjacent to the Site. A copy of the 1938 aerial image for the vicinity of the Site is shown on Figure A-2 in Appendix A.

The 1954 image was annotated to show water features, roads, and railway lines. Park Head Creek was shown in its current configuration east of the Site. There was evidence of marl extraction in a wetland area on the east side of Park Head Creek. No watercourses were visible on the Site. A copy of the 1954 aerial image showing water features in the vicinity of the Site is shown on Figure A-1. As previously discussed in Section 2.3, that image indicated the presence of westerly-flowing streams flowing underground at locations northwest and southeast of the Site.

No visible changes in surface drainage on or in the vicinity were noted on the 1964 image. The area of cultivation on the Site appeared similar to current conditions. Trees had filled in on the northern portion of the current treed area where trees were not visible on the 1938 image. The current apartment building southeast of the Site had been constructed. The conditions on the 1966 image appeared similar.

The 1974 and 1995 images were both from mid-April, when surface water and groundwater levels are typically near seasonal highs. On the 1974 image, a darker area suggestive of wetter soil was visible on the adjacent property to the west and crossing the middle of the Site, on the north side of what appeared to be a stone fencerow. That suggested the potential for an area of more concentrated overland surface runoff. No other areas of potential surface flow were noted on or in the immediate vicinity of the Site. No areas of potential surface flow were noted on or in the immediate vicinity of the Site on the 1995 image. On the 1974 image, what appeared to be a house or small barn had been constructed immediately east of the Site, at the south end of the current Howe Drive. A small building and associated laneway were also shown at that location on the 2002 topographic mapping (MNR OBM), which was based on 1983 air photography. On the 1987 image, the current municipal arena building had been constructed west of the Site and a ball diamond had been constructed north of the arena. On the 1995 image, the small building located east of the Site that was visible on the 1974 image was gone. No significant changes in on-Site conditions were noted on the 2006 and 2010 images. West of the Site, the south portion of the arena building was expanded to the east between 2006 and 2010.

An image from March 20, 2012 showed the Site conditions with no snow cover in what is typically a period of seasonal high water levels. No evidence of surface water flow was noted on the Site or in the immediate vicinity of the Site. The current Howe Drive had been constructed east of the Site and three houses were under construction on the west side of that street. What appeared to be a drainage ditch had been constructed at the rear of the residential properties on the west side of Howe Drive, along the east side of the Site. The inferred drainage ditch appeared to drain into the road allowance for Howe Drive near the north end of the Site. A copy of that image is shown on Figure A-3.

Images from February 16 and March 29, 2014 showed the Site and surrounding area with snow cover, and what was inferred to be frozen ground conditions. No evidence of groundwater springs was noted on or in the immediate vicinity of the Site. A copy of the March 29, 2014 image is shown on Figure A-4. Park Head Creek east of the Site appeared to be snow-covered in the

February 16 image, suggesting that groundwater discharge was not the primary source of flow in the creek at that location. What appeared to be open water was visible in Park Head Creek in the area north of the north end of Howe Drive and extending northerly beyond the north limit of Lot 21. That suggested the potential that groundwater inflow was a more significant contributor to the creek in that area. A copy of the February 16, 2014 image is shown on Figure A-5.

No significant changes in conditions on the Site were noted on the 2015 and 2020 images. East of the Site, additional houses were constructed on the west side of Howe Drive. South of the Site, the historical farmhouse and ancillary buildings were removed and the new fitness and wellness facility had been constructed.

No evidence to suggest the potential presence of underground streams or sinkholes on or in the immediate vicinity of the Site was noted.

5.0 WATER WELL RECORDS AND HYDROGEOLOGICAL SETTING

Most properties in the community of Shallow Lake are currently serviced by the municipal water supply, identified as the Shallow Lake Drinking Water System. That system is supplied by two drilled wells located on the south side of Highway 6, approximately 1.3 km west of the Site. It was understood that the water supply for the proposed development at the Site will be obtained from the municipal system. The Grey and Bruce Counties Groundwater Study (Waterloo Hydrogeologic, Inc., 2003) indicated that the Shallow Lake Water System was comprised of two bedrock wells, Well #2 constructed in 1996 and Well #3 constructed in 1999. GSS could not identify a well record for Well #2. The record inferred to be associated with Well #3 (MECP Well ID 2514177) indicated that the 200-mm diameter well was drilled to a depth of 61.0 m (200 feet), encountering 2.7 m of till-like overburden underlain by limestone to a depth 56.4 m, where blue shale was encountered. A copy of that record is included in **Appendix D**. Water-producing zones were reportedly encountered at depths of 27.4 to 30.5 m and 54.9 m. The static water level depth was 10.7 m. The recorded groundwater conditions were similar to those recorded on the log for OGS DDH 12a-09, located 2.9 km southwest of the municipal wells. As previously described in Section 3.2, water-producing zones in DDH 12a were encountered at the interface between the Eramosa Vinemount member and the underlying Goat Island Ancaster member at a depth of 31.8 m, and within the Irondequoit, Rockway, and Merritton (IRM) Formations at a depth of 65 m.

Available water well records from the database for the Ministry of the Environment, Conservation and Parks (MECP) water well information system (WWIS) were reviewed to obtain information on the subsurface conditions in the vicinity of the Site. The well record search identified records for thirty-four (34) wells located within approximately 300 m of the Site. Review of the records indicated that one of those wells (MECP Well ID 2516500) was plotted at an incorrect location based on the address recorded on the well record sheet. The locations of the remaining 33 wells, based on the coordinates recorded in the WWIS database, are shown on **Figure 5**. Copies of the associated well record sheets are included in Appendix D. A tabularized summary of the water well record information obtained from the MECP WWIS database for the 33 wells is included in Table D-1 in Appendix D. Well ID 7137287 was for the 2009 abandonment of Well ID 2506177 at the community centre located west of the Site, leaving 32 unique well locations.

All of the wells were completed in the bedrock, which was encountered at depths ranging from 0 to 9.1 m (0 to 30 feet). The total well depths ranged from 13.7 to 75.3 m (45 to 247 feet). In general, the elevation of the bedrock surface followed the ground surface topography and dipped to the east-southeast in the vicinity of the Site.

Nine of the 32 wells reportedly encountered at least 1.5 m of overburden above the bedrock. The WWIS database indicated that an additional well (2502219) encountered gravel and stones to a depth of 9.1 m; however, on the well record sheet that material was described as "loose rock". The overburden was typically described as clay, clay with stones, or hardpan with stones, with a maximum reported depth of 7.6 m (Well ID 2502240). GSS inferred that those soils were till-like with a relatively low hydraulic conductivity. Coarser, granular overburden was reported at three well locations, identified as follows. Well 2053194 was mapped at a location east of the Site and reportedly encountered gravel with stones to a depth of 4.9 m. Well 250139 was shown at a location on the south side of Highway 6, south of the Site, in an area mapped as surficial bedrock

and reportedly encountered silt and gravel to a depth of 2.3 m. Well 7363044 was shown at a location approximately 145 m northeast of the northeast corner of the Site in an area mapped as stoney, sandy silt till and reportedly encountered sand with stones to a depth of 7.3 m.

The upper bedrock was most commonly described on the well records as limestone or brown limestone/brown rock. There were also references to white limestone and grey limestone. Little could be concluded about the encountered bedrock stratigraphy from the descriptions on the well records, with the exception of the shale strata that were reportedly encountered at depths ranging from 65.5 to 69.5 m in three of the wells. The shales were inferred to correspond to the Cabot Head Formation, which was encountered at a depth of 47.8 m (elevation 194.1 m) in OGS DDH 13-09 located southeast of the Site and at a depth of 71.2 m (elevation 151.7 m) in DDH 12a-09 located southwest of the Site. No indication of the thickness of the near-surface Guelph Formation in the vicinity of the Site could be discerned from the descriptions recorded on the well records.

The reported depths at which water was found typically ranged from approximately 18 to 40 m (60 to 130 feet). Only two wells (2502240 and 2508293) reportedly found water at a depth of less than 18 m. Well 2502240 was constructed for the United Church in 1964 and reportedly found water at a depth of 13.1 m, with a static water level depth of 6.7 m. That well was completed at a depth of 13.7 m and was test pumped at a rate of 15 gpm, resulting in 0.3 m of drawdown after 1 hour, indicating a highly conductive zone in the bedrock at that location. Well 2502240 was inferred to be located on the north side of Princess Street, just west of MacInnis Street, approximately 290 m southeast of the Site. The estimated ground surface elevation at the well location was 227 m, approximately 12 m lower than the ground surface elevation at the southeast corner of the Site. Well 2508293 was constructed for domestic use in 1984 and reportedly found water at depths of 9.1 and 18.3 m. The static water level depth was not recorded. The well was completed at a depth of 43.3 m and was test pumped at a rate of 4 gpm, resulting in at least 24.1 m of drawdown after 1 hour. The recommended pumping rate for the well was 3 gpm. The pumping test information indicated that highly conductive zones in the bedrock were not present at that location. Well 2508293 was inferred to be located on the south side of Joynt Street, approximately 200 m south of the Site.

The test-pumping data recorded on the water well record sheets by the drilling contractors at the time of well installation are summarized in Table D-2 in Appendix D. Test-pumping rates were recorded as gallons per minute (gpm), which GSS considered likely to refer to US gallons per minute (USgpm). For wells with a pumping rate and total drawdown recorded on the record sheet, GSS calculated the specific capacity and those values are shown in Table D-2. The data were reviewed for indications of highly conductive zones in the bedrock that would suggest the potential for karstic fractures.

The recorded information indicated that most of the wells produced an adequate supply of water for domestic use, although only three of the wells had a specific capacity greater than 2 gpm/ft. One of those wells was 2502240, which was discussed above. The other two wells were 2502238 and 2503194. Well 2502238 was constructed for domestic use in 1962 and reportedly encountered water-bearing zones at depths of 35.1 and 36.6 m, with a static water level depth of 17.1 m. The well was completed at a depth of 39.3 m and was test pumped at a rate of 12 gpm

for 2 hours, with no corresponding drawdown, indicating a highly conductive zone in the bedrock at that location. Well 2502238 was shown to be located on the south side of Princess Street, near the northwest village limit, which would place the well southwest of the Site at a slightly higher ground elevation. Well 2503194 was constructed for domestic use in 1970 and reportedly encountered water-bearing zones at depths of 18.3 and 23.8 m, with a static water level depth of 6.4 m. The well was completed at a depth of 24.4 m and was test pumped at a rate of 14 gpm for 2.5 hours, with 1.2 m of corresponding drawdown, indicating a conductive zone in the bedrock at that location. The recorded location of Well 2503194 in the WWIS database was approximately 200 m east of the Site, near the west end of Division Street. However, the location sketch shown on the well record suggested to GSS that the well could have been located further to the east, near Cruickshank Street.

The pumping data for the water well records were not considered to be indicative of the presence of an integrated network of solutionally-enlarged, high-permeability channels (i.e., karstification) within the bedrock aquifer(s) in the vicinity of the Site.

6.0 SUBSURFACE INVESTIGATION

6.1 Test Pit Investigation

Eight test pits, designated TP1 to TP8, were excavated at the Site on April 27, 2023 to investigate the shallow soil conditions and identify the depth to bedrock. The test pits were excavated to depths ranging from 0.5 to 1.3 m with a compact excavator supplied and operated by a local contractor. The test pit locations were chosen to provide reasonable coverage across the accessible (non-treed) portion of the Site and are shown on the Site Plan, **Figure 6**. A GSS representative monitored the encountered soil and bedrock conditions in the test pits and collected representative soil samples. The subsurface conditions are described on the test pit logs in **Appendix E**. Photographs of the test pits are included in **Appendix F**. The locations of the test pits were recorded using a hand-held GPS device and the ground surface elevations at the test pit locations were obtained from the topographic plan derived for the Site.

All of the test pits encountered surficial topsoil, ranging in thickness from 0.1 to 0.4 m. Beneath the topsoil, the encountered soils consisted predominantly of a sandy silt matrix with varying amounts of clay, gravel, cobbles, boulders, and broken rock. All of the test pits encountered bedrock, at depths ranging from 0.5 to 1.3 m below ground. At TP1, TP2, and TP7, the upper bedrock was layered and fragmented and could be broken relatively easily with the excavator. TP1 was excavated approximately 0.4 m into the bedrock without encountering sound rock. TP2 was excavated 0.15 m into the upper bedrock before encountering sounder rock. The bedrock surface in TP7 was uneven and the test pit was terminated without encountering solid, impenetrable rock. No open fractures or evidence of solution weathering or widening of fractures was noted in the exposed bedrock. A summary of the conditions encountered in the test pits is provided in **Table 6-1**, below. Reference should be made to the test pit logs in Appendix E for a more detailed description of the encountered subsurface conditions.

Table 6-1: Summary of Information for Test Pits

TP ID	Ground Surface Elevation (m)	Final Depth (mbgs)	Encountered Bedrock		Encountered Soil Strata
			Depth (mbgs)	Elevation (m)	
TP1	240.5	1.1	0.7	239.8	Topsoil, Sandy Silt, some clay, gravel
TP2	239.3	0.8	0.6	238.6	Topsoil, Sandy Silt, some clay, gravel
TP3	238.4	1.1	1.1	237.4	Topsoil, Sandy Silt, some clay, gravel
TP4	238.2	1.3	1.3	236.9	Topsoil, Sandy Silt, some clay, gravel
TP5	238.2	0.6	0.6	237.6	Topsoil, Sandy Silt, some clay, gravel
TP6	238.9	0.5	0.5	238.4	Topsoil, Sandy Silt, some clay, gravel
TP7	239.6	0.6	0.6	239.1	Topsoil, Sandy Silt, some clay, gravel
TP8	240.9	1.2	0.9	240.0	Topsoil, Sandy Silt, some clay, gravel

Notes: 1. Elevations in metres relative to geodetic datum
2. mbgs = metres below ground surface

A sample of the soil encountered between 0.8 and 1.2 m depth in TP4 was submitted to GM BluePlan Engineering Limited (GMBP) in Owen Sound for grain size analysis and estimation of the associated percolation 'T' time. The results of the testing are included in Appendix E. Section 8.7.2.1 of the Ontario Building Code specified that a sewage leaching bed shall not be located in soils having a percolation time of less than 1 minute per cm (min/cm) or greater than 50 min/cm. In the GMBP report, the soil was described as a clayey gravel and the estimated percolation 'T' time was 30 to 40 min/cm. Based on the amount of silt and clay in the sample, the report indicated that it would not be feasible to construct an in-ground leaching bed in such soil. A raised leaching bed constructed of suitable imported material was recommended. Considering the depth to the encountered bedrock, GSS considered that raised leaching beds would likely be necessary for all of the lots in the proposed development, regardless of the soil conditions.

6.2 Inferred Stratigraphic Conditions

The elevations of the encountered bedrock ranged from approximately 240.0 m at TP8 in the southwest corner of the Site to 236.9 at m at TP4 near the northeast corner of the Site. The information obtained from the test pits indicated that the bedrock surface generally dipped toward the east-northeast in the cultivated portion of the Site.

An inferred stratigraphic cross-section through the Site was prepared using the records for two off-Site wells with recorded locations considered to be reliable (2506177, 7363044) near the southwest and northeast corners of the Site. Well 2506177 previously supplied water to the community centre. The location of the former well was obtained from the 2009 abandonment record (7137287). The subsurface conditions are shown on the cross-section presented on **Figure 7** and the location of the section is shown on Figure 6. The inferred bedrock surface beneath the Site is shown on the section on Figure 6, based on the conditions encountered at selected test pits and the records for water wells located southwest and northeast of the Site. The section indicated that the overburden thickness increased slightly across the Site, from approximately 0.9 m at the southwest corner to 3.3 m at the northeast corner. Well 2506177, located approximately 80 m southwest of the Site, reportedly encountered white limestone from near surface to a depth of 5.5 m, underlain by brown limestone. Well 7363044, located approximately 160 m northeast of the Site, reportedly encountered brown limestone beneath the overburden at a depth of 7.3 m. Comparison of the bedrock descriptions to the Paleozoic geology mapping suggested the potential that the white limestone corresponded to the upper Guelph Formation dolostone and the brown limestone corresponded to the underlying Eramosa Formation dolostone. That, in turn, suggested the potential that the thickness of the Guelph Formation across the Site declined from approximately 4 m near the northwest corner to 0 m near the northeast corner.

The static water levels recorded at the time of drilling in wells located southwest and northeast of the Site indicated that the depth to the water table was approximately 14 to 15 m beneath the ground surface on the Site. At Well 2506177 southwest of the Site, the upper water-bearing zone was identified at a depth of 35.1 m (elevation 208.4 m), within the brown limestone. At Well 7363044 northeast of the Site, the upper water-bearing zone was identified at a depth of 21.3 m

(elevation 215.7 m), at the interface of the brown limestone with grey layers (possibly indicative of the Eramosa Formation) and the underlying grey limestone.

6.3 Groundwater Monitoring

In conjunction with the reconnaissance and survey of the Site, GSS identified a125-mm (5-inch) diameter steel casing for what appeared to be a water supply well near the southeast corner of the Site, shown as Well 1 on Figure 6. A 50-mm diameter PVC monitoring well with a compression cap had been installed inside the steel casing. As a result, the well was not suitable to be used for water supply. GSS sounded the PVC monitoring well to a depth of 24.4 m below ground surface. The annular space between the PVC pipe and the steel casing had been filled to a depth of 1.65 mbgs. Based on the well location, casing diameter, and sounded depth, no water well record could be associated with the identified well. The reason for installing a monitoring well inside the steel casing was not apparent.

Groundwater Levels

GSS measured the groundwater level in the monitoring well on four occasions, as summarized in **Table 6-2**, below. The measured groundwater levels ranged from a high of 14.94 mbgs (elevation 224.85 m) on May 6, 2024 to a low of 18.23 mbgs (elevation 221.55 m) on September 27, 2024, a variation of 3.3 m. Based on the depth of the monitoring well, the measured water levels were considered to be indicative of the water table elevation. Based on the water level data, GSS inferred that the depth to the water table on the Site was typically of the order of 15 m or more below ground surface.

Table 6-2: Groundwater Level Monitoring Data for Well 1

Date	Water Level (mbgs)	Water Level Elevation (m)	Comment
Sep 28 2023	17.81	221.97	--
Nov 20 2023	15.84	223.94	Collected Sample
May 6 2024	14.93	224.85	Collected Sample
Sep 27 2024	18.23	221.55	--

Regional scale mapping for the bedrock aquifer in the vicinity of the Site (Turner, 1978) indicated that the groundwater flow direction was generally in a westerly direction. The identified wellhead protection area for the municipal wells located west of the Site generally indicated that the groundwater flow direction was in a west-southwesterly direction; however, the limit of the identified groundwater capture zone (WHPA-D) extended only 690 m east-northeast of the most easterly well. As noted in Section 3.1, bedrock topography mapping indicated the presence of a local bedrock high located between the municipal wells and the Site, and the watershed mapping referenced in Section 2.3 indicated the presence of a local watershed divide west of the Site.

Comparison of recorded static water levels for selected water wells in the vicinity of the Site, including the wells shown on the section on Figure 7, indicated that locally the groundwater flow

direction in the bedrock aquifer in the vicinity of the Site was in a southeasterly direction, toward Park Head Creek.

Groundwater Quality

On November 20, 2023 and May 6, 2024, GSS collected groundwater samples from Well 1 for analysis of a standard package of inorganic water quality indicator parameters. The samples were collected using a dedicated Waterra inertial pump and length of 13-mm ID polyethylene tubing installed in the well. In excess of three well volumes of water were purged from the well prior to collecting the initial sample and in excess of two well volumes of water were purged prior to collecting the second sample. The samples were collected from the tubing into appropriate bottles provided by the analytical laboratory. Sub-samples for analysis of metals were filtered in the field using disposable, 0.45 micron in-line filters. The samples were submitted to Caduceon Environmental Laboratories in Richmond Hill for analysis. Copies of the laboratory certificates of analysis are included in **Appendix G**. The analytical results are summarized in **Table 6-3,** below. For context, the results were compared to the relevant Ontario Drinking Water Quality Standards (ODWQS).

Table 6-3: Groundwater Quality Data for Well 1

Parameter	Units	ODWQS	20-Nov-2023	06-May-2024
pH	pH Units	6.5 - 8.5 (OG)	7.93	8.82
Conductivity	µmho/cm	-	627	569
Alkalinity (as CaCO3)	mg/L	30 - 500 (OG)	294	251
Hardness (as CaCO3)	mg/L	80 - 100 (OG)	**353**	**288**
Chloride	mg/L	250 (AO)	10.7	6.9
Fluoride	mg/L	1.5 (MAC)	0.3	0.3
Nitrite (N)	mg/L	1.0 (MAC)	<0.05	<0.05
Nitrate (N)	mg/L	10.0 (MAC)	3.92	5.87
Sulphate	mg/L	500 (AO)	17	12
Potassium	mg/L	-	2.8	2.2
Sodium	mg/L	200 (AO)	8.8	2.2
Calcium	mg/L	-	83.6	66.1
Magnesium	mg/L	-	35.0	29.9
Iron	mg/L	0.3 (AO)	**1.24**	<0.005
Copper	mg/L	1 (AO)	0.003	<0.002
Manganese	mg/L	0.05 (AO)	**0.182**	<0.001
Zinc	mg/L	5 (AO)	0.087	0.017
Total Dissolved Solids	mg/L	500 (AO)	353	296

Notes: 1. OG – Operational Guideline; AO – Aesthetic Objective; MAC – Maximum Acceptable Concentration
2. Concentrations higher than a standard are shown in **bold** and underlined.

The total dissolved solids (TDS) concentrations in the samples were relatively low and were considered to be consistent with relatively shallow groundwater that was not substantially impacted by surface activities such as road salting. The iron and manganese concentrations

were elevated in the first sample but not in the second sample. For most parameters, the analyte concentrations were lower in the second sample when the groundwater level was higher.

The water chemistry for the two groundwater samples collected from Well 1 was compared using a Piper diagram, a copy of which is included in Appendix G. The Piper diagram provides a comparison of the major anion and cation concentrations for each sample and can be used for assessing the sources of the constituents dissolved in the water. As shown on the diagram, both samples plotted in approximately the same location, indicating similar chemistry and a similar water source. The samples were classified as calcium – bicarbonate type water, which is typical of shallow, fresh groundwater.

7.0 SITE RECONNAISSANCE

In 2023, GSS made reconnaissance visits to the Site on March 23 and April 27, during the typical period for seasonal high water levels and surface water flow. At the time of the March 23 visit there was some patchy snow cover in parts of the Site. Another reconnaissance visit was made to the wooded area in the eastern portion of the Site on August 21, 2024. A final reconnaissance visit was made to the Site on March 20, 2025, during the period of the spring freshet. On that date, the cultivated fields on the Site were largely bare, the eastern margins of the fields near the wooded area were snow-covered with remnant drifts, and there was a thin, discontinuous snow cover in the wooded area. An aerial image of the Site from 2021 is shown on Figure 2. Selected photographs from the Site reconnaissance are provided in Appendix F. A summary of observations from the site visits is provided below.

- No structures were located on the Site.
- No surface watercourses, flowing water, or standing water were observed on the Site in 2023 and 2024. On March 20, 2025, a few, isolated depressions in the relatively hummocky, wooded area were noted to contain small ice-covered areas that indicated the potential presence of shallow standing water, likely from snow melt (Photo 6). No evidence of flowing water was observed.
- The majority of the Site consisted of cultivated fields, which were not planted at the time of the spring site visits. No exposed rock was observed within the cultivated fields.
- A partially grass-covered pile of stone (broken rock and boulders) and earth was located near the southwest corner of the Site. The pile was located in the area where the west boundary of the Site extended approximately 20 m into Lot 23. There was visible evidence of the pile in aerial images extending back to 2006. Earlier images (1938, 1966) indicated the presence of a structure similar to a small barn at the approximate location of the soil and rock pile. In the 1974 image there appeared to be only a foundation at that location and the structure was not visible on the 1995 image.
- A hedgerow and/or inferred stone fencerow that was visible crossing the Site on a 2021 aerial image, and another hedgerow/fencerow further to the north, were not present. There was evidence to suggest that those features had been recently removed. Partial, low stone fencerows were observed near the property boundary and tree line in the southern portion of the Site, near TP1, and within the treed area, running in an east-west direction, just north of TP2 (Photo 7).
- Within the treed area, the ground surface was hummocky, with multiple small depressions. The tree cover was primarily deciduous with little undergrowth at the time of the Site visits (Photo 5). The ground surface was leaf-covered. No defined channels or watercourses were observed and no standing water was present, except as noted above for March 20, 2025. There were numerous large rocks and boulders, but no obvious exposed bedrock was observed. The large boulders were most prevalent on the higher ground near the south Site boundary within the treed area.

- The bedrock surface within the treed area was inferred to be near surface. At selected locations in low areas, shallow holes were advanced manually with a Dutch auger in August 2024 and met refusal at depths ranging from 0.5 to 0.8 m. At some of those locations, the encountered soils consisted of surficial organic material underlain by silty sand till and at other locations predominantly organic soils were encountered. No fissures or sinkholes were observed. At one location, a hole approximately 0.15 m in diameter was observed with several smaller holes nearby. The soils at that location were predominantly organic and the holes could have been created by burrowing animals.
- A shallow ditch was observed running in a south to north location immediately east of the Site, at the rear of the residential properties fronting onto Howe Drive. A deeper, east-west oriented ditch was observed extending easterly to Howe Drive, near the northeast corner of the Site. Based on review of topographic mapping and aerial images, GSS inferred that those ditches were constructed in conjunction with the residential development on the west side of Howe Drive, adjacent to the Site. No water flow or standing water was observed in the ditches during any of the site visits.
- The observed conditions suggested that much of the snow melt and stormwater runoff would infiltrate widely across the Site, without channelization or concentration in a few areas. The observed hummocky conditions in portions of the treed area on the east side of the Site indicated a potential for runoff to collect in low areas and dissipate by infiltration; however, it was considered likely that those events would be sporadic.

8.0 POTENTIAL PRESENCE OF KARST TOPOGRAPHY

8.1 Relevant Mapping and Reports

Grey County Mapping

A mapped karst area identified in Appendix A of the Grey County OP encompassed approximately the southwestern 70% of the Site and extended off Site to the west, south, and east, as shown on Figure 4. A karst area was defined in Section 9.18 Definitions of the OP as follows:

> *Karst Area is applied to those lands which possess or are expected to possess shallow overburden with karst topography. Shallow overburden applies to those lands displaying less than one metre of natural soil over bedrock while karst topography is a geologic feature found in limestone formations which may be fissures, caves, sinkholes and springs. The combination of the two features have the potential of being extremely sensitive, thus requiring further in-depth study through an environmental impact study prior to any development being permitted.*

The Approved Assessment Report for the Grey Sauble Source Protection Area (2015) referenced a 2005 study on karst in the planning region by Waterloo Hydrogeologic, Inc. (WHI), which reportedly contained a GIS database of karst areas. GSS recently obtained a copy of that report, entitled "Technical Memorandum: AEMOT Study Results and Grey & Bruce Counties Karst Mapping" (WHI, 2005), and reviewed the report for information relevant to the Site. The stated objective of the karst mapping portion of the study was to develop a complete database of karst physiographic information specific to groundwater flow and contaminant susceptibility for karst conditions not previously mapped in the combined Grey and Bruce Counties and AEMOT study area. That information was then used to reassess groundwater vulnerability mapping. The reported methodology included compiling approximately 200 OBM topographic maps (1:10,000 scale) for the study area and examining the maps for sinkhole/karst areas, combining all sources of information into a comprehensive database of karst areas, and carrying out an initial ground-truthing of the identified areas by inspecting them in the field. Karst areas were reportedly labelled in the database as one of four features: sinking stream, land depression, open pit, or swamp. The correlation of open pits and swamps with karst features was not explained in the report and was not apparent to GSS.

GSS examined the figures and field verification sheets that accompanied the 2005 WHI report and noted that no karst features were identified on or in the immediate vicinity of the Site. The closest ground-truthed features to the Site were two mapped sinkholes located immediately north of the former railway right-of-way on the north side of the Shallow Lake water body, approximately 700 and 950 m south-southwest of the Site. A third "sinkhole" was shown at a location adjacent to Sideroad 25, 1.1 km northwest of the Site, and was identified as an elongated feature with no water or exposed rock in a crop/pasture area that was observed from the road and was in line with other sinks in the area that were not accessible. A fourth karst feature that coincided with a small, mapped wetland was shown at a location 1.3 km east-northeast of the Site, on the east side of Grey Road 170, but that feature was not ground-truthed.

OGS Mapping and Reports

In 2008, the OGS produced a report (Groundwater Resources Study 5) on the compilation and investigation of the nature of karst throughout southern Ontario and Manitoulin Island (Brunton and Dodge, 2008). The key objectives of the study were to: 1) highlight the distributions and occurrences of key karst features, including cave types, sinkholes, disappearing streams, and various forms of karren; and (2) place the variety of karst landforms within a regional stratigraphic-sedimentologic, geomorphologic, and hydrogeologic context that enables the nature of key bedrock aquifers to be examined in a karst context.

The mapped karst area identified in Appendix A of the Grey County OP coincided with an area mapped as "known karst" on GIS mapping derived from the OGS report "Karst of Southern Ontario and Manitoulin Island" (Brunton and Dodge, 2008). That report produced a karst map of Southern Ontario that displayed karst in the form of four colours: red areas represented known karst; orange regions represented inferred karst; yellow regions depicted areas of potential karst; and beige areas represented areas of unknown or no observed karst. The area mapped as known karst that encompassed the Site coincided with an area mapped as Paleozoic bedrock in the seamless surficial geology mapping produced by the OGS (MRD 128-Rev, 2007), as shown on Figure 3 of this report. The area mapped as Paleozoic bedrock, in turn, coincided with an area similarly mapped as Paleozoic bedrock on the 1982 OGS Quaternary geology mapping for the Wiarton area (Sharpe and Jamieson, 1982). That indicated to GSS that the area of known karst identified on the Site was based on the presence of surficial, carbonate bedrock from field mapping carried out in 1977.

The OGS karst report (Brunton and Dodge, 2008) noted that the colours shown on the mapping depicted confidence levels for karst features to be present within specific Paleozoic sedimentary rocks across the study area. Regions coloured in red were noted to represent areas of known karst, reportedly determined either by OGS staff and/or from published reports. Those karst features were reported to include caves, sinkholes, and/or disappearing streams and karst springs, and, to a lesser degree, various forms of karren (karst pavements). The closest mapped karst feature to the Site was the disappearing stream for Hepworth Creek at a location known by GSS to be approximately 2,400 m northwest of the Site, as described in Section 2.3. The karst mapping (Brunton and Dodge, 2008) showed that karst feature at a location within the Sawmill Nordic Centre ski area east of Hepworth, approximately 650 m southwest of the actual location where the stream disappears underground. The entire area encompassing both the actual and mapped locations of a known karst feature (disappearing stream) was identified on the karst mapping as potential karst, presumably because the Quaternary geology mapping indicated that the depth to bedrock was greater than 1 m.

The GIS-based OGS karst mapping for the vicinity of the Site also showed "representative photographs of various observed karst features" for a location identified as “Shallow Lake Hepworth” and mapped within the Shallow Lake water body, near the north edge, approximately 800 m south of the Site. The description for the four undated photographs was "Sinkholes and Disappearing streams". On August 21, 2024, a GSS representative visited the Shallow Lake water body and observed the lake to be largely dry. A shallow stream flowed across the lakebed in a westerly direction and was observed to disappear underground near the mapped location of

the OGS photographs (see Photo 8 in Appendix F). Despite the presence of this identified karst feature, the location of the OGS photographs was shown to be in an extensive area mapped as potential karst. Two sinkholes identified in the 2005 WHI karst study report at locations slightly north of the Shallow Lake water body, as discussed previously in this section, were similarly shown to be in an area mapped as potential karst.

The OGS karst report (Brunton and Dodge, 2008) that was inferred by GSS to be the basis for identification of known karst on the Site noted that areas depicted as potential karst regions were far removed from present- and paleo-drainage river systems and/or covered by overburden or younger stratigraphic units, and also lacked direct observation of karst features by OGS staff and/or did not have any reported karst features. As described above, that was not consistent with the mapping of karst features in the region of the Site.

GSS noted that other areas mapped as known karst in the region of the Site all corresponded to areas mapped as exposed Paleozoic bedrock on the GIS-based, surficial geology mapping for Southern Ontario (Armstrong and Dodge, 2007) and the earlier regional Quaternary geology mapping ((Sharpe and Jamieson, 1982). No karst features were mapped within 500 m of the Site. The closest identified karst features to the Site were shown in areas mapped as potential karst. Therefore, GSS inferred that the mapped presence of known karst on and in the vicinity of the Site was based entirely on geological mapping that showed carbonate bedrock to be exposed at surface. GSS understood that mapping was originally based on bedrock being located within 0.9 m (3 feet) of ground surface and has subsequently been interpreted as bedrock located within 1 m of ground surface.

The 2008 OGS karst report (Brunton and Dodge, 2008) referenced a supplementary report to Groundwater Resources Study 5 prepared by Golder Associates Ltd. (Golder) and the OGS in 2008. That report documented reconnaissance-level field investigations carried out by Golder at the request of the OGS in areas of limestone/dolostone plains and associated areas of thin drift within five regions in Ontario where varying degrees of surface karst were observed. One of those areas was identified as south-central Bruce Peninsula (Wiarton Area). The main purpose of the investigation was to assess whether surface expressions of karst dissolution (*karren* in the form of solution-enhanced joint sets, *kluftkarren* – clint and grike morphologies) were reflected in the fractured and potential karstic nature of underlying sedimentary units and to what depth. The field studies included surface mapping of limestone/dolostone joint patterns (ranging from karren-dominated and solution-enhanced joints to poorly developed joint sets) in conjunction with borehole geophysical logging (natural gamma, apparent conductivity, caliper, and optical televiewer) at the same locations.

The supplementary report (Golder and OGS, 2008) concluded that in general, the degree of karstification on exposed bedrock surfaces did not reflect the nature of karst in the subsurface. The report indicated that with localized exceptions, the influence of karst solution-weathering was weak to absent where the bedrock surface was uniformly covered with overburden in excess of 0.5 to 1.0 m thick. It was noted that under those conditions, the overburden was inherently carbonate-rich, having been derived from glacial erosion of the underlying limestone and dolostone. Therefore, the weak carbonic acid in infiltrating water from precipitation and runoff would be neutralized as it passed through the soil and have little effect on the underlying rock

(Golder and OGS, 2008). The report concluded that all of the sites examined had some degree of karst weathering, but the sites where surface karst weathering was most developed with distinct open crevasse-like joints and open vertical solution channels were those areas where the rock was directly exposed at surface. The report went on to note that areas of exposed limestone/dolostone plain where overburden is of minimal thickness or absent, typically develop a karst-weathered caprock. The caprock consists of open crevasse-like joints interconnected with open weathered horizontal bedding plains within the upper 2 to 4 m of the bedrock surface. In those areas, there would be little attenuation from interaction with soil for the precipitation runoff and the water would move directly into the bedrock openings from where it could infiltrate to depths, carrying any soluble contaminants that may have been contacted, such as nitrate or bacteria.

Other Studies

A copy of a 2009 report prepared by Stephen Worthington, entitled "Review of the Existing Well Head Protection Area Mapping for the Kimberley and Shallow Lake Municipal Water Systems and the Influence of Karst on Groundwater Supplies" (Worthington, 2009), was provided to GSS and the report was reviewed for information relevant to the Site. Information provided by Worthington (2009) indicated that Park Head Creek downstream of Shallow Lake flows intermittently and is frequently dry in the late summer, and that during those months water flowing into the lake from Park Head Creek, Davidson Creek, and Cashore Creek sinks into sinkholes in the bed of the lake. Worthington's interpretation was that groundwater flow from the Shallow Lake water body area was likely to be flowing in a northwest direction toward springs located lower down the Sauble River from Park Head Creek or to the springs at the head of Spring Creek.

Worthington (2009) identified two main water-producing zones (aquifers) in the bedrock in the area of the Shallow Lake municipal wells, similar to the information presented in Section 5.0 of this report. The deeper aquifer was inferred to have a higher hydraulic conductivity and was interpreted to be the primary zone for groundwater flow, with evidence of surface water inputs noted for that zone (Worthington, 2009). No information was presented in the 2009 report by Worthington that would indicate the presence of karst features on or in the immediate vicinity of the Site.

8.2 Findings on the Potential Presence of Karst

Karst mapping derived from a 2008 study by the OGS identified an area of known karst in the southern two-thirds of the Site. The mapped presence of known karst appeared to have been largely based on the presence of an extensive area of Paleozoic bedrock (Amabel Formation: Eramosa member dolostone) that was originally mapped by the OGS in 1982 (Sharpe and Jamieson). As shown on Figure 4, the identified karst area in the Grey County OP encompassed currently developed areas located west, south, and east of the Site, including the Shallow Lake community centre, residential developments on Maplewood Crescent and the west side of Howe Drive, and existing houses located on Princess and Joynt Streets. Therefore, GSS did not consider that mapping to be indicative of a specific karst hazard for the Site. None of the mapping reviewed for this assessment indicated the presence of karst features on or in the immediate vicinity of the Site.

No exposed bedrock was observed on the Site during the reconnaissance visits. Eight test pits excavated within the cultivated portion of the Site encountered bedrock at depths ranging from 0.5 to 1.3 m. At 6 of the 8 test pits, the depth to bedrock was less than 1 m. An interpreted stratigraphic section through the Site indicated that the depth to bedrock ranged from approximately 0.6 to 3.3 m. At TP1, TP2, and TP7, the upper bedrock was layered and fragmented and could be broken relatively easily with the excavator. TP1 was excavated approximately 0.4 m into the bedrock without encountering sound rock. TP2 was excavated 0.15 m into the upper bedrock before encountering sounder rock. The bedrock surface in TP7 was uneven and the test pit was terminated without encountering solid, impenetrable rock. No open fractures or evidence of solution weathering or widening of fractures were noted for the bedrock exposed in the test pits.

Records for 32 water well locations were identified within approximately 300 m of the Site. The records for 20 of those 32 wells indicated that less than 1 m of overburden was encountered at the well location. For an additional 3 wells, the depth of overburden was not indicated as the records were for deepening of an existing well or the well encountered fill material over the bedrock. Only two of the wells located within the mapped karst area from the Grey County OP (IDs 2501539 and 2506376) reportedly encountered more than 1 m of overburden. Both of those wells reportedly encountered 2.4 m of overburden. Additional wells reportedly encountering less than 1 m overburden were mapped at locations east of the identified karst area. Therefore, the information obtained confirmed that much of the Site is located in an area of shallow bedrock (less than 1 m depth).

As noted previously in this report, a 2013 report by the OGS on karst and hazard lands mitigation (Brunton, 2013) noted that there was no right or wrong answer regarding the optimum thickness of soil and overburden sentiments above bedrock that would be required to reduce or eliminate the risk of sinkhole development where there is the potential for the interaction of aggressive groundwaters and more susceptible bedrock. A 2008 report by Golder and the OGS indicated that with localized exceptions, the influence of karst solution-weathering was weak to absent where the bedrock surface was uniformly covered with overburden in excess of 0.5 to 1.0 m.

No evidence indicative of active karstification on the Site was identified. No surface water features were identified on the Site, and observations at the Site in the spring of 2023 and 2025 did not show indications of channelized surface runoff on the Site. It was considered that there was a potential for seasonal surface runoff to temporarily accumulate in small, localized depressions within the hummocky wooded area in the eastern portion of the Site, although only minor evidence of that was observed. Review of historical mapping and aerial imagery for the vicinity of the Site did not identify evidence of surface water flow on or in the immediate vicinity of the Site or evidence to suggest the presence of karst features. Review of available well records did not indicate the potential presence of a solution-enhanced fracture network in the upper bedrock in the vicinity of the Site.

Review of available records indicated the presence of disappearing streams flowing underground at locations approximately 2.4 km northwest, 0.8 km south, and 2.5 km east-southeast of the Site. Two of those karst features were identified on karst mapping of southern Ontario published by the OGS in 2008 and both were shown to be located within areas mapped as potential karst rather

than known karst. All of those streams were inferred to flow in a predominantly westerly direction and there was no evidence to suggest that the underground flow path from any of those streams passed beneath the Site.

With reference to the definition of a karst area in Section 9.18 of the Official Plan, a portion of the Site was confirmed to have shallow overburden (i.e., less than one metre of natural soil over bedrock); however, no evidence of karst topography (fissures, caves, sinkholes, or springs) was identified on the Site.

9.0 ASSESSMENT OF POTENTIAL IMPACTS AND RECOMMENDED MITIGATION MEASURES

The presence of shallow bedrock on the Site should be considered in the final design of the development, including the implications for the depths of foundations and underground services and for site grading to manage stormwater runoff.

The proposed Site grading and house and septic system layout for the development were shown on Figures 9.1 and 10.2 in a July 2025 draft functional servicing report prepared by GSS. The proposed finished floor elevations (FFE) for the houses shown on the plan ranged from 242.11 m near the northwest corner to 239.00 m at the east side of the Site. For the purpose of this assessment, the floor elevations were estimated to be approximately 1.5 to 2.0 m above the inferred bedrock surface elevation, which was considered to be adequate. It is uncertain if the houses will be constructed with basements; however, it is anticipated that the excavations for the footings for at least some of the houses will encounter bedrock. Where bedrock is encountered in the foundation excavations on the Site, it is recommended that the excavations be inspected by a qualified engineer to identify the presence of any weathered rock and/or open fractures, and to confirm that the founding conditions are adequate for support of the proposed structures. If open fractures are identified in exposed bedrock in the foundation excavations, it is recommended that the fractures be filled with lean concrete (i.e., non-shrink grout). No information to indicate the potential presence of sinkholes on the Site was identified.

Proposed ditches were shown around the perimeter of the site and on both sides of the proposed road. All of the ditches were shown to drain to a proposed stormwater management pond to be constructed in the northeast corner of the Site. The design bottom elevation of the SWMP was shown at elevation 235.76 m, which was approximately 0.35 m or more above the inferred bedrock surface elevation of approximately 235.4 to 234.7 m in that area, based on the cross-section shown on Figure 7. Based on the presence of relatively shallow bedrock, the SWMP should not be designed to enhance infiltration into the shallow underlying soils. The soils exposed in the test pits on the Site were considered to have relatively low to moderate permeability and would not be considered favourable for enhanced infiltration. The exposed soils in the bottom of the excavation for the SWMP should be inspected by a qualified engineer at the time of construction to confirm that there is no direct contact with the upper bedrock. If bedrock is encountered in the excavation, then the design and/or construction of the pond must be modified as appropriate to prevent direct infiltration of stormwater from the pond into the upper bedrock. That could potentially include placement of a low-permeability liner in the pond. Considering the potential to encounter bedrock in the excavation for the pond, it would be prudent for a geotechnical engineer to investigate the subsurface conditions at the location of the SWMP prior to completion of the final design so that the information can be incorporated into the design.

Appropriate measures should be implemented to minimize the potential for enhanced, concentrated infiltration of stormwater from ditches into shallow, fractured bedrock. The design ditch bottom elevations shown on the site grading and drainage plan were higher than the inferred bedrock surface elevations. There is considered to be greater uncertainty with respect to the bedrock surface elevation near the east boundary of the Site in the hummocky, wooded area. It is anticipated that substantial regrading will be necessary in that area and modifications to the

ditch elevation may be necessary at the time of final design and/or based on the conditions encountered at the time of construction. However, it is noted that there is an existing ditch along the rear of the properties fronting onto the west side of Howe Drive, adjacent to the east boundary of the Site, so construction of a suitable ditch on the east side of the Site in that area is considered likely to be feasible.

In the event that ditches constructed on the Site encounter bedrock, it is recommended that a suitable, low-permeability material be placed and compacted in the bottom of the ditches to limit infiltration into the underlying bedrock. That material could consist of compacted, low-permeability (clayey) soil with a minimum thickness of 100 mm or a commercial geosynthetic clay liner. The low-permeability barrier must be suitably covered with topsoil and seeded to promote grass cover.

Based on the presence of relatively low-permeability native soils and shallow bedrock, construction of raised leaching beds for each house in the development will be necessary, unless an additional investigation for a specific lot indicates that a raised bed would not be required for that lot. It is understood that the individual sewage systems on the Site will be designed with advanced treatment systems for removal of nitrate, as described in the GSS groundwater quality impact assessment report for on-Site sewage systems (GSS, 2025). Such systems typically include a filter bed with a smaller footprint than a conventional Class 4 leaching bed. The Ontario Building Code requires a separation distance of at least 0.9 m between the bottom of the absorption trenches in the leaching bed and the bedrock surface. The leaching beds must be designed to prevent direct infiltration of untreated sewage into the upper bedrock.

