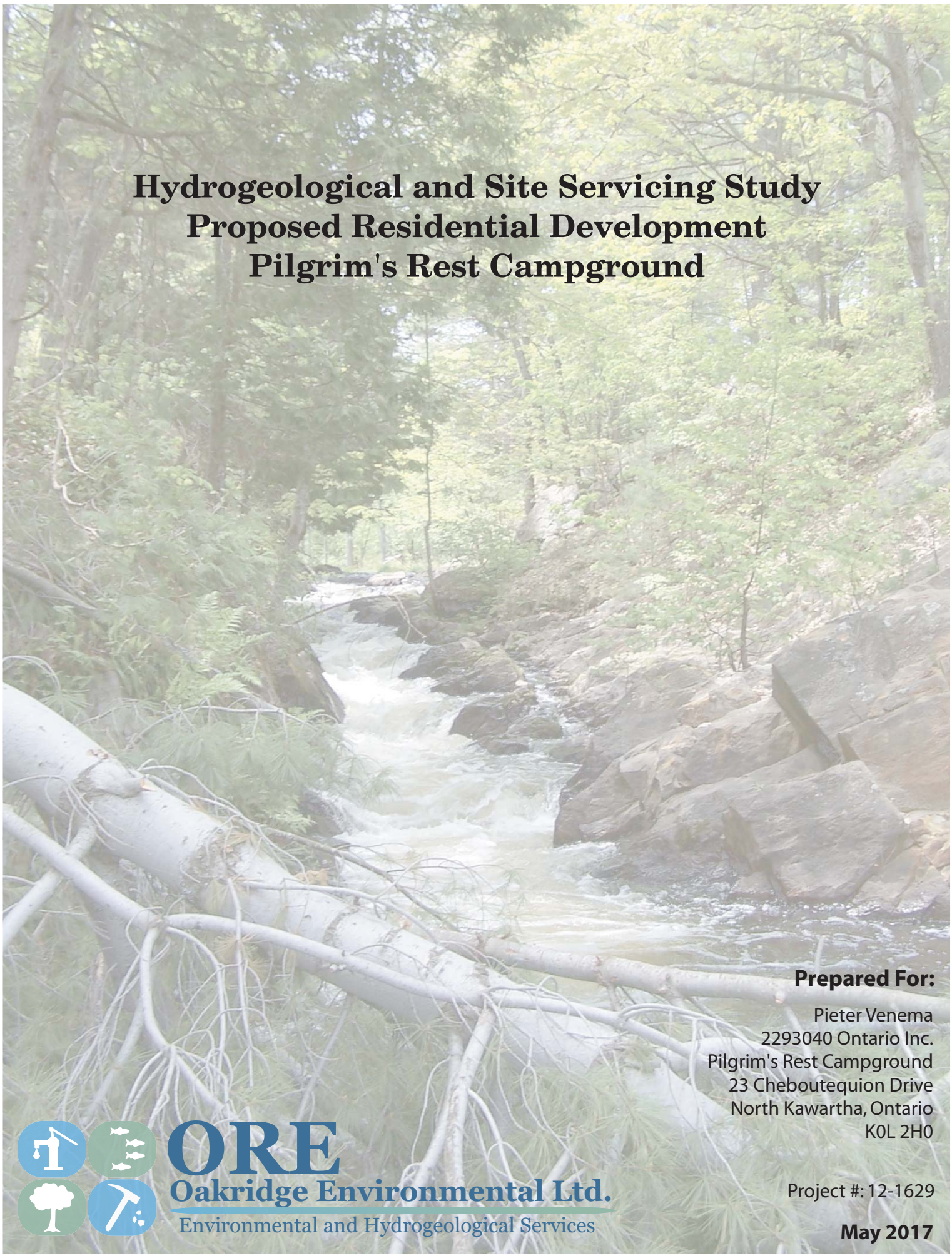

Hydrogeological and Site Servicing Study
Proposed Residential Development
Pilgrim's Rest Campground

Prepared For:

Pieter Venema
2293040 Ontario Inc.
Pilgrim's Rest Campground
23 Cheboutequion Drive
North Kawartha, Ontario
K0L 2H0

ORE
Oakridge Environmental Ltd.
Environmental and Hydrogeological Services

Project #: 12-1629

May 2017

ORE
Oakridge Environmental Limited
Environmental and Hydrogeological Services

May 24, 2017

2293040 Ontario Inc.
Pilgrim's Rest Campground
23 Cheboutequion Drive
North Kawartha, Ontario
K0L 2H0

Attention: **Pieter Venema**, President

Re: Hydrogeological and Site Servicing Study
Proposed Residential Development
Pilgrim's Rest Campground
Part Lots 3 & 4, Concession 11 (Burleigh)
Township of North Kawartha, County of Peterborough
Our File No. 12-1629

Dear Mr. Venema:

We are pleased to present our hydrogeological and site servicing report in support of a proposed residential condominium redevelopment of the property currently occupied by the Pilgrim's Rest Campground.

Despite the somewhat challenging groundwater supply conditions, the study has successfully demonstrated that private wells and sewage systems will be practical and sustainable at this site. Our report provides a series of recommendations intended to assist future purchasers in regards to establishing those services.

Should you have any questions, please contact the undersigned.

Yours truly,
Oakridge Environmental Ltd.

Original Signed By

Brian R. King, P. Geo.
Principal

Hydrogeological and Site Servicing Study
Proposed Residential Development
Pilgrim's Rest Campground

Prepared For:

Mr. Pieter Venema
2293040 Ontario Inc.
23 Cheboutequion Dr.
North Kawartha, Ontario
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May 24, 2017

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1.0 Introduction

1.1 Site Description and Access

The subject property is situated on Northey's Bay Road, approximately 1.5 km west of County Road 6 (Figure 1). The site is currently utilized as a seasonal camping resort (Pilgrim's Rest Campground) and is bounded by Northey's Bay Road in the north, Cheboutequion Drive in the west, Stony Lake to the south and Jack Creek to the east. The entrance to the campground property is via Cheboutequion Road, approximately 170 m south of it's intersection with Northey's Bay Road.

The campground can also be accessed by a fire route (Fire Route 24) that is utilized by neighbouring residents to access their private lakefront cottages adjacent to the campground to the west.

The subject site currently contains approximately 87 serviced trailer sites in addition to approximately 20 unserviced camping sites (Figure 2).

1.2 Approach

A proposed seasonal residential (condominium) development is intended to replace the existing seasonal campground. To support the development application, a hydrogeological and site servicing study is required to verify that there is a sufficient quantity of acceptable quality water available to supply the future residences and to determine the allowable density by completing an impact assessment based on effluent loading for the site.

These requirements are consistent with Section 2.6.3 of the County of Peterborough's Official Plan (OP), which refers to compliance with Ministry of Environment and Climate Change (MOECC) guidelines.

The hydrogeological study requirements for development applications are described in MOECC Procedures "D-5-4" and "D-5-5". Briefly, Procedure D-5-4 pertains to evaluating the site's capacity to handle septic effluent and environmental impact, whereas D-5-5 pertains to the various tests needed to demonstrate an adequate water supply.

In addition to the preceding, our study also has regard for Part 8 of the Ontario Building Code.

2.0 Scope of Work

Based on the above guidelines, the following scope of work has been completed:

- Relevant available background data associated with the site and surrounding lands have been compiled and reviewed.
- Our existing base plan has been updated to incorporate our most recent field data, augmented with our own mapping-grade differential GPS data.
- Site inspections have been conducted to assess the terrain and hydrogeological conditions.
- Ministry of Environment and Climate Change (MOECC) well record data for the site area have been obtained and reviewed using our Groundwater Information System (GWIS). Cross sections have been prepared to illustrate aquifer distribution in the area.
- A survey of neighbouring wells near the site has been completed to obtain information regarding local groundwater supply conditions.
- Shallow soil explorations have been conducted about the site by excavating test pits and advancing manual hand-auger boreholes for the purpose of characterizing soil conditions.
- An assessment of the site's potential capacity for sewage disposal has been conducted following the MOECC's Procedure D-5-4, guidance for impact assessments of individual on-site sewage systems.
- A review of local groundwater supply conditions, based on existing data, has been conducted.
- Seven (7) test wells were constructed for the purpose of conducting hydraulic tests in accordance with MOECC's Procedure D-5-5.
- Preliminary pumping tests were conducted on seven (7) wells, including the existing well that services the primary residence and campground office, to determine the approximate yields prior to longer-term testing.
- Select wells were subjected to a successful hydraulic fracturing program in an effort to improve well yields.
- Five (5) test wells were subjected to pumping tests and water quality sampling in accordance with MOECC Procedure D-5-5 guidelines.

- A conceptual servicing plan was prepared to illustrate how each proposed lot could be serviced while satisfying the constraints determined by the Environmental Impact Study (under separate cover) and this study.

- All data have been assessed and interpreted.

- This Hydrogeological and Site Servicing report has been prepared.

Our findings are presented in the following sections.

3.0 Physical Setting

3.1 Existing Property Use

Currently, the subject site contains two separate parcels consisting of an approximately 28.5 ha (70 acre) mainland and an 0.5 ha (1 acre) island immediately offshore. The site is operated as a seasonal trailer and camping resort referred to as Pilgrim's Rest Campground. The property contains approximately 87 fully-serviced trailer sites in addition to approximately 20 un-serviced camping sites. All of the serviced trailer sites are located within approximately 220 m of the shore of Stony Lake. Un-serviced camp sites are mostly situated north of the trailer sites within the forested areas of the property, however, camp sites are also located on the island.

The campground obtains water from a communal surface water intake located at the mouth of Jack Creek. A pumphouse on the bank of the creek supplies chlorinated water to the campground. It is understood that the water supply system is registered with the Ministry of Health (through the Peterborough County-City Health Unit) and is subjected to regular water quality compliance testing.

Wastewater generated by the campground is disposed of via a single large sewage system situated approximately 25 m from Stony Lake. We estimate the theoretical sewage flow rate of the campground to be approximately 45,000 L/day, based on Code and Guide for Sewage Systems (Ontario Building Code - OBC). The sewage system does not operate under an Environmental Compliance Approval (ECA) or Certificate of Approval (C of A) and likely predates any such requirements. The system includes a fully in-ground effluent disposal bed and does not incorporate any additional treatment beyond what is provided by the septic tanks.

The public washroom and laundry facilities are directly connected to the communal sewage system. However, none of the trailer sites are serviced directly by the system. Instead, each trailer must be manually pumped out through a pumping station that is connected to the works. As such, the current system requires a considerable amount of wastewater handling.

In addition to the central sewage system, a number of Class 1 sewage systems (outhouses) also occur throughout the site, representing an unknown proportion of the site's total sewage flows. Those units do not provide any treatment.

3.2 Proposed Development

To replace the existing campground, a less concentrated residential condominium development has been proposed at the site. Each condominium lot (unit) will be privately serviced by a well and modern subsurface sewage disposal system.

While the property encompasses approximately 29.0 ha (72 acres), the proposed development will only occupy approximately 19.0 ha (47 acres). The remaining area will be maintained in a natural state for passive recreational uses only (e.g., walking trail, etc). There are no redevelopment plans for the 0.5 ha (1 acre) island associated with the property. Furthermore, the island will be placed in a protective zone category which will preclude future development, reflecting the recommendations of a Stage 3 archaeological assessment completed by others.

The proposed development area (Figure 2) will utilize the campground's existing driveway off Cheboutequion Drive and Fire Route 24.

Replacement of the trailer park with a modern residential development, based on properly constructed private sewage systems that are well set-back from the lake with a less concentrated use of the waterfront areas, should be viewed as beneficial with respect to protection and improvement of the water quality of Stony Lake.

3.3 Topography and Drainage

The site is situated immediately north of the southern edge of the Canadian Shield. As such, the topography is dominated by rock knobs and trough-like valleys which often contain wetlands or pockets of poorly drained soil. Total relief across the site is approximately 20 m, as measured from Northey's Bay Road (255 masl) to the lakeshore (235 masl).

The subject property contains a series of small scarps and somewhat discrete plateau-like areas, typically with a few metres of elevation difference between them. The distribution of these features is controlled by the bedrock structure.

Most of the northern part of the site is forested and unimproved. In contrast, the existing camp occupies a cleared and comparatively level area within 250 m of the shoreline. The camp area appears to have been subjected to considerable grading and filling over time, including the creation of filled areas along several parts of the shore. In several instances, filling has apparently replaced lacustrine shoreline wetland areas.

The site's drainage pattern is somewhat complex, resulting from the Shield terrain. The major watercourse (other than Stony Lake) is Jack Creek, an important perennial feature which defines approximately half of the site's eastern boundary. To the north and east of the site, Jack Creek is a fairly wide, slower-flowing stream associated with wetland conditions. Closer to the lake, the creek occurs in a deeply incised valley wherein flows cascade over the bedrock, forming attractive rapids and falls.

A small and sluggish bifurcated stream system crosses the northern part of the site, entering the property primarily via culverts below Northey's Bay Road. Some of those flows appear to originate in the adjacent Provincial Park to the north and are mapped by the Ministry of Natural Resources and Forestry (MNRF) as permanent streams. Some seasonal flows may also contribute, following minor swales. Typically, the flows occupy several narrow, poorly defined channels with associated "pocket wetlands" occurring in low lying areas between the rock outcroppings. Although possible to cross on foot with some difficulty, this network of streams and wetlands effectively forms a barrier to mechanized crossing, separating the northernmost part of the property from the rest of the site.

Drainage on the site is somewhat complex with three local drainage divides occurring on the previously developed portion of the property. One of these local drainage divides occur near the centre of the site, essentially at the existing internal road (Figure 3). To the east, drainage is southeastward towards a small unevaluated wetland associated with Jack Creek. To the west, drainage occurs in a small stream feature associated with low-lying wet area (possible wetland) that drains through a culvert below Fire Route 24. This feature appears to collect and convey minor groundwater seepage from the base of the rock, plus any accumulated runoff. The presence of the drainage divide and existing road provides a crossing for these drainage features.

A second (minor) local drainage divide splits surficial drainage between the wetlands associated with a small tributary of Jack Creek on the northeast side of the hydroelectric corridor and the unevaluated wetland to the southeast that is associated with Jack Creek.

The third local drainage divide is located near the northern extent of the current trailer sites (Figure 3). On the south-side of the divide, surface water flows south into Stony Lake while on the north-side flows are split between the unevaluated wetland associated with Jack Creek and the small tributary that drains towards Fire Route 24.

The remainder of the property drains through the central wetland area associated with Jack Creek.

3.4 Regional Geology

3.4.1 Bedrock Geology

The bedrock geology is composed entirely of Precambrian age rocks, consisting primarily of granitic gneiss and iron rich metasediments (rusty schists), as illustrated by Figure 4. Typically, these rock types are dense and competent, although the rusty schist (also referred to as a type of "iron formation") can be friable, with reduced competency. These iron rich rocks could be a source of iron mineralization for local groundwater and surface water. Despite the dominant granite gneiss bedrock, metamorphosed limestone (i.e., marble) is also known to occur within the metasediments in the central portion of the site.

Published mapping indicates that an ancient (inactive) NE-trending fault zone occurs along the path of Jack Creek. The creek may be following the rock structure associated with that feature. It is not known whether the structural zone is of any significance with respect to the movement of groundwater.

3.4.2 Surficial Geology

Published mapping indicates that the site's physiography is nondescript, consisting of thin soils overlying bedrock. However, aggregate resources mapping provides some detail regarding the distribution of granular deposits in the area, including two small occurrences on (or partially on) the subject site (Figure 5). These deposits consist predominantly of outwash sand and are classified as "secondary" deposits in terms of their resource importance. Both contain 1.5 m to 5 m of sand, described as "suitable for pit-run uses" only.

Based on our site observations, the extent of the two sand deposits appear to have been grossly exaggerated by the mapping. The general locations are, however, reasonably accurate. The central sand deposit has been historically exploited on the site, possibly for shoreline reclamation, maintenance of the small beach area and to provide fill for miscellaneous purposes.

3.5 Site Geology

3.5.1 Shallow Soils Exploration

To explore the on-site geology, soil and terrain conditions, a series of twenty-five (25) test pits and six (6) hand-auger holes were excavated to expose the shallow subsurface (Figure 6).

Briefly, the proposed development area of the site is dominated by granitic bedrock subcrops covered with a thin layer of sand (SP type) with silt and occasional gravel. The

sand deposits occur in a variety of thicknesses between areas of bedrock outcrops. In depressed areas between outcrop and subcrop locations, black organic silty topsoil occurs in thicknesses ranging between 10 and 50 cm. Typically, silty sand with trace gravel occurs below the topsoil in these locations.

At the southern extent of the site (where the existing campground development is located), the subsurface soils are dominated by sand fill with gravel and occasional cobbles/boulders. Most of the sand fill on the previously developed lands seem to have originated from a small sand pit that was once located in the central portion of the site (Figure 2).

Relatively significant (e.g. >1 m thickness) sand deposits occur in two (2) locations on the property. One was formerly present in the central portion of the site, but has been exhausted of most of the useable aggregate materials. The second deposit occurs at the northwestern extent of the site where the current campground office is located. These "acidic" silicate-rich sands appear to be derived from the underlying gneissic bedrock.

Buried lake sediments and wood debris have also been encountered by camp staff in other areas of the property.

Copies of the test pit logs and grain size analysis are included in Appendix A.

3.5.2 Terrain Mapping

Based on the subsurface explorations and our site inspections, a terrain map has been prepared to illustrate overburden thickness across the site (Figure 6). As the on-site geology is relatively consistent (i.e., dominated by a mantle of sandy soil), our terrain mapping focuses on the overburden thickness, which have been categorized into three (3) units:

- areas with no significant overburden materials (0 to 0.2 m thick) referred to as "Terrain Type A",
- areas with minimal overburden (0.2 to 0.8 m thick) referred to as "Terrain Type B", and
- areas with significant overburden thickness (>0.8 m thick) referred to as "Terrain Type C".

3.6 Shallow Groundwater

Groundwater was encountered in nine (9) of the of the exploratory test pits. Typically the depth to groundwater was measured to be approximately 0.7 m below the ground surface. It is expected that groundwater in these locations represents water trapped on top of the bedrock within bedrock depressions that occur throughout the site. These "perched" water

bearing zones would not represent a significant water source (i.e., not aquifers) and would not be suitable for future supply purposes.

Groundwater discharge was not observed on the site, however, some minor seasonal groundwater discharge is assumed to occur based on indicators (e.g., vegetation, erosional scars), associated with the banks of the wetlands and watercourses observed on the site.

4.0 Hydrogeology

4.1 MOECC Well Record Database

As part of this study, we have compiled and reviewed MOECC well record data for recorded wells surrounding the subject site (within approximately 5 km). In total, 310 local well records have been incorporated into our Groundwater Information System (GWIS), representing conditions in the site area (Appendix B). The locations of these wells, based on the co-ordinates provided, are illustrated by Figure 7.

Of the 310 local well records, only 72 fall within 1 km of the site, restricting statistical analysis within the immediate site area. Therefore, for the purpose of statistical analysis (below), the entire data set of 310 local well records were utilized.

All but one (1) of the well records represent drilled wells. Dug wells are not likely to occur in the area given the minimal overburden cover and granitic bedrock which likely wouldn't support a shallow aquifer that could be utilized by dug wells.

The majority of the recorded wells are described as being for domestic use. The average (mean) reported test rate is approximately 8.0 gpm, with most wells achieving a fairly low yield in the range 1 gpm to 4 gpm (Figure 8). However, the reported test yields range up to a maximum of 100 gpm, somewhat skewing the average. The dataset includes four (4) instances of wells described as having been abandoned due to "insufficient supply" and two (2) instances of a well being abandoned due to unspecified water quality issues.

Overall, while these statistical results indicate that an adequate quantity of water supplies are generally available in the study area, these data also suggest that obtaining a successful well (i.e., well yield of 5 gpm or greater) may require more than one attempt. At the very least, the data indicate that groundwater supply conditions are variable, as would be expected from the geological setting.

According to the MOECC's well record data, local wells encounter groundwater within a wide elevation range of 195 masl to 248 masl (mean = 222 masl). Within that range, there appears to be a highly variable distribution of aquifer depths, however, the majority of the wells appear to intersect an aquifer from 216 masl to 230 masl (Figure 8). Below the subject site, the average aquifer elevation would correspond to a depth of roughly 20 m. The well record data does not suggest that there is any appreciable correlation between

aquifer elevation and well yield. As such, there does not appear to be any significant difference in yield potential from one aquifer to another.

Cross sections illustrating the distribution of aquifers through the site are presented in Figures 9 and 10.

4.2 Regional Aquifer Distribution

From the cross sections (Figures 9 and 10) we have identified three (3) principal aquifers that occur in the site area. For simplicity, these are labelled as the "Overburden/Basal Aquifer", the "Shallow Bedrock Aquifer" and the "Deep Bedrock Aquifer". Each is briefly described below:

Overburden/Basal Aquifer

In areas of sufficient overburden thickness, dug wells would typically be utilized to tap a shallow aquifer occurring at, or just above the underlying bedrock. Typically, these aquifers are variable and occur within a few metres of the ground surface (usually referred to as overburden aquifers).

Deeper wells that utilize this aquifer occur only in areas where the overburden thickness is substantial. In those cases, the wells are completed in sand layer that occurs immediately above the bedrock (typically referred to as the basal aquifer).

As outlined previously, the subject site is not likely to contain this type of aquifer.

Shallow Bedrock Aquifer

The majority of wells in the study area utilize an aquifer that occurs between 210 masl and 230 masl. This aquifer correlates closely with the average surface water elevation of Stony Lake (approximately 234 m asl). The driller's logs do not appear to indicate any changes in rock formation correlating with the presence of water suggesting the water is obtained within fracture zones in the bedrock.

Deep Bedrock Aquifer

A few wells in the dataset utilize an aquifer that appears to occur between elevations 160 masl and 180 masl, in the site area. The average yield of the wells in this aquifer appears to be approximately 6 gpm.

Based on the preceding, both of the bedrock zones are considered the target aquifers for

the proposed development. The corresponding well depths will, therefore, vary from roughly 20 m to 90 m below the subject site. As these aquifers appear to be associated with fracture zones within the bedrock, their occurrence will be highly variable.

4.3 Well Survey

In order to better define local aquifer conditions, a door-to-door well survey was completed within 500 m of the subject site on June 5, 2013. Residents were asked to provide basic information on their well, sewage system and occupancy in order to assess local servicing conditions. Residents not home at the time of the survey were left a letter explaining the purpose of the survey and contact information if they chose to participate. A copy of the well survey questionnaire and letter have been included in Appendix C.

Unfortunately, only one respondent to the well survey provided information. It is understood that the resident has a lake intake system as their main potable water supply. This is not unusual given that most of the homes/cottages in the area are waterfront lots.

4.4 On-site Test Wells

Seven (drilled) test wells are present on the subject site and have been utilized for this investigation. One of the wells (TW-1) was constructed prior to commencing the hydrogeological investigations, suppling potable water to the camp office and the associated residence.

All of the wells were constructed by (or under the direction of) White's Water Well Drilling. All of the wells intersected the gneissic bedrock within 4 m of the ground surface. Each well casing was installed into the underlying bedrock and grouted to surface. Well locations were selected based on accessibility and to provide a somewhat even distribution of wells about the property. Copies of the respective well records are presented in Appendix D. A detailed description of each well is included below.

TW-1

TW-1 was constructed on March 23, 2012. The well was drilled to a depth of 51.5 m (169 ft), reportedly intersecting two (2) water-bearing zones at 27.1 m (89 ft) and 50.3 m (165 ft). It is understood that the well was subject to low-pressure hydraulic fracturing in an attempt to increase its yield. That procedure appears to have been successful, as the camp office and residence have not experienced any issues related to water quantity. Water quality has been characterized by camp staff as being high in iron.

TW-2

TW-2 was constructed on May 12, 2013 in the central portion of the property, just north of the former aggregate pit. The well was constructed to a depth of 57.9 m (190 ft). However, upon completion was reported as "dry".

The well was subjected to low-pressure hydraulic fracturing in an attempt to encounter water. After many attempts, a minor fracture in the bedrock was observed to be supplying approximately 2 gpm. Using a down-hole video camera, the water was observed to be entering the well bore at a depth of 39.0 m (128 ft).

TW-3

TW-3 was constructed on July 13, 2013 on the south-western portion of the subject site, having a total depth of 91.4 m (300 ft). Some water was encountered by TW-3, however, the depth of the aquifer could not be determined by the driller.

Low-pressure hydraulic fracturing was utilized in order to obtain increased well yield. Upon completion, the well was observed to be capable of supplying 6 gpm according to the driller's log. Water was observed (utilizing a video camera) to be entering the well at a depth of 37.2 m (122 ft). Although not observed, the driller suggested that another water bearing zone was also intersected below 41 m (135 ft). Given the limited capabilities of the driller's equipment, it was not possible to drawdown the water column below 41 m (135 ft). Despite the well record indicating water bearing fractures at 20.5 m (67 ft) and 21.3 m (70 ft), these were observed to be essentially dry fractures under sustained pumping.

TW-4

TW-4 was constructed on November 20, 2013 approximately 42 m southwest of Jack Creek and 43 m southeast of a small wetland inlet associated with Jack Creek. In addition, TW-4 was located adjacent to the mapped fault zone indicated by the bedrock geology mapping. Despite the close proximity of surface water features surrounding the well, the wellhead is elevated on top of a large bedrock outcrop that extends 5 m above the surrounding surface water features. The drilling of TW-4 was extended specifically to examine the potential for deeper aquifers based on the success of TW-3.

TW-4 was constructed to a depth of 89 m (292 ft) and although the well had approximately 83 m of water column immediately following the drilling, the well contractor indicated that the well yield was unknown, but likely around 2 gpm. As such, the well was subjected to low-pressure hydraulic fracturing to increase the yield. The hydraulic fracturing was followed by pumping to determine where the

water bearing fracture(s) occurred.

Unfortunately, the well driller was unable to drawdown the water column sufficiently to determine where the water was coming into the well.

TW-5

TW-5 was constructed on December 9, 2013 in the central portion of the property, 67 m southeast of a small tributary that flows southwest into Stony Lake. The well was constructed to a depth of 76.2 m (250 ft). The driller indicated that a significant (i.e., 5 gpm) water bearing fracture had been encountered at an unknown depth.

The well was subjected to low-pressure hydraulic fracturing followed immediately by pumping in an attempt to "clean-out" the well. Water was observed to be entering the well (utilizing a down-hole camera) at a depth of 43.6 m (143 ft). At the cessation of pumping, the water appeared to be running clear.

TW-6

TW-6 was constructed on May 7, 2014, by Wensley Water Well Ltd under the supervision of White's Water Well Drilling Ltd. The well was constructed to a depth of 99.1 m (320 ft), on the northern part of the proposed development, adjacent to the former sand pit.

During well construction, the drill intersected a bedrock contact between the upper black granite gneiss and the underlying feldspar-rich pink granite. The driller indicated the presence of a water bearing fracture at a depth of 33.3 m (110 ft) and further indicated that there could also be a minor water bearing zone at a depth of 88.4 m (290 ft). In addition, a water bearing fracture was noted at a depth of 36.5 m (120 ft) during subsequent pumping.

Upon completion of the well, the driller reported an approximate yield of 2 gpm. It is suspected that the driller's estimate was limited by the depth at which the pump was set (i.e., 46 m). The well was subjected to low-pressure hydraulic fracturing by White's Water Well Drilling Ltd. to increase the apparent well yield. Following the hydrofracking, the driller's estimated yield was 6 gpm.

TW-7

TW-7 was constructed on June 12, 2014, by Wensley Water Well under the supervision of White's Water Well Drilling Ltd. The well was constructed to a

depth of 48.8 m (160 ft), situated approximately 65 m north of Stony Lake in the southern portion of the site. Upon completion, the driller noted a water bearing fracture at a depth of 36.6 m (120 ft).

Two (2) water bearing fractures were noted to occur at depths of 16 m (52 ft) and 23.6 m (77 ft) during subsequent pumping. Following the same procedure as all previous test wells, the well was subjected to low-pressure hydraulic fracturing conducted by White's Water Well Drilling Ltd. The driller estimated the yield of the well to be 5 gpm following the hydrofracking.

4.5 Preliminary Pumping Tests

In order to determine whether the wells were suitable for aquifer testing in accordance with MOECC Procedure D-5-5, a series of short-term (i.e., 2 to 3 hour) pumping tests were conducted. A brief description of the preliminary pumping tests is included below.

TW-1

TW-1 was subjected to a preliminary pumping test on May 6, 2013 utilizing the well's existing plumbing. Unfortunately, the existing pump and pressure tank assembly limited the ability to reduce the flow rate to the rate recommended by the driller. As such, after pumping the well for 50 minutes at an average rate of 0.53 litres per second (L/s) or 7.0 imperial gallons per minute (igpm), the water level approached the pump and the test had to be stopped. During the test, a total of 1,582 L were extracted from the well. The well recovered to within 87% of the original (static) water level within approximately 2.5 hours.

It is understood that the resident of the home that is serviced by TW-1 did not experience any interruptions in water supply following the cessation of the preliminary pumping test.

Given the limitations of the existing plumbing at TW-1, it was determined that the well was not suitable for future testing in accordance with MOECC Procedure D-5-5, however it is quite capable of supplying water to the primary residence of the campground superintendent and the campground office.

TW-2

TW-2 was subjected to a 192 minute pumping test on June 12, 2013 utilizing a submersible pump supplied by the well contractor. The end of the discharge pipe was outfitted with a 2 gpm flow restriction device ("restrictor") to maintain a constant flow rate throughout the test. During the test, a total of 1,363 L of water was extracted from the well. The well recovered to 45% of the original static water

level within 183 minutes.

Preliminary analysis of the drawdown curve revealed that the well would not be able to sustain constant rate pumping at 2 gpm. As such, it was determined that the well (in its current state) likely had insufficient yield for further testing.

TW-3

TW-3 was subjected to prolonged pumping on July 15, 2013, following the low-pressure hydraulic fracturing of the well. Based on the prolonged pumping of TW-3, it was determined that the well could likely yield 5+ gpm and would be suitable for testing in accordance with MOECC Procedure D-5-5.

TW-4

TW-4 was subjected to a 130 minute pumping test on November 20, 2013 utilizing a submersible pump supplied by the well contractor with a 2 gpm flow restrictor. During the preliminary pumping test, a total of 984 L were extracted from the well. Water quality during the test was noted to be turbid prior to the cessation of pumping.

Analysis of the preliminary test curve revealed that the well likely wouldn't support prolonged pumping at 2 gpm. As such, TW-4 (in its current state) would not likely be suitable for future testing.

TW-5

TW-5 was subjected to a 120 minute pumping test on December 9, 2013 at a rate of 5 gpm utilizing a submersible pump supplied by the well contractor. A total of 2,271 L was extracted from the well during the pumping test. During the test, cascading was observed to occur at a depth of 43.6 m (143 ft) below the top of casing (btoc).

Analysis of the preliminary test curve revealed that the well would not be able to sustain a pumping rate of 5 gpm for a longer period of time. Subsequent recovery data analysis suggested that the maximum long-term yield of the well (in its current state) was likely to be approximately 1 gpm.

TW-6

TW-6 was subjected to a 120 minute pumping test on May 9, 2014. The well was

pumped at a rate of 4 gpm utilizing a submersible pump and flow restrictor provided by the well contractor. Approximately 1,817 L of water was extracted from the well during the preliminary pumping test.

Prior to the cessation of pumping, the water became turbid and cascading was observed to occur 33.5 m (110 ft) btoc. Preliminary analysis of the test curve revealed that the well (in its current state) likely wouldn't be able to sustain a pumping rate of 4 gpm for a long period of time. Subsequent recovery data analysis suggested that the maximum long-term yield of the well was likely to be approximately 2 gpm.

TW-7

TW-7 was subjected to a 140 minute pumping test on June 12, 2014. The well was pumped at a rate of 5 gpm utilizing a submersible pump and flow restrictor provided by the well contractor.

A total of 2,650 L was extracted from the well during the preliminary pumping test. During the test, the water appeared to be approaching stabilization, suggesting the long-term yield of the well was 5+ gpm.

4.6 High-Pressure Hydraulic Fracturing

Initially, all of the wells on the site were subjected to low-pressure hydraulic fracturing ("fracking") by White's Water Well Drilling Ltd., whereby a single packer was utilized to inject water into the well bore in an attempt to open additional fractures and/or "clean out" existing fractures to improve the well yield (Figure 11).

During the initial fracking program, the maximum pressure observed was approximately 150 psi. The method utilized a single packer set at a depth of 30 m (100 ft) in most instances. As such, the injection pressure would be distributed over a great length of the bore (i.e., >30 m). As such, the effectiveness of the hydraulic fracturing was limited. Only wells that exhibited turbid conditions initially had an increase in apparent yield from the low-pressure hydrofracturing.

Based on the preliminary pumping tests (discussed above), a number of wells were selected to be subjected to additional hydrofracturing utilizing a dual-packer arrangement (Figure 11). This approach could apply the injection pressure over a relatively short bore length (i.e., 6.1 m). Test wells TW-2, TW-4, TW-5 and TW-6 were subjected to high-pressure (often observed to be over 200 psi) hydraulic fracturing by Holmes Water Well Hydrofracturing. Each well was fracked across a number of different target depths in an attempt to widen existing fractures and open up (and/or clean out) any other fractures that may occur in the bedrock. With the exception of TW-2, sudden pressure drops during

the hydrofracturing were observed suggesting that the hydrofracturing had been successful.

Following the hydraulic fracturing, each well was subjected to aggressive pumping (albeit less than 50,000 L/day) to evacuate all of the injected water. Additional water bearing fractures and apparent well yields were noted during the pumping of each well and are briefly discussed in the following section.

4.7 Pumping Tests

4.7.1 General

Following the aggressive hydraulic fracturing program, five (5) on-site wells were selected for test pumping in accordance with MOECC Procedure D-5-5. The remaining on-site wells were utilized as observation wells. Prior to the pumping tests, an attempt was made to contact adjacent land owners through campground staff in order to obtain permission to monitor off-site (domestic) wells. Although an adjacent land owner did indicate the existence of a well on their property, it is understood that the wellhead was inaccessible and the property owner had indicated that the well was only used for non-potable supply (i.e., lawn watering).

Prior to each test, the target flow rate was determined based on the guidance provided by Section 4.3 of MOECC Procedure D-5-5. To summarize, D-5-5 states that each pumping test should be conducted such that the flow rate is not less than 18.75 litres per minute (L/min) or 4.1 imperial gallons (igal), unless specific occupancy parameters are contemplated. Therefore over a 6 hour period, the minimum volume needed to satisfy D-5-5 is 6,750 L. For those instances where our preliminary testing suggested that a well would not be capable of supporting the flow rate, D-5-5 makes an allowance for extending the pumping time to achieve the minimum total volume. In addition, D-5-5 states that the well must recover to within 95% of the original static water level within 24 hours of the beginning of the pumping test (i.e., so that the same pumping procedure could be repeated daily).

Based on the preceding, the duration and flow rate utilized for each pumping test was based on extracting the minimum volume of 6,750 L within a single 24 hour period.

Prior to the pumping tests, the pumped well and the observation wells were outfitted with programmable data logging pressure transducers ("loggers") to help facilitate frequent (i.e., every 1 minute) water level readings. To supplement the logger measurements, manual measurements were collected periodically throughout the pumping tests.

A detailed description of the formal well testing program has been included below. Copies of the pumping test curves are presented in Appendix E.

4.7.2 TW-3

Based on the results of the preliminary pumping test, TW-3 was subjected to a pumping test at a rate of 0.32 L/s (4.2 igal) for 369 minutes on July 17, 2014.

The total volume of water extracted during the test was approximately 7,094 Litres. During the test, the well exhibited a maximum drawdown of 18 m, followed by stabilization of the pumping level. At the time of the test, TW-3 had a total available drawdown of about 90 m based on the difference between the static level and the driller's recommended pump setting.

The well recovered to within 95% of the initial static water level within 296 minutes of the cessation of pumping.

Based on the drawdown measured in the pumped well, the transmissivity is estimated at approximately 0.61 m^2/day, utilizing a Cooper-Jacob analysis. Analysis of the recovery data for TW-3 suggests a lower transmissivity of approximately 0.36 m^2/day, based on a Theis analysis. Unfortunately, the minimal drawdown observed at TW-7 (observation well) was insufficient for analysis.

Based on the 6-hour specific capacity (i.e., 0.02 L/s/m) and the total available drawdown (i.e., 90 m), the theoretical yield of TW-3 is on the order of 1.6 L/s (21 igpm). In reality, the achievable yield would likely be lower, as a result of well losses (inefficiency) and any boundary effects. Regardless, it is clear that the aquifer tapped by TW-3 has sufficient yield for domestic supply purposes and meets the D-5-5 criteria, without the need for supplementary water storage.

4.7.3 TW-4

Based on the results of the high-pressure hydrofracturing, TW-4 was subjected to a pumping test at a rate of 0.19 L/s (2.5 igpm) for 605 minutes on December 2, 2014.

The total volume of water extracted during the test was approximately 6,897 litres. During the test, the well exhibited a maximum drawdown of 34 m. At the time of the test, TW-4 had a total available drawdown of about 67 m based on the difference between the static level and the driller's pump setting.

The well recovered to within 95% of the initial static water level within 513 minutes of the cessation of pumping.

The test curve is consistent with a semi-confined (leaky) aquifer condition. The observation well data indicate no discernable interference effects with any of the observation wells.

Based on the drawdown measured in the pumped well, the transmissivity is estimated at approximately 8.6 x 10^{-2} m^2/day, based on a Cooper-Jacob analysis. Analysis of the recovery data for TW-4 suggests a slightly lower transmissivity of approximately 7.5 x 10^{-2} m^2/day, based on a Theis analysis.

Based on the 10-hour specific capacity (i.e., 5.5 x 10^{-3} L/s/m) and the total available drawdown (i.e., 67 m), the theoretical yield of TW-4 is on the order of 0.37 L/s (4.9 igpm). In reality, the achievable yield would likely be lower, as a result of well losses (inefficiency) and any boundary effects. Regardless, it is clear that the aquifer tapped by TW-4 has sufficient yield for domestic supply purposes, which meets the D-5-5 criteria. Supplementary water storage may be desired to satisfy short-term water demand needs (discussed in a following section).

4.7.4 TW-5

Based on the results of the high-pressure hydrofracturing, TW-5 was subjected to a pumping test at a rate of 0.09 L/s (1.5 gpm) for 1451 minutes on February 19, 2015.

The total volume of water extracted during the test was approximately 7,835 Litres. During the test, the well exhibited a maximum drawdown of 24 m, followed by stabilization of the pumping level. At the time of the test, TW-5 had a total available drawdown of about 72 m based on the difference between the static level and the driller's recommended pump setting.

The test curve is consistent with a semi-confined (leaky) aquifer condition. The observation well data indicate no discernable interference effects with any of the observation wells.

The well recovered to within 95% of the initial static water level within 440 minutes of the cessation of pumping.

Based on the drawdown measured in the pumped well, the transmissivity is estimated at approximately 0.1 m^2/day, based on a Cooper-Jacob analysis. Analysis of the recovery data for TW-5 suggests a lower transmissivity of approximately 6.9 x 10^{-2} m^2/day, based on a Theis analysis.

Based on the 24-hour specific capacity (i.e., 3.8 x 10^{-3} L/s/m) and the total available drawdown (i.e., 72 m), the theoretical yield of TW-5 is on the order of 0.27 L/s (3.6 igpm). In reality, the achievable yield would likely be lower, as a result of well losses (inefficiency) and any boundary effects. Regardless, it is clear that the aquifer tapped by TW-5 has sufficient yield for domestic supply purposes, which meets the D-5-5 criteria. Supplementary water storage may be desired to satisfy short-term water demand needs (discussed in a following section).