The proposed alignment of the watermain on the Site was shown on Figure 7.1 of the functional servicing report (GSS, 2025). Based on the inferred bedrock surface elevation on the Site, it is anticipated that excavations for the watermain to obtain a minimum cover of 1.8 m will encounter bedrock. A geotechnical investigation along the alignment of the proposed roadway through the development is recommended prior to completing the final design.

Considering the findings of this assessment and provided that the recommended investigation and mitigation measures are appropriately implemented, the proposed development at the Site was not considered to be at risk from the presence of unstable bedrock and was not regarded to be a threat to local groundwater resources from the presence of karst topography.

10.0 SUMMARY OF FINDINGS AND RECOMMENDATIONS

Based on the results of this review and assessment, the following summary of findings is provided.

- The Site for the proposed residential development was assessed for the presence of karst topography to address the relevant requirements identified in the Grey County Official Plan.
- A mapped karst area identified in Appendix A of the Grey County OP encompassed approximately the southwestern 70% of the Site.
- Appendix A of the Grey County OP indicated the presence of a "plugged petroleum well" in a wooded area in the eastern portion of the Site. Copies of records obtained from the provincial Oil, Gas and Salt Resources Library indicated that the plugged petroleum well mapped on the Site was actually located approximately 250 m north of the Site, in the northeast corner of the current cultivated field on the adjacent property to the north, in the west half of Lot 22. A survey plan showed that well to be located 15 m east of an older petroleum well, which GSS inferred to be the plugged petroleum well that was mapped at a location approximately 380 m north-northwest of the Site in Lot 23.
- Review of available topographic mapping and historical imagery indicated that surface drainage on the Site was in an easterly direction toward Park Head Creek, which flowed in a southerly direction approximately 300 m east of the Site. Review of historical mapping and aerial imagery for the vicinity of the Site did not identify evidence of surface water flow on or in the immediate vicinity of the Site or evidence to suggest the presence of karst features.
- Review of available records indicated the presence of disappearing streams flowing underground at locations approximately 2.4 km northwest, 0.8 km south, and 2.5 km east-southeast of the Site. All of those streams were inferred to flow in a predominantly westerly direction and there was no evidence to suggest that the underground flow path from any of those streams passed beneath the Site. None of the identified disappearing streams were located within areas mapped as karst in the Grey County OP.
- Geological mapping indicated that approximately the southern 70% of the Site was located within an area identified as exposed bedrock, most recently identified as Guelph Formation dolostone. The exposed bedrock was shown extending off-Site to the west, south, and east. The northern portion of the Site was shown to be located within an extensive deposit of Bruce till (stoney, sandy silt) that extended north and west of the Site.
- Review of available water well records for the vicinity of the Site indicated that water-producing zones were typically encountered at depths greater than 18 m. There were no indications of the potential presence of a highly conductive, karstic fracture network within the bedrock in the vicinity of the Site. The water table beneath the Site was indicated to be at a depth of approximately 15 m.
- Eight test pits excavated in the accessible cultivated portion of the Site encountered bedrock at depths ranging from 0.5 to 1.3 m. At 6 of the 8 test pits, the depth to bedrock was less than 1 m. An interpreted stratigraphic section through the Site indicated that the depth to bedrock ranged from approximately 0.6 to 3.3 m. At three test pits, the upper bedrock was layered

and fragmented and could be broken relatively easily with the excavator. No open fractures or evidence of solution weathering or widening of fractures were noted for the bedrock exposed in the test pits.

- The ground surface in the treed area in the eastern portion of the Site was hummocky with small depressions. The bedrock surface within the treed area was inferred to be near surface, as shallow holes advanced manually with a Dutch auger met refusal at depths ranging from 0.5 to 0.8 m. No fissures or sinkholes were observed. No defined channels or watercourses were observed and no standing water was present. There were numerous large rocks and boulders at surface, but no obvious exposed bedrock was observed.

- No evidence indicative of active karstification on the Site was identified. No surface water features were identified on the Site, and observations at the Site in the spring of 2023 and 2025 did not show indications of channelized surface runoff on the Site. It was considered that there was a potential for seasonal surface runoff to temporarily accumulate in small, localized depressions within the hummocky wooded area in the eastern portion of the Site, although only minor evidence of that was observed. No evidence indicating the potential presence of karst on the Site was observed.

- A 2008 report on field investigations of karst landscapes by Golder Associates Ltd. and the Ontario Geological Survey indicated that in general the influence of karst solution weathering was weak to absent where the bedrock surface was uniformly covered with overburden more than 0.5 to 1.0 m thick.

- Karst mapping derived from a 2008 study by the OGS identified an area of known karst in approximately the southern two-thirds of the Site and extending off-Site to the west, south and east. The mapped presence of known karst appeared to have been largely based on the presence of an area of Paleozoic bedrock that was originally mapped by the OGS in 1982. The identified karst area in the Grey County OP coincided with the OGS mapping and encompassed currently developed areas located west, south, and east of the Site, including the Shallow Lake community centre and residential developments on Maplewood Crescent and the west side of Howe Drive. GSS did not consider that mapping to be indicative of a specific karst hazard for the Site. None of the mapping or studies reviewed for this assessment indicated the presence of karst features on or in the immediate vicinity of the Site.

- The information obtained confirmed that much of the Site is located in an area of shallow bedrock (less than 1 m depth); however, no evidence of karst topography (fissures, caves, sinkholes, or springs) was identified on the Site. Definitions in the Grey County OP indicated that the term karst area was applied to lands which possess or are expected to possess both shallow overburden and karst topography. The combination of the two features was noted to have the potential of being extremely sensitive.

- The proposed development for the Site consists of twenty-seven (27) residential lots, consisting of 26 lots for single-family houses and one lot for a proposed fourplex. The development will be serviced with the municipal water supply and individual private sewage systems. A stormwater management pond (SWMP) is proposed for the northeast corner of the Site.

- The presence of shallow bedrock on the Site should be considered in the final design of the development, including the implications for the depths of foundations and underground services and for site grading to manage stormwater runoff.
- It is anticipated that the excavations for the footings for at least some of the houses will encounter bedrock. Where bedrock is encountered in the foundation excavations for construction of houses on the Site, it is recommended that the excavations be inspected by a qualified engineer to identify the presence of any weathered rock and/or open fractures. If open fractures are identified, it is recommended that they be filled with lean concrete.
- With respect to Site grading and drainage, appropriate measures should be implemented to minimize the potential for enhanced infiltration of surface runoff into shallow, fractured bedrock, as described in this report. Similarly, the SWMP should not be designed for enhanced infiltration. There is a potential that the excavation for the SWMP will encounter bedrock. It is recommended that exposed soils in the excavation for the SWMP be inspected by a qualified engineer, and/or that subsurface conditions at the pond location be investigated in advance of the final design, and that appropriate measures be implemented as necessary so there is no direct hydraulic connection between the pond and the underlying bedrock.
- Based on the presence of relatively low-permeability native soils and shallow bedrock, construction of raised leaching beds for each house in the development will be necessary. The leaching beds must be designed to prevent direct infiltration of untreated sewage into the upper bedrock.
- A geotechnical investigation along the alignment of the proposed roadway through the development is recommended prior to completing the final design of underground services.

Considering the findings of this assessment and provided that the recommended investigation and mitigation measures are appropriately implemented, the proposed development at the Site was not considered to be at risk from the presence of unstable bedrock and was not regarded to be a threat to local groundwater resources from the presence of karst topography.

Respectfully submitted,

GSS ENGINEERING CONSULTANTS LTD.

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WBB/bb

11.0 REFERENCES

Armstrong, D. (1993). *Paleozoic Geology of Southern Bruce Peninsula, Southern Ontario,* Ontario Geological Survey, Open File Report 5875, 19 p.

Armstrong, D. (1993). *Paleozoic Geology of the Southern Bruce Peninsula, Southern Ontario,* Ontario Geological Survey Map P.3236, Scale 1:50,000.

Armstrong, D.K., and Dodge, J.E.P. (2007). *Paleozoic Geology of Southern Ontario,* Ontario Geological Survey, Miscellaneous Release – Data 219.

Brunton, F.R. (2009). *Update of Revisions to the Early Silurian Stratigraphy of the Niagara Escarpment: Integration of Sequence Stratigraphy, Sedimentology and Hydrogeology to Delineate Hydrogeologic Units,* Summary of Field Work and Other Activities 2009, Ontario Geological Survey, Open File Report 6240, 20 p.

Brunton, F.R. (2013). *Karst and Hazard Lands Mitigation: Some Guidelines for Geological and Geotechnical Investigations in Ontario Karst Terrains,* Summary of Field Work and Other Activities 2013, Ontario Geological Survey, Open File Report 6290, 24 p.

Brunton, F.R., and Brintnell, C. (2020). *Early Silurian Sequence Stratigraphy and Geological Controls on Karstic Bedrock Groundwater-Flow Zones, Niagara Escarpment Region and the Subsurface of Southwestern Ontario,* Ontario Geological Survey Groundwater Resources Study 13, 120 p.

Brunton, F.R., and Dodge, J.E.P. (2008a). *Karst of Southern Ontario and Manitoulin Island,* Ontario Geological Survey, Groundwater Resources Study 5, 99 p.

Brunton, F.R., and Dodge, J.E.P. (2008b). *Karst Map of Southern Ontario and Manitoulin Island,* Ontario Geological Survey, Groundwater Resources Study 5.

Buck, M.J., Worthington, S.R.H., and Ford, D.C. (2003). *Earth Science Inventory and Evaluation of the Eramosa Karst Area of Natural and Scientific Interest,* Ontario Ministry of Natural Resources, Guelph District, South-central Region, 51 p.

Cowell, D.W. (1976). *Karst Geomorphology of the Bruce Peninsula, Ontario,* Master of Science Thesis, McMaster University, Hamilton, Ontario, 231 p.

Cowell, D.W. (2020). *Karst Geomorphology of the Saugeen-Bruce Peninsula,* Chapter 12, Landscapes and Landforms of Eastern Canada, Springer Nature Switzerland AG, 20 p.

Golder Associates Ltd. and Ontario Geological Survey (2008). *Supplementary Report to Groundwater Resources Study 5: 3-D Field Investigation of Paleozoic Bedrock and Boreholes in Thin-Drift Limestone-Dolostone Plains of Southern Ontario, 53 p*.

Guillet, G.R. (1969). *Marl in Ontario*, Ontario Department of Mines Industrial Mineral Report 28, Landscapes and Landforms of Eastern Canada, Springer Nature Switzerland AG, 20 p.

Illustrated Atlas of the Dominion of Canada, H. Beldon & Co., Toronto, 1880, Bruce County supplement (Ontario Map Reference #16), available online through the McGill University Library Canadian County Atlas Digital Project.

Liberty, B.A., and Bolton, T.E. (1971). *Paleozoic Geology of the Bruce Peninsula Area, Ontario*, Geological Survey of Canada, Memoir 360, Department of Energy, Mines and Resources.

Ontario Geological Survey (2010). *Surficial Geology of Southern Ontario*, Miscellaneous Release - Data (MRD) 128 - Revised (replaces the map previously released as MRD 128 (2003)).

Sharpe, D.R. (1982). *Drift Thickness of the Wiarton Area, Southern Ontario,* Ontario Geological Survey Map P.2560, Scale 1:50,000, Compilation 1977-1981.

Sharpe, D.R. (1982). *Bedrock Topography of the Wiarton Area, Southern Ontario,* Ontario Geological Survey Map P.2561, Scale 1:50,000, Compilation 1977-1981.

Sharpe, D.R., and Jamieson, G.R. (1982). *Quaternary Geology of the Wiarton Area, Southern Ontario,* Ontario Geological Survey Preliminary Map P.2559, Scale 1:50,000, Geology 1977.

Turner, M.E. (1978). *Ministry of the Environment Hydrogeologic Map 78-5, Guelph-Amabel Aquifer, Markdale to Owen Sound,* Scale 1:100,000.

Waterloo Hydrogeologic, Inc. (2005). *Technical Memorandum: AEMOT Study Results and Grey & Bruce Counties Karst Mapping*, prepared for Grey County and the Ministry of the Environment.

Waterloo Hydrogeologic, Inc. (2003). *Grey and Bruce Counties Groundwater Study, Final Report*.

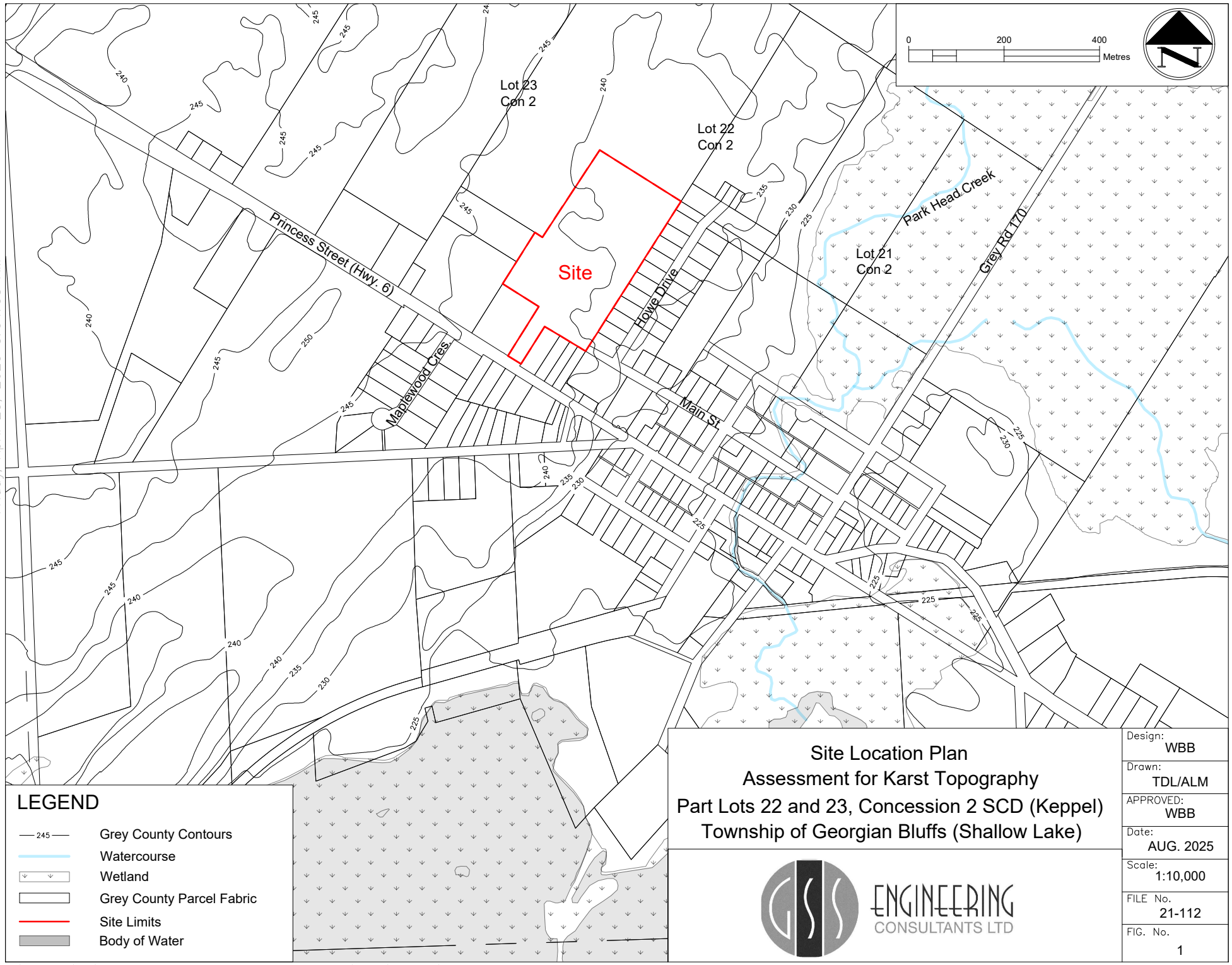
Worthington, S.R.H. (2009). *Review of the Existing Well Head Protection Area Mapping for the Kimberley and Shallow Lake Municipal Water Systems and the Influence of Karst on Groundwater Supplies,* prepared for the Saugeen Valley Conservation Authority, Grey Sauble Conservation Authority, and Municipality of Northern Bruce Peninsula, 18 p.

12.0 QUALIFICATIONS OF THE ASSESSOR

W. Brad Benson, P.Eng., is a professional engineer and hydrogeologist and has been employed as a Senior Hydrogeologist with GSS Engineering Consultants Ltd. since January 2016. Mr. Benson has a graduate degree from the University of Waterloo in Civil Engineering, specializing in hydrogeology, and has 34 years of experience as an environmental consultant in southwestern Ontario, including 14 years working in the Grey Bruce area. He has been responsible for project management and technical analysis/review of projects that included groundwater quality and quantity evaluation and protection, surface water and groundwater interactions, water budget analysis, regional source water protection studies, stormwater management, below water aggregate extraction from pits and quarries, groundwater dewatering and control, environmental monitoring, and environmental site characterization and remediation. This experience included technical peer review of provincial Tier 1 and Tier 2 water budget assessments for groundwater and surface water for the Saugeen, Grey Sauble, Northern Bruce Peninsula Source Protection Region.

GSS Engineering Consultants Ltd. was incorporated in 2013 and provides civil and environmental consulting services from its office in Owen Sound, Ontario. The partners in the firm have more than 90 years of combined engineering experience and have completed projects throughout Grey and Bruce Counties and surrounding regions.

FIGURES



Site Location Plan
Assessment for Karst Topography
Part Lots 22 and 23, Concession 2 SCD (Keppel)
Township of Georgian Bluffs (Shallow Lake)

GSS ENGINEERING CONSULTANTS LTD

Design:	WBB
Drawn:	TDL/ALM
APPROVED:	WBB
Date:	AUG. 2025
Scale:	1:10,000
FILE No.	21-112
FIG. No.	1

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Surrounding Land Use
Assessment for Karst Topography
Part Lots 22 and 23, Concession 2 SCD (Keppel)
Township of Georgian Bluffs (Shallow Lake)

GSS ENGINEERING CONSULTANTS LTD

Design:	WBB
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Date:	AUG. 2025
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FIG. No.	2

Reference:
Grey County Parcel Mapping
Image: Google Earth (May 28, 2021)

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G:\GSS Common\2021\21-112 548 Princess Street Shallow Lake-Draft Plan of Subdivision\Drawings\Hydrogeology\21-112.dwg Mar 31, 2025 - 4:51pm

Reference: Ontario Geological Survey (2010). Surficial Geology of Southern Ontario, Miscellaneous Release - Data (MRD) 128 - Revised.

3	**Paleozoic bedrock**
5b	5b Stone-poor, sandy silt to silty sand-textured till on Paleozoic terrain
6	**Ice-contact stratified deposits:** sand and gravel, minor silt, clay and till 6a In moraines, eskers, kames and crevasse fills 6b In subaquatic fans
8	**Fine-textured glaciolacustrine deposits:** silt and clay, minor sand and gravel 8a Massive to well laminated 8b Interbedded silt and clay and gritty, pebbly flow till and rainout deposits
9	**Coarse-textured glaciolacustrine deposits:** sand, gravel, minor silt and clay 9a Deltaic deposits 9b Littoral deposits 9c Foreshore and basinal deposits
20	**Organic Deposits:** peat, muck, marl

Surficial Geology Mapping
Assessment for Karst Topography
Part Lots 22 and 23, Concession 2 SCD (Keppel)
Township of Georgian Bluffs (Shallow Lake)

GSS ENGINEERING CONSULTANTS LTD

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FIG. No.	3

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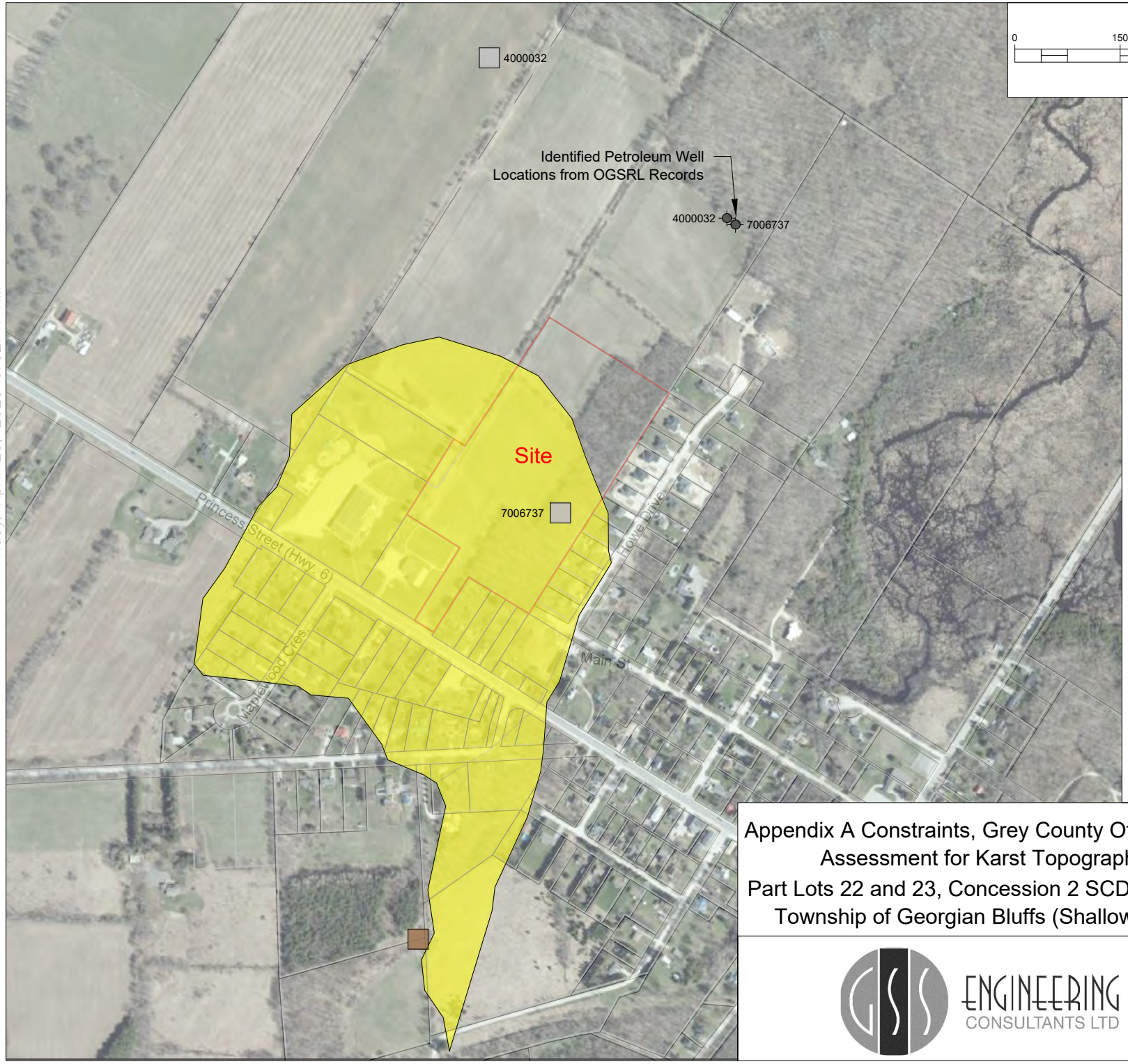

0 150 300 Metres

LEGEND

Mapped Features from Appendix A, Grey County Official Plan

- Petroleum Well (Abandoned)
- Petroleum Well (Unknown)
- Karst Area

Appendix A Constraints, Grey County Offical Plan Assessment for Karst Topography

Part Lots 22 and 23, Concession 2 SCD (Keppel)

Township of Georgian Bluffs (Shallow Lake)

GSS ENGINEERING CONSULTANTS LTD

Design:	WBB
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APPROVED:	WBB
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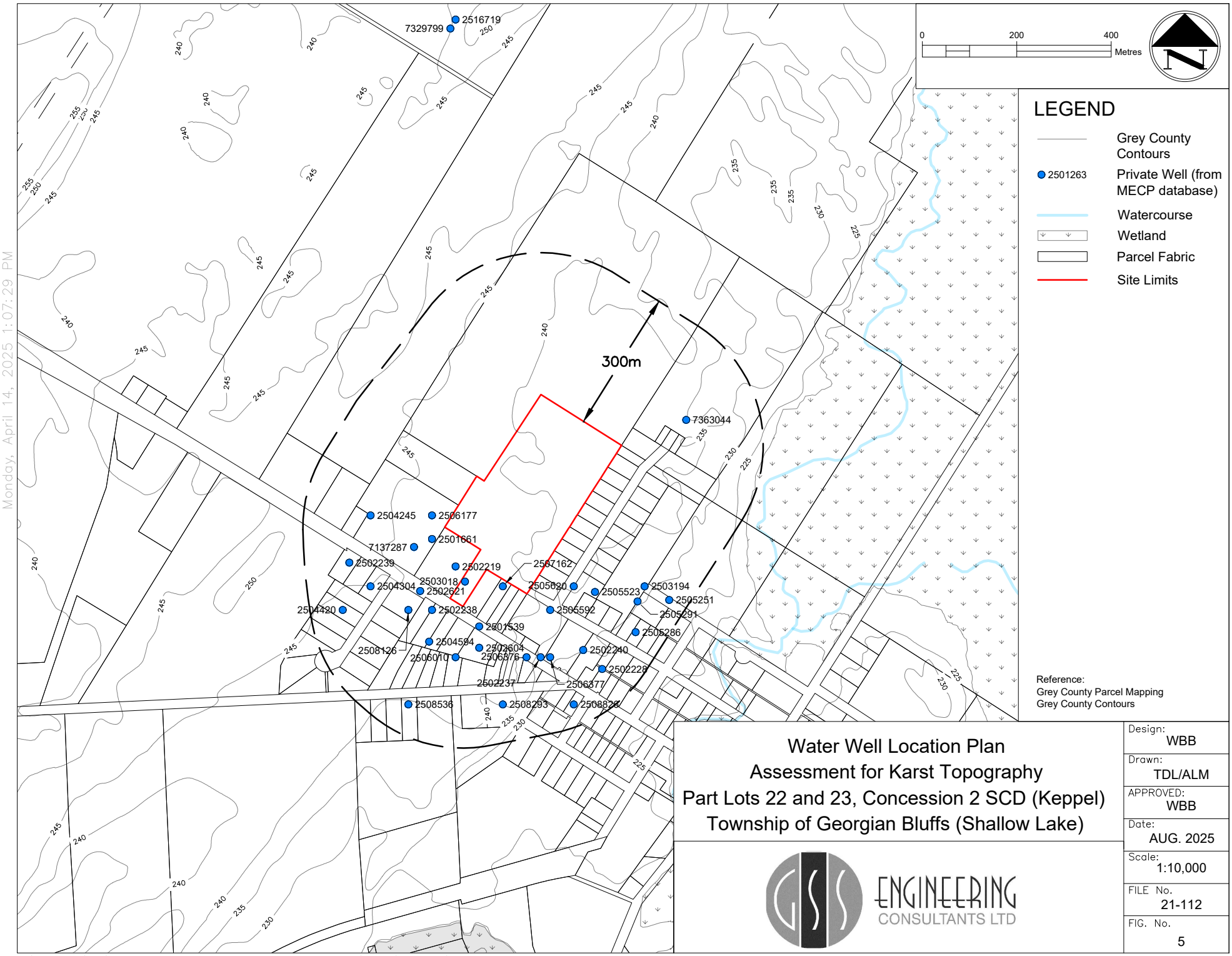

Water Well Location Plan
Assessment for Karst Topography
Part Lots 22 and 23, Concession 2 SCD (Keppel)
Township of Georgian Bluffs (Shallow Lake)

GSS ENGINEERING CONSULTANTS LTD

Design:	WBB
Drawn:	TDL/ALM
APPROVED:	WBB
Date:	AUG. 2025
Scale:	1:10,000
FILE No.	21-112
FIG. No.	5

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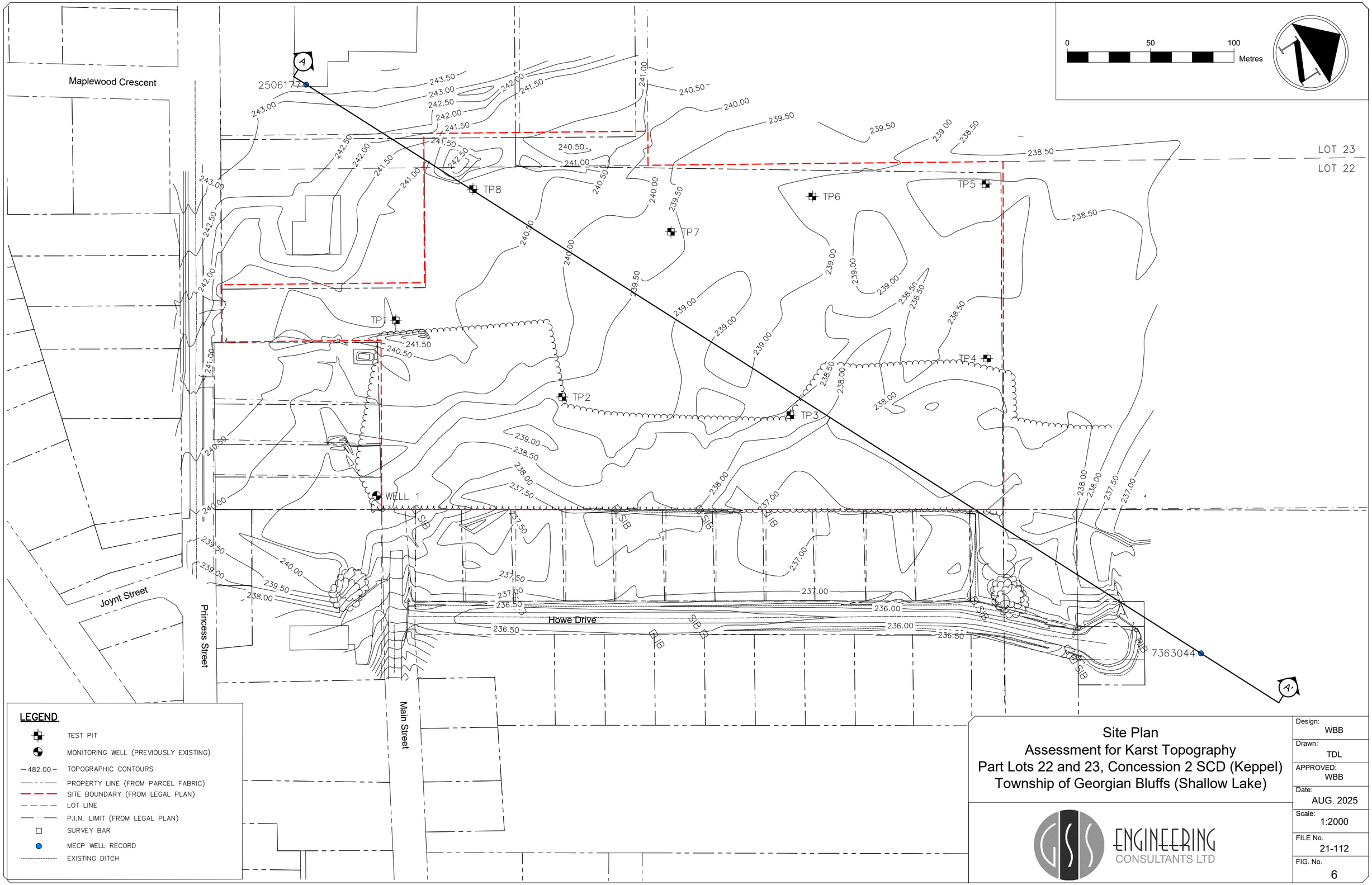

Site Plan
Assessment for Karst Topography
Part Lots 22 and 23, Concession 2 SCD (Keppel)
Township of Georgian Bluffs (Shallow Lake)

GSS ENGINEERING CONSULTANTS LTD

Design:	WBB
Drawn:	TDL
APPROVED:	WBB
Date:	AUG. 2025
Scale:	1:2000
FILE No.	21-112
FIG. No.	6

Tuesday, April 1, 2025 11:33:33 AM

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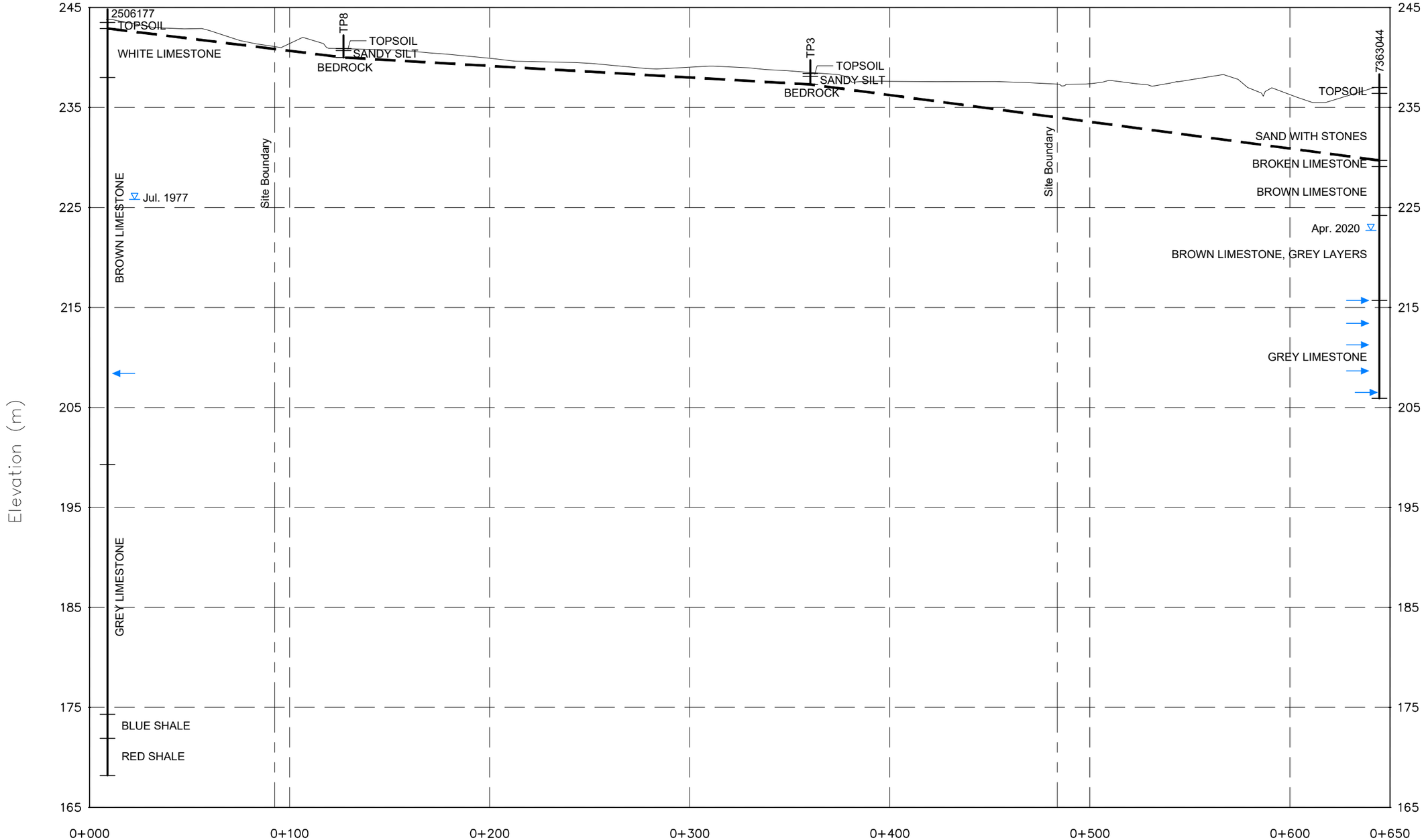

LEGEND

- WATER FOUND
- STATIC WATER LEVEL
- INFERRED BEDROCK SURFACE

Horizontal Scale – 1:2000
Vertical Scale – 1:400

Cross Section A-A'
Assessment for Karst Topography
Part Lots 22 and 23, Concession 2 SCD (Keppel)
Township of Georgian Bluffs (Shallow Lake)

GSS ENGINEERING CONSULTANTS LTD

Design:	WBB
Drawn:	TDL
APPROVED:	WBB
Date:	AUG. 2025
Scale:	1:2000
FILE No.	21-112
FIG. No.	7

Monday, April 14, 2025 1:19:29 PM

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APPENDIX A

Aerial Images

1954 Aerial Image
Assessment for Karst Topography
Part Lots 22 and 23, Con 2 SCD (Keppel)
Township of Georgian Bluffs (Shallow Lake)

GSS ENGINEERING CONSULTANTS LTD

Design:	WBB
Drawn:	TDL
APPROVED:	WBB
Date:	AUG. 2025
Scale:	1:25,000
FILE No.	21-112
FIG. No.	A-1

Reference: McMaster University Library (Original Scale 1:63,360)

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Monday, April 14, 2025 9:13:20 AM

Reference: National Air Photo Library (Jun 21, 1938, Original Scale 1:20,000)

GSS ENGINEERING CONSULTANTS LTD

1938 AERIAL IMAGE

Scale: 1:5,000 Approximate	**Assessment for Karst Topography** **Part Lots 22 and 23, Con 2 SCD (Keppel)** **Township of Georgian Bluffs (Shallow Lake)**	Prepared By: WBB
Date: Aug 2025		Reviewed By: WBB
Project: 21-112		Figure A-2

Reference: Google Earth (Mar 20, 2012)

GSS ENGINEERING CONSULTANTS LTD

2012 AERIAL IMAGE

Scale: 1:5,000 Approximate	**Assessment for Karst Topography** **Part Lots 22 and 23, Con 2 SCD (Keppel)** **Township of Georgian Bluffs (Shallow Lake)**	Prepared By: WBB
Date: Aug 2025		Reviewed By: WBB
Project: 21-112		Figure A-3

Reference: Google Earth (Mar 29, 2014)

GSS ENGINEERING CONSULTANTS LTD

2014 AERIAL IMAGE (1)

Scale: 1:5,000 Approximate	**Assessment for Karst Topography** **Part Lots 22 and 23, Con 2 SCD (Keppel)** **Township of Georgian Bluffs (Shallow Lake)**	Prepared By: WBB
Date: Aug 2025		Reviewed By: WBB
Project: 21-112		Figure A-4

Reference: Google Earth (Feb 16, 2014)

GSS ENGINEERING CONSULTANTS LTD

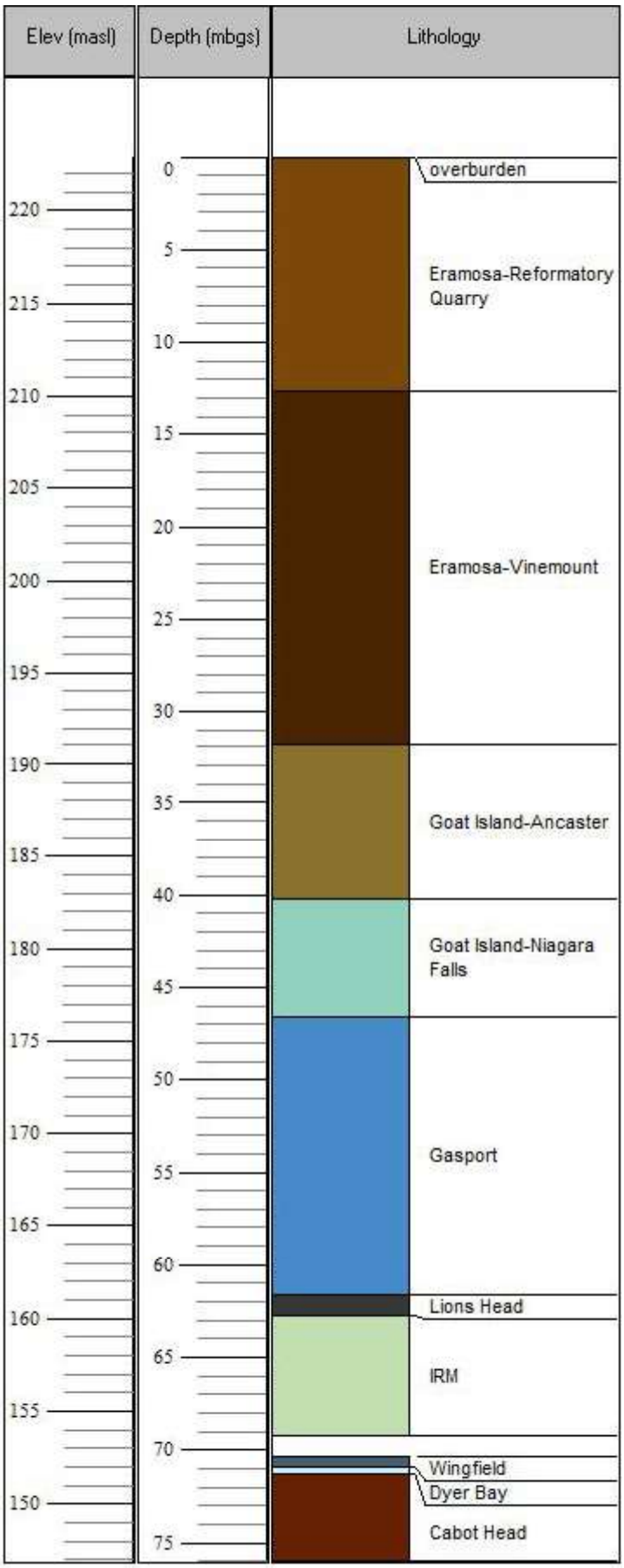
2014 AERIAL IMAGE (2)

Scale: 1:6,000 Approximate	**Assessment for Karst Topography** **Part Lots 22 and 23, Con 2 SCD (Keppel)** **Township of Georgian Bluffs (Shallow Lake)**	Prepared By: WBB
Date: Aug 2025		Reviewed By: WBB
Project: 21-112		Figure A-5

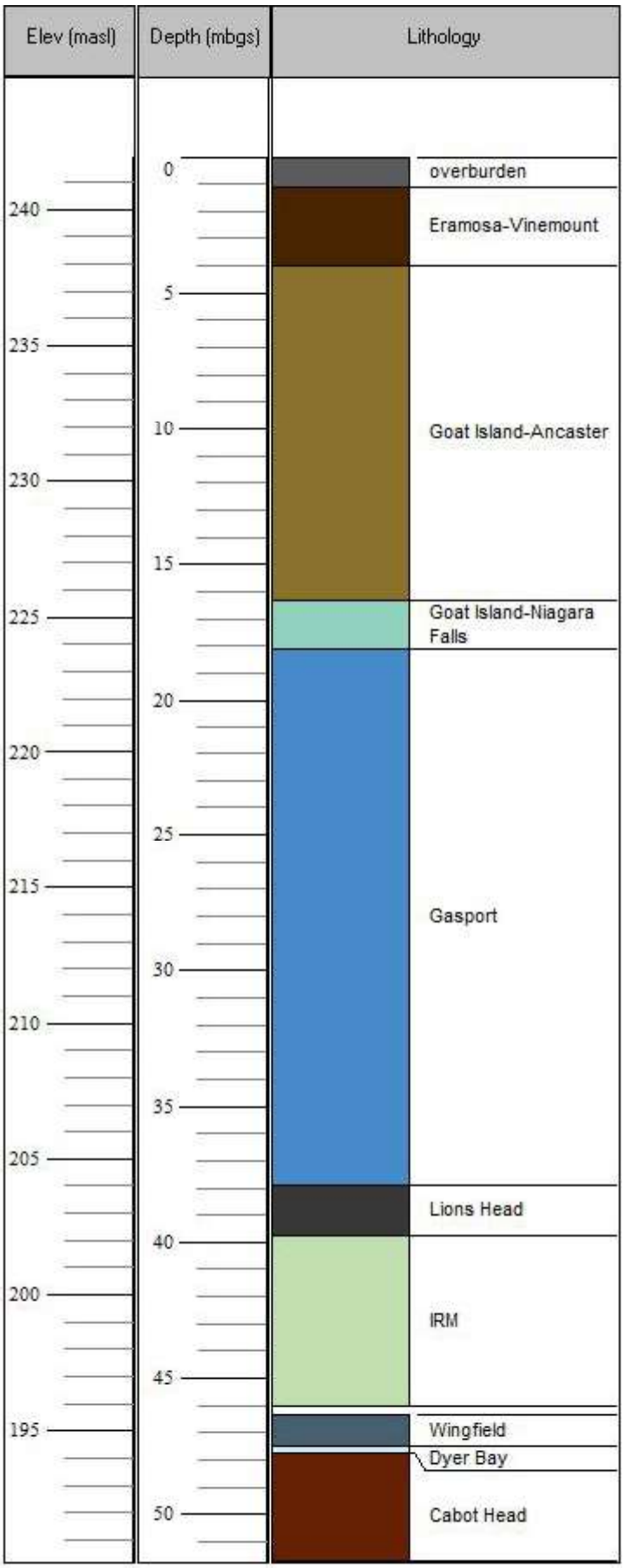
APPENDIX B

Ontario Geological Survey Drill Hole Records

OGS-DDH12a-09



OGS-DDH13-09


Elev (masl)
Depth (mbgs)
Lithology
240
235
230
225
220
215
210
205
200
195
0
5
10
15
20
25
30
35
40
45
50
overburden
Eramosa-Vinemount
Goat Island-Ancaster
Goat Island-Niagara Falls
Gasport
Lions Head
IRM
Wingfield
Dyer Bay
Cabot Head

GEOPHYSICAL RECORD OF BOREHOLE: DDH-12A

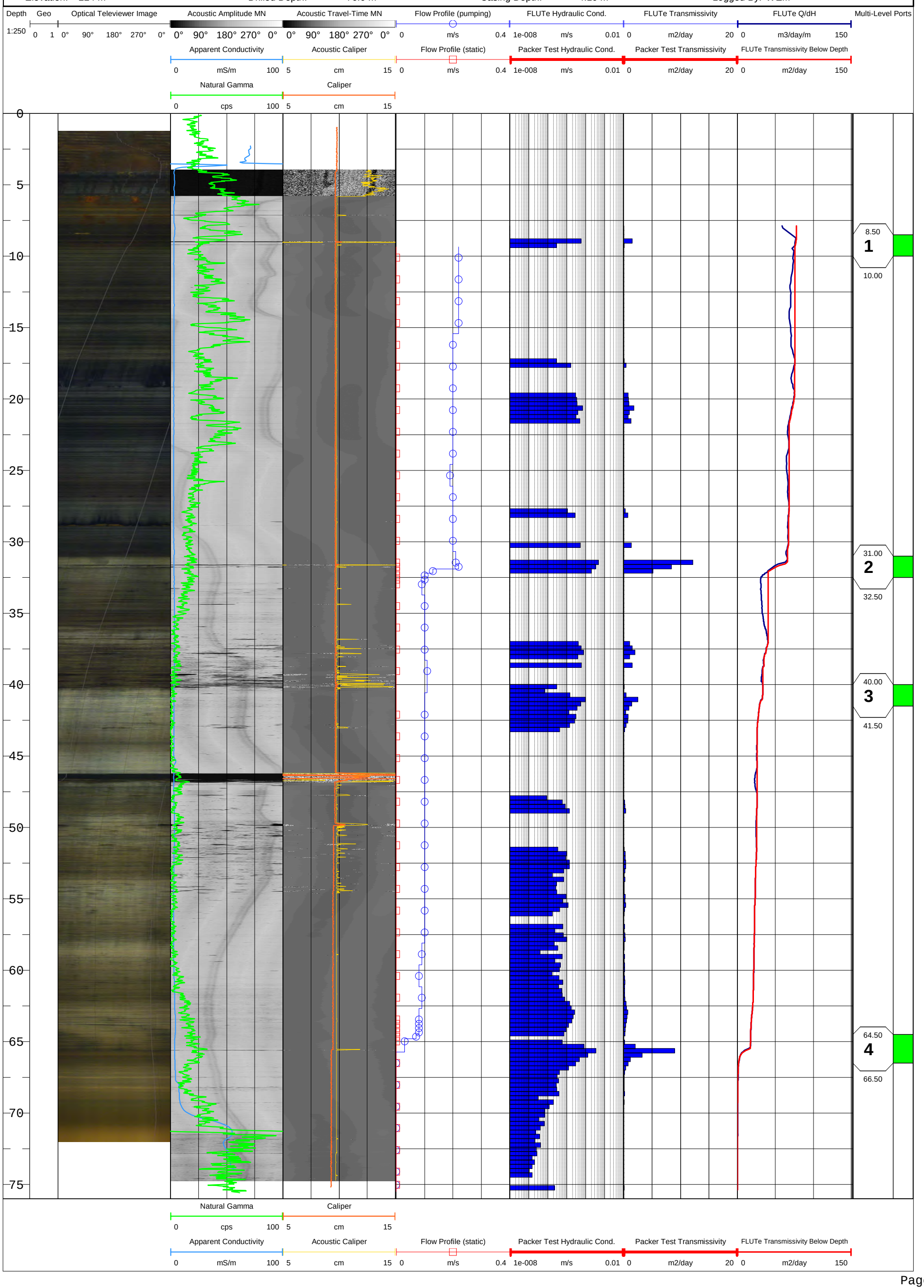
Ontario Geological Survey
Sedimentary Geoscience Section
Ministry of Northern Development, Mines and Forestry

Golder Associates

Project Number: 10-1152-0114

Date: February, 2011

Datum:	NAD83						
Easting:	489549	Depth Reference:	Ground Surface	Borehole Diameter:	HQ (96.0 mm)	Location:	Parkhead-S. Bruce Pen.
Northing:	4938830	Drilling Method:	Diamond Core	Casing Diameter:	HQ casing (101.6 mm)	Log Date:	Feb 3-4, 2010
Elevation:	224 m	Drilled Depth:	76.0 m	Casing Depth:	4.10 m	Logged By:	WEM



GEOPHYSICAL RECORD OF BOREHOLE: DDH-13

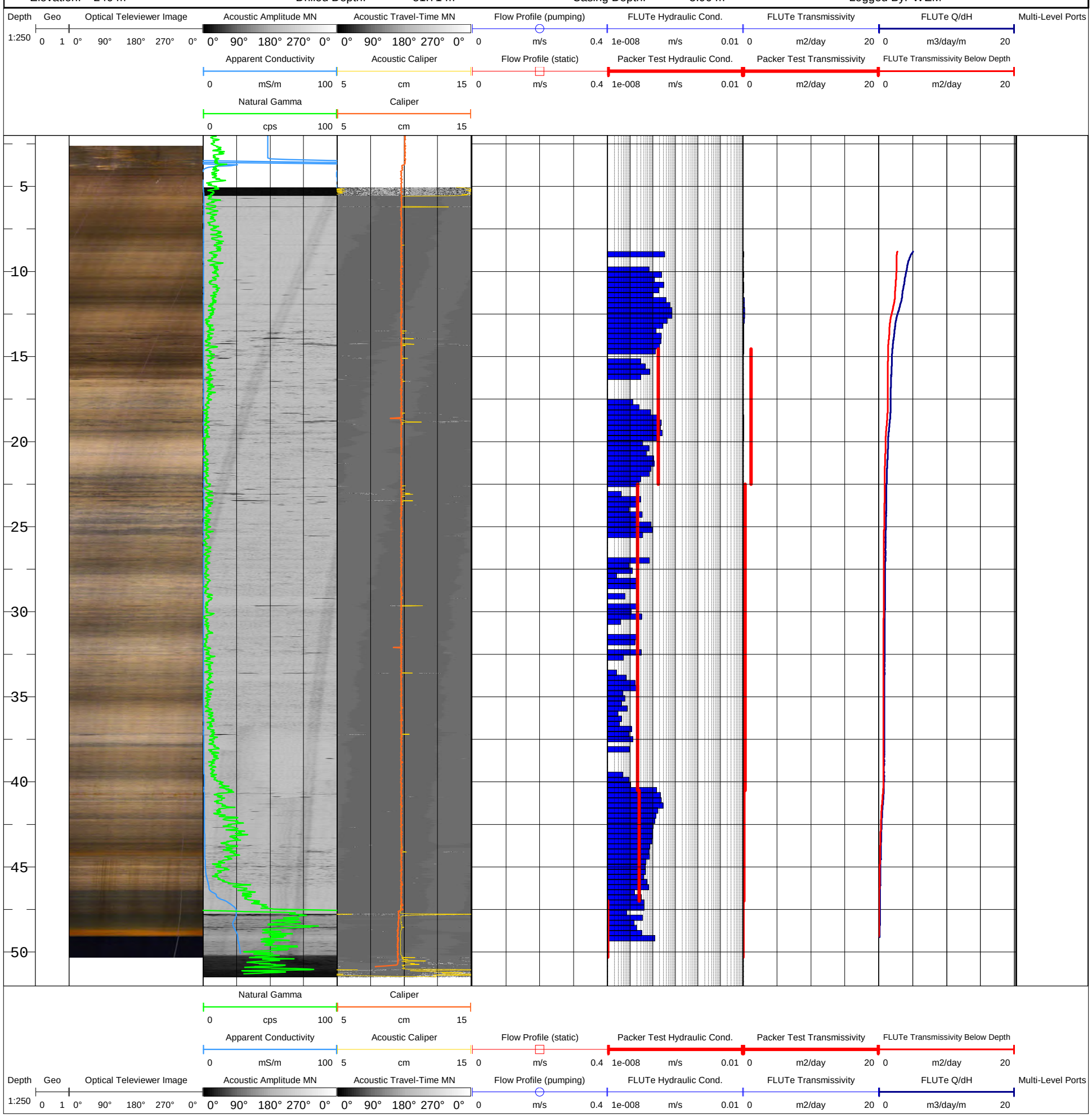
Ontario Geological Survey
Sedimentary Geoscience Section
Ministry of Northern Development, Mines and Forestry

Golder Associates

Project Number: 10-1152-0114

Date: February, 2011

Datum:	NAD83						
Easting:	496693	Depth Reference:	Ground Surface	Borehole Diameter:	HQ (96.0 mm)	Location:	Ledgerock Quarry -Owen Sound
Northing:	4937558	Drilling Method:	Diamond Core	Casing Diameter:	HW casing (101.6 mm)	Log Date:	December 22, 2009
Elevation:	246 m	Drilled Depth:	51.71 m	Casing Depth:	3.96 m	Logged By:	WEM



APPENDIX C

Petroleum Well Records

CTY: Grey	**TWP:** Keppel	**TRACT:** 2	**LOT:** 22	**CON:** II
WELL NAME: Forbes No. 1			**WELL ID:** T006737	**CLASS:** DPT
OPERATOR: J.E.English General Drilling & Well Servicing Ltd.	**Target:** ORD		**STATUS:** DH - ABD	

DRILLING DATA

RIG TYPE:

GRND ELEV: 240.00

KB ELEV: 241.00

TVD: 451.50 **PBTD:**

DATES

LICENCE ISSUED: 1985-05-08

SPUD DATE:

TD DATE: 1985-08-09

COMPLETE DATE:

WORKOVER DATE:

PLUG DATE: 1985-08-19

COORDINATES

N/S BOUND: 256.00 N

E/W BOUND: 161.80 E

NAD 83

SURF LAT: 44.61961917
SURF LONG: -81.09060389

BOT LAT: 44.61961917
BOT LONG: -81.09060389

SAMPLES

TRAY: 6465

POOL

FORMATION	TOP	TVD	ELEV

LOCATION COMMENTS

DATE	ACCURACY	METHOD OBTAINED
	Within 20 metres	Well Records (1954 to 1997)

Some content could not be displayed because it requires a member login

Results for T006737

Plugging Record Located:

PLUG CONTRACTOR	PLUG DATES	PLUG BACK DATES	DRIFT THICKNESS
J.E. English General Drilling & Well Service Ltd.	START DATE: Aug 14, 1985	START DATE:	4.50 m
	END DATE: Aug 19, 1985	END DATE:	

PLUGGING NOTES

```
Plug #1 - Set bridge at 430.9m, 3m of stone, 5 sacks of cement, tagged at 414.5m.
Plug #2 - Bridge at 93m, 3m of stone, 8 sacks of cement.
Plug #3 - Bridge at 15m, 3m of stone, 10 sacks of cement.
Filled hole with clay - pulled 219mm casing.
```

PLUG NO.	TOP DEPTH (m)	BASE DEPTH (m)	CEMENT AMOUNT	CEMENT TYPE
1		430.90	5 Sacks	
2		93.00	8 Sacks	
3		15.00	10 Sacks	

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Worked hard for 0.00439500808716 seconds

CTY: Grey	**TWP:** Keppel	**TRACT:** 2	**LOT:** 22	**CON:** IIS
WELL NAME: Imperial Oil No. 527 - W. Radbourne No. 1			**WELL ID:** H000032	**CLASS:** NPW
OPERATOR: Imperial Oil Ltd	**Target:** PRE		**STATUS:** GS - ABD	

DRILLING DATA

RIG TYPE: Cable

GRND ELEV: 240.18

KB ELEV: 240.79

TVD: 497.43 **PBTD:**

DATES

LICENCE ISSUED:

SPUD DATE:

TD DATE: 1955-08-09

COMPLETE DATE:

WORKOVER DATE:

PLUG DATE: 1955-09-27

COORDINATES

N/S BOUND: 685.00 S

E/W BOUND: 500.00 E

NAD 83

SURF LAT: 44.62548167
SURF LONG: -81.09188528

BOT LAT: 44.62548167
BOT LONG: -81.09188528

SAMPLES

TRAY: 7794

POOL

FORMATION	TOP	TVD	ELEV

LOCATION COMMENTS

DATE	ACCURACY	METHOD OBTAINED
	Within 20 metres	Well Records (1954 to 1997)

Some content could not be displayed because it requires a member login

Results for H000032

Plugging Record Located:

PLUG CONTRACTOR	PLUG DATES	PLUG BACK DATES	DRIFT THICKNESS
English & Mullin	START DATE: Sep 28, 1955 END DATE: Sep 27, 1955	START DATE: END DATE:	m

PLUGGING NOTES

1-8" lead plug was set at 1052'. 1-10" lead plug was set at 266' and 3 sacks of cement were run on top. 1-10" wood plug was set at 17'. 10 3/4 casing was cut off well below ground level and a steel plate was welded on top.

PLUG NO.	TOP DEPTH (m)	BASE DEPTH (m)	CEMENT AMOUNT	CEMENT TYPE

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Worked hard for 0.00374817848206 seconds

CTY: Grey	**TWP:** Keppel	**TRACT** 2	**LOT** 22	**CON:** II
WELL NAME: Forbes No. 1, Keppel 2 - 22 - II			**WELL ID:** T006737	**CLASS:** DPT
OPERATOR: J.E.English General Drilling & Well Servicing Ltd.		**TARGET:** ORD		**STATUS:** DH - ABD

DRILLING DATA	DATES	COORDINATES	SAMPLES
CONTRACTOR:	**LICENCE ISSUED:** May 8, 1985	**N/S BOUND.** 256m N	**TOP:**
J. E. English General Drilling	**SPUD DATE:** Jul 4, 1985	**E/W BOUND:** 161.8m E	**BOT:**
RIG TYPE: CABLE ROTARY	**TD DATE:** Aug 9, 1985	**NAD 83**	**TRAY:** 6465
GRND ELEV: 240	**COMPLETE DATE:**	**SURF LAT:** 44° 37' 10.629 " N	
KB ELEV: 241.00 **DRILLER TD:** 451.50	**WORKOVER DATE:**	**SURF LONG:** 81° 05' 26.174 " W	
TVD: 451.50 **PBTD:** **PBTVD:**	**PLUG DATE:** Aug 19, 1985	**BOT LAT:** 44° 37' 10.629 " N	
		BOT LONG: 81° 05' 26.174 " W	

PERIOD	FORMATION	TOP	TVD	ELEV
QUATERNARY	Drift	1.00	1.00	240.00
DEVONIAN	Port Lambton Group			
	Kettle Point			
	Hamilton Group			
	Marcellus			
	Dundee			
	Columbus			
	Lucas			
	Amherstburg			
	Sylvania			
	Bois Blanc			
	Springvale			
	Oriskany			
SILURIAN	Bass Islands/Bertie			
	G Unit			
	F Unit			
	F Salt			
	E Unit			
	D Unit			
	C Unit			
	B Unit			
	B Equivalent			
	B Salt			
	B Anhydrite			
	A-2 Carbonate			
	A-2 Shale			
	A-2 Salt			
	A-2 Anhydrite			
	A-1 Carbonate			
	A-1 Evaporite			
	Guelph			
	Goat Island			
	Gasport			
	Wiarton/Colpoy Bay	21.30	21.30	219.70
	Decew			
	Rochester			
	Irondequoit			
	Reynales/Fossil Hill	48.00	48.00	193.00
	Neahga			
	Thorold			
	Grimsby	56.40	56.40	184.60
	Cabot Head	61.00	61.00	180.00
	Manitoulin	94.00	94.00	147.00
	Whirlpool			
ORDOVICIAN	Queenston	106.00	106.00	135.00
	Georgian Bay/Blue Mtn	143.00	143.00	98.00
	Collingwood			
	Cobourg	311.70	311.70	-70.70
	Sherman Fall	344.00	344.00	-103.00
	Kirkfield	369.00	369.00	-128.00
	Coboconk	429.80	429.80	-188.80
	Gull River	434.80	434.80	-193.80
	Shadow Lake			
CAMBRIAN	Cambrian			
PRECAMBRIAN	Precambrian			
Geology by:	FORM 7			

COMPLETION DATA

GAS: 10^3 m^3 /d

OIL: m^3 /d **Perforated:**

SIP: kPag **Open Hole:**

FORMATION:

INTERVALS: Prim T B 2nd T B 3rd T B

REMARKS:

INITAL GAS

INTERVAL	FLOW 1000 m3/d	SIP kPag	Anal	Analysis Formation

INITIAL OIL

INTERVAL	FLOW m3/d	API	Anal	Analysis Formation

INITIAL WATER

INTERVAL	STATIC LEVEL	TYPE	Anal	Analysis Formation
9 -		Fresh	N	
21 - 0	0.00	Fresh	N	

CASING AND TUBING

DIAM.	WEIGHT	SET DEPTH	HOW SET	RECOV.
219.00		5.2	SHO	5.20
178.00		87.4	CEM	76.20

LOGGING RECORD

INTERVAL	TYPE	COMPANY

CORING RECORD

INTERVAL	LOCATION	NO.	Anal
-			N

CTY: Grey	TWP: Keppel	BLK:	TRAC: 2	LOT: 22	CON: II
WELL NAME	Forbes #1 Keppel 22-11	PERMIT:	6737	INIT CLASS:	DPT
OPERATOR:	J.E. English General Drilling & Well	TARGET:	ORD	CUR STATUS:	DH-- ABD

DRILLING DATA		DATES		COORDINATES		SAMPLES	
CONTRACTOR:	J.E. English General Drilling	PERMIT:	1985-05-08	NORTH:	256.0 m	TOP:	15.0
RIG TYPE:	CAB	SPUD:	1985-07-04	SOUTH:	m	BOT:	451.4
CABLE TOP:	1.0	COMPTD:	1985-08-09	EAST:	161.8 m	TRAY:	6465
BOT:	451.5	OFFCNF:	1986-08-09	WEST:	m		
ROTRY TOP:		WRKOVR:		LAT:	44-37-34		
BOT:		ABNDND:	1985-08-19	LONG:	81-05-30		
DRLG FLD:							

DEPTHS: KB ELEV: 241.0; LOGGER: ; DRILLER: 451.5; DEEP END: ; PLUG BK:

INITIAL GAS RECORD

INTERVAL	FLOW	SIP
—		
—		
—		
—		
—		
—		

CASING AND TUBING RECORD

DIAM.	WEIGHT	SET AT	HOW SET	RECOV.
219.0		5.2	SHO	5.2
178.0		87.4	CEM	76.2

COMPLETION DATA

GAS:	$10^3 m^3/d$
OIL:	m^3/d
SIP:	kPa
FORM:	
INTRVL:	m
	m
	m
PERF ☐	OPEN HOLE ☐

INITIAL OIL RECORD

INTERVAL	FLOW	DENSITY
—		
—		
—		
—		
—		

LOGGING RECORD

INTERVAL	TYPE	COMPANY
—		
—		
—		
—		
—		
—		

REMARKS

Permit #5895 in 1982-
Permit #6331 in 1983-
suspended
Permit #6737 in 1985-
completed & deepened
& abandoned

INITIAL WATER RECORD

INTERVAL	STAT. LEV.	TYPE
9.0 —		FRE
21.0 —		FRE
—		
—		
—		
—		

CORING RECORD

INTERVAL	LOCATION	NO.	ANAL.
—			
—			
—			
—			
—			

	GEOLOGICAL CONTACTS	TOP	ELEV.	THICK
	KB / LAKE LEVEL	0		
	DRIFT / LAKE BOTTOM	1.0		
DEVONIAN	PORT LAMBTON			
DEVONIAN	KETTLE POINT			
DEVONIAN	HAMILTON			
DEVONIAN	MARCELLUS			
DEVONIAN	DUNDEE			
DEVONIAN	COLUMBUS			
DEVONIAN	LUCAS			
DEVONIAN	AMHERSTBURG			
DEVONIAN	SYLVANIA			
DEVONIAN	BOIS BLANC			
DEVONIAN	SPRINGVALE			
DEVONIAN	ORISKANY			
SILURIAN	BASS ISLANDS			
SILURIAN	G SHALE			
SILURIAN	F SHALE			
SILURIAN	F SALT			
SILURIAN	E CARBONATE			
SILURIAN	D SALT/EQUIVALENT			
SILURIAN	C SHALE			
SILURIAN	B MARKER			
SILURIAN	B EQUIVALENT			
SILURIAN	B SALT			
SILURIAN	B ANHYDRITE			
SILURIAN	A2 CARBONATE			
SILURIAN	A2 SALT			

SILURIAN	A2 ANHYDRITE			
SILURIAN	A1 CARBONATE			
SILURIAN	A1 SALT			
SILURIAN	A1 ANHYDRITE			
SILURIAN	GUELPH			
SILURIAN	ERAMOSA			
SILURIAN	GOAT ISLAND			
SILURIAN	GASPORT/WIARTON			
SILURIAN	DECEW			
SILURIAN	~~ROCHESTER~~ Lions Head	36.0		
SILURIAN	IRONDEQUOIT			
SILURIAN	REYNALES/FOSSIL HILL	48.0		
SILURIAN	THOROLD			
SILURIAN	GRIMSBY Dyer Bay	56.4		
SILURIAN	CABOT HEAD	61.0		
SILURIAN	MANITOULIN	94.0		
SILURIAN	WHIRLPOOL			
ORDOVICIAN	QUEENSTON	106.0		
ORDOVICIAN	BLUE MOUNTAIN - GEORG. BAY	143.0		
ORDOVICIAN	COLLINGWOOD			
ORDOVICIAN	COBOURG	311.7		
ORDOVICIAN	VERULAM	344.0		
ORDOVICIAN	KIRKFIELD	369.0		
ORDOVICIAN	COBOCONK	429.8		
ORDOVICIAN	GULL RIVER	434.8		
ORDOVICIAN	SHADOW LAKE			
CAMBRIAN				
PRECAMBRIAN				

GEOLOGY BY: D. K. Parker

THE PETROLEUM RESOURCES ACT, 1971

Application for a Permit to Bore, Drill or Deepen a Well

To: The Minister of Natural Resources:

The undersigned operator applies for a permit to bore, drill or deepen a well under The Petroleum Resources Act, 1971 and the regulations thereunder and submits the following information, together with the prescribed fee of $15.00.

1. WELL NAME FORBES #1 KEPPEL 1-22-II
2. Name of Applicant TERRY FORBES
   Address BOX 325 CHESTERVILLE ONTARIO
3. Location of proposed well GREY (County or District) KEPPEL (Township)
   (a) Land [1]
   Tract No. 2 Lot No. 22 Concession No. II
   (b) Lake
   Block No. ..... Tract No. .....
4. Co-ordinates - North-~~South~~ 256 m East-West 161.8 m
5. Ground Elevation [1] 240 m
6. Name of land owner W. RAD BOURNE
   Address SHALLOW LAKE
   Part of lot owned N. 3/4 acres 75 telephone number .....
7. Name of Drilling contractor TERRY FORBES
   Address BOX 325 CHESTERVILLE ONTARIO
8. Proposed starting date AUGUST 18, 1980
9. Proposed depth of well ~~#~~ 497 m Formation at total depth PRECAMBRIAN
10. Proposed casing and cementing program.

Casing Size	Weight	Grade	New or Used	Estimated Depth	How to be Set
8"	24#		new	~~#~~ 5 m	shoe
7"	20#		new	86 m	shoe & cement

11. Blowout prevention equipment ORBIT VALVE & OIL SAVER
12. Type of Security: ☐ Negotiable ☐ Non-Negotiable ☒ Cash ☐ Letter of Credit
13. Remarks .....

The undersigned operator certifies that he has the right to bore or drill a well in the above location, and is in compliance with the Act and regulations.

Terry Forbes (Signature)

Date August 12, 1980

BOX 325 Chesterville Ont (Address)

[1] NOTE:—

Ministry of Natural Resources
Ontario

Form 106

THE PETROLEUM RESOURCES ACT, 1971

Permit № 5895

Permit to Bore, Drill or Deepen a Well

Under **The Petroleum Resources Act, 1971,** and the regulations and subject to the limitations thereof, this permit is issued

to Terry Forbes

of Box 305, Chesterville, Ontario

to bore, drill or deepen a well, described as follows:

LOCATION:

~~NM~~ Grey	Keppel
County	Township
22	II
Lot	Concession
	2
Block	Tract

number of licence of occupation or lease

256 m N	161.8 m E
Co-ordinates: N-S	E-W

Name of well Forbes #1 Keppel 1-22-II

Depth not to exceed 497 metres

This permit is issued subject to such special terms, conditions, duties and liabilities as the Minister imposes.

This permit expires with June 2, 1983

This permit is not transferable.

Issued at London, Ontario, Date June 2, 1982

Supervisor

Hon. Alan W. Pope — Minister

NOTE: The operator shall display this permit at the well site throughout the drilling operations.

1851 (5/81)

85/74

Ministry of Natural Resources
Ontario

Drilling and Completion Record

The Petroleum Resources Act, 1971

SYMBOL	
INITIALS	DATE
RWB	Sept 3/85

To the Minister of Natural Resources

Form 107

CLASS	DEEPE	FIELD OR POOL	FINAL STATUS DRY HOLE
COUNTY	GREY	TOWNSHIP: KEPPEL	LOT 22 CONC II TRACT 2
WELL NAME	FORBES #1 KEPPEL 2-22-II		PERMIT NO. 6737
OPERATOR	J. E. ENGLISH. GENERAL DRILLING LTD		TD: 451.5m PBTD:
ADDRESS:	BOX 124 PORT LAMBTON		GROUND ELEV. 240 m (above sea level)
LAND OWNER	W. KADBOURNE		KB/RF ELEV. 241 m
DRILLING CONTRACTOR	SAME AS OPERATOR	CABLE [X]	ROTARY [ ] LICENSE NO. 24
GEOLOGIST		GEOLOGY FROM LOGS [ ] SAMPLES [ ]	N-S 256 N m FROM LOT LINE E-W 161.8 E m FROM LOT LINE

COORDINATES: LATITUDE ____ LONGITUDE ____

LEASE OR L.O. NO. ____

DATE DRILLING STARTED JULY 4/85

DATE DRILLING COMPLETED AUG 9/85

GEOLOGICAL CONTACTS				TOP	ELEV.	THICK.
Lake Level						
Drift/Lake bottom						
DEVONIAN	PORT LAMBTON					
DEVONIAN		Kettle Point				
DEVONIAN	HAMILTON					
DEVONIAN	HAMILTON	Marcellus				
DEVONIAN		Dundee				
DEVONIAN	DETROIT RIVER	Lucas				
DEVONIAN	DETROIT RIVER	Amherstburg				
DEVONIAN		Bois Blanc				
SILURIAN		Bass Islands				
SILURIAN	Salina	G unit	shale			
SILURIAN	Salina	F unit	shale			
SILURIAN	Salina	E unit	carb.			
SILURIAN	Salina	D unit	salt			
SILURIAN	Salina	C unit	shale			
SILURIAN	Salina	B unit	marker			
SILURIAN	Salina	B unit	salt			
SILURIAN	Salina	B unit	anhy.			
SILURIAN	Salina	A-2 unit	carb.			
SILURIAN	Salina	A-2 unit	salt			
SILURIAN	Salina	A-2 unit	anhy.			
SILURIAN	Salina	A-1 unit	carb.			
SILURIAN	Salina	A-1 unit	evap.			
SILURIAN		Guelph				
SILURIAN		Eramosa				
SILURIAN	AMABEL	Goat Island				
SILURIAN	AMABEL	Gasport				
SILURIAN	AMABEL	Rochester				
SILURIAN	AMABEL	Irondequoit				
SILURIAN		Reynales				
SILURIAN		Thorold				
SILURIAN	CATARACT	Grimsby				
SILURIAN	CATARACT	Cabot Head				
SILURIAN	CATARACT	Manitoulin				
SILURIAN		Whirlpool				
ORDOVICIAN		Queenston				
ORDOVICIAN		Meaford-Dundas				
ORDOVICIAN		Collingwood				
ORDOVICIAN	TRENTON	Cobourg				
ORDOVICIAN	TRENTON	Sherman Fall				
ORDOVICIAN	TRENTON	Kirkfield				
ORDOVICIAN	BLACK RIVER	Coboconk				
ORDOVICIAN	BLACK RIVER	Gull River				
ORDOVICIAN	BLACK RIVER	Shadow Lake				
CAMBRIAN						
PRECAMBRIAN						

Additional geological contacts and intervals to be listed on reverse side of form.

INITIAL GAS RECORD

INTERVAL	NATURAL FLOW	S.I. PRESSURE
NIL		
430m	SMELL	

INITIAL OIL RECORD

INTERVAL	NATURAL FLOW	API GRAVITY
NIL		

WATER RECORD

INTERVAL	LEV.FR.SURF.	FLOW	TYPE
9 m	NR		FRESH
21m	20 m		FRESH

CASING AND TUBING RECORD

SIZE	WEIGHT	SET AT	HOW SET	REC.
219mm		5.2 m	SHOE	ALL
178mm		87.4m	CEMENT	76.2m

LOGGING RECORD

LOGGING CO. ____ LOGGER'S T.D. ____

LOGGED INTERVAL	TYPE	LOGGED INTERVAL	TYPE
NIL			

CORING RECORD

SIZE:

CORED INTERVAL	REC.	ANAL.	CORED INTERVAL	REC.	ANAL.
NIL					

FINAL RESULTS

OIL		m^3/d
GAS		$10^3m^3/d$
PRESSURE		k Pa

PRODUCING INTERVAL(S) ____

DISPOSITION OF CORE ____

COMPLETION DATA

PERFORATED [ ] OPEN HOLE [ ]

PRODUCING FORMATION(S) ____

1077 (12/78)

DRILLER'S LOG OR ADDITIONAL GEOLOGICAL CONTACTS		
Formation	Top	Thick.
GREY LIME	70'	
GREY + BLUE	110'	
GREY LIME	140'	
GREY + BROWN	176'	
BLUE SHALE	200'	
RED SHALE	210'	
RED + BLUE SH.	230'	
GREY LIME	490'	
RED + BLUE SH.	530'	
BLUE SH.	570'	
GREY + BLUE	710'	
BROWN LIME	1040'	
GREY LIME	1095'	
BROWN LIME	1410'	
BR + GREY LIME	1420'	

CEMENTING RECORD

178 mm Cag 5 SKS OF CEMENT

PACKER RECORD

Type	Size	Depth

RECORD OF DRILLSTEM TEST INFORMATION

Date	

RECORD OF PRODUCTION STIMULATION AND PRODUCTION TESTS

Date	

Plugging Record – In the case of dry holes, the plugging method is to be described on Form 110 and attached hereto.

Remarks _____

Signature _____ Address _____ Date AUG 26/85

Note 1: The well name shall be that name which appears on Form 106 and shall not be changed without approval by the Minister.

Note 2: Elevations must be determined by instrument and must be certified by an Ontario Land Surveyor or other person acceptable to the Minister.

Note 3: This form is to be forwarded to the Department within thirty days after the end of boring, drilling, deepening, work over, stimulation, plug-back or re-casing.

For Departmental Use

Date of Shipment of Samples Aug 13/85

Record of other Tests and Analyses _____

Other Data and Remarks _____

Ministry of Natural Resources
Ontario

Plugging of a Well Record

The Petroleum Resources Act, 1971

Form 110

To the Minister

Rec'd Sept 3/85

WELL NAME FORBES #1 KEPPEL 2-22-II

Name of Owner of Well J.E. ENGLISH GENERAL DRILLING + WELL SERVICING LTD.

Address BOX 124 PORT LAMBTON, ONTARIO

Lease Number ..... Year Drilled 1980 - 85

Name of Landowner when drilled W. RADBOURNE Land Well No. 1

County GREY Township KEPPEL

Lot 2-22 Concession II Total Depth 451.4 m

Co-ordinates: N-S. 256.0 m N

E-W. 161.8 m E

Plugging Contractor J.E. ENGLISH GENERAL DRILLING Licence No. 24

Plugging Supervisor R.W. SEALEY

Plugging Dates AUG 14, 16, 19 1985

Well Data: Thickness of Drift 4.5 m

Depths of All Water Pays: Fresh 9 m : 21 m

Mineral NIL

Depths of All Gas Pays NIL

Present Flow and Pressure ..... $10^3 m^3/d$ ..... k Pa

Depths of All Oil Pays NIL

Present Production ..... m^3/d

CASING RECORD

Size	Seated At	How Set	m Recov.	m Left In
219 mm	5.2 m	SHOE	ALL	NIL
178 mm	87.4 m	5 SKS. CEMENT	76.2 m	11.2 m

Describe Plugging Method in Complete Detail

PLUG #1 SET BRIDGE AT 430.9 m
3 m OF STONE
5 SKS OF CEMENT
TAGGED AT 414.5 m

PLUG #2 BRIDGE AT 93 m
3 m OF STONE
8 SKS OF CEMENT

PLUG #3 BRIDGE AT 15 m
3 m OF STONE
10 SKS OF CEMENT
FILLED HOLE WITH CLAY - PULLED 8 5/8" CASING

AUGUST 26/85
Date Form Completed

Signature J.E. English

Address BOX 124 PORT LAMBTON

1079 (12/78)

SKETCH
SHOWING PROPOSED WELL DRILLING SITE
ON A PART OF

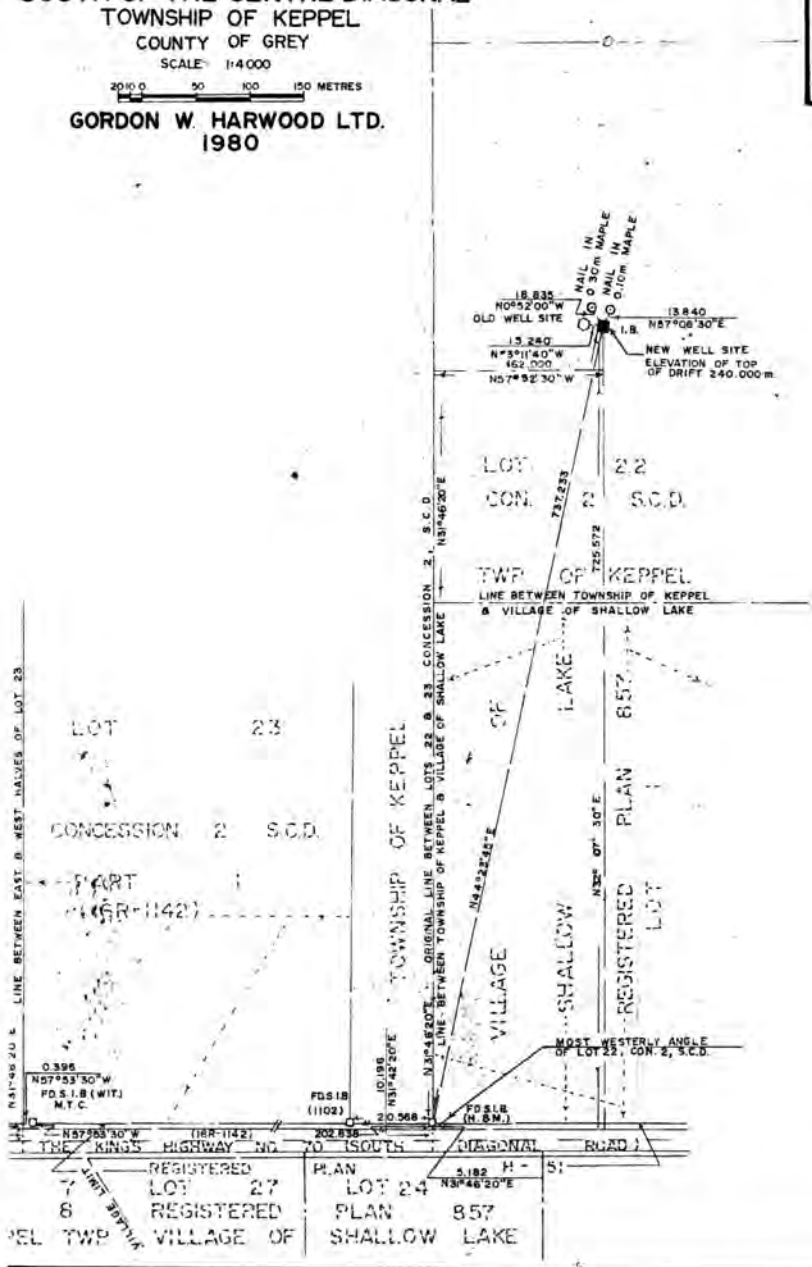
LOT 22
CONCESSION 2
SOUTH OF THE CENTRE DIAGONAL
TOWNSHIP OF KEPPEL
COUNTY OF GREY
SCALE 1:4000

20 10 0 50 100 150 METRES

GORDON W. HARWOOD LTD.
1980

I REQUIRE THIS PLAN TO BE DEPOSITED UNDER THE REGISTRY ACT.	**PLAN** _____ RECEIVED AND DEPOSITED
DATE	DATE
SIGNATURE	LAND REGISTRAR FO THE REGISTRY DIVISION OF BR (NUMBER 3)
NAME IN PRINT	

METRIC: MEASUREMENTS SHOWN ON THIS PLAN ARE IN METRES AND MAY BE CONVERTED TO FEET BY DIVIDING BY 0.3048



NOTES

BEARINGS SHOWN HEREON ARE ASTRONOMIC, DERIVED FROM THE SOUTHERLY LIMIT OF PART 1, DEPOSITED PLAN NUMBER 16R-1142 SHOWN AS HAVING A BEARING OF N57°53'30"W THEREON.

- S.S.I.B. — DENOTES SHORT STANDARD IRON BAR
- S.I.B. — DENOTES STANDARD IRON BAR
- I.B. — DENOTES IRON BAR
- 1102 — DENOTES GORDON W. HARWOOD O.L.S.
- FD. — DENOTES FOUND

SURVEYOR'S CERTIFICATE

I CERTIFY THAT:
(1) THIS SURVEY AND PLAN ARE CORRECT AND IN ACCORDANCE WITH TH SURVEY'S ACT AND THE REGISTRY ACT AND THE REGULATIONS MADE THEREUNDER.
(2) THE SURVEY WAS COMPLETED ON THE 25 th DAY OF APRIL, 1980.