4.7.5 TW-6

Following the hydrofracturing of TW-6, turbidity was persistent in the well. As such, a 24 hour pumping test was conducted at a relatively low rate 0.13 L/s (1.7 igpm) to determine if a lower pumping rate would resolve the water quality issue. Although it was determined that TW-6 was quite capable of supporting the pumping rate for 24 hours, prior to the cessation of pumping, small amounts of sediment were observed to be persistent in the groundwater. As such, it was recommended that the well be "cleaned-out" prior to retesting.

During the clean-out, a pump was lowered to the bottom of the well and the well was vigorously pumped at a high rate to evacuate all the water and sediment. It is likely that the sediment was introduced during the hydrofracturing process and settled into the bottom of the well. The well was allowed to recover and the process was repeated until sediment-free conditions persisted.

Based on the results of the attempted 24 hour pumping test, TW-6 was subjected to a pumping test at a rate of 0.19 L/s (2.5 igpm) for 606 minutes on September 3rd, 2014.

The total volume of water extracted during the test was approximately 6,908 Litres. During the test, the well exhibited a maximum drawdown of 55 m. At the time of the test, TW-6 had a total available drawdown of about 93 m based on the difference between the static level and the driller's recommended pump setting.

The initial part of the test curve is consistent with a semi-confined (leaky) aquifer condition. At a depth of approximately 33 m, the water level in the well dropped below a significant water-bearing fracture, causing an increased drawdown in the water level. A stable pumping level was not achieved prior to the cessation of pumping.

The well recovered to within 95% of the initial static water level within 585 minutes following the cessation of pumping.

Based on the drawdown measured in the pumped well, the transmissivity is estimated at approximately 0.1 m^2/day, based on a Cooper-Jacob analysis. Analysis of the recovery data from the well suggests a slightly lower transmissivity of approximately 0.07 m^2/day, based on a Theis analysis.

Based on the 10-hour specific capacity (i.e., 3.5 x 10^{-3} L/s/m) and the total available drawdown (i.e., 95 m), the theoretical yield of TW-6 is on the order of 0.32 L/s (4.2 igpm). In reality, the achievable yield would likely be lower, as a result of well losses (inefficiency) and any boundary effects. Regardless, it is clear that the aquifer tapped by TW-6 has sufficient yield for domestic supply purposes, which meets the D-5-5 criteria, without the need for supplementary water storage.

4.7.6 TW-7

Based on the results of the preliminary pumping test, TW-7 was subjected to a pumping test at a rate of 0.32 L/s (4.2 igpm) for 371 minutes on July 16, 2014.

The total volume of water extracted during the test was approximately 7,133 Litres. During the test, the well exhibited a maximum drawdown of 34 m, followed by stabilization of the pumping level. At the time of the test, TW-7 had a total available drawdown of about 44 m based on the difference between the static level and the driller's recommended pump setting.

The well recovered to within 95% of the original static water level within 98 minutes following the cessation of pumping.

The test curve is consistent with a semi-confined (leaky) aquifer condition. The observation well data indicate a barely discernable interference effect at TW-3 (separation = 137 m). No significant responses were observed at any of the other observation wells.

Based on the drawdown measured in the pumped well, the transmissivity is estimated at approximately 0.34 m^2/day, utilizing a Cooper-Jacob analysis. Analysis of the observation well data for TW-3 suggests a considerably higher transmissivity of approximately 7.47 m^2/day with an associated storativity of 4.6 X 10^{-5}, also based on a Cooper-Jacob analysis. However, given the distance between the pumped and observation wells, "scale effects" could be exaggerating the calculated transmissivity somewhat.

Based on the 6-hour specific capacity (i.e., 9.4 x 10^{-3} L/s/m) and the total available drawdown (i.e., 44 m), the theoretical yield of TW-7 is on the order of 0.41 L/s (5.4 igpm). In reality, the achievable yield would likely be lower, as a result of well losses (inefficiency) and any boundary effects. Regardless, it is clear that the aquifer tapped by TW-7 has sufficient yield for domestic supply purposes, which meets the D-5-5 criteria, without the need for supplementary water storage.

4.7.7 Discussion

Domestic water usage is typically split into two main daily usage periods: i.e., one demand period in the morning and one in the evening. MOECC Procedure D-5-5 states that the average per-person water demand is 450 L per day. This is equivalent to a peak demand rate of 3.75 litres/minute for each person. The occupancy is generally considered to be *the number of bedrooms" plus one"*.

Taking into consideration the above, a four (4) bedroom home would theoretically have an occupancy of five (5) persons, resulting in a daily average water demand of 5 X 450 L/day = 2,250 L/day. If the day is split according to a morning and evening peak usage period, each period would require approximately 1,125 L. These higher usage periods would most

often occur within a relatively short time frame of 1 to 2 hours.

To comply with this minimum requirement of Procedure D-5-5, the test wells should be capable of meeting the above criteria. For wells capable of meeting the average daily demand but not able to meet the peak, short-term demand, lower pumping rates can be acceptable, provided supplementary water storage is available in the system.

Despite the challenging water supply conditions at the site, all of the tested wells satisfied the requirements of MOECC Procedure D-5-5.

Based on the results of the pumping test data, it appears that a combined strategy of drilling and high-pressure or targeted hydraulic fracturing has been quite successful at this site. As such, it is expected that all future wells in the development should follow a similar drilling and hydraulic fracturing program when initial well yields are estimated to be below 0.09 L/s (1.2 igpm).

Most of the water bearing fractures occur at a depth of approximately 46 m (150 ft), however, deeper wells have revealed the possibility of deeper (> 60 m) supplementary water bearing fractures. These deeper fractures do not appear to impair water quality. It is expected that future wells on the site will require similar construction to maximize yield and storage in addition to hydraulic fracturing.

Supplementary water storage will likely be necessary for the majority of the proposed lots on the site, however, the need for supplementary storage should be determined on an individual basis, based on the well conditions and homeowners' water supply requirements.

4.8 Interference Assessment

Monitoring data obtained during the pumping tests indicate that water takings within the proposed subdivision will likely create barely discernable drawdown interference effects in nearby wells. During the pumping tests, only one observed interference effect of approximately 0.5 m occurred in a nearby well. Given that the majority of the residences neighbouring the site are known to be on lake intake systems, the development would be considered "remote" from other groundwater users.

For future supply wells, the available drawdown typically expected will be substantial, based on the test well data (i.e., range 44 m to 93 m). Cumulative interference effects should not exceed a few metres within the development, given the very low density. Interference on that scale should be quite manageable and should not be expected to represent a potential impact.

4.9 Water Quality

4.9.1 General

Water quality samples were collected from each of the test wells at preselected intervals throughout the formal pumping tests. Samples were forwarded to Caduceon Environmental Laboratories in Ottawa/Kingston for chemical and bacteria analysis. In addition, field water quality measurements for pH, conductivity, temperature, total dissolved solids (TDS) and turbidity were taken periodically throughout the pumping tests. A summary of the water quality results and the laboratory certificates are presented in Appendix F.

Overall, water quality in all of the test wells is reasonably good and within the expected range of values for groundwater in the study area. All of the test wells meet the *health related* quality criteria of D-5-5 and the Ontario Drinking Water Quality Standards (ODWQS).

A brief summary of the water quality results for each well is presented below.

4.9.2 TW-3

Groundwater samples were collected from TW-3 during the 6 hour pumping test. One sample was collected 240 minutes into the test and the last sample was collected just prior to the cessation of pumping.

The laboratory data indicate that groundwater from TW-3 is generally characterised by a slightly high hardness concentration of 194 mg/L, occurring above the Ontario Drinking Water Standards (ODWQS) ideal range of 80 mg/L to 100 mg/L. Hardness is an aesthetic parameter and does not pose any threat to human health, however, at elevated concentrations could cause staining of fixtures. It is expected that the hardness could be readily treated through a water softener. Treatment to reduce hardness is not mandatory.

TW-3 also exhibits high iron and manganese concentrations, occurring at 3.77 mg/L and 0.522 mg/L respectively. Both exceed their respective ODWQS objectives of 0.3 mg/L and 0.05 mg/L respectively. At these concentrations, treatment to reduce iron and manganese will likely be desirable. Both are considered treatable through a combination of aeration and filtration.

Iron and manganese are aesthetic objectives and should not have any impact on human health. However, at these concentrations, iron and manganese will likely form precipitates that can cause staining of fixtures and a slight bitter taste in the water. These precipitates undoubtably contributed to the laboratory's high turbidity value of 25.2 NTU. Turbidity measured in the field, however, was

observed to be 2.41 NTU at the wellhead when stabilised utilizing a dilute acid solution. Future use of TW-3 will likely improve well development and will further reduce any remaining well-related turbidity.

Bacteriological samples were collected approximately at the mid-point and just prior to the cessation of the pumping test. Prior to sampling, an in-field test was conducted to verify the absence of residual chlorine. The laboratory results indicate counts of 0 cfu/100 ml for Total Coliform and 0 cfu/100 ml for E. Coli, indicating acceptable quality.

4.9.3 TW-4

Groundwater samples were collected from TW-4 during the ten (10) hour pumping test and forwarded to Caduceon Environmental Laboratories. One sample was collected 300 minutes into the test and the last sample was collected just prior to the cessation of pumping.

The groundwater is generally characterised by a slightly elevated hardness concentration of 159 mg/L occurring marginally above the Ontario Drinking Water Standards' (ODWQS) ideal range of 80 mg/L to 100 mg/L. Hardness is an aesthetic parameter and does not pose any threat to human health, however, at elevated concentrations could cause staining of fixtures. It is expected that the hardness could be readily treated through a water softener. Treatment to reduce hardness is not mandatory.

TW-4 exhibits high iron and manganese concentrations, occurring at 7.79 mg/L and 0.596 mg/L respectively. Both occur above their respective ODWQS objectives of 0.3 mg/L and 0.05 mg/L respectively. At these concentrations, treatment to reduce iron and manganese will likely be desirable, similar to TW-3. Both are considered treatable through a combination of aeration and filtration.

Iron and manganese are aesthetic objectives and should not have any impact on human health. However, at these concentrations, iron and manganese will likely form precipitates that can cause staining of fixtures and a slight bitter taste to the water. These precipitates undoubtably contributed to the laboratory's high turbidity value of 75.2 NTU. Turbidity measured in the field, however, was observed to be 3.85 NTU at the wellhead. Future use of TW-4 will likely improve well development and should reduce any remaining well-related turbidity.

Bacteriological samples were approximately half-way through and just prior to the cessation of the ten (10) hour pumping test. Prior to sampling, an in-field test was conducted to verify the absence of residual chlorine. The laboratory results indicate counts of 0 cfu/100 mL for Total Coliform and 0 cfu/100 mL for E. Coli, at the 5 hour mark of the test. The final sample collected prior to the cessation of pumping had

12 cfu/100 mL for Total Coliform.

Near the end of the pumping test, the water was observed to have black sediment and other organic material in the discharge. As such, it is believed that sediment remaining in the bottom of the well bore from the hydrofracturing process was liberated once the water level was sufficiently drawn down. As such, it is believed that the water sample collected at the end of the pumping test was not representative of the water typically produced by this well.

Similar to TW-6 (discussed above), TW-4 was subjected to the same pumping procedure to effectively clean out the well. During the clean out procedure, TW-4 was observed to have a large amount of sediment in the bottom of the well. Therefore, TW-4 was subjected to repeated pumping over several days. During that time, sediment and organic debris was observed in the discharge water that resembled lake sediments. On May 7th, 2015, a water sample was collected from TW-4 and forwarded to Caduceon Environmental Laboratories for re-analysis of major ion and bacteriological parameters.

The results of the water quality analysis indicate counts of 0 cfu/100 mL for Total Coliform and 0 cfu/100 mL for E. Coli. In addition, the DOC was reported to be 4.9 mg/L, just below the ODWQS limit of 5.0 mg/L. Similar to the iron and manganese concentrations, the DOC concentration is expected to improve with use. Based on these results, it appears that TW-4 has acceptable water quality.

4.9.4 TW-5

Groundwater from TW-5 exhibits a moderate total dissolved solids (TDS) content with a somewhat reduced hardness in comparison to other on-site wells (i.e., occurring below the ideal range of 80 mg/L to 100 mg/L). It is apparent that some natural softening (i.e., ion exchange) is occurring in the aquifer, as calcium has a lower concentration while sodium has a higher concentration, when compared to most of the other on-site wells.

Although well within the aesthetic objective of 200 mg/L, the sodium concentration in TW-5 occurs above the warning level of 20 mg/L. As indicated in the Ontario Drinking Water Quality Standards (ODWQS), it is generally recommended that the local Medical Officer of Health be notified when the sodium concentration exceeds 20 mg/L so that this information may be communicated to local physicians for their use with patients on sodium restricted diets.

TW-5 exhibits slightly high iron and manganese concentrations, occurring at 0.355 mg/L and 0.087 mg/L respectively. Both occur marginally above their respective objectives. Iron and manganese are aesthetic objectives and therefore should not have any impact on human health. However, at these concentrations,

iron and manganese could form precipitates that can cause staining of fixtures and a slight bitter taste to the water. At these concentrations, iron and manganese are considered treatable through a combination of aeration and filtration.

Bacteriological samples were collected half-way through and just prior to the cessation of the 24 hour pumping test. Prior to sampling, an in-field test was conducted to verify the absence of residual chlorine. The laboratory results indicate counts of 0 cfu/100 ml for Total Coliform and 0 cfu/100 ml for E. Coli, indicating acceptable quality.

4.9.5 TW-6

Groundwater from TW-6 exhibits a moderate total dissolved solids (TDS) content with a somewhat reduced hardness in comparison to other on-site wells (i.e., occurring below the ideal range of 80 mg/L to 100 mg/L). Similar to TW-5, it is apparent that some natural softening (i.e., ion exchange) is occurring in the aquifer, as calcium has a lower concentration while sodium has a higher concentration, when compared to most of the other on-site wells.

Although well within the aesthetic objective of 200 mg/L, the sodium concentration in TW-6 occurs above the warning level of 20 mg/L. As indicated in the Ontario Drinking Water Quality Standards (ODWQS), it is generally recommended that the local Medical Officer of Health be notified when the sodium concentration exceeds 20 mg/L so that this information may be communicated to local physicians for their use with patients on sodium restricted diets.

TW-6 exhibits high iron and manganese concentrations, occurring at 5.37 mg/L and 0.469 mg/L respectively. Both occur above their respective ODWQS objectives. Iron and manganese are aesthetic parameters. At these concentrations, iron and manganese will form precipitates that can cause staining of fixtures and a slight bitter taste to the water. The iron and manganese are considered treatable through a combination of aeration and filtration.

Water from TW-6 differs from all the other site wells as pH and fluoride are elevated over their respective ODWQS limits. While the pH was observed to decline with pumping, fluoride appears to be stable at a concentration of approximately 2.0 mg/L. Similar to sodium, it is generally recommended that the local Medical Officer of Health be notified when fluoride occurs at a concentration between 1.5 mg/L and 2.4 mg/L. This information may be communicated to the public to raise awareness about excessive fluoride use. As such, any future owner should be advised not to consume any fluoride from additional sources.

It is expected that the pH will further decline with use, however, the current pH, (i.e., above 8.5) can cause mineral incrustations and a bitter taste to occur. If pH

remains above 8.5, the pH can be adjusted through treatment (i.e., by adding a neutralizer).

Bacteriological samples were collected half-way through and just prior to the cessation of the 10 hour pumping test. Prior to sampling, an in-field test was conducted to verify the absence of residual chlorine. The laboratory results indicate counts of 0 cfu/100 ml for Total Coliform and 0 cfu/100 ml for E. Coli, indicating acceptable quality.

4.9.6 TW-7

Groundwater samples were collected from TW-7 during the 6 hour pumping test. The first sample was collected 180 minutes into the test and the last sample was collected just prior to the cessation of pumping. The groundwater is generally characterised by an slightly high hardness concentration of 168 mg/L occurring above the Ontario Drinking Water Standards (ODWQS) ideal range of 80 mg/L to 100 mg/L. Hardness is an aesthetic parameter and does not pose any threat to human health, however at elevated concentrations could cause staining of fixtures. It is expected that the hardness could be readily treated through a water softener.

TW-7 exhibits high iron and manganese concentrations, occurring at 5.37 mg/L and 0.469 mg/L respectively. Both iron and manganese occur above their respective aesthetic objectives. At these concentrations, iron and manganese will likely form precipitates that can cause staining of fixtures and a slight bitter taste to the water. These precipitates undoubtably contributed to the laboratory's high turbidity value of 60.9 NTU. Turbidity measured in the field, however, was observed to be 0.89 NTU at the wellhead, when measured in an acid stabilized sample. Future use of TW-7 will likely improve well development and reduce any remaining well-related turbidity. At the reported concentrations, iron and manganese are considered treatable through a combination of aeration and filtration.

Bacteriological samples were collected half-way through and just prior to the cessation of the 6 hour pumping test. Prior to sampling, an in-field test was conducted to verify the absence of residual chlorine. The laboratory results indicate counts of 0 cfu/100 ml for Total Coliform and 0 cfu/100 ml for E. Coli, indicating acceptable quality.

4.9.7 Discussion

Overall, the groundwater quality at the site is generally good and satisfies the requirements of MOECC Procedure D-5-5. Groundwater at the subject site is characterized by elevated levels of iron and manganese, both aesthetic parameters. It is likely that water from some wells will require rigorous treatment by a

combination of aeration and filtration.

Softening may not be desired in all wells, as naturally soft water (i.e., below 80 mg/L) will occur in some locations. It is possible that wells tapping a marble-type aquifer (i.e., carbonate source) may exhibit natural softening through ion exchange processes.

Wells TW-4 and TW-6 exhibited persistent turbidity issues due to sediment introduced during the hydrofracturing process despite long-term pumping following those activities. It is believed the sediment originated from impurities in the water used in fracking. As such, for any future wells subjected to hydraulic fracturing, it will be important to fully clean the well by evacuating the entire water column until sediment-free conditions persist (similar to the procedure used on TW-6 and TW-4). Water quality samples should be collected following the clean-out activities to verify acceptable water quality.

5.0 Wastewater Treatment

5.1 Existing Wastewater Treatment

A legacy central sewage disposal system is currently situated in the south-eastern portion of the subject site, within approximately 25 m of Stony Lake (Figure 2). The system services 87 trailer units, a common washroom with shower facilities and a central laundry facility. A trailer pump-out is located in proximity to the washroom facilities. We estimate the theoretical sewage flow rate of the campground to be approximately 45,000 L/day, based on Code and Guide for Sewage Systems (Ontario Building Code - OBC). However, the system appears to be undersized for that flow rate.

The system includes a fully in-ground effluent disposal bed. However, a test pit excavated immediately east of the bed revealed that bedrock could occur at a depth of only 0.49 m in the area. The OBC states that the bottom of an absorption trench must be at least 0.9 m *"above the high ground water table, rock or soil with a percolation time greater than 50 minutes"*. As such, it is unclear whether the existing disposal bed would meet this requirement and/or whether the effluent is being sufficiently treated.

The public washroom and laundry facilities are directly connected to the communal sewage system. However, none of the trailer sites are serviced directly by the system. Instead, each trailer must be manually pumped out through a pumping station that is connected to the works. As such, the current system requires a considerable amount of wastewater handling.

The sewage system does not operate under an Environmental Compliance Approval (ECA) or Certificate of Approval (C of A) and likely predates any such requirements. The system does not incorporate any additional treatment beyond what is provided by the septic

tanks.

In addition to the central sewage system, a number of Class 1 sewage systems (outhouses) also occur throughout the site, representing an unknown proportion of the site's total sewage flows. Those units do not provide any treatment. The locations of Class 1 sewage systems observed on the site are included in Figure 2.

Based on its age, location, construction and the absence of nutrient reduction treatment, the existing central sewage system would not be appropriate for use to service the proposed development. As such, the proposed development will be serviced by modern, properly constructed individual sewage systems on each lot. The private sewage systems will be substantially set-back from the Stony Lake shoreline.

5.2 Nitrate Impact Assessment

5.2.1 General

The principal impact of the proposed development on groundwater resources is related to the introduction of septic effluent into the shallow flow zone from the proposed individual tile bed systems.

Within the effluent, nitrate is considered the critical contaminant as elevated nitrate concentrations are linked to infant methaemoglobinaemia (nitrate poisoning). To protect groundwater resources, the Ministry of Environment's Procedure D-5-4 sets the maximum allowable nitrate concentration at the site boundary to be 10 mg/L (also the Ontario Drinking Water Standard). The nitrate impact assessment is therefore conducted to verify that this limit is not exceeded.

Naturally occurring bacteria and soil interaction mechanisms can, and usually do, result in nitrate being renovated. However, Procedure D-5-4 acknowledges ***dilution*** as the principal attenuation mechanism[1] to be used to predict future nitrate concentrations as a result of subdivision development.

For the purpose of assessing the subject site, three (3) local drainage areas have been designated in the development area. Each area drains into one of three surface water features. The drainage areas are herein referred to as the "Jack Creek Drainage Area", "Stony Lake Drainage Area" and "Tributary of Stony Lake Drainage Area". Each are identified on Figure 6.

[1] Procedure D-5-4 also acknowledges monitoring-based assessments and other specialized assessment forms, primarily for use in areas where there is scientific precedent.

5.2.2 Development Area Available Dilution

In order to estimate the availability of sustained dilution from direct recharge, the following calculation has been considered:

$$D_w = A \times W_s \times I_f$$

where,

D_w= Available dilution water — A = Net dilution area
W_s= Water surplus — I_f = Infiltration factor[2]

For this assessment, the average regional water surplus[3] is estimated to be 287.8 mm.

Only lands that are proposed to be developed were considered as part of the following calculations.

Jack Creek Drainage Area

The Jack Creek Drainage Area comprises of 7.56 ha (18.7 acres) of land area. Soils within this area are dominated by sand of variable thickness. As such, the soil component of the infiltration factor is based on the percentage of the area that contains over 20 cm of overburden thickness (i.e., 80%) as illustrated on Figure 6:

Soil factor	=	0.31 (medium sand factor 0.39 x 80%)
Slope factor	=	0.15 (rolling terrain)
Cover factor	=	0.15 (mostly grass and tree covering)
Total	=	0.61

Substituting the various factors into the above expression and accounting for impermeable surfaces (i.e. 5% of lot area) yields the following total dilution availabilities for the remaining (7.18 ha) area:

7.18 ha X 287.8 mm/yr X 0.61 = 12,605 m^3/yr (34.5 m^3/day)

[2] Infiltration factor calculation method: From MOEE Hydrogeological Technical Information Requirements for Land Development Applications, April 1995

[3] Based on average water surplus for Peterborough, Lakefield and Apsley stations, as listed in: Department of Transport "Average Annual Water Surplus in Canada" (1967).

Stony Lake Drainage Area

The Stony Lake Drainage Area comprises of 7.35 ha (18.2 acres) of land area. Soils within this area are also comprised of sand of variable thickness. As such, the soil component of the infiltration factor is based on the percentage of the area that contains over 20 cm of overburden thickness (i.e., 90 %) as illustrated on Figure 6:

Soil factor	=	0.35 (medium sand factor 0.39 x 90%)
Slope factor	=	0.15 (gently sloping terrain)
Cover factor	=	0.13 (mostly grass covering)
Total	=	0.63

Substituting the various factors into the above expression and accounting for impermeable surfaces (i.e. 5% of lot area) yields the following total dilution availabilities for the remaining (7.0 ha) area:

7.00 ha X 287.8 mm/yr X 0.63 = 12,692 m^3/yr (34.8 m^3/day)

Tributary of Stony Lake Drainage Area

The Tributary of Stony Lake Drainage Area comprises an area of 6.47 ha (16.0 acres). Soils within this drainage area are comprised of sand of variable thickness. As such, the soil component of the infiltration factor is based on the percentage of the area that contains over 20 cm of overburden thickness (i.e., 80 %) as illustrated on Figure 6:

Soil factor	=	0.33 (medium sand 0.39 x 85%)
Slope factor	=	0.15 (rolling terrain)
Cover factor	=	0.15 (mostly grass and tree covering)
Total	=	0.63

Substituting the various factors into the above expression and accounting for impermeable surfaces (i.e. 5% of lot area) yields the following total dilution availabilities for the remaining (6.15 ha) area:

6.15 ha X 287.8 mm/yr X 0.63 = 11,151 m^3/yr (30.6 m^3/day)

The combined total estimated available dilution for the three (3) drainage areas is approximately 36,452 m^3/yr (99.9 m^3/day).

5.2.3 Development Area Impact Evaluation

Lot density is determined through a simple mass-balance calculation which considers the following factors:

- available dilution (total 99.9 m^3/day, see above)
- total volume of septic effluent (1,000 L/day)
- baseline nitrate levels in the supply aquifer (assumed to be 0.01 g/day)
- nitrate input from septic systems (40 g/day)

To determine the total number of supportable lots, an evaluation of each drainage area described above) has been conducted:

Jack Creek Drainage Area

$$[Nitrate] = \frac{(septic\ input + supply\ aquifer\ input) \bullet No.\ of\ Lots}{available\ dilution + volume\ of\ septic\ effluent}$$

$$[Nitrate] = \frac{(40\ g/day + 0.01\ g/day)\ X\ 11)}{34.5\ m^3/day + (1\ m^3/day\ X\ 11\ lots)}$$

$$= \mathbf{9.67\ mg/L}$$

Therefore, based on the above analysis, *a total of 11 lots can be supported* by the Jack Creek Drainage Area while remaining in compliance with MOECC Procedure D-5-4.

Stony Lake Drainage Area

$$[Nitrate] = \frac{(septic\ input + supply\ aquifer\ input) \bullet No.\ of\ Lots}{available\ dilution + volume\ of\ septic\ effluent}$$

$$[Nitrate] = \frac{(40\ g/day + 0.01\ g/day)\ X\ 9)}{34.8\ m^3/day + (1\ m^3/day\ X\ 9\ lots)}$$

$$= \mathbf{8.22\ mg/L}$$

Therefore, based on the above analysis, *a total of 9 lots can be supported* by the Stony Lake Drainage Area while remaining in compliance with MOECC Procedure D-5-4.

Tributary of Stony Lake Drainage Area

$$[Nitrate] = \frac{(septic\ input + supply\ aquifer\ input) \bullet No.\ of\ Lots}{available\ dilution + volume\ of\ septic\ effluent}$$

$$[Nitrate] = \frac{(40\ g/day + 0.01\ g/day)\ X\ 10)}{30.6\ m^3/day + (1\ m^3/day\ X\ 10\ lots)}$$

$$= \mathbf{9.85\ mg/L}$$

Therefore, based on the above analysis, *a total of 10 lots can be supported* by the Tributary of Stony Lake Drainage Area while remaining in compliance with MOECC Procedure D-5-4.

From the preceding analyses, the proposed development area should be capable of supporting the development of 30 privately serviced lots while remaining in compliance with MOECC Procedure D-5-4, based on conventional private sewage systems.

6.0 Servicing Considerations

6.1 Private Wells

The results of this study support the construction and sustainable use of private, individual wells to supply potable water for each of the proposed subdivision lots. Seven (7) test wells have been constructed on the subject site to verify those conditions. Five (5) are suitable for future supply use and one is currently being utilized by a residence on the site.

Figure 12 illustrates the proposed/recommended locations for future private wells within the development. These locations are based on accommodating minimum separation distances and the juxtaposition of proposed building envelopes and proposed septic systems.

As a result of the generally thin, permeable soils, the site would be considered moderately sensitive with respect to hydrogeological conditions. As such, the recommended separation distances between wells and septic systems has been maximized (where practical).

6.2 Sewage Disposal

The proposed development is to be serviced by conventional type sewage disposal systems (i.e., individual septic tank and tile bed at each lot). The existing legacy central sewage system will not be utilized and will be decommissioned.

In addition to obtaining data regarding the shallow aquifer, the soils information obtained during the terrain mapping is also valuable for determining the type of tile bed system most appropriate for the site (e.g., fully raised, partially raised, or in-ground). Primarily due to the presence of bedrock near surface at the site, and to a lesser extent, due to perched shallow water-table conditions in some areas, we expect that future sewage systems will need to be constructed with fully raised tile beds.

Figure 12 illustrates the recommended locations for a sewage disposal bed area.

7.0 Conclusions and Recommendations

7.1 This Hydrogeological and Site Servicing Study has been prepared in support of a proposed seasonal residential condominium development at the current site of Pilgrim's Rest Campground in the Township of North Kawartha. The primary objectives of this report are to present a summary of the site conditions, provide an evaluation of groundwater supply potential and present an impact assessment to verify the sustainability of privately serviced lots while complying with MOECC Procedures D-5-4 and D-5-5.

7.2 The campground currently utilizes an intake situated at the mouth of Jack Creek to supply a communal water works. This system will not be utilized for the proposed development and will be decommissioned.

7.3 The campground currently utilizes a large central sewage disposal system situated within approximately 25 m of Stony Lake. The legacy system services 87 trailer units, a common washroom with shower facilities and a central laundry facility. A trailer pump-out is located in proximity to the washroom facilities. The current disposal system requires a considerable amount of wastewater handling.

The system includes a fully in-ground effluent disposal bed that may be undersized for the theoretical camp flows. The sewage system does not operate under an Environmental Compliance Approval (ECA) or Certificate of Approval (C of A) and likely predates any such requirements. Other than provided by the septic tanks, the system incorporates no additional treatment.

In addition to the central sewage system, a number of Class 1 sewage systems (outhouses) also occur throughout the site, representing an unknown proportion of the site's total sewage flows. Those units do not provide any treatment. The locations of Class 1 sewage systems observed on the site are included in Figure 2.

Based on its age, location, construction and the absence of nutrient reduction treatment, the existing central sewage system would not be appropriate for use to service the proposed development. Therefore, proposed development will result in decommissioning of all the existing sewage (Class 1 and 4) systems on-site.

7.4 It is proposed that the development will be individually serviced with a well and subsurface sewage disposal system. Replacement of the trailer park with a modern, less concentrated seasonal residential development, serviced by properly constructed private sewage systems that are well set-back from the lake, with less concentrated waterfront usage, should be viewed as beneficial with respect to protection of Stony Lake.

7.5 A series of twenty-five (25) test pits and six (6) hand-auger holes were excavated on the property to explore the on-site geology, soil, terrain and shallow groundwater conditions. All of the test pits and hand-auger holes intersected a continuous sandy mantle (SP-type) in areas devoid of granite outcrops.

7.6 According to MOECC well records, statistical results indicate that an adequate quantity of water supplies are generally available in the study area. These data also suggest that obtaining a successful well (i.e., well yield of 5 gpm or greater) may require more than one attempt. At the very least, the data indicate that groundwater supply conditions are variable, as would be expected from the geological setting.

7.7 Seven (7) wells have been constructed on the subject site to determine the aquifer conditions. Five (5) of these wells have been subjected to pumping tests and water quality sampling, in accordance with the requirements of MOECC Procedures D-5-5. Based on those tests, five (5) of the test wells are suitable for future supply use and one is currently being utilized by a residence on the site. Despite the challenging groundwater conditions, the test well evaluations confirm that sufficient groundwater should be available to support the proposed units (lots).

Based on our overall findings, it is our recommendation that each proposed lot should be serviced for water supply through construction of a drilled well meeting the requirements of Ontario Regulation 903, as amended. Dug or bored wells are *not* appropriate for this site. Although there is a virtually unlimited supply of water available from the lake, a drilled well is the preferred alternative. A lake-based, potable water supply system is not currently considered for any proposed lot.

7.8 Based on the test well data, we conclude that the proposed lots can obtain an adequate supply of acceptable quality water from a combination of two (2) water bearing zones in the Precambrian bedrock. These aquifers consist of fractured granitic gneiss and/or marble that may be formational contacts. The water bearing zones may require aggressive hydrofracturing to develop an acceptable yield. Hydrofracturing conducted during this study was very successful. The drilling contractor should be advised of this condition prior to any future well construction.

7.9 The test well data suggest that yields can be variable and some wells may have lower than ideal yields, not unlike most rural Ontario settings. As such, it is apparent that a small percentage of future lot owners may not obtain an acceptable yield upon initial well construction. In those cases, the use of supplementary water storage may be appropriate to compensate for a lower well yield. In other instances, it may be necessary to construct more than one well to obtain an acceptable quantity of groundwater.

7.10 As a result of the variable groundwater conditions at the subject site, we are recommending that a *Well Certification Program* be implemented at this site. The program will require that prior to issuance of a building permit, a well be constructed under the supervision of, and tested by, a Qualified Person (P. Geo. or P. Eng.) who will certify in writing that a drilled well has been constructed, meeting the minimum construction, water demand and water quality requirements as set forth herein. The well "certification report" shall be submitted to the municipality as part of the Building Permit application. The requirements of the Program are outlined in Appendix G.

As a general guide, unless the Qualified Person recommends otherwise, new drilled wells should be constructed at the locations illustrated on the accompanying Recommended Lot Servicing Plan, Figure 12. Figure 12 illustrates that each of the proposed lots has ample room to support the construction of a residence, a drilled well and a fully-raised conventional sewage disposal system based on an anticipated sewage flow of 2,000 L/day.

Notwithstanding the contents of this study, well certification reports should be prepared and provided for the future owners of TW-3, TW-4, TW-5, TW-6 and TW-7 so that purchasers of those lots will have the benefit of any additional recommendations that might be presented therein.

7.11 Heat pump feasibility has not been investigated as part of this study. The use of open loop heat pump systems is not recommended for this site. Any such open loop heat pump installations should only be considered if a hydrogeologist has determined that such systems can be utilized without compromising groundwater availability and quality.

7.12 Based on the results of our on-site geology investigation and terrain mapping, an assessment of the nitrate impact has been completed, relying entirely on natural attenuation of septic effluent by dilution to achieve compliance with MOECC Procedure D-5-4. The assessment was conducted on three (3) separate drainage areas within proposed development area. The drainage areas were referred to as "Jack Creek Drainage Area", "Tributary of Stony Lake Drainage Area" and "Stony Lake Drainage Area".

Based on the results of the nitrate impact assessment, the proposed developmennt should be able to support thirty (30) residences and still comply with MOECC Procedure D-5-4.

7.13 The development is expected to have no significant impact on water quality in Stony Lake and should represent a net improvement by removing the current trailer park. The presence of "acidic" noncalcareous silicate derived sands mantling the site will help attenuate (through sorption) the phosphorus contained within the effluent from the

sewage systems[4].

As a precaution, it is recommended that a 30 m setback be imposed which will preclude the construction of septic systems close to the lake.

The use of proprietary wastewater treatment systems is also recommended as a means of further reducing nutrient output and as a means of reducing the system footprints. This can be achieved by implementing any of the tertiary treatment systems that are pre-approved under the Ontario Building Code (OBC).

* end of report *

Yours truly,
Oakridge Environmental Ltd.

Original Signed By

Dan MacIntyre, B.Sc.
Senior Hydrogeological Technician

Original Signed By

Brian R. King, P. Geo.
Principal

[4] Robertson, W.D. Enhanced Attenuation of Septic System Phosphate in Noncalcareous Sediments. Vol. 41, No. 1 - Ground Water - January - February 2003. Pg. 48-56.

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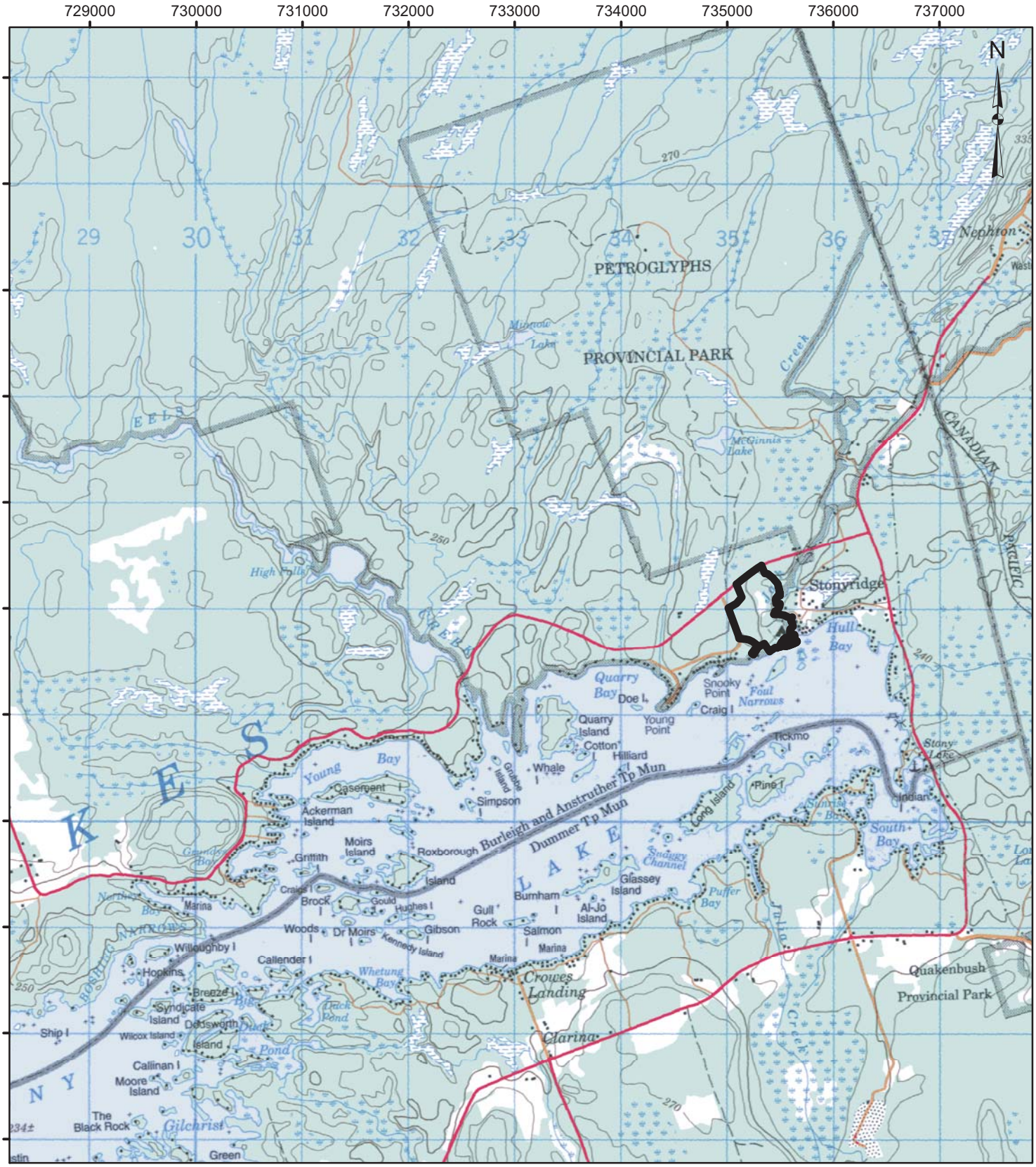
FIGURES



Scale: 1:50,000

North American Datum 1983 UTM Zone 17

Approximate Property Boundary

0 0.5 1 2 km

Hydrogeological & Site Servicing Study
Preposed Residential Development
Pilgrim's Rest Campground

Part of Lot 4, Concession XI (Burleigh),
Township of North Kawartha, County of Peterborough

TITLE

GENERAL LOCATION PLAN

ORE Oakridge Environmental Ltd.
Environmental and Hydrogeological Services

PROJECT # 12-1629

DATE May 2017

FIGURE NO. **1**

Notes: Base map provided by Natural Resources Canada, GEOGRATIS NTS MAP 31/09

Hydrogeological & Site Servicing Study
Preposed Residential Development
Pilgrim's Rest Campground

Part of Lot 4, Concession XI (Burleigh)
Township of North Kawartha
County of Peterborough

735000 735250 735500 735750 736000

4942500 4942250 4942000 4941750

N

Other Lands Owned by Proponent

Jack Creek

NORTHEYS BAY RD

HULLS RD

Entrance to Pilgrim's Rest Campground

Campground Office

Former Sand Pit

TW-6

TW-1

Development Area

TW-2

TW-4

TW-5

Trailer Park

TW-7

TW-3

CHEBOUTEQUION DR

FR 24

FR 23

FR 26

FR 27

FR 28

Stony Lake

North American Datum 1983 UTM Zone 17

- Areas Open for Potential Future Development
- Areas Not to be Developed
- Approximate Property Boundary
- Campground Office/Residence Filter Bed
- Communal Sewage Disposal System
- Potable Water Intake System
- Class 1 Sewage Systems
- Existing Test Well Location

Scale: 1:4,000

0 50 100 200 m

Notes: Imagery provided by First Base Solutions Inc. (DRAPE, 2008)

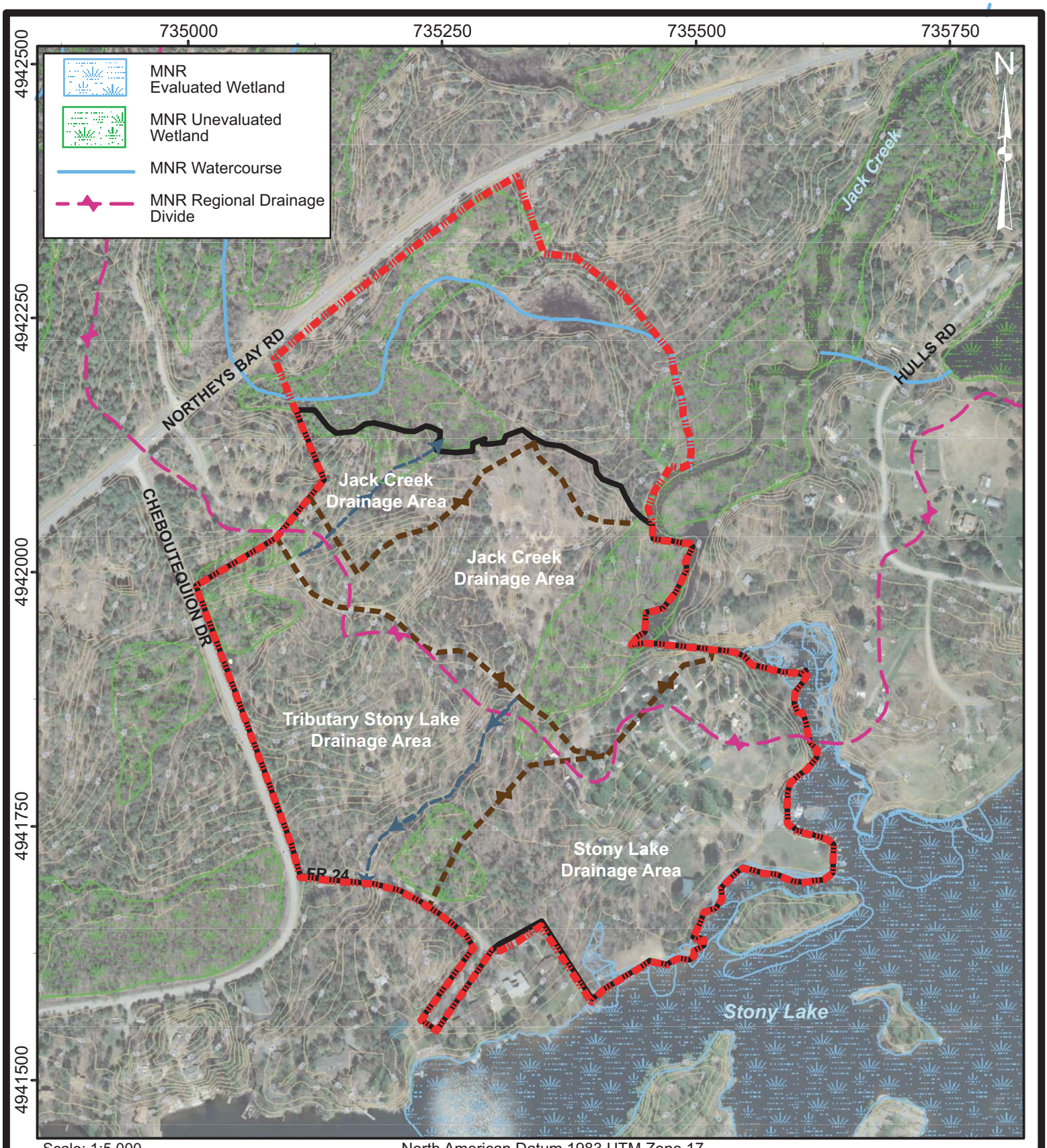
Base map provided by the Ministry of Natural Resources, copyright the Queen's Printer (2013)

TITLE

PROPERTY PLAN

ORE Oakridge Environmental Ltd.
Environmental and Hydrogeological Services

PROJECT #	FIGURE NO.
12-1629	2
DATE	
May 2017	



Scale: 1:5,000

North American Datum 1983 UTM Zone 17

Approximate Property Boundary

Proposed Development Area

Local Drainage Divide

Seasonal Drainage

Notes: Base map provided by the Ministry of Natural Resources (MNR), copyright the Queen's Printer (2013)

Aerial photography provided by First Base Solutions Inc. (DRAPE, 2008)

Hydrogeological & Site Servicing Study
Preposed Residential Development
Pilgrim's Rest Campground

Part of Lot 4, Concession XI (Burleigh),
Township of North Kawartha, County of Peterborough

0 50 100 200 m

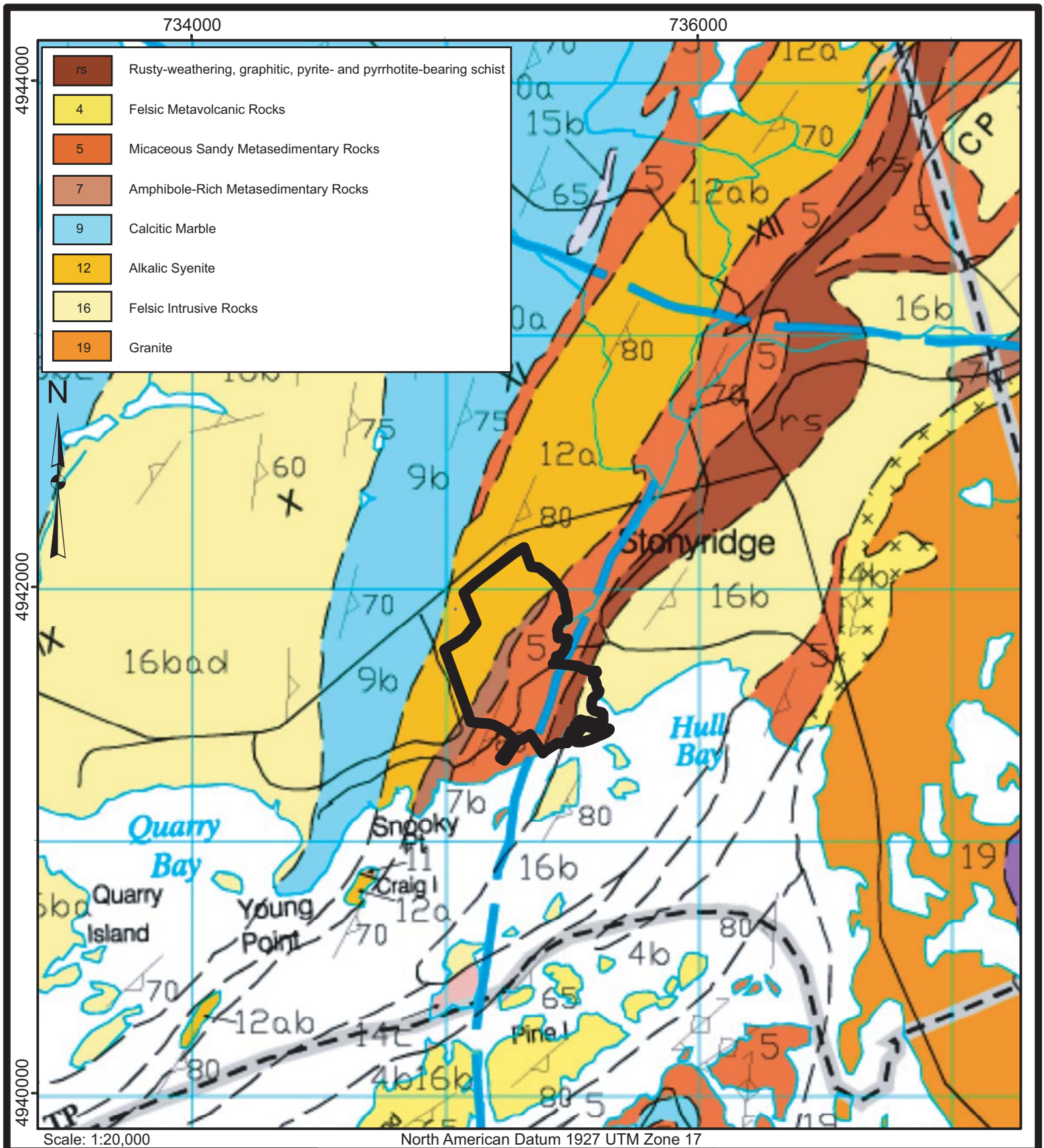
TITLE
TOPOGRAPHY & DRAINAGE PLAN

ORE Oakridge Environmental Ltd.
Environmental and Hydrogeological Services

PROJECT # 12-1629

DATE May 2017

FIGURE NO. **3**



Scale: 1:20,000

North American Datum 1927 UTM Zone 17

SYMBOLS

Geological contact
Limit of mapping
Compositional layering and/or parallel tectonic foliation (horizontal)
Compositional layering and/or parallel tectonic foliation (inclined, magnitude of dip uncertain)
Compositional layering and/or parallel tectonic foliation (vertical)
Lineation (with plunge, magnitude of plunge uncertain)
Fault
Synform
Contact metamorphic aureole

Notes: Base map provided by the Ontario Geological Survey, copyright the Queen's Printer (2006)

Hydrogeological & Site Servicing Study
Preposed Residential Development
Pilgrim's Rest Campground
Part of Lot 4, Concession XI (Burleigh),
Township of North Kawartha, County of Peterborough

0 250 500 1,000 m

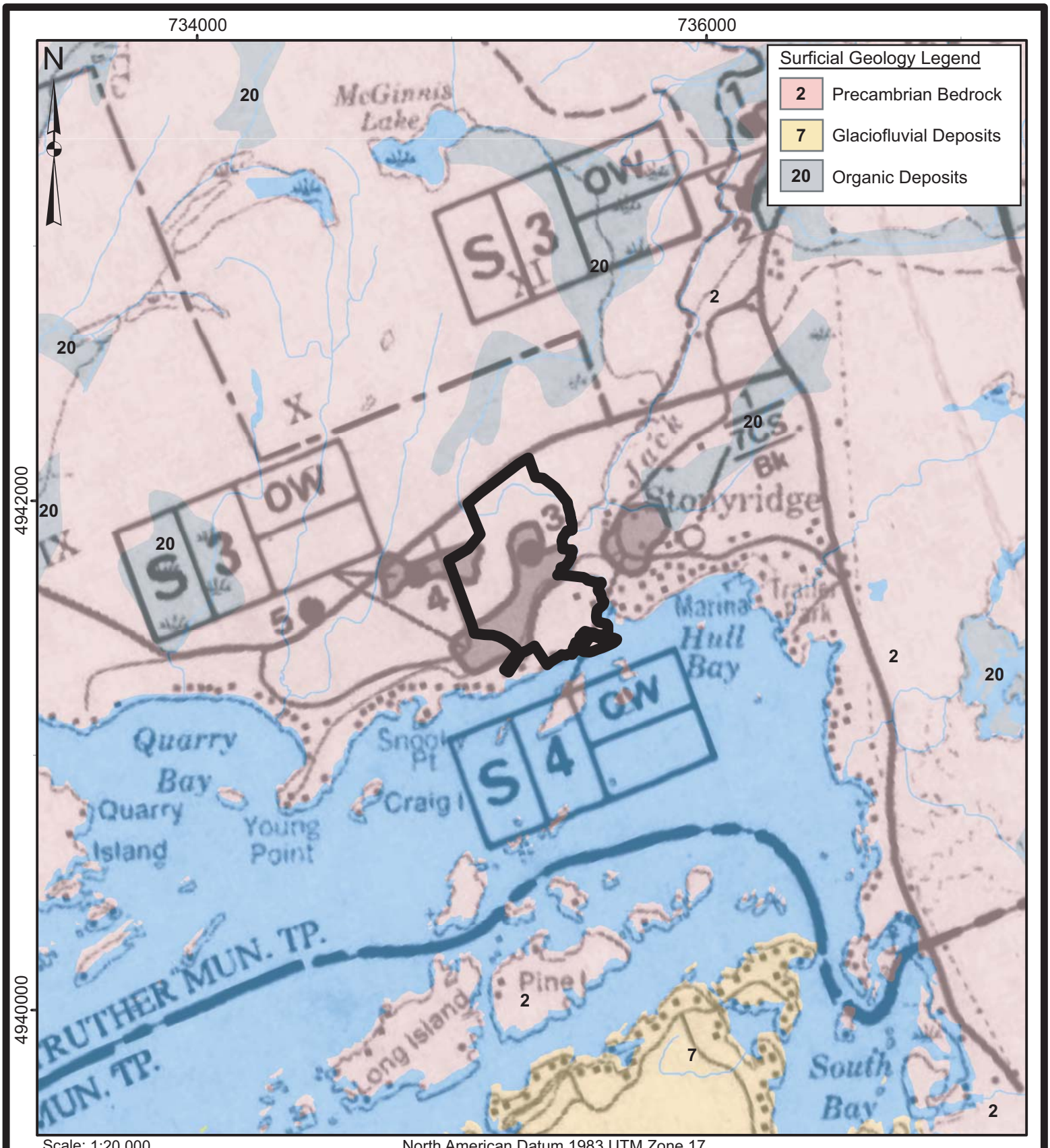
TITLE
BEDROCK GEOLOGY

ORE Oakridge Environmental Ltd.
Environmental and Hydrogeological Services

PROJECT # 12-1629

DATE May 2017

FIGURE NO. **4**



Scale: 1:20,000

North American Datum 1983 UTM Zone 17

Aggregate Resource Legend

S 3 OW — Outwash deposit with less than 35% gravel content with thickness of 1.5 to 3 m

S 4 OW — Outwash deposit with less than 35% gravel content, less than 1.5 m thick

Notes: Base map provided by the Ontario Geological Survey, copyright the Queen's Printer (2010)

Hydrogeological & Site Servicing Study
Preposed Residential Development
Pilgrim's Rest Campground

Part of Lot 4, Concession XI (Burleigh), Township of North Kawartha, County of Peterborough

0 250 500 1,000 m

TITLE

SURFICIAL GEOLOGY & AGGREGATE RESOURCE MAP

ORE Oakridge Environmental Ltd.
Environmental and Hydrogeological Services

PROJECT # 12-1629

DATE May 2017

FIGURE NO. **5**

Hydrogeological & Site Servicing Study
Preposed Residential Development
Pilgrim's Rest Campground

Part of Lot 4, Concession XI (Burleigh)
Township of North Kawartha
County of Peterborough

735000 735250 735500 735750

4942250 4942000 4941750

NORTHEYS BAY RD

CHEBOUTEQUION DR

TP-21 TP-20 HA-3 TP-19 HA-2 TP-23 TP-22 TP-1 HA-1 TP-18 TP-2 TP-3 TP-4 TP-24 TP-10 TP-6 TP-9 TP-12 TP-5 TP-25 TP-11 TP-8 TP-7 TP-13 HA-4 TP-15 TP-14 TP-16 TP-17

Jack Creek Drainage Area

Tributary of Stony Lake Drainage Area

Stony Lake Drainage Area

Overburden Thickness (m)
1.4 1.2 1.0 0.8 0.6 0.4 0.2 0.0

LEGEND

- Test Pit(TP)/Hand Auger (HA) Locations
- Exposed Bedrock (Outcrop)
- Local Drainage Divide (Delineates Drainage Area)
- Seasonal Drainage
- Wetland Boundary (Field Verified by ORE)
- Poor Drainage Area

N

Scale: 1:3,000

0 50 100 200 m

Notes: Air photo provided by First Base Solutions Inc. (DRAPE, 2008)

Feature locations determined by mapping-grade differential global positioning system (dGPS, +/- 1.0 m)

Grid based on North American Datum 1983 UTM Zone 17

Overburden thickness interpreted using a simple triangulation algorithm with edge point interpretation

TITLE

TERRAIN MAP

ORE Oakridge Environmental Ltd.
Environmental and Hydrogeological Services

PROJECT #	FIGURE NO.
12-1629	6
DATE	
May 2017	

Hydrogeological & Site Servicing Study
Preposed Residential Development
Pilgrim's Rest Campground

Part of Lot 4, Concession XI (Burleigh)
Township of North Kawartha
County of Peterborough

732000 734000 736000 738000

4944000 4942000 4940000

N

McGinnis Lake
Eels Creek
Stony Lake
Hull South Bay
Pine Island South
Long Lake
Jack Creek

STONY LAKE QUARRY ISLAND
STONY LAKE ISLAND 78
STONY LAKE ISLAND 102
STONY LAKE ISLAND 85

HULLS RD
NORTHEYS BAY RD
BEDWELL DR
S BAY RD
BROCK RD
COUNTY RD 6
FR 20
FR 21
FR 22
FR 24
FR 29
FR 31
FR 32
FR 33
FR 93

TW-1

LEGEND

- Domestic/Livestock Well
- Commercial/Industrial Well
- Municipal Well
- Unknown/Abandoned Well
- North to South Projected Line of Section (refer to Figure 9)
- West to East Projected Line of Section (refer to Figure 10)

Driller's Test Rate:

0 GPM → >20 GPM

Scale: 1:20,000

0 250 500 1,000 m

Notes: Base map provided by the Ministry of Natural Resources, copyright the Queen's Printer (2013)

Well locations provided by the Ministry of Environment, copyright the Queen's Printer (2013)

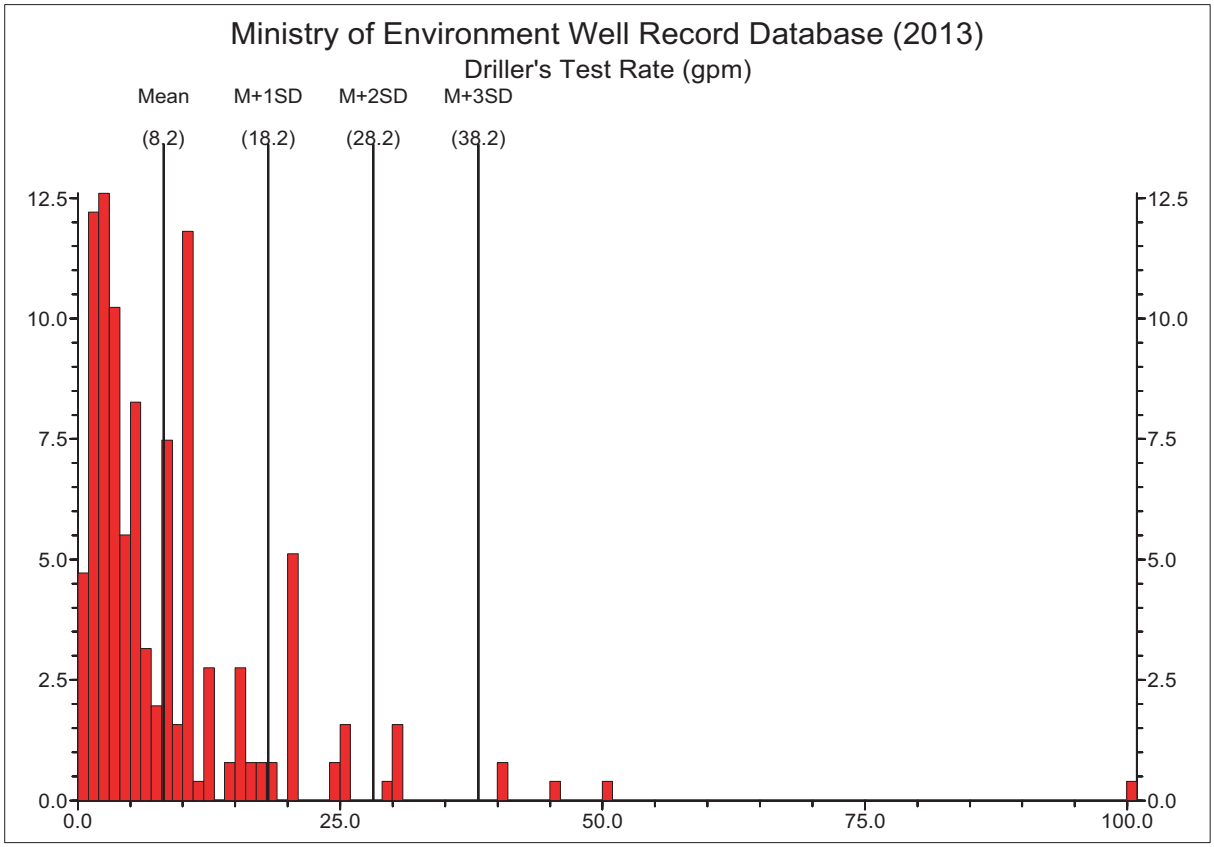
North American Datum 1983 UTM Zone 17

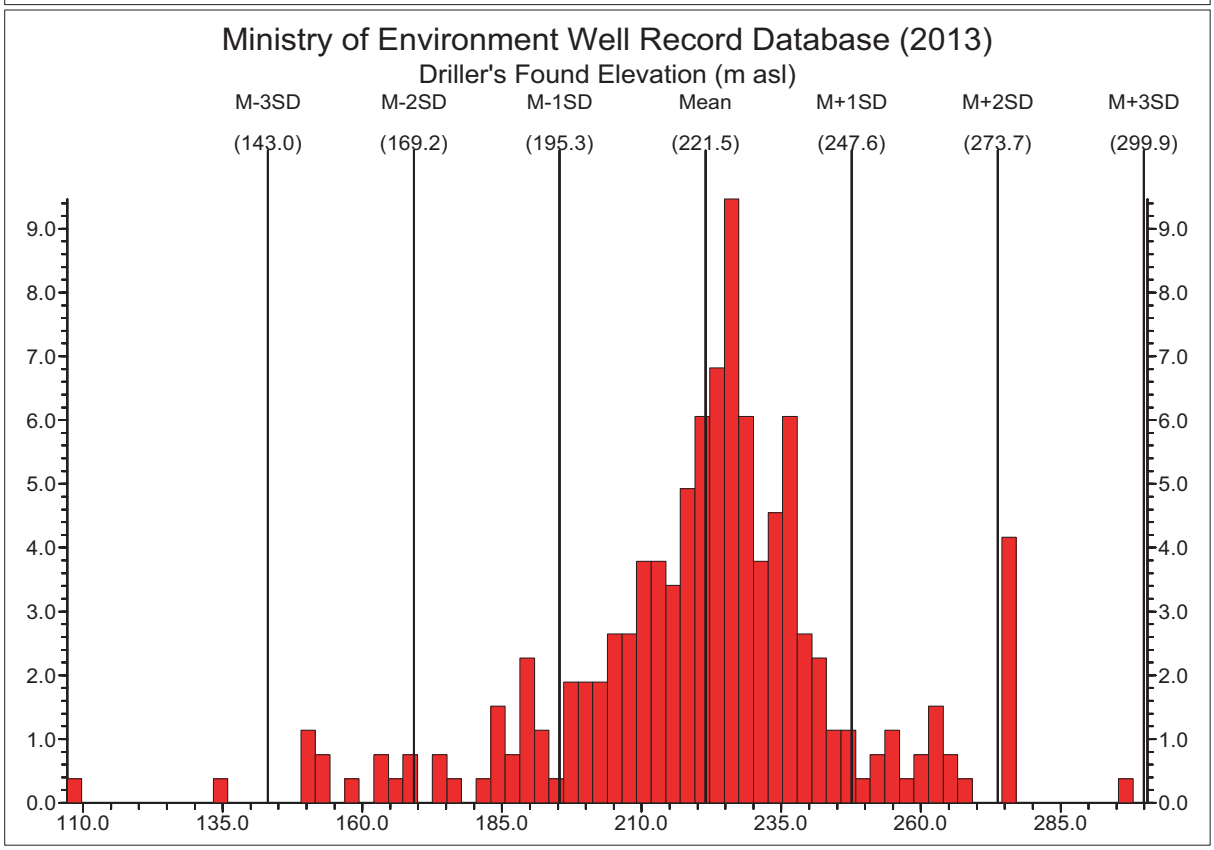
TITLE

MOECC WELL LOCATION PLAN

ORE Oakridge Environmental Ltd.
Environmental and Hydrogeological Services

PROJECT #	FIGURE NO.
12-1629	7
DATE	
May 2017	





Hydrogeological & Site Servicing Study
Preposed Residential Development
Pilgrim's Rest Campground

Part of Lot 4, Concession XI (Burleigh),
Township of North Kawartha, County of Peterborough

TITLE

WELL STATISTICS

ORE Oakridge Environmental Ltd.
Environmental and Hydrogeological Services

PROJECT # 12-1629

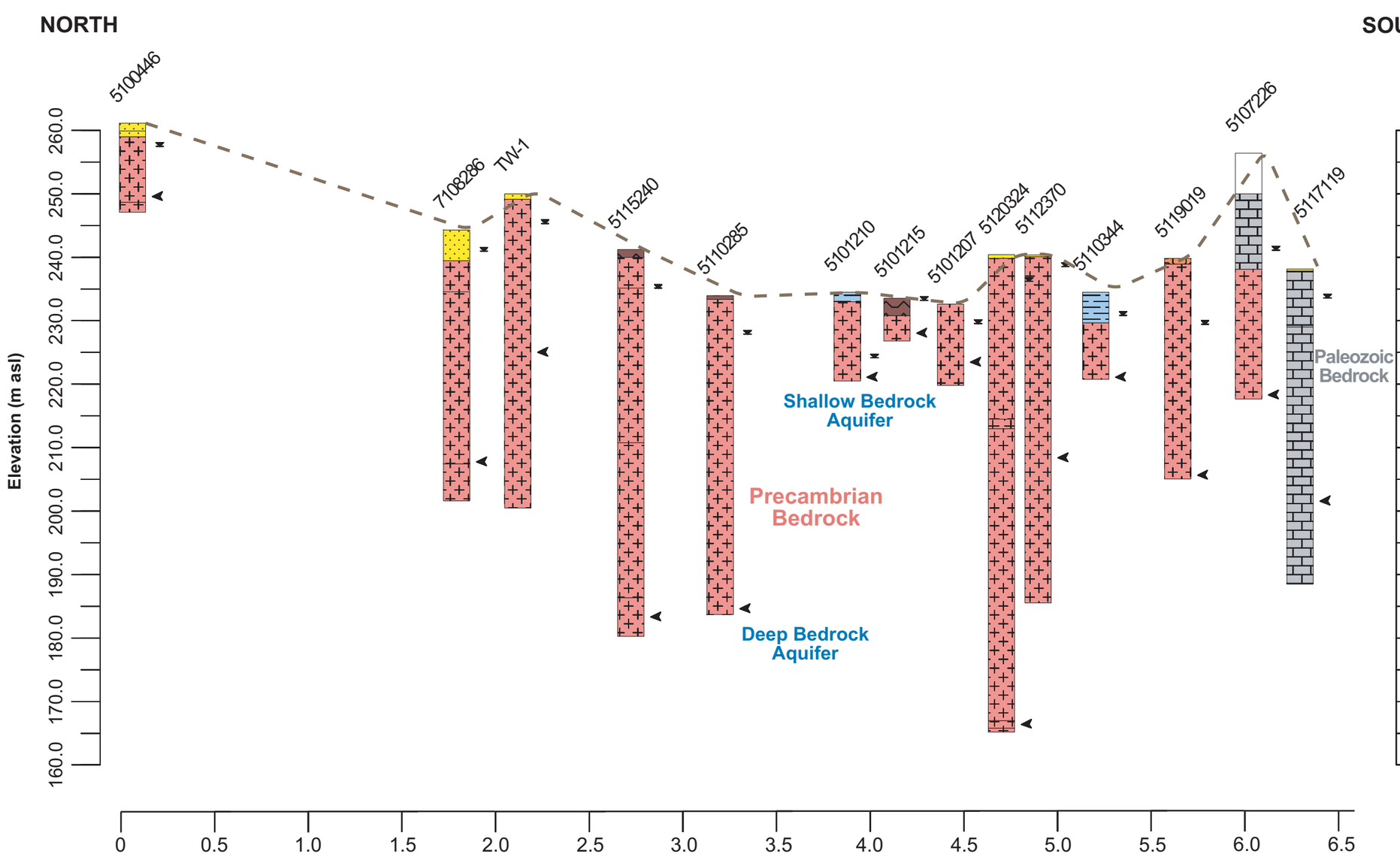
DATE May 2017

FIGURE NO. **8**

Notes: Well statistics based on Ministry of Environment Well Record Data, copyright the Queen's Printer (2013)

Hydrogeological & Site Servicing Study
Preposed Residential Development
Pilgrim's Rest Campground

Part of Lot 4, Concession XI (Burleigh)
Township of North Kawartha
County of Peterborough



LEGEND

- Topsoil
- Gravel
- Sand
- Silt (Till)
- Limestone
- Granite
- Previously Dug/Drilled
- Static Water Level
- Water Found Depth

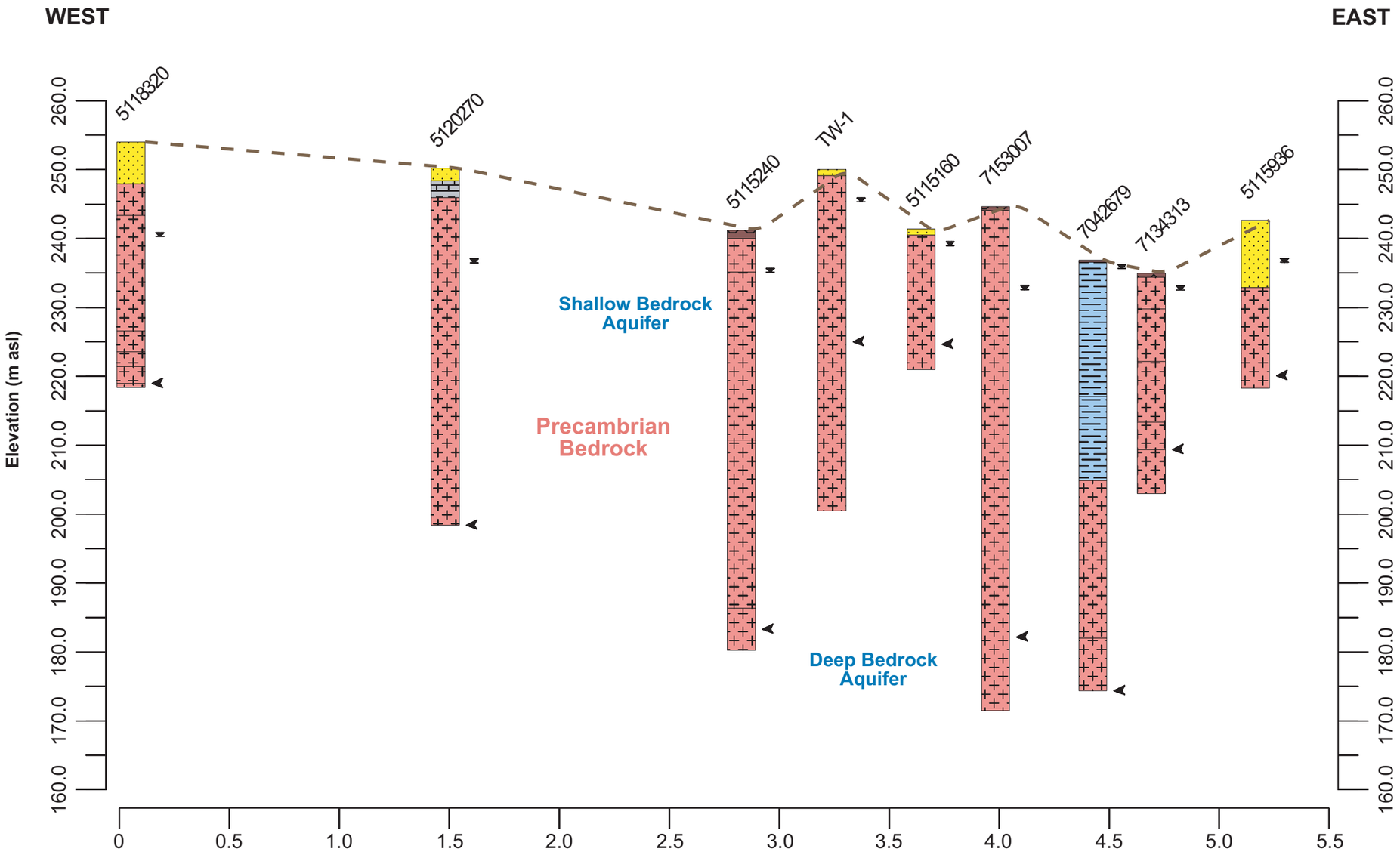
Notes: Refer to Figure 7 for Projected Line of Section

TITLE

NORTH TO SOUTH CROSS SECTION

ORE Oakridge Environmental Ltd.
Environmental and Hydrogeological Services

PROJECT #	FIGURE NO.
12-1629	9
DATE	
May 2017	



Hydrogeological & Site Servicing Study
Preposed Residential Development
Pilgrim's Rest Campground

Part of Lot 4, Concession XI (Burleigh)
Township of North Kawartha
County of Peterborough

LEGEND

- Topsoil
- Gravel
- Sand
- Silt (Till)
- Limestone
- Granite
- Previously Dug/Drilled
- Static Water Level
- Water Found Depth

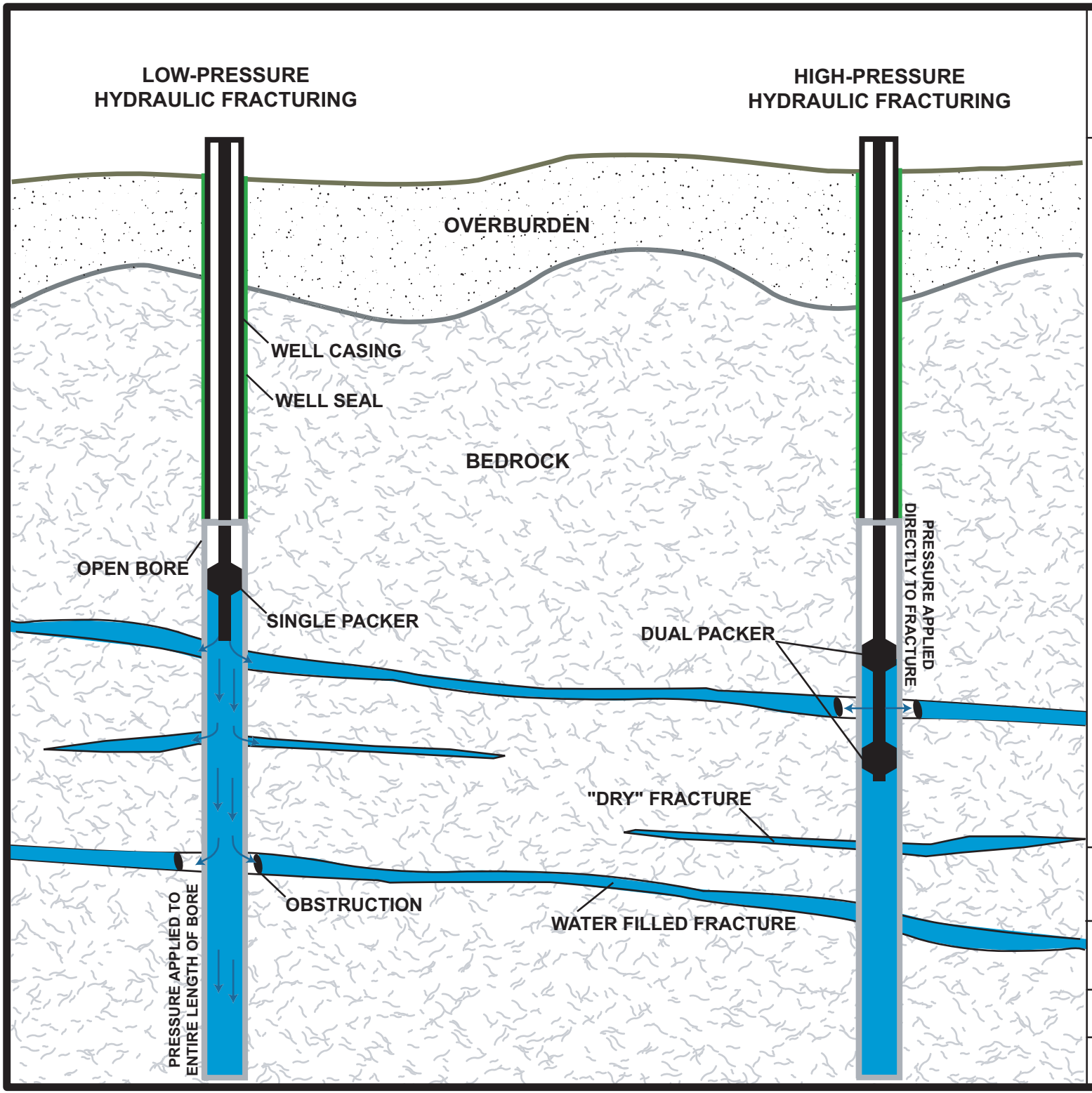
Notes: Refer to Figure 7 for Projected Line of Section

TITLE

WEST TO EAST CROSS SECTION

ORE Oakridge Environmental Ltd.
Environmental and Hydrogeological Services

PROJECT #	FIGURE NO.
12-1629	**10**
DATE	
May 2017	



Hydrogeological & Site Servicing Study
Preposed Residential Development
Pilgrim's Rest Campground
Part of Lot 4, Concession XI (Burleigh),
Township of North Kawartha,
County of Peterborough

TITLE
HYDRAULIC FRACTURING SCHEMATIC DIAGRAM

ORE
Oakridge Environmental Ltd.
Environmental and Hydrogeological Services

PROJECT #	FIGURE NO.
12-1629	11
DATE	
May 2017	

N

Northeys Bay Road

Cheboutequion Drive

Fire Route 24

HYDRO EASEMENT

TW-1
TW-2
TW-3
TW-4
TW-5
TW-6
TW-7

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30

- Conceptual Residence
- Conceptual Class 4 Conventional Sewage System with 15 m Mantle (based on 2,000 L/day, T = 10 min/cm)
- Conceptual Well Location (with 15 m OBC setback)
- Existing Well Location (with 15 m OBC setback)
- Existing Picnic Shelter
- Environmental Buffer
- Flood Limit
- Wetland (ORE, 2015)
- MNRF Evaluated Wetland (Provincially Signficant)
- Watercourse (with flow direction indicated)
- Approximate Drainage Divide

Notes: Air photo provided by First Base Solutions Inc. (DRAPE, 2008)

Base plan modified after EcoVue Consulting Services Inc. (April 3, 2017)

Feature locations determined by mapping-grade differential Global Positioning System (dGPS, +/- 1.0 m)

Last Updated: May 24, 2017

Hydrogeological and Site Servicing Study
Proposed Residential Development
Pilgrim's Rest Campground

Part Lots 3 & 4, Concession 11 (Burleigh)

Township of North Kawartha, County of Peterborough

Scale: 0 25 50 100

Metres (m)

1:3,000

Title: **Conceptual Servicing Plan**

Drawn By: ORE Oakridge Environmental Ltd. Environmental and Hydrogeological Services

Project No.: 12-1629

Date: May 2017

Figure No.: **12**

APPENDIX A

Test Pit Logs and
Grain Size Analysis

Oakridge Environmental Ltd.
Environmental and Hydrogeological Services
Phone : 705-745-1181
Fax : 705-745-4163
P.O. Box 431,
Peterborough,
ON., K9J 6Z3

TESTPIT NO.: **HA-1**

TOTAL DEPTH: **1.25**

UTM Coordinates : 735158, 4942010

Elevation (masl) : 254

PROJECT INFORMATION

PROJECT NO: **12-1629**

SITE LOCATION: **Pilgrim's Rest Campground**

LOGGED BY: **DM**

DATES ASSESSED: **May 6, 2013**

BACKHOE INFORMATION

EXCAVATION CO.:

BACKHOE TYPE: **Hand Auger**

STANDPIPE/PIEZOMETERS :**Not installed**

SAMPLING METHODS: **composite grab**

▽ Seepage ▼ Water Level △ Moist

FIELD TEST PIT LOG

Depth	Water	Piezometer Installation	Special Notes	Sample #	Vapour ppm	Depth	Soil Symbol	Soil Description
0.00								TOPSOIL: Black silty topsoil with rootlets
0.05 m						0.05 m		
0.10	▽		perched water at 0.15 m					SM: Oxidized silty sand.
0.20								Perched water table at 0.15 m
0.30								End @ 1.25 m
0.40								
0.50								
0.60								
0.70								
0.80								
0.90								
1.00								
1.10								
1.20								

NOTES: 20 °C, Cloudy

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Fax : 705-745-4163

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Peterborough,
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TESTPIT NO.: **HA-2**

TOTAL DEPTH: **0.94**

UTM Coordinates : 735104, 4941964

Elevation (masl) : 248.5

PROJECT INFORMATION

PROJECT NO: **12-1629**

SITE LOCATION: **Pilgrim's Rest Campground**

LOGGED BY: **DM**

DATES ASSESSED: **May 6, 2013**

BACKHOE INFORMATION

EXCAVATION CO.:

BACKHOE TYPE: **Hand Auger**

STANDPIPE/PIEZOMETERS :**Not installed**

SAMPLING METHODS: **composite grab**

▽ Seepage ▼ Water Level △ Moist

FIELD TEST PIT LOG

Depth	Water	Piezometer Installation	Special Notes	Sample #	Vapour ppm	Depth	Soil Symbol	Soil Description
0.00						0.05 m		TOPSOIL: Black silty topsoil with rootlets
0.10								SM: Dry oxidized silty sand.
0.20								End @ 0.94 m
0.30								
0.40								
0.50								
0.60								
0.70								
0.80								
0.90								

NOTES: 20 °C, Cloudy

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TESTPIT NO.: **HA-3**

TOTAL DEPTH: **0.74**

UTM Coordinates : 735183, 4942110

Elevation (masl) : 246.5

PROJECT INFORMATION

PROJECT NO: **12-1629**

SITE LOCATION: **Pilgrim's Rest Campground**

LOGGED BY: **MC**

DATES ASSESSED: **June 13, 2013**

BACKHOE INFORMATION

EXCAVATION CO.:

BACKHOE TYPE: **Hand Auger**

STANDPIPE/PIEZOMETERS :**Not installed**

SAMPLING METHODS: **composite grab**

▽ Seepage ▼ Water Level △ Moist

FIELD TEST PIT LOG

Depth	Water	Piezometer Installation	Special Notes	Sample #	Vapour ppm	Depth	Soil Symbol	Soil Description
0.00								TOPSOIL: Dark brown silty topsoil with rootlets
0.10								
0.20						0.2 m		SM: Light brown silty sand. No plasticity, holds form. No seepage Refused on presumed bedrock @ 0.74 m End @ 0.74 m
0.30								
0.40								
0.50				composite sample taken				
0.60								
0.70			refused on presumed bedrock @ 0.74 m					

NOTES: 20 °C, Cloudy

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P.O. Box 431,
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ON., K9J 6Z3

TESTPIT NO.: **HA-4**

TOTAL DEPTH: **0.75**

UTM Coordinates : 735287, 4941712

Elevation (masl) : 239.9

PROJECT INFORMATION

PROJECT NO: **12-1629**

SITE LOCATION: **Pilgrim's Rest Campground**

LOGGED BY: **MC**

DATES ASSESSED: **June 13, 2013**

BACKHOE INFORMATION

EXCAVATION CO.:

BACKHOE TYPE: **Hand Auger**

STANDPIPE/PIEZOMETERS :**Not installed**

SAMPLING METHODS: **composite grab**

▽ Seepage ▼ Water Level △ Moist

FIELD TEST PIT LOG

Depth	Water	Piezometer Installation	Special Notes	Sample #	Vapour ppm	Depth	Soil Symbol	Soil Description
0.00								TOPSOIL: Black silty topsoil with rootlets
0.10								
0.20								
0.25 m								SM: Saturated light brown sitly sand.
0.30								Saturated beyond 0.40 m
0.40	▽		saturated beyond 0.4 m					Refused on presumed bedrock @ 0.75
0.50				composite sample taken				End @ 0.75 m
0.60								
0.70			refused on presumed bedrock @ 0.75 m					

NOTES: 20 °C, Cloudy

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TESTPIT NO.: **HA-5**

TOTAL DEPTH: **0.18**

UTM Coordinates : 735432, 4942358

Elevation (masl) : 252.8

PROJECT INFORMATION

PROJECT NO: **12-1629**

SITE LOCATION: **Pilgrim's Rest Campground**

LOGGED BY: **MC**

DATES ASSESSED: **June 13, 2013**

BACKHOE INFORMATION

EXCAVATION CO.:

BACKHOE TYPE: **Hand Auger**

STANDPIPE/PIEZOMETERS :**Not installed**

SAMPLING METHODS: **composite grab**

▽ Seepage ▼ Water Level △ Moist

FIELD TEST PIT LOG

Depth	Water	Piezometer Installation	Special Notes	Sample #	Vapour ppm	Depth	Soil Symbol	Soil Description
0.00								TOPSOIL: Black silty topsoil with rootlets
0.10			rootlets end at 0.12 m			0.12m		ML: Dark brown clayey silt trace sand. Refused on presumed bedrock @ 0.18 m. End @ 0.18 m
			refused on presumed bedrock @ 0.18 m	composite sample taken				

NOTES: 20 °C, Cloudy

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TESTPIT NO.: **HA-6**

TOTAL DEPTH: **0.84**

UTM Coordinates : 735811, 4942380

Elevation (masl) : 248.8

PROJECT INFORMATION

PROJECT NO: **12-1629**

SITE LOCATION: **Pilgrim's Rest Campground**

LOGGED BY: **MC**

DATES ASSESSED: **June 13, 2013**

BACKHOE INFORMATION

EXCAVATION CO.:

BACKHOE TYPE: **Hand Auger**

STANDPIPE/PIEZOMETERS :**Not installed**

SAMPLING METHODS: **composite grab**

▽ Seepage ▼ Water Level △ Moist

FIELD TEST PIT LOG

Depth	Water	Piezometer Installation	Special Notes	Sample #	Vapour ppm	Depth	Soil Symbol	Soil Description
0.00								TOPSOIL: Black silty topsoil with rootlets
0.10								
0.20						0.22 m		SM: Oxidize silty sand. No gravel Grey beyond 0.78 m Refused on presumed bedrock @ 0.84 m End @ 0.84 m
0.30								
0.40								
0.50				composite sample taken				
0.60								
0.70			grey beyond 0.78 m					
0.80			refused on presumed bedrock @ 0.84 m					

NOTES: 20 °C, Cloudy

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P.O. Box 431,
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ON., K9J 6Z3

TESTPIT NO.: **TP-1**

TOTAL DEPTH: **1.39 m**

UTM Coordinates : 735045, 4941963

Elevation (masl) : 248.5

PROJECT INFORMATION

PROJECT NO: **12-1629**

SITE LOCATION: **Pilgrim's Rest Campground**

LOGGED BY: **MC**

DATES ASSESSED: **June 12, 2013**

BACKHOE INFORMATION

EXCAVATION CO.: **Supplied by Proponent**

BACKHOE TYPE: **Hitachi**

STANDPIPE/PIEZOMETERS : **Not installed**

SAMPLING METHODS: **composite grab**

▽ Seepage ▼ Water Level △ Moist

FIELD TEST PIT LOG

Depth	Water	Piezometer Installation	Special Notes	Sample #	Vapour ppm	Depth	Soil Symbol	Soil Description
0.00								TOPSOIL: Black sand topsoil with rootlets.
0.10						0.13 m		SM: Reddish brown oxidized silty sand. Dry with no gravel.
0.20								
0.30								
0.40								
0.50								
0.60			rootlets end at 0.56 m					
0.70				composite sample taken				
0.80								
0.90								
1.00								
1.10								
1.20	▽		minor seepage at 1.18 m			1.18 m		SM: Grey sandy silt with trace clay. Low plasticity and no gravel. Some weathered granite. Minor seepage at 1.18 m
1.30			refused on presumed bedrock @ 1.39 m					Refused on presumed bedrock @ 1.39 m End @ 1.39m

NOTES: 20 °C, Sunny

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TESTPIT NO.: **TP-2**

TOTAL DEPTH: **1.06 m**

UTM Coordinates : 735125, 4941912

Elevation (masl) : 251.1

PROJECT INFORMATION

PROJECT NO: **12-1629**

SITE LOCATION: **Pilgrim's Rest Campground**

LOGGED BY: **MC**

DATES ASSESSED: **June 12, 2013**

BACKHOE INFORMATION

EXCAVATION CO.: **Supplied by Propenent**

BACKHOE TYPE: **Hitachi**

STANDPIPE/PIEZOMETERS : **Not installed**

SAMPLING METHODS: **composite grab**

▽ Seepage ▼ Water Level △ Moist

FIELD TEST PIT LOG

Depth	Water	Piezometer Installation	Special Notes	Sample #	Vapour ppm	Depth	Soil Symbol	Soil Description
0.00								TOPSOIL: Black sandy topsoil with rootlets.
0.10						0.1 m		SW: Light brown well with trace silt. Dry with no gravel.
0.20								
0.30								
0.40								
0.50								
0.60			rootlets end at 0.58 m					
0.70				composite sample taken				
0.80						0.8 m		SM: Grey silty oxidized sand . Low plasticity and no gravel. No seepage End @ 1.06 m
0.90								
1.00								

NOTES: 20 °C, Sunny

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TESTPIT NO.: **TP-3**

TOTAL DEPTH: **0.84 m**

UTM Coordinates : 735200, 4941878

Elevation (masl) : 247.8

PROJECT INFORMATION

PROJECT NO: **12-1629**

SITE LOCATION: **Pilgrim's Rest Campground**

LOGGED BY: **MC**

DATES ASSESSED: **June 12, 2013**

BACKHOE INFORMATION

EXCAVATION CO.: **Supplied by Propenent**

BACKHOE TYPE: **Hitachi**

STANDPIPE/PIEZOMETERS : **Not installed**

SAMPLING METHODS: **composite grab**

▽ Seepage ▼ Water Level △ Moist

FIELD TEST PIT LOG

Depth	Water	Piezometer Installation	Special Notes	Sample #	Vapour ppm	Depth	Soil Symbol	Soil Description
0.00								TOPSOIL: Black sandy topsoil with rootlets
0.10								
0.18 m								SW: Light brown sand with trace silt. Dry and no gravel, no plasticity.
0.20								No seepage
0.30								Refused on presumed bedrock @ 0.84 m
0.40			rootlets end at 0.45 m	composite sample taken				End @ 0.84 m
0.50								
0.60								
0.70								
0.80								

NOTES: 20 °C, Sunny

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TESTPIT NO.: **TP-4**

TOTAL DEPTH: **1.04 m**

UTM Coordinates : 735256, 491857

Elevation (masl) : 243.1

PROJECT INFORMATION

PROJECT NO: **12-1629**

SITE LOCATION: **Pilgrim's Rest Campground**

LOGGED BY: **MC**

DATES ASSESSED: **June 12, 2013**

BACKHOE INFORMATION

EXCAVATION CO.: **Supplied by Propenent**

BACKHOE TYPE: **Hitachi**

STANDPIPE/PIEZOMETERS : **Not installed**

SAMPLING METHODS: **composite grab**

▽ Seepage ▼ Water Level △ Moist

FIELD TEST PIT LOG

Depth	Water	Piezometer Installation	Special Notes	Sample #	Vapour ppm	Depth	Soil Symbol	Soil Description
0.00								TOPSOIL: Black sandy topsoil with rootlets.
0.10						0.17 m		SW: Light brown sand with trace silt. Dry and no gravel, no plasticity.
0.20								
0.30								
0.40								
0.50				composite sample taken		0.46 m		SM: Light brown slightly moist well graded silty sand. No plasticity and holds form. Oxidized beyond 0.73 m End @ 1.04 m
0.60								
0.70			Oxidization beyond 0.73 m					
0.80			rootlets end at 0.75 m					
0.90								
1.00								

NOTES: 20 °C, Sunny

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TESTPIT NO.: **TP-5**

TOTAL DEPTH: **0.54 m**

UTM Coordinates : 735237, 4941809

Elevation (masl) : 240.1

PROJECT INFORMATION

PROJECT NO: **12-1629**

SITE LOCATION: **Pilgrim's Rest Campground**

LOGGED BY: **MC**

DATES ASSESSED: **June 12, 2013**

BACKHOE INFORMATION

EXCAVATION CO.: **Supplied by Propenent**

BACKHOE TYPE: **Hitachi**

STANDPIPE/PIEZOMETERS : **Not installed**

SAMPLING METHODS: **composite grab**

▽ Seepage ▼ Water Level △ Moist

FIELD TEST PIT LOG

Depth	Water	Piezometer Installation	Special Notes	Sample #	Vapour ppm	Depth	Soil Symbol	Soil Description
0.00								TOPSOIL: Black sandy topsoil with rootlets
0.10						0.16 m		SW: Oxidized slightly moist silty sand trace sub-rounded gravel. No plasticity and holds form.
0.20								Refused on presumed bedrock @ 0.54 m
0.30			rootlets end at 0.36 m	Composite sample taken				End @ 0.54 m
0.40								
0.50			refused on presumed bedrock @ 0.54 m					

NOTES: 20 °C, Sunny

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TESTPIT NO.: **TP-6**

TOTAL DEPTH: **0.54 m**

UTM Coordinates : 735347, 4941832

Elevation (masl) : 241.9

PROJECT INFORMATION

PROJECT NO: **12-1629**

SITE LOCATION: **Pilgrim's Rest Campground**

LOGGED BY: **MC**

DATES ASSESSED: **June 12, 2013**

BACKHOE INFORMATION

EXCAVATION CO.: **Supplied by Propenent**

BACKHOE TYPE: **Hitachi**

STANDPIPE/PIEZOMETERS : **Not installed**

SAMPLING METHODS: **composite grab**

▽ Seepage ▼ Water Level △ Moist

FIELD TEST PIT LOG

Depth	Water	Piezometer Installation	Special Notes	Sample #	Vapour ppm	Depth	Soil Symbol	Soil Description
0.00								TOPSOIL: Black sandy topsoil with rootlets
0.10			rootlets end at 0.12 m			0.12 m		SM: Oxidized slightly moist silty sand trace sub-rounded gravel. No plasticity and holds form. No seepage. Refused on presumed bedrock @ 0.54 m End @ 0.54 m
0.20			patio stone at 0.23 m					
0.30				composite sample taken				
0.40								
0.50			refused on presumed bedrock @ 0.54 m					

NOTES: 20 °C, Sunny

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P.O. Box 431,
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TESTPIT NO.: **TP-7**

TOTAL DEPTH: **0.32**

UTM Coordinates : 735320, 491776

Elevation (masl) : 241.3

PROJECT INFORMATION

PROJECT NO: **12-1629**

SITE LOCATION: **Pilgrim's Rest Campground**

LOGGED BY: **MC**

DATES ASSESSED: **June 12, 2013**

BACKHOE INFORMATION

EXCAVATION CO.: **Supplied by Propenent**

BACKHOE TYPE: **Hitachi**

STANDPIPE/PIEZOMETERS : **Not installed**

SAMPLING METHODS: **composite grab**

▽ Seepage ▼ Water Level △ Moist

FIELD TEST PIT LOG

Depth	Water	Piezometer Installation	Special Notes	Sample #	Vapour ppm	Depth	Soil Symbol	Soil Description
0.00								TOPSOIL: Black sandy topsoil with rootlets
0.10						0.13 m		SM: Oxidized slightly moist silty sand trace sub-rounded gravel. No plasticity and holds form.
0.20			rootlets end at 0.32 m	composite sample taken				No seepage.
0.30			refused on presumed bedrock @ 0.32 m					Refused on presumed bedrock @ 0.32 m
								End @ 0.32 m

NOTES: 20 °C, Sunny

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TESTPIT NO.: **TP-8**

TOTAL DEPTH: **0.53**

UTM Coordinates : 735362, 4941780

Elevation (masl) : 241.5

PROJECT INFORMATION

PROJECT NO: **12-1629**

SITE LOCATION: **Pilgrim's Rest Campground**

LOGGED BY: **MC**

DATES ASSESSED: **June 12, 2013**

BACKHOE INFORMATION

EXCAVATION CO.: **Supplied by Propenent**

BACKHOE TYPE: **Hitachi**

STANDPIPE/PIEZOMETERS : **Not installed**

SAMPLING METHODS: **composite grab**

▽ Seepage ▼ Water Level △ Moist

FIELD TEST PIT LOG

Depth	Water	Piezometer Installation	Special Notes	Sample #	Vapour ppm	Depth	Soil Symbol	Soil Description
0.00								TOPSOIL: Black sandy topsoil with rootlets
0.10	△		moist beyond 0.16 m	composite sample taken		0.16 m		SM: Oxidized moist silty sand trace sub-rounded gravel and clay. No plasticity and holds form. No seepage. Refused on presumed bedrock @ 0.53 m End @ 0.53 m
0.20								
0.30								
0.40			rootlets end at 0.53 m					
0.50			refused on presumed bedrock @ 0.53 m					

NOTES: 20 °C, Sunny

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TESTPIT NO.: **TP-9**

TOTAL DEPTH: **0.77**

UTM Coordinates : 735433, 4941831

Elevation (masl) : 244.0

PROJECT INFORMATION

PROJECT NO: **12-1629**

SITE LOCATION: **Pilgrim's Rest Campground**

LOGGED BY: **MC**

DATES ASSESSED: **June 12, 2013**

BACKHOE INFORMATION

EXCAVATION CO.: **Supplied by Propenent**

BACKHOE TYPE: **Hitachi**

STANDPIPE/PIEZOMETERS : **Not installed**

SAMPLING METHODS: **composite grab**

▽ Seepage ▼ Water Level △ Moist

FIELD TEST PIT LOG

Depth	Water	Piezometer Installation	Special Notes	Sample #	Vapour ppm	Depth	Soil Symbol	Soil Description
0.00								TOPSOIL: Black sandy topsoil with rootlets. Bedrock ledge at 0.33 m.
0.10								
0.20								
0.30			rootlets end at 0.32 m bedrock ledge at 0.33 m			0.35 m		SM: Light brown moist silty sand with some clay and sub-rounded gravel. Gravel 5 cm nominal size. Seepage at 0.5 m Oxidized at 0.77 m Refused on presumed bedrock @ 0.77 m End @ 0.77 m
0.40				composite sample taken				
0.50	▽		seepage at 0.5 m					
0.60								
0.70			refused on presumed bedrock @ 0.77 m					

NOTES: 20 °C, Sunny

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TESTPIT NO.: **TP-10**

TOTAL DEPTH: **0.28**

UTM Coordinates : 735485, 4941901

Elevation (masl) : 243.1

PROJECT INFORMATION

PROJECT NO: **12-1629**

SITE LOCATION: **Pilgrim's Rest Campground**

LOGGED BY: **MC**

DATES ASSESSED: **June 12, 2013**

BACKHOE INFORMATION

EXCAVATION CO.: **Supplied by Propenent**

BACKHOE TYPE: **Hitachi**

STANDPIPE/PIEZOMETERS : **Not installed**

SAMPLING METHODS: **composite grab**

▽ Seepage ▼ Water Level △ Moist

FIELD TEST PIT LOG

Depth	Water	Piezometer Installation	Special Notes	Sample #	Vapour ppm	Depth	Soil Symbol	Soil Description
0.00								TOPSOIL: Black sandy topsoil with rootlets.
0.10								
0.20	△		moist beyond 0.23 m rootlets end at 0.28 m refused on presumed bedrock @ 0.28 m	Composite sample taken		0.23 m		SM: Oxidized light brown moist silty sand with some clay and sub-rounded gravel. No Seepage. Refused on presumed bedrock @ 0.28 m End @ 0.28 m

NOTES: 20 °C, Sunny

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P.O. Box 431,
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TESTPIT NO.: **TP-11**

TOTAL DEPTH: **0.52**

UTM Coordinates : 735493, 4941796

Elevation (masl) : 239.1

PROJECT INFORMATION

PROJECT NO: **12-1629**

SITE LOCATION: **Pilgrim's Rest Campground**

LOGGED BY: **MC**

DATES ASSESSED: **June 12, 2013**

BACKHOE INFORMATION

EXCAVATION CO.: **Supplied by Propenent**

BACKHOE TYPE: **Hitachi**

STANDPIPE/PIEZOMETERS : **Not installed**

SAMPLING METHODS: **composite grab**

▽ Seepage ▼ Water Level △ Moist

FIELD TEST PIT LOG

Depth	Water	Piezometer Installation	Special Notes	Sample #	Vapour ppm	Depth	Soil Symbol	Soil Description
0.00								TOPSOIL: Black sandy topsoil with rootlets.
0.10			rootlets end at 0.13 m			0.13 m		SM (FILL): Light brown dry sand with sub-round gravel and trace silt.
0.20								
0.30				composite sample taken		0.32 m		PEAT: Black silty organic soil with twigs and bark. No seepage. Refused on presumed bedrock @ 0.52 m END @ 0.52 m
0.40								
0.50			refused on presumed bedrock @ 0.52 m					

NOTES: 20 °C, Sunny

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Fax : 705-745-4163

P.O. Box 431,
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TESTPIT NO.: **TP-12**

TOTAL DEPTH: **0.49**

UTM Coordinates : 735569, 4941822

Elevation (masl) : 239.1

PROJECT INFORMATION

PROJECT NO: **12-1629**

SITE LOCATION: **Pilgrim's Rest Campground**

LOGGED BY: **MC**

DATES ASSESSED: **June 12, 2013**

BACKHOE INFORMATION

EXCAVATION CO.: **Supplied by Propenent**

BACKHOE TYPE: **Hitachi**

STANDPIPE/PIEZOMETERS : **Not installed**

SAMPLING METHODS: **composite grab**

▽ Seepage ▼ Water Level △ Moist

FIELD TEST PIT LOG

Depth	Water	Piezometer Installation	Special Notes	Sample #	Vapour ppm	Depth	Soil Symbol	Soil Description
0.00								TOPSOIL: Black sandy topsoil with rootlets.
0.10								
0.18 m								SW: Oxidized dry sand with trace silt. Not plastic, holds form.
0.20								Refused on presumed bedrock @ 0.49 m
0.30				composite sample taken				End @ 0.49 m
0.40			rootlets end at 0.36 m					
			refused on presumed bedrock @ 0.49 m					

NOTES: 20 °C, Sunny

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Fax : 705-745-4163

P.O. Box 431,
Peterborough,
ON., K9J 6Z3

TESTPIT NO.: **TP-13**

TOTAL DEPTH: **0.99**

UTM Coordinates : 735579, 4941731

Elevation (masl) : 236.5

PROJECT INFORMATION

PROJECT NO: **12-1629**

SITE LOCATION: **Pilgrim's Rest Campground**

LOGGED BY: **MC**

DATES ASSESSED: **June 12, 2013**

BACKHOE INFORMATION

EXCAVATION CO.: **Supplied by Propenent**

BACKHOE TYPE: **Hitachi**

STANDPIPE/PIEZOMETERS : **Not installed**

SAMPLING METHODS: **composite grab**

▽ Seepage ▼ Water Level △ Moist

FIELD TEST PIT LOG

Depth	Water	Piezometer Installation	Special Notes	Sample #	Vapour ppm	Depth	Soil Symbol	Soil Description
0.00								TOPSOIL: Black sandy topsoil with rootlets.
0.10						0.13 m		SW (FILL): Oxidized dry sand with trace silt. Not plastic, holds form.
0.20								
0.30								
0.40						0.42 m		PEAT: Black spongy fibrous organics (i.e. sticks, blocks of wood, roots) with some sub- rounded cobbles . Decompositing odour.
0.50				composite sample taken after 0.5 m				Moist at 0.77 m
0.60								Seepage at 0.95 m
0.70								End @ 0.99 m
0.80	△		moist beyond 0.77 m					
0.90	▽		seepage at 0.95 m					

NOTES: 20 °C, Sunny

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TESTPIT NO.: **TP-14**

TOTAL DEPTH: **1.22**

UTM Coordinates : 735502,4941701

Elevation (masl) : 237.1

PROJECT INFORMATION

PROJECT NO: **12-1629**

SITE LOCATION: **Pilgrim's Rest Campground**

LOGGED BY: **MC**

DATES ASSESSED: **June 12, 2013**

BACKHOE INFORMATION

EXCAVATION CO.: **Supplied by Propenent**

BACKHOE TYPE: **Hitachi**

STANDPIPE/PIEZOMETERS : **Not installed**

SAMPLING METHODS: **composite grab**

▽ Seepage ▼ Water Level △ Moist

FIELD TEST PIT LOG

Depth	Water	Piezometer Installation	Special Notes	Sample #	Vapour ppm	Depth	Soil Symbol	Soil Description
0.00								TOPSOIL: Black sandy topsoil with rootlets.
0.10								
0.20	△		moist beyond 0.22 m			0.22 m		SW: Light brown moist sand. Moist at 0.22 m
0.30								
0.40			rootlets end at 0.43 m					
0.50								
0.60						0.62 m		SW: Grey sand. No fines, no gravel. Seepage @ 0.76 End @ 1.22 m
0.70	▽		seepage @ 0.76 m	composite sample taken				
0.80								
0.90								
1.00								
1.10								
1.20								

NOTES: 20 °C, Sunny

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TESTPIT NO.: **TP-15**

TOTAL DEPTH: **0.84**

UTM Coordinates : 735459, 4941694

Elevation (masl) : 237.0

PROJECT INFORMATION

PROJECT NO: **12-1629**

SITE LOCATION: **Pilgrim's Rest Campground**

LOGGED BY: **MC**

DATES ASSESSED: **June 12, 2013**

BACKHOE INFORMATION

EXCAVATION CO.: **Supplied by Propenent**

BACKHOE TYPE: **Hitachi**

STANDPIPE/PIEZOMETERS : **Not installed**

SAMPLING METHODS: **composite grab**

▽ Seepage ▼ Water Level △ Moist

FIELD TEST PIT LOG

Depth	Water	Piezometer Installation	Special Notes	Sample #	Vapour ppm	Depth	Soil Symbol	Soil Description
0.00								TOPSOIL: Black sandy topsoil with rootlets.
0.10						0.16 m		SM: Light brown moist silty sand. Moist beyond 0.43 m
0.20								
0.30								
0.40	△		moist beyond 0.43 m			0.43 m		SW: Grey sand with gravel and rounded cobbles. Seepage @ 0.75 Refused on presumed boulder @ 0.84 m End @ 0.84 m
0.50			rootlets end at 0.49 m	composite sample taken				
0.60								
0.70	▽							
0.80								

NOTES: 20 °C, Sunny

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TESTPIT NO.: **TP-16**

TOTAL DEPTH: **0.88**

UTM Coordinates : 735400, 4941685

Elevation (masl) : 237.1

PROJECT INFORMATION

PROJECT NO: **12-1629**

SITE LOCATION: **Pilgrim's Rest Campground**

LOGGED BY: **MC**

DATES ASSESSED: **June 12, 2013**

BACKHOE INFORMATION

EXCAVATION CO.: **Supplied by Propenent**

BACKHOE TYPE: **Hitachi**

STANDPIPE/PIEZOMETERS : **Not installed**

SAMPLING METHODS: **composite grab**

▽ Seepage ▼ Water Level △ Moist

FIELD TEST PIT LOG

Depth	Water	Piezometer Installation	Special Notes	Sample #	Vapour ppm	Depth	Soil Symbol	Soil Description
0.00								TOPSOIL: Black sandy topsoil with rootlets.
0.10								
0.20								
						0.25 m		SM: Light brown moist silty sand.
0.30								Bedrock ledge at 0.43 m
0.40			bedrock ledge at 0.43 m					Seepage @ 0.88 m
0.50			rootlets end at 0.47 m					Refused on presumed bedrock @ 0.88 m
0.60				composite sample taken				End @ 0.88 m
0.70								
0.80	▽		seepage at 0.88 m refused on presumed bedrock @ 0.88 m					

NOTES: 20 °C, Sunny

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TESTPIT NO.: **TP-17**

TOTAL DEPTH: **1.07**

UTM Coordinates : 735345, 4941674

Elevation (masl) : 239.1

PROJECT INFORMATION

PROJECT NO: **12-1629**

SITE LOCATION: **Pilgrim's Rest Campground**

LOGGED BY: **MC**

DATES ASSESSED: **June 12, 2013**

BACKHOE INFORMATION

EXCAVATION CO.: **Supplied by Propenent**

BACKHOE TYPE: **Hitachi**

STANDPIPE/PIEZOMETERS : **Not installed**

SAMPLING METHODS: **composite grab**

▽ Seepage ▼ Water Level △ Moist

FIELD TEST PIT LOG

Depth	Water	Piezometer Installation	Special Notes	Sample #	Vapour ppm	Depth	Soil Symbol	Soil Description
0.00								TOPSOIL: Black sandy topsoil with rootlets.
0.10	□					0.13 m		SM: Light brown moist silty sand.
0.20								Oxidized from 0.13 m - 0.77 m
0.30								Seepage @ 0.77 m
0.40								End @ 0.77 m
0.50			rootlets end at 0.47 m					
0.60				composite sample taken				
0.70								
0.80	▽		seepage @ 0.77 m					
0.90								
1.00								

NOTES: 20 °C, Sunny

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TESTPIT NO.: **TP-18**

TOTAL DEPTH: **1.70**

UTM Coordinates : 735329, 4941941

Elevation (masl) : 240.8

PROJECT INFORMATION

PROJECT NO: **12-1629**

SITE LOCATION: **Pilgrim's Rest Campground**

LOGGED BY: **MC**

DATES ASSESSED: **June 12, 2013**

BACKHOE INFORMATION

EXCAVATION CO.: **Supplied by Propenent**

BACKHOE TYPE: **Hitachi**

STANDPIPE/PIEZOMETERS : **Not installed**

SAMPLING METHODS: **composite grab**

▽ Seepage ▼ Water Level △ Moist

FIELD TEST PIT LOG

Depth	Water	Piezometer Installation	Special Notes	Sample #	Vapour ppm	Depth	Soil Symbol	Soil Description
0.00								
0.10	△		moist beyond 0.10 m					SM (FILL): Brown silty sand with some gravel. Moist at 0.10 m
0.20								
0.30								
0.40								
0.50								
0.60								
0.70								
0.80								
0.90	▽		seepage at 0.89 m	Composite sample taken		0.89 m		SM: Grey clayey silty sand. Not plastic holds form. No gravel. Seepage at 0.89 m Refused on presumed bedrock @ 1.70 m End @ 1.70 m
1.00								
1.10								
1.20								
1.30								
1.40								
1.50								
1.60			refused on presumed bedrock @ 1.70 m					

NOTES: 20 °C, Sunny

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TESTPIT NO.: **TP-19**

TOTAL DEPTH: **0.98**

UTM Coordinates : 735340, 4942033

Elevation (masl) : 243.0

PROJECT INFORMATION

PROJECT NO: **12-1629**

SITE LOCATION: **Pilgrim's Rest Campground**

LOGGED BY: **MC**

DATES ASSESSED: **June 12, 2013**

BACKHOE INFORMATION

EXCAVATION CO.: **Supplied by Propenent**

BACKHOE TYPE: **Hitachi**

STANDPIPE/PIEZOMETERS : **Not installed**

SAMPLING METHODS: **composite grab**

▽ Seepage ▼ Water Level △ Moist

FIELD TEST PIT LOG

Depth	Water	Piezometer Installation	Special Notes	Sample #	Vapour ppm	Depth	Soil Symbol	Soil Description
0.00								SM: Grey clayey silty sand. Not plastic, holds form. No gravel.
0.10								Seepage at 0.98 m
0.20								Refused on presumed bedrock @ 0.98 m
0.30								End @ 0.98 m
0.40								
0.50				composite sample taken				
0.60								
0.70								
0.80								
0.90	▽		seepage at 0.98 m refused on presumed bedrock @ 0.98 m					

NOTES: 20 °C, Sunny

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TESTPIT NO.: **TP-20**

TOTAL DEPTH: **1.10**

UTM Coordinates : 735297, 4942108

Elevation (masl) : 245.0

PROJECT INFORMATION

PROJECT NO: **12-1629**

SITE LOCATION: **Pilgrim's Rest Campground**

LOGGED BY: **MC**

DATES ASSESSED: **June 13, 2013**

BACKHOE INFORMATION

EXCAVATION CO.: **Supplied by Propenent**

BACKHOE TYPE: **Hitachi**

STANDPIPE/PIEZOMETERS : **Not installed**

SAMPLING METHODS: **composite grab**

▽ Seepage ▼ Water Level △ Moist

FIELD TEST PIT LOG

Depth	Water	Piezometer Installation	Special Notes	Sample #	Vapour ppm	Depth	Soil Symbol	Soil Description
0.00								TOPSOIL: Dark brown silty topsoil with rootlets
0.10								
0.20								
0.30			rootlets end @ 0.33 m			0.33 m		SW: Light brown sand trace silt. No gravel, no plasticity, holds form.
0.40								No seepage
0.50								End @ 1.10 m
0.60				composite sample taken				
0.70								
0.80								
0.90								
1.00								

NOTES: 20 °C, Cloudy

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TESTPIT NO.: **TP-21**

TOTAL DEPTH: **1.82**

UTM Coordinates : 735329,4942175

Elevation (masl) : 245.3

PROJECT INFORMATION

PROJECT NO: **12-1629**

SITE LOCATION: **Pilgrim's Rest Campground**

LOGGED BY: **MC**

DATES ASSESSED: **June 13, 2013**

BACKHOE INFORMATION

EXCAVATION CO.: **Supplied by Propenent**

BACKHOE TYPE: **Hitachi**

STANDPIPE/PIEZOMETERS : **Not installed**

SAMPLING METHODS: **composite grab**

▽ Seepage ▼ Water Level △ Moist

FIELD TEST PIT LOG

Depth	Water	Piezometer Installation	Special Notes	Sample #	Vapour ppm	Depth	Soil Symbol	Soil Description
0.00								TOPSOIL: Dark brown silty topsoil with rootlets
0.10								
0.20						0.21 m		SM: Light brown silty sand. No plasticity, holds form.
0.30								Beyond 0.58 m oxidized with greater amounts of sub-rounded gravel and silt. nominal size 20 mm.
0.40								
0.50			rootlets end @ 0.49 m					No seepage
0.60			oxidized beyond 0.58 m					End @ 1.82 m
0.70								
0.80								
0.90								
1.00				composite sample taken				
1.10								
1.20								
1.30								
1.40								
1.50								
1.60								
1.70								
1.80								

NOTES: 20 °C, Cloudy

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TESTPIT NO.: **TP-22**

TOTAL DEPTH: **1.2**

UTM Coordinates : 735274, 4942000

Elevation (masl) : 246.2

PROJECT INFORMATION

PROJECT NO: **12-1629**

SITE LOCATION: **Pilgrim's Rest Campground**

LOGGED BY: **MC**

DATES ASSESSED: **June 13, 2013**

BACKHOE INFORMATION

EXCAVATION CO.: **Supplied by Propenent**

BACKHOE TYPE: **Hitachi**

STANDPIPE/PIEZOMETERS : **Not installed**

SAMPLING METHODS: **composite grab**

▽ Seepage ▼ Water Level △ Moist

FIELD TEST PIT LOG

Depth	Water	Piezometer Installation	Special Notes	Sample #	Vapour ppm	Depth	Soil Symbol	Soil Description
0.00								TOPSOIL: Dark brown silty topsoil with rootlets
0.10								
0.20								
0.30						0.32 m		SM: Light brown silty sand with trace angular gravel. No plasticity, holds form.
0.40								No seepage
0.50								End @ 1.2 m
0.60			rootlets end @ 0.61 m					
0.70								
0.80				composite sample taken				
0.90								
1.00								
1.10								

NOTES: 20 °C, Cloudy

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TESTPIT NO.: **TP-23**

TOTAL DEPTH: **0.23**

UTM Coordinates : 735211, 4942017

Elevation (masl) : 254.2

PROJECT INFORMATION

PROJECT NO: **12-1629**

SITE LOCATION: **Pilgrim's Rest Campground**

LOGGED BY: **MC**

DATES ASSESSED: **June 13, 2013**

BACKHOE INFORMATION

EXCAVATION CO.: **Supplied by Propenent**

BACKHOE TYPE: **Hitachi**

STANDPIPE/PIEZOMETERS : **Not installed**

SAMPLING METHODS: **composite grab**

▽ Seepage ▼ Water Level △ Moist

FIELD TEST PIT LOG

Depth	Water	Piezometer Installation	Special Notes	Sample #	Vapour ppm	Depth	Soil Symbol	Soil Description
0.00								TOPSOIL: Dark brown silty topsoil with rootlets
						0.08 m		SW: Dark brown sand with silt trace clay and subrounded gravel.
0.10				composite sample taken				No seepage
								Refused on presumed bedrock @ 0.23 m
0.20			rootlets end @ 0.23 m refused on presumed bedrock @ 0.23 m					End @ 0.23 m

NOTES: 20 °C, Cloudy

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TESTPIT NO.: **TP-24**

TOTAL DEPTH: **1.03**

UTM Coordinates : 735069, 4941861

Elevation (masl) : 251.2

PROJECT INFORMATION

PROJECT NO: **12-1629**

SITE LOCATION: **Pilgrim's Rest Campground**

LOGGED BY: **MC**

DATES ASSESSED: **June 13, 2013**

BACKHOE INFORMATION

EXCAVATION CO.: **Supplied by Propenent**

BACKHOE TYPE: **Hitachi**

STANDPIPE/PIEZOMETERS : **Not installed**

SAMPLING METHODS: **composite grab**

▽ Seepage ▼ Water Level △ Moist

FIELD TEST PIT LOG

Depth	Water	Piezometer Installation	Special Notes	Sample #	Vapour ppm	Depth	Soil Symbol	Soil Description
0.00								TOPSOIL: Dark brown silty topsoil with rootlets
0.10								
0.20			oxidized from 0.24 m to 0.73 m			0.24 m		SM: Light brown silty sand. No gravel Oxidized from 0.24 m to 0.73 m No seepage End @ 1.03 m
0.30								
0.40								
0.50			rootlets end @ 0.53 m					
0.60				composite sample taken				
0.70								
0.80								
0.90								
1.00								

NOTES: 20 °C, Cloudy

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TESTPIT NO.: **TP-25**

TOTAL DEPTH: **1.63**

UTM Coordinates : 735112, 4941804

Elevation (masl) : 245.5

PROJECT INFORMATION

PROJECT NO: **12-1629**

SITE LOCATION: **Pilgrim's Rest Campground**

LOGGED BY: **MC**

DATES ASSESSED: **June 13, 2013**

BACKHOE INFORMATION

EXCAVATION CO.: **Supplied by Propenent**

BACKHOE TYPE: **Hitachi**

STANDPIPE/PIEZOMETERS : **Not installed**

SAMPLING METHODS: **composite grab**

▽ Seepage ▼ Water Level △ Moist

FIELD TEST PIT LOG

Depth	Water	Piezometer Installation	Special Notes	Sample #	Vapour ppm	Depth	Soil Symbol	Soil Description
0.00								TOPSOIL: Black silty topsoil with rootlets
0.10						0.12 m		SM: Oxidized red silty sand with trace poorly sorted subrounded gravel and cobles. No plasticity, holds form.
0.20								Seepage @ 1.63 m
0.30								Refused on presumed bedrock @ 1.63 m
0.40								End @ 1.63 m
0.50								
0.60			rootlets end at 0.58 m					
0.70								
0.80								
0.90				composite sample taken				
1.00								
1.10								
1.20								
1.30								
1.40								
1.50			seepage at 1.62 m refused on presumed bedrock @ 1.63 m					
1.60	▽							