WIARTON, ONTARIO
APRIL 28, 1980

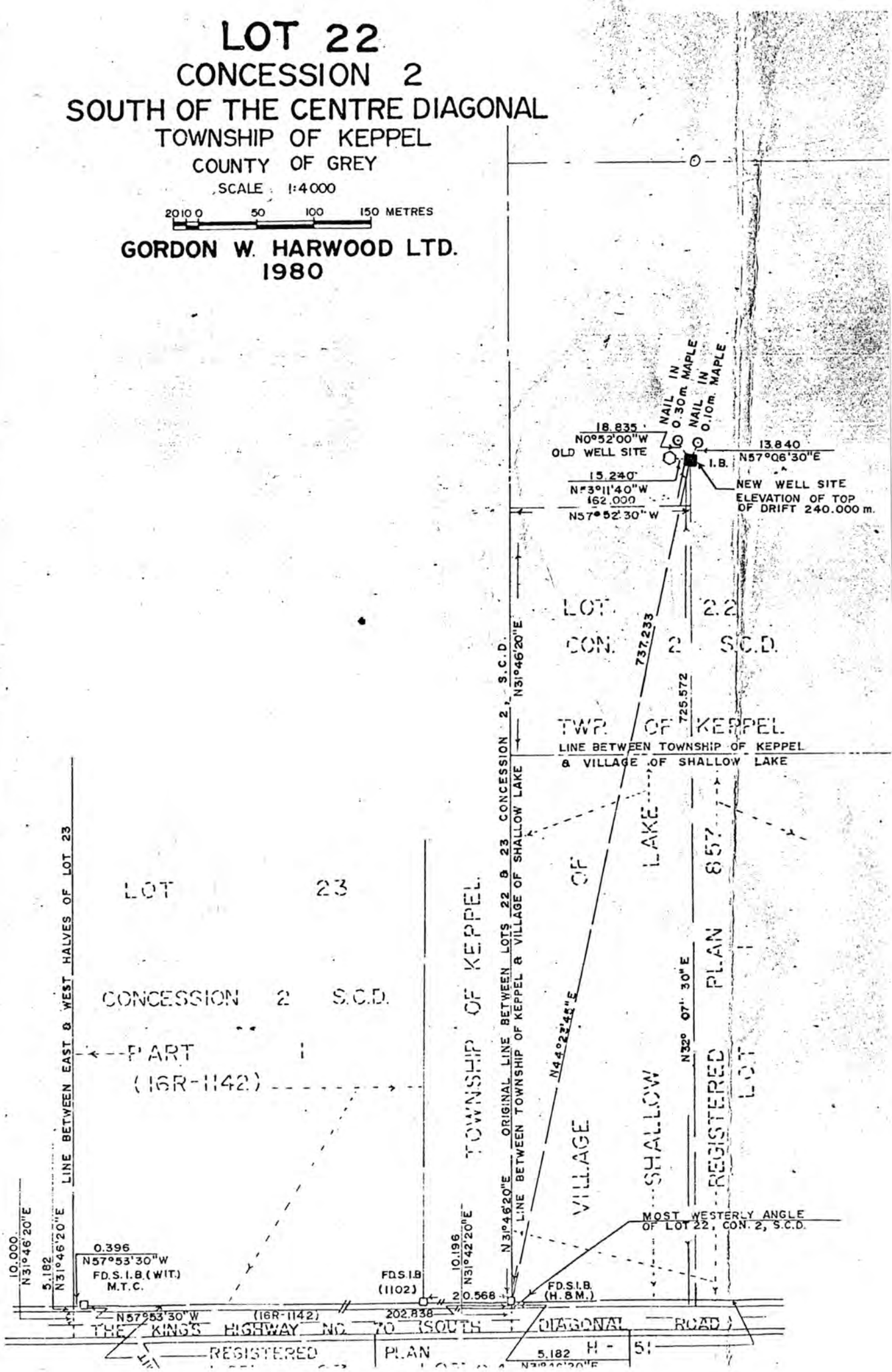
GORDON W. HARWOOD
ONTARIO LAND SURVEYOR
572 FRANK STREET, WIARTO
ONTARIO, N0H2T0, PH. 534-1

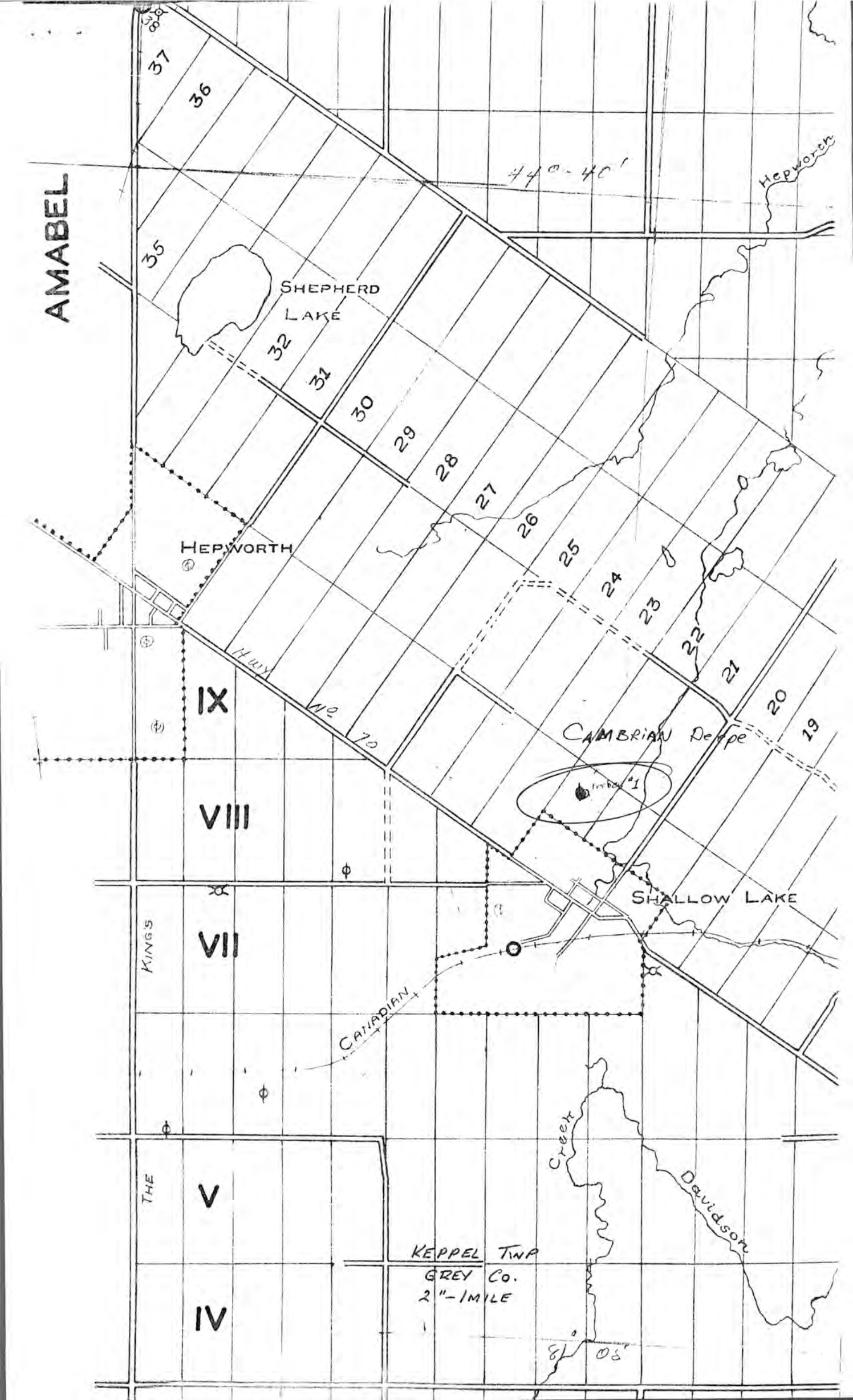
LOT 22
CONCESSION 2
SOUTH OF THE CENTRE DIAGONAL
TOWNSHIP OF KEPPEL
COUNTY OF GREY

SCALE 1:4000

20 10 0 50 100 150 METRES

GORDON W. HARWOOD LTD.
1980




AMABEL
SHEPHERD LAKE
HEPWORTH
Hepworth
44°-40'
Hwy No 70
CAMBRIAN Depe
Trench #1
SHALLOW LAKE
CANADIAN
Creek
Davidson
KINGS
THE
IX
VIII
VII
V
IV
37
36
35
32
31
30
29
28
27
26
25
24
23
22
21
20
19
KEPPEL TWP
GREY Co.
2"-1MILE

APPENDIX D

MECP Water Well Records

TABLE D-1: SUMMARY OF MECP WATER WELL RECORDS
Proposed Subdivision, Part Lot 23, Concession 2 SCD (Keppel), Georgian Bluffs (Shallow Lake)

Ref. No.	Well ID	Township Concession and Lot	UTM Coordinates	Date and Contractor	Casing Dia (in)	Water Found (ft)	Pump Test Static Level (ft) Pump Level (ft) Test Rate (gpm) Duration (h:mm)	Well Use or Final Status	Formation (depth to bottom of each layer in ft)
1	2501539 ()	SHALLOW LAKE VILLAGE	17 492665 4940488 W	1949/05 5505	4 4	FR 0106	36/110/2/1:0	DO	SILT GRVL 0008 ROCK 0110
2	2501661 ()	KEPPEL TOWNSHIP OR S 02 023	17 492565 4940673 W	1953/09 5505	4 4	FR 0080	40/75/2/0:30	DO	PRDR 0080 LMSN 0097
3	2502219 ()	SHALLOW LAKE VILLAGE	17 492615 4940615 W	1953/10 5502	4 4	FR 0107	35/45/5/3:0	DO	GRVL STNS 0030 BRWN ROCK 0107
4	2502228 ()	SHALLOW LAKE VILLAGE	17 492925 4940398 W	1957/11 5505	4 4	FR 0085	40/50/10/1:0	DO	LOAM 0002 ROCK 0010 WHIT LMSN 0085
5	2502237 ()	SHALLOW LAKE VILLAGE	17 492795 4940423 W	1962/03 5505	5 5	FR 0116	50/60/18/1:0	DO	LMSN 0003 BRWN LMSN 0120
6	2502238 ()	SHALLOW LAKE VILLAGE	17 492565 4940523 W	1962/04 5502	5 5	FR 0115 FR 0120	56/56/12/2:0	DO	ROCK SHLE 0005 GREY LMSN 0129
7	2502239 ()	SHALLOW LAKE VILLAGE	17 492390 4940623 W	1964/04 5505	5 5	FR 0080	51/85/15/1:0	DO	BRWN FILL 0001 BRWN LMSN 0005 WHIT LMSN 0025 BRWN LMSN 0122 GREY LMSN 0125
8	2502240 ()	SHALLOW LAKE VILLAGE	17 492885 4940438 W	1964/06 5505	5 5	FR 0043	22/23/15/1:0	PS	BRWN CLAY STNS 0025 BRWN LMSN 0045
9	2502604 ()	SHALLOW LAKE VILLAGE	17 492665 4940443 W	1968/05 5507	5 5	FR 0120 FR 0138	60/135/5/3:0	DO	LMSN 0040 BRWN LMSN 0143
10	2502621 ()	SHALLOW LAKE VILLAGE	17 492540 4940563 W	1968/08 5507	5 5	FR 0200	70/130/6/2:0	PS	PRDR 0105 BRWN LMSN 0205
11	2503018 ()	SHALLOW LAKE VILLAGE	17 492635 4940583 W	1969/06 5507	5	FR 0100	35/60/7/2:0	DO	BRWN LMSN 0109
12	2503194 ()	SHALLOW LAKE VILLAGE	17 493015 4940573 W	1970/04 5502	5	FR 0060 FR 0078	21/25/14/2:30	DO	BRWN GRVL STNS 0016 BRWN ROCK 0060 GREY ROCK 0080
13	2504245 ()	KEPPEL TOWNSHIP OR S 02 023	17 492435 4940723 W	1973/08 3408	6 6 5	FR 0100	26//4/6:0	DO	CLAY SAND STNS 0001 WHIT LMSN 0116
14	2504304 ()	SHALLOW LAKE VILLAGE	17 492435 4940573 W	1973/08 5505	5	FR 0122	60/80/7/1:0	DO	BRWN LOAM 0002 BRWN LMSN 0122 WHIT LMSN 0157
15	2504420 ()	SHALLOW LAKE VILLAGE	17 492376 4940523 W	1973/10 5507	5 5	FR 0130	40/130/8/2:0	DO	LMSN 0163
16	2504594 ()	SHALLOW LAKE VILLAGE	17 492559 4940456 W	1974/03 5507	5 5	FR 0150	40/150/4/2:0	DO	LMSN 0160
17	2505251 ()	SHALLOW LAKE VILLAGE	17 493067 4940544 W	1975/05 5507	5 5	FR 0060	16/40/8/2:0	DO	CLAY STNS 0012 LMSN 0080
18	2505286 ()	SHALLOW LAKE VILLAGE	17 492996 4940476 W	1975/05 5507	5 5	FR 0100 FR 0110	25/100/7/2:0	DO	LMSN 0120

TABLE D-1: SUMMARY OF MECP WATER WELL RECORDS
Proposed Subdivision, Part Lot 23, Concession 2 SCD (Keppel), Georgian Bluffs (Shallow Lake)

Ref. No.	Well ID	Township Concession and Lot	UTM Coordinates	Date and Contractor	Casing Dia (in)	Water Found (ft)	Pump Test Static Level (ft) Pump Level (ft) Test Rate (gpm) Duration (h:mm)	Well Use or Final Status	Formation (depth to bottom of each layer in ft)
19	2505291 ()	SHALLOW LAKE VILLAGE	17 493000 4940541 W	1975/04 5507	5 5	FR 0075	5/30/15/2:0	DO	CLAY STNS 0005 LMSN 0082
20	2505523 ()	KEPPEL TOWNSHIP OR S 02 022	17 492910 4940561 W	1975/11 5507	6	FR 0060 UK 0083	12/60/8/2:0	DO	HPAN STNS 0012 LMSN 0090
21	2505592 ()	SHALLOW LAKE VILLAGE	17 492815 4940523 W	1976/03 5505	6	FR 0105	36/50/7/1:0	CO	BRWN STNS LOAM LOOS 0003 GREY LMSN 0107
22	2505620 ()	SHALLOW LAKE VILLAGE	17 492865 4940573 W	1976/05 5507	6	FR 0060	16/45/12/2:0	DO	CLAY STNS 0012 LMSN 0097
23	2506010 ()	SHALLOW LAKE VILLAGE	17 492615 4940423 W	1976/09 5507	6	FR 0105	70/100/20/1:0	DO	CLAY 0002 LMSN 0154
24	2506177 ()	KEPPEL TOWNSHIP OR S 02 023	17 492565 4940723 W	1977/07 5505	6	FR 0115	58/240/5/2:0	CO	BRWN LOAM 0002 WHIT LMSN 0018 BRWN LMSN 0145 GREY LMSN 0227 BLUE SHLE 0235 RED SHLE 0247
25	2506376 ()	SHALLOW LAKE VILLAGE CON 08 008	17 492765 4940423 W	1977/06 5507	5	FR 0088 FR 0215	62/200/8/2:0	DO	CLAY 0008 LMSN 0215 BLUE SHLE 0223 RED SHLE 0240
26	2506377 ()	SHALLOW LAKE VILLAGE CON 08 008	17 492815 4940423 W	1977/06 5507	5	FR 0088	64/130/5/2:0	DO	CLAY 0003 LMSN 0150
27	2507162 ()	SHALLOW LAKE VILLAGE	17 492715 4940573 W	1979/10 5507	6	FR 0215	59/245/6/2:0	DO	GRVL FILL 0006 LMSN 0228 BLUE SHLE 0236 RED SHLE 0245
28	2508126 ()	SHALLOW LAKE VILLAGE	17 492515 4940523 W	1983/10 5505	5	FR 0075	75/190/4/2:0	DO	BRWN LOAM 0001 BRWN LMSN 0012 GREY LMSN 0028 BRWN LMSN 0141 GREY LMSN 0196
29	2508293 ()	SHALLOW LAKE VILLAGE	17 492715 4940323 W	1984/05 5505	5	FR 0030 FR 0060	/130/4/1:0	DO	GREY STNS FILL 0003 BRWN LMSN 0006 BRWN LMSN 0108 GREY LMSN 0142
30	2508536 ()	SHALLOW LAKE VILLAGE 030	17 492515 4940323 W	1985/11 3316	5 5	FR 0130	25/50/15/1:0	DO	BRWN ROCK CLAY FCRD 0008 BRWN ROCK 0090 GREY ROCK 0140
31	2508826 (04143)	SHALLOW LAKE VILLAGE	17 492865 4940323 W	1987/03 5507	5		35//10/1:0	DO	LOAM STNS 0003 LMSN 0110
32	7137287 (Z103217) A	KEPPEL TOWNSHIP OR S 02 023	17 492527 4940656 W	2009/11 5505					
33	7363044 (Z329254) A294904	KEPPEL TOWNSHIP	17 493103 4940925 W	2020/04 5505	6.19 6	UT 0070 0100	47/50/5/2:	DO	BLCK LOAM 0002 BRWN SAND STNS 0024 BRWN LMSN FCRD 0026 BRWN LMSN 0042 BRWN LMSN LYRD 0070 GREY LMSN 0102

TABLE D-2: SUMMARY OF PUMPING TEST DATA FROM MECP WATER WELL RECORDS
Proposed Subdivision, Part Lot 23, Concession 2 SCD (Keppel), Georgian Bluffs (Shallow Lake)

Ref. No.	Well ID	Casing Dia (in)	Well Depth (ft)	Static Level (ft)	Pumping Method	Pumping Rate (gpm)	Total Drawdown (ft)	Specific Capacity (gpm/ft)	Recovery Water Level (ft)	Pump Test Static Level (ft) Pump Level (ft) Test Rate (gpm) Duration (h:mm)	Recommended Pumping Rate (gpm)
1	2501539	4	110	36	Pump	2.5	110	0.02	N/A	36/110/2/1:0	-
2	2501661	4	97	40	Pump	2.5	35	0.07	-	40/75/2/0:30	-
3	2502219	4	107	35	Pump	5	10	0.50	N/A	35/45/5/3:0	-
4	2502228	4	85	40	Pump	10	10	1.00	-	40/50/10/1:0	-
5	2502237	5	120	50	Pump	18	10	1.80	-	50/60/18/1:0	5 - 10
6	2502238	5	129	56	Pump	12	0	>100	N/A	56/56/12/2:0	5
7	2502239	5	125	51	Pump	15	70	0.21	N/A	51/85/15/1:0	5 - 10
8	2502240	5	45	22	Pump	15	1	15.00	-	22/23/15/1:0	5 - 10
9	2502604	5	143	60	Pump	5	75	0.07	N/A	60/135/5/3:0	5
10	2502621	5	205	70	Pump	6	60	0.10	-	70/130/6/2:0	5
11	2503018	5	109	35	Bailer	7	25	0.28	-	35/60/7/2:0	5
12	2503194	5	80	21	Bailer	14	4	3.50	21 after 30 min (100%)	21/25/14/2:30	7
13	2504245	6	116	26	Bailer	4	100	0.04	-	26//4/6:0	4
14	2504304	5	157	60	Bailer	7	20	0.35	60 after 60 min (100%)	60/80/7/1:0	5
15	2504420	5	163	40	Bailer	8	90	0.09	N/A	40/130/8/2:0	5
16	2504594	5	160	40	Bailer	5	110	0.05	-	40/150/4/2:0	4
17	2505251	5	80	16	Pump	8	24	0.33	-	16/40/8/2:0	5
18	2505286	5	120	25	Bailer	7	75	0.09	-	25/100/7/2:0	7
19	2505291	5	82	5	Bailer	15	25	0.60	-	5/30/15/2:0	15
20	2505523	5	90	12	Bailer	8	48	0.17	-	12/60/8/2:0	5
21	2505592	5	107	36	Bailer	7	14	0.50	-	36/50/7/1:0	5
22	2505620	5	97	16	Bailer	12	29	0.41	-	16/45/12/2:0	5+
23	2506010	5	154	70	-	20	30	0.67	-	70/100/20/1:0	5
24	2506177	6	247	58	Bailer	5	182	0.03	-	58/240/5/2:0	5
25	2506376	5	240	62	Pump	8	138	0.06	N/A	62/200/8/2:0	5
26	2506377	5	150	64	Bailer	5	66	0.08	-	64/130/5/2:0	5
27	2507162	6	245	59	Air	6	186	N/A	-	59/245/6/2:0	6
28	2508126	5	196	75	Bailer	4	115	0.03	119 after 60 min (38%)	75/190/4/2:0	3

TABLE D-2: SUMMARY OF PUMPING TEST DATA FROM MECP WATER WELL RECORDS
Proposed Subdivision, Part Lot 23, Concession 2 SCD (Keppel), Georgian Bluffs (Shallow Lake)

Ref. No.	Well ID	Casing Dia (in)	Well Depth (ft)	Static Level (ft)	Pumping Method	Pumping Rate (gpm)	Total Drawdown (ft)	Specific Capacity (gpm/ft)	Recovery Water Level (ft)	Pump Test Static Level (ft) Pump Level (ft) Test Rate (gpm) Duration (h:mm)	Recommended Pumping Rate (gpm)
29	2508293	5	142	-	Bailer	4	N/A	-	N/A	/130/4/1:0	3
30	2508536	5	140	25	Bailer	15	25	0.60	-	25/50/15/1:0	10
31	2508826	5	110	35	Air	10	N/A	-	35 after 45 min (100%)	35//10/1:0	8 - 10
32	7137287	-	-	-	-	-	-	-	-	-	-
33	7363044	6	102	47	Pump	5	2.7	1.85	47 after 1 min (100%)	47/50/5/2:0	5

Ministry of Environment and Energy
Ontario

The Ontario Water Resources Act
WATER WELL RECORD

Print only in spaces provided.
Mark correct box with a checkmark, where applicable.

11 — 2514177

Municipality: 25009 — Con.: CON — 08

County or District	Township/Borough/City/Town/Village	Con block tract survey, etc.	Lot
[redacted]	Kipple	VIII	6

Address: RR#2 Shallow Lake

Date completed (day month year): 99

21 — Northing — RC — Elevation — RC — Basin Code — ii — iii — iv

LOG OF OVERBURDEN AND BEDROCK MATERIALS (see instructions)

General colour	Most common material	Other materials	General description	Depth – feet From	Depth – feet To
			clay and stones	0	9
			limestone	9	185
			blue shale rock	185	197
			blue shale	197	200

31

32

41 WATER RECORD

Water found at – feet	Kind of water
90-100	1 ☐ Fresh ✓ 2 ☐ Salty 3 ☐ Sulphur 4 ☐ Minerals 6 ☐ Gas
140-	1 ☐ Fresh ✓ 2 ☐ Salty 3 ☐ Sulphur 4 ☐ Minerals 6 ☐ Gas
	1 ☐ Fresh 2 ☐ Salty 3 ☐ Sulphur 4 ☐ Minerals 6 ☐ Gas
	1 ☐ Fresh 2 ☐ Salty 3 ☐ Sulphur 4 ☐ Minerals 6 ☐ Gas
	1 ☐ Fresh 2 ☐ Salty 3 ☐ Sulphur 4 ☐ Minerals 6 ☐ Gas

51 CASING & OPEN HOLE RECORD

Inside diam inches	Material	Wall thickness inches	Depth – feet From	Depth – feet To
8 1/4	1 ☐ Steel ✓ 2 ☐ Galvanized 3 ☐ Concrete 4 ☐ Open hole 5 ☐ Plastic	.205	0	50
	1 ☐ Steel 2 ☐ Galvanized 3 ☐ Concrete 4 ☐ Open hole ✓ 5 ☐ Plastic		50	200
	1 ☐ Steel 2 ☐ Galvanized 3 ☐ Concrete 4 ☐ Open hole 5 ☐ Plastic			

SCREEN

Sizes of opening (Slot No.)	Diameter inches	Length feet
Material and type	Depth at top of screen feet	

61 PLUGGING & SEALING RECORD

✓ Annular space ☐ Abandonment

Depth set at – feet From	To	Material and type (Cement grout, bentonite, etc.)
9	50	Cement

71 PUMPING TEST

Pumping test method: 1 ☐ Pump 2 ☐ Bailer — Pumping rate: 100+ GPM — Duration of pumping: 1 Hours ..... Mins

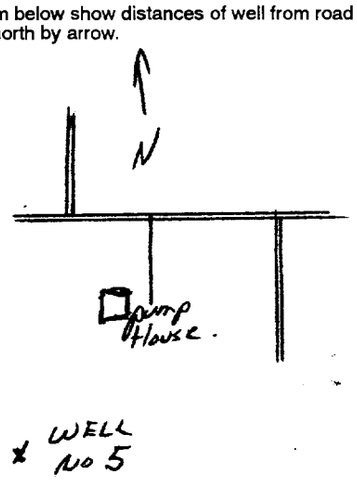
Static level	Water level end of pumping	Water levels during 1 ☐ Pumping 2 ✓ Recovery			
35 feet	200 feet	15 minutes feet	30 minutes 35 feet	45 minutes ✓ feet	60 minutes ✓ feet

If flowing give rate: GPM — Pump intake set at: 200 RODS feet — Water at end of test: ✓ Clear ☐ Cloudy

Recommended pump type: ☐ Shallow ✓ Deep — Recommended pump setting: 180 feet — Recommended pump rate: 100 GPM

LOCATION OF WELL

In diagram below show distances of well from road and lot line. Indicate north by arrow.



202538

FINAL STATUS OF WELL

1 ✓ Water supply
2 ☐ Observation well
3 ☐ Test hole
4 ☐ Recharge well
5 ☐ Abandoned, insufficient supply
6 ☐ Abandoned, poor quality
7 ☐ Abandoned (Other)
8 ☐ Dewatering
9 ☐ Unfinished
10 ☐ Replacement well

WATER USE

1 ☐ Domestic
2 ☐ Stock
3 ☐ Irrigation
4 ☐ Industrial
5 ☐ Commercial
6 ✓ Municipal
7 ☐ Public supply
8 ☐ Cooling & air conditioning
9 ☐ Not used
10 ☐ Other .....

METHOD OF CONSTRUCTION

1 ☐ Cable tool
2 ☐ Rotary (conventional)
3 ☐ Rotary (reverse)
4 ☐ Rotary (air)
5 ✓ Air percussion
6 ☐ Boring
7 ☐ Diamond
8 ☐ Jetting
9 ☐ Driving
10 ☐ Digging
11 ☐ Other .....

Name of Well Contractor	Well Contractor's Licence No.
Wm Wright Well Drilling Ltd	5507
Address: Box 167 Hepworth Ont	
Name of Well Technician: Herb Wright	Well Technician's Licence No.
Signature of Technician/Contractor: Herbert Wright	Submission date (day mo yr)

MINISTRY USE ONLY

Data source	Contractor	Date received
	5507	FEB 23 2000
Date of inspection	Inspector	
Remarks		

CSS.ES0

2 - MINISTER OF ENVIRONMENT & ENERGY COPY

0506 (07/94) Front Form 9

M 17 Z 4912610 E
19 R 4914012510 N
Elev. 19 R 0 78.5
Basin 22

ONTARIO

25 № 1539

41A/11E

The Well Drillers Act

Department of Mines, Province of Ontario

DEPARTMENT OF MINES
MAY 23 1950

Water Well Record

SHALLOW LAKE

[redacted] Con VIII Lot 8 Pt. Lot .....
[redacted] Acres ½
Date Completed May 10 49 Cost of Well (not including pump) $300.00

Pipe and Casing Record	Pumping Test
Casing diameter(s) 4" I. D.	Date May 10 - 49
Length(s) of casing(s) 13'	Developed Capacity
Length of screen	Duration of Test 1 hr.
Type of screen	Pumping Rate 150 gal a hour
Type of pump	Drawdown can pump dry
Capacity of pump	Static level of completed well 36'
Depth of pump setting	Is well a gravel-wall type?

Water Record

Kind (fresh or mineral) fresh
Quality (hard, soft, contains iron, sulphur etc.) hard

Depth(s) to Water Horizon(s)	Kind of Water	No. of Feet Water Rises
106 ft.	fresh	70 ft

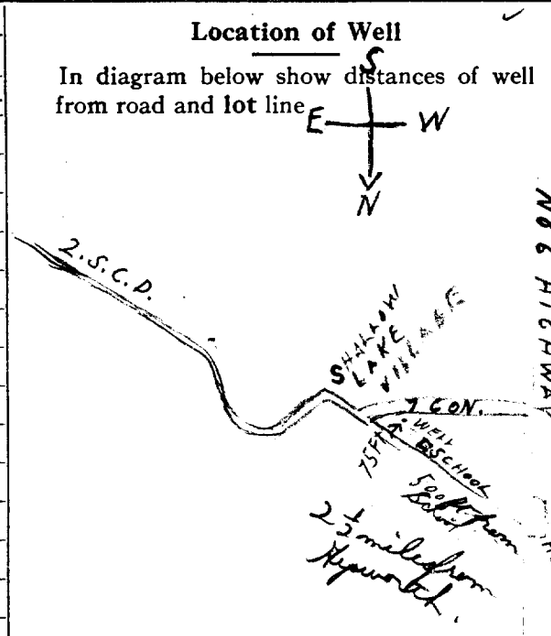
Appearance (clear, cloudy, coloured)
For what purpose(s) is the water to be used? house
How far is well from possible source of contamination? 75 ft
What is source of contamination? outside toilet
Enclose a copy of any mineral analysis that has been made of water

Well Log

Drift and Bedrock Record	From 0 ft.	To ft.
Silt & Gravel		
7½ ft to bedrock	0	7½
bedrock	7½	110
Hit a little water at 60 ft		
a little more at 105.		
Not strong can pump dry.		

Location of Well

In diagram below show distances of well from road and lot line



Situation: Is well on upland, in valley, or on hillside? upland
Drilling Firm Wright Bros.
Address Wiarton, Ont.
Recorded by R. E. Wright Address Wiarton
Date May 20 1950 Licence Number 434

CSS S8

UTM 17 Z 491251510 E
19 R 4941041510 N
Elev.: 19 R
Elephant Rd South
Lot - 23

RECEIVED
JAN 12 1954
GEOLOGICAL BRANCH
DEPARTMENT of MINES

25 No. 1661

ONTARIO

The Well Drillers Act
Department of Mines, Province of Ontario

Water Well Record

County or Territorial District: Gray Township, ~~Village, Town or City~~: Keppel
Con. 2nd S.D.R. Lot 23 Street and Number (if in Village, Town or City):
Owner: [redacted] Address: R.R. No. 1 Shallow Lake
Date Completed: Sept. 18 53 (day) (month) (year) Cost of Well (excluding pump): $90.00

Pipe and Casing Record	Pumping Test
Casing diameter(s): 4 1/4	Date: Sept. 18-53
Length(s) of casing(s): 11 feet	Static level: 40
Type of screen:	Pumping level: 75
Length of screen:	Pumping rate: 15 g.p.h.
Distance from top of screen to ground level:	Duration of test: 1/2 hr.
Is well a gravel-wall type?	Distance from cylinder or bowls to ground level:

Water Record

Kind (fresh or mineral): fresh
Quality (hard, soft, contains iron, sulphur, etc.): hard
Appearance (clear, cloudy, coloured):
For what purpose(s) is the water to be used?: domestic
How far is well from possible source of contamination? 100 ft.
What is the source of contamination? none apparent
Enclose a copy of any mineral analysis that has been made of water

Depth(s) to Water Horizon(s)	Kind of Water	No. of Feet Water Rises
80	fresh	57

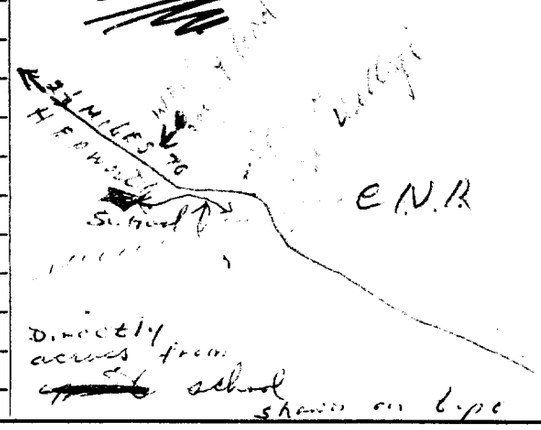
Well Log

Overburden and Bedrock Record	From	To
Previously drilled	0 ft.	80 ft.
limestone rock	80	97
This well was drilled before		
to 30 ft. we could		
not and drilled		
17 feet deeper and put		
11 ft of casing in. It is		
100 ft right from the		
well	97	feet

Location of Well

In diagram below show distances of well from road and lot line. Indicate north by arrow.

See Over



Situation: Is well on upland, in valley, or on hillside? Hillside
Drilling Firm: Wright Bros
Address: Wiarton Ont.
Name of Driller: [illegible] Address: Wiarton Ont.
Date: Sept. 18-53 Licence Number: [illegible]
Signature of Licensee

FORM 5

CSS.S8

UTM 17 Z 492650 E
19 R 4840392 N
Elev. 19 R 07910
Basin 22

41A/1a

ONTARIO

RECEIVED
FEB 12 1954
GEOLOGICAL BRANCH
DEPARTMENT of MINES

25 № 2219

The Well Drillers Act

Department of Mines, Province of Ontario

Water Well Record

County or Territorial District: Grey ..... ~~Township~~, Village, ~~Town or City~~: Shallow Lake
Con. 2 ..... Lot ~~23~~ ..... Street and Number (if in Village, Town or City): Shallow Lake P.O.
Owner: [redacted] ..... Address: Shallow Lake Ontario
Date Completed: Oct 1 1953 (day) (month) (year) ..... Cost of Well (excluding pump) .....

Pipe and Casing Record	Pumping Test
Casing diameter(s): 4 1/4"	Date:
Length(s) of casing(s): 42 ft	Static level: 35 ft
Type of screen:	Pumping level: 45 ft
Length of screen:	Pumping rate: ~~unmeasured~~ 5 gal per min
Distance from top of screen to ground level:	Duration of test: 3 hours
Is well a gravel-wall type? no	Distance from cylinder or bowls to ground level:

Water Record

Kind (fresh or mineral): fresh
Quality (hard, soft, contains iron, sulphur, etc.): soft
Appearance (clear, cloudy, coloured): clear
For what purpose(s) is the water to be used? House
How far is well from possible source of contamination? 30 ft
What is the source of contamination? septic tanks
Enclose a copy of any mineral analysis that has been made of water

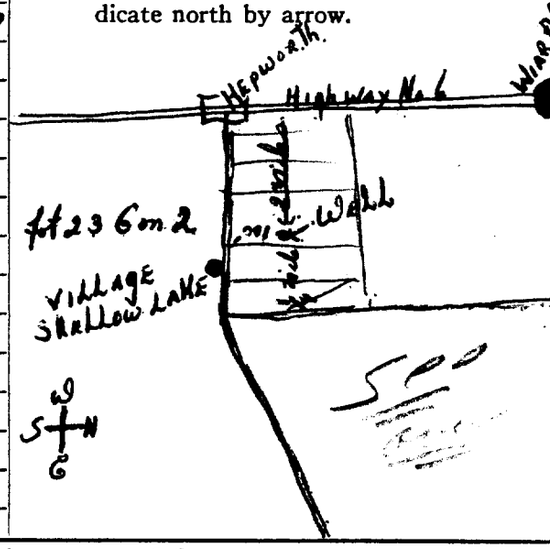
Depth(s) to Water Horizon(s)	Kind of Water	No. of Feet Water Rises
~~35~~ ft 107	Fresh	72 ft

Well Log

Overburden and Bedrock Record	From 0 ft.	To ....ft.
Loose Rock	0	30
Brown Rock	30	107

Location of Well

In diagram below show distances of well from road and lot line. Indicate north by arrow.



Situation: Is well on upland, in valley, or on hillside? Top of Hill
Drilling Firm: Dalton Wright & Sons
Address: R.R. no. 5 Wiarton Ontario
Name of Driller: Ted & Bill Wright ..... Address: R.R. no. 5 Wiarton
Date: Nov 20 1953 ..... Licence Number: 496 & 324
William Wright
Signature of Licensee

FORM 5

CSS 58

UTM 17 Z 492900 E
19 R 4940200 N
Elev. 19 R 0758
Basin 22

41A11a
44A/5E

25 № 2228

ONTARIO

The Water-well Drillers Act, 1954
Department of Mines

Water-Well Record

GROUNDWATER BRANCH
JAN 19 1958
ONTARIO WATER RESOURCES COMMISSION

County or Territorial District [redacted] Township, Village, Town or City Hepworth
[redacted] Village, Town or City) Shallow Lake
[redacted] Address Shallow Lake
Date completed [redacted]
(day) (month) (year)

SHALLOW LAKE

Pipe and Casing Record

Casing diameter(s) 4 1/2
Length(s) 35 ft
Type of screen —
Length of screen —

Pumping Test

Static level 40 ft
Pumping rate 16 gal per MIN
Pumping level 50 ft
Duration of test 1 hr

Well Log / Water Record

Overburden and Bedrock Record	From ft.	To ft.	Depth(s) at which water(s) found	No. of feet water rises	Kind of water (fresh, salty, or sulphur)
top soil	0	2			
broken rock	2	10			
white limestone	10	85	85	45	fresh

For what purpose(s) is the water to be used? Domestic
Is water clear or cloudy? Clear
Is well on upland, in valley, or on hillside? hillside

Drilling firm C. Wright Bros.
Address Lucknow

Name of Driller Roy J. Stern
Address Lucknow

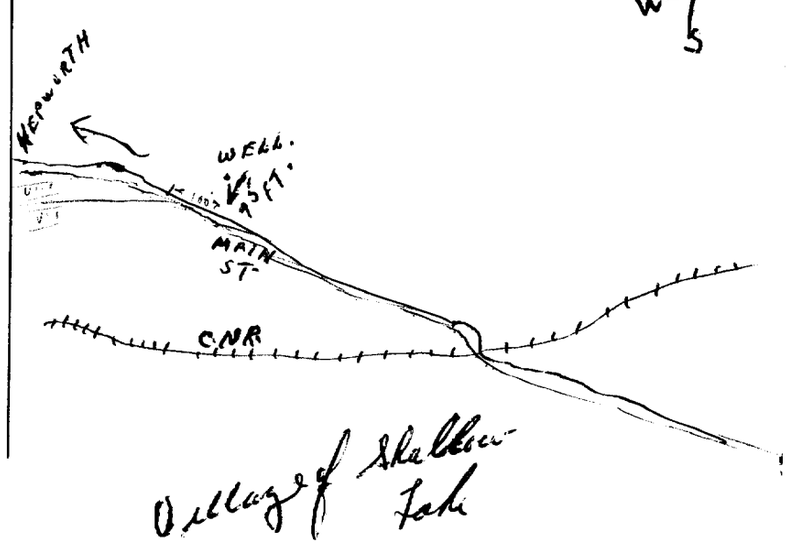
Licence Number 32 & 33

I certify that the foregoing statements of fact are true.

Date 12-11-57 R. Wright
Signature of Licensee

Location of Well

In diagram below show distances of well from road and lot line. Indicate north by arrow.



Form 5

CSS 58

UTM 17 Z 49 ~~4025~~ 2780 E
15 R 4939 ~~0250~~ 40200 N
Elev 6 ~~5~~ R 0775

41P11a
44F/3E

GROUND WATER BRANCH
25 No. 2287
2 1962
ONTARIO WATER RESOURCES COMMISSION

The Ontario Water Resources Commission Act

WATER WELL RECORD

Basin 22 GREY
County or District
~~Township, Village, Town or City~~ Shallow Lake
Con — Lot —
Date completed 30 (day) May (month) 62 (year)
[redacted] ress Shallow Lake

Casing and Screen Record

Inside diameter of casing 5 in.
Total length of casing 32 ft.
Type of screen —
Length of screen —
Depth to top of screen —
Diameter of finished hole 5 in.

Pumping Test

Static level 50 ft
Test-pumping rate 18 G.P.M.
Pumping level 60 ft.
Duration of test pumping 1 HOUR.
Water clear or cloudy at end of test CLOUDY
Recommended pumping rate 5 ~~6~~ 10 G.P.M.
with pump setting of 80 feet below ground surface

Well Log

Overburden and Bedrock Record	From ft.	To ft.	Water Record: Depth(s) at which water(s) found	Water Record: Kind of water (fresh, salty, sulphur)
Shaky ~~rock~~ lime stone.	0	3	116	FRESH
Brown lime stone.	3	120		

For what purpose(s) is the water to be used? D.O.M.

Is well on upland, in valley, or on hillside? UPLAND

Drilling or Boring Firm Roy & Stan Wright

Address Wiarton

Licence Number 431

Name of Driller or Borer Stan Wright

Address Wiarton

Date

Stan Wright
(Signature of Licensed Drilling or Boring Contractor)

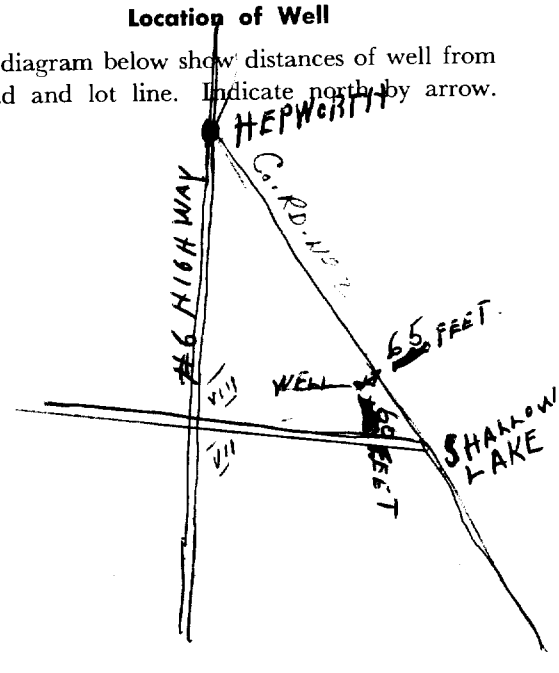
Form 7 5M-61-3852

OWRC COPY

Location of Well

W. N E S

In diagram below show distances of well from road and lot line. Indicate north by arrow.



OSS.58

41P11a
447/34

UTM 17 Z 4912550 E
15 R 4940310 N

Elev. 15 R 0780 ~~0~~ 5

Basin 22 11 K

The Ontario Water Resources Commission Act

WATER WELL RECORD

County or District GREY

Township, Village, ~~Town or City~~ SHALLOW LAKE

Con. — Lot —

Date completed 23 (day) APRIL (month) 1962 (year)

[redacted]dress SHALLOW LAKE

Casing and Screen Record

Inside diameter of casing 5"

Total length of casing 37 ft

Type of screen —

Length of screen —

Depth to top of screen

Diameter of finished hole 5"

Pumping Test

Static level 56

Test-pumping rate 12 G.P.M.

Pumping level 56

Duration of test pumping 2 hrs

Water clear or cloudy at end of test cloudy

Recommended pumping rate 5 G.P.M.

with pump setting of 100 feet below ground surface

Well Log

Overburden and Bedrock Record	From ft.	To ft.	Water Record: Depth(s) at which water(s) found	Water Record: Kind of water (fresh, salty, sulphur)
Shaly Rock	0	5		fresh
~~Bedrock~~ Gr[illegible]	5	129	115	
			120	"

For what purpose(s) is the water to be used? domestic

Is well on upland, in valley, or on hillside? hillside

Drilling or Boring Firm Walter Wright & Sons RR# 3 Thornbury

Address

Licence Number 430

Name of Driller or Borer Edward Wright

Address Claude H. Thornton

Date May 9th 1962

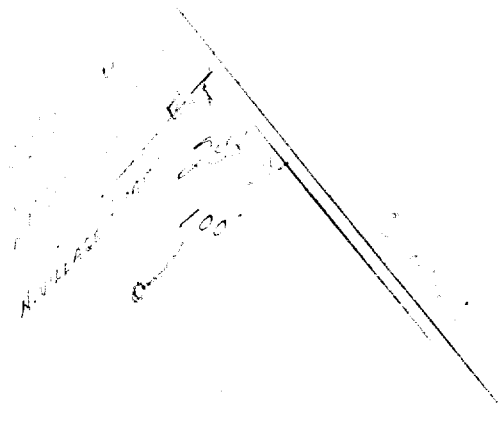
(Signature of Licensed Drilling or Boring Contractor)

Form 7 15M Sets 60-5930

OWRC COPY

Location of Well

In diagram below show distances of well from road and lot line. Indicate north by arrow.



MAY 15 1962 ONTARIO WATER RESOURCES COMMISSION 2238

MA

UTM 17 Z 419121 ~~410~~ 375 E

15 R 4941013 ~~65~~ 400 N

Elev. 15 R 079171 ~~7~~ 800

Basin 22

41P11a 47A/3E

25 No. 2239

WATER RESOURCES DIVISION DEC 23 1964 ONTARIO WATER RESOURCES COMMISSION

Shallow Lake

the Ontario Water Resources Commission Act

WATER WELL RECORD

County or District GREY ~~Township~~, Village, ~~Town or City~~ ~~KEMAR~~

Con 8 Lot 8 Date completed 30 (day) Apr. (month) 1964 (year)

[redacted] ress Shallow Lake.

Casing and Screen Record

Inside diameter of casing 5 in

Total length of casing 30 feet

Type of screen -

Length of screen -

Depth to top of screen -

Diameter of finished hole 5 in

Pumping Test

Static level 51 feet

Test-pumping rate 15 G.P.M.

Pumping level 85 feet

Duration of test pumping 1 hour.

Water clear or cloudy at end of test cloudy.

Recommended pumping rate 5 to 10 G.P.M.

with pump setting of 80. feet below ground surface

Well Log

Overburden and Bedrock Record	From ft.	To ft.	Water Record: Depth(s) at which water(s) found	Water Record: Kind of water (fresh, salty, sulphur)
Brown soil	0	1	80-	
Brown lime stone	1	5	122	fresh.
White lime stone	5	25		
Brown lime stone	25	122		
Grey lime stone	122	125		

For what purpose(s) is the water to be used? Dom.

Is well on upland, in valley, or on hillside? upland.

Drilling or Boring Firm Roy & Stan Wright

Address Wiarton Ont.

Licence Number 1312

Name of Driller or Borer Stan Wright

Address Wiarton

Date

Stan Wright

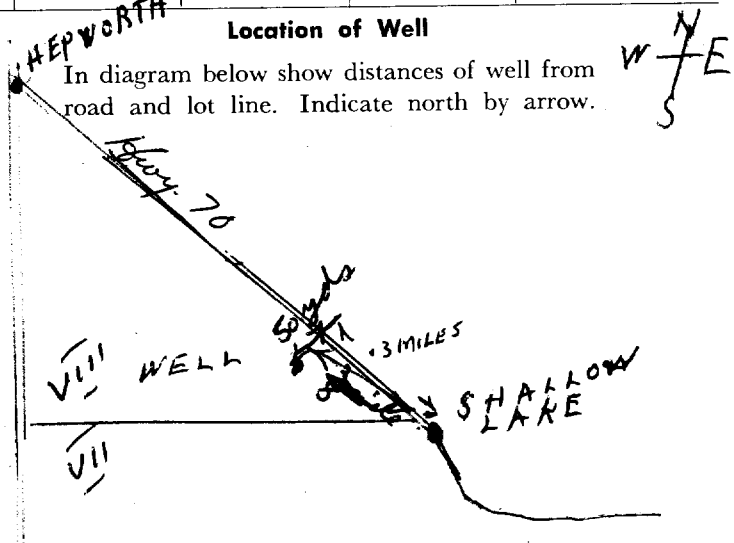
(Signature of Licensed Drilling or Boring Contractor)

Form 7 10M-62-1152

OWRC COPY

Location of Well

In diagram below show distances of well from road and lot line. Indicate north by arrow.



MA

UTM 17 Z 492840 E

5 19 R 4940215 N

Elev. 5 19 R 0 7 5 0 1

41Alla

41A/1E 25 No. 2240

The Ontario Water Resources Commission Act

WATER WELL RECORD

WATER RESOURCES DIVISION

Basin 22 | GREY

County or District

~~Township~~, Village, ~~Town or City~~ SHALLOW LAKE

Con. — Lot —

Date completed 12 June 64 (day month year)

Owner UNITED CHURCH (print in block letters)

Address Shallow Lake Ont

Casing and Screen Record

Inside diameter of casing 5 in

Total length of casing 27 feet

Type of screen —

Length of screen —

Depth to top of screen —

Diameter of finished hole 5 in

Pumping Test

Static level 22 feet

Test-pumping rate 15 G.P.M.

Pumping level 23 feet

Duration of test pumping 1 hour

Water clear or cloudy at end of test cloudy

Recommended pumping rate 5 to 10 G.P.M.

with pump setting of 30 feet below ground surface

Well Log

Overburden and Bedrock Record	From ft.	To ft.	Water Record: Depth(s) at which water(s) found	Water Record: Kind of water (fresh, salty, sulphur)
Brown clay & stones	0	25		
Brown limestone	25	45	43	fresh.

For what purpose(s) is the water to be used? Church.

Is well on upland, in valley, or on hillside? upland

Drilling or Boring Firm Roy & Stan Wright

Address Wiarton

Licence Number 1312

Name of Driller or Borer Stan Wright

Address Wiarton

Date 12 June 64

Stan Wright (Signature of Licensed Drilling or Boring Contractor)

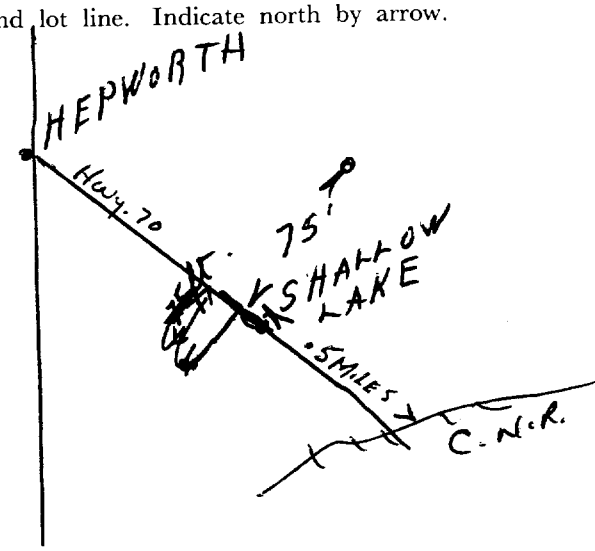
Form 7 15M-60-4138

OWRC COPY

Location of Well

W 7 E
S

In diagram below show distances of well from road and lot line. Indicate north by arrow.