NOTES: 20 °C, Cloudy

APPENDIX B

MOECC Well Record Database

Ministry of Environment Well Records

Well I.D.	Easting	Northing	Elev.	WL Found (m)	Test Rate	Status	Use	Water Kind	Lith. Depth	Lith. Colour	Lith. Materials	
5100446	735449.1	4943840	261.1	12 ft	11.58	0 GPM	Water Supply	Domestic	FRESH			
									1.22		MEDIUM SAND	
									1.22		MEDIUM SAND	
									2.13		MEDIUM SAND	STONES
									2.13		MEDIUM SAND	STONES
									12.5	BLACK	GRANITE	
									12.5	BLACK	GRANITE	
									14.0	RED	GRANITE	
									14.0	RED	GRANITE	
5100499	730566.1	4939370	241.2	22 ft	12.80	4 GPM	Water Supply	Domestic	FRESH			
									6.1		CLAY	HARDPAN
									6.1		CLAY	HARDPAN
									7.01		GRAVEL	
									7.01		GRAVEL	
									17.1	BROWN	GRANITE	
									17.1	BROWN	GRANITE	
5100501	730498.1	4939896	243.2	5 ft	29.26	1 GPM	Water Supply	Domestic	FRESH			
									1.22	RED	GRANITE	
									1.22	RED	GRANITE	
									8.23	GREY	GRANITE	
									8.23	GREY	GRANITE	
									10.7	BLACK	GRANITE	
									10.7	BLACK	GRANITE	
									27.4	GREY	GRANITE	
									27.4	GREY	GRANITE	
									32.0	WHITE	GRANITE	
									32.0	WHITE	GRANITE	
									44.2	GREY	GRANITE	
									44.2	GREY	GRANITE	
5100502	730746.1	4940488	243.1	10 ft	6.401	5 GPM	Water Supply	Domestic	FRESH			
									6.40		MEDIUM SAND	GRAVEL
5100503	732500.1	4940675	244.3	10 ft	10.36	7 GPM	Water Supply	Domestic	FRESH			
									0.30		TOPSOIL	
									0.30		TOPSOIL	
									1.52	BROWN	MEDIUM SAND	
									1.52	BROWN	MEDIUM SAND	
									11.6	RED	GRANITE	
									11.6	RED	GRANITE	
5100504	732452.1	4940613	245.4	20 ft	32.00	3 GPM	Water Supply	Domestic	FRESH			

Well I.D.	Easting	Northing	Elev.	WL Found (m)	Test Rate	Status	Use	Water Kind	Lith. Depth	Lith. Colour	Lith. Materials	
									0.30		TOPSOIL	
									0.30		TOPSOIL	
									1.83	BROWN	MEDIUM SAND	STONES
									1.83	BROWN	MEDIUM SAND	STONES
									3.96	GREY	LIMESTONE	
									3.96	GREY	LIMESTONE	
									6.1	GREY	GRANITE	
									6.1	GREY	GRANITE	
									7.92	RED	GRANITE	
									7.92	RED	GRANITE	
									11.6	WHITE	GRANITE	
									11.6	WHITE	GRANITE	
									14.9	BLACK	GRANITE	
									14.9	BLACK	GRANITE	
									28.3	WHITE	GRANITE	
									28.3	WHITE	GRANITE	
									31.7	RED	GRANITE	
									31.7	RED	GRANITE	
									32.9	WHITE	GRANITE	
									32.9	WHITE	GRANITE	
5100505	734878.1	4941511	237.1	3 ft	13.72	2 GPM	Water Supply	Domestic	FRESH			
									5.18	RED	GRANITE	
									5.18	RED	GRANITE	
									13.7	BLACK	GRANITE	
									13.7	BLACK	GRANITE	
									14.3	RED	GRANITE	
									14.3	RED	GRANITE	
									16.8	BLACK	GRANITE	
									16.8	BLACK	GRANITE	
5100506	734923.1	4941508	239.1	4 ft	1.829	2 GPM	Water Supply	Domestic	FRESH			
									2.44	RED	CLAY	
									2.44	RED	CLAY	
									2.44	RED	CLAY	
									2.44	RED	CLAY	
									3.05	GREY	CLAY	
									3.05	GREY	CLAY	
									3.05	GREY	CLAY	
									3.05	GREY	CLAY	
									13.1	BROWN	GRANITE	
									13.1	BROWN	GRANITE	

Well I.D.	Easting	Northing	Elev.	WL Found (m)		Test Rate	Status	Use	Water Kind	Lith. Depth	Lith. Colour	Lith. Materials	
										13.1	BROWN	GRANITE	
										13.1	BROWN	GRANITE	
										18.9	RED	GRANITE	
										18.9	RED	GRANITE	
										18.9	RED	GRANITE	
										18.9	RED	GRANITE	
										21.3	BLACK	GRANITE	
										21.3	BLACK	GRANITE	
										21.3	BLACK	GRANITE	
										21.3	BLACK	GRANITE	
5100507	734956.1	4941559	239.5	3 ft	6.706	1 GPM	Water Supply	Domestic	FRESH				
										0.61		TOPSOIL	
										0.61		TOPSOIL	
										3.66	RED	MEDIUM SAND	
										3.66	RED	MEDIUM SAND	
										15.2	BROWN	GRANITE	
										15.2	BROWN	GRANITE	
5100508	734393.1	4941419	237.3	6 ft	38.71	0 GPM	Water Supply	Domestic	FRESH				
										0.30		TOPSOIL	
										0.30		TOPSOIL	
										4.88	BROWN	MEDIUM SAND	
										4.88	BROWN	MEDIUM SAND	
										5.49		GRANITE	SHALE
										5.49		GRANITE	SHALE
										7.01	BROWN	GRANITE	
										7.01	BROWN	GRANITE	
										40.5	GREY	GRANITE	
										40.5	GREY	GRANITE	
5100510	736041.2	4942036	245.9	7 ft	4.877	1 GPM	Water Supply	Domestic	FRESH				
										1.83		MEDIUM SAND	BOULDERS
										1.83		MEDIUM SAND	BOULDERS
										5.49	RED	GRANITE	
										5.49	RED	GRANITE	
										6.1		SANDSTONE	
										6.1		SANDSTONE	
5100511	735439.1	4941865	242.8	5 ft	5.486	1 GPM	Water Supply	Domestic	FRESH				
										1.83		MEDIUM SAND	
										1.83		MEDIUM SAND	
										6.40	BLUE	GRANITE	
										6.40	BLUE	GRANITE	

Well I.D.	Easting	Northing	Elev.	WL Found (m)	Test Rate	Status	Use	Water Kind	Lith. Depth	Lith. Colour	Lith. Materials	
5100512	735971.2	4942063	253.4	8 ft	7.62	4 GPM	Water Supply	Domestic	FRESH			
									0.30		TOPSOIL	
									0.30		TOPSOIL	
									2.44	BROWN	CLAY	MEDIUM SAND
									2.44	BROWN	CLAY	MEDIUM SAND
									18	RED	GRANITE	
									18	RED	GRANITE	
5101087	736795.2	4939036	241.1	11 ft	4.572	10 GPM	Water Supply	Domestic	FRESH			
									0.91		TOPSOIL	MEDIUM SAND
									0.91		TOPSOIL	MEDIUM SAND
									6.1	BROWN	LIMESTONE	
									6.1	BROWN	LIMESTONE	
5101181	733064.1	4937823	248.8	1 ft	3.658	1 GPM	Water Supply	Domestic	FRESH			
									0.30		TOPSOIL	
									0.30		TOPSOIL	
									7.62	BLACK	GRANITE	
									7.62	BLACK	GRANITE	
5101182	732990.1	4938084	247	10 ft	6.401	0 GPM	Water Supply	Domestic	FRESH			
									2.74	RED	CLAY	BOULDERS
									2.74	RED	CLAY	BOULDERS
									9.14	BLUE	GRANITE	
									9.14	BLUE	GRANITE	
5101183	732854.1	4938413	249.2				Abandoned-Supply					
									0.91		TOPSOIL	CLAY
									19.5	GREY	GRANITE	
5101184	732802.1	4938601	241.5	16 ft	10.97	0 GPM	Water Supply	Domestic	FRESH			
									0.61		TOPSOIL	
									0.61		TOPSOIL	
									15.5	GREY	GRANITE	
									15.5	GREY	GRANITE	
5101196	733874.1	4938175	269.8	5 ft	3.658	GPM	Water Supply	Commerical	FRESH			
									0.61		TOPSOIL	
									0.61		TOPSOIL	
									5.49	RED	LIMESTONE	
									5.49	RED	LIMESTONE	
5101197	733875.1	4938140	270.4	12 ft	10.36	2 GPM	Water Supply	Commerical	FRESH			
									11.6	RED	GRANITE	
									11.6	RED	GRANITE	
5101198	733904.1	4938032	270.6	2 ft	8.839	2 GPM	Water Supply	Domestic	FRESH			
									2.44	RED	CLAY	SHALE
									2.44	RED	CLAY	SHALE

Well I.D.	Easting	Northing	Elev.	WL Found (m)	Test Rate	Status	Use	Water Kind	Lith. Depth	Lith. Colour	Lith. Materials	
									11	RED	GRANITE	
									11	RED	GRANITE	
5101199	733875.1	4939128	234.2	15 ft	12.19	1 GPM	Water Supply	Domestic	FRESH			
									2.44		CLAY	MEDIUM SAND
									2.44		CLAY	MEDIUM SAND
									14.9	BLUE	GRANITE	
									14.9	BLUE	GRANITE	
5101200	733305.1	4938768	233.3	9 ft	6.706	20 GPM	Water Supply	Domestic	FRESH			
									2.74		TOPSOIL	
									2.74		TOPSOIL	
									3.05		SHALE	
									3.05		SHALE	
									8.23		GRANITE	
									8.23		GRANITE	
5101201	732999.1	4938683	232.8	16 ft	5.791	1 GPM	Water Supply	Domestic	FRESH			
									0.91		CLAY	TOPSOIL
									0.91		CLAY	TOPSOIL
									8.53	GREY	LIMESTONE	
									8.53	GREY	LIMESTONE	
5101204	735293.1	4938933	240.1	6 ft	18.29	0 GPM	Water Supply	Domestic	FRESH			
									5.49	RED	CLAY	BOULDERS
									5.49	RED	CLAY	BOULDERS
									8.53	RED	LIMESTONE	
									8.53	RED	LIMESTONE	
									12.2	BLUE	LIMESTONE	
									12.2	BLUE	LIMESTONE	
									23.5	WHITE	LIMESTONE	
									23.5	WHITE	LIMESTONE	
5101205	735275.1	4938758	239.8	10 ft	3.353	5 GPM	Water Supply	Domestic	FRESH			
									1.83		TOPSOIL	STONES
									1.83		TOPSOIL	STONES
									5.49	RED	GRANITE	
									5.49	RED	GRANITE	
5101206	735938.2	4939041	238.9	13 ft	5.182	2 GPM	Water Supply	Domestic	FRESH			
									2.74		GRAVEL	
									2.74		GRAVEL	
									5.18	RED	GRANITE	
									5.18	RED	GRANITE	
5101207	735084.1	4939918	232.6	10 ft	9.144	1 GPM	Water Supply	Domestic	FRESH			
									12.8		GRANITE	
									12.8		GRANITE	

Well I.D.	Easting	Northing	Elev.	WL Found (m)	Test Rate	Status	Use	Water Kind	Lith. Depth	Lith. Colour	Lith. Materials	
5101208	735331.1	4939972	235.3	8 ft	9.144 GPM	Water Supply	Domestic	FRESH				
									1.22	RED	CLAY	SHALE
									9.45	RED	GRANITE	
5101209	735336.1	4939992	236.1	8 ft	16.15	1 GPM Water Supply	Domestic	FRESH				
									9.45		PREV. DRILLED	
									9.45		PREV. DRILLED	
									16.2	RED	GRANITE	
									16.2	RED	GRANITE	
5101210	735007.1	4940414	234.5	34 ft	13.41	2 GPM Water Supply	Domestic	FRESH				
									1.52		CLAY	STONES
									1.52		CLAY	STONES
									14.0		GRANITE	
									14.0		GRANITE	
5101211	734597.1	4940016	237.8	92 ft	30.48	0 GPM Water Supply	Domestic	FRESH				
									30.5	RED	GRANITE	
									30.5	RED	GRANITE	
5101214	735808.1	4940323	233.5	13 ft		1 GPM Water Supply	Domestic	FRESH				
									0.30		TOPSOIL	
									0.30		TOPSOIL	
									3.05	RED	MEDIUM SAND	STONES
									3.05	RED	MEDIUM SAND	STONES
									21.3	RED	GRANITE	
									21.3	RED	GRANITE	
5101215	735613.1	4940176	233.5	1 ft	5.486	1 GPM Water Supply	Domestic	FRESH				
									2.74		TOPSOIL	GRAVEL
									2.74		TOPSOIL	GRAVEL
									6.71	RED	GRANITE	
									6.71	RED	GRANITE	
5101216	736215.2	4939623	236.4			Abandoned-Supply		Not stated				
									0.61		TOPSOIL	
									0.61		TOPSOIL	
									2.13		MEDIUM SAND	
									2.13		MEDIUM SAND	
									79.2		GRANITE	
									79.2		GRANITE	
5101217	735805.1	4940407	232.9	9 ft	5.486	1 GPM Water Supply	Domestic	FRESH				
									1.52		TOPSOIL	MEDIUM SAND
									1.52		TOPSOIL	MEDIUM SAND
									9.14	RED	LIMESTONE	
									9.14	RED	LIMESTONE	
5101218	736130.2	4940234	234.3	4 ft	4.572	2 GPM Water Supply	Domestic	FRESH				

Well I.D.	Easting	Northing	Elev.	WL Found (m)	Test Rate	Status	Use	Water Kind	Lith. Depth	Lith. Colour	Lith. Materials	
									0.91		CLAY	TOPSOIL
									0.91		CLAY	TOPSOIL
									6.71	RED	GRANITE	
									6.71	RED	GRANITE	
5101219	735573.1	4940060	234.2	27 ft	12.80	2 GPM	Water Supply	Livestock	FRESH			
									4.88		PREVIOUSLY DUG	
									4.88		PREVIOUSLY DUG	
									7.92		CLAY	BOULDERS
									7.92		CLAY	BOULDERS
									12.8	WHITE	LIMESTONE	
									12.8	WHITE	LIMESTONE	
5101224	737081.2	4939560	242.9	12 ft	7.010	3 GPM	Water Supply	Domestic	FRESH			
									4.27		MEDIUM SAND	
									4.27		MEDIUM SAND	
									7.32	BROWN	GRANITE	
									7.32	BROWN	GRANITE	
5101976	737337.2	4945453	304.5	8 ft	6.706	1 GPM	Water Supply	Domestic	FRESH			
									17.1	BLACK	GRANITE	
									17.1	BLACK	GRANITE	
5105016	732515.1	4938573	237.6	20 ft	24.38	0 GPM	Water Supply	Domestic	FRESH			
									0.30		TOPSOIL	
									0.30		TOPSOIL	
									1.83	BROWN	MEDIUM SAND	STONES
									1.83	BROWN	MEDIUM SAND	STONES
									33.5	GREY	GRANITE	
									33.5	GREY	GRANITE	
5105037	736035.2	4942923	246	20 ft	11.58	GPM	Water Supply	Domestic	FRESH			
									14.0		PREV. DRILLED	
									32.0	GREY	GRANITE	
5105066	732015.1	4940853	252.2	35 ft	26.52	3 GPM	Water Supply	Domestic	FRESH			
									0.61	BROWN	SHALE	
									0.61	BROWN	SHALE	
									27.4	RED	GRANITE	
									27.4	RED	GRANITE	
5105067	731895.1	4940873	252.2	45 ft	21.34	3 GPM	Water Supply	Domestic	FRESH			
									1.52	BROWN	MEDIUM SAND	
									1.52	BROWN	MEDIUM SAND	
									21.3	GREY	GRANITE	
									21.3	GREY	GRANITE	
5105300	734565.1	4938173	273.0	5 ft	5.486	5 GPM	Water Supply	Domestic	FRESH			
									0.30		TOPSOIL	

Well I.D.	Easting	Northing	Elev.	WL Found (m)		Test Rate	Status	Use	Water Kind	Lith. Depth	Lith. Colour	Lith. Materials	
										0.30		TOPSOIL	
										2.74		LIMESTONE	
										2.74		LIMESTONE	
										6.71		LIMESTONE	
										6.71		LIMESTONE	
5105521	732615.1	4940603	238.1	30 ft	33.83	1 GPM	Water Supply	Domestic	FRESH				
										36.3	GREY	GRANITE	
										36.3	GREY	GRANITE	
5105863	734380.1	4941373	235.9	20 ft	24.38	2 GPM	Water Supply	Domestic	FRESH				
										0.30		TOPSOIL	
										0.30		TOPSOIL	
										11	BROWN	MEDIUM SAND	
										11	BROWN	MEDIUM SAND	
										29	GREY	GRANITE	
										29	GREY	GRANITE	
5105952	732815.1	4938448	248.4		32.00		Water Supply	Domestic	FRESH				
										0.30		TOPSOIL	
										0.30		TOPSOIL	
										0.61	BROWN	CLAY	SAND
										0.61	BROWN	CLAY	SAND
										32.0	GREY	GRANITE	
										32.0	GREY	GRANITE	
										38.4	BLACK	GRANITE	
										38.4	BLACK	GRANITE	
5106047	736255.2	4939843	236.3	30 ft	10.97	1 GPM	Water Supply	Domestic	FRESH				
										4.57		SAND	
										4.57		SAND	
										28.3		GRANITE	
										28.3		GRANITE	
5106074	736365.2	4941763	235.6	0 ft	5.182	50 GPM	Water Supply	Domestic	FRESH				
										1.83	BROWN	CLAY	MEDIUM SAND
										1.83	BROWN	CLAY	MEDIUM SAND
										6.1		GRANITE	
										6.1		GRANITE	
5106268	734725.1	4941423	236.6	20 ft	18.9	2 GPM	Water Supply	Domestic	FRESH				
										0.61		TOPSOIL	
										0.61		TOPSOIL	
										19.5	RED	GRANITE	
										19.5	RED	GRANITE	
5106440	734160.1	4941488	236.1	ft	72.54	10 GPM	Water Supply	Domestic	FRESH				
										9.14	BROWN	SAND	CLAY

Well I.D.	Easting	Northing	Elev.	WL Found (m)		Test Rate	Status	Use	Water Kind	Lith. Depth	Lith. Colour	Lith. Materials	
										9.14	BROWN	SAND	CLAY
										72.5	BLACK	GRANITE	
										72.5	BLACK	GRANITE	
										73.2	BLACK	GRANITE	
										73.2	BLACK	GRANITE	
5106449	736859.2	4939623	238.9	6 ft	10.67	12 GPM	Water Supply	Domestic	FRESH				
										6.40	BROWN	SAND	
										6.40	BROWN	SAND	
										8.84	RED	GRANITE	
										8.84	RED	GRANITE	
										10.7	BLACK	GRANITE	
										10.7	BLACK	GRANITE	
										11.6	RED	GRANITE	
										11.6	RED	GRANITE	
5106572	733135.1	4938041	247.9	4 ft	21.95	8 GPM	Water Supply	Domestic	FRESH				
										0.91	BROWN	CLAY	
										0.91	BROWN	CLAY	
										3.05	RED	STONES	
										3.05	RED	STONES	
										10.7	GREY	STONES	
										10.7	GREY	STONES	
										11.3	BLACK	STONES	
										11.3	BLACK	STONES	
										22.3	GREY	LIMESTONE	
										22.3	GREY	LIMESTONE	
5106573	733067.1	4938495	246.3	8 ft	6.706	1 GPM	Water Supply	Domestic	FRESH				
										0.91		FILL	
										0.91		FILL	
										3.05	BROWN	SHALE	
										3.05	BROWN	SHALE	
										12.2	GREY	SANDSTONE	
										12.2	GREY	SANDSTONE	
5106611	735204.1	4939827	236.6	5 ft	10.67	15 GPM	Water Supply	Domestic	FRESH				
										0.30	BLACK	TOPSOIL	
										0.30	BLACK	TOPSOIL	
										5.49	GREY	GRANITE	
										5.49	GREY	GRANITE	
										6.71	RED	GRANITE	
										6.71	RED	GRANITE	
										11.6	GREY	GRANITE	

Well I.D.	Easting	Northing	Elev.	WL Found (m)		Test Rate	Status	Use	Water Kind	Lith. Depth	Lith. Colour	Lith. Materials	
										11.6	GREY	GRANITE	
5106694	735038.1	4943883	261.9	35 ft	35.36	45 GPM	Water Supply	Domestic	FRESH				
										1.22		SAND	
										1.22		SAND	
										36		LIMESTONE	
										36		LIMESTONE	
5106990	735286.1	4939669	240.6				Abandoned-Supply						
										0.30		TOPSOIL	
										0.61	BROWN	SAND	
										1.52	BROWN	SAND	SHALE
										92.0	GREY	GRANITE	
5106991	735281.1	4939670	240.5	5 ft	46.63	10 GPM	Water Supply	Domestic	FRESH				
										0.30		TOPSOIL	
										0.30		TOPSOIL	
										0.91	BROWN	CLAY	SAND
										0.91	BROWN	CLAY	SAND
										45.7	GREY	GRANITE	
										45.7	GREY	GRANITE	
										47.2	RED	GRANITE	
										47.2	RED	GRANITE	
5107181	733734.1	4938914	236.8	20 ft	15.24	0 GPM	Water Supply	Domestic	FRESH				
										0.30		TOPSOIL	
										0.30		TOPSOIL	
										2.44	BROWN	CLAY	
										2.44	BROWN	CLAY	
										10.7	GREY	LIMESTONE	
										10.7	GREY	LIMESTONE	
										18.3	GREY	GRANITE	
										18.3	GREY	GRANITE	
5107209	734501.1	4939205	238.2	4 ft	13.41	2 GPM	Water Supply	Domestic	FRESH				
										0.91		PREVIOUSLY DUG	
										0.91		PREVIOUSLY DUG	
										2.44	GREY	SHALE	
										2.44	GREY	SHALE	
										6.1	RED	GRANITE	
										6.1	RED	GRANITE	
										14.0	BLACK	GRANITE	
										14.0	BLACK	GRANITE	
5107215	736578.2	4941540	238.1	40 ft	35.66	20 GPM	Water Supply	Domestic	FRESH				
										0.30		TOPSOIL	

Well I.D.	Easting	Northing	Elev.	WL Found (m)	Test Rate	Status	Use	Water Kind	Lith. Depth	Lith. Colour	Lith. Materials	
									0.30		TOPSOIL	
									41.1	RED	GRANITE	
									41.1	RED	GRANITE	
5107226	734768.1	4938490	256.4	50 ft	38.1	8 GPM	Water Supply	Domestic	FRESH			
									6.40		PREVIOUSLY DUG	
									6.40		PREVIOUSLY DUG	
									18.3	GREY	LIMESTONE	
									18.3	GREY	LIMESTONE	
									38.7	RED	GRANITE	
									38.7	RED	GRANITE	
5107244	730830.1	4940157	240.3	18 ft	33.53	1 GPM	Water Supply	Domestic	FRESH			
									0.30		TOPSOIL	
									0.30		TOPSOIL	
									2.44	BROWN	SAND	CLAY
									2.44	BROWN	SAND	CLAY
									6.1	GREY	LIMESTONE	
									6.1	GREY	LIMESTONE	
									24.4	GREY	GRANITE	
									24.4	GREY	GRANITE	
									35.1	BLACK	GRANITE	
									35.1	BLACK	GRANITE	
5107441	735265.1	4939723	235.4	+02 ft	76.2	3 GPM	Water Supply	Domestic	FRESH			
									1.52		SAND	FILL
									3.66	BLACK	GRANITE	SHALE
									24.4	BLACK	GRANITE	HARD
									27.4	RED	GRANITE	HARD
									102	BLACK	GRANITE	HARD
5107502	735265.1	4939673	239.8	18 ft	27.43	8 GPM	Water Supply	Domestic	FRESH			
									2.44	BROWN	SAND	STONES
									27.4	BLACK	GRANITE	HARD
									28.3	RED	GRANITE	HARD
5107510	734015.1	4941523	237.7	10 ft	45.11	20 GPM	Water Supply	Domestic	FRESH			
									3.66		SAND	
									3.66		SAND	
									8.53	BLUE	SAND	WATER-BEARING
									8.53	BLUE	SAND	WATER-BEARING
									47.5	RED	GRANITE	
									47.5	RED	GRANITE	
5107679	733715.1	4938873	239.3	40 ft	89.31	20 GPM	Water Supply	Domestic	FRESH			
									22.9		PREV. DRILLED	

Well I.D.	Easting	Northing	Elev.	WL Found (m)	Test Rate	Status	Use	Water Kind	Lith. Depth	Lith. Colour	Lith. Materials	
									88.4	GREY	GRANITE	
									88.7	RED	GRANITE	
									91.4	WHITE	QUARTZ	
5108087	736565.2	4939623	238.5	10 ft	14.33	2 GPM	Water Supply	Domestic	FRESH			
									0.30	BROWN	SAND	LOOSE
									0.30	BROWN	SAND	LOOSE
									10.4	RED	GRANITE	HARD
									10.4	RED	GRANITE	HARD
									16.2	BLACK	GRANITE	HARD
									16.2	BLACK	GRANITE	HARD
5108360	731165.1	4940723	240.6	22 ft	7.315	3 GPM	Water Supply	Domestic	FRESH			
									2.44	WHITE	GRANITE	
									9.75	RED	GRANITE	
									17.7	WHITE	GRANITE	
5108654	735815.1	4942023	243.6	+02 ft	57.61	1 GPM	Water Supply	Domestic	FRESH			
									7.92	BROWN	SAND	
									7.92	BROWN	SAND	
									12.2	GREY	GRANITE	
									12.2	GREY	GRANITE	
									60.0		GRANITE	
									60.0		GRANITE	
5108664	736365.2	4941573	234.4	20 ft	11.58	2 GPM	Water Supply	Domestic	FRESH			
									0.61	BROWN	SAND	SOFT
									2.74	BLACK	GRANITE	HARD
									16.2	BLACK	GRANITE	HARD
5108724	734765.1	4941423	235.4	40 ft	67.97	4 GPM	Water Supply	Domestic	FRESH			
									1.83	BROWN	SAND	SOFT
									31.1	BLACK	GRANITE	HARD
									33.2	RED	GRANITE	HARD
									65.8	BLACK	GRANITE	HARD
									68	RED	GRANITE	HARD
5108853	732665.1	4940723	239.8	35 ft	31.7	10 GPM	Water Supply	Domestic	FRESH			
									1.22	BROWN	TOPSOIL	
									33.5	RED	GRANITE	
5109029	733865.1	4938023	269.6	15 ft	8.23	8 GPM	Water Supply	Domestic	FRESH			
									0.30	BLACK	TOPSOIL	SOFT
									8.23	GREY	LIMESTONE	HARD
									8.53	BROWN	LIMESTONE	SOFT
									11.3	GREY	LIMESTONE	HARD
									14.9	GREY	GRANITE	HARD
5109064	736165.2	4938823	242.5	15 ft	52.73	20 GPM	Water Supply	Domestic	FRESH			

Well I.D.	Easting	Northing	Elev.	WL Found (m)	Test Rate	Status	Use	Water Kind	Lith. Depth	Lith. Colour	Lith. Materials	
									3.05		SAND	
									3.05		SAND	
									4.57	RED	SANDSTONE	
									4.57	RED	SANDSTONE	
									39.6	WHITE	QUARTZ	
									39.6	WHITE	QUARTZ	
									52.7		GRANITE	
									52.7		GRANITE	
									53.9	RED	GRANITE	
									53.9	RED	GRANITE	
5109065	734165.1	4941473	235.0	25 ft	14.94	10 GPM	Water Supply	Domestic	FRESH			
									0.61		SAND	
									0.61		SAND	
									16.5	RED	GRANITE	
									16.5	RED	GRANITE	
5109087	736365.2	4941973	237.1	3 ft	10.36	GPM	Water Supply	Domestic	FRESH			
									3.05		SAND	
									3.05		SAND	
									11.3	RED	GRANITE	
									11.3	RED	GRANITE	
5109088	735765.1	4942073	244.3	11 ft	8.23	18 GPM	Water Supply	Domestic	FRESH			
									0.30	BROWN	SAND	OVERBURDEN
									0.30	BROWN	SAND	OVERBURDEN
									9.14	RED	ROCK	GRANITE
									9.14	RED	ROCK	GRANITE
5109089	735715.1	4941873	238.6	25 ft	14.63	0 GPM	Water Supply	Domestic	FRESH			
									8.53	BROWN	SILT	SAND
									8.53	BROWN	SILT	SAND
									14.6	RED	ROCK	SHALE
									14.6	RED	ROCK	SHALE
									27.4	RED	ROCK	GRANITE
									27.4	RED	ROCK	GRANITE
5109092	735715.1	4942023	243.2	ft	17.68	GPM	Water Supply	Domestic	FRESH			
									6.40		SAND	CLAY
									6.40		SAND	CLAY
									6.40		SAND	CLAY
									6.40		SAND	CLAY
									21.3	GREY	ROCK	
									21.3	GREY	ROCK	
									21.3	GREY	ROCK	

Well I.D.	Easting	Northing	Elev.	WL Found (m)	Test Rate	Status	Use	Water Kind	Lith. Depth	Lith. Colour	Lith. Materials	
									21.3	GREY	ROCK	
5109100	733915.1	4938023	271	38 ft	11.58	1 GPM	Water Supply	Domestic	FRESH			
									0.30	BROWN	TOPSOIL	SOFT
									21.6	GREY	LIMESTONE	POROUS
									35.4	RED	LIMESTONE	POROUS
									39.3	RED	GRANITE	HARD
									42.7	GREEN	GRANITE	HARD
									46.6	GREY	GRANITE	HARD
5109134	736515.2	4939523	237.9	12 ft	38.71	30 GPM	Water Supply	Domestic	FRESH			
									0.61	BROWN	SAND	SOFT
									38.7	RED	GRANITE	HARD
5109176	736265.2	4938823	242.7	6 ft	10.67	30 GPM	Water Supply	Domestic	Not stated			
									1.83	BROWN	CLAY	
									1.83	BROWN	CLAY	
									10.7	GREY	LIMESTONE	
									10.7	GREY	LIMESTONE	
5109187	736915.2	4940323	235.5	20 ft	19.51	10 GPM	Water Supply	Domestic	FRESH			
									19.5	RED	GRANITE	
									19.5	RED	GRANITE	
									21.3	BROWN	GRANITE	
									21.3	BROWN	GRANITE	
									22.6	GREY	GRANITE	
									22.6	GREY	GRANITE	
5109230	736265.2	4942173	253.6	65 ft	63.4	1 GPM	Water Supply	Municipal	FRESH			
									3.35	BROWN	SAND	SOFT
									3.35	BROWN	SAND	SOFT
									7.32	GREY	SAND	GRAVEL
									7.32	GREY	SAND	GRAVEL
									65.5	BLACK	GRANITE	HARD
									65.5	BLACK	GRANITE	HARD
5109294	730265.1	4939473	248.5	4 ft	19.81	2 GPM	Water Supply	Domestic	FRESH			
									0.30		TOPSOIL	
									7.32	BROWN	CLAY	SANDY
									19.8	BLACK	GRANITE	STONES
									30.5	GREY	GRANITE	
5109459	735665.1	4939923	238.4	0 ft	6.096	10 GPM	Water Supply	Domestic	FRESH			
									0.61	BROWN	TOPSOIL	SOFT
									2.44	BROWN	SAND	STONES
									3.35	GREY	SHALE	STONES
									6.1	GREY	STONES	HARD
5109560	730715.1	4940323	233.8	15 ft	8.23	24 GPM	Water Supply	Domestic	FRESH			

Well I.D.	Easting	Northing	Elev.	WL Found (m)	Test Rate	Status	Use	Water Kind	Lith. Depth	Lith. Colour	Lith. Materials	
									0.30	BROWN	TOPSOIL	SOFT
									3.66	BROWN	GRAVEL	STONES
									8.23	GREY	GRANITE	HARD
5109615	736415.2	4941873	235.7	5 ft	27.74	3 GPM	Water Supply	Domestic	FRESH			
									1.83		FILL	
									1.83		FILL	
									29	RED	GRANITE	
									29	RED	GRANITE	
5109755	736515.2	4941923	237.8	3 ft	11.58	15 GPM	Water Supply	Domestic	FRESH			
									5.18		SAND	GRAVEL
									5.18		SAND	GRAVEL
									11.3	GREY	GRANITE	
									11.3	GREY	GRANITE	
									11.9	RED	GRANITE	
									11.9	RED	GRANITE	
5109980	737015.2	4939723	237.4	7 ft	5.486	20 GPM	Water Supply	Domestic	FRESH			
									3.35	BROWN	SAND	LIGHT-COLOURED
									3.35	BROWN	SAND	LIGHT-COLOURED
									6.71	RED	GRANITE	HARD
									6.71	RED	GRANITE	HARD
5109981	737015.2	4939773	241.8	3 ft	3.048	8 GPM	Water Supply	Domestic	Not stated			
									0.30	BROWN	TOPSOIL	SOFT
									1.83	BROWN	SAND	CLAY
									7.92	RED	GRANITE	HARD
5109982	737015.2	4939823	235.7	3 ft	9.754	5 GPM	Water Supply	Domestic	FRESH			
									0.30	BROWN	TOPSOIL	SOFT
									2.74	BROWN	SAND	CLAY
									9.75	BLACK	GRANITE	HARD
5110006	731715.1	4940723	235.1	15 ft	18.9	4 GPM	Water Supply	Domestic	FRESH			
									1.52		TOPSOIL	
									18	WHITE	GRANITE	HARD
									18.9	RED	GRANITE	HARD
5110011	736915.2	4939723	234.4	2 ft	5.791	25 GPM	Water Supply	Domestic	Not stated			
									0.30	BROWN	TOPSOIL	DARK-COLOURED
									3.66	BROWN	SAND	CLAY
									5.79	RED	GRANITE	HARD
5110256	732315.1	4940623	251.6	40 ft	60.66	15 GPM	Water Supply	Domestic	FRESH			
									1.22	BROWN	FILL	SOFT
									1.22	BROWN	FILL	SOFT
									59.4	WHITE	GRANITE	HARD
									59.4	WHITE	GRANITE	HARD

Well I.D.	Easting	Northing	Elev.	WL Found (m)		Test Rate	Status	Use	Water Kind	Lith. Depth	Lith. Colour	Lith. Materials	
										60.7	BROWN	GRANITE	HARD
										60.7	BROWN	GRANITE	HARD
5110261	736915.2	4939723	234.4	4 ft	6.401	20 GPM	Water Supply	Domestic	FRESH				
										0.30	BLACK	TOPSOIL	SOFT
										1.52	BROWN	SAND	SOFT
										6.71	BLACK	GRANITE	HARD
5110285	734415.1	4941023	234	20 ft	49.38	10 GPM	Water Supply	Domestic	FRESH				
										0.61	BROWN	TOPSOIL	SOFT
										0.61	BROWN	TOPSOIL	SOFT
										50.3	RED	GRANITE	HARD
										50.3	RED	GRANITE	HARD
5110344	734615.1	4939223	234.5	12 ft	13.41	10 GPM	Water Supply	Domestic	Not stated				
										4.88	BROWN	CLAY	SAND
										13.7	RED	GRANITE	
5110484	730615.1	4939923	237.3				Abandoned-Supply						
										5.49	BROWN	SAND	SHALE
										61	GREY	GRANITE	
5110570	735215.1	4939323	240.0	8 ft	4.877	2 GPM	Water Supply	Domestic	FRESH				
										0.30		TOPSOIL	
										4.27	BROWN	FINE SAND	
										4.88	BROWN	COARSE GRAVEL	
										7.32	GREY	LIMESTONE	
										8.53	WHITE	GRANITE	
5110584	736715.2	4939823	233.6	8 ft	11.28	8 GPM	Water Supply	Domestic	FRESH				
										0.30	BROWN	TOPSOIL	
										0.30	BROWN	TOPSOIL	
										0.30	BROWN	TOPSOIL	
										0.30	BROWN	TOPSOIL	
										13.7	BLACK	GRANITE	
										13.7	BLACK	GRANITE	
										13.7	BLACK	GRANITE	
										13.7	BLACK	GRANITE	
5110585	736715.2	4939723	233.6	20 ft	44.50	40 GPM	Water Supply	Domestic	FRESH				
										0.61	BROWN	SAND	
										0.61	BROWN	SAND	
										9.14	RED	GRANITE	
										9.14	RED	GRANITE	
										14.6	GREEN	GRANITE	
										14.6	GREEN	GRANITE	
										45.1		GRANITE	
										45.1		GRANITE	

Well I.D.	Easting	Northing	Elev.	WL Found (m)	Test Rate	Status	Use	Water Kind	Lith. Depth	Lith. Colour	Lith. Materials	
5110586	736765.2	4939723	240.2	10 ft	39.62	40 GPM	Water Supply	Domestic	FRESH			
									0.61	BROWN	SAND	
									0.61	BROWN	SAND	
									14.0	GREEN	GRANITE	
									14.0	GREEN	GRANITE	
									40.8	RED	GRANITE	
									40.8	RED	GRANITE	
5110615	737015.2	4939723	237.4	2 ft	18.59	20 GPM	Water Supply	Domestic	Not stated			
									7.01	BROWN	SAND	SOFT
									7.01	BROWN	SAND	SOFT
									18.6	BLACK	GRANITE	HARD
									18.6	BLACK	GRANITE	HARD
									24.4	RED	GRANITE	
									24.4	RED	GRANITE	
									59.7	BLACK	GRANITE	
									59.7	BLACK	GRANITE	
									63.4	RED	GRANITE	
									63.4	RED	GRANITE	
									70.7	BLACK	GRANITE	
									70.7	BLACK	GRANITE	
									75.3	RED	GRANITE	
									75.3	RED	GRANITE	
5110680	734415.1	4941323	235	4 ft	8.534	8 GPM	Water Supply	Domestic	FRESH			
									3.66	BROWN	TOPSOIL	SANDY
									3.66	BROWN	TOPSOIL	SANDY
									8.53	GREY	MARL	SANDY
									8.53	GREY	MARL	SANDY
									8.84		MEDIUM GRAVEL	SANDY
									8.84		MEDIUM GRAVEL	SANDY
									24.4	GREY	GRANITE	STONES
									24.4	GREY	GRANITE	STONES
									28.7	GREY	GRANITE	QUARTZ
									28.7	GREY	GRANITE	QUARTZ
5110693	736615.2	4939723	240.7	2 ft	1.524	5 GPM	Water Supply	Domestic	FRESH			
									0.61	BLACK	CLAY	FILL
									9.14	BLACK	GRANITE	LAYERED
5110725	736115.2	4940273	234.6	6 ft	11.28	5 GPM	Water Supply	Domestic	FRESH			
									0.61	BROWN	SAND	
									0.61	BROWN	SAND	
									12.2	BROWN	STONES	

Well I.D.	Easting	Northing	Elev.	WL Found (m)		Test Rate	Status	Use	Water Kind	Lith. Depth	Lith. Colour	Lith. Materials	
										12.2	BROWN	STONES	
										18.3	GREEN	STONES	
										18.3	GREEN	STONES	
5110768	734765.1	4941423	235.4	1 ft	9.144	3 GPM	Water Supply	Domestic	Not stated				
										0.61	BROWN	MEDIUM SAND	
										0.61	BROWN	MEDIUM SAND	
										3.05	GREY	MEDIUM SAND	
										3.05	GREY	MEDIUM SAND	
										7.92	BLACK	GRANITE	HARD
										7.92	BLACK	GRANITE	HARD
										9.14	RED	GRANITE	HARD
										9.14	RED	GRANITE	HARD
										23.8	BLACK	GRANITE	HARD
										23.8	BLACK	GRANITE	HARD
5110814	736865.2	4939823	234	20 ft	28.96	2 GPM	Water Supply	Domestic	Not stated				
										29	BLACK	GRANITE	MEDIUM-GRAINED
										29	BLACK	GRANITE	MEDIUM-GRAINED
										34.1	RED	GRANITE	MEDIUM-GRAINED
										34.1	RED	GRANITE	MEDIUM-GRAINED
5110849	730615.1	4940273	236.0	5 ft	22.56	12 GPM	Water Supply	Domestic	Not stated				
										2.13	BROWN	SAND	GRAVEL
										5.79	BLACK	GRANITE	HARD
										22.3	GREEN	GRANITE	HARD
										22.6	RED	GRANITE	HARD
5111033	735215.1	4939323	240.0	3 ft	5.791	1 GPM	Water Supply	Domestic	FRESH				
										7.92		PREV. DRILLED	
										14.3	GREY	GRANITE	
5111240	735495.6	4941848	241.4	6 ft	1.829	2 GPM	Water Supply	Domestic	FRESH				
										1.83	BROWN	SAND	STONES
										13.4	RED	GRANITE	
5111457	736677.2	4945068	265.7	9 ft	8.534	30 GPM	Water Supply	Domestic	FRESH				
										1.52	YELLOW	SAND	GRANITE
										13.7	GREY	GRANITE	
5111475	732097.1	4940921	255.9	20 ft	13.72	1 GPM	Water Supply	Domestic	Not stated				
										13.7	WHITE	GRANITE	ROCK
										15.2	BROWN	GRANITE	ROCK
										32.0	BLACK	GRANITE	ROCK
										34.1	WHITE	GRANITE	ROCK
5111577	731548.1	4936593	248.4	0 ft	12.19	30 GPM	Water Supply	Domestic	Not stated				
										4.57	BROWN	CLAY	STONES
										13.1	RED	GRANITE	ROCK

Well I.D.	Easting	Northing	Elev.	WL Found (m)	Test Rate	Status	Use	Water Kind	Lith. Depth	Lith. Colour	Lith. Materials	
5111655	732097.1	4940921	255.9	14 ft	28.04	1 GPM	Water Supply	Domestic	FRESH			
									3.66	BROWN	GRAVEL	SANDY
									3.66	BROWN	GRAVEL	SANDY
									6.71	RED	GRANITE	
									6.71	RED	GRANITE	
									13.7	GREY	GRANITE	
									13.7	GREY	GRANITE	
									19.8	RED	GRANITE	
									19.8	RED	GRANITE	
									22.6	GREY	GRANITE	
									22.6	GREY	GRANITE	
									26.2	RED	GRANITE	
									26.2	RED	GRANITE	
									28.7	GREY	GRANITE	
									28.7	GREY	GRANITE	
									31.1	GREY	GRANITE	
									31.1	GREY	GRANITE	
									53.0	RED	GRANITE	
									53.0	RED	GRANITE	
5112155	730593.1	4936911	239.3	28 ft	14.63	10 GPM	Water Supply	Domestic	FRESH			
									0.30	BROWN	TOPSOIL	
									0.30	BROWN	TOPSOIL	
									3.05	BROWN	SHALE	ROCK
									3.05	BROWN	SHALE	ROCK
									16.2	BROWN	STONES	SHALE
									16.2	BROWN	STONES	SHALE
5112262	732513.1	4946191	277.4	0 ft	20.73	10 GPM	Water Supply	Domestic	FRESH			
									1.83		SANDSTONE	
									1.83		SANDSTONE	
									25.3	RED	GRANITE	
									25.3	RED	GRANITE	
5112277	736567.2	4939997	233.4	8 ft	19.81	5 GPM	Water Supply	Domestic	Not stated			
									0.91	BROWN	MEDIUM SAND	
									20.1	GREY	GRANITE	HARD
5112324	736567.2	4939997	233.4	14 ft	82.60	8 GPM	Water Supply	Domestic	Not stated			
									1.83	BROWN	FILL	MEDIUM-GRAINED
									83.8	GREY	GRANITE	HARD
5112325	736567.2	4939997	233.4	4 ft	50.29	2 GPM	Water Supply	Domestic	Not stated			
									2.13	BROWN	MEDIUM SAND	
									51.8	GREY	LIMESTONE	LAYERED
5112349	732097.1	4940921	255.9	10 ft	12.19	3 GPM	Water Supply	Domestic	FRESH			

Well I.D.	Easting	Northing	Elev.	WL Found (m)	Test Rate	Status	Use	Water Kind	Lith. Depth	Lith. Colour	Lith. Materials	
									0.61		SAND	
									0.61		SAND	
									19.2	WHITE	GRANITE	
									19.2	WHITE	GRANITE	
5112350	732097.1	4940921	255.9	15 ft	12.19	3 GPM	Water Supply	Domestic	FRESH			
									0.91		GRAVEL	
									0.91		GRAVEL	
									19.2		GRANITE	
									19.2		GRANITE	
5112370	735110.1	4939499	240.4	6 ft	32.00	1 GPM	Water Supply	Domestic	FRESH			
									0.30		SAND	
									54.9	GREY	GRANITE	
5112413	730432.6	4940313	241	12 ft	36.58	4 GPM	Water Supply	Domestic	Not stated			
									0.61	BROWN	FILL	MEDIUM-GRAINED
									38.4	GREY	GRANITE	HARD
5112499	736567.2	4939997	233.4	30 ft	30.48	8 GPM	Water Supply	Domestic	Not stated			
									0.30	GREY	GRAVEL	LOOSE
									32.3	RED	GRANITE	HARD
5112612	730288.8	4939733	254.3	23 ft	42.67	5 GPM	Water Supply	Domestic	Not stated			
									0.91	BROWN	FILL	MEDIUM-GRAINED
									44.5	GREY	GRANITE	HARD
5112701	731548.1	4936593	248.4	18 ft	48.77	2 GPM	Water Supply	Domestic	Not stated			
									0.30	BROWN	TOPSOIL	SOFT
									21.6	RED	GRANITE	HARD
									57.6	BLACK	GRANITE	HARD
5112879	731814.1	4938445	233.5	30 ft	35.97	4 GPM	Water Supply	Domestic	Not stated			
									1.83	BROWN	FILL	MEDIUM-GRAINED
									38.4	GREY	GRANITE	HARD
5113023	735495.6	4941848	241.4	12 ft	24.38	10 GPM	Water Supply	Domestic	FRESH			
									7.92		QUICKSAND	
									7.92		QUICKSAND	
									36.6	BLACK	GRANITE	
									36.6	BLACK	GRANITE	
5113190	732097.1	4940921	255.9	3 ft	102.1	25 GPM	Water Supply	Domestic	FRESH			
									0.91		SAND	
									102	WHITE	GRANITE	
5113199	731548.1	4936593	248.4	8 ft	20.12	1 GPM	Water Supply	Domestic	Not stated			
									4.27	BROWN	FILL	MEDIUM-GRAINED
									4.27	BROWN	FILL	MEDIUM-GRAINED
									39.9	GREY	GRANITE	HARD
									39.9	GREY	GRANITE	HARD

Well I.D.	Easting	Northing	Elev.	WL Found (m)		Test Rate	Status	Use	Water Kind	Lith. Depth	Lith. Colour	Lith. Materials	
										47.9	BLACK	GRANITE	HARD
										47.9	BLACK	GRANITE	HARD
										51.8	RED	GRANITE	HARD
										51.8	RED	GRANITE	HARD
5113757	732513.1	4946191	277.4	10 ft	12.19	7 GPM	Water Supply	Domestic	FRESH				
										0.61		CLAY	
										0.61		CLAY	
										12.2		LIMESTONE	
										12.2		LIMESTONE	
										38.1	GREY	GRANITE	
										38.1	GREY	GRANITE	
5113764	730432.6	4940313	241				Water Supply	Domestic	FRESH				
										0.61		SAND	
										85.3	BLACK	GRANITE	
5113850	736567.2	4939997	233.4	15 ft	80.77	0 GPM	Water Supply	Domestic	FRESH				
										2.13	BROWN	SAND	
										85.3	GREY	GRANITE	
5113851	736567.2	4939997	233.4	2 ft	35.66	4 GPM	Water Supply	Domestic	FRESH				
										1.22	BROWN	SAND	
										38.1	GREY	GRANITE	
5113961	736787.2	4939383	243.2	18 ft	20.73	25 GPM	Water Supply	Domestic	FRESH				
										20.7	BLACK	GRANITE	HARD
										20.7	BLACK	GRANITE	HARD
5114007	730432.6	4940313	241	13 ft	19.20	5 GPM	Water Supply	Domestic	FRESH				
										1.22	BROWN	OVERBURDEN	
										19.2	BROWN	ROCK	
5114008	731548.1	4936593	248.4	21 ft	10.97	16 GPM	Water Supply	Domestic	FRESH				
										2.74	BROWN	OVERBURDEN	
										2.74	BROWN	OVERBURDEN	
										10.1	GREY	ROCK	LIMESTONE
										10.1	GREY	ROCK	LIMESTONE
										17.7	RED	ROCK	SHALE
										17.7	RED	ROCK	SHALE
5114165	736677.2	4945068	265.7				Water Supply	Domestic					
										2.44	BROWN	SAND	
										158	BLACK	GRANITE	GRANITE
5114295	730432.6	4940313	241	20 ft	48.77	20 GPM	Water Supply	Domestic	FRESH				
										3.66	BROWN	SAND	BOULDERS
										48.8	BLACK	GRANITE	MEDIUM-GRAINED
										51.8	BLACK	GRANITE	SOFT
5114507	736709.2	4941270	237.5	10 ft	9.144	6 GPM	Water Supply	Domestic	FRESH				

Well I.D.	Easting	Northing	Elev.	WL Found (m)		Test Rate	Status	Use	Water Kind	Lith. Depth	Lith. Colour	Lith. Materials	
										13.4	GREY	GRANITE	
5114579	737200.2	4941542	238.2	10 ft	27.74	10 GPM	Water Supply	Domestic	FRESH				
										1.22	BROWN	SAND	
										30.5	RED	GRANITE	
5114580	737003.2	4942114	242.7	20 ft	29.26	6 GPM	Water Supply	Domestic	FRESH				
										10.4	BROWN	SAND	CLAY
										10.4	BROWN	SAND	CLAY
										30.5	RED	GRANITE	
										30.5	RED	GRANITE	
5114581	735676.1	4942337	240.4	20 ft	29.26	10 GPM	Water Supply	Domestic	FRESH				
										0.91	BROWN	SAND	
										30.5	RED	GRANITE	
5114592	737591.2	4940389	240.7	20 ft	23.16	10 GPM	Water Supply	Domestic	FRESH				
										3.05	BROWN	CLAY	STONES
										3.05	BROWN	CLAY	STONES
										25.3	RED	GRANITE	
										25.3	RED	GRANITE	
5114737	730593.1	4936911	239.3	25 ft	14.63	12 GPM	Water Supply	Domestic	FRESH				
										1.22	BROWN	SAND	FILL
										1.83	BLACK	TOPSOIL	BOULDERS
										19.2	GREY	GRANITE	
5114760	736567.2	4939997	233.4	ft	69.8	GPM	Water Supply	Domestic	FRESH				
										2.74	BROWN	OVERBURDEN	CLAY
										69.8	BROWN	ROCK	HARD
										80.8	GREY	ROCK	
5114784	735495.6	4941848	241.4	10 ft	13.72	8 GPM	Water Supply	Domestic	FRESH				
										1.22	GREY	FILL	STONES
										6.1	BROWN	SAND	
										13.7	GREY	GRANITE	
										14.6	RED	GRANITE	
										21.3	GREY	GRANITE	
										25	WHITE	GRANITE	
5114891	732533.1	4937715	250.2	18 ft	9.144	4 GPM	Water Supply	Domestic	FRESH				
										3.05	BROWN	SAND	GRAVEL
										3.05	BROWN	SAND	GRAVEL
										8.53	RED	GRANITE	
										8.53	RED	GRANITE	
										18.3	GREY	GRANITE	
										18.3	GREY	GRANITE	
5114895	735495.6	4941848	241.4	10 ft	35.05	2 GPM	Water Supply	Domestic	FRESH				
										0.61	BROWN	SAND	

Well I.D.	Easting	Northing	Elev.	WL Found (m)	Test Rate	Status	Use	Water Kind	Lith. Depth	Lith. Colour	Lith. Materials	
									35.1	GREY	GRANITE	
									35.4	GREEN	GRANITE	
									43.3	RED	GRANITE	
5114981	730036.1	4941430	260.6	10 ft	13.72	5 GPM	Water Supply	Domestic	FRESH			
									0.30	BROWN	TOPSOIL	SOFT
									0.30	BROWN	TOPSOIL	SOFT
									5.49	GREY	SHALE	SAND
									5.49	GREY	SHALE	SAND
									11	RED	CLAY	SANDY
									11	RED	CLAY	SANDY
									14.9	RED	LIMESTONE	HARD
									14.9	RED	LIMESTONE	HARD
5115084	732325.1	4938177	251.8	ft	4.267	1 GPM	Water Supply	Domestic	FRESH			
									0.30	BROWN	TOPSOIL	
									3.66	BROWN	CLAY	STONES
									4.27		SHALE	
									14.3		GRANITE	ROCK
5115150	736019.2	4942917	244.8	24 ft	22.86	20 GPM	Water Supply	Domestic	FRESH			
									7.32	RED	SAND	GRAVEL
									7.32	RED	SAND	GRAVEL
									24.4	GREY	GRANITE	
									24.4	GREY	GRANITE	
5115159	735495.6	4941848	241.4	0 ft	6.096	5 GPM	Test Hole	Domestic	FRESH			
									0.91	BROWN	SAND	
									9.14	BLACK	GRANITE	
5115160	735495.6	4941848	241.4	8 ft	16.76	3 GPM	Water Supply	Domestic	FRESH			
									0.91	BROWN	SAND	
									20.4	BLACK	GRANITE	
5115240	734685.1	4941451	241.2	20 ft	57.91	8 GPM	Water Supply	Domestic	FRESH			
									1.22	BLACK	TOPSOIL	
									6.1	WHITE	GRANITE	
									30.5	WHITE	GRANITE	
									54.9	WHITE	GRANITE	
									61	WHITE	GRANITE	
5115306	735110.1	4939499	240.4	20 ft	24.38	6 GPM	Water Supply	Domestic	FRESH			
									0.61	BLACK	TOPSOIL	
									6.1	BLACK	GRANITE	
									24.4	BLACK	GRANITE	
									42.7	BLACK	GRANITE	
5115449	736709.2	4941270	237.5	6 ft	10.06	7 GPM	Water Supply	Domestic	FRESH			
									0.61	BROWN	SAND	

Well I.D.	Easting	Northing	Elev.	WL Found (m)		Test Rate	Status	Use	Water Kind	Lith. Depth	Lith. Colour	Lith. Materials	
										3.66	GREY	CLAY	
										19.2	RED	GRANITE	
5115450	735495.6	4941848	241.4										
5115590	730432.6	4940313	241	40 ft	35.05	7 GPM	Water Supply	Domestic	FRESH				
										1.52	BROWN	SAND	
										1.52	BROWN	SAND	
										6.1	WHITE	GRANITE	
										6.1	WHITE	GRANITE	
										24.4	BLACK	GRANITE	SAND
										24.4	BLACK	GRANITE	SAND
										37.2	BLACK	GRANITE	
										37.2	BLACK	GRANITE	
5115829	730432.6	4940313	241	15 ft	12.19	10 GPM	Water Supply	Domestic	FRESH				
										1.52	BROWN	SAND	BOULDERS
										1.52	BROWN	SAND	BOULDERS
										4.88	BROWN	ROCK	WEATHERED
										4.88	BROWN	ROCK	WEATHERED
										12.2		GRANITE	
										12.2		GRANITE	
										22.9	BLACK	GRANITE	
										22.9	BLACK	GRANITE	
										38.1	RED	GRANITE	
										38.1	RED	GRANITE	
5115832	736529.7	4943841	247.3	27 ft	9.144	4 GPM	Water Supply	Domestic	FRESH				
										0.30	BROWN	TOPSOIL	
										0.30	BROWN	TOPSOIL	
										0.30	BROWN	TOPSOIL	
										0.30	BROWN	TOPSOIL	
										0.30	BROWN	TOPSOIL	
										0.30	BROWN	TOPSOIL	
										0.30	BROWN	TOPSOIL	
										0.30	BROWN	TOPSOIL	
										0.30	BROWN	TOPSOIL	
										0.91	BROWN	TOPSOIL	SANDY
										0.91	BROWN	TOPSOIL	SANDY
										0.91	BROWN	TOPSOIL	SANDY
										0.91	BROWN	TOPSOIL	SANDY
										0.91	BROWN	TOPSOIL	SANDY
										0.91	BROWN	TOPSOIL	SANDY

Well I.D.	Easting	Northing	Elev.	WL Found (m)	Test Rate	Status	Use	Water Kind	Lith. Depth	Lith. Colour	Lith. Materials	
									0.91	BROWN	TOPSOIL	SANDY
									0.91	BROWN	TOPSOIL	SANDY
									0.91	BROWN	TOPSOIL	SANDY
									5.49	BLACK	GRANITE	ROCK
									5.49	BLACK	GRANITE	ROCK
									5.49	BLACK	GRANITE	ROCK
									5.49	BLACK	GRANITE	ROCK
									5.49	BLACK	GRANITE	ROCK
									5.49	BLACK	GRANITE	ROCK
									5.49	BLACK	GRANITE	ROCK
									5.49	BLACK	GRANITE	ROCK
									5.49	BLACK	GRANITE	ROCK
									13.4	BLACK	GRANITE	ROCK
									13.4	BLACK	GRANITE	ROCK
									13.4	BLACK	GRANITE	ROCK
									13.4	BLACK	GRANITE	ROCK
									13.4	BLACK	GRANITE	ROCK
									13.4	BLACK	GRANITE	ROCK
									13.4	BLACK	GRANITE	ROCK
									13.4	BLACK	GRANITE	ROCK
									13.4	BLACK	GRANITE	ROCK
									21.3	BLACK	GRANITE	ROCK
									21.3	BLACK	GRANITE	ROCK
									21.3	BLACK	GRANITE	ROCK
									21.3	BLACK	GRANITE	ROCK
									21.3	BLACK	GRANITE	ROCK
									21.3	BLACK	GRANITE	ROCK
									21.3	BLACK	GRANITE	ROCK
									21.3	BLACK	GRANITE	ROCK
									21.3	BLACK	GRANITE	ROCK
									21.9	BLACK	GRANITE	
									21.9	BLACK	GRANITE	
									21.9	BLACK	GRANITE	
									21.9	BLACK	GRANITE	
									21.9	BLACK	GRANITE	
									21.9	BLACK	GRANITE	
									21.9	BLACK	GRANITE	
									21.9	BLACK	GRANITE	
5115851	731548.1	4936593	248.4	22 ft	10.97	GPM	Water Supply	Domestic	FRESH			

Well I.D.	Easting	Northing	Elev.	WL Found (m)		Test Rate	Status	Use	Water Kind	Lith. Depth	Lith. Colour	Lith. Materials	
										3.96	BROWN	OVERBURDEN	
										3.96	BROWN	OVERBURDEN	
										8.23	GREY	ROCK	LIMESTONE
										8.23	GREY	ROCK	LIMESTONE
										13.7	RED	ROCK	SHALE
										13.7	RED	ROCK	SHALE
										15.2	GREEN	ROCK	
										15.2	GREEN	ROCK	
5115852	733858.1	4938270	271	9	ft	9.144	10 GPM	Water Supply	Domestic	FRESH			
										3.96	RED	SAND	CLAY
										3.96	RED	SAND	CLAY
										9.14	RED	GRANITE	ROCK
										9.14	RED	GRANITE	ROCK
										10.1	RED	GRANITE	QUARTZ
										10.1	RED	GRANITE	QUARTZ
										12.2	RED	GRANITE	ROCK
										12.2	RED	GRANITE	ROCK
5115882	730844.1	4938257	241.9	18	ft	7.62	6 GPM	Water Supply	Domestic	FRESH			
										1.22	BROWN	CLAY	SANDY
										3.66	BLUE	GRANITE	FRACTURED
										15.2	BLACK	GRANITE	LAYERED
5115936	737003.2	4942114	242.7	20	ft	22.56	4 GPM	Water Supply	Domestic	FRESH			
										9.75	YELLOW	SAND	LOOSE
										24.4	GREEN	GRANITE	
5115968	736567.2	4939997	233.4	7	ft	3.048	100 GPM	Water Supply	Domestic	Not stated			
										0.30	BROWN	TOPSOIL	LOOSE
										0.30	BROWN	TOPSOIL	LOOSE
										3.05	BROWN	SAND	DENSE
										3.05	BROWN	SAND	DENSE
										3.05	RED	ROCK	DENSE
										3.05	RED	ROCK	DENSE
5116011	730273.1	4940867	255.9	22	ft	34.44	10 GPM	Water Supply	Domestic	FRESH			
										0.91	BROWN	SAND	STONES
										36.6	WHITE	GRANITE	ROCK
5116085	737515.2	4945412	262.1	8	ft	7.925	5 GPM	Water Supply	Industrial	FRESH			
										2.44	BROWN	SAND	GRAVEL
										2.44	BROWN	SAND	GRAVEL
										2.44	BROWN	SAND	GRAVEL
										2.44	BROWN	SAND	GRAVEL
										36.6	WHITE	DOLOMITE	

Well I.D.	Easting	Northing	Elev.	WL Found (m)		Test Rate	Status	Use	Water Kind	Lith. Depth	Lith. Colour	Lith. Materials	
										36.6	WHITE	DOLOMITE	
										36.6	WHITE	DOLOMITE	
										36.6	WHITE	DOLOMITE	
5116124	735495.6	4941848	241.4	8 ft	27.43	3 GPM	Water Supply	Domestic	FRESH				
										1.22	BROWN	TOPSOIL	
										25.9	BLACK	GRANITE	
										28.0	RED	GRANITE	
5116190	735110.1	4939499	240.4	4 ft	5.486	15 GPM	Water Supply	Domestic	FRESH				
										0.61	BROWN	SAND	TOPSOIL
										2.13	RED	SAND	GRAVEL
										6.71	RED	GRANITE	ROCK
										12.2	BLACK	GRANITE	ROCK
5116279	736709.2	4941270	237.5	3 ft	14.63	8 GPM			FRESH				
										0.30		TOPSOIL	
										15.2	GREY	GRANITE	
5116315	733695.1	4938777	241.1	15 ft	15.85	4 GPM	Water Supply	Domestic	FRESH				
										0.61	BROWN	SAND	STONES
										0.61	BROWN	SAND	STONES
										2.44	GREY	GRANITE	HARD
										2.44	GREY	GRANITE	HARD
										3.05	RED	GRANITE	
										3.05	RED	GRANITE	
										15.8	GREY	GRANITE	HARD
										15.8	GREY	GRANITE	HARD
										16.5	GREY	GRANITE	QUARTZ
										16.5	GREY	GRANITE	QUARTZ
										18.3	GREY	GRANITE	HARD
										18.3	GREY	GRANITE	HARD
5116355	733695.1	4938777	241.1	14 ft	11.58	2 GPM	Abandoned-Quality	Not Used	FRESH				
										3.35	BROWN	SAND	CLAY
										3.35	BROWN	SAND	CLAY
										11.6	RED	GRANITE	HARD
										11.6	RED	GRANITE	HARD
										13.1	BLACK	GRANITE	HARD
										13.1	BLACK	GRANITE	HARD
5116386	733695.1	4938777	241.1	10 ft	24.38	2 GPM	Water Supply	Domestic	FRESH				
										2.44	BROWN	SAND	CLAY
										2.44	BROWN	SAND	CLAY
										6.1	RED	GRANITE	HARD
										6.1	RED	GRANITE	HARD

Well I.D.	Easting	Northing	Elev.	WL Found (m)	Test Rate	Status	Use	Water Kind	Lith. Depth	Lith. Colour	Lith. Materials	
									24.4	GREY	GRANITE	HARD
									24.4	GREY	GRANITE	HARD
5116388	731108.1	4937737	242.3	18 ft	12.5	8 GPM	Water Supply	Domestic	FRESH			
									0.91	BROWN	SAND	CLAY
									0.91	BROWN	SAND	CLAY
									3.05	RED	GRANITE	QUARTZ
									3.05	RED	GRANITE	QUARTZ
									4.57	GREY	GRANITE	HARD
									4.57	GREY	GRANITE	HARD
									10.7	RED	GRANITE	QUARTZ
									10.7	RED	GRANITE	QUARTZ
									13.7	GREEN	GRANITE	HARD
									13.7	GREEN	GRANITE	HARD
5116417	736979.2	4938802	246.5	10 ft	28.96	5 GPM	Water Supply	Domestic	FRESH			
									1.83	BROWN	SAND	
									31.4	GREY	LIMESTONE	
5116516	736567.2	4939997	233.4	20 ft	7.62	1 GPM	Water Supply	Domestic	FRESH			
									0.91	BLACK	TOPSOIL	
									122	GREY	GRANITE	
5116654	733695.1	4938777	241.1	16 ft	19.51	3 GPM	Water Supply	Domestic	FRESH			
									1.83	BROWN	SAND	CLAY
									1.83	BROWN	SAND	CLAY
									3.35	RED	GRANITE	HARD
									3.35	RED	GRANITE	HARD
									12.8	GREY	GRANITE	HARD
									12.8	GREY	GRANITE	HARD
									14.6	GREEN	GRANITE	LOOSE
									14.6	GREEN	GRANITE	LOOSE
									21.0	GREY	GRANITE	HARD
									21.0	GREY	GRANITE	HARD
5116663	733543.6	4941643	253.8	20 ft	90.53	10 GPM	Water Supply	Domestic	FRESH			
									0.91	BROWN	SAND	
									0.91	BROWN	SAND	
									25.9	GREY	GRANITE	
									25.9	GREY	GRANITE	
									27.4	RED	GRANITE	
									27.4	RED	GRANITE	
									79.2	GREY	GRANITE	
									79.2	GREY	GRANITE	
									80.8	RED	GRANITE	

Well I.D.	Easting	Northing	Elev.	WL Found (m)	Test Rate	Status	Use	Water Kind	Lith. Depth	Lith. Colour	Lith. Materials	
									80.8	RED	GRANITE	
									92.4	GREY	GRANITE	
									92.4	GREY	GRANITE	
5116801	735491.1	4938243	238.1	10 ft	7.62	2 GPM	Water Supply	Domestic	FRESH			
									0.30	BROWN	TOPSOIL	
									0.30	BROWN	TOPSOIL	
									0.30	BROWN	TOPSOIL	
									0.30	BROWN	TOPSOIL	
									0.30	BROWN	TOPSOIL	
									0.30	BROWN	TOPSOIL	
									2.44	BROWN	ROCK	LAYERED
									2.44	BROWN	ROCK	LAYERED
									2.44	BROWN	ROCK	LAYERED
									2.44	BROWN	ROCK	LAYERED
									2.44	BROWN	ROCK	LAYERED
									2.44	BROWN	ROCK	LAYERED
									5.49	BROWN	LIMESTONE	
									5.49	BROWN	LIMESTONE	
									5.49	BROWN	LIMESTONE	
									5.49	BROWN	LIMESTONE	
									5.49	BROWN	LIMESTONE	
									5.49	BROWN	LIMESTONE	
									6.71	BROWN	ROCK	
									6.71	BROWN	ROCK	
									6.71	BROWN	ROCK	
									6.71	BROWN	ROCK	
									6.71	BROWN	ROCK	
									6.71	BROWN	ROCK	
									33.5	WHITE	ROCK	
									33.5	WHITE	ROCK	
									33.5	WHITE	ROCK	
									33.5	WHITE	ROCK	
									33.5	WHITE	ROCK	
									33.5	WHITE	ROCK	
5116804	735495.6	4941848	241.4	5 ft	10.67	3 GPM	Water Supply	Domestic	FRESH			
									1.22	BROWN	SAND	BOULDERS
									1.22	BROWN	SAND	BOULDERS
									3.35	RED	GRANITE	HARD
									3.35	RED	GRANITE	HARD
									13.4	GREY	GRANITE	HARD

Well I.D.	Easting	Northing	Elev.	WL Found (m)	Test Rate	Status	Use	Water Kind	Lith. Depth	Lith. Colour	Lith. Materials	
									13.4	GREY	GRANITE	HARD
5116805	732325.1	4938177	251.8	20 ft	12.19	0 GPM	Water Supply	Domestic	FRESH			
									0.91	RED	SAND	STONES
									0.91	RED	SAND	STONES
									5.49	RED	SANDSTONE	BOULDERS
									5.49	RED	SANDSTONE	BOULDERS
									45.1	GREY	GRANITE	HARD
									45.1	GREY	GRANITE	HARD
5116816	736709.2	4941270	237.5	3 ft	5.486	5 GPM	Water Supply	Domestic	FRESH			
									0.30	BLACK	TOPSOIL	
									0.30	BLACK	TOPSOIL	
									0.30	BLACK	TOPSOIL	
									0.30	BLACK	TOPSOIL	
									4.57	RED	GRANITE	
									4.57	RED	GRANITE	
									4.57	RED	GRANITE	
									4.57	RED	GRANITE	
									7.62	BLACK	GRANITE	
									7.62	BLACK	GRANITE	
									7.62	BLACK	GRANITE	
									7.62	BLACK	GRANITE	
									12.8	RED	GRANITE	
									12.8	RED	GRANITE	
									12.8	RED	GRANITE	
									12.8	RED	GRANITE	
5117119	735491.1	4938243	238.1	15 ft	30.48	3 GPM	Water Supply	Domestic	FRESH			
									0.30	BROWN	SAND	
									0.30	BROWN	SAND	
									9.14	RED	LIMESTONE	
									9.14	RED	LIMESTONE	
									49.7	GREY	LIMESTONE	GRANITE
									49.7	GREY	LIMESTONE	GRANITE
5117147	735495.6	4941848	241.4	12 ft	21.34	2 GPM	Water Supply	Domestic	FRESH			
									5.49	RED	SAND	SOFT
									5.49	RED	SAND	SOFT
									5.49	RED	SAND	SOFT
									5.49	RED	SAND	SOFT
									10.7	RED	SANDSTONE	HARD
									10.7	RED	SANDSTONE	HARD
									10.7	RED	SANDSTONE	HARD

Well I.D.	Easting	Northing	Elev.	WL Found (m)	Test Rate	Status	Use	Water Kind	Lith. Depth	Lith. Colour	Lith. Materials	
									10.7	RED	SANDSTONE	HARD
									13.1	RED	GRANITE	HARD
									13.1	RED	GRANITE	HARD
									13.1	RED	GRANITE	HARD
									13.1	RED	GRANITE	HARD
									15.5	GREY	GRANITE	POROUS
									15.5	GREY	GRANITE	POROUS
									15.5	GREY	GRANITE	POROUS
									15.5	GREY	GRANITE	POROUS
									21.3	BLACK	GRANITE	HARD
									21.3	BLACK	GRANITE	HARD
									21.3	BLACK	GRANITE	HARD
									21.3	BLACK	GRANITE	HARD
									22.3	GREY	GRANITE	POROUS
									22.3	GREY	GRANITE	POROUS
									22.3	GREY	GRANITE	POROUS
									22.3	GREY	GRANITE	POROUS
									24.4	BLACK	GRANITE	HARD
									24.4	BLACK	GRANITE	HARD
									24.4	BLACK	GRANITE	HARD
									24.4	BLACK	GRANITE	HARD
5117378	732097.1	4940921	255.9	18 ft	5.486	2 GPM	Water Supply	Domestic	FRESH			
									2.44	BROWN	SAND	FILL
									2.44	BROWN	SAND	FILL
									40.2	BLACK	GRANITE	ROCK
									40.2	BLACK	GRANITE	ROCK
5117379	730432.6	4940313	241	ft	2.438	3 GPM	Water Supply	Domestic	FRESH			
									0.30	BROWN	SAND	
									0.30	BROWN	SAND	
									12.2	GREY	GRANITE	
									12.2	GREY	GRANITE	
									25.3	WHITE	GRANITE	
									25.3	WHITE	GRANITE	
									26.2	RED	GRANITE	
									26.2	RED	GRANITE	
									55.8	WHITE	GRANITE	
									55.8	WHITE	GRANITE	
5117381	730288.8	4939733	254.3	25 ft	15.24	8 GPM	Water Supply	Domestic	FRESH			
									0.30	BROWN	TOPSOIL	
									0.30	BROWN	TOPSOIL	

Well I.D.	Easting	Northing	Elev.	WL Found (m)	Test Rate	Status	Use	Water Kind	Lith. Depth	Lith. Colour	Lith. Materials	
									3.66	BROWN	CLAY	SANDY
									3.66	BROWN	CLAY	SANDY
									20.4	RED	GRANITE	
									20.4	RED	GRANITE	
5117663	735495.6	4941848	241.4	15 ft		GPM	Water Supply	Domestic				
									1.52	BROWN	TOPSOIL	
									62.5	RED	GRANITE	
5117669	732097.1	4940921	255.9	20 ft	33.53	14 GPM	Water Supply	Domestic	FRESH			
									1.22	BROWN	TOPSOIL	SANDY
									35.7	BLACK	GRANITE	ROCK
5117670	730273.1	4940867	255.9	23 ft	18.9	5 GPM	Water Supply	Domestic	FRESH			
									21.9	RED	GRANITE	
5117671	730432.6	4940313	241	8 ft	16.76	25 GPM	Water Supply	Domestic	FRESH			
									1.52	BROWN	TOPSOIL	SANDY
									1.52	BROWN	TOPSOIL	SANDY
									17.7	RED	GRANITE	ROCK
									17.7	RED	GRANITE	ROCK
5117722	732513.1	4946191	277.4	12 ft	11.58	GPM	Water Supply	Domestic	FRESH			
									0.91	BROWN	SAND	STONES
									0.91	BROWN	SAND	STONES
									9.14	GREY	GRANITE	QUARTZ
									9.14	GREY	GRANITE	QUARTZ
									11.6	RED	GRANITE	SOFT
									11.6	RED	GRANITE	SOFT
									21.3	WHITE	GRANITE	HARD
									21.3	WHITE	GRANITE	HARD
									32.0	RED	GRANITE	QUARTZ
									32.0	RED	GRANITE	QUARTZ
									45.7	GREY	GRANITE	HARD
									45.7	GREY	GRANITE	HARD
									54.3	WHITE	GRANITE	HARD
									54.3	WHITE	GRANITE	HARD
									58.2	RED	GRANITE	QUARTZ
									58.2	RED	GRANITE	QUARTZ
									65.5	WHITE	GRANITE	HARD
									65.5	WHITE	GRANITE	HARD
									73.2	GREY	GRANITE	HARD
									73.2	GREY	GRANITE	HARD
5117820	732097.1	4940921	255.9	14 ft		3 GPM	Water Supply	Domestic	FRESH			
									1.22	BROWN	TOPSOIL	

Well I.D.	Easting	Northing	Elev.	WL Found (m)		Test Rate	Status	Use	Water Kind	Lith. Depth	Lith. Colour	Lith. Materials	
										1.22	BROWN	TOPSOIL	
										122	WHITE	GRANITE	
										122	WHITE	GRANITE	
5117836	736608.2	4940937	235.5	10 ft	17.37	3 GPM	Water Supply	Domestic	FRESH				
										1.22	BROWN	SAND	FILL
										1.22	BROWN	SAND	FILL
										18.6	GREY	GRANITE	HARD
										18.6	GREY	GRANITE	HARD
5118008	736709.2	4941270	237.5	2 ft	4.572	1 GPM	Water Supply	Domestic	FRESH				
										0.91	BROWN	TOPSOIL	
										0.91	BROWN	TOPSOIL	
										0.91	BROWN	TOPSOIL	
										0.91	BROWN	TOPSOIL	
										1.52	BROWN	SAND	
										1.52	BROWN	SAND	
										1.52	BROWN	SAND	
										1.52	BROWN	SAND	
										15.2	RED	GRANITE	HARD
										15.2	RED	GRANITE	HARD
										15.2	RED	GRANITE	HARD
										15.2	RED	GRANITE	HARD
										18.3	BLACK	GRANITE	HARD
										18.3	BLACK	GRANITE	HARD
										18.3	BLACK	GRANITE	HARD
										18.3	BLACK	GRANITE	HARD
										23.8	RED	GRANITE	HARD
										23.8	RED	GRANITE	HARD
										23.8	RED	GRANITE	HARD
										23.8	RED	GRANITE	HARD
5118097	736564.7	4939997	233.4	19 ft	21.95	10 GPM	Water Supply	Domestic	FRESH				
										0.61	RED	SAND	SOFT
										0.61	RED	SAND	SOFT
										4.27	GREY	GRANITE	HARD
										4.27	GREY	GRANITE	HARD
										8.53	GREEN	GRANITE	HARD
										8.53	GREEN	GRANITE	HARD
										18.3	RED	GRANITE	HARD
										18.3	RED	GRANITE	HARD
										20.7	GREY	GRANITE	HARD
										20.7	GREY	GRANITE	HARD

Well I.D.	Easting	Northing	Elev.	WL Found (m)		Test Rate	Status	Use	Water Kind	Lith. Depth	Lith. Colour	Lith. Materials	
										21.9	RED	GRANITE	POROUS
										21.9	RED	GRANITE	POROUS
										24.4	GREY	GRANITE	POROUS
										24.4	GREY	GRANITE	POROUS
5118320	731933.1	4941460	254.0	45 ft	35.05	8 GPM	Water Supply	Domestic	FRESH				
										6.1	BROWN	SAND	GRAVEL
										6.1	BROWN	SAND	GRAVEL
										10.7	GREY	GRANITE	HARD
										10.7	GREY	GRANITE	HARD
										27.4	WHITE	GRANITE	QUARTZ
										27.4	WHITE	GRANITE	QUARTZ
										30.5	GREY	GRANITE	HARD
										30.5	GREY	GRANITE	HARD
										32.6	WHITE	GRANITE	QUARTZ
										32.6	WHITE	GRANITE	QUARTZ
										35.1	RED	GRANITE	POROUS
										35.1	RED	GRANITE	POROUS
										35.7	GREY	GRANITE	HARD
										35.7	GREY	GRANITE	HARD
5118363	730555.6	4939266	239	21 ft	14.63	4 GPM	Water Supply	Domestic	FRESH				
										0.30	BROWN	TOPSOIL	
										0.30	BROWN	TOPSOIL	
										3.35	WHITE	SHALE	GRANITE
										3.35	WHITE	SHALE	GRANITE
										14.6	WHITE	GRANITE	
										14.6	WHITE	GRANITE	
										24.4	RED	GRANITE	
										24.4	RED	GRANITE	
5118438	730837.6	4938241	242.4	17 ft	32.61	15 GPM	Water Supply	Domestic	FRESH				
										2.44		GRAVEL	
										2.44		GRAVEL	
										36.6	GREY	GRANITE	
										36.6	GREY	GRANITE	
5118449	738177.8	4946418	283.4	5 ft	58.22	3 GPM	Water Supply	Domestic	FRESH				
										0.30	BROWN	TOPSOIL	
										0.30	BROWN	TOPSOIL	
										7.62	GREY	SILT	SAND
										7.62	GREY	SILT	SAND
										61	GREY	GRANITE	
										61	GREY	GRANITE	