17 492650 Con VIII
5 H940220 Lot 8
5 0780
22

CODED

41A11a

7

2502604
3 9

The Ontario Water Resources Commission Act

WATER WELL RECORD

SHALLOW LAKE

County or District: Grey
Township, Village, Town or City: Keppel
Con. ~~10~~ VIII Pt Lot ~~Part 8 229 23~~
Date completed: 8 (day) May (month) 68 (year)

[redacted] ress. Shallow Lake

Casing and Screen Record

Inside diameter of casing: 5 3/16
Total length of casing: 45'. 7"
Type of screen: —
Length of screen: —
Depth to top of screen: —
Diameter of finished hole: 5"

Pumping Test

Static level: 60
Test-pumping rate: 5 G.P.M.
Pumping level: 135
Duration of test pumping: 3 hrs
Water clear or cloudy at end of test: Clear
Recommended pumping rate: 5 G.P.M.
with pump setting of: 135 feet below ground surface

Well Log

Overburden and Bedrock Record	From ft.	To ft.	Water Record: Depth(s) at which water(s) found	Water Record: Kind of water (fresh, salty, sulphur)
Loose Limestone	0	40	120	Fresh
Brown Limestone	40	143	138	

For what purpose(s) is the water to be used? House D.

Is well on upland, in valley, or on hillside? upland

Drilling or Boring Firm: William Wright
Well Driller
Address: Hepworth Ont

Licence Number: 3076
Name of Driller or Borer: Herb Wright
Address: Hepworth Ont
Date: May 17/68
William Wright
(Signature of Licensed Drilling or Boring Contractor)

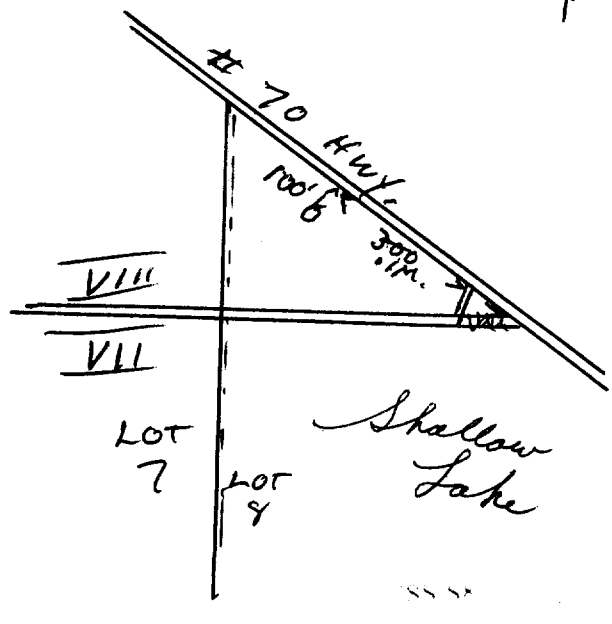
PLAN 857
LOT 22

Form 7 15M-60-4138

OWRC COPY

Location of Well

In diagram below show distances of well from road and lot line. Indicate north by arrow.



17 49245 52
5 49403 25 40
5 07 85 90
22

41A11a

2502621

CODED

The Ontario Water Resources Commission Act

WATER WELL RECORD

County or District: Grey

Township, Village, Town or City: ~~Keppel~~ Shallow Lake ~~Amabel~~ Shallow Lake

Con. ~~VIII~~ Lot 8

Date completed: 8 (day) Aug. (month) 1968 (year)

Owner: Shallow Lake School (print in block letters)

Address: Shallow Lake, Ont.

Casing and Screen Record

Inside diameter of casing	5"
Total length of casing	52'
Type of screen	–
Length of screen	–
Depth to top of screen	–
Diameter of finished hole	5"

Pumping Test

Static level	70'
Test-pumping rate	6 G.P.M.
Pumping level	130'
Duration of test pumping	2 hrs.
Water clear or cloudy at end of test	Clearing
Recommended pumping rate	5 G.P.M.
with pump setting of	180 feet below ground surface

Well Log

Overburden and Bedrock Record	From ft.	To ft.	Water Record: Depth(s) at which water(s) found	Water Record: Kind of water (fresh, salty, sulphur)
Previously Drilled 105'				
Lt. Brown Limestone	105	200	200	Fresh
Dk. Brown Lime.	200	205'		

For what purpose(s) is the water to be used? School

Is well on upland, in valley, or on hillside? Upland

Drilling or Boring Firm: Hem. Hight Well Driller

Address: Hepworth, Ont.

Licence Number: 3076

Name of Driller or Borer: Herb Hight

Address: Hepworth, Ont.

Date: Aug. 8, 1968

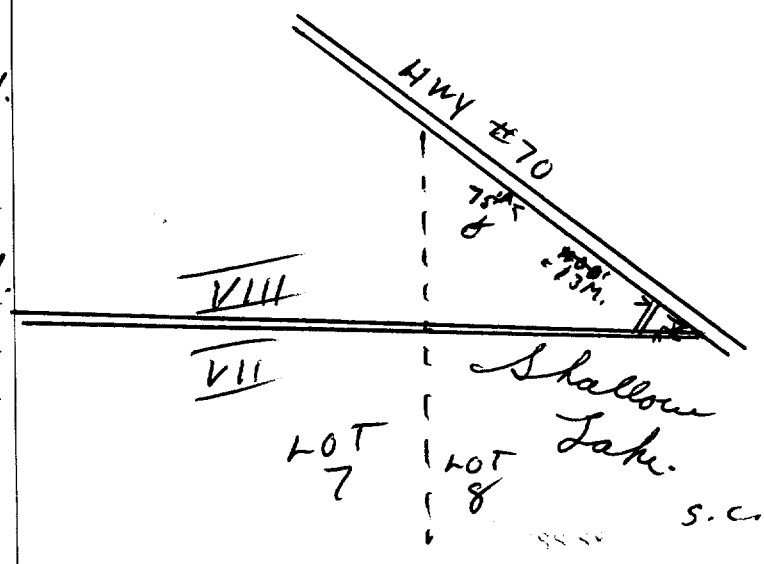
William Wright (Signature of Licensed Drilling or Boring Contractor)

Form 7 15M-60-4138

OWRC COPY

Location of Well

In diagram below show distances of well from road and lot line. Indicate north by arrow.



The Ontario Water Resources Commission Act

WATER WELL RECORD

41 A 11a

Water management in Ontario

1. PRINT ONLY IN SPACES PROVIDED
2. CHECK ☒ CORRECT BOX WHERE APPLICABLE

11 | 2503018 | MUNICIP. 25009 | CON. ØR S C 02

COUNTY OR DISTRICT	TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE	CON., BLOCK, TRACT, SURVEY, ETC.	LOT
Grey	(Keppel) SHALLOW LAKE	II ORDS	022

OWNER (SURNAME FIRST) [redacted] ADDRESS Shallow Lake, Ont. DATE COMPLETED DAY 28 MO. 06 YR. 69

[redacted] ING 940360 RC. 4 ELEVATION 0785 RC. 5 BASIN CODE 22

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH – FEET FROM	DEPTH – FEET TO
Lt. Brown	Lime.			0	109

31 0109 6 15

32

41 WATER RECORD

WATER FOUND AT – FEET	KIND OF WATER
0100	1 ☑ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL

51 CASING & OPEN HOLE RECORD

INSIDE DIAM. INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH – FEET FROM	DEPTH – FEET TO
05"	1 ☒ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE	.196	0	~~43~~ 0043
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☒ OPEN HOLE		43	0109
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE			

SCREEN

SIZE(S) OF OPENING (SLOT NO.)	DIAMETER INCHES	LENGTH FEET
—		

MATERIAL AND TYPE	DEPTH TO TOP OF SCREEN FEET

61 PLUGGING & SEALING RECORD

DEPTH SET AT – FEET FROM	TO	MATERIAL AND TYPE (CEMENT GROUT, LEAD PACKER, ETC.)
		—

71 PUMPING TEST

PUMPING TEST METHOD: 1 ☐ PUMP 2 ☑ BAILER

PUMPING RATE: 0007 GPM. DURATION OF PUMPING: 02 HOURS 00 MINS.

STATIC LEVEL	WATER LEVEL END OF PUMPING	WATER LEVELS DURING (1 ☒ PUMPING 2 ☐ RECOVERY) 15 MINUTES	30 MINUTES	45 MINUTES	60 MINUTES
035 FEET	060 FEET	060 FEET	060 FEET	060 FEET	060 FEET

IF FLOWING, GIVE RATE: GPM.

PUMP INTAKE SET AT: 80 FEET

WATER AT END OF TEST: 1 ☑ CLEAR 2 ☐ CLOUDY

RECOMMENDED PUMP TYPE: ☐ SHALLOW ☑ DEEP

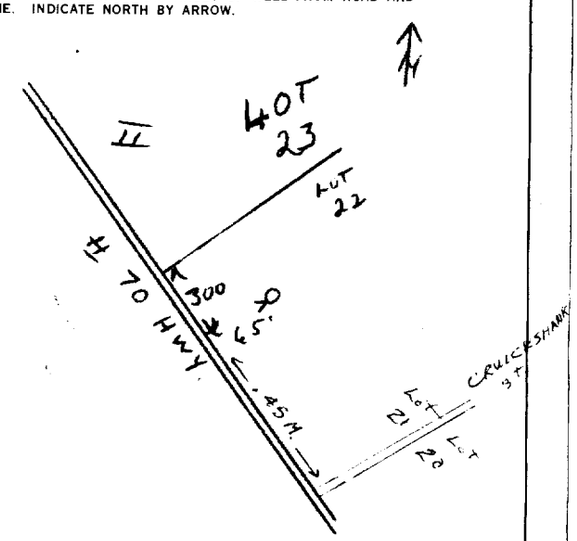
RECOMMENDED PUMP SETTING: 080 FEET

RECOMMENDED PUMPING RATE: 0005 GPM.

50-53 000.3 GPM./FT. SPECIFIC CAPACITY

LOCATION OF WELL

IN DIAGRAM BELOW SHOW DISTANCES OF WELL FROM ROAD AND LOT LINE. INDICATE NORTH BY ARROW.



DRILLERS REMARKS:

FINAL STATUS OF WELL

1 ☑ WATER SUPPLY 2 ☐ OBSERVATION WELL 3 ☐ TEST HOLE 4 ☐ RECHARGE WELL 5 ☐ ABANDONED, INSUFFICIENT SUPPLY 6 ☐ ABANDONED, POOR QUALITY 7 ☐ UNFINISHED

WATER USE 01

1 ☑ DOMESTIC 2 ☐ STOCK 3 ☐ IRRIGATION 4 ☐ INDUSTRIAL ☐ OTHER 5 ☐ COMMERCIAL 6 ☐ MUNICIPAL 7 ☐ PUBLIC SUPPLY 8 ☐ COOLING OR AIR CONDITIONING 9 ☐ NOT USED

METHOD OF DRILLING

1 ☑ CABLE TOOL 2 ☐ ROTARY (CONVENTIONAL) 3 ☐ ROTARY (REVERSE) 4 ☐ ROTARY (AIR) 5 ☐ AIR PERCUSSION 6 ☐ BORING 7 ☐ DIAMOND 8 ☐ JETTING 9 ☐ DRIVING

CONTRACTOR

NAME OF WELL CONTRACTOR: Hm. Wright — LICENCE NUMBER: 3489

ADDRESS: Stayworth, Ont

NAME OF DRILLER OR BORER: Herb Wright — LICENCE NUMBER: 3490

SIGNATURE OF CONTRACTOR: William Wright — SUBMISSION DATE: DAY 17 MO. 9 YR. 69

OFFICE USE ONLY

DATA SOURCE: 1 | CONTRACTOR: 5507 | DATE RECEIVED: 180969

DATE INSPECTION: 180969 | INSPECTOR:

REMARKS: P/L

OWRC COPY

The Ontario Water Resources Commission Act

WATER WELL RECORD

41A / 11E

Water management in Ontario

1. PRINT ONLY IN SPACES PROVIDED
2. CHECK ☒ CORRECT BOX WHERE APPLICABLE

11 | 2503194 | MUNICIP. 25706 | CON.

COUNTY OR DISTRICT	TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE	CON.	BLOCK	TRACT, SURVEY, ETC.	LOT
Grey	Shallow Lake		11	~~THORNS~~	~~22~~

OWNER (SURNAME FIRST): [redacted]

ADDRESS: SHALLOW LAKE

DATE COMPLETED: DAY 22 MO. 04 YR. 70

21 | UTM ZONE 17 | EASTING 493000 | NORTHING 4940350 | RC 4 | ELEVATION 0740 | RC 5 | BASIN CODE 22

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH – FEET FROM	TO
BROWN	GRAVEL	STONES		0	16
BROWN	ROCK			16	60
GREY	ROCK			60	80

31: 0016 0111 2 | 0060 0 26 | 0080 2 26

32

41 WATER RECORD

WATER FOUND AT – FEET	KIND OF WATER
0060	1 ☒ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
0078	1 ☒ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL

51 CASING & OPEN HOLE RECORD

INSIDE DIAM. INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH – FEET FROM	TO
~~5 3/16~~ 05	1 ☒ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE	188	0	~~22~~ 0027
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☒ OPEN HOLE		27	0080 ~~80~~
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE			

SCREEN

SIZE(S) OF OPENING (SLOT NO.)	DIAMETER INCHES	LENGTH FEET

MATERIAL AND TYPE: —— DEPTH TO TOP OF SCREEN FEET

61 PLUGGING & SEALING RECORD

DEPTH SET AT – FEET FROM	TO	MATERIAL AND TYPE (CEMENT GROUT, LEAD PACKER, ETC.)
		——

71 PUMPING TEST

PUMPING TEST METHOD: 1 ☐ PUMP 2 ☒ BAILER

PUMPING RATE: 0014 GPM

DURATION OF PUMPING: 02 HOURS 30 MINS.

STATIC LEVEL	WATER LEVEL END OF PUMPING	WATER LEVELS DURING PUMPING 15 MINUTES	30 MINUTES	45 MINUTES	60 MINUTES
021 FEET	025 FEET	~~25~~ FEET	021 FEET	021 FEET	021 FEET

IF FLOWING, GIVE RATE: GPM.

PUMP INTAKE SET AT: [redacted] FEET

WATER AT END OF TEST: 1 ☒ CLEAR 2 ☐ CLOUDY

RECOMMENDED PUMP TYPE: ☐ SHALLOW ☒ DEEP

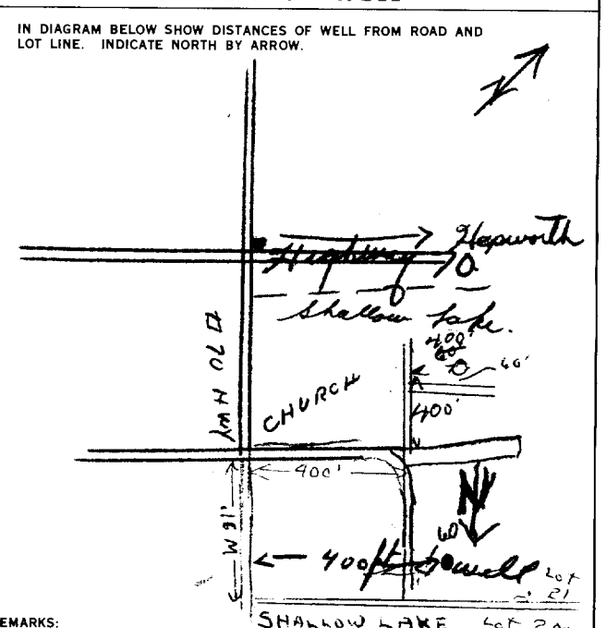
RECOMMENDED PUMP SETTING: 050 FEET

RECOMMENDED PUMPING RATE: 0007 GPM.

50-53: 003.5 GPM./FT. SPECIFIC CAPACITY

LOCATION OF WELL

IN DIAGRAM BELOW SHOW DISTANCES OF WELL FROM ROAD AND LOT LINE. INDICATE NORTH BY ARROW.



DRILLERS REMARKS:

FINAL STATUS OF WELL

1 ☒ WATER SUPPLY
2 ☐ OBSERVATION WELL
3 ☐ TEST HOLE
4 ☐ RECHARGE WELL
5 ☐ ABANDONED, INSUFFICIENT SUPPLY
6 ☐ ABANDONED, POOR QUALITY
7 ☐ UNFINISHED

WATER USE 01

1 ☒ DOMESTIC
2 ☐ STOCK
3 ☐ IRRIGATION
4 ☐ INDUSTRIAL
5 ☐ COMMERCIAL
6 ☐ MUNICIPAL
7 ☐ PUBLIC SUPPLY
8 ☐ COOLING OR AIR CONDITIONING
☐ OTHER
9 ☐ NOT USED

METHOD OF DRILLING

1 ☒ CABLE TOOL
2 ☐ ROTARY (CONVENTIONAL)
3 ☐ ROTARY (REVERSE)
4 ☐ ROTARY (AIR)
5 ☐ AIR PERCUSSION
6 ☐ BORING
7 ☐ DIAMOND
8 ☐ JETTING
9 ☐ DRIVING

CONTRACTOR

NAME OF WELL CONTRACTOR: Dalton E Wright — LICENCE NUMBER: 3491

ADDRESS: Wiarton

NAME OF DRILLER OR BORER: Same — LICENCE NUMBER:

SIGNATURE OF CONTRACTOR: Dalton E Wright — SUBMISSION DATE: DAY 5 MO. 6 YR. 70

OFFICE USE ONLY

DATA SOURCE: 1 | CONTRACTOR: 5502 | DATE RECEIVED: 08 06 70

DATE OF INSPECTION: 5/10/70 | INSPECTOR: R/P

REMARKS:

OWRC COPY

MINISTRY OF THE ENVIRONMENT
The Ontario Water Resources Act

WATER WELL RECORD

Ontario

B

41A/1LE

1. PRINT ONLY IN SPACES PROVIDED
2. CHECK ☒ CORRECT BOX WHERE APPLICABLE

11 | 2504245 | MUNICIP. 25009 | CON. OR S. | 02

COUNTY OR DISTRICT	TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE	CON., BLOCK, TRACT, SURVEY, ETC.	LOT
GREY	KEPPEL.	CTL S.O.R.	~~EX 23~~ 023

OWNER (SURNAME FIRST)	ADDRESS	DATE COMPLETED
R.N.H. LTD.	WALTERS FALLS	DAY 28 MO. 08 YR. 73

21 | UTM ZONE 17 | EASTING 492420 | NORTHING 4940500 | RC. 4 | ELEVATION 9800 | RC. 5 | BASIN CODE 22

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET FROM	DEPTH - FEET TO
	TILL.			0	1
	HARD	WHITE LIMESTONE		1	116

31 | 0001 0528 12 0NNANST

32

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
0100 ~~116~~	1 ☒ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
15-18	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
20-23	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
25-28	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
30-33	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL

51 CASING & OPEN HOLE RECORD

INSIDE DIAM. INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET FROM	DEPTH - FEET TO
06 ~~6 1/4~~	1 ☒ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE	231	0	~~16~~ 0016
06 ~~6 1/4~~	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☒ OPEN HOLE		16	~~88~~ 0088
05"	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☒ OPEN HOLE		88	0116

SCREEN

SIZE(S) OF OPENING (SLOT NO.)	DIAMETER INCHES	LENGTH FEET
MATERIAL AND TYPE	DEPTH TO TOP OF SCREEN FEET	

61 PLUGGING & SEALING RECORD

DEPTH SET AT - FEET FROM	TO	MATERIAL AND TYPE (CEMENT GROUT, LEAD PACKER, ETC.)
10-13	14-17	
18-21	22-25	
26-29	30-33	

71 PUMPING TEST

PUMPING TEST METHOD	PUMPING RATE	DURATION OF PUMPING
1 ☐ PUMP 2 ☒ BAILER	0004 GPM	06 HOURS 00 MINS

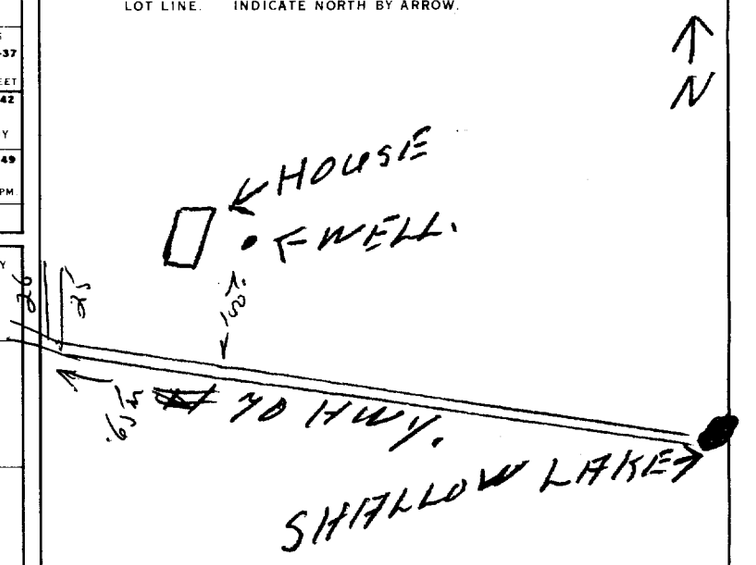
STATIC LEVEL	WATER LEVEL END OF PUMPING	WATER LEVELS DURING (1 ☒ PUMPING 2 ☐ RECOVERY)	15 MINUTES	30 MINUTES	45 MINUTES	60 MINUTES
026 FEET	FEET		FEET	FEET	100 FEET	FEET

IF FLOWING, GIVE RATE	PUMP INTAKE SET AT	WATER AT END OF TEST
GPM	FEET	1 ☒ CLEAR 2 ☐ CLOUDY

RECOMMENDED PUMP TYPE	RECOMMENDED PUMP SETTING	RECOMMENDED PUMPING RATE
☐ SHALLOW ☒ DEEP	110 FEET	0004 GPM

LOCATION OF WELL

IN DIAGRAM BELOW SHOW DISTANCES OF WELL FROM ROAD AND LOT LINE. INDICATE NORTH BY ARROW.



DRILLERS REMARKS:

FINAL STATUS OF WELL
1 ☒ WATER SUPPLY 2 ☐ OBSERVATION WELL 3 ☐ TEST HOLE 4 ☐ RECHARGE WELL 5 ☐ ABANDONED, INSUFFICIENT SUPPLY 6 ☐ ABANDONED, POOR QUALITY 7 ☐ UNFINISHED

WATER USE 01
1 ☒ DOMESTIC 2 ☐ STOCK 3 ☐ IRRIGATION 4 ☐ INDUSTRIAL ☐ OTHER 5 ☐ COMMERCIAL 6 ☐ MUNICIPAL 7 ☐ PUBLIC SUPPLY 8 ☐ COOLING OR AIR CONDITIONING 9 ☐ NOT USED

METHOD OF DRILLING
1 ☒ CABLE TOOL 2 ☐ ROTARY (CONVENTIONAL) 3 ☐ ROTARY (REVERSE) 4 ☐ ROTARY (AIR) 5 ☐ AIR PERCUSSION 6 ☐ BORING 7 ☐ DIAMOND 8 ☐ JETTING 9 ☐ DRIVING

CONTRACTOR

NAME OF WELL CONTRACTOR	LICENCE NUMBER
ALLAN LOUCKS	3408
ADDRESS: CHATSWORTH.	
NAME OF DRILLER OR BORER: L. SPEERS.	LICENCE NUMBER
SIGNATURE OF CONTRACTOR: Allan Loucks	SUBMISSION DATE DAY ___ MO. ___ YR. ___

OFFICE USE ONLY

DATA SOURCE	CONTRACTOR	DATE RECEIVED
1	3408	11 09 73

DATE OF INSPECTION | INSPECTOR

REMARKS:

CSS.S8

MINISTRY OF THE ENVIRONMENT COPY

FORM 7 07-091

MINISTRY OF THE ENVIRONMENT
The Ontario Water Resources Act

WATER WELL RECORD

Ontario

1. PRINT ONLY IN SPACES PROVIDED
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11 | 2504304 | MUNICIP. 25706 | CON.

COUNTY OR DISTRICT: GREY | TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE: KEPPEL & Shallow Lake | CON., BLOCK, TRACT, SURVEY, ETC. | LOT

[redacted] ALLOW LAKE | DATE COMPLETED: DAY 11 MO. 08 YR. 73

140350 | RC. 4 | ELEVATION 08001 | RC. 5 | BASIN CODE 22

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET FROM	DEPTH - FEET TO
BROWN	TOP SOIL			0	1½
BROWN	LIMESTONE			1½	122
WHITE	LIMESTONE			122	157

31: 0002002 | 0122AIST | 0157AIST

32:

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
012 / 155	1 ☒ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL

51 CASING & OPEN HOLE RECORD

INSIDE DIAM. INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET FROM	DEPTH - FEET TO
5⅝ / 05	1 ☒ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE	188	0	~~30~~ / 0003
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☒ OPEN HOLE			0157
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE			

SCREEN

SIZE(S) OF OPENING (SLOT NO.)	DIAMETER INCHES	LENGTH FEET
MATERIAL AND TYPE	DEPTH TO TOP OF SCREEN FEET	

61 PLUGGING & SEALING RECORD

DEPTH SET AT - FEET FROM	TO	MATERIAL AND TYPE (CEMENT GROUT, LEAD PACKER, ETC.)

71 PUMPING TEST

PUMPING TEST METHOD: 1 ☐ PUMP 2 ☒ BAILER | PUMPING RATE: 0007 GPM | DURATION OF PUMPING: 01 HOURS 00 MINS

STATIC LEVEL	WATER LEVEL END OF PUMPING	WATER LEVELS DURING (1 ☐ PUMPING 2 ☒ RECOVERY) 15 MINUTES	30 MINUTES	45 MINUTES	60 MINUTES
060 FEET	080 FEET	FEET	FEET	FEET	060 FEET

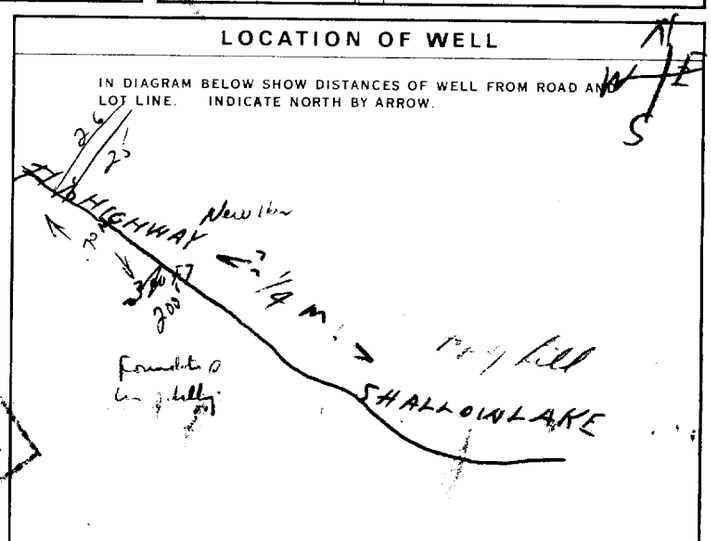
IF FLOWING, GIVE RATE: GPM | PUMP INTAKE SET AT: FEET | WATER AT END OF TEST: 1 ☐ CLEAR 2 ☒ CLOUDY

RECOMMENDED PUMP TYPE: ☐ SHALLOW ☒ DEEP | RECOMMENDED PUMP SETTING: 120 FEET | RECOMMENDED PUMPING RATE: 0005 GPM

000.4

LOCATION OF WELL

IN DIAGRAM BELOW SHOW DISTANCES OF WELL FROM ROAD AND LOT LINE. INDICATE NORTH BY ARROW.



DRILLERS REMARKS:

FINAL STATUS OF WELL: 1 ☒ WATER SUPPLY 2 ☐ OBSERVATION WELL 3 ☐ TEST HOLE 4 ☐ RECHARGE WELL 5 ☐ ABANDONED, INSUFFICIENT SUPPLY 6 ☐ ABANDONED, POOR QUALITY 7 ☐ UNFINISHED

WATER USE 01: 1 ☒ DOMESTIC 2 ☐ STOCK 3 ☐ IRRIGATION 4 ☐ INDUSTRIAL ☐ OTHER 5 ☐ COMMERCIAL 6 ☐ MUNICIPAL 7 ☐ PUBLIC SUPPLY 8 ☐ COOLING OR AIR CONDITIONING 9 ☐ NOT USED

METHOD OF DRILLING: 1 ☐ CABLE TOOL 2 ☒ ROTARY (CONVENTIONAL) 3 ☐ ROTARY (REVERSE) 4 ☐ ROTARY (AIR) 5 ☐ AIR PERCUSSION 6 ☐ BORING 7 ☐ DIAMOND 8 ☐ JETTING 9 ☐ DRIVING

CONTRACTOR

NAME OF WELL CONTRACTOR: Roy & Stan Wright | LICENCE NUMBER: 5505
ADDRESS: 298 Frank St Wiarton
NAME OF DRILLER OR BORER: David Wright | LICENCE NUMBER:
SIGNATURE OF CONTRACTOR: Stan Wright | SUBMISSION DATE: DAY ___ MO. ___ YR. ___

OFFICE USE ONLY

DATA SOURCE: 1 | CONTRACTOR: 5505 | DATE RECEIVED: 19 09 73
DATE OF INSPECTION | INSPECTOR
REMARKS:

MINISTRY OF THE ENVIRONMENT COPY

FORM 7 07-091

MINISTRY OF THE ENVIRONMENT
The Ontario Water Resources Act

WATER WELL RECORD

Ontario

B

41 A/1E

1. PRINT ONLY IN SPACES PROVIDED
2. CHECK ☒ CORRECT BOX WHERE APPLICABLE

11 | 2504420 | MUNICIP. 2.57.0.6 | CON.

COUNTY OR DISTRICT	TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE	CON., BLOCK, TRACT, SURVEY, ETC.	LOT 25-27
Grey	Keppel (Shallow Lake)		

[redacted] 345 15th A East Owen Sound — DATE COMPLETED 48-53: DAY 31 MO. Oct YR. 72

RC ELEVATION RC BASIN CODE II III IV

2504420 17 492361 4940300 4 800 5 22 OCT 17, 1975 69 47

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET FROM	TO
	Limestone			0	163

OWRC P.7

31 | 10163 | 115

32

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
0130 10-13 ~~155~~	1 ☒ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL 14
15-18	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL 19
20-23	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL 24
25-28	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL 29
30-33	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL 34 80

51 CASING & OPEN HOLE RECORD

INSIDE DIAM. INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET FROM	TO
~~5 3/16~~ 05	1 ☒ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☒ OPEN HOLE 12	188	0 ~~42~~	0042 16 ~~163~~
17-18 05	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☒ OPEN HOLE 19		42	20-23 0163
24-25	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE 26			27-30

SCREEN

SIZE(S) OF OPENING (SLOT NO.) 31-33	DIAMETER 34-38 INCHES	LENGTH 39-40 FEET
MATERIAL AND TYPE	DEPTH TO TOP OF SCREEN 41-44 FEET	80

61 PLUGGING & SEALING RECORD

DEPTH SET AT - FEET FROM	TO	MATERIAL AND TYPE (CEMENT GROUT, LEAD PACKER, ETC.)
10-13	14-17	
18-21	22-25	
26-29	30-33	80

71 PUMPING TEST

PUMPING TEST METHOD 10	PUMPING RATE 11-14	DURATION OF PUMPING 15-16 HOURS 17-18 MINS
1 ☐ PUMP 2 ☒ BAILER	0008 GPM	02 00

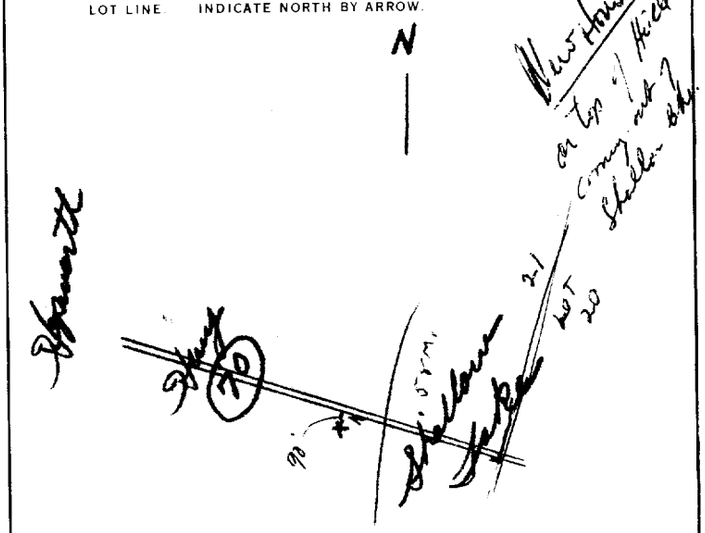
STATIC LEVEL	WATER LEVEL END OF PUMPING	25 WATER LEVELS DURING 1 ☒ PUMPING 2 ☐ RECOVERY			
19-21	22-24	15 MINUTES	30 MINUTES	45 MINUTES	60 MINUTES
040 FEET	130 FEET	080 26-28 FEET	120 29-31 FEET	130 32-34 FEET	120 35-37 FEET

IF FLOWING, GIVE RATE 38-41	PUMP INTAKE SET AT	WATER AT END OF TEST 42
GPM	163 FEET	1 ☐ CLEAR 2 ☒ CLOUDY
RECOMMENDED PUMP TYPE ☐ SHALLOW ☒ DEEP	RECOMMENDED PUMP SETTING 43-45 145 FEET	RECOMMENDED PUMPING RATE 46-49 0005 GPM

50-53 0001

LOCATION OF WELL

IN DIAGRAM BELOW SHOW DISTANCES OF WELL FROM ROAD AND LOT LINE. INDICATE NORTH BY ARROW.



DRILLERS REMARKS:

FINAL STATUS OF WELL 54	1 ☒ WATER SUPPLY 2 ☐ OBSERVATION WELL 3 ☐ TEST HOLE 4 ☐ RECHARGE WELL 5 ☐ ABANDONED, INSUFFICIENT SUPPLY 6 ☐ ABANDONED, POOR QUALITY 7 ☐ UNFINISHED
WATER USE 55-56 01	1 ☒ DOMESTIC 2 ☐ STOCK 3 ☐ IRRIGATION 4 ☐ INDUSTRIAL ☐ OTHER 5 ☐ COMMERCIAL 6 ☐ MUNICIPAL 7 ☐ PUBLIC SUPPLY 8 ☐ COOLING OR AIR CONDITIONING 9 ☐ NOT USED
METHOD OF DRILLING 57	1 ☐ CABLE TOOL 2 ☐ ROTARY (CONVENTIONAL) 3 ☐ ROTARY (REVERSE) 4 ☒ ROTARY (AIR) 5 ☐ AIR PERCUSSION 6 ☐ BORING 7 ☐ DIAMOND 8 ☐ JETTING 9 ☐ DRIVING

CONTRACTOR

NAME OF WELL CONTRACTOR: Wm Wright Well Drillers Ltd — LICENCE NUMBER: 5507

ADDRESS: Box 167 Hepworth Ont

NAME OF DRILLER OR BORER: Herb Wright — LICENCE NUMBER: 5503

SIGNATURE OF CONTRACTOR: William Wright — SUBMISSION DATE: DAY ____ MO. ____ YR. ____

OFFICE USE ONLY

DATA SOURCE 58: 1 — CONTRACTOR 59-62: 5507 — DATE RECEIVED 63-68: 070174 — 80

DATE OF INSPECTION: 18, 10, 74 — INSPECTOR:

REMARKS:

CSS S8

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MINISTRY OF THE ENVIRONMENT
The Ontario Water Resources Act

WATER WELL RECORD

Ontario

41A/11E

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11 | 2504594 | MUNICIP. 25706 | CON.

COUNTY OR DISTRICT	TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE	CON., BLOCK, TRACT, SURVEY, ETC.	LOT
Gren[redacted]	Kensel	Tha VIII	

[redacted] Shallow Lake — DATE COMPLETED: DAY 01 MO. 03 YR. 74

4940233 4 785 5 22 MAY 05, 1976

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET FROM	DEPTH - FEET TO
	Limestone			0	160

OWRC V.7

OWRC P.8

31 0160 15

32

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
0150	1 ☒ FRESH 3 ☐ SULPHUR 2 ☐ SALTY 4 ☐ MINERAL
	1 ☐ FRESH 3 ☐ SULPHUR 2 ☐ SALTY 4 ☐ MINERAL
	1 ☐ FRESH 3 ☐ SULPHUR 2 ☐ SALTY 4 ☐ MINERAL
	1 ☐ FRESH 3 ☐ SULPHUR 2 ☐ SALTY 4 ☐ MINERAL
	1 ☐ FRESH 3 ☐ SULPHUR 2 ☐ SALTY 4 ☐ MINERAL

51 CASING & OPEN HOLE RECORD

INSIDE DIAM. INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET FROM	DEPTH - FEET TO
5 5/16 05	☒ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☒ ~~OPEN HOLE~~	188	0 ~~43~~ 0043 ~~43~~	~~43~~ 160
05	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☒ OPEN HOLE		43	0160
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE			

SCREEN

SIZE(S) OF OPENING (SLOT NO.)	DIAMETER INCHES	LENGTH FEET
MATERIAL AND TYPE	DEPTH TO TOP OF SCREEN FEET	

61 PLUGGING & SEALING RECORD

DEPTH SET AT - FEET FROM	TO	MATERIAL AND TYPE (CEMENT GROUT, LEAD PACKER, ETC.)

71 PUMPING TEST

PUMPING TEST METHOD: 1 ☐ PUMP 2 ☒ BAILER

PUMPING RATE: 0004 GPM

DURATION OF PUMPING: 02 HOURS 00 MINS

WATER LEVELS DURING: 1 ☒ PUMPING 2 ☐ RECOVERY

STATIC LEVEL	WATER LEVEL END OF PUMPING	15 MINUTES	30 MINUTES	45 MINUTES	60 MINUTES
040 FEET	150 FEET	090 FEET	150 FEET	150 FEET	150 FEET

IF FLOWING, GIVE RATE: GPM

PUMP INTAKE SET AT: 165 FEET

WATER AT END OF TEST: 1 ☒ CLEAR 2 ☐ CLOUDY

RECOMMENDED PUMP TYPE: ☐ SHALLOW ☒ DEEP

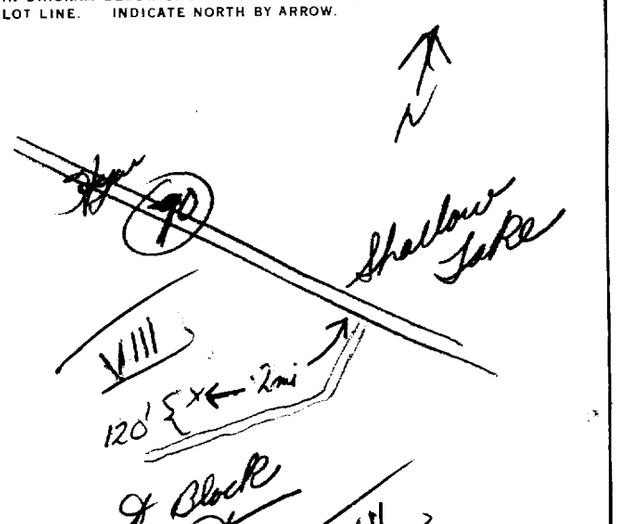
RECOMMENDED PUMP SETTING: 150 FEET

RECOMMENDED PUMPING RATE: 0004 GPM

000.0 GPM./FT. SPECIFIC CAPACITY

LOCATION OF WELL 9240

IN DIAGRAM BELOW SHOW DISTANCES OF WELL FROM ROAD AND LOT LINE. INDICATE NORTH BY ARROW.



DRILLERS REMARKS:

FINAL STATUS OF WELL 1
1 ☒ WATER SUPPLY 2 ☐ OBSERVATION WELL 3 ☐ TEST HOLE 4 ☐ RECHARGE WELL 5 ☐ ABANDONED, INSUFFICIENT SUPPLY 6 ☐ ABANDONED, POOR QUALITY 7 ☐ UNFINISHED

WATER USE 01
1 ☒ DOMESTIC 2 ☐ STOCK 3 ☐ IRRIGATION 4 ☐ INDUSTRIAL ☐ OTHER 5 ☐ COMMERCIAL 6 ☐ MUNICIPAL 7 ☐ PUBLIC SUPPLY 8 ☐ COOLING OR AIR CONDITIONING 9 ☐ NOT USED

METHOD OF DRILLING 4
1 ☐ CABLE TOOL 2 ☐ ROTARY (CONVENTIONAL) 3 ☐ ROTARY (REVERSE) 4 ☒ ROTARY (AIR) 5 ☐ AIR PERCUSSION 6 ☐ BORING 7 ☐ DIAMOND 8 ☐ JETTING 9 ☐ DRIVING

CONTRACTOR

NAME OF WELL CONTRACTOR: Wm Wright Well Drillers Ltd — LICENCE NUMBER 5507

ADDRESS: Box 167 Ilderton Ont

NAME OF DRILLER OR BORER: — LICENCE NUMBER —

SIGNATURE OF CONTRACTOR: William Wright — SUBMISSION DATE DAY MO. YR.

OFFICE USE ONLY

DATA SOURCE 1 | CONTRACTOR 5507 | DATE RECEIVED 280574

DATE OF INSPECTION: June 27/75 | INSPECTOR

REMARKS: NOT HOOKED UP.

P L

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MINISTRY OF THE ENVIRONMENT
The Ontario Water Resources Act

WATER WELL RECORD

Ontario

41A/11E

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11 | 2505251 | MUNICIP. 25706 | CON.

COUNTY OR DISTRICT	TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE	CON., BLOCK, TRACT, SURVEY, ETC.	LOT 25-27
[redacted]	Shallow Lake		
	Shallow Lake		DATE COMPLETED 05 48-53 DAY 26 MO. ~~May~~ YR. 75

				RC.	ELEVATION	RC.	BASIN CODE	II	III	IV
2505251	17	493052	4940321	4	748	5	22	AUG 16, 1976		19 47

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET FROM	TO
Clay & Stones				0	12
Limestone				12	80

31 | 0012 0512 | 0080 15

32

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
0060 (25) 10-13	1 ☒ FRESH 3 ☐ SULPHUR 14; 2 ☐ SALTY 4 ☐ MINERAL
15-18	1 ☐ FRESH 3 ☐ SULPHUR 19; 2 ☐ SALTY 4 ☐ MINERAL
20-23	1 ☐ FRESH 3 ☐ SULPHUR 24; 2 ☐ SALTY 4 ☐ MINERAL
25-28	1 ☐ FRESH 3 ☐ SULPHUR 29; 2 ☐ SALTY 4 ☐ MINERAL
30-33	1 ☐ FRESH 3 ☐ SULPHUR 34; 2 ☐ SALTY 4 ☐ MINERAL

51 CASING & OPEN HOLE RECORD

INSIDE DIAM. INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET FROM	TO
05 (5 3/4) 10-11	1 ☒ STEEL 12; 2 ☐ GALVANIZED; 3 ☐ CONCRETE; 4 ☒ OPEN HOLE	188	0	0023 13-16
			25	80
17-18	1 ☐ STEEL 19; 2 ☐ GALVANIZED; 3 ☐ CONCRETE; 4 ☒ OPEN HOLE			20-23
05			25	0080
24-25	1 ☐ STEEL 26; 2 ☐ GALVANIZED; 3 ☐ CONCRETE; 4 ☐ OPEN HOLE			27-30

SCREEN

SIZE(S) OF OPENING (SLOT NO.) 31-33	DIAMETER 34-38 INCHES	LENGTH 39-40 FEET
MATERIAL AND TYPE	DEPTH TO TOP OF SCREEN 41-44 FEET	80

61 PLUGGING & SEALING RECORD

DEPTH SET AT - FEET FROM	TO	MATERIAL AND TYPE (CEMENT GROUT, LEAD PACKER, ETC.)
10-13	14-17	
18-21	22-25	
26-29	30-33	80

71 PUMPING TEST

PUMPING TEST METHOD 10	PUMPING RATE 11-14	DURATION OF PUMPING
1 ☑ PUMP 2 ☐ BAILER	0008 GPM.	02 15-16 HOURS 00 17-18 MINS.