Well I.D.	Easting	Northing	Elev.	WL Found (m)	Test Rate	Status	Use	Water Kind	Lith. Depth	Lith. Colour	Lith. Materials	
5118589	730834.6	4938242	242.3	24 ft 25.3	10 GPM	Water Supply	Domestic	FRESH				
									0.30	BROWN	SAND	SOFT
									0.30	BROWN	SAND	SOFT
									9.14	BLACK	GRANITE	QUARTZ
									9.14	BLACK	GRANITE	QUARTZ
									10.4	RED	GRANITE	HARD
									10.4	RED	GRANITE	HARD
									24.7	BLACK	GRANITE	HARD
									24.7	BLACK	GRANITE	HARD
									25.3	RED	GRANITE	POROUS
									25.3	RED	GRANITE	POROUS
									26.5	BLACK	GRANITE	HARD
									26.5	BLACK	GRANITE	HARD
5118590	732318.6	4938175	251.2	10 ft 13.72	1 GPM	Water Supply	Domestic	FRESH				
									3.05	RED	SAND	SOFT
									3.05	RED	SAND	SOFT
									10.7	BLACK	GRANITE	HARD
									10.7	BLACK	GRANITE	HARD
									22.3	GREY	GRANITE	
									22.3	GREY	GRANITE	
5118643	735673	4941879	238.9	11 ft 21.95	8 GPM	Water Supply	Domestic	FRESH				
									3.96	RED	SAND	SOFT
									3.96	RED	SAND	SOFT
									6.1	RED	GRANITE	HARD
									6.1	RED	GRANITE	HARD
									19.8	BLACK	GRANITE	HARD
									19.8	BLACK	GRANITE	HARD
									21.9	GREY	GRANITE	POROUS
									21.9	GREY	GRANITE	POROUS
									24.4	BLACK	GRANITE	HARD
									24.4	BLACK	GRANITE	HARD
5118660	732747.6	4937151	275.2	18 ft 12.19	10 GPM	Water Supply	Domestic	FRESH				
									0.30	BROWN	TOPSOIL	
									3.96	BROWN	CLAY	STONES
									6.40	GREY	CLAY	STONES
									12.2	GREY	LIMESTONE	ROCK
5118712	735113.1	4939499	240.3	19 ft 107	4 GPM	Water Supply	Domestic	FRESH				
									2.13	BROWN	SAND	
									2.13	BROWN	SAND	
									110	GREEN	GRAVEL	

Well I.D.	Easting	Northing	Elev.	WL Found (m)	Test Rate	Status	Use	Water Kind	Lith. Depth	Lith. Colour	Lith. Materials	
									110	GREEN	GRAVEL	
5118736	732510.1	4946192	277.4	1.219		Water Supply	Not Used	FRESH				
									0.30	BROWN	TOPSOIL	
									0.91	GREY	SILT	CLAY
									2.44	GREY	LIMESTONE	SOFT
5118737	732510.1	4946192	277.4	1.219		Observation Wells	Not Used	FRESH				
									0.30	BROWN	TOPSOIL	
									0.91	GREY	SILT	CLAY
									2.44	GREY	LIMESTONE	SOFT
5118738	732510.1	4946192	277.4	1.219		Water Supply	Not Used	FRESH				
									0.30	BROWN	UNKNOWN TYPE	
									0.91	GREY	SILT	CLAY
									2.44	GREY	LIMESTONE	SOFT
5118739	732510.1	4946192	277.4	1.219		Observation Wells	Not Used	FRESH				
									0.30	BROWN	TOPSOIL	LOOSE
									0.91	GREY	SILT	CLAY
									2.44	GREY	LIMESTONE	SOFT
5118740	732510.1	4946192	277.4	1.219		Observation Wells	Not Used	FRESH				
									0.30	BROWN	TOPSOIL	LOOSE
									0.91	GREY	SILT	CLAY
									2.44	GREY	LIMESTONE	SOFT
5118741	732510.1	4946192	277.4	1.219		Observation Wells	Not Used	FRESH				
									0.30	BROWN	TOPSOIL	LOOSE
									0.91	BROWN	SILT	CLAY
									2.44	GREY	LIMESTONE	SOFT
5118742	732510.1	4946192	277.4	2.134		Observation Wells	Not Used	FRESH				
									0.30	BROWN	TOPSOIL	
									0.91	GREY	SILT	CLAY
									3.66	GREY	LIMESTONE	FRACTURED
5118743	732510.1	4946192	277.4	2.438		Observation Wells	Not Used	FRESH				
									0.30	BROWN	TOPSOIL	
									0.30	GREY	SILT	CLAY
									5.49	GREY	LIMESTONE	FRACTURED
5118744	732510.1	4946192	277.4	2.134		Observation Wells	Not Used	FRESH				
									0.30	BROWN	TOPSOIL	
									1.22	GREY	SILT	CLAY
									5.18	GREY	LIMESTONE	FRACTURED
5118745	732510.1	4946192	277.4	1.829		Observation Wells		FRESH				
									0.30	BROWN	TOPSOIL	
									0.61	GREY	SILT	DENSE
									3.96	GREY	LIMESTONE	FRACTURED

Well I.D.	Easting	Northing	Elev.	WL Found (m)	Test Rate	Status	Use	Water Kind	Lith. Depth	Lith. Colour	Lith. Materials	
5118746	732510.1	4946192	277.4	2.134		Observation Wells		FRESH				
									0.30	BROWN	TOPSOIL	
									0.61	GREY	UNKNOWN TYPE	
									5.18	GREY	LIMESTONE	FRACTURED
5118827	740146.2	4945103	262.2	11 ft	7.010	5 GPM	Water Supply	Domestic	Not stated			
									0.30	BROWN	TOPSOIL	
									0.30	BROWN	TOPSOIL	
									30.5	GREY	GRANITE	
									30.5	GREY	GRANITE	
5118867	730835.1	4938242	242.3	15 ft	18.9	7 GPM	Water Supply	Domestic	FRESH			
									0.30	BROWN	SAND	SOFT
									0.30	BROWN	SAND	SOFT
									1.22	GREY	GRANITE	HARD
									1.22	GREY	GRANITE	HARD
									1.83	RED	GRANITE	HARD
									1.83	RED	GRANITE	HARD
									17.7	BLACK	GRANITE	HARD
									17.7	BLACK	GRANITE	HARD
									18.9	RED	GRANITE	POROUS
									18.9	RED	GRANITE	POROUS
									19.2	BLACK	GRANITE	HARD
									19.2	BLACK	GRANITE	HARD
5118905	736784.1	4939384	243	5 ft	10.67	10 GPM	Water Supply	Domestic	FRESH			
									4.88	BROWN	FINE SAND	
									4.88	BROWN	FINE SAND	
									4.88	BROWN	FINE SAND	
									4.88	BROWN	FINE SAND	
									5.49	BROWN	FINE GRAVEL	
									5.49	BROWN	FINE GRAVEL	
									5.49	BROWN	FINE GRAVEL	
									5.49	BROWN	FINE GRAVEL	
									10.4	GREY	GRANITE	SOFT
									10.4	GREY	GRANITE	SOFT
									10.4	GREY	GRANITE	SOFT
									10.4	GREY	GRANITE	SOFT
									24.4	BLACK	GRANITE	
									24.4	BLACK	GRANITE	
									24.4	BLACK	GRANITE	
									24.4	BLACK	GRANITE	
5118954	730702	4939831	239.9	14 ft	29.26	3 GPM	Water Supply	Domestic	FRESH			

Well I.D.	Easting	Northing	Elev.	WL Found (m)	Test Rate	Status	Use	Water Kind	Lith. Depth	Lith. Colour	Lith. Materials	
									1.22	GREY	GRAVEL	SOFT
									1.22	GREY	GRAVEL	SOFT
									3.66	GREY	GRANITE	HARD
									3.66	GREY	GRANITE	HARD
									5.79	RED	GRANITE	HARD
									5.79	RED	GRANITE	HARD
									12.2	BLACK	GRANITE	HARD
									12.2	BLACK	GRANITE	HARD
									28.3	GREEN	GRANITE	HARD
									28.3	GREEN	GRANITE	HARD
									29.3	RED	GRANITE	POROUS
									29.3	RED	GRANITE	POROUS
									38.1	GREY	GRANITE	HARD
									38.1	GREY	GRANITE	HARD
5119008	737186	4939459	242.6	11 ft	6.096	8 GPM	Water Supply	Domestic	FRESH			
									1.22	RED	GRANITE	
									6.1	GREY	GRANITE	
									12.2	BLACK	GRANITE	
5119018	733694.1	4938777	241.0	5 ft	64.01	10 GPM	Water Supply	Domestic	FRESH			
									3.35	BROWN	CLAY	ROCK
									64.0	BLACK	GRANITE	ROCK
5119019	735292.1	4938830	239.8	34 ft	18.29	10 GPM	Water Supply	Domestic	FRESH			
									0.91		GRAVEL	
									0.91		GRAVEL	
									34.7	BLACK	GRANITE	
									34.7	BLACK	GRANITE	
5119085	736716	4939531	242.7	4 ft	16.76	10 GPM	Water Supply	Domestic	FRESH			
									0.30	BROWN	TOPSOIL	
									0.30	BROWN	TOPSOIL	
									0.30	BROWN	TOPSOIL	
									0.30	BROWN	TOPSOIL	
									1.22	BROWN	CLAY	SAND
									1.22	BROWN	CLAY	SAND
									1.22	BROWN	CLAY	SAND
									1.22	BROWN	CLAY	SAND
									1.52	BROWN	SHALE	STONES
									1.52	BROWN	SHALE	STONES
									1.52	BROWN	SHALE	STONES
									1.52	BROWN	SHALE	STONES
									4.57	BROWN	GRANITE	

Well I.D.	Easting	Northing	Elev.	WL Found (m)		Test Rate	Status	Use	Water Kind	Lith. Depth	Lith. Colour	Lith. Materials	
										4.57	BROWN	GRANITE	
										4.57	BROWN	GRANITE	
										4.57	BROWN	GRANITE	
										5.79		GRANITE	
										5.79		GRANITE	
										5.79		GRANITE	
										5.79		GRANITE	
										17.7	BROWN	GRANITE	
										17.7	BROWN	GRANITE	
										17.7	BROWN	GRANITE	
										17.7	BROWN	GRANITE	
										18.3	GREY	GRANITE	
										18.3	GREY	GRANITE	
										18.3	GREY	GRANITE	
										18.3	GREY	GRANITE	
5119144	734429.1	4941406	238.0	3	ft	11.58	5 GPM	Water Supply	Domestic	FRESH			
										0.30	BROWN	TOPSOIL	
										0.30	BROWN	TOPSOIL	
										0.30	BROWN	TOPSOIL	
										0.30	BROWN	TOPSOIL	
										10.7	BROWN	TOPSOIL	SANDY
										10.7	BROWN	TOPSOIL	SANDY
										10.7	BROWN	TOPSOIL	SANDY
										10.7	BROWN	TOPSOIL	SANDY
										12.5	BROWN	SAND	
										12.5	BROWN	SAND	
										12.5	BROWN	SAND	
										12.5	BROWN	SAND	
5119157	731288.1	4938535	241.1	36	ft	29.26	10 GPM	Water Supply	Domestic	FRESH			
										0.61	BLACK	TOPSOIL	SOFT
										0.61	BLACK	TOPSOIL	SOFT
										5.79	GREY	GRANITE	HARD
										5.79	GREY	GRANITE	HARD
										9.45	RED	GRANITE	HARD
										9.45	RED	GRANITE	HARD
										14.9	GREY	GRANITE	HARD
										14.9	GREY	GRANITE	HARD
										21.6	BROWN	GRANITE	HARD
										21.6	BROWN	GRANITE	HARD
										28.3	GREY	GRANITE	HARD

Well I.D.	Easting	Northing	Elev.	WL Found (m)	Test Rate	Status	Use	Water Kind	Lith. Depth	Lith. Colour	Lith. Materials	
									28.3	GREY	GRANITE	HARD
									29.3		GRANITE	POROUS
									29.3		GRANITE	POROUS
									29.6	GREY	GRANITE	HARD
									29.6	GREY	GRANITE	HARD
5119158	731255.1	4938543	241.0	17 ft	16.15	2 GPM	Water Supply	Domestic	FRESH			
									0.30	BLACK	TOPSOIL	SOFT
									0.30	BLACK	TOPSOIL	SOFT
									3.66	BLACK	GRANITE	HARD
									3.66	BLACK	GRANITE	HARD
									4.27	RED	GRANITE	SOFT
									4.27	RED	GRANITE	SOFT
									16.2	GREY	GRANITE	HARD
									16.2	GREY	GRANITE	HARD
									32.9	BLACK	GRANITE	HARD
									32.9	BLACK	GRANITE	HARD
									35.4		GRANITE	HARD
									35.4		GRANITE	HARD
									35.7	BLACK	GRANITE	HARD
									35.7	BLACK	GRANITE	HARD
5119172	736650.1	4938957	242.2	9 ft	6.706	20 GPM	Water Supply	Domestic	FRESH			
									1.22	BROWN	TOPSOIL	SAND
									1.22	BROWN	TOPSOIL	SAND
									3.05	RED	SAND	SOFT
									3.05	RED	SAND	SOFT
									3.96	RED	SANDSTONE	SOFT
									3.96	RED	SANDSTONE	SOFT
									6.71	RED	GRANITE	HARD
									6.71	RED	GRANITE	HARD
									7.01	RED	SANDSTONE	POROUS
									7.01	RED	SANDSTONE	POROUS
									7.62	GREY	GRANITE	HARD
									7.62	GREY	GRANITE	HARD
5119267	736090	4940096	237.7	6 ft	17.37	16 GPM	Water Supply	Domestic	FRESH			
									0.61	BLACK	TOPSOIL	SOFT
									0.61	BLACK	TOPSOIL	SOFT
									5.18	RED	GRANITE	HARD
									5.18	RED	GRANITE	HARD
									8.84	GREY	GRANITE	HARD
									8.84	GREY	GRANITE	HARD

Well I.D.	Easting	Northing	Elev.	WL Found (m)	Test Rate	Status	Use	Water Kind	Lith. Depth	Lith. Colour	Lith. Materials	
									16.8		GRANITE	HARD
									16.8		GRANITE	HARD
									17.4	RED	GRANITE	POROUS
									17.4	RED	GRANITE	POROUS
									19.2	GREY	GRANITE	HARD
									19.2	GREY	GRANITE	HARD
5119339	736512	4941873	237.2	0 ft	24.38	6 GPM	Water Supply	Domestic	FRESH			
									0.30	BROWN	TOPSOIL	
									7.32	BROWN	SAND	GRAVEL
									24.4	RED	GRANITE	ROCK
5119440	740125	4944603	262.0	16 ft	10.06	8 GPM	Water Supply	Domestic	FRESH			
									1.83	GREY	GRAVEL	SOFT
									1.83	GREY	GRAVEL	SOFT
									4.57	RED	GRANITE	HARD
									4.57	RED	GRANITE	HARD
									9.14	BLACK	GRANITE	HARD
									9.14	BLACK	GRANITE	HARD
									10.1	RED	GRANITE	POROUS
									10.1	RED	GRANITE	POROUS
									11.9	BLACK	GRANITE	HARD
									11.9	BLACK	GRANITE	HARD
5119500	736784.1	4939384	243	21 ft	18.59	20 GPM	Water Supply	Domestic	FRESH			
									4.27	BROWN	CLAY	STONES
									4.27	BROWN	CLAY	STONES
									4.27	BROWN	CLAY	STONES
									4.27	BROWN	CLAY	STONES
									8.84	RED	GRANITE	SHALE
									8.84	RED	GRANITE	SHALE
									8.84	RED	GRANITE	SHALE
									8.84	RED	GRANITE	SHALE
									22.9	RED	GRANITE	HARD
									22.9	RED	GRANITE	HARD
									22.9	RED	GRANITE	HARD
									22.9	RED	GRANITE	HARD
5119585	736561.1	4939998	233.4	16 ft	42.67	10 GPM	Water Supply	Domestic	FRESH			
									1.22	BROWN	SAND	GRAVEL
									1.22	BROWN	SAND	GRAVEL
									42.1	GREY	GRANITE	HARD
									42.1	GREY	GRANITE	HARD
									43.3	BROWN	UNKNOWN TYPE	GRANITE

Well I.D.	Easting	Northing	Elev.	WL Found (m)		Test Rate	Status	Use	Water Kind	Lith. Depth	Lith. Colour	Lith. Materials	
										43.3	BROWN	UNKNOWN TYPE	GRANITE
										48.8	GREY	GRANITE	
										48.8	GREY	GRANITE	
5119697	730288	4937539	237.3	3 m	11.6	22.7 LPM	Water Supply	Domestic	FRESH				
										0.30	BROWN	SAND	SOFT
										0.30	BROWN	SAND	SOFT
										5.2	RED	GRANITE	HARD
										5.2	RED	GRANITE	HARD
										10.9	GREY	GRANITE	HARD
										10.9	GREY	GRANITE	HARD
										11.6	RED	GRANITE	POROUS
										11.6	RED	GRANITE	POROUS
										17.3	BLACK	GRANITE	HARD
										17.3	BLACK	GRANITE	HARD
5119743	738364.1	4938044	267.8	18 ft	13.72	10 GPM	Water Supply	Domestic	FRESH				
										2.13	BROWN	TOPSOIL	
										4.57	BROWN	CLAY	SHALE
										13.7	GREY	LIMESTONE	ROCK
5119747	733694.1	4938777	241.0	7 ft	72.24	5 GPM	Water Supply	Domestic	Not stated				
										0.30		TOPSOIL	
										1.52	BROWN	CLAY	ROCK
										21.9	RED	GRANITE	ROCK
										36.6	BLACK	GRANITE	ROCK
										68.6	GREY	GRANITE	ROCK
										72.2	RED	GRANITE	ROCK
5119824	731225	4938276	243.2	10 m	19.5	36.4 LPM	Water Supply	Domestic	FRESH				
										0.30	BLACK	TOPSOIL	SOFT
										0.30	BLACK	TOPSOIL	SOFT
										2.74	BLACK	GRANITE	HARD
										2.74	BLACK	GRANITE	HARD
										6.40		GRANITE	HARD
										6.40		GRANITE	HARD
										19.5	BLACK	GRANITE	HARD
										19.5	BLACK	GRANITE	HARD
										21		GRANITE	QUARTZ
										21		GRANITE	QUARTZ
										26.2	BLACK	GRANITE	HARD
										26.2	BLACK	GRANITE	HARD
5119891	735493.1	4941849	241.6	3 m	16	112 LPM	Water Supply	Domestic	FRESH				
										0.30	BROWN	TOPSOIL	SOFT

Well I.D.	Easting	Northing	Elev.	WL Found (m)		Test Rate	Status	Use	Water Kind	Lith. Depth	Lith. Colour	Lith. Materials	
										6.1	BROWN	SAND	SOFT
										14.8		GRAVEL	HARD
										23.2	RED	GRAVEL	HARD
5119952	736364	4941743	235.7	1 m		36 LPM	Water Supply	Domestic					
										2	BLACK	MUCK	WOOD FRAGMENTS
										4	GREY	SAND	SILT
										31	GREY	GRANITE	
5119953	736364	4941775	235.4	0.9 m		36 LPM	Water Supply	Domestic	FRESH				
										2.5	BLACK	MUCK	WOOD FRAGMENTS
										31	GREY	GRANITE	
5119964	730751	4940447	241.6	6 m		LPM	Abandoned-Other						
5120020	730726	4938189	241.7	6 m	35	13.6 LPM	Water Supply	Domestic	FRESH				
										6	BLACK	GRANITE	
										7	WHITE	QUARTZ	
										24	BLACK	GRANITE	
										24.4	RED	GRANITE	
										32.6	BLACK	GRANITE	
										35.6	RED	GRANITE	
										37.5	BLACK	GRANITE	
5120144	730888	4940546	244.4	8 m	33	68 LPM	Water Supply	Domestic	FRESH				
										1.5	RED	SAND	BOULDERS
										1.5	RED	SAND	BOULDERS
										4.80		GRANITE	HARD
										4.80		GRANITE	HARD
										22.8	GREY	GRANITE	HARD
										22.8	GREY	GRANITE	HARD
										32		GRANITE	HARD
										32		GRANITE	HARD
										33.2	BLACK	GRANITE	HARD
										33.2	BLACK	GRANITE	HARD
										35		GRANITE	GRANITE
										35		GRANITE	GRANITE
5120248	733452	4941419	241.3	8 m		90.9 LPM	Water Supply	Domestic	FRESH				
										1.52	BROWN	CLAY	ROCK
										1.52	BROWN	CLAY	ROCK
										67.1	RED	GRANITE	
										67.1	RED	GRANITE	
5120270	733350	4941473	250.2	10 m	51.81	68.2 LPM	Water Supply	Domestic	FRESH				
										1.82	BROWN	SAND	
										1.82	BROWN	SAND	

Well I.D.	Easting	Northing	Elev.	WL Found (m)		Test Rate	Status	Use	Water Kind	Lith. Depth	Lith. Colour	Lith. Materials	
										4.26	RED	SHALE	ROCK
										4.26	RED	SHALE	ROCK
										51.8	RED	GRANITE	
										51.8	RED	GRANITE	
5120299	737069	4939777	245.5	8	m	29	45 LPM	Water Supply	Domestic	FRESH			
										0.60	BROWN	SAND	STONES
										0.60	BROWN	SAND	STONES
										7	RED	GRANITE	HARD
										7	RED	GRANITE	HARD
										28.9	BLACK	GRANITE	HARD
										28.9	BLACK	GRANITE	HARD
										29.2	RED	GRANITE	POROUS
										29.2	RED	GRANITE	POROUS
										31.6	BLACK	GRANITE	HARD
										31.6	BLACK	GRANITE	HARD
5120324	735287	4939674	240.4	4	m	74	24 LPM	Water Supply	Domestic	FRESH			
										0.60	BROWN	SAND	SOFT
										0.60	BROWN	SAND	SOFT
										25.9	BLACK	GRANITE	HARD
										25.9	BLACK	GRANITE	HARD
										27.4	WHITE	QUARTZ	HARD
										27.4	WHITE	QUARTZ	HARD
										73.4	GREY	GRANITE	HARD
										73.4	GREY	GRANITE	HARD
										74.6	BLACK	GRANITE	POROUS
										74.6	BLACK	GRANITE	POROUS
										75.2	GREY	GRANITE	HARD
										75.2	GREY	GRANITE	HARD
5120325	735763	4942291	248.6	6	m	21.3	18.2 LPM	Water Supply	Domestic	FRESH			
										0.30	BROWN	TOPSOIL	STONES
										0.30	BROWN	TOPSOIL	STONES
										21.3	GREY	GRANITE	
										21.3	GREY	GRANITE	
										30.5	BROWN	GRANITE	
										30.5	BROWN	GRANITE	
5120377	731934	4940804	247.1	34	ft	60.96	6 GPM	Water Supply	Domestic	FRESH			
										2.74	GREY	BOULDERS	SAND
										2.74	GREY	BOULDERS	SAND
										11.3	GREY	GRANITE	
										11.3	GREY	GRANITE	

Well I.D.	Easting	Northing	Elev.	WL Found (m)	Test Rate	Status	Use	Water Kind	Lith. Depth	Lith. Colour	Lith. Materials	
									18		GRANITE	
									18		GRANITE	
									36.6	BLACK	GRANITE	
									36.6	BLACK	GRANITE	
									60.4		GRANITE	
									60.4		GRANITE	
									62.2	RED	GRANITE	
									62.2	RED	GRANITE	
									64.0	BLACK	GRANITE	
									64.0	BLACK	GRANITE	
5120553	737137	4939812	241.9	13 ft	23.77	5 GPM	Water Supply	Domestic	FRESH			
									6.71		GRANITE	HARD
									6.71		GRANITE	HARD
									8.84	GREY	GRANITE	HARD
									8.84	GREY	GRANITE	HARD
									23.8	BLACK	GRANITE	HARD
									23.8	BLACK	GRANITE	HARD
									25	RED	GRANITE	SOFT
									25	RED	GRANITE	SOFT
5120741	732899	4938451	246.7	13 ft	27.13	3 GPM	Water Supply	Domestic	FRESH			
									0.61	BLACK	TOPSOIL	
									0.61	BLACK	TOPSOIL	
									5.18	GREY	GRANITE	
									5.18	GREY	GRANITE	
									9.14	RED	GRANITE	
									9.14	RED	GRANITE	
									27.1	BLACK	GRANITE	
									27.1	BLACK	GRANITE	
									28.0		GRANITE	
									28.0		GRANITE	
									32.0	BLACK	GRANITE	
									32.0	BLACK	GRANITE	
5120749	730977	4938373	239.8	10 ft		14 GPM	Water Supply	Domestic				
									10.7	BLACK	GRANITE	
									10.7	BLACK	GRANITE	
									11	BROWN	GRANITE	
									11	BROWN	GRANITE	
									22.6	BLACK	GRANITE	
									22.6	BLACK	GRANITE	
									22.9		GRANITE	

Well I.D.	Easting	Northing	Elev.	WL Found (m)		Test Rate	Status	Use	Water Kind	Lith. Depth	Lith. Colour	Lith. Materials	
										22.9		GRANITE	
5120786	736255	4939842	236.3	3 ft	47.24	3.5 GPM	Water Supply	Domestic	FRESH				
										3.05	BROWN	SAND	STONES
										3.05	BROWN	SAND	STONES
										3.05	BROWN	SAND	STONES
										4.27	GREY	CLAY	HARD
										4.27	GREY	CLAY	HARD
										4.27	GREY	CLAY	HARD
										37.2	GREY	GRANITE	HARD
										37.2	GREY	GRANITE	HARD
										37.2	GREY	GRANITE	HARD
										42.7		GRANITE	HARD
										42.7		GRANITE	HARD
										42.7		GRANITE	HARD
										46.0	BLACK	GRANITE	HARD
										46.0	BLACK	GRANITE	HARD
										46.0	BLACK	GRANITE	HARD
										47.2	RED	GRANITE	POROUS
										47.2	RED	GRANITE	POROUS
										47.2	RED	GRANITE	POROUS
										56.4	GREY	GRANITE	HARD
										56.4	GREY	GRANITE	HARD
										56.4	GREY	GRANITE	HARD
7042679	736270	4941974	236.9	1 m	62.48	45.5 LPM	Water Supply	Domestic	FRESH				
										0.30	BROWN	TOPSOIL	
										0.30	BROWN	TOPSOIL	
										19.8	BROWN	CLAY	SANDY
										19.8	BROWN	CLAY	SANDY
										32	GREY	CLAY	SANDY
										32	GREY	CLAY	SANDY
										54.9	BLACK	GRANITE	ROCK
										54.9	BLACK	GRANITE	ROCK
										62.5	RED	GRANITE	STONES
										62.5	RED	GRANITE	STONES
7044620	731039	4940764	250.8	6 m	79.2	45.5 LPM	Water Supply	Domestic	FRESH				
										1.5	BROWN	SAND	
										1.5	BROWN	SAND	
										1.5	BROWN	SAND	
										1.5	BROWN	SAND	
										82.3	GREY	GRANITE	

Well I.D.	Easting	Northing	Elev.	WL Found (m)		Test Rate	Status	Use	Water Kind	Lith. Depth	Lith. Colour	Lith. Materials
										82.3	GREY	GRANITE
										82.3	GREY	GRANITE
										82.3	GREY	GRANITE
7101362	736283	4943144	252	11 ft	15.54	3 GPM	Water Supply	Commerical	FRESH			
										1.22	BROWN	SAND
										7.92	RED	GRANITE
										15.5	BLACK	GRANITE
										19.2	RED	GRANITE
7107320	736001	4941913	234.3	2 ft	50.29	2 GPM	Water Supply	Domestic	FRESH			
										5.49	RED	SAND
										8.84	RED	GRANITE
										50.3	GREY	GRANITE
										62.5	RED	GRANITE
7107321	730670	4938001	239	9 ft	18.9	17 GPM	Water Supply	Domestic	FRESH			
										0.91	GREY	GRANITE
										11.9	BLACK	GRANITE
										14.0	GREY	GRANITE
										18.9	BLACK	GRANITE
										22.6	GREY	GRANITE
7108125	734726	4941377	234.2	0 m	23	36 LPM	Water Supply	Domestic	FRESH			
											GREY	
											GREY	
										5.2	BROWN	SAND
										5.2	BROWN	SAND
										29.6	WHITE	GRANITE
										29.6	WHITE	GRANITE
										33.5	GREY	GRANITE
										33.5	GREY	GRANITE
										88.4	WHITE	GRANITE
										88.4	WHITE	GRANITE
										113	WHITE	GRANITE
										113	WHITE	GRANITE
										122	GREY	GRANITE
										122	GREY	GRANITE
7108286	735719	4942169	244.3	11 ft	36.58	2 GPM	Water Supply	Domestic	FRESH			
										4.88	RED	SAND
										9.75	RED	GRANITE
										36.9	GREY	GRANITE
										42.7	BLACK	GRANITE
7115945	736750	4939720	237.7	8 ft	39.32	5 GPM	Water Supply	Domestic	Untested			

Well I.D.	Easting	Northing	Elev.	WL Found (m)		Test Rate	Status	Use	Water Kind	Lith. Depth	Lith. Colour	Lith. Materials	
										14.0	BLACK	GRANITE	
										14.0	BLACK	GRANITE	
										15.8	RED	GRANITE	
										15.8	RED	GRANITE	
										36.9	BLACK	GRANITE	
										36.9	BLACK	GRANITE	
										39.3	RED	GRANITE	
										39.3	RED	GRANITE	
										44.2	BLACK	GRANITE	
										44.2	BLACK	GRANITE	
7121483	734440	4939242		3	ft	70.10	5 GPM	Water Supply	Public	FRESH			
										3.66	BLACK	CLAY	
										80.8	RED	GRANITE	
7132971	737363	4945747	279.7					Test Hole	Test Hole				
										0.30	BROWN	MEDIUM SAND	GRAVEL
										1.52	BROWN	SAND	GRAVEL
										2.44	GREY	MEDIUM SAND	
7132974	737447	4945666	301.4					Test Hole	Test Hole				
7134313	736534	4941581	235	8	ft	25.60	2.5 GPM	Water Supply	Domestic	Untested			
										0.61	BLACK	TOPSOIL	
										0.61	BLACK	TOPSOIL	
										5.18	GREY	GRANITE	
										5.18	GREY	GRANITE	
										12.8	BLACK	GRANITE	
										12.8	BLACK	GRANITE	
										21.6	RED	GRANITE	
										21.6	RED	GRANITE	
										25.6	BLACK	GRANITE	
										25.6	BLACK	GRANITE	
										32.0	RED	GRANITE	
										32.0	RED	GRANITE	
7134395	735032	4942105	249.9	28	ft	32.92	3 GPM	Water Supply	Domestic	Untested			
										1.22	BROWN	SAND	STONES
										64.0	GREY	GRANITE	
7144264	734389	4941090	239.6	23	ft	37.49	15 GPM	Water Supply	Domestic	Untested			
										0.61	BROWN	SAND	
										0.61	BROWN	SAND	
										36	WHITE	LIMESTONE	
										36	WHITE	LIMESTONE	

Well I.D.	Easting	Northing	Elev.	WL Found (m)	Test Rate	Status	Use	Water Kind	Lith. Depth	Lith. Colour	Lith. Materials	
									42.7	RED	LIMESTONE	
									42.7	RED	LIMESTONE	
7144884	733917	4938978	241.4	25 ft	68.58	3 GPM	Water Supply	Domestic	FRESH			
									0.30	BLACK	TOPSOIL	
									0.30	BLACK	TOPSOIL	
									1.83	GREY	SHALE	
									1.83	GREY	SHALE	
									122	BLACK	GRANITE	
									122	BLACK	GRANITE	
7146501	731455	4940710	240.8	10 ft	89.92	2.5 GPM	Water Supply	Domestic	Untested			
									2.13	BROWN	SAND	GRAVEL
									49.4	WHITE	MARBLE	
									56.4	GREY	GRANITE	
									101	WHITE	MARBLE	
7151163	734745	4939558	238.5	18 ft	131.1	0.5 GPM	Water Supply	Domestic	FRESH			
									0.15	BROWN	TOPSOIL	
									0.91	BROWN	SAND	GRAVEL
									84.7	BLACK	GRANITE	
									99.1	BLACK	GRANITE	
									114	BLACK	GRANITE	
									171	BLACK	GRANITE	
7153007	735832	4941997	244.7	40 ft	62.48	2 GPM	Water Supply	Domestic	Untested			
									0.61	BROWN	TOPSOIL	
									73.2	GREY	GRANITE	
7153395	731256	4938456	238.3	15 ft	33.53	2 GPM	Water Supply	Domestic	Untested			
									1.22	BROWN	SAND	
									1.22	BROWN	SAND	
									29.3	BLACK	GRANITE	
									29.3	BLACK	GRANITE	
									33.5	RED	GRANITE	
									33.5	RED	GRANITE	
									63.1	BLACK	GRANITE	
									63.1	BLACK	GRANITE	
7153404	736355	4940258		14 ft	38.1	5 GPM	Water Supply	Domestic	Untested			
									1.83	GREY	GRAVEL	
									1.83	GREY	GRAVEL	
									38.1	GREY	GRANITE	
									38.1	GREY	GRANITE	
									40.2	RED	GRANITE	POROUS
									40.2	RED	GRANITE	POROUS
7155111	734745	4939558					Abandoned-Other					

Well I.D.	Easting	Northing	Elev.	WL Found (m)	Test Rate	Status	Use	Water Kind	Lith. Depth	Lith. Colour	Lith. Materials	
7167920	735835	4941907	18 ft	22.86	12 GPM	Water Supply	Domestic	Untested				
									0.91	RED	SAND	
									0.91	RED	SAND	
									20.7	GREY	GRANITE	
									20.7	GREY	GRANITE	
									24.4	RED	GRANITE	
									24.4	RED	GRANITE	
7167922	737328	4939112	44 ft	20.73	10 GPM	Water Supply	Domestic	Untested				
									1.83	RED	SAND	
									1.83	RED	SAND	
									19.2	GREY	GRANITE	
									19.2	GREY	GRANITE	
									21.3	RED	GRANITE	
									21.3	RED	GRANITE	
									24.4	GREY	GRANITE	
									24.4	GREY	GRANITE	
7169392	736541	4942035	13 ft	39.62	12 GPM	Water Supply	Domestic	Untested				
									4.27	RED	SAND	
									4.27	RED	SAND	
									39.6	GREY	GRANITE	
									39.6	GREY	GRANITE	
									42.7	RED	GRANITE	
									42.7	RED	GRANITE	
7175309	734245	4939217	16 ft	38.1	GPM	Water Supply	Domestic	Untested				
									38.1			
									38.1			
									38.1			
7184437	736770	4939522	3 ft	7.315	8.5 GPM	Water Supply		FRESH				
									1.22	YELLOW	SAND	STONES
									1.22	YELLOW	SAND	STONES
									6.40	GREY	CLAY	SILT
									6.40	GREY	CLAY	SILT
									9.45	RED	GRANITE	
									9.45	RED	GRANITE	
7184439	735093	4942000	20 ft	27.13	5 GPM	Water Supply		FRESH				
									6.71	YELLOW	SAND	
									6.71	YELLOW	SAND	
									6.71	YELLOW	SAND	
									6.71	YELLOW	SAND	

Well I.D.	Easting	Northing	Elev.	WL Found (m)	Test Rate	Status	Use	Water Kind	Lith. Depth	Lith. Colour	Lith. Materials	
									25.9	BLACK	GRANITE	
									25.9	BLACK	GRANITE	
									25.9	BLACK	GRANITE	
									25.9	BLACK	GRANITE	
									27.1	RED	GRANITE	
									27.1	RED	GRANITE	
									27.1	RED	GRANITE	
									27.1	RED	GRANITE	
									45.7	GREY	GRANITE	
									45.7	GREY	GRANITE	
									45.7	GREY	GRANITE	
									45.7	GREY	GRANITE	
									47.2	BROWN	GRANITE	
									47.2	BROWN	GRANITE	
									47.2	BROWN	GRANITE	
									47.2	BROWN	GRANITE	
									51.5	BLACK	GRANITE	
									51.5	BLACK	GRANITE	
									51.5	BLACK	GRANITE	
									51.5	BLACK	GRANITE	
7184698	730938	4940594	51 ft	25.91	12 GPM	Water Supply	Domestic	Untested				
									1.83	GREY	GRAVEL	
									1.83	GREY	GRAVEL	
									3.66	WHITE	GRANITE	
									3.66	WHITE	GRANITE	
									25.9	BLACK	GRANITE	
									25.9	BLACK	GRANITE	
									30.5	RED	GRANITE	
									30.5	RED	GRANITE	
7186951	732595	4940450	6 ft	37.49	4 GPM	Water Supply	Domestic	Untested				
									0.30	BROWN	SAND	
									0.30	BROWN	SAND	
									9.75	GREY	GRANITE	
									9.75	GREY	GRANITE	
									29	GREY	GRANITE	
									29	GREY	GRANITE	
									48.8	GREY	GRANITE	
									48.8	GREY	GRANITE	
7189267	736053	4939168	9 ft	91.44	4 GPM	Water Supply	Domestic	Untested				
									2.74	RED	SAND	STONES

Well I.D.	Easting	Northing	Elev.	WL Found (m)	Test Rate	Status	Use	Water Kind	Lith. Depth	Lith. Colour	Lith. Materials	
									2.74	RED	SAND	STONES
									8.53	RED	GRANITE	
									8.53	RED	GRANITE	
									104	GREY	GRANITE	
									104	GREY	GRANITE	
7189663	736675	4939689	20 ft	38.1	8 GPM	Water Supply	Domestic	Untested				
									42.7	RED	GRANITE	
7198245	730875	4936697	12 ft	24.38	10 GPM	Water Supply	Domestic					
									2.44	RED	CLAY	BOULDERS
									24.4	RED	GRANITE	ROCK
7199568	734043	4941523	10 ft	64.01	15 GPM	Water Supply	Domestic	Untested				
									3.96	RED	SAND	
									3.96	RED	SAND	
									45.7	GREY	GRANITE	
									45.7	GREY	GRANITE	
									47.2	RED	GRANITE	
									47.2	RED	GRANITE	
									64.0	GREY	GRANITE	
									64.0	GREY	GRANITE	
									67.1	RED	GRANITE	
									67.1	RED	GRANITE	
7199570	736681	4940915	4 ft	44.81	3 GPM	Water Supply	Domestic	Untested				
									5.18	GREY	GRANITE	
									5.18	GREY	GRANITE	
									44.2	BLACK	GRANITE	
									44.2	BLACK	GRANITE	
									44.8	RED	GRANITE	
									44.8	RED	GRANITE	
									48.8	BLACK	GRANITE	
									48.8	BLACK	GRANITE	
7199571	734039	4941529				Abandoned-Quality						
7203246	732038	4938471	20 ft	91.44	6 GPM	Water Supply	Domestic	Untested				
									0.61	RED	SAND	
									0.61	RED	SAND	
									91.4	GREY	GRANITE	HARD
									91.4	GREY	GRANITE	HARD
7203247	731036	4940692	17 ft	97.54	15 GPM	Water Supply	Domestic	Untested				
									1.22	BROWN	SAND	SOFT
									1.22	BROWN	SAND	SOFT
									64.0	GREY	GRANITE	HARD

Well I.D.	Easting	Northing	Elev.	WL Found (m)		Test Rate	Status	Use	Water Kind	Lith. Depth	Lith. Colour	Lith. Materials	
										64.0	GREY	GRANITE	HARD
										74.7	RED	GRANITE	
										74.7	RED	GRANITE	
										105	RED	GRANITE	HARD
										105	RED	GRANITE	HARD
7203396	736982	4944300											
										1.83	BROWN	SILT	SAND
										4.27	GREY	ROCK	
7203412	736860	4944179											
										0.76	GREY	FILL	ROCK
										4.57	GREY	ROCK	
7206040	735290	4941929		6 ft	8.534	2 GPM	Water Supply		Untested				
										0.91	YELLOW	SAND	
										0.91	YELLOW	SAND	
										5.49	BLUE	GRANITE	
										5.49	BLUE	GRANITE	
										7.32		GRANITE	
										7.32		GRANITE	
										57.9	WHITE	GRANITE	
										57.9	WHITE	GRANITE	
7209778	735071	4938512		6 ft	15.24	6 GPM	Water Supply	Domestic	Untested				
										0.30	BLACK	TOPSOIL	STONES
										0.30	BLACK	TOPSOIL	STONES
										3.66	RED	SAND	GRAVEL
										3.66	RED	SAND	GRAVEL
										11.3	RED	GRANITE	
										11.3	RED	GRANITE	
										18.9	BLACK	GRANITE	
										18.9	BLACK	GRANITE	
7212951	730737	4936790		9 ft	57.91	15 GPM	Water Supply	Domestic	Untested				
										0.61	BROWN	SAND	SOFT
										0.61	BROWN	SAND	SOFT
										8.84	GREY	GRANITE	HARD
										8.84	GREY	GRANITE	HARD
										42.7	RED	GRANITE	HARD
										42.7	RED	GRANITE	HARD
										57.9	GREY	GRANITE	HARD
										57.9	GREY	GRANITE	HARD
										61	BLACK	GRANITE	
										61	BLACK	GRANITE	