STATIC LEVEL	WATER LEVEL END OF PUMPING	25 WATER LEVELS DURING 1 ☒ PUMPING 2 ☐ RECOVERY			
		15 MINUTES	30 MINUTES	45 MINUTES	60 MINUTES
016 19-21 FEET	040 22-24 FEET	040 26-28 FEET	040 29-31 FEET	040 32-34 FEET	040 35-37 FEET

IF FLOWING, GIVE RATE 38-41 GPM.	PUMP INTAKE SET AT 82 FEET	WATER AT END OF TEST 42: 1 ☒ CLEAR 2 ☐ CLOUDY
RECOMMENDED PUMP TYPE: ☐ SHALLOW ☒ DEEP	RECOMMENDED PUMP SETTING 060 43-45 FEET	RECOMMENDED PUMPING RATE 0005 46-49 GPM.

50-53 0003 GPM./FT. SPECIFIC CAPACITY

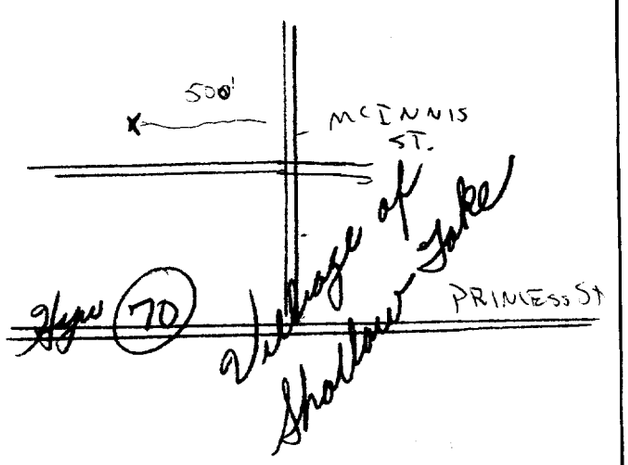
FINAL STATUS OF WELL 1 (54)
1 ☒ WATER SUPPLY; 2 ☐ OBSERVATION WELL; 3 ☐ TEST HOLE; 4 ☐ RECHARGE WELL; 5 ☐ ABANDONED, INSUFFICIENT SUPPLY; 6 ☐ ABANDONED, POOR QUALITY; 7 ☐ UNFINISHED

WATER USE 01 (55-56)
1 ☒ DOMESTIC; 2 ☐ STOCK; 3 ☐ IRRIGATION; 4 ☐ INDUSTRIAL; ☐ OTHER; 5 ☐ COMMERCIAL; 6 ☐ MUNICIPAL; 7 ☐ PUBLIC SUPPLY; 8 ☐ COOLING OR AIR CONDITIONING; 9 ☐ NOT USED

METHOD OF DRILLING 4 (57)
1 ☐ CABLE TOOL; 2 ☐ ROTARY (CONVENTIONAL); 3 ☐ ROTARY (REVERSE); 4 ☒ ROTARY (AIR); 5 ☒ AIR PERCUSSION; 6 ☐ BORING; 7 ☐ DIAMOND; 8 ☐ JETTING; 9 ☐ DRIVING

LOCATION OF WELL 9340

IN DIAGRAM BELOW SHOW DISTANCES OF WELL FROM ROAD AND LOT LINE. INDICATE NORTH BY ARROW.



DRILLERS REMARKS:

CONTRACTOR

NAME OF WELL CONTRACTOR: Wm Wright & Well Drillers Ltd — LICENCE NUMBER: 5507
ADDRESS: Box 167 Hanover Ont
NAME OF DRILLER OR BORER: Wm Wright — LICENCE NUMBER:
SIGNATURE OF CONTRACTOR: William Wright — SUBMISSION DATE: DAY ____ MO. ____ YR. ____

OFFICE USE ONLY

DATA SOURCE 58	CONTRACTOR 59-62	DATE RECEIVED 63-68	80
1	5507	290975	
DATE OF INSPECTION: 9/10/75	INSPECTOR:		7
REMARKS: p.t buried		P TD / WTD	

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The Ontario Water Resources Act

WATER WELL RECORD

Ontario

41A/11EW2

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11 | 2505286 | MUNICIP. 25706 | CON.

COUNTY OR DISTRICT	TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE	CON., BLOCK, TRACT, SURVEY, ETC.	LOT 25-27
[redacted]	Keppel SHALLOW LAKE		

[redacted] Shallow Lake, Ontario — DATE COMPLETED 48-53: DAY 24 MO. 05 YR. 75

RC. ELEVATION RC. BASIN CODE

21 | 2505286 | 17 | 492981 | 4940253 | 4 | 750 | 5 | 22 | AUG 16, 1976 | 19 47

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET FROM	TO
	Limestone			0	120

31 | 0120 | 15

32

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
10-13: 0100 ~~110~~	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
15-18: 0110	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
20-23	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
25-28	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
30-33	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL

51 CASING & OPEN HOLE RECORD

INSIDE DIAM. INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET FROM	TO
10-11: 05 ~~5 3/4~~	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE	.188	0	0043
17-18: 05	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE		43	0120
24-25	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE			

SCREEN

SIZE(S) OF OPENING (SLOT NO.)	DIAMETER INCHES	LENGTH FEET
MATERIAL AND TYPE	DEPTH TO TOP OF SCREEN FEET	

61 PLUGGING & SEALING RECORD

DEPTH SET AT - FEET FROM	TO	MATERIAL AND TYPE (CEMENT GROUT, LEAD PACKER, ETC.)

71 PUMPING TEST

PUMPING TEST METHOD: 1 ☐ PUMP 2 ☑ BAILER

PUMPING RATE: 0007 GPM.

DURATION OF PUMPING: 02 HOURS 00 MINS.

WATER LEVELS DURING: 1 ☑ PUMPING 2 ☐ RECOVERY

STATIC LEVEL	WATER LEVEL END OF PUMPING	15 MINUTES	30 MINUTES	45 MINUTES	60 MINUTES
025 FEET	100 FEET	100 FEET	FEET	FEET	FEET

IF FLOWING, GIVE RATE: GPM.

PUMP INTAKE SET AT: 90 FEET

WATER AT END OF TEST: 1 ☑ CLEAR 2 ☐ CLOUDY

RECOMMENDED PUMP TYPE: ☐ SHALLOW ☐ DEEP

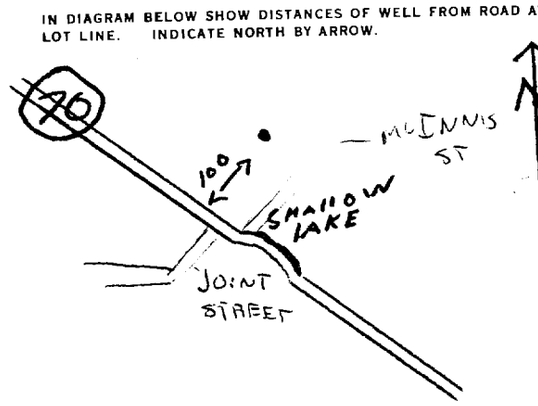
RECOMMENDED PUMP SETTING: 090 FEET

RECOMMENDED PUMPING RATE: 0007 GPM.

50-53: 0001 GPM./FT. SPECIFIC CAPACITY

LOCATION OF WELL 9240

IN DIAGRAM BELOW SHOW DISTANCES OF WELL FROM ROAD AND LOT LINE. INDICATE NORTH BY ARROW.



DRILLERS REMARKS:

FINAL STATUS OF WELL 1
1 ☑ WATER SUPPLY 2 ☐ OBSERVATION WELL 3 ☐ TEST HOLE 4 ☐ RECHARGE WELL 5 ☐ ABANDONED, INSUFFICIENT SUPPLY 6 ☐ ABANDONED, POOR QUALITY 7 ☐ UNFINISHED

WATER USE 01
1 ☑ DOMESTIC 2 ☐ STOCK 3 ☐ IRRIGATION 4 ☐ INDUSTRIAL ☐ OTHER 5 ☐ COMMERCIAL 6 ☐ MUNICIPAL 7 ☐ PUBLIC SUPPLY 8 ☐ COOLING OR AIR CONDITIONING 9 ☐ NOT USED

METHOD OF DRILLING 4
1 ☐ CABLE TOOL 2 ☐ ROTARY (CONVENTIONAL) 3 ☐ ROTARY (REVERSE) 4 ☑ ROTARY (AIR) 5 ☐ AIR PERCUSSION 6 ☐ BORING 7 ☐ DIAMOND 8 ☐ JETTING 9 ☐ DRIVING

CONTRACTOR

NAME OF WELL CONTRACTOR: Wm. Wright Well Drillers — LICENCE NUMBER: 5507

ADDRESS: Hepworth, Ont.

NAME OF DRILLER OR BORER: Herb Wright — LICENCE NUMBER: 5503

SIGNATURE OF CONTRACTOR: William Wright — SUBMISSION DATE: DAY ___ MO. ___ YR. ___

OFFICE USE ONLY

DATA SOURCE: 1 — CONTRACTOR: 5507 — DATE RECEIVED: 290975

DATE OF INSPECTION: 8/10/75 — INSPECTOR: 2

REMARKS: P.B vented in basement CSS 88

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FORM 7 MOE 07-091

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MINISTRY OF THE ENVIRONMENT
The Ontario Water Resources Act

WATER WELL RECORD

41 A/11 East

Ontario

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11 | 2505291 | MUNICIP. 25706 | CON.

COUNTY OR DISTRICT	TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE	CON., BLOCK, TRACT, SURVEY, ETC.	LOT 25-27
[redacted]	Kapel SHALLOW LAKE		
	Shallow Lake, Ont.		DATE COMPLETED 48-53 DAY 16 MO. 04 YR. 75

2505291	17	492985	4940318	4	750	5	22	AUG 16, 1976	197

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET FROM	TO
	Clay	& Stones		0	5
	Limestone			5	82

31 0005 05112 0082 115

32

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
0075	1 ☑ FRESH 3 ☐ SULPHUR 2 ☐ SALTY 4 ☐ MINERAL
	1 ☐ FRESH 3 ☐ SULPHUR 2 ☐ SALTY 4 ☐ MINERAL
	1 ☐ FRESH 3 ☐ SULPHUR 2 ☐ SALTY 4 ☐ MINERAL
	1 ☐ FRESH 3 ☐ SULPHUR 2 ☐ SALTY 4 ☐ MINERAL
	1 ☐ FRESH 3 ☐ SULPHUR 2 ☐ SALTY 4 ☐ MINERAL

51 CASING & OPEN HOLE RECORD

INSIDE DIAM. INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET FROM	TO
05	1 ☑ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE	.188	0	0025
05	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☑ OPEN HOLE		25	0082
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE			

SCREEN

SIZE(S) OF OPENING (SLOT NO.)	DIAMETER INCHES	LENGTH FEET
MATERIAL AND TYPE	DEPTH TO TOP OF SCREEN FEET	

61 PLUGGING & SEALING RECORD

DEPTH SET AT - FEET FROM	TO	MATERIAL AND TYPE (CEMENT GROUT, LEAD PACKER, ETC.)

71 PUMPING TEST

PUMPING TEST METHOD	PUMPING RATE	DURATION OF PUMPING
1 ☐ PUMP 2 ☑ BAILER	0015 GPM.	02 HOURS 00 MINS

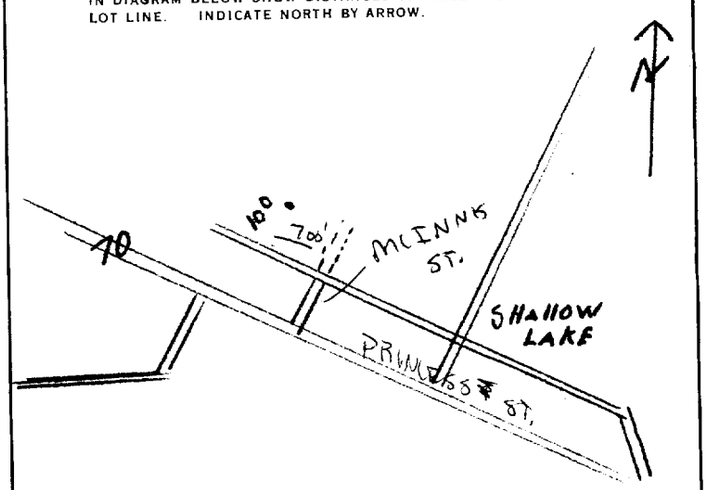
STATIC LEVEL	WATER LEVEL END OF PUMPING	WATER LEVELS DURING (1 ☑ PUMPING 2 ☐ RECOVERY)			
		15 MINUTES	30 MINUTES	45 MINUTES	60 MINUTES
005 FEET	030 FEET	030 FEET	FEET	FEET	FEET

IF FLOWING, GIVE RATE	PUMP INTAKE SET AT	WATER AT END OF TEST
GPM.	60 FEET	1 ☑ CLEAR 2 ☐ CLOUDY
RECOMMENDED PUMP TYPE: ☐ SHALLOW ☑ DEEP	RECOMMENDED PUMP SETTING 060 FEET	RECOMMENDED PUMPING RATE 0015 GPM.

50-53 000.6 GPM./FT. SPECIFIC CAPACITY

LOCATION OF WELL 9240

IN DIAGRAM BELOW SHOW DISTANCES OF WELL FROM ROAD AND LOT LINE. INDICATE NORTH BY ARROW.



DRILLERS REMARKS:

FINAL STATUS OF WELL 54	1 ☑ WATER SUPPLY 2 ☐ OBSERVATION WELL 3 ☐ TEST HOLE 4 ☐ RECHARGE WELL 5 ☐ ABANDONED, INSUFFICIENT SUPPLY 6 ☐ ABANDONED, POOR QUALITY 7 ☐ UNFINISHED
WATER USE 01 55-56	1 ☑ DOMESTIC 2 ☐ STOCK 3 ☐ IRRIGATION 4 ☐ INDUSTRIAL ☐ OTHER 5 ☐ COMMERCIAL 6 ☐ MUNICIPAL 7 ☐ PUBLIC SUPPLY 8 ☐ COOLING OR AIR CONDITIONING 9 ☐ NOT USED
METHOD OF DRILLING 4 57	1 ☐ CABLE TOOL 2 ☐ ROTARY (CONVENTIONAL) 3 ☐ ROTARY (REVERSE) 4 ☑ ROTARY (AIR) 5 ☐ AIR PERCUSSION 6 ☐ BORING 7 ☐ DIAMOND 8 ☐ JETTING 9 ☐ DRIVING

CONTRACTOR

NAME OF WELL CONTRACTOR: Hm. Wright Well Driller — LICENCE NUMBER 5507
ADDRESS: Hepworth, Ont.
NAME OF DRILLER OR BORER: Herb Wright — LICENCE NUMBER 5503
SIGNATURE OF CONTRACTOR: William Wright — SUBMISSION DATE DAY ___ MO. ___ YR. ___

OFFICE USE ONLY

DATA SOURCE 58	CONTRACTOR 59-62	DATE RECEIVED 63-68
1	5507	290975

DATE OF INSPECTION: 8/10/75 — INSPECTOR: 2
REMARKS: Pit buried
CSS S8
P TO
WI TO

FORM 7 MOE 07-091

MINISTRY OF THE ENVIRONMENT COPY

MINISTRY OF THE ENVIRONMENT
The Ontario Water Resources Act

WATER WELL RECORD

Ontario

41 A/11E

1. PRINT ONLY IN SPACES PROVIDED
2. CHECK ☒ CORRECT BOX WHERE APPLICABLE

11 | 2505523 | MUNICIP. 25009 | CON. OR SUR. 02

COUNTY OR DISTRICT	TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE	CON., BLOCK, TRACT, SURVEY, ETC.	LOT 25-27
Grey	Shallow Lake	II O. Rd. S	022
[redacted]	Shallow Lake		DATE COMPLETED DAY 05 MO 07 YR. 75

ING	RC.	ELEVATION	RC.	BASIN CODE		
940338	5	775	5	22	JUL 13, 1977	309

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET FROM	TO
Hardpan & Stones				0	12
Limestone				12	90

31 | 0012 1H 12 | 0090 15

32

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
0060 (83) 10-13	1 ☒ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL 14
0083 15-18	1 ☐ FRESH 2 ☐ SALTY 3 ☒ SULPHUR 4 ☐ MINERAL 19 (#5)
20-23	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL 24
25-28	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL 29
30-33	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL 34 40

51 CASING & OPEN HOLE RECORD

INSIDE DIAM. INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET FROM	TO
06 (5 7/16) 11	1 ☒ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE 12	188	0	0033 26
			33	90
17-18	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☒ OPEN HOLE 19			20-23 0090
24-25	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE 26			27-30

SCREEN

SIZE(S) OF OPENING (SLOT NO.) 31-33	DIAMETER 34-38 INCHES	LENGTH 39-40 FEET
MATERIAL AND TYPE	DEPTH TO TOP OF SCREEN 41-44 FEET	80

61 PLUGGING & SEALING RECORD

DEPTH SET AT - FEET FROM	TO	MATERIAL AND TYPE (CEMENT GROUT, LEAD PACKER, ETC.)
10-13	14-17	
18-21	22-25	
26-29	30-33	80

71 PUMPING TEST

PUMPING TEST METHOD 10	PUMPING RATE 11-14	DURATION OF PUMPING 15-16 HOURS / 17-18 MINS
1 ☐ PUMP 2 ☒ BAILER	0008 GPM	02 / 00

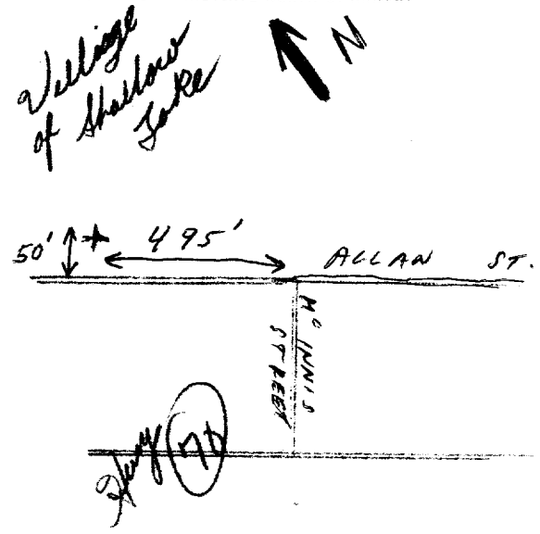
STATIC LEVEL 19-21	WATER LEVEL END OF PUMPING 22-24	25 WATER LEVELS DURING 1 ☒ PUMPING 2 ☐ RECOVERY			
		15 MINUTES	30 MINUTES	45 MINUTES	60 MINUTES
012 FEET	060 FEET	060 26-28 FEET	060 29-31 FEET	060 32-34 FEET	060 35-37 FEET

IF FLOWING, GIVE RATE 38-41	PUMP INTAKE SET AT	WATER AT END OF TEST 42
GPM	90 FEET	1 ☒ CLEAR 2 ☐ CLOUDY
RECOMMENDED PUMP TYPE ☐ SHALLOW ☒ DEEP	RECOMMENDED PUMP SETTING 43-45 070 FEET	RECOMMENDED PUMPING RATE 46-49 0005 GPM

50-53 ——— GPM./FT. SPECIFIC CAPACITY

LOCATION OF WELL 9240

IN DIAGRAM BELOW SHOW DISTANCES OF WELL FROM ROAD AND LOT LINE. INDICATE NORTH BY ARROW.



DRILLERS REMARKS:

FINAL STATUS OF WELL 54	1 ☒ WATER SUPPLY 2 ☐ OBSERVATION WELL 3 ☐ TEST HOLE 4 ☐ RECHARGE WELL	5 ☐ ABANDONED, INSUFFICIENT SUPPLY 6 ☐ ABANDONED, POOR QUALITY 7 ☐ UNFINISHED
WATER USE 55-56 01	1 ☒ DOMESTIC 2 ☐ STOCK 3 ☐ IRRIGATION 4 ☐ INDUSTRIAL ☐ OTHER	5 ☐ COMMERCIAL 6 ☐ MUNICIPAL 7 ☐ PUBLIC SUPPLY 8 ☐ COOLING OR AIR CONDITIONING 9 ☐ NOT USED
METHOD OF DRILLING 57 4	1 ☐ CABLE TOOL 2 ☐ ROTARY (CONVENTIONAL) 3 ☐ ROTARY (REVERSE) 4 ☒ ROTARY (AIR) 5 ☐ AIR PERCUSSION	6 ☐ BORING 7 ☐ DIAMOND 8 ☐ JETTING 9 ☐ DRIVING

CONTRACTOR

NAME OF WELL CONTRACTOR	LICENCE NUMBER
Wm Wright & Well Drillers Ltd	5507
ADDRESS: Box 167 Hanover	
NAME OF DRILLER OR BORER: Wm Wright	LICENCE NUMBER
SIGNATURE OF CONTRACTOR: William Wright	SUBMISSION DATE DAY ___ MO. ___ YR. ___

OFFICE USE ONLY

DATA SOURCE 58	CONTRACTOR 59-62	DATE RECEIVED 63-68	80
1	5507	170376	
DATE OF INSPECTION: June 10/76	INSPECTOR		
REMARKS:		P/B.h. WI	

165

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MINISTRY OF THE ENVIRONMENT
The Ontario Water Resources Act

WATER WELL RECORD

Ontario

41 A/11E

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11 | 2505592. | MUNICIP 25706 | CON.

COUNTY OR DISTRICT	TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE	CON., BLOCK, TRACT, SURVEY, ETC.	LOT
GREY	KEPPLE SHALLOW LAKE	[redacted] II ORDS	[redacted]

[redacted]

SHALLOW LAKE, ONT. DATE COMPLETED DAY 27 MO 03 YR 76

[redacted] 40.300 5 ELEVATION 0775 5 BASIN CODE 22

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET FROM	DEPTH - FEET TO
BROWN	LOOSE STONES & SOIL			0	3
GREY	LIME STONE			3	107

31 | 0003612020277 0107215

32

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
0105	1 ☒ FRESH 3 ☐ SULPHUR 2 ☐ SALTY 4 ☐ MINERAL
	1 ☐ FRESH 3 ☐ SULPHUR 2 ☐ SALTY 4 ☐ MINERAL
	1 ☐ FRESH 3 ☐ SULPHUR 2 ☐ SALTY 4 ☐ MINERAL
	1 ☐ FRESH 3 ☐ SULPHUR 2 ☐ SALTY 4 ☐ MINERAL
	1 ☐ FRESH 3 ☐ SULPHUR 2 ☐ SALTY 4 ☐ MINERAL

51 CASING & OPEN HOLE RECORD

INSIDE DIAM. INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET FROM	DEPTH - FEET TO
06	1 ☒ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE	188	0	0021
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE		21	0107
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE			

SCREEN

SIZE(S) OF OPENING (SLOT NO.)	DIAMETER INCHES	LENGTH FEET

MATERIAL AND TYPE	DEPTH TO TOP OF SCREEN FEET

61 PLUGGING & SEALING RECORD

DEPTH SET AT - FEET FROM	TO	MATERIAL AND TYPE (CEMENT GROUT, LEAD PACKER, ETC.)

71 PUMPING TEST

PUMPING TEST METHOD	PUMPING RATE	DURATION OF PUMPING
1 ☐ PUMP 2 ☒ BAILER	0007 GPM	01 HOURS 00 MINS

STATIC LEVEL	WATER LEVEL END OF PUMPING	WATER LEVELS DURING (1 ☐ PUMPING 2 ☒ RECOVERY) 15 MINUTES	30 MINUTES	45 MINUTES	60 MINUTES
036' FEET	050' FEET	036' FEET	FEET	FEET	FEET

IF FLOWING, GIVE RATE: GPM

PUMP INTAKE SET AT: FEET

WATER AT END OF TEST: 1 ☐ CLEAR 2 ☒ CLOUDY

RECOMMENDED PUMP TYPE: ☐ SHALLOW ☒ DEEP

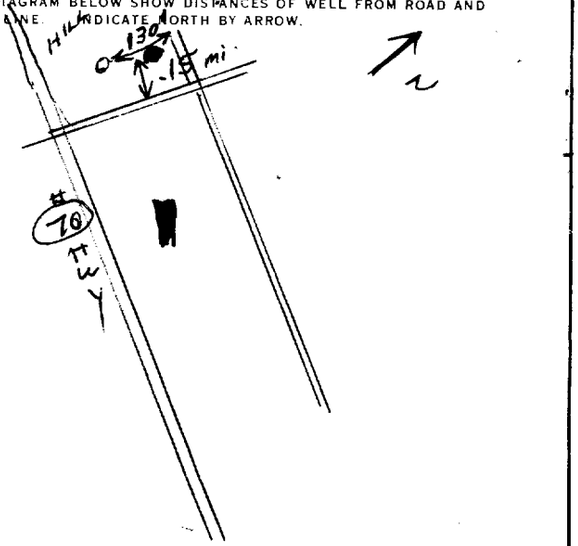
RECOMMENDED PUMP SETTING: 080' FEET

RECOMMENDED PUMPING RATE: 0005 GPM

GPM./FT. SPECIFIC CAPACITY

LOCATION OF WELL

IN DIAGRAM BELOW SHOW DISTANCES OF WELL FROM ROAD AND LOT LINE. INDICATE NORTH BY ARROW.



DRILLERS REMARKS:

FINAL STATUS OF WELL 1
1 ☒ WATER SUPPLY 2 ☐ OBSERVATION WELL 3 ☐ TEST HOLE 4 ☐ RECHARGE WELL 5 ☐ ABANDONED, INSUFFICIENT SUPPLY 6 ☐ ABANDONED, POOR QUALITY 7 ☐ UNFINISHED

WATER USE 05
1 ☐ DOMESTIC 2 ☐ STOCK 3 ☐ IRRIGATION 4 ☐ INDUSTRIAL ☐ OTHER 5 ☒ COMMERCIAL 6 ☐ MUNICIPAL 7 ☐ PUBLIC SUPPLY 8 ☐ COOLING OR AIR CONDITIONING 9 ☐ NOT USED

METHOD OF DRILLING 2
1 ☐ CABLE TOOL 2 ☒ ROTARY (CONVENTIONAL) 3 ☐ ROTARY (REVERSE) 4 ☐ ROTARY (AIR) 5 ☐ AIR PERCUSSION 6 ☐ BORING 7 ☐ DIAMOND 8 ☐ JETTING 9 ☐ DRIVING

CONTRACTOR

NAME OF WELL CONTRACTOR: STAN WRIGHT & CO — LICENCE NUMBER: 5505
ADDRESS: 298- FRANK ST WIARTON, ONT
NAME OF DRILLER OR BORER: DAVE & ROY, WRIGHT — LICENCE NUMBER: 5505
SIGNATURE OF CONTRACTOR: Stan Wright — SUBMISSION DATE: DAY 17 MO. 5 YR. 76

OFFICE USE ONLY

DATA SOURCE: 1 — CONTRACTOR: 5505 — DATE RECEIVED: 50576
DATE OF INSPECTION: July 13/77 — INSPECTOR:
REMARKS:
P B.A.
WI B.A.

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MINISTRY OF THE ENVIRONMENT
The Ontario Water Resources Act

WATER WELL RECORD

Ontario

41 A/11E

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11 | 2505620 | 25706 | CON.

COUNTY OR DISTRICT	TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE	CON., BLOCK, TRACT, SURVEY, ETC.	LOT
Grey	[redacted] REPPEL SHALLOW [redacted] LAKE	[redacted] II O.R.S.	[redacted] 22

OWNER (SURNAME FIRST)	ADDRESS	DATE COMPLETED
Hall John	Box 60 Tara	DAY 11 MO. July YR. 76

Construction	ZONE	EASTING	NORTHING	RC	ELEVATION	RC	BASIN CODE
	17	492850	4940350	5	0770	5	22

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET FROM	DEPTH - FEET TO
Clay &	Stones			0	12
Limestone				12	97
		CODED			

31

32

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
60-90	1 ☐ FRESH 3 ☐ SULPHUR ☒ 2 ☐ SALTY 4 ☐ MINERAL
	1 ☐ FRESH 3 ☐ SULPHUR 2 ☐ SALTY 4 ☐ MINERAL
	1 ☐ FRESH 3 ☐ SULPHUR 2 ☐ SALTY 4 ☐ MINERAL
	1 ☐ FRESH 3 ☐ SULPHUR 2 ☐ SALTY 4 ☐ MINERAL
	1 ☐ FRESH 3 ☐ SULPHUR 2 ☐ SALTY 4 ☐ MINERAL

51 CASING & OPEN HOLE RECORD

INSIDE DIAM. - INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET FROM	DEPTH - FEET TO
5 3/16	1 ☒ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☒ OPEN HOLE	180	0	33
			33	97
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE			
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE			

SCREEN

SIZE(S) OF OPENING (SLOT NO.)	DIAMETER INCHES	LENGTH FEET
MATERIAL AND TYPE	DEPTH TO TOP OF SCREEN FEET	

61 PLUGGING & SEALING RECORD

DEPTH SET AT - FEET FROM	TO	MATERIAL AND TYPE (CEMENT GROUT, LEAD PACKER, ETC.)

71 PUMPING TEST

PUMPING TEST METHOD	PUMPING RATE	DURATION OF PUMPING
1 ☐ PUMP 2 ☒ BAILER	12 GPM	2 HOURS ___ MINS

STATIC LEVEL	WATER LEVEL END OF PUMPING	WATER LEVELS DURING (1 ☒ PUMPING 2 ☐ RECOVERY) 15 MINUTES	30 MINUTES	45 MINUTES	60 MINUTES
16 FEET	45 FEET	45 FEET	45 FEET	45 FEET	45 FEET

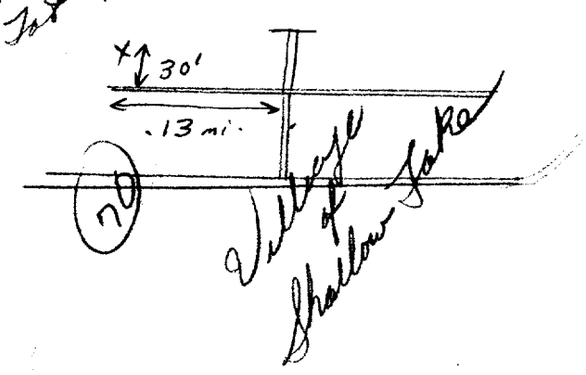
IF FLOWING, GIVE RATE	PUMP INTAKE SET AT	WATER AT END OF TEST
GPM	97 FEET	1 ☒ CLEAR 2 ☐ CLOUDY
RECOMMENDED PUMP TYPE: ☐ SHALLOW ☒ DEEP	RECOMMENDED PUMP SETTING 75 FEET	RECOMMENDED PUMPING RATE 5+ GPM

50-53 ——— GPM./FT. SPECIFIC CAPACITY

LOCATION OF WELL

IN DIAGRAM BELOW SHOW DISTANCES OF WELL FROM ROAD AND LOT LINE. INDICATE NORTH BY ARROW.

Con 857
Part 9
Lot 1



DRILLERS REMARKS:

FINAL STATUS OF WELL

1 ☒ WATER SUPPLY 5 ☐ ABANDONED, INSUFFICIENT SUPPLY
2 ☐ OBSERVATION WELL 6 ☐ ABANDONED, POOR QUALITY
3 ☐ TEST HOLE 7 ☐ UNFINISHED
4 ☐ RECHARGE WELL

WATER USE

1 ☒ DOMESTIC 5 ☐ COMMERCIAL
2 ☐ STOCK 6 ☐ MUNICIPAL
3 ☐ IRRIGATION 7 ☐ PUBLIC SUPPLY
4 ☐ INDUSTRIAL 8 ☐ COOLING OR AIR CONDITIONING
☐ OTHER 9 ☐ NOT USED

METHOD OF DRILLING

1 ☐ CABLE TOOL 6 ☐ BORING
2 ☐ ROTARY (CONVENTIONAL) 7 ☐ DIAMOND
3 ☐ ROTARY (REVERSE) 8 ☐ JETTING
4 ☒ ROTARY (AIR) 9 ☐ DRIVING
5 ☐ AIR PERCUSSION

CONTRACTOR

NAME OF WELL CONTRACTOR: Wm Wright Well Drillers Ltd — LICENCE NUMBER: 5567
ADDRESS: Box 167 Hanover Ont
NAME OF DRILLER OR BORER: Wm Wright — LICENCE NUMBER: 5507
SIGNATURE OF CONTRACTOR: William Wright — SUBMISSION DATE: DAY ___ MO. ___ YR. ___

OFFICE USE ONLY

DATA SOURCE | CONTRACTOR | DATE RECEIVED: 070676
DATE OF INSPECTION: July 13/77 | INSPECTOR: 7
REMARKS: CSS 58 | P/B.P. | WI

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Ontario

MINISTRY OF THE ENVIRONMENT
The Ontario Water Resources Act

WATER WELL RECORD

41 A/11E

1. PRINT ONLY IN SPACES PROVIDED
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11 | 2506010 | MUNICIP. 25706 | CON.

COUNTY OR DISTRICT: Grey
TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE: Shallow Lake
CON., BLOCK, TRACT, SURVEY, ETC.: [redacted] 8
LOT: 2
[redacted]
Shallow Lake
DATE COMPLETED: DAY 11 MO. 03 YR. 76
[redacted] 940200 | 5 | ELEVATION 0775 | 5 | BASIN CODE 22

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET FROM	DEPTH - FEET TO
Clay				0	2
Limestone				2	154

31: 0021 05 | 0154 15

32:

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
0105	1 ☒ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL

51 CASING & OPEN HOLE RECORD

OUTSIDE DIAM. INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET FROM	DEPTH - FEET TO
5 3/16 06	☒ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE ~~4 ☐ OPEN HOLE~~	188	0	44.6
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☒ OPEN HOLE		44.6	0154
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE			

SCREEN

SIZE(S) OF OPENING (SLOT NO.)	DIAMETER INCHES	LENGTH FEET
MATERIAL AND TYPE	DEPTH TO TOP OF SCREEN FEET	

61 PLUGGING & SEALING RECORD

DEPTH SET AT - FEET FROM	TO	MATERIAL AND TYPE (CEMENT GROUT LEAD PACKER, ETC.)

71 PUMPING TEST

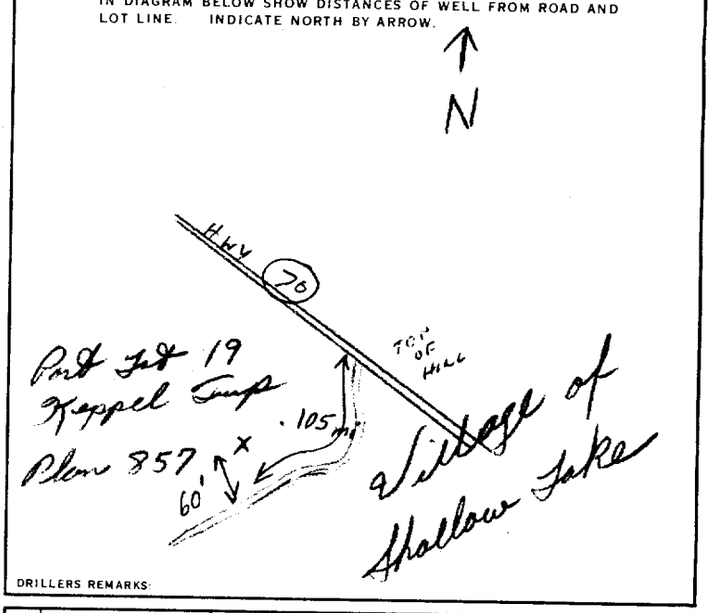
PUMPING TEST METHOD: 1 ☐ PUMP 2 ☐ BAILER
PUMPING RATE: 0020 GPM
DURATION OF PUMPING: 01 HOURS 00 MINS

STATIC LEVEL	WATER LEVEL END OF PUMPING	WATER LEVELS DURING (1 ☒ PUMPING 2 ☐ RECOVERY) 15 MINUTES	30 MINUTES	45 MINUTES	60 MINUTES
070 FEET	100 FEET	100 FEET	100 FEET	100 FEET	100 FEET

IF FLOWING, GIVE RATE: GPM
PUMP INTAKE SET AT: 154 FEET
WATER AT END OF TEST: 1 ☒ CLEAR 2 ☐ CLOUDY
RECOMMENDED PUMP TYPE: ☐ SHALLOW ☒ DEEP
RECOMMENDED PUMP SETTING: 120 FEET
RECOMMENDED PUMPING RATE: 0005 GPM
GPM./FT. SPECIFIC CAPACITY

LOCATION OF WELL

IN DIAGRAM BELOW SHOW DISTANCES OF WELL FROM ROAD AND LOT LINE. INDICATE NORTH BY ARROW.



DRILLERS REMARKS:

FINAL STATUS OF WELL 1
1 ☒ WATER SUPPLY 2 ☐ OBSERVATION WELL 3 ☐ TEST HOLE 4 ☐ RECHARGE WELL 5 ☐ ABANDONED, INSUFFICIENT SUPPLY 6 ☐ ABANDONED, POOR QUALITY 7 ☐ UNFINISHED

WATER USE 01
1 ☒ DOMESTIC 2 ☐ STOCK 3 ☐ IRRIGATION 4 ☐ INDUSTRIAL ☐ OTHER 5 ☐ COMMERCIAL 6 ☐ MUNICIPAL 7 ☐ PUBLIC SUPPLY 8 ☐ COOLING OR AIR CONDITIONING 9 ☐ NOT USED

METHOD OF DRILLING 5
1 ☐ CABLE TOOL 2 ☐ ROTARY (CONVENTIONAL) 3 ☐ ROTARY (REVERSE) 4 ☐ ROTARY (AIR) 5 ☒ AIR PERCUSSION 6 ☐ BORING 7 ☐ DIAMOND 8 ☐ JETTING 9 ☐ DRIVING

CONTRACTOR

NAME OF WELL CONTRACTOR: John Wright Well Drilling Ltd — LICENCE NUMBER 5507
ADDRESS: Box 167 Hagersville Ont
NAME OF DRILLER OR BORER: Wm Wright — LICENCE NUMBER 5507
SIGNATURE OF CONTRACTOR: William Wright
SUBMISSION DATE: DAY ____ MO. ____ YR. ____

OFFICE USE ONLY

DATA SOURCE: 1 | CONTRACTOR: 5507 | DATE RECEIVED: 100577
DATE OF INSPECTION: July 13/77 | INSPECTOR: 7
REMARKS: P/B.h. WI

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FORM 7 MOE 07-091

MINISTRY OF THE ENVIRONMENT
The Ontario Water Resources Act

WATER WELL RECORD

4/A/11E

Ontario

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11 | 2506177 | MUNICIP. 009 | CON. ØR S | 02

COUNTY OR DISTRICT	TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE	CON., BLOCK, TRACT, SURVEY, ETC.	LOT
GREY	KEPPEL	CON II O. RD. S.	PART 23

[redacted] SHALLOW LAKE, ONTARIO — DATE COMPLETED 48-53: DA 05 MO ~~July~~ 07 YR. 77

NORTHING 40500 RC 5 ELEVATION 0800 RC 5 BASIN CODE 22

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET FROM	DEPTH - FEET TO
Brown	Top Soil			0	2'
White	Limestone			2	18
Brown	Limestone			18	145
Grey	Limestone			145	227
Blue	Shale			227	235
Red	Shale			235	247'

31: 0002602 | 0018115 | 0145615 | 0227215 | 0235317 | 0247717

32:

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
0115	1 ☒ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL

51 CASING & OPEN HOLE RECORD

INSIDE DIAM INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET FROM	DEPTH - FEET TO
06	1 ☒ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE	188	0	0022
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☒ OPEN HOLE		22	0247
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE			

SCREEN

SIZE(S) OF OPENING (SLOT NO.)	DIAMETER INCHES	LENGTH FEET

MATERIAL AND TYPE	DEPTH TO TOP OF SCREEN FEET

61 PLUGGING & SEALING RECORD

DEPTH SET AT - FEET FROM	TO	MATERIAL AND TYPE (CEMENT GROUT LEAD PACKER, ETC.)

71 PUMPING TEST

PUMPING TEST METHOD: 1 ☐ PUMP ☒ BAILER — PUMPING RATE: 0005 GPM — DURATION OF PUMPING: 02 HOURS 00 MINS

STATIC LEVEL	WATER LEVEL END OF PUMPING	WATER LEVELS DURING (1 ☐ PUMPING 2 ☒ RECOVERY) 15 MINUTES	30 MINUTES	45 MINUTES	60 MINUTES
058 FEET	240 FEET	080 FEET		067 FEET	

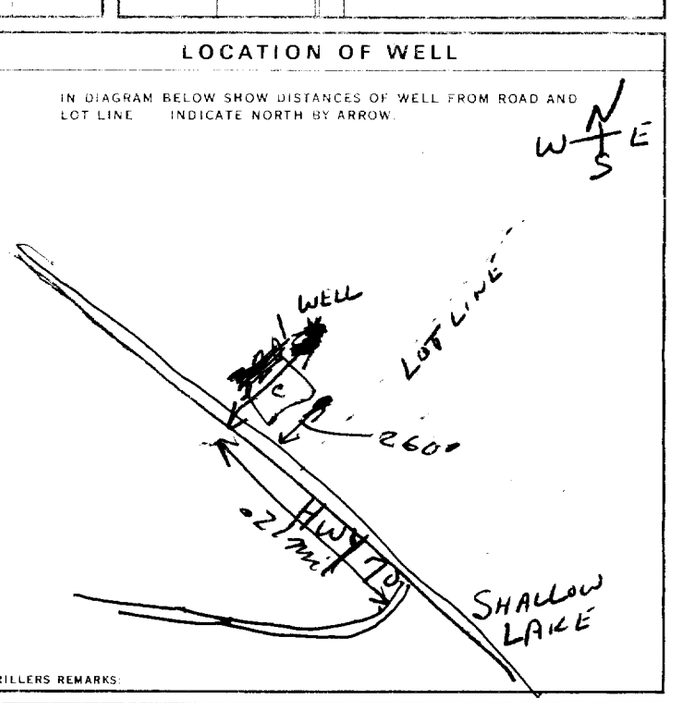
IF FLOWING, GIVE RATE: GPM — PUMP INTAKE SET AT: FEET — WATER AT END OF TEST: 1 ☒ CLEAR 2 ☐ CLOUDY

RECOMMENDED PUMP TYPE: ☐ SHALLOW ☒ DEEP — RECOMMENDED PUMP SETTING: 220 FEET — RECOMMENDED PUMPING RATE: 0005 GPM

GPM./FT. SPECIFIC CAPACITY

LOCATION OF WELL

IN DIAGRAM BELOW SHOW DISTANCES OF WELL FROM ROAD AND LOT LINE. INDICATE NORTH BY ARROW.



DRILLERS REMARKS:

FINAL STATUS OF WELL 54: 1 ☒ WATER SUPPLY 2 ☐ OBSERVATION WELL 3 ☐ TEST HOLE 4 ☐ RECHARGE WELL 5 ☐ ABANDONED, INSUFFICIENT SUPPLY 6 ☐ ABANDONED, POOR QUALITY 7 ☐ UNFINISHED

WATER USE 55-56: 05 — 1 ☐ DOMESTIC 2 ☐ STOCK 3 ☐ IRRIGATION 4 ☐ INDUSTRIAL ☐ OTHER 5 ☒ COMMERCIAL 6 ☐ MUNICIPAL 7 ☐ PUBLIC SUPPLY 8 ☐ COOLING OR AIR CONDITIONING 9 ☐ NOT USED

METHOD OF DRILLING 57: 2 — 1 ☐ CABLE TOOL 2 ☒ ROTARY (CONVENTIONAL) 3 ☐ ROTARY (REVERSE) 4 ☐ ROTARY (AIR) 5 ☐ AIR PERCUSSION 6 ☐ BORING 7 ☐ DIAMOND 8 ☐ JETTING 9 ☐ DRIVING

CONTRACTOR

NAME OF WELL CONTRACTOR: STAN WRIGHT & CO. WELL DRILLERS — LICENCE NUMBER: 5505
ADDRESS: 298 FRANK ST. WIARTON, ONTARIO
NAME OF DRILLER OR BORER: STAN, MIKE & DAVE WRIGHT — LICENCE NUMBER: 5505
SIGNATURE OF CONTRACTOR: Stan Wright — SUBMISSION DATE: DA 22 MO AUG YR 77

SAW

OFFICE USE ONLY

DATA SOURCE 58: 1 — CONTRACTOR 59-62: 5505 — DATE RECEIVED 63-68: 250877 — 80: 7
DATE OF INSPECTION: 18/7/78 — INSPECTOR:
REMARKS: CSS S8
P BV
WI BV

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FORM 7 MOE 07-091

MINISTRY OF THE ENVIRONMENT
The Ontario Water Resources Act

WATER WELL RECORD

Ontario

4IA/11E

1. PRINT ONLY IN SPACES PROVIDED
2. CHECK ☒ CORRECT BOX WHERE APPLICABLE

11 2506376 MUNICIP. 25706 CON. CON 08

COUNTY OR DISTRICT	TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE	CON., BLOCK, TRACT, SURVEY, ETC.	LOT
Grey	Shallow Lake	VIII	008

[redacted] Shallow Lake

DATE COMPLETED: DAY 09 MO. 06 YR. 77

940200 RC 5 ELEVATION 0775 RC 5 BASIN CODE 22

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET FROM	DEPTH - FEET TO
Clay				0	8
Limestone				8	215
Blue Shale				215	223
Red Shale				223	240

31 0008 05 | 0215 15 | 0223 17 | 0240 17

32

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
0088 ~~215~~	1 ☒ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
0215	1 ☒ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL

51 CASING & OPEN HOLE RECORD

INSIDE DIAMETER INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET FROM	DEPTH - FEET TO
05 ~~5½~~ ~~6~~	1 ☒ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE ~~4 ☒ OPEN HOLE~~	188	0 ~~40~~	0040 ~~240~~
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☒ OPEN HOLE			0240
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE			

SCREEN

SIZE(S) OF OPENING (SLOT NO.)	DIAMETER INCHES	LENGTH FEET
MATERIAL AND TYPE	DEPTH TO TOP OF SCREEN FEET	

61 PLUGGING & SEALING RECORD

DEPTH SET AT - FEET FROM	TO	MATERIAL AND TYPE (CEMENT GROUT, LEAD PACKER, ETC.)

71 PUMPING TEST

PUMPING TEST METHOD: 1 ☒ PUMP 2 ☐ BAILER

PUMPING RATE: 0008 GPM

DURATION OF PUMPING: 02 HOURS 00 MINS

STATIC LEVEL: 062 FEET

WATER LEVEL END OF PUMPING: 200 FEET

WATER LEVELS DURING: 1 ☒ PUMPING 2 ☐ RECOVERY

15 MINUTES	30 MINUTES	45 MINUTES	60 MINUTES
150 FEET	200 FEET	200 FEET	200 FEET

IF FLOWING, GIVE RATE: GPM

PUMP INTAKE SET AT: 240 FEET

WATER AT END OF TEST: 1 ☒ CLEAR 2 ☐ CLOUDY

RECOMMENDED PUMP TYPE: ☐ SHALLOW ☒ DEEP

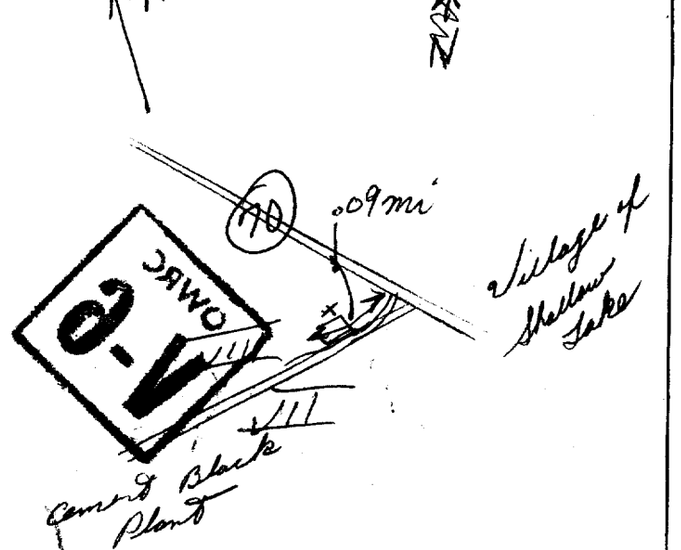
RECOMMENDED PUMP SETTING: 210 FEET

RECOMMENDED PUMPING RATE: 0005 GPM

GPM./FT. SPECIFIC CAPACITY

LOCATION OF WELL

IN DIAGRAM BELOW SHOW DISTANCES OF WELL FROM ROAD AND LOT LINE. INDICATE NORTH BY ARROW.



DRILLERS REMARKS

FINAL STATUS OF WELL 1
1 ☒ WATER SUPPLY 2 ☐ OBSERVATION WELL 3 ☐ TEST HOLE 4 ☐ RECHARGE WELL 5 ☐ ABANDONED, INSUFFICIENT SUPPLY 6 ☐ ABANDONED, POOR QUALITY 7 ☐ UNFINISHED

WATER USE 01
1 ☒ DOMESTIC 2 ☐ STOCK 3 ☐ IRRIGATION 4 ☐ INDUSTRIAL ☐ OTHER 5 ☐ COMMERCIAL 6 ☐ MUNICIPAL 7 ☐ PUBLIC SUPPLY 8 ☐ COOLING OR AIR CONDITIONING 9 ☐ NOT USED

METHOD OF DRILLING 4
1 ☐ CABLE TOOL 2 ☐ ROTARY (CONVENTIONAL) 3 ☐ ROTARY (REVERSE) 4 ☒ ROTARY (AIR) 5 ☐ AIR PERCUSSION 6 ☐ BORING 7 ☐ DIAMOND 8 ☐ JETTING 9 ☐ DRIVING

CONTRACTOR

NAME OF WELL CONTRACTOR: Wm Wright Well Drillers Ltd — LICENCE NUMBER: 5507

ADDRESS: Box 167 Hanover Ont

NAME OF DRILLER OR BORER: Wm Wright — LICENCE NUMBER: 5507

SIGNATURE OF CONTRACTOR: William Wright — SUBMISSION DATE: DAY ____ MO. ____ YR. ____

OFFICE USE ONLY

DATA SOURCE: 1 — CONTRACTOR: 5507 — DATE RECEIVED: 170478

DATE OF INSPECTION: 17/7/78 — INSPECTOR: 7

REMARKS: P WI

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FORM 7 MOE 07-091

Ontario

MINISTRY OF THE ENVIRONMENT
The Ontario Water Resources Act

WATER WELL RECORD

41A/1CE

1. PRINT ONLY IN SPACES PROVIDED
2. CHECK ☒ CORRECT BOX WHERE APPLICABLE

11 2506377 MUNICIP 25706 CON. CØN 08

COUNTY OR DISTRICT	TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE	CON., BLOCK, TRACT, SURVEY, ETC.	LOT
Grey	Shallow Lake	VIII	008

[redacted] Shallow Lake

DATE COMPLETED DAY 09 MO. 06 YR 77

UTM/PLATE NUMBER 940200 RC 5 ELEVATION 0775 RC 5 BASIN CODE 22

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET FROM	DEPTH - FEET TO
Clay				0	3
Limestone				3	150

31 0003 05 0150 15

32

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
0088	☒ FRESH ☐ SULPHUR ☐ SALTY ☐ MINERAL
	☐ FRESH ☐ SULPHUR ☐ SALTY ☐ MINERAL
	☐ FRESH ☐ SULPHUR ☐ SALTY ☐ MINERAL
	☐ FRESH ☐ SULPHUR ☐ SALTY ☐ MINERAL
	☐ FRESH ☐ SULPHUR ☐ SALTY ☐ MINERAL

51 CASING & OPEN HOLE RECORD

INSIDE DIAM INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET FROM	DEPTH - FEET TO
05	☒ STEEL ☐ GALVANIZED ☐ CONCRETE ~~OPEN HOLE~~	188	0	0040
			~~40~~	~~150~~
	☐ STEEL ☐ GALVANIZED ☐ CONCRETE ☒ OPEN HOLE			0150
	☐ STEEL ☐ GALVANIZED ☐ CONCRETE ☐ OPEN HOLE			

SCREEN

SIZE(S) OF OPENING (SLOT NO.)	DIAMETER INCHES	LENGTH FEET
MATERIAL AND TYPE	DEPTH TO TOP OF SCREEN FEET	

61 PLUGGING & SEALING RECORD

DEPTH SET AT - FEET FROM	TO	MATERIAL AND TYPE (CEMENT GROUT, LEAD PACKER, ETC.)

71 PUMPING TEST

PUMPING TEST METHOD	PUMPING RATE	DURATION OF PUMPING
☐ PUMP ☒ BAILER	0005 GPM	02 HOURS 00 MINS

STATIC LEVEL	WATER LEVEL END OF PUMPING	WATER LEVELS DURING ☒ PUMPING ☐ RECOVERY			
		15 MINUTES	30 MINUTES	45 MINUTES	60 MINUTES
064 FEET	130 FEET	130 FEET	130 FEET	130 FEET	130 FEET

IF FLOWING, GIVE RATE ___ GPM

PUMP INTAKE SET AT 150 FEET

WATER AT END OF TEST ☒ CLEAR ☐ CLOUDY

RECOMMENDED PUMP TYPE ☐ SHALLOW ☒ DEEP

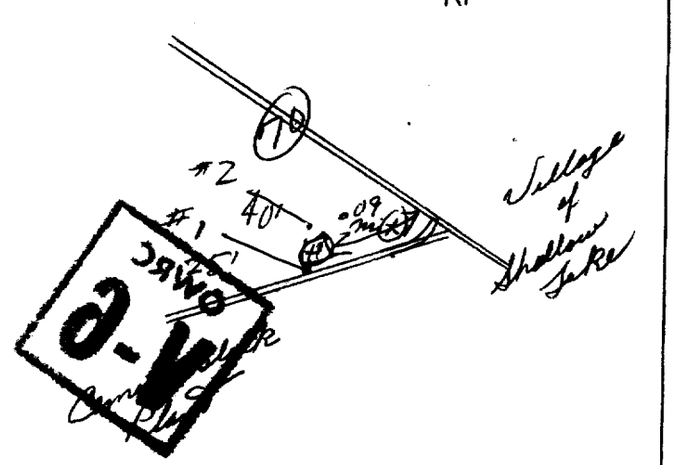
RECOMMENDED PUMP SETTING 140 FEET

RECOMMENDED PUMPING RATE 0005 GPM

GPM / FT. SPECIFIC CAPACITY

LOCATION OF WELL

IN DIAGRAM BELOW SHOW DISTANCES OF WELL FROM ROAD AND LOT LINE. INDICATE NORTH BY ARROW.



DRILLERS REMARKS:

FINAL STATUS OF WELL 1	1 ☒ WATER SUPPLY 2 ☐ OBSERVATION WELL 3 ☐ TEST HOLE 4 ☐ RECHARGE WELL 5 ☐ ABANDONED, INSUFFICIENT SUPPLY 6 ☐ ABANDONED, POOR QUALITY 7 ☐ UNFINISHED
WATER USE 01	1 ☒ DOMESTIC 2 ☐ STOCK 3 ☐ IRRIGATION 4 ☐ INDUSTRIAL ☐ OTHER 5 ☐ COMMERCIAL 6 ☐ MUNICIPAL 7 ☐ PUBLIC SUPPLY 8 ☐ COOLING OR AIR CONDITIONING 9 ☐ NOT USED
METHOD OF DRILLING 4	1 ☐ CABLE TOOL 2 ☐ ROTARY (CONVENTIONAL) 3 ☐ ROTARY (REVERSE) 4 ☒ ROTARY (AIR) 5 ☐ AIR PERCUSSION 6 ☐ BORING 7 ☐ DIAMOND 8 ☐ JETTING 9 ☐ DRIVING

CONTRACTOR

NAME OF WELL CONTRACTOR: Wm Wright Well Drillers Ltd — LICENCE NUMBER 5507

ADDRESS: Box 167 Hanover Ont

NAME OF DRILLER OR BORER: Wm Wright — LICENCE NUMBER 5507

SIGNATURE OF CONTRACTOR: William Wright — SUBMISSION DATE DAY ___ MO. ___ YR. ___

OFFICE USE ONLY

DATA SOURCE	CONTRACTOR	DATE RECEIVED
1	5507	170478

DATE OF INSPECTION 17/7/78 INSPECTOR

REMARKS:

P BR
WI BR

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FORM 7 MOE 07-091

Ministry of the Environment

Ontario

The Ontario Water Resources Act

41A/11E

WATER WELL RECORD

1. PRINT ONLY IN SPACES PROVIDED
2. CHECK ☒ CORRECT BOX WHERE APPLICABLE

11 2507162 MUNICIP. 25 06 CON.

COUNTY OR DISTRICT	TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE	CON., BLOCK, TRACT, SURVEY, ETC.	LOT
Grey	Keppel Shallow Lake	II ORds S.	

[redacted] Shallow Lake

DATE COMPLETED 10 DAY 15 MO. Oct YR. 79

[redacted] 240350 RC 5 ELEVATION 0775 RC 5 BASIN CODE 22

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET FROM	DEPTH - FEET TO
Grey	Fill			0	6
Limestone				6	228
Blue	Shale			228	236
Red	Shale			236	245

31 0006 1101 0228 1 15 0236 3 1 7 0245 7 1 7

32

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
0215 (10-13) 215-230	1 ☒ FRESH 3 ☐ SULPHUR 2 ☐ SALTY 4 ☐ MINERAL (14)
(15-18)	1 ☐ FRESH 3 ☐ SULPHUR 2 ☐ SALTY 4 ☐ MINERAL (19)
(20-23)	1 ☐ FRESH 3 ☐ SULPHUR 2 ☐ SALTY 4 ☐ MINERAL (24)
(25-28)	1 ☐ FRESH 3 ☐ SULPHUR 2 ☐ SALTY 4 ☐ MINERAL (29)
(30-33)	1 ☐ FRESH 3 ☐ SULPHUR 2 ☐ SALTY 4 ☐ MINERAL (34) 80

51 CASING & OPEN HOLE RECORD

INSIDE DIAM. INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET FROM	DEPTH - FEET TO
6 1/4 06 (10-11)	1 ☒ STEEL (12) 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE	188	0	0042 (16)
(17-18)	1 ☐ STEEL (19) 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☒ OPEN HOLE		42	0245 (20-23)
(24-25)	1 ☐ STEEL (26) 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE			(27-30)

SCREEN

SIZE(S) OF OPENING (SLOT NO.) (31-33)	DIAMETER (34-38) INCHES	LENGTH (39-40) FEET
MATERIAL AND TYPE	DEPTH TO TOP OF SCREEN (41-44) FEET	80

61 PLUGGING & SEALING RECORD

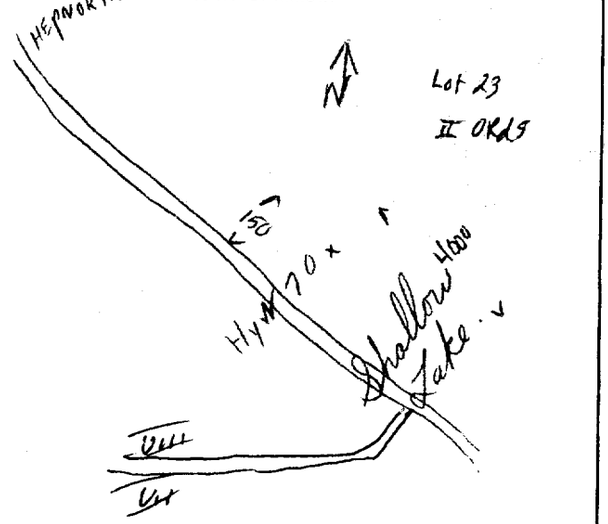
DEPTH SET AT - FEET FROM	TO	MATERIAL AND TYPE (CEMENT GROUT, LEAD PACKER, ETC.)
(10-13)	(14-17)	
(18-21)	(22-25)	
(26-29)	(30-33) 80	

71 PUMPING TEST

PUMPING TEST METHOD (10)	air 1 ☒ PUMP 2 ☐ BAILER
PUMPING RATE (11-14)	0006 6 7 GPM
DURATION OF PUMPING	02 (15-16) HOURS 00 (17-18) MINS.
STATIC LEVEL (19-21)	059 FEET
WATER LEVEL END OF PUMPING (22-24)	245 FEET
WATER LEVELS DURING (25)	1 ☒ PUMPING 2 ☐ RECOVERY
15 MINUTES (26-28)	245 FEET
30 MINUTES (29-31)	— FEET
45 MINUTES (32-34)	— FEET
60 MINUTES (35-37)	— FEET
IF FLOWING, GIVE RATE (38-41)	GPM
PUMP INTAKE SET AT	245 FEET
WATER AT END OF TEST (42)	1 ☐ CLEAR 2 ☒ CLOUDY
RECOMMENDED PUMP TYPE (50-53)	☐ SHALLOW ☒ DEEP
RECOMMENDED PUMP SETTING (43-45)	225 FEET
RECOMMENDED PUMPING RATE (46-49)	0006 GPM

LOCATION OF WELL

IN DIAGRAM BELOW SHOW DISTANCES OF WELL FROM ROAD AND LOT LINE. INDICATE NORTH BY ARROW.



DRILLERS REMARKS:

FINAL STATUS OF WELL (54) 1	1 ☒ WATER SUPPLY 2 ☐ OBSERVATION WELL 3 ☐ TEST HOLE 4 ☐ RECHARGE WELL 5 ☐ ABANDONED, INSUFFICIENT SUPPLY 6 ☐ ABANDONED, POOR QUALITY 7 ☐ UNFINISHED
WATER USE (55-56) 01	1 ☒ DOMESTIC 2 ☐ STOCK 3 ☐ IRRIGATION 4 ☐ INDUSTRIAL ☐ OTHER 5 ☐ COMMERCIAL 6 ☐ MUNICIPAL 7 ☐ PUBLIC SUPPLY 8 ☐ COOLING OR AIR CONDITIONING 9 ☐ NOT USED
METHOD OF DRILLING (57) 5	1 ☐ CABLE TOOL 2 ☐ ROTARY (CONVENTIONAL) 3 ☐ ROTARY (REVERSE) 4 ☐ ROTARY (AIR) 5 ☒ AIR PERCUSSION 6 ☐ BORING 7 ☐ DIAMOND 8 ☐ JETTING 9 ☐ DRIVING

CONTRACTOR

NAME OF WELL CONTRACTOR	Wm Wright Well Drillers Ltd
LICENCE NUMBER	5507
ADDRESS	RR 1 Hepworth Ont N0H 1P0
NAME OF DRILLER OR BORER	Wm Wright
LICENCE NUMBER	5507
SIGNATURE OF CONTRACTOR	Wm Wright
SUBMISSION DATE	DAY ____ MO. ____ YR. ____

OFFICE USE ONLY

DATA SOURCE (58)	1
CONTRACTOR (59-62)	5507
DATE RECEIVED (63-68)	010480
DATE OF INSPECTION	16/7/80
INSPECTOR	
REMARKS	

MINISTRY OF THE ENVIRONMENT COPY

FORM NO. 0506—4—77

Ministry of the Environment
Ontario

The Ontario Water Resources Act

WATER WELL RECORD

1. PRINT ONLY IN SPACES PROVIDED
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11 — 2508126 — MUNICIP. 25706 — CON.

COUNTY OR DISTRICT	TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE	CON., BLOCK, TRACT, SURVEY, ETC.	LOT
GREY	KEPPEL Shallow Lake	Plan 1037 VILLAGE OF SHALLOW LAKE	11

[redacted] ALLOW LAKE, ONT.

DATE COMPLETED: DAY 25 MO. ~~Oct.~~ 10 YR. 83

UTM 740300 — RC. 5 — ELEVATION 0775 — RC 5 — BASIN CODE 22

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET FROM	TO
Brown	Top Soil			0	1
Brown	Limestone			1	12
Grey	Limestone			12	28
Brown	Limestone			28	141
Grey	Limestone			141	196

MOE VF-17

31: 0001602 | 0012615 | 0028215 | 0141615 | 0196215

32:

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
0075 196	1 ☒ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL

51 CASING & OPEN HOLE RECORD

INSIDE DIAM INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET FROM	TO
05 ~~178~~	1 ☒ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE	.188	0	0025
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☒ OPEN HOLE		25	0196
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE			

SCREEN

SIZE(S) OF OPENING (SLOT NO.)	DIAMETER (INCHES)	LENGTH (FEET)

MATERIAL AND TYPE	DEPTH TO TOP OF SCREEN (FEET)

61 PLUGGING & SEALING RECORD

DEPTH SET AT - FEET FROM	TO	MATERIAL AND TYPE (CEMENT GROUT, LEAD PACKER, ETC.)

71 PUMPING TEST

PUMPING TEST METHOD	PUMPING RATE (GPM)	DURATION OF PUMPING (HOURS / MINS)
1 ☐ PUMP 2 ☒ BAILER	0004	02 / 00

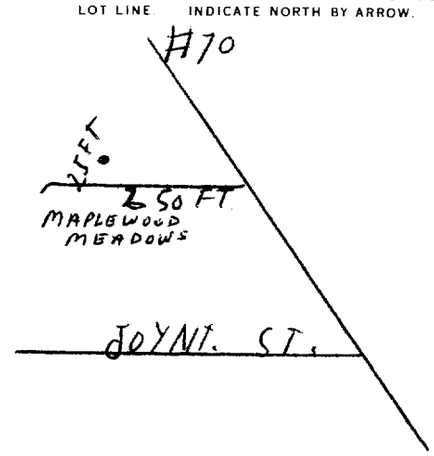
STATIC LEVEL	WATER LEVEL END OF PUMPING	WATER LEVELS DURING (1 ☐ PUMPING 2 ☒ RECOVERY) 15 MINUTES	30 MINUTES	45 MINUTES	60 MINUTES
075 FEET	190 FEET	149 FEET	145 FEET	121 FEET	119 FEET

IF FLOWING, GIVE RATE (GPM)	PUMP INTAKE SET AT (FEET)	WATER AT END OF TEST
		1 ☒ CLEAR 2 ~~☐ CLOUDY~~

RECOMMENDED PUMP TYPE	RECOMMENDED PUMP SETTING (FEET)	RECOMMENDED PUMPING RATE (GPM)
☐ SHALLOW ☒ DEEP	190	0003

LOCATION OF WELL

IN DIAGRAM BELOW SHOW DISTANCES OF WELL FROM ROAD AND LOT LINE. INDICATE NORTH BY ARROW.



DRILLERS REMARKS

FINAL STATUS OF WELL 1	1 ☒ WATER SUPPLY 2 ☐ OBSERVATION WELL 3 ☐ TEST HOLE 4 ☐ RECHARGE WELL 5 ☐ ABANDONED, INSUFFICIENT SUPPLY 6 ☐ ABANDONED, POOR QUALITY 7 ☐ UNFINISHED
WATER USE 01	1 ☒ DOMESTIC 2 ☐ STOCK 3 ☐ IRRIGATION 4 ☐ INDUSTRIAL ☐ OTHER 5 ☐ COMMERCIAL 6 ☐ MUNICIPAL 7 ☐ PUBLIC SUPPLY 8 ☐ COOLING OR AIR CONDITIONING 9 ☐ NOT USED
METHOD OF DRILLING 2	1 ☐ CABLE TOOL 2 ☒ ROTARY (CONVENTIONAL) 3 ☐ ROTARY (REVERSE) 4 ☐ ROTARY (AIR) 5 ☐ AIR PERCUSSION 6 ☐ BORING 7 ☐ DIAMOND 8 ☐ JETTING 9 ☐ DRIVING

CONTRACTOR

NAME OF WELL CONTRACTOR: STAN WRIGHT & CO WELL DRILLERS — LICENCE NUMBER: 5505

ADDRESS: 298 FRANK ST., WIARTON, ONT.

NAME OF DRILLER OR BORER: STAN & MIKE WRIGHT — LICENCE NUMBER: 5505

SIGNATURE OF CONTRACTOR: Stan Wright — SUBMISSION DATE: DAY 23 MO. 4 YR. 84

OFFICE USE ONLY

DATA SOURCE	CONTRACTOR	DATE RECEIVED
1	5505	010584

DATE OF INSPECTION: | INSPECTOR:

REMARKS

MINISTRY OF THE ENVIRONMENT COPY

FORM NO. 0506—4—77 FORM 7

Ministry of the Environment
Ontario

The Ontario Water Resources Act

WATER WELL RECORD

2508293

1. PRINT ONLY IN SPACES PROVIDED
2. CHECK ☒ CORRECT BOX WHERE APPLICABLE

11

MUNICIP 25706 CON.

COUNTY OR DISTRICT	TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE	CON., BLOCK, TRACT, SURVEY, ETC	LOT
GREY	KEPPEL SHALLOW LAKE		

OWNER (SURNAME FIRST)

[redacted]NT STREET, SHALLOW LAKE, ONT.

DATE COMPLETED DAY 16 MO May YR 84

[redacted]140 100 RC 5 ELEVATION 0775 RC 5 BASIN CODE 22

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET FROM	TO
Grey	Quarry Stone & Fill			0	3
Brown	Limestone		Shakey	3	6
Brown	Limestone			6	108
Grey	Limestone			108	142

AUG 27 1986

31 0003 21201 0006 615 0108 615 0142 215

32

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
0030 ~~070~~	1 ☒ FRESH 3 ☐ SULPHUR 2 ☐ SALTY 4 ☐ MINERAL
~~0100~~ ~~140~~	1 ☒ FRESH 3 ☐ SULPHUR 2 ☐ SALTY 4 ☐ MINERAL
0060	1 ☐ FRESH 3 ☐ SULPHUR 2 ☐ SALTY 4 ☐ MINERAL
~~0080~~	1 ☐ FRESH 3 ☐ SULPHUR 2 ☐ SALTY 4 ☐ MINERAL
	1 ☐ FRESH 3 ☐ SULPHUR 2 ☐ SALTY 4 ☐ MINERAL
	1 ☐ FRESH 3 ☐ SULPHUR 2 ☐ SALTY 4 ☐ MINERAL

51 CASING & OPEN HOLE RECORD

INSIDE DIAM INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET FROM	TO
05 ~~170~~	1 ☒ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE	.188	0	0021 ~~20½~~
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☒ OPEN HOLE		20½	0142
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE			

SCREEN

SIZE(S) OF OPENING (SLOT NO.)	DIAMETER INCHES	LENGTH FEET
MATERIAL AND TYPE	DEPTH TO TOP OF SCREEN FEET	

61 PLUGGING & SEALING RECORD

DEPTH SET AT - FEET FROM	TO	MATERIAL AND TYPE (CEMENT GROUT LEAD PACKER, ETC.)

71 PUMPING TEST

PUMPING TEST METHOD: 1 ☐ PUMP 2 ☒ BAILER

PUMPING RATE: 0004 GPM

DURATION OF PUMPING: 01 HOURS 00 MINS

STATIC LEVEL	WATER LEVEL END OF PUMPING	WATER LEVELS DURING (1 ☐ PUMPING 2 ☑ RECOVERY) 15 MINUTES	30 MINUTES	45 MINUTES	60 MINUTES
2 FEET	130 FEET	057 FEET	054 FEET	053 FEET	051 FEET

IF FLOWING, GIVE RATE: GPM

PUMP INTAKE SET AT: FEET

WATER AT END OF TEST: 1 ☐ CLEAR 2 ☒ CLOUDY

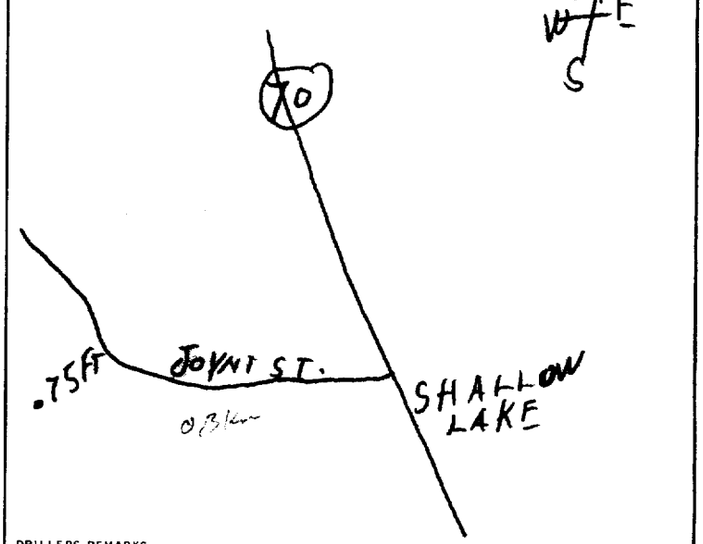
RECOMMENDED PUMP TYPE: ☐ SHALLOW ☒ DEEP

RECOMMENDED PUMP SETTING: 130 FEET

RECOMMENDED PUMPING RATE: 0003 GPM

LOCATION OF WELL

IN DIAGRAM BELOW SHOW DISTANCES OF WELL FROM ROAD AND LOT LINE. INDICATE NORTH BY ARROW.



DRILLERS REMARKS

FINAL STATUS OF WELL 1
1 ☒ WATER SUPPLY 2 ☐ OBSERVATION WELL 3 ☐ TEST HOLE 4 ☐ RECHARGE WELL 5 ☐ ABANDONED, INSUFFICIENT SUPPLY 6 ☐ ABANDONED POOR QUALITY 7 ☐ UNFINISHED

WATER USE 01
1 ☒ DOMESTIC 2 ☒ STOCK 3 ☐ IRRIGATION 4 ☐ INDUSTRIAL ☐ OTHER 5 ☐ COMMERCIAL 6 ☐ MUNICIPAL 7 ☐ PUBLIC SUPPLY 8 ☐ COOLING OR AIR CONDITIONING 9 ☐ NOT USED

METHOD OF DRILLING 2
1 ☐ CABLE TOOL 2 ☒ ROTARY (CONVENTIONAL) 3 ☐ ROTARY (REVERSE) 4 ☐ ROTARY (AIR) 5 ☐ AIR PERCUSSION 6 ☐ BORING 7 ☐ DIAMOND 8 ☐ JETTING 9 ☐ DRIVING

CONTRACTOR

NAME OF WELL CONTRACTOR: STAN WRIGHT & CO WELL DRILLERS — LICENCE NUMBER: 5505

ADDRESS: 298 FRANK ST, WIARTON, ONT.

NAME OF DRILLER OR BORER: MIKE & STAN WRIGHT — LICENCE NUMBER: 5505

SIGNATURE OF CONTRACTOR: Stan Wright — SUBMISSION DATE: DAY 26 MO Jan YR 85

MINISTRY OF THE ENVIRONMENT COPY

OFFICE USE ONLY

DATA SOURCE: 1 — CONTRACTOR: 5505 — DATE RECEIVED: 040285

DATE OF INSPECTION: 18/7/85 — INSPECTOR:

REMARKS:

FORM NO. 0506—4—77 FORM 7

Ministry of the Environment
Ontario

The Ontario Water Resources Act

WATER WELL RECORD

1. PRINT ONLY IN SPACES PROVIDED
2. CHECK ☒ CORRECT BOX WHERE APPLICABLE

(11) 2508536 PLAN 25706 857 CON.

COUNTY OR DISTRICT	TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE	CON., BLOCK, TRACT, SURVEY, ETC.	LOT
GREY	KEPPEL SHALLOW LAKE		30

[redacted] SHALLOW LAKE.

DATE COMPLETED: DAY 20 MO NOV YR 85

UTM 40 100 ZONE 5 ELEVATION 0780 ZONE 5 BASIN CODE 22

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET FROM	TO
BROWN	- Rocks. CLAY	- BROKEN Rock		0	8
BROWN	- Rock			8	90
GREY	- Rock			90	140

31

32

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
120 ft	1 ☐ FRESH 3 ☐ SULPHUR 2 ☐ SALTY 4 ☐ MINERAL
130 ft	
	1 ☐ FRESH 3 ☐ SULPHUR 2 ☐ SALTY 4 ☐ MINERAL
	1 ☐ FRESH 3 ☐ SULPHUR 2 ☐ SALTY 4 ☐ MINERAL
	1 ☐ FRESH 3 ☐ SULPHUR 2 ☐ SALTY 4 ☐ MINERAL
	1 ☐ FRESH 3 ☐ SULPHUR 2 ☐ SALTY 4 ☐ MINERAL
	1 ☐ FRESH 3 ☐ SULPHUR 2 ☐ SALTY 4 ☐ MINERAL

51 CASING & OPEN HOLE RECORD

INSIDE DIAM INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET FROM	TO
5"	1 ☒ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE	.188	0	20
5"	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☒ OPEN HOLE		20	140
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE			

SCREEN

SIZE(S) OF OPENING (SLOT NO.)	DIAMETER INCHES	LENGTH FEET
MATERIAL AND TYPE	DEPTH TO TOP OF SCREEN FEET	

61 PLUGGING & SEALING RECORD

DEPTH SET AT - FEET FROM	TO	MATERIAL AND TYPE (CEMENT GROUT, LEAD PACKER, ETC.)

71 PUMPING TEST

PUMPING TEST METHOD: 1 ☐ PUMP 2 ☒ BAILER

PUMPING RATE: 15 GPM

DURATION OF PUMPING: 1 HOURS ___ MINS

STATIC LEVEL	WATER LEVEL END OF PUMPING	WATER LEVELS DURING (1 ☐ PUMPING 2 ☐ RECOVERY) 15 MINUTES	30 MINUTES	45 MINUTES	60 MINUTES
25 FEET	50 FEET	50 FEET	50 FEET	50 FEET	50 FEET

IF FLOWING, GIVE RATE: ___ GPM

PUMP INTAKE SET AT: ___ FEET

WATER AT END OF TEST: 1 ☒ CLEAR 2 ☐ CLOUDY

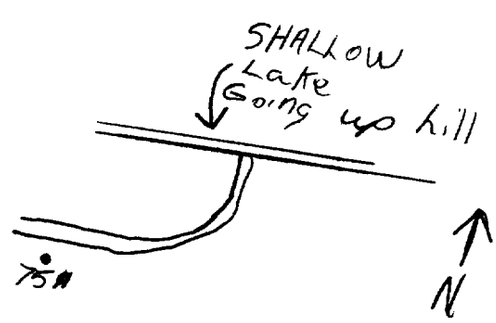
RECOMMENDED PUMP TYPE: ☐ SHALLOW ☒ DEEP

RECOMMENDED PUMP SETTING: 90 FEET

RECOMMENDED PUMPING RATE: 10 GPM

LOCATION OF WELL

IN DIAGRAM BELOW SHOW DISTANCES OF WELL FROM ROAD AND LOT LINE. INDICATE NORTH BY ARROW.



DRILLERS REMARKS:

FINAL STATUS OF WELL: 1 ☒ WATER SUPPLY 2 ☐ OBSERVATION WELL 3 ☐ TEST HOLE 4 ☐ RECHARGE WELL 5 ☐ ABANDONED, INSUFFICIENT SUPPLY 6 ☐ ABANDONED, POOR QUALITY 7 ☐ UNFINISHED

WATER USE: 1 ☒ DOMESTIC 2 ☐ STOCK 3 ☐ IRRIGATION 4 ☐ INDUSTRIAL ☐ OTHER 5 ☐ COMMERCIAL 6 ☐ MUNICIPAL 7 ☐ PUBLIC SUPPLY 8 ☐ COOLING OR AIR CONDITIONING 9 ☐ NOT USED

METHOD OF DRILLING: 1 ☐ CABLE TOOL 2 ☒ ROTARY (CONVENTIONAL) 3 ☐ ROTARY (REVERSE) 4 ☐ ROTARY (AIR) 5 ☐ AIR PERCUSSION 6 ☐ BORING 7 ☐ DIAMOND 8 ☐ JETTING 9 ☐ DRIVING

CONTRACTOR

NAME OF WELL CONTRACTOR: LADCO DRILLING — LICENCE NUMBER: 3316

ADDRESS: GODERICH R.R#3

NAME OF DRILLER OR BORER: THOMAS LANG — LICENCE NUMBER: 3316

SIGNATURE OF CONTRACTOR: [signature] — SUBMISSION DATE: DAY 14 MO. DEC YR. 85

OFFICE USE ONLY

DATA SOURCE | CONTRACTOR | DATE RECEIVED 28 0486

DATE OF INSPECTION: 8/10/86 — INSPECTOR

REMARKS: WDE

MINISTRY OF THE ENVIRONMENT COPY

FORM NO. 0506—4—77 FORM 7

Ministry of the Environment
Ontario

41 A/11

The Ontario Water Resources Act

WATER WELL RECORD

1. PRINT ONLY IN SPACES PROVIDED
2. CHECK ☒ CORRECT BOX WHERE APPLICABLE

11 2508826 MUNICIP 25706 CON.

COUNTY OR DISTRICT	TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE	CON. BLOCK, TRACT, SURVEY, ETC	LOT
[redacted]	Keppel	Village Shallow Lake	

DATE COMPLETED DAY ____ MO ____ YR. 87

[redacted] 40/00 RC ELEVATION 750 RC BASIN CODE

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET FROM	DEPTH - FEET TO
			soil and stone	0	3
			limestone	3	110

31

32

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
10-13	1 ☐ FRESH 3 ☐ SULPHUR 14; 2 ☐ SALTY 4 ☐ MINERAL
15-18	1 ☐ FRESH 3 ☐ SULPHUR 19; 2 ☐ SALTY 4 ☐ MINERAL
20-23	1 ☐ FRESH 3 ☐ SULPHUR 24; 2 ☐ SALTY 4 ☐ MINERAL
25-28	1 ☐ FRESH 3 ☐ SULPHUR 29; 2 ☐ SALTY 4 ☐ MINERAL
30-33	1 ☐ FRESH 3 ☐ SULPHUR 34; 2 ☐ SALTY 4 ☐ MINERAL

51 CASING & OPEN HOLE RECORD

INSIDE DIAM INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET FROM	DEPTH - FEET TO
10-11 5 3/16	1 ☑ STEEL 12; 2 ☐ GALVANIZED; 3 ☐ CONCRETE; 4 ☐ OPEN HOLE	.188	0	13-16 52.6
17-18	1 ☐ STEEL 19; 2 ☐ GALVANIZED; 3 ☐ CONCRETE; 4 ☑ OPEN HOLE		52.6	20-23 110
24-25	1 ☐ STEEL 26; 2 ☐ GALVANIZED; 3 ☐ CONCRETE; 4 ☐ OPEN HOLE			27-30

SCREEN

SIZE(S) OF OPENING (SLOT NO.) 31-33	DIAMETER 34-38 INCHES	LENGTH 39-40 FEET
MATERIAL AND TYPE	DEPTH TO TOP OF SCREEN 41-44 FEET	30

61 PLUGGING & SEALING RECORD

DEPTH SET AT - FEET FROM	TO	MATERIAL AND TYPE (CEMENT GROUT, LEAD PACKER, ETC.)
10-13	14-17	
18-21	22-25	
26-29	30-33	80

71 PUMPING TEST

PUMPING TEST METHOD 10	PUMPING RATE 11-14	DURATION OF PUMPING
1 ☐ PUMP 2 ☐ BAILER AIR	10 GPM	1 HOURS 15-16 ____ MINS 17-18

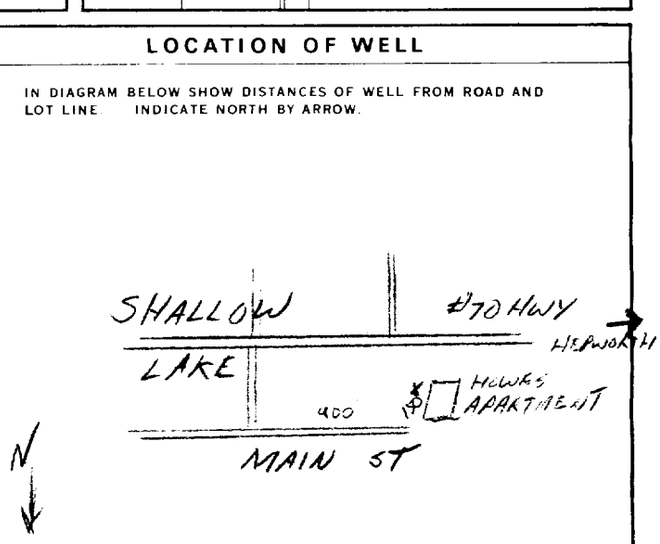
STATIC LEVEL	WATER LEVEL END OF PUMPING	WATER LEVELS DURING (1 ☐ PUMPING 2 ☐ RECOVERY) 25			
		15 MINUTES	30 MINUTES	45 MINUTES	60 MINUTES
35 FEET (19-21)	FEET (22-24)	FEET (26-28)	FEET (29-31)	35 FEET (32-34)	✓ FEET (35-37)

IF FLOWING, GIVE RATE 38-41	PUMP INTAKE SET AT	WATER AT END OF TEST 42
GPM	110 R005 FEET	1 ☑ CLEAR 2 ☐ CLOUDY
RECOMMENDED PUMP TYPE: ☐ SHALLOW ☑ DEEP	RECOMMENDED PUMP SETTING 100 FEET (43-45)	RECOMMENDED PUMPING RATE 8-10 GPM (46-49)

50-53

LOCATION OF WELL

IN DIAGRAM BELOW SHOW DISTANCES OF WELL FROM ROAD AND LOT LINE. INDICATE NORTH BY ARROW.



DRILLERS REMARKS 04143

FINAL STATUS OF WELL (54)	1 ☑ WATER SUPPLY; 2 ☐ OBSERVATION WELL; 3 ☐ TEST HOLE; 4 ☐ RECHARGE WELL; 5 ☐ ABANDONED, INSUFFICIENT SUPPLY; 6 ☐ ABANDONED POOR QUALITY; 7 ☐ UNFINISHED
WATER USE (55-56)	1 ☑ DOMESTIC; 2 ☐ STOCK; 3 ☐ IRRIGATION; 4 ☐ INDUSTRIAL; ☐ OTHER; 5 ☐ COMMERCIAL; 6 ☐ MUNICIPAL; 7 ☐ PUBLIC SUPPLY; 8 ☐ COOLING OR AIR CONDITIONING; 9 ☐ NOT USED
METHOD OF DRILLING (57)	1 ☐ CABLE TOOL; 2 ☐ ROTARY (CONVENTIONAL); 3 ☐ ROTARY (REVERSE); 4 ☐ ROTARY (AIR); 5 ☑ AIR PERCUSSION; 6 ☐ BORING; 7 ☐ DIAMOND; 8 ☐ JETTING; 9 ☐ DRIVING

CONTRACTOR

NAME OF WELL CONTRACTOR: Wm Wright Well Drilling Ltd — LICENCE NUMBER 5507

ADDRESS: Box 167 Hepworth Ont

NAME OF DRILLER OR BORER: L. Wright — LICENCE NUMBER

CONTRACTOR: A.T. [illegible] — SUBMISSION DATE DAY ____ MO ____ YR. ____

OFFICE USE ONLY

DATA SOURCE 58	CONTRACTOR 59-62	DATE RECEIVED 63-68 220487
DATE OF INSPECTION 12/8/87	INSPECTOR	
REMARKS		

CSS 88

ONMENT COPY

FORM NO. 0506—4—77 FORM 7

Ontario — Ministry of the Environment

Measurements recorded in: ☐ Metric ☑ Imperial

Well Tag No. *(Place Sticker and/or Print Below)*

7137287

Well Record

Regulation 903 Ontario Water Resources Act

Well Owner's Information

First Name	Last Name / Organization	E-mail Address	☐ Well Constructed by Well Owner
	TOWNSHIP OF GEORGIAN BLUFFS		

Mailing Address (Street Number/Name)	Municipality	Province	Postal Code	Telephone No. *(inc. area code)*
177964 GREY RD 18 RR#3	OWEN SOUND	ONT	N4K5N5	5193762729

Well Location

Address of Well Location (Street Number/Name)	Township	Lot	Concession
	KEPPEL	PT 23	II ORS

County/District/Municipality	City/Town/Village	Province	Postal Code
GREY	SHALLOW LAKE	Ontario	N0H2K0

UTM Coordinates	Zone	Easting	Northing	Municipal Plan and Sublot Number	Other
NAD 83	17	492527	4940656		

Overburden and Bedrock Materials/Abandonment Sealing Record *(see instructions on the back of this form)*

General Colour	Most Common Material	Other Materials	General Description	Depth (m/ft) From	To
			DECOMMISSION WELL # 25-06177 DRILLED JULY 1977 247 FEET		
			FILLED WITH BENTONITE TO 4 FEET BELOW GRADE		
			BED ROCK 3.5 FEET BELOW GRADE		
			CEMENT PLUG PLACED IN TOP OF CASING.		
			WELL HEAD COVERED WITH CEMENT FOOTINGS		
			OF NEW ADDITION TO ARENA		

Annular Space

Depth Set at (m/ft) From	To	Type of Sealant Used *(Material and Type)*	Volume Placed *(m³/ft³)*

Method of Construction

☐ Cable Tool ☐ Diamond
☐ Rotary (Conventional) ☐ Jetting
☐ Rotary (Reverse) ☐ Driving
☐ Boring ☐ Digging
☐ Air percussion
☐ Other, *specify* _____

Well Use

☐ Public ☐ Commercial ☐ Not used
☐ Domestic ☐ Municipal ☐ Dewatering
☐ Livestock ☐ Test Hole ☐ Monitoring
☐ Irrigation ☐ Cooling & Air Conditioning
☐ Industrial
☐ Other, *specify* _____

Construction Record - Casing

Inside Diameter *(cm/in)*	Open Hole OR Material (Galvanized, Fibreglass, Concrete, Plastic, Steel)	Wall Thickness *(cm/in)*	Depth (m/ft) From	To

Construction Record - Screen

Outside Diameter *(cm/in)*	Material (Plastic, Galvanized, Steel)	Slot No.	Depth (m/ft) From	To

Status of Well

☐ Water Supply
☐ Replacement Well
☐ Test Hole
☐ Recharge Well
☐ Dewatering Well
☐ Observation and/or Monitoring Hole
☐ Alteration (Construction)
☐ Abandoned, Insufficient Supply
☐ Abandoned, Poor Water Quality
☐ Abandoned, other, *specify* _____
☐ Other, *specify* _____

Water Details

Water found at Depth (m/ft)	Kind of Water: ☐ Fresh ☐ Untested ☐ Gas ☐ Other, *specify* _____
Water found at Depth (m/ft)	Kind of Water: ☐ Fresh ☐ Untested ☐ Gas ☐ Other, *specify* _____
Water found at Depth (m/ft)	Kind of Water: ☐ Fresh ☐ Untested ☐ Gas ☐ Other, *specify* _____

Hole Diameter

Depth (m/ft) From	To	Diameter *(cm/in)*

Results of Well Yield Testing

After test of well yield, water was:
☐ Clear and sand free
☐ Other, *specify* _____

If pumping discontinued, give reason:

Pump intake set at *(m/ft)*

Pumping rate *(l/min / GPM)*

Duration of pumping _____ hrs + _____ min

Final water level end of pumping *(m/ft)*

If flowing give rate *(l/min / GPM)*

Recommended pump depth *(m/ft)*

Recommended pump rate *(l/min / GPM)*

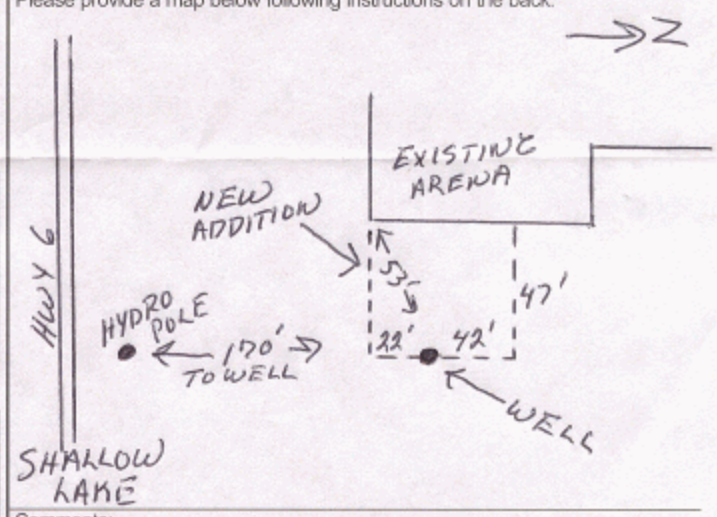
Well production *(l/min / GPM)*

Disinfected? ☐ Yes ☐ No

Draw Down Time *(min)*	Water Level *(m/ft)*	Recovery Time *(min)*	Water Level *(m/ft)*
Static Level			
1		1	
2		2	
3		3	
4		4	
5		5	
10		10	
15		15	
20		20	
25		25	
30		30	
40		40	
50		50	
60		60	

Map of Well Location

Please provide a map below following instructions on the back.



Comments:

Well Contractor and Well Technician Information

Business Name of Well Contractor	Well Contractor's Licence No.
STAN WRIGHT & Co. WELL DRILLERS	5505

Business Address (Street Number/Name)	Municipality
RR#1 SHALLOW LAKE	

Province	Postal Code	Business E-mail Address
ONT	N0H2K0	

Bus. Telephone No. *(inc. area code)*	Name of Well Technician (Last Name, First Name)
5193764380	WRIGHT MIKE

Well Technician's Licence No.	Signature of Technician and/or Contractor	Date Submitted
T185	[signature]	2009/12/28

Well owner's information package delivered	Date Package Delivered	Date Work Completed
☑ Yes ☐ No	2009/11/23	2009/11/09

Ministry Use Only

Audit No. Z103217

JAN 04 2010

Received

0506E (12/2007)

Ministry's Copy

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Ontario — Ministry of the Environment, Conservation and Parks

Measurements recorded in: ☐ Metric ☑ Imperial

Well Tag No. *(Place Sticker and/or Print Below)* A294904

7363044 Well Record

Regulation 903 Ontario Water Resources Act

Page 1 of 1

Well Owner's Information

First Name	Last Name / Organization	E-mail Address	☐ Well Constructed by Well Owner
	Barry's Construction		

Mailing Address (Street Number/Name)	Municipality	Province	Postal Code	Telephone No. (inc. area code)
7839 Hwy 21	Allenford	ON		

Well Location

Address of Well Location (Street Number/Name)	Township	Lot	Concession
75 Howe Drive	Georgian Bluffs		

County/District/Municipality	City/Town/Village	Province	Postal Code
Grey	Shallow Lake	Ontario	

UTM Coordinates	Zone	Easting	Northing	Municipal Plan and Sublot Number	Other
NAD 83	17	493103	4940925	Plan 16M34 BLK 31	

Overburden and Bedrock Materials/Abandonment Sealing Record *(see instructions on the back of this form)*

General Colour	Most Common Material	Other Materials	General Description	Depth (m/ft) From	To
Black	Topsoil			0	2
Brown	Sand	Stones		2	24
Brown	Limestone		Broken	24	26
Brown	Limestone		Solid	26	42
Brown	Limestone	Grey Layers		42	70
Grey	Limestone		Solid	70	102

Annular Space

Depth Set at (m/ft) From	To	Type of Sealant Used (Material and Type)	Volume Placed (m^3/ft^3)
0	26	Bentonite	

Method of Construction

☐ Cable Tool ☐ Diamond
☐ Rotary (Conventional) ☐ Jetting
☐ Rotary (Reverse) ☐ Driving
☐ Boring ☐ Digging
☑ Air percussion
☐ Other, *specify*

Well Use

☐ Public ☐ Commercial ☐ Not used
☑ Domestic ☐ Municipal ☐ Dewatering
☐ Livestock ☐ Test Hole ☐ Monitoring
☐ Irrigation ☐ Cooling & Air Conditioning
☐ Industrial
☐ Other, *specify*

Construction Record - Casing

Inside Diameter (cm/in)	Open Hole OR Material (Galvanized, Fibreglass, Concrete, Plastic, Steel)	Wall Thickness (cm/in)	Depth (m/ft) From	To
6 3/16	Steel	.219	+1.5	26
6	Open		26	102

Construction Record - Screen

Outside Diameter (cm/in)	Material (Plastic, Galvanized, Steel)	Slot No.	Depth (m/ft) From	To

Status of Well

☑ Water Supply
☐ Replacement Well
☐ Test Hole
☐ Recharge Well
☐ Dewatering Well
☐ Observation and/or Monitoring Hole
☐ Alteration (Construction)
☐ Abandoned, Insufficient Supply
☐ Abandoned, Poor Water Quality
☐ Abandoned, other, *specify*
☐ Other, *specify*

Water Details

Water found at Depth (m/ft)	Kind of Water	
70	☑ Fresh ☑ Untested ☐ Gas ☐ Other, *specify*	
100	☐ Fresh ☐ Untested ☐ Gas ☐ Other, *specify*	
	☐ Fresh ☐ Untested ☐ Gas ☐ Other, *specify*	

Hole Diameter

Depth (m/ft) From	To	Diameter (cm/in)
0	26	10
26	102	6

Results of Well Yield Testing

After test of well yield, water was: ☑ Clear and sand free ☐ Other, *specify*

If pumping discontinued, give reason:

Pump intake set at (m/ft): 85

Pumping rate (l/min / GPM): 5

Duration of pumping: 2 hrs + ____ min

Final water level end of pumping (m/ft): 49.7

If flowing give rate (l/min / GPM): —

Recommended pump depth (m/ft): 85

Recommended pump rate (l/min / GPM): 5

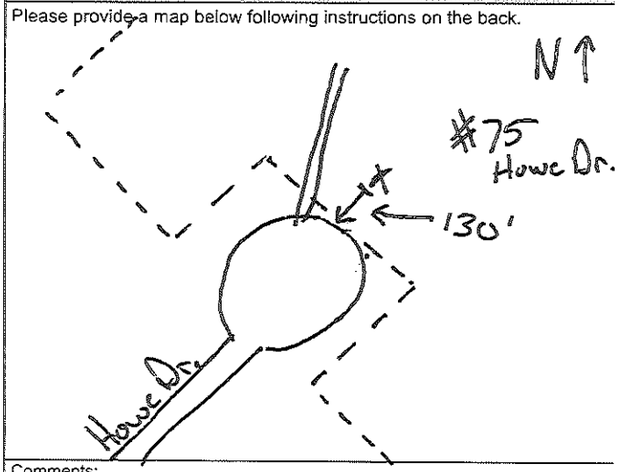
Well production (l/min / GPM): 7

Disinfected? ☑ Yes ☐ No

Draw Down Time (min)	Water Level (m/ft)	Recovery Time (min)	Water Level (m/ft)
Static Level	47		
1	47.2	1	47
2		2	
3		3	
4	47.5	4	
5	47.6	5	
10	48	10	
15	48.4	15	
20	48.7	20	
25	49	25	
30	49.1	30	
40	49.3	40	
50	49.5	50	
60	49.7	60	

Map of Well Location

Please provide a map below following instructions on the back.



Comments:

Well Contractor and Well Technician Information

Business Name of Well Contractor: Dan Wright & Co Well Drilling

Well Contractor's Licence No.: 5505

Business Address (Street Number/Name): R.R. #1

Municipality: Shallow Lake

Province: ON

Postal Code: N0H2K0

Business E-mail Address:

Bus. Telephone No. (inc. area code): 5193764380

Name of Well Technician (Last Name, First Name): Wright, Dan & Kevin.

Well Technician's Licence No.: 3958

Signature of Technician and/or Contractor:

Date Submitted: Y Y Y Y M M D D

Well owner's information package delivered: ☑ Yes ☐ No

Date Package Delivered: 2020 04 20

Date Work Completed: 2020 04 20

Ministry Use Only

Audit No. Z329254

Received JUL 21 2020

0506E (2018/12)

Ministry's Copy

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Ontario Ministry of the Environment

Well Tag Num: A 035174

A035174

2516719

Well Record

Regulation 903 Ontario Water Resources Act

page ___ of ___

Instructions for Completing Form

- For use in the **Province of Ontario** only. This document is a permanent **legal** document. Please retain for future reference.
- All Sections **must** be completed in full to avoid delays in processing. Further instructions and explanations are available on the back of this form.
- Questions regarding completing this application can be directed to the Water Well Management Coordinator at 416-235-6203.
- **All metre measurements shall be reported to 1/10th of a metre.**
- Please print clearly in blue or black ink only.

Ministry Use Only

MUN | CON | LOT

Well Owner's Information and Location of Well Information

[redacted]

RR#/Street Number/Name	City/Town/Village	Site/Compartment/Block/Tract etc.
RR#3	Shallow Lake	

GPS Reading: NAD 83 / Zone 17T / Easting 0492613 / Northing 4941772 — Unit Make/Model: Garmin 12 — Mode of Operation: ☐ Undifferentiated ☑ Averaged ☐ Differentiated, specify

Log of Overburden and Bedrock Materials (see instructions)

General Colour	Most common material	Other Materials	General Description	Depth From	Depth To
			clay	0	15
			limestone	15	214
			blue shale	214	220

Hole Diameter

Depth From	Depth To	Diameter
0	20	10"
20	30.6	8"
30.6	220	6"

Water Record

Water found at	Kind of Water
118	☑ Fresh ☐ Sulphur ☐ Gas ☐ Salty ☐ Minerals ☐ Other:
197	☑ Fresh ☐ Sulphur ☐ Gas ☐ Salty ☐ Minerals ☐ Other:
m	☐ Fresh ☐ Sulphur ☐ Gas ☐ Salty ☐ Minerals ☐ Other:

After test of well yield, water was: ☐ Clear and sediment free ☐ Other, specify

Chlorinated ☐ Yes ☐ No

Construction Record

Inside diam	Material	Wall thickness centimetres	Depth From	Depth To
Casing				
6 1/4	☑ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized	.188	+18"	30.6
	☐ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized			
	☐ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized			
Screen				
Outside diam	☐ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized	Slot No.		
No Casing or Screen				
	☑ Open hole		30.6	220.

Test of Well Yield

Pumping test method: AIR

Pump intake set at - (metres): 220

Pumping rate - (litres/min): 7

Duration of pumping: 1 hrs + ___ min

Final water level end of pumping: 220 metres

Recommended pump type: ☐ Shallow ☑ Deep

Recommended pump depth: 210 metres

Recommended pump rate: 15+ (litres/min)

If flowing give rate - (litres/min)

If pumping discontinued, give reason.

Draw Down Time min	Draw Down Water Level metres	Recovery Time min	Recovery Water Level metres
Static Level	34		
1		1	
2		2	
3		3	
4		4	
5		5	
10		10	
15		15	
20		20	
25		25	
30		30	
40		40	
50		50	
60		60	55.

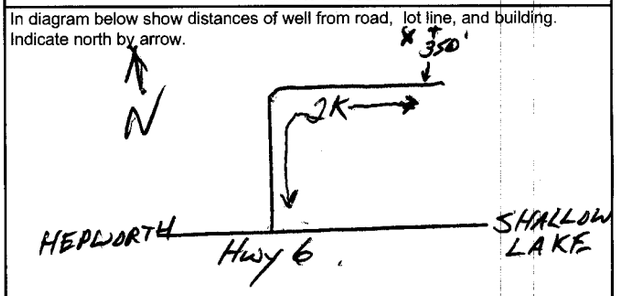
Plugging and Sealing Record

☑ Annular space ☐ Abandonment

Depth set at - From	To	Material and type (bentonite slurry, neat cement slurry) etc.	Volume Placed (cubic metres)
0	20	bentonite	

Location of Well

In diagram below show distances of well from road, lot line, and building. Indicate north by arrow.



Method of Construction

☐ Cable Tool ☐ Rotary (air) ☐ Diamond ☐ Digging
☐ Rotary (conventional) ☑ Air percussion ☐ Jetting ☐ Other
☐ Rotary (reverse) ☐ Boring ☐ Driving

Water Use

☑ Domestic ☐ Industrial ☐ Public Supply ☐ Other
☑ Stock ☐ Commercial ☐ Not used
☐ Irrigation ☐ Municipal ☐ Cooling & air conditioning

Final Status of Well

☑ Water Supply ☐ Recharge well ☐ Unfinished ☐ Abandoned, (Other)
☐ Observation well ☐ Abandoned, insufficient supply ☐ Dewatering
☐ Test Hole ☐ Abandoned, poor quality ☐ Replacement well

Audit No. Z 38951

Date Well Completed: YYYY 05 MM 10 DD 26

Was the well owner's information package delivered? ☐ Yes ☑ No

Date Delivered: YYYY MM DD

Well Contractor/Technician Information

Name of Well Contractor: Wm Wright & Sons Drilling Ltd

Well Contractor's Licence No.: 5507

Business Address (street name, number, city etc.): Box 967 Hepworth Ont

Name of Well Technician (last name, first name): Wright, Clarence

Well Technician's Licence No.: T-0140

Signature of Technician/Contractor: X Clarence Wright

Date Submitted: YYYY MM DD

Ministry Use Only

Data Source

Contractor: 5507

Date Received: YYYY MM DD JAN 18 2006

Date of Inspection: YYYY MM DD

Remarks

Well Record Number

0506E (09/03) Contractor's Copy ☐ Ministry's Copy ☐ Well Owner's Copy ☐

Cette formule est disponible en français

Ontario — Ministry of the Environment and Climate Change

Measurements recorded in: ☐ Metric ☑ Imperial

Well Tag No. *(Place Sticker and/or Print Below)* A140718

7329799 **Well Record**

Regulation 903 Ontario Water Resources Act

Page of

[redacted]

Well Location

Address of Well Location (Street Number/Name)	Township	Lot	Concession
326091 Sideroad 25	Derrycrow Bluffs		

County/District/Municipality	City/Town/Village	Province	Postal Code
Grey	Shallow Lake	Ontario	N0H2K0

UTM Coordinates: Zone	Easting	Northing	Municipal Plan and Sublot Number	Other
NAD 83	17	499599	4941760	

Overburden and Bedrock Materials/Abandonment Sealing Record *(see instructions on the back of this form)*

General Colour	Most Common Material	Other Materials	General Description	Depth (m/ft) From	To
			clay stones	0	14
			limestone	14	210
			blue shale	210	225

Annular Space

Depth Set at (m/ft) From	To	Type of Sealant Used (Material and Type)	Volume Placed (m³/ft³)
0	28	bentonite	

Method of Construction

☐ Cable Tool ☐ Diamond
☐ Rotary (Conventional) ☐ Jetting
☐ Rotary (Reverse) ☐ Driving
☐ Boring ☐ Digging
☑ Air percussion
☑ Other, *specify* dayer

Well Use

☐ Public ☐ Commercial ☐ Not used
☑ Domestic ☐ Municipal ☐ Dewatering
☑ Livestock ☐ Test Hole ☐ Monitoring
☐ Irrigation ☐ Cooling & Air Conditioning
☐ Industrial
☐ Other, *specify*

Construction Record - Casing

Inside Diameter (cm/in)	Open Hole OR Material (Galvanized, Fibreglass, Concrete, Plastic, Steel)	Wall Thickness (cm/in)	Depth (m/ft) From	To
6	steel	188	0	28

Construction Record - Screen

Outside Diameter (cm/in)	Material (Plastic, Galvanized, Steel)	Slot No.	Depth (m/ft) From	To

Status of Well

☑ Water Supply
☐ Replacement Well
☐ Test Hole
☐ Recharge Well
☐ Dewatering Well
☐ Observation and/or Monitoring Hole
☐ Alteration (Construction)
☐ Abandoned, Insufficient Supply
☐ Abandoned, Poor Water Quality
☐ Abandoned, other, *specify*
☐ Other, *specify*

Water Details

Water found at Depth (m/ft)	Kind of Water	
105	☑ Fresh ☐ Untested ☐ Gas ☐ Other, *specify*	
196	☑ Fresh ☐ Untested ☐ Gas ☐ Other, *specify*	
	☐ Fresh ☐ Untested ☐ Gas ☐ Other, *specify*	

Hole Diameter

Depth (m/ft) From	To	Diameter (cm/in)
0	28	10
28	215	6

Results of Well Yield Testing

After test of well yield, water was: ☑ Clear and sand free ☐ Other, *specify*

If pumping discontinued, give reason:

Pump intake set at (m/ft): 215

Pumping rate (l/min / GPM): 4-5

Duration of pumping: 1 hrs + min

Final water level end of pumping (m/ft): 215

If flowing give rate (l/min / GPM)

Recommended pump depth (m/ft): 200

Recommended pump rate (l/min / GPM): 5

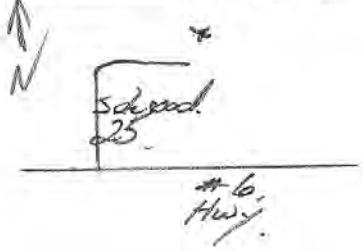
Well production (l/min / GPM)

Disinfected? ☑ Yes ☐ No

Draw Down Time (min)	Water Level (m/ft)	Recovery Time (min)	Water Level (m/ft)
Static Level	45		
1		1	
2		2	
3		3	
4		4	
5		5	
10		10	
15		15	
20		20	
25		25	
30		30	
40		40	
50		50	
60		60	45

Map of Well Location

Please provide a map below following instructions on the back.



Comments:

Well Contractor and Well Technician Information

Business Name of Well Contractor: Wm Wright Well Drilling Ltd — Well Contractor's Licence No.: 5501 7

Business Address (Street Number/Name): Box 167 Hepworth — Municipality: S.B.P.

Province: Ont — Postal Code: N0H1P0 — Business E-mail Address:

Bus. Telephone No. *(inc. area code)*: 519 935 2180 — Name of Well Technician (Last Name, First Name): Wright Terry

Well Technician's Licence No.: 0141 — Signature of Technician and/or Contractor: Terry Wright — Date Submitted: Y Y Y Y M M D D

Well owner's information package delivered: ☑ Yes ☐ No

Date Package Delivered: Y Y Y Y M M D D

Date Work Completed: 2018 08 09

Ministry Use Only

Audit No. Z297258

Received MAR 15 2019

0506E (2014/11) Ministry's Copy

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APPENDIX E

Test Pit Logs and Grain Size Analysis

TEST PIT LOG – TP 1

Location: Part Lot 23, Con 2 SCD (Keppel), Georgian Bluffs

Project No. 21-112

Ground Elevation: 240.5 m

Date: April 27, 2023

DEPTH (m)		SOIL DESCRIPTION	SAMPLES		REMARKS
From	**To**		**No.**	**Depth (m)**	
0	0.41	TOPSOIL			
0.41	0.71	Brown SANDY SILT, some clay, trace to some gravel.	1	0.41 - 0.71	
0.71	1.07	Dolostone BEDROCK, layered, fragmented, can be broken with hoe.			
	1.07	End of Test Pit			Water Condition: Dry

TEST PIT LOG – TP 2

Location: Part Lot 23, Con 2 SCD (Keppel), Georgian Bluffs

Project No. 21-112

Ground Elevation: 239.3 m

Date: April 27, 2023

DEPTH (m)		SOIL DESCRIPTION	SAMPLES		REMARKS
From	**To**		**No.**	**Depth (m)**	
0	0.30	TOPSOIL			
0.30	0.61	Brown SANDY SILT, some clay and gravel.			
0.61	0.76	Dolostone BEDROCK, upper 0.15 m fragmented, solid at 0.76 m depth.			
	0.76	End of Test Pit			Water Condition: Dry

TEST PIT LOG – TP 3

Location: Part Lot 23, Con 2 SCD (Keppel), Georgian Bluffs

Project No. 21-112

Ground Elevation: 238.4 m

Date: April 27, 2023

DEPTH (m)		SOIL DESCRIPTION	SAMPLES		REMARKS
From	**To**		**No.**	**Depth (m)**	
0	0.30	TOPSOIL			
0.30	1.07	Brown SANDY SILT, some clay and gravel, with boulders and broken rock.	1	0.61 - 0.76	
1.07	--	Dolostone BEDROCK, solid, no open fractures.			
	1.07	End of Test Pit			Water Condition: Dry

TEST PIT LOG – TP 4

Location: Part Lot 23, Con 2 SCD (Keppel), Georgian Bluffs

Project No. 21-112

Ground Elevation: 238.2 m

Date: April 27, 2023

DEPTH (m)		SOIL DESCRIPTION	SAMPLES		REMARKS
From	**To**		**No.**	**Depth (m)**	
0	0.30	TOPSOIL			
0.30	1.32	Brown SILTY SAND, some gravel, trace to some clay. Boulders and broken rock increasing with depth.	1	0.81 - 1.22	Grain size analysis. Estimated 'T' time 30 - 40 min/cm.
1.32	--	Dolostone BEDROCK, solid, no open fractures.			
	1.32	End of Test Pit			Water Condition: Dry

TEST PIT LOG – TP 5

Location: Part Lot 23, Con 2 SCD (Keppel), Georgian Bluffs

Project No. 21-112

Ground Elevation: 238.2 m

Date: April 27, 2023

DEPTH (m)		SOIL DESCRIPTION	SAMPLES		REMARKS
From	**To**		**No.**	**Depth (m)**	
0	0.13	TOPSOIL			
0.13	0.61	Brown SANDY SILT, some clay, trace to some gravel, with cobbles, boulders, and rock fragments.			
0.61	--	Whitish-grey dolostone BEDROCK, no open fractures.			
	0.61	End of Test Pit			Water Condition: Dry

TEST PIT LOG – TP 6

Location: Part Lot 23, Con 2 SCD (Keppel), Georgian Bluffs

Project No. 21-112

Ground Elevation: 238.9 m

Date: April 27, 2023

DEPTH (m)		SOIL DESCRIPTION	SAMPLES		REMARKS
From	**To**		**No.**	**Depth (m)**	
0	0.20	TOPSOIL			
0.20	0.51	Brown SANDY SILT, some clay, trace to some gravel, with cobbles and rock fragments.			
0.51	--	Whitish-grey dolostone BEDROCK, solid, uneven, no open fractures.			
	0.51	End of Test Pit			Water Condition: Dry

TEST PIT LOG – TP 7

Location: Part Lot 23, Con 2 SCD (Keppel), Georgian Bluffs

Project No. 21-112

Ground Elevation: 239.6 m

Date: April 27, 2023

DEPTH (m)		SOIL DESCRIPTION	SAMPLES		REMARKS
From	**To**		**No.**	**Depth (m)**	
0	0.20	TOPSOIL			
0.20	0.56	Brown SANDY SILT, some clay, trace gravel, some rock fragments.			
0.56	--	Whitish-grey, dolostone BEDROCK, layered, can be broken with hoe.			Encountered rock as shallow as 0.4 m depth.
	0.56	End of Test Pit			Water Condition: Dry

TEST PIT LOG – TP 8

Location: Part Lot 23, Con 2 SCD (Keppel), Georgian Bluffs

Project No. 21-112

Ground Elevation: 240.9 m

Date: April 27, 2023

DEPTH (m)		SOIL DESCRIPTION	SAMPLES		REMARKS
From	**To**		**No.**	**Depth (m)**	
0	0.20	TOPSOIL			
0.20	0.91	Brown SANDY SILT, some clay, trace to some gravel, rock fragments.			
0.91	--	Whitish-grey, dolostone BEDROCK, solid, uneven surface, no open fractures.			Bedrock surface as deep as 1.2 m depth. Uneven surface; not penetrated with hoe.
	1.22	End of Test Pit			Water Condition: Dry

May 16, 2023
Our File: 218194

Via Email: Bradbenson@gssengineering.ca

GSS Engineering Consultants Ltd.
1010-9th Ave West, Unit 104D
Owen Sound, ON N4K 5R7

Attention: Brad Benson P. Eng

Re: Soil Testing for Sewage System
GSS No. 21-112
Plan 857, Pt. Lot 1, Pt. Lot 22, Conc 2 SCD
Township of Georgian Bluffs

Dear Brad,

As requested, we have performed a grading analysis on the soil sample delivered to us on May 4, 2023. It is understood that the sample was collected from a testpit (TP-4) in the area where a leaching or filter bed is proposed to be constructed.

The sample from testpit TP-4 is a clayey gravel. From the attached Grain-Size Distribution Curve and based on the Hazen Formula, we estimate the co-efficient of permeability to be in the order of 6.4×10^{-5} cm/second. Based on this result and the relationship of soil types to percolation times as per the Ontario Building Code (OBC), we have assessed a percolation time, "T" of 30 to 40 minutes/cm for the sample.

Due to the amount of silt and clay in the soil in the sample, the "T" time is elevated and therefore it is not feasible to construct and in-ground system in such soil. A raised system constructed of approved imported material must be considered.

Increased amounts of silt and clay will negatively affect the percolation time and the performance of the leaching or filter bed. The percolation time is also dependent upon the density, structure, and moisture content of the soil and the installation methods utilized. Therefore, it is the responsibility of the owner, system designer, and contractor to monitor the quality of the soils across the site and any imported material to assure themselves that the design criteria are met and if necessary, adjust the design of the system.

Should you have any questions, please do not hesitate to contact me.

Yours truly,

GM BLUEPLAN ENGINEERING LIMITED
Per:

Wm. E. Dubeau, P.Eng.
WED/mr

Encl.

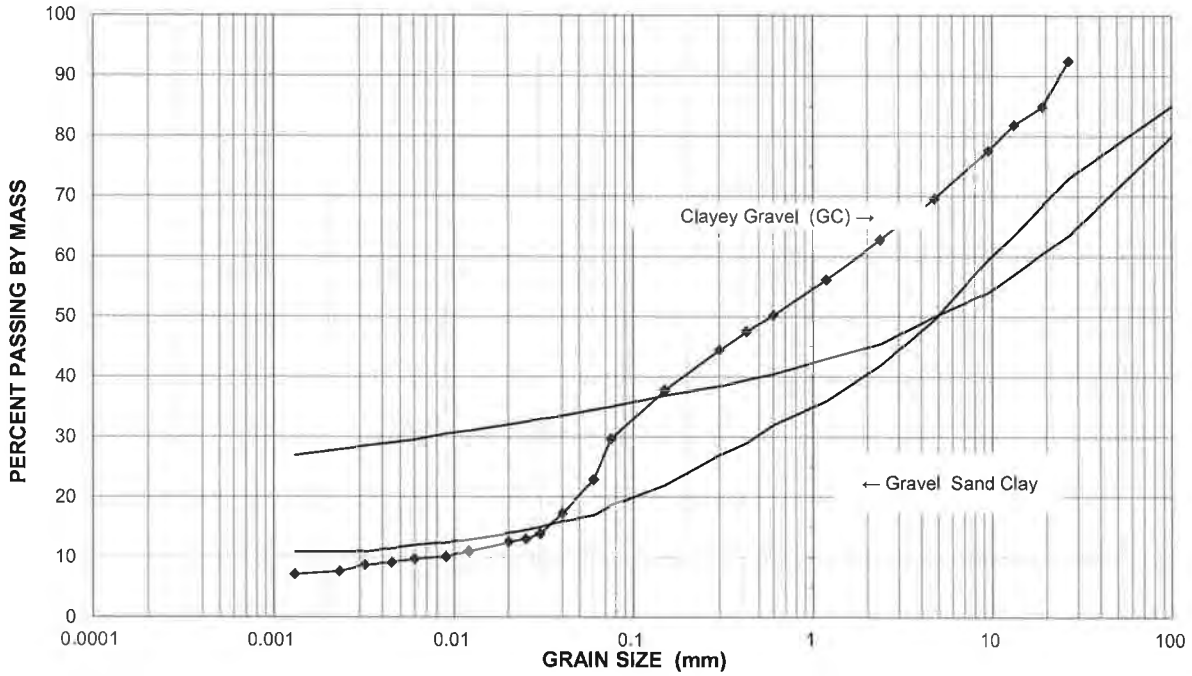
cc: File No: 218194

GM BluePlan Engineering Limited
Guelph, Owen Sound, Listowel, Kitchener, London, Hamilton, GTA
1260 - 2nd Avenue E., Unit 1 Owen Sound, ON N4K 2J3
Phone 519-376-1805 Fax 519-376-8977 www.GMBluePlan.ca

PARTICLE SIZE ANALYSIS

PROJECT:	M.T. GSS Engineering (#21-112)	FILE NO.:	218194
LOCATION:	Plan 857, Part lot 1; Part lot 22, concession 2 SCD, Township of G	LAB SAMPLE NO.:	S-4977
CLIENT :	GSS Engineering	SAMPLE DATE:	Apr-27 RCVD May-4
SOIL TYPE:	Clayey Gravel with Sand and some Silt	SAMPLED BY:	Client
GRAPH # :	4 - Clayey Gravels, Gravel Sand Clay Mixtures	SOURCE:	TH @2.7-4 ft

PARTICLE SIZE DISTRIBUTION



←		FINE	MEDIUM	COARSE	FINE	COARSE
CLAY	SILT	SAND			GRAVEL	

SIEVE SIZE PARTICLE DIA. (mm)	PERCENT PASSING SAMPLE	HYDROMETER PARTICLE DIA. (mm)	PERCENT PASSING SAMPLE
26.5	92.4	0.0600	23.0
19	84.9	0.0400	17.3
13.2	81.9	0.0300	13.9
9.5	77.6	0.0250	13.0
4.75	69.7	0.0200	12.5
2.36	62.6	0.0120	11.1
1.180	56.2	0.0090	10.1
0.600	50.3	0.0060	9.7
0.425	47.6	0.0045	9.2
0.300	44.4	0.0032	8.7
0.150	37.8	0.0023	7.8
0.075	29.7	0.0013	7.3

D_{10} : 0.008 mm **D_{60} : 1.87 mm** **Cu : 234**

Coefficient of Permeability: 6.4 x 10^{-5} cm/sec **"T" Time : 30 to 40 mins/cm**

Comments:

APPENDIX F

Site Photographs

Photo 1: Exposed soil and bedrock in TP1 near the south end of the Site (April 27, 2023).

Photo 2: Exposed soil and bedrock in TP3 (April 27, 2023).

Photo 3: Exposed soil and bedrock in TP5 near the northwest corner of the Site (April 27, 2023).

Photo 4: Exposed soil and bedrock in TP8 near the southeast corner of the Site (April 27, 2023).

Photo 5: Ground conditions in the eastern, wooded portion of the Site looking easterly toward Howe Drive (March 23, 2023).

Photo 6: Ground conditions in the eastern, wooded portion of the Site during the spring freshet, showing minor snow/ice accumulation in a shallow depression (March 20, 2025).

Photo 7: View of the shallow swale on the north side of a stone fencerow, looking westerly toward the cultivated field on the Site from the edge of the wooded area (March 23, 2023).

Photo 8: A stream flowing underground at a location in the northwestern portion of the lakebed for Shallow Lake, south of the Site (August 21, 2024).

APPENDIX G

Groundwater Quality Data

CERTIFICATE OF ANALYSIS

Final Report

C.O.C.: -

REPORT No: 23-032866 - Rev. 0

Report To:
GSS Engineering Consultant Ltd.
945 3rd Ave E
Suite 230
Owen Sound, ON N4K 2K8

Attention: Brad Benson

CADUCEON Environmental Laboratories
110 West Beaver Creek Rd
Unit #14
Richmond Hill, ON L4B 1J9

DATE RECEIVED: 2023-Nov-21
DATE REPORTED: 2023-Nov-27
SAMPLE MATRIX: Ground Water

CUSTOMER PROJECT: Shallow Lake
P.O. NUMBER: 21-112

Analyses	Qty	Site Analyzed	Authorized	Date Analyzed	Lab Method	Reference Method
Anions (Liquid)	1	OTTAWA	PCURIEL	2023-Nov-22	A-IC-01	SM 4110B
Cond/pH/Alk Auto (Liquid)	1	OTTAWA	SBOUDREAU	2023-Nov-22	COND-02/PH-02/ALK-02	SM 2510B/4500H/2320B
Ion Balance (Calc)	1	OTTAWA	ASCHNEIDER		CP-028	MECP E3196
ICP/OES (Liquid)	1	OTTAWA	APRUDYVUS	2023-Nov-24	D-ICP-01	SM 3120B

R.L. = Reporting Limit
NC = Not Calculated
Test methods may be modified from specified reference method unless indicated by an *

Michelle Dubien
Data Specialist

The analytical results reported herein refer to the samples as received. Reproduction of this analytical report in full or in part is prohibited without prior consent from Caduceon Environmental Laboratories.

				Client I.D.	Well 1
				Sample I.D.	23-032866-1
				Date Collected	2023-Nov-20
Parameter	Units	R.L.	Limits	DWG	-
Alkalinity(CaCO3) to pH4.5	mg/L	5	500	OG	294
Conductivity @25°C	uS/cm	1			627
pH @25°C	pH units	-	8.5	OG	7.93
Fluoride	mg/L	0.1	1.5	MAC	0.3
Chloride	mg/L	0.5	250	AO	10.7
Nitrate (N)	mg/L	0.05	10.0	MAC	3.92
Nitrite (N)	mg/L	0.05	1.0	MAC	<0.05
Sulphate	mg/L	1	500	AO	17
Hardness (as CaCO3)	mg/L as CaCO3	0.02	100	OG	**353**
Calcium	mg/L	0.02			83.6
Copper	mg/L	0.002	1	AO	0.003
Iron	mg/L	0.005	0.3	AO	**1.24**
Magnesium	mg/L	0.02			35.0
Manganese	mg/L	0.001	0.05	AO	**0.182**
Potassium	mg/L	0.1			2.8
Sodium	mg/L	0.2	200, 20, 20	AO, WL, MAC	8.8
Zinc	mg/L	0.005	5	AO	0.087
Anion Sum	meq/L	-			6.81
Cation Sum	meq/L	-			7.58
% Difference	%	-			5.35
TDS (Ion Sum Calc)	mg/L	1	500	AO	353

Michelle Dubien
Data Specialist

The analytical results reported herein refer to the samples as received. Reproduction of this analytical report in full or in part is prohibited without prior consent from Caduceon Environmental Laboratories.

				Client I.D.	Well 1
				Sample I.D.	23-032866-1
				Date Collected	2023-Nov-20
Parameter	Units	R.L.	Limits	DWG	-
Conductivity Calc	µmho/cm	-			651

DWG - Drinking Water Guidelines
ODWS - Ontario Drinking Water Standards
AO - Aesthetic Objectives
IMAC - Interim Maximum Acceptable Concentration
MAC - Maximum Acceptable Concentration
ODWO - D-5-5 Objective
OG - Operational Guidelines
WL - Warning Level - Sodium Restricted Diets

Summary of Exceedances

Aesthetic Objectives		
Well 1	**Found Value**	**Limit**
Iron	1.24	0.3
Manganese	0.182	0.05

Operational Guidelines		
Well 1	**Found Value**	**Limit**
Hardness (as CaCO3)	353	100

Michelle Dubien
Data Specialist

The analytical results reported herein refer to the samples as received. Reproduction of this analytical report in full or in part is prohibited without prior consent from Caduceon Environmental Laboratories.

CERTIFICATE OF ANALYSIS

Final Report

C.O.C.: -

REPORT No: 24-012761 - Rev. 0

Report To:
GSS Engineering Consultant Ltd.
945 3rd Ave E
Suite 230
Owen Sound, ON N4K 2K8

Attention: Brad Benson

CADUCEON Environmental Laboratories
110 West Beaver Creek Rd
Unit #14
Richmond Hill, ON L4B 1J9

DATE RECEIVED: 2024-May-07
DATE REPORTED: 2024-May-10
SAMPLE MATRIX: Ground Water

CUSTOMER PROJECT: Shallow Lake
P.O. NUMBER: 21-112

Analyses	Qty	Site Analyzed	Authorized	Date Analyzed	Lab Method	Reference Method
Anions (Liquid)	1	OTTAWA	PCURIEL	2024-May-08	A-IC-01	SM 4110B
Cond/pH/Alk Auto (Liquid)	1	OTTAWA	SBOUDREAU	2024-May-09	COND-02/PH-02/ALK-02	SM 2510B/4500H/2320B
Ion Balance (Calc)	1	OTTAWA	ASCHNEIDER		CP-028	MECP E3196
ICP/OES (Liquid)	1	OTTAWA	APRUDYVUS	2024-May-09	D-ICP-01	SM 3120B

R.L. = Reporting Limit
NC = Not Calculated
Test methods may be modified from specified reference method unless indicated by an *

Michelle Dubien
Data Specialist

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				Client I.D.	Well 1
				Sample I.D.	24-012761-1
				Date Collected	2024-May-06
Parameter	Units	R.L.	Limits	DWG	-
Alkalinity(CaCO3) to pH4.5	mg/L	5	500	OG	251
Conductivity @25°C	uS/cm	1			569
pH @25°C	pH units	-	8.5	OG	7.82
Fluoride	mg/L	0.1	1.5	MAC	0.3
Chloride	mg/L	0.5	250	AO	6.9
Nitrate (N)	mg/L	0.05	10.0	MAC	5.87
Nitrite (N)	mg/L	0.05	1.0	MAC	<0.05
Sulphate	mg/L	1	500	AO	12
Hardness (as CaCO3)	mg/L as CaCO3	0.02	100	OG	**288**
Calcium	mg/L	0.02			66.1
Copper	mg/L	0.002	1	AO	<0.002
Iron	mg/L	0.005	0.3	AO	<0.005
Magnesium	mg/L	0.02			29.9
Manganese	mg/L	0.001	0.05	AO	<0.001
Potassium	mg/L	0.1			2.2
Sodium	mg/L	0.2	200, 20, 20	AO, WL, MAC	2.2
Zinc	mg/L	0.005	5	AO	0.017
Anion Sum	meq/L	-			5.90
Cation Sum	meq/L	-			5.91
% Difference	%	-			0.0979
TDS (Ion Sum Calc)	mg/L	1	500	AO	296

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				Client I.D.	Well 1
				Sample I.D.	24-012761-1
				Date Collected	2024-May-06
Parameter	Units	R.L.	Limits	DWG	-
Conductivity Calc	µmho/cm	-			545
pH (Client Data)	pH units	-			7.1
Temperature (Client Data)	°C	-			10.6

DWG - Drinking Water Guidelines
ODWS - Ontario Drinking Water Standards
AO - Aesthetic Objectives
IMAC - Interim Maximum Acceptable Concentration
MAC - Maximum Acceptable Concentration
ODWO - D-5-5 Objective
OG - Operational Guidelines
WL - Warning Level - Sodium Restricted Diets

Summary of Exceedances		
Operational Guidelines		
Well 1	**Found Value**	**Limit**
Hardness (as CaCO3)	288	100

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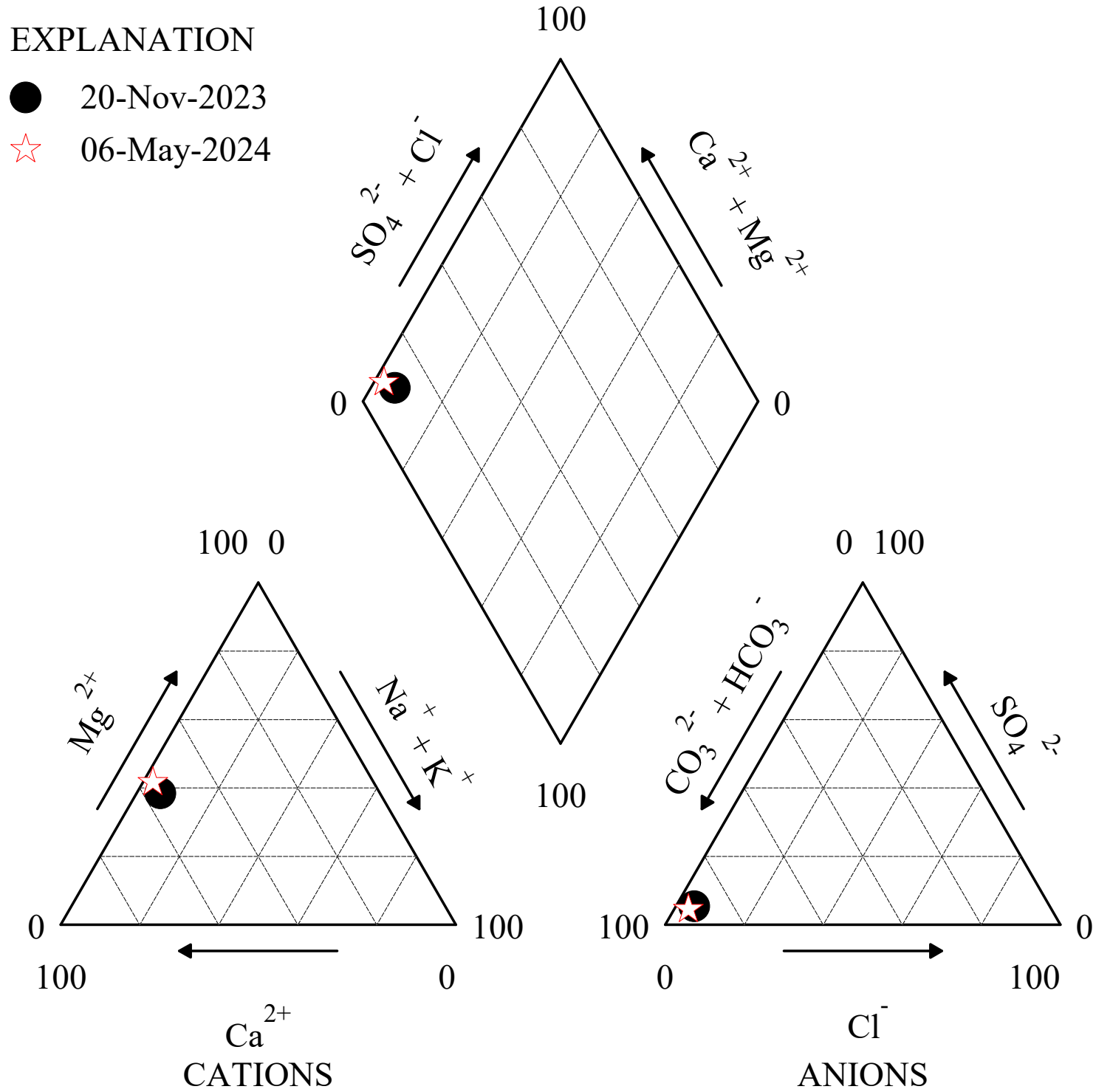
Comparison of Water Chemistry Data - Well 1