Well I.D.	Easting	Northing	Elev.	WL Found (m)		Test Rate	Status	Use	Water Kind	Lith. Depth	Lith. Colour	Lith. Materials	
7215338	735361	4941843		8 ft		5 GPM			Untested				
										1.52	YELLOW	SAND	
										1.52	YELLOW	SAND	
										5.49	GREY	GRANITE	
										5.49	GREY	GRANITE	
										36.6	BLACK	GRANITE	
										36.6	BLACK	GRANITE	
										42.7	WHITE	GRANITE	
										42.7	WHITE	GRANITE	
										76.2	BLACK	GRANITE	
										76.2	BLACK	GRANITE	
7215341	735477	4941878		20 ft		2 GPM	Test Hole		Untested				
										0.61	BLACK	TOPSOIL	
										0.61	BLACK	TOPSOIL	
										13.7	GREY	GRANITE	
										13.7	GREY	GRANITE	
										38.1	GREY	GRANITE	
										38.1	GREY	GRANITE	
										59.4	BLACK	GRANITE	
										59.4	BLACK	GRANITE	
										76.2	BLACK	GRANITE	QUARTZITE
										76.2	BLACK	GRANITE	QUARTZITE
										78.9	WHITE	GRANITE	
										78.9	WHITE	GRANITE	
										89.0	BLACK	GRANITE	
										89.0	BLACK	GRANITE	
7215344	735376	4941700		6 ft	20.48	6 GPM	Test Hole		Untested				
										1.22	YELLOW	SAND	
										1.22	YELLOW	SAND	
										1.22	YELLOW	SAND	
										1.22	YELLOW	SAND	
										1.22	YELLOW	SAND	
										1.22	YELLOW	SAND	
										91.4	GREY	GRANITE	
										91.4	GREY	GRANITE	
										91.4	GREY	GRANITE	
										91.4	GREY	GRANITE	
										91.4	GREY	GRANITE	
										91.4	GREY	GRANITE	
7221696	735315	4942076		10 ft	33.53	3.5 GPM	Test Hole	Test Hole	Untested				

Well I.D.	Easting	Northing	Elev.	WL Found (m)	Test Rate	Status	Use	Water Kind	Lith. Depth	Lith. Colour	Lith. Materials	
									2.13	RED	SAND	GRAVEL
									2.13	RED	SAND	GRAVEL
									26.2	GREY	GRANITE	
									26.2	GREY	GRANITE	
									32.9	BLACK	GRANITE	
									32.9	BLACK	GRANITE	
									36.6	GREY	GRANITE	
									36.6	GREY	GRANITE	
									88.4	BLACK	GRANITE	
									88.4	BLACK	GRANITE	
									97.5	RED	GRANITE	
									97.5	RED	GRANITE	
7225021	735500	4941762	9 ft	36.58	5 GPM	Water Supply	Test Hole	Untested				
									4.88	RED	SAND	
									4.88	RED	SAND	
									29	BLACK	GRANITE	
									29	BLACK	GRANITE	
									30.5	RED	GRANITE	
									30.5	RED	GRANITE	
									39.0	BLACK	GRANITE	
									39.0	BLACK	GRANITE	
									42.7	WHITE	GRANITE	
									42.7	WHITE	GRANITE	
									48.8	BLACK	GRANITE	
									48.8	BLACK	GRANITE	
7225022	734948	4941450	6 ft	91.44	3 GPM	Water Supply	Domestic	Untested				
									0.91	BROWN	SAND	
									0.91	BROWN	SAND	
									85.3	GREY	GRANITE	
									85.3	GREY	GRANITE	
									92.0		GRANITE	
									92.0		GRANITE	
									104	GREY	GRANITE	
									104	GREY	GRANITE	
7226465	734660	4938491	44 ft	21.34	2 GPM	Water Supply	Domestic	Untested				
									0.91	GREY	CLAY	
									0.91	GREY	CLAY	
									13.7	GREY	LIMESTONE	
									13.7	GREY	LIMESTONE	
									20.7	RED	GRANITE	

Well I.D.	Easting	Northing	Elev.	WL Found (m)	Test Rate	Status	Use	Water Kind	Lith. Depth	Lith. Colour	Lith. Materials	
									20.7	RED	GRANITE	
									61	GREY	GRANITE	
									61	GREY	GRANITE	
7228857	736371	4941754	3 ft	39.62	2 GPM	Water Supply	Domestic	Untested				
									2.44	RED	SAND	
									2.44	RED	SAND	
									7.32	RED	GRANITE	
									7.32	RED	GRANITE	
									48.8	BLACK	GRANITE	
									48.8	BLACK	GRANITE	
7229219	731653	4938427	6 ft	9.144	8 GPM	Water Supply	Domestic	Untested				
									0.30	BROWN	TOPSOIL	
									0.30	BROWN	TOPSOIL	
									0.30	BROWN	TOPSOIL	
									24.4	GREY	GRANITE	
									24.4	GREY	GRANITE	
									24.4	GREY	GRANITE	
7231661	731712	4938385	6 ft	13.72	10 GPM	Water Supply	Domestic	Untested				
									1.52	BROWN	SAND	GRAVEL
									1.52	BROWN	SAND	GRAVEL
									24.4	GREY	GRANITE	
									24.4	GREY	GRANITE	

APPENDIX C

Well Survey Letter & Questionnaire

ORE
Oakridge Environmental Limited
Environmental and Hydrogeological Services

Dear Homeowner or Occupant:

On June 05, 2013, an Oakridge Environmental Ltd. staff member visited your property while conducting a door to door well survey. Our study is part of a hydrogeological study being commissioned by a neighbouring property.

Through this study, we are collecting data regarding water supplies and sewage treatment in the area. If you would like to participate, we would like to include information about your well and septic system in our study.

The purpose of the survey is to prepare an accurate database of local water supply conditions. If you are in receipt of this letter, it means that we attempted to contact you and you were unavailable. We have a brief questionnaire that we can complete with you by telephone, fax or e-mail (whichever is most convenient).

The success of our survey depends on obtaining accurate information. We view your water supply and sewage treatment system information as an important part of our survey. You are under no obligation to participate in our survey, however if you are interested in participating, please contact our office at your earliest convenience using the information provided below.

We thank you for your time.

Christa Lemelin

Oakridge Environmental Ltd.
P.O. Box 431
380 Armour Road, Suite 127
Peterborough, Ontario
K9J 6Z3

telephone: (705) 745-1181
1-888-OAKRIDGE (625-7434)
fax: (705) 745-4163
1-877-796-7781
email: christa.ore@bellnet.ca

www.oakridgeenvironmental.com

WATER SUPPLY SUMMARY

For Office Use Only

By:_____

Project No:_____

MOEE #:_____

Ref. No:_____

Township:_____

Hamlet/Town:_____

Lot:_____ Concession:_____

Well Owner:_____

Mailing Address:_____

Phone: _____ Date:_____

Type of Residence: (house, seasonal cottage, business, etc.)_____

WATER SUPPLY SOURCE

Dug Well: ❑ Drilled Well: ❑ Lake/River: ❑ Other:_____

Well Depth:_____ Diameter: _____

Well Construction:_____

Well Drilled by: _____Date:_____

WATER QUANTITY

Never Dry: ❑ Occasionally Dry: ❑ Often Dry: ❑ Last Date:_____

Ever hauled water? _____ Last Date:_____ Contractor:_____

WATER QUALITY

Odour Problems (describe):_____

Taste Problems (describe):_____

Turbidity Problems (describe):_____

Staining (describe):_____

Bacteria Problems (describe): _____

Other:_____

Ever had water sampled? Bacteria? ❑ Chemical? ❑ Last Date:_____

WATER TREATMENT

Water Softener:_____

Chlorinator:_____

Filter:_____

Other:_____

PROPERTY AND WATER USE

Lot Size:_____ No. of Residents:_____ No. of Washrooms:_____

No. of Bedrooms:_____

SEWAGE DISPOSAL

Tile Bed: Raised: ❑ In-ground: ❑

Problems: Odours: ❑ Breakouts: ❑ No problems: ❑

System Age:_____ Constructed By:_____

Distance to Well:_____ Direction: (eg. Upgradient) _____

Distance to Building:_____

PROPERTY SKETCH

(showing house, well, and tile bed locations)

Interested in participating in well testing or monitoring? Yes No

APPENDIX D

Individual On-Site Well Records

Ontario Ministry of the Environment

A112514

A112514

(Print Below) COPY

Well Record

Regulation 903 Ontario Water Resources Act

Measurements recorded in: ☐ Metric ☐ Imperial

Well Owner's Information

First Name	Last Name / Organization	E-mail Address	☐ Well Constructed by Well Owner
	Royal Homes Limited		

Mailing Address (Street Number/Name)	Municipality	Province	Postal Code	Telephone No. (inc. area code)
P.O. Box 310 213 Arthur	Wingham	ON	[illegible]	[illegible]

Well Location

Address of Well Location (Street Number/Name)	Township	Lot	Concession
2250 Northey's Bay Rd.	North Kawartha	Pt 3	11

County/District/Municipality	City/Town/Village	Province	Postal Code
Peterborough	Lakefield	Ontario	[illegible]

UTM Coordinates	Zone	Easting	Northing	Municipal Plan and Sublot Number	Other
NAD 83	17	[illegible]	[illegible]		RP 45R5530

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
yellow	sand			0	22
bl.	granite			22	85
bl.	granite			85	89
grey	granite			89	130
grey	granite			130	155
bl.	granite			155	169

Annular Space

Depth Set at (m/ft) From	To	Type of Sealant Used (Material and Type)	Volume Placed (m³/ft³)
0	22	bentonite grout	

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): 160

Pumping rate (l/min / GPM): 5

Duration of pumping: 1 hrs + 0 min

Final water level end of pumping (m/ft): 118.50

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

Recommended pump depth (m/ft): 165

Recommended pump rate (l/min / GPM):

Well production (l/min / GPM): 2

Disinfected? ☒ Yes ☐ No

Draw Down Time (min)	Water Level (m/ft)	Recovery Time (min)	Water Level (m/ft)
Static Level	16.9		
1	20.10	1	[illegible]
2	22.50	2	[illegible]
3	25.00	3	[illegible]
4	27.40	4	[illegible]
5	29.10	5	[illegible]
10	40.10	10	[illegible]
15	49.00	15	[illegible]
20	57.40	20	[illegible]
25	64.90	25	[illegible]
30	72.50	30	[illegible]
40	89.40	40	[illegible]
50	105.10	50	[illegible]
60	118.50	60	[illegible]

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
6¼	Steel	.188	+2	22
6⅛	Open hole		22	169

Status of Well

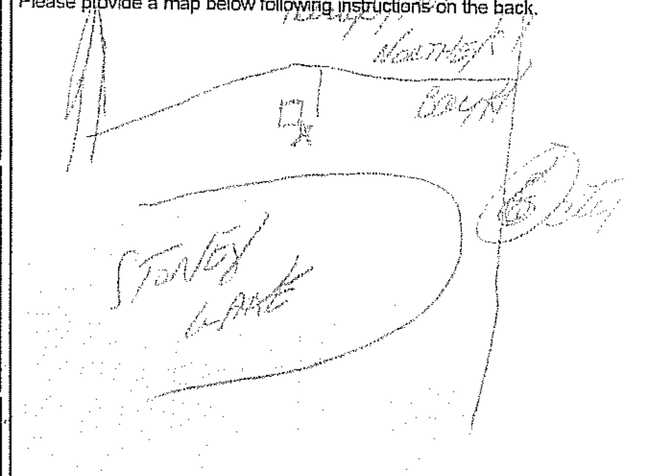
☒ Water Supply
☐ Replacement Well
☐ Test Hole
☐ Recharge Well
☐ Dewatering Well
☐ Observation and/or Monitoring Hole
☐ Alteration (Construction)
☐ Abandoned, Insufficient Supply
☐ Abandoned, Poor Water Quality
☐ Abandoned, other, specify
☐ Other, specify

Construction Record - Screen

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

Map of Well Location

Please provide a map below following instructions on the back.



Comments:

Water Details

Water found at Depth 89 (m/ft) ☐ Gas — Kind of Water: ☒ Fresh ☐ Untested ☐ Other, specify

Water found at Depth 165 (m/ft) ☐ Gas — Kind of Water: ☒ Fresh ☐ Untested ☐ Other, specify

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

Hole Diameter

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

Well Contractor and Well Technician Information

Business Name of Well Contractor	Well Contractor's Licence No.
Keith White's Water Wells	6567

Business Address (Street Number/Name)	Municipality
2013 North School Rd.	Havelock

Province	Postal Code	Business E-mail Address
ON	[illegible]	

Bus. Telephone No. (inc. area code)	Name of Well Technician (Last Name, First Name)
[illegible]	White, Keith

Well Technician's Licence No.	Signature of Technician and/or Contractor	Date Submitted
1135	[signature]	[illegible]

Well owner's information package delivered ☒ Yes ☐ No

Date Package Delivered: [illegible]

Date Work Completed: [illegible]

Ministry Use Only

Audit No. Z127493

Received

Ontario — Ministry of the Environment

Tag#: A130935

(Print Below) A130935

Well Record

Regulation 903 Ontario Water Resources Act

Measurements recorded in: ☐ Metric ☒ Imperial

Page ____ of 3

Well Owner's Information

First Name	Last Name / Organization	E-mail Address	☐ Well Constructed by Well Owner
	Royal Homes Limited		

Mailing Address (Street Number/Name)	Municipality	Province	Postal Code	Telephone No. (inc. area code)
P.O. Box 370, 23 Arthur St	Wingham	ON	N0G2W0	

Well Location

Address of Well Location (Street Number/Name)	Township	Lot	Concession
486 Pilgrims Rest Rd	N65D Kinloss	17 3	11

County/District/Municipality	City/Town/Village	Province	Postal Code
Peterborough	Lakefield	Ontario	

UTM Coordinates	Zone	Easting	Northing	Municipal Plan and Sublot Number	Other
NAD 8 3	17	755290	4971929		RP45R8530

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	Depth (m/ft) To
yellow	sand			0	3
Blk/wh	granite			3	18
Bl/pink	granite			18	24
Bl/wht	granite			24	190

Annular Space

Depth Set at (m/ft) From	To	Type of Sealant Used (Material and Type)	Volume Placed (m^3/ft^3)
0	20	Bentonite grout	

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	Depth (m/ft) To
6 3/4	steel	.188	+1.5	-20
6 3/4	open hole		20	190

Construction Record - Screen

Outside Diameter (cm/in)	Material (Plastic, Galvanized, Steel)	Slot No.	Depth (m/ft) From	Depth (m/ft) 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)	Gas	Kind of Water: Fresh ☒ Untested	Other, specify
128	☐	☐	
	☐	☐	
	☐	☐	

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): 185

Pumping rate (l/min / GPM): 2

Duration of pumping: 3 hrs + ____ min

Final water level end of pumping (m/ft): 135.5

If flowing give rate (l/min / GPM): -

Recommended pump depth (m/ft): 185

Recommended pump rate (l/min / GPM): 2

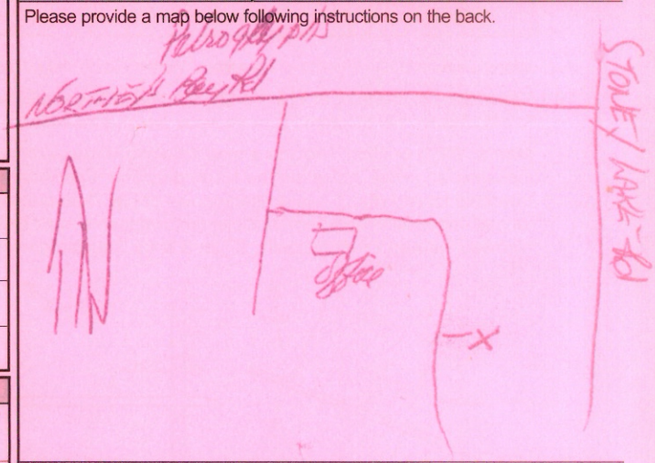
Well production (l/min / GPM): 1.5

Disinfected? ☒ Yes ☐ No

Draw Down Time (min)	Draw Down Water Level (m/ft)	Recovery Time (min)	Recovery Water Level (m/ft)
Static Level	6.35		135.5
1	7.68	1	130.30
2	8.70	2	129.70
3	9.70	3	128.90
4	10.70	4	128.70
5	11.70	5	127.80
10	16.10	10	124.90
15	20.20	15	122.30
20	23.80	20	120.40
25	27.30	25	117.30
30	30.70	30	115.70
40	37.60	40	111.60
50	45.10	50	107.80
60	52.30	60	104.40

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.
Keith White's Water Wells	6516

Business Address (Street Number/Name)	Municipality
2613 North School Rd	

Province	Postal Code	Business E-mail Address
ON	K0K1X0	

Bus. Telephone No. (inc. area code)	Name of Well Technician (Last Name, First Name)
7057971086	White Keith

Well Technician's Licence No.	Signature of Technician and/or Contractor	Date Submitted
1732		2012/05/07

Well owner's information package delivered: ☐ Yes ☐ No

Date Package Delivered: 2012/06/12

Date Work Completed: 2012/05/12

Ministry Use Only

Audit No. Z 150681

Received

Well Owner's Copy

Ontario — Ministry of the Environment

Tag#: A130939

Well Record

Regulation 903, Ontario Water Resources Act

Page ___ of 3

Measurements recorded in: ☐ Metric ☒ Imperial

We... (Print Below) A130939

RECEIVED SEP 12 2013

Well Owner's Information

First Name	Last Name / Organization	E-mail Address	Well Constructed by Well Owner
	Royal Homes Limited		☐

Mailing Address (Street Number/Name)	Municipality	Province	Postal Code	Telephone No. (inc. area code)
P.O. Box 370 213 Arthur St.	Wingham	ON	N0G2W0	

Well Location

Address of Well Location (Street Number/Name)	Township	Lot	Concession
4786 Pilgrims Rest Rd.	North Kawartha	Pt 3	11

County/District/Municipality	City/Town/Village	Province	Postal Code
Peterborough	Lakefield	Ontario	

UTM Coordinates	Zone	Easting	Northing	Municipal Plan and Sublot Number	Other
NAD 8 3	17	735376	4941700		

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	Depth (m/ft) To
Yellow	sand			0	4
grey & white & Bl.	granite			4	300

Annular Space

Depth Set at (m/ft) From	Depth Set at (m/ft) To	Type of Sealant Used (Material and Type)	Volume Placed (m^3/ft^3)
2	20	Bentonite grout	

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	Depth (m/ft) To
6 4	Steel	.188	1.5	20
6 8	open hole		20	300

Construction Record - Screen

Outside Diameter (cm/in)	Material (Plastic, Galvanized, Steel)	Slot No.	Depth (m/ft) From	Depth (m/ft) 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)	Gas	Kind of Water	Other, specify
612	☐	☐ Fresh ☒ Untested	
70	☐	☐ Fresh ☒ Untested	
122	☐	☐ Fresh ☒ Untested	

Hole Diameter

Depth (m/ft) From	Depth (m/ft) 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): 210

Pumping rate (l/min / GPM): 6 GPM

Duration of pumping: 1 hrs + 0 min

Final water level end of pumping (m/ft): 67.10

If flowing give rate (l/min / GPM): -

Recommended pump depth (m/ft): 295

Recommended pump rate (l/min / GPM): 6

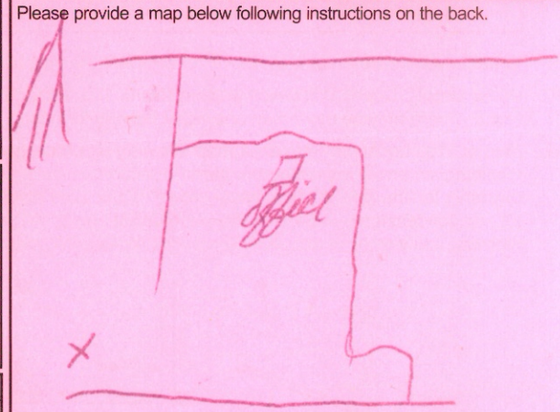
Well production (l/min / GPM): +6

Disinfected? ☒ Yes ☐ No

Draw Down Time (min)	Draw Down Water Level (m/ft)	Recovery Time (min)	Recovery Water Level (m/ft)
Static Level	6.40		
1	10.30	1	62.80
2	12.80	2	50.50
3	15.50	3	57.30
4	18.10	4	55.00
5	20.45	5	52.75
10	32.10	10	43.30
15	36.40	15	37.20
20	44.60	20	30.70
25	49.50	25	26.55
30	53.60	30	23.20
40	59.75	40	18.70
50	64.20	50	15.70
60	67.10	60	12.95

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.
Keith White's Water Wells	6567

Business Address (Street Number/Name)	Municipality
263 Birchwood Rd	Lindsay

Province	Postal Code	Business E-mail Address
ON	K9V 4R2	

Bus. Telephone No. (inc. area code)	Name of Well Technician (Last Name, First Name)
705 878 7236	White, Kevin

Well Technician's Licence No.	Signature of Technician and/or Contractor	Date Submitted
1732		2013/09/13 (Y Y Y Y M M D D)

Well owner's information package delivered	Date Package Delivered	Date Work Completed
☒ Yes ☐ No	2013/09/13	2013/09/13

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Audit No. Z 150686

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Well Owner's Copy

Ontario — Ministry of the Environment

Well Record

Regulation 903 Ontario Water Resources Act

Tag#: A130956 (Print Below)

A130956

Measurements recorded in: ☐ Metric ☒ Imperial

Page ____ of 3

Well Owner's Information

First Name	Last Name / Organization	E-mail Address	☐ Well Constructed by Well Owner
	Loyal Homes Limited		

Mailing Address (Street Number/Name)	Municipality	Province	Postal Code	Telephone No. (inc. area code)
P.O. Box 370 213 Queen St	Wingham	ON	N0G2W0	

Well Location

Address of Well Location (Street Number/Name)	Township	Lot	Concession
4786 Kilgorie West Rd.	North Kawartha	A3	11

County/District/Municipality	City/Town/Village	Province	Postal Code
Peterborough	Lakefield	Ontario	

UTM Coordinates	Zone	Easting	Northing	Municipal Plan and Sublot Number	Other
NAD 83	17	739477	4934878		

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	Depth (m/ft) To
BL	Top Soil		hard	0	2
grey/pink	granite		"	2	45
grey/white	granite		"	45	125
Red/pink	granite		"	125	195
Black	granite	quartzite		195	250
White/BL	granite			250	259
Black	granite			259	292

Annular Space

Depth Set at (m/ft) From	Depth Set at (m/ft) To	Type of Sealant Used (Material and Type)	Volume Placed (m³/ft³)
0	20	bentonite grout	

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	Depth (m/ft) To
6	Steel	.188	1.5	20
			20	292

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

Construction Record - Screen

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

Water Details

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

Hole Diameter

Depth (m/ft) From	Depth (m/ft) To	Diameter (cm/in)
0	20	8
20	292	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): 230

Pumping rate (l/min / GPM): 2

Duration of pumping: 2 hrs + 0 min

Final water level end of pumping (m/ft): 124.09

If flowing give rate (l/min / GPM): —

Recommended pump depth (m/ft):

Recommended pump rate (l/min / GPM):

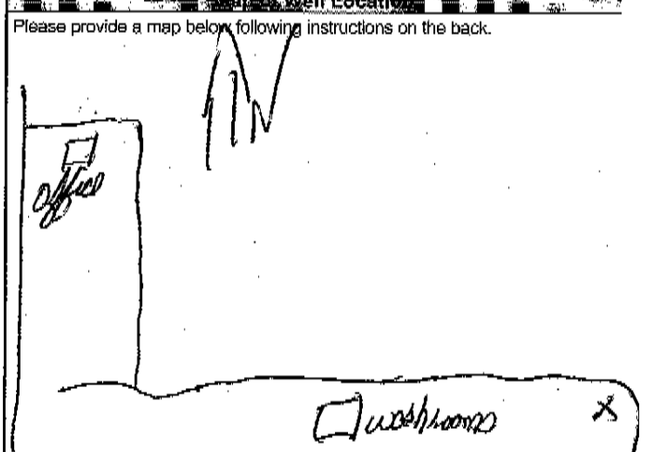
Well production (l/min / GPM): 2

Disinfected? ☒ Yes ☐ No

Draw Down Time (min)	Draw Down Water Level (m/ft)	Recovery Time (min)	Recovery Water Level (m/ft)
Static Level	18.10		
1	16.95	1	123.40
2	18.00	2	127.88
3	19.06	3	122.34
4	20.08	4	121.82
5	21.15	5	121.30
10	27.25	10	118.78
15	33.05	15	116.28
20	38.58	20	113.96
25	43.88	25	111.66
30	48.94	30	109.48
40	58.55	40	105.13
50	67.60	50	100.90
60	76.25	60	97.15

Sketch 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.
Keith White's Water Wells	6764

Business Address (Street Number/Name)	Municipality
2613 Northcott Rd	Havelock

Province	Postal Code	Business E-mail Address
ON	K0L1Z0	

Bus. Telephone No. (inc. area code)	Name of Well Technician (Last Name, First Name)
705 778 7336	White, Keith

Well Technician's Licence No.	Signature of Technician and/or Contractor	Date Submitted
1732	Keith White	2013/12/19 (Y/M/D)

Well owner's information package delivered	Date Package Delivered	Date Work Completed
☒ Yes ☐ No	2013/12/19 (Y/M/D)	2013/12/10 (Y/M/D)

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Tag#: A130958

Well Record

Regulation 903 Ontario Water Resources Act

Measurements recorded in: ☐ Metric ☒ Imperial

Well ... (see Instructions Below): A130958

Page ___ of 3

Well Owner's Information

First Name	Last Name / Organization	E-mail Address	☐ Well Constructed by Well Owner
	Royal Homes Limited		

Mailing Address (Street Number/Name)	Municipality	Province	Postal Code	Telephone No. (inc. area code)
P.O. Box 213 Arthur St.	Wingham	On	N0G2W0	

Well Location

Address of Well Location (Street Number/Name)	Township	Lot	Concession
RR6 Kilgram's West Rd.	North Kawartha	Pt 3	11

County/District/Municipality	City/Town/Village	Province	Postal Code
Peterborough	Lakefield	Ontario	

UTM Coordinates	Zone	Easting	Northing	Municipal Plan and Sublot Number	Other
NAD 8 3	17	735361	4944843		

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	Depth (m/ft) To
yellow	sand			0	5
grey/red	granite		hrd	5	18
Blue L	granite		white & brown granite	18	120
White &	granite			120	140
Blue L	granite		Brown grey	140	250

Annular Space

Depth Set at (m/ft) From	Depth Set at (m/ft) To	Type of Sealant Used (Material and Type)	Volume Placed (m^3/ft^3)
0	20	Bentonite grout	

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	Depth (m/ft) To
6"	steel	.188	-1.5	20
6"	open hole		20	250

Construction Record - Screen

Outside Diameter (cm/in)	Material (Plastic, Galvanized, Steel)	Slot No.	Depth (m/ft) From	Depth (m/ft) 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)	☐ Gas	Kind of Water: ☐ Fresh ☒ Untested	☐ Other, *specify*
Water found at Depth (m/ft)	☐ Gas	Kind of Water: ☐ Fresh ☐ Untested	☐ Other, *specify*
Water found at Depth (m/ft)	☐ Gas	Kind of Water: ☐ Fresh ☐ Untested	☐ Other, *specify*

Hole Diameter

Depth (m/ft) From	Depth (m/ft) To	Diameter (cm/in)
0	20	6"
20	250	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): 230

Pumping rate (l/min / GPM): 5

Duration of pumping: 1 hrs + 0 min

Final water level end of pumping (m/ft): 163.50

If flowing give rate (l/min / GPM): -

Recommended pump depth (m/ft): 245

Recommended pump rate (l/min / GPM): 5

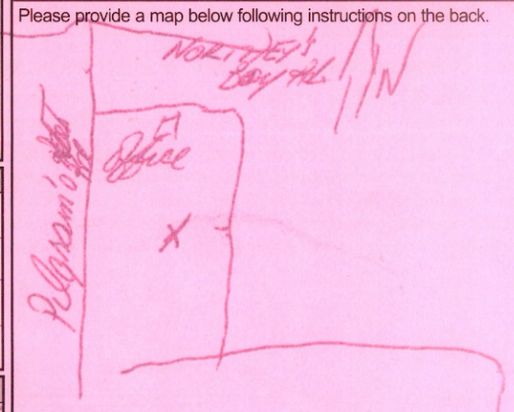
Well production (l/min / GPM): 4.5

Disinfected? ☒ Yes ☐ No

Draw Down Time (min)	Draw Down Water Level (m/ft)	Recovery Time (min)	Recovery Water Level (m/ft)
Static Level	7.60		
1	11.13	1	161.45
2	14.38	2	159.57
3	17.56	3	158.03
4	20.65	4	155.80
5	23.74	5	153.95
10	37.92	10	143.90
15	50.46	15	136.45
20	62.10	20	129.60
25	72.74	25	122.95
30	82.30	30	116.45
40	99.45	40	104.50
50	113.69	50	93.65
60	125.66	60	84.00

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.
Keith White's Water Wells	6567

Business Address (Street Number/Name)	Municipality
2613 North Pool Rd.	Havelock

Province	Postal Code	Business E-mail Address
On	K0L1Z0	

Bus. Telephone No. (inc. area code)	Name of Well Technician (Last Name, First Name)
705 778 7936	White Keith

Well Technician's Licence No.	Signature of Technician and/or Contractor	Date Submitted
1732		2012/03/16

Well owner's information package delivered	Date Package Delivered	Date Work Completed
☐ Yes ☒ No	2012/03/12	2012/03/12

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Well Owner's Copy

Ontario — Ministry of the Environment

Measurements recorded in: ☐ Metric ☑ Imperial

Well Tag No. *(Place Sticker and/or Print Below)*: A 138967

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
	ROYAL HOMES LTD		

Mailing Address (Street Number/Name)	Municipality	Province	Postal Code	Telephone No. *(inc. area code)*
P.O. BOX 213 ARTHUR ST	WILLIAM	ON	N0G 2W0	

Well Location

Address of Well Location (Street Number/Name)	Township	Lot	Concession
4786 PILGRIMS REST RD.	BURLEIGH	PT 3	11

County/District/Municipality	City/Town/Village	Province	Postal Code
PETERBOROUGH	LAKEFIELD	Ontario	K0L 2H0

UTM Coordinates	Zone	Easting	Northing	Municipal Plan and Sublot Number	Other
NAD 8 3	17	735315	4942076		

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	Depth (m/ft) To
RED	SAND	GRAVEL	SOFT	0	7
GREY	GRANITE		HARD	7	86
BLACK	GRANITE		HARD	86	108
GREY	GRANITE		HARD	108	120
BLACK	GRANITE		HARD	120	290
PINK	GRANITE		HARD	290	320

Annular Space

Depth Set at (m/ft) From	Depth Set at (m/ft) To	Type of Sealant Used (Material and Type)	Volume Placed (m^3/ft^3)
0	20	BENTONITE SLURRY	7 FT^3

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	Depth (m/ft) To
6 1/8	STEEL	188	0	20
6 1/8	OPEN HOLE		20	320

Construction Record - Screen

Outside Diameter (cm/in)	Material (Plastic, Galvanized, Steel)	Slot No.	Depth (m/ft) From	Depth (m/ft) 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	Gas	Other, specify
110	☐ Fresh ☑ Untested	☐ Gas	☐ Other, specify
	☐ Fresh ☐ Untested	☐ Gas	☐ Other, specify
	☐ Fresh ☐ Untested	☐ Gas	☐ Other, specify

Hole Diameter

Depth (m/ft) From	Depth (m/ft) To	Diameter (cm/in)
0	20	8 3/4
20	320	6 1/8

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): 35

Duration of pumping: 2 hrs + 0 min

Final water level end of pumping (m/ft): 114.95

If flowing give rate (l/min / GPM): -

Recommended pump depth (m/ft): 315

Recommended pump rate (l/min / GPM): 35

Well production (l/min / GPM): 35

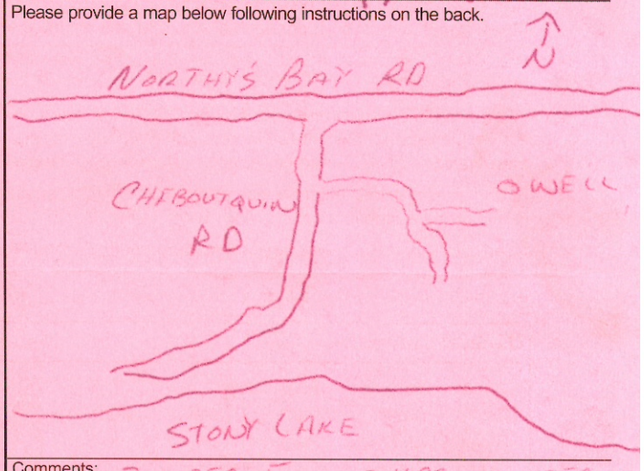
Disinfected? ☑ Yes ☐ No

Draw Down Time (min)	Draw Down Water Level (m/ft)	Recovery Time (min)	Recovery Water Level (m/ft)
Static Level	9.76		
1	13.34	1	110.04
2	14.34	2	108.24
3	15.37	3	106.93
4	16.43	4	105.58
5	17.42	5	104.53
10	25.62	10	98.79
15	31.46	15	94.09
20	37.69	20	89.81
25	43.07	25	86.03
30	48.54	30	82.56
40	57.66	40	76.36
50	65.50	50	70.68
60	74.1	60	66.35

114.95

Map of Well Location

Please provide a map below following instructions on the back.



Comments: PUMPED FOR 2 HRS WATER LEVEL @ 114.95

Well Contractor and Well Technician Information

Business Name of Well Contractor	Well Contractor's Licence No.
WENSLEY WATER WELL LTD	6578

Business Address (Street Number/Name)	Municipality
AR2 LAKEFIELD	PETERBOROUGH

Province	Postal Code	Business E-mail Address
ON	K0L 2H0	

Bus. Telephone No. *(inc. area code)*	Name of Well Technician (Last Name, First Name)
7056521629	ERIK WENSLEY

Well Technician's Licence No.	Signature of Technician and/or Contractor	Date Submitted
0632		2014/05/23

Well owner's information package delivered	Date Package Delivered	Date Work Completed
☐ Yes ☑ No		2014/04/15

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Well Owner's Copy

Ontario — Ministry of the Environment

Measurements recorded in: ☐ Metric ☑ Imperial

Well Tag No. *(Place Sticker and/or Print Below)*: A167169

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
	ROYAL HOMES LTD		

Mailing Address (Street Number/Name)	Municipality	Province	Postal Code	Telephone No. (inc. area code)
PO BOX 213 ARTHUR ST	WINGHAM	ON	N0G 2W0	

Well Location

Address of Well Location (Street Number/Name)	Township	Lot	Concession
4786 PILGRIMS REST RD.	BURLEIGH	PT 3	11

County/District/Municipality	City/Town/Village	Province	Postal Code
PETERBORO	LAKEFIELD	Ontario	K0L 2H0

UTM Coordinates	Zone	Easting	Northing	Municipal Plan and Sublot Number	Other
NAD 83	17	735500	4841762		

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	Depth (m/ft) To
RED	SAND		WET	0	16
BLACK	GRANITE		HARD	16	95
RED	GRANITE		FRACTURED	95	100
BLACK	GRANITE		HARD	100	128
WHITE	GRANITE		HARD	128	140
BLACK	GRANITE		HARD	140	160

Annular Space

Depth Set at (m/ft) From	Depth Set at (m/ft) To	Type of Sealant Used (Material and Type)	Volume Placed (m³/ft³)
0	20	BENTONITE	14 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	Depth (m/ft) To
6 1/4	STEEL	188	0	20
6 1/8	OPEN HOLE		20	160

Construction Record - Screen

Outside Diameter (cm/in)	Material (Plastic, Galvanized, Steel)	Slot No.	Depth (m/ft) From	Depth (m/ft) 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	Gas	Other, specify
120	☐ Fresh ☑ Untested	☐	
	☐ Fresh ☐ Untested	☐	
	☐ Fresh ☐ Untested	☐	

Hole Diameter

Depth (m/ft) From	Depth (m/ft) To	Diameter (cm/in)
0	20	8 3/4
20	160	6 1/8

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): 155

Pumping rate (l/min / GPM): 5

Duration of pumping: 1 hrs + ____ min

Final water level end of pumping (m/ft): 68

If flowing give rate (l/min / GPM)

Recommended pump depth (m/ft): 155

Recommended pump rate (l/min / GPM): 5

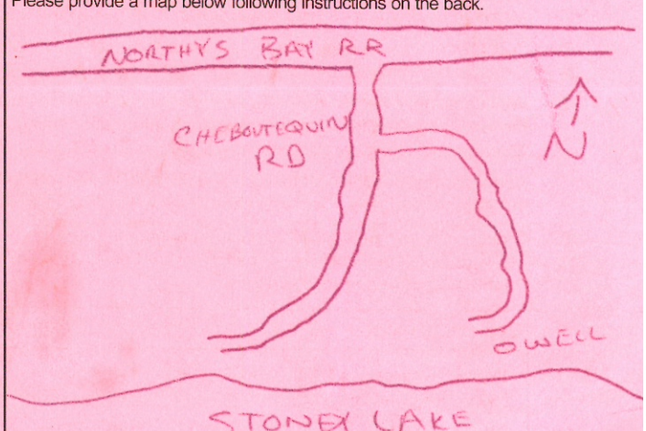
Well production (l/min / GPM): 5

Disinfected? ☑ Yes ☐ No

Draw Down Time (min)	Draw Down Water Level (m/ft)	Recovery Time (min)	Recovery Water Level (m/ft)
Static Level	8.6		
1	11.2	1	67.8
2	13.6	2	66.9
3	15.6	3	66.1
4	17.7	4	65.6
5	19.7	5	65.1
10	28	10	55.3
15	35.1	15	46.9
20	41	20	39.4
25	45.7	25	33.7
30	50	30	29
40	57.5	40	21.5
50	63.3	50	16.7
60	68	60	13.4

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.
WENSLEY WATER WELL LTD	6578

Business Address (Street Number/Name)	Municipality
RR 2 LAKEFIELD	PETERBORO

Province	Postal Code	Business E-mail Address
ON	K0L 2H0	

Bus. Telephone No. (inc. area code)	Name of Well Technician (Last Name, First Name)
7056521629	ERIC WENSLEY

Well Technician's Licence No.	Signature of Technician and/or Contractor	Date Submitted
01632		2014/06/30

Well owner's information package delivered: ☐ Yes ☑ No

Date Package Delivered: ____

Date Work Completed: 2014/06/12

Ministry Use Only

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Well Owner's Copy

APPENDIX E

Pumping Test Data

Oakridge Environmental Ltd.
380 Armour Road, Suite 127
Peterborough, Ontario
K9H 7L7

Pumping Test Analysis Report

Project: Pilgrim's Rest

Number: 12-1629

Client: Pieter Venema

Location: Burleigh	Pumping Test: TW-1 Prelim.	Pumping well: TW-1
Test conducted by: DM/MC		Test date: 5/6/2013
Analysis performed by: DM/BK	TW-1 - Time-Drawdown	Analysis date: 5/12/2014
Aquifer Thickness:	Discharge: variable, average rate 0.5272 [l/s]	

Oakridge Environmental Ltd.
380 Armour Road, Suite 127
Peterborough, Ontario
K9H 7L7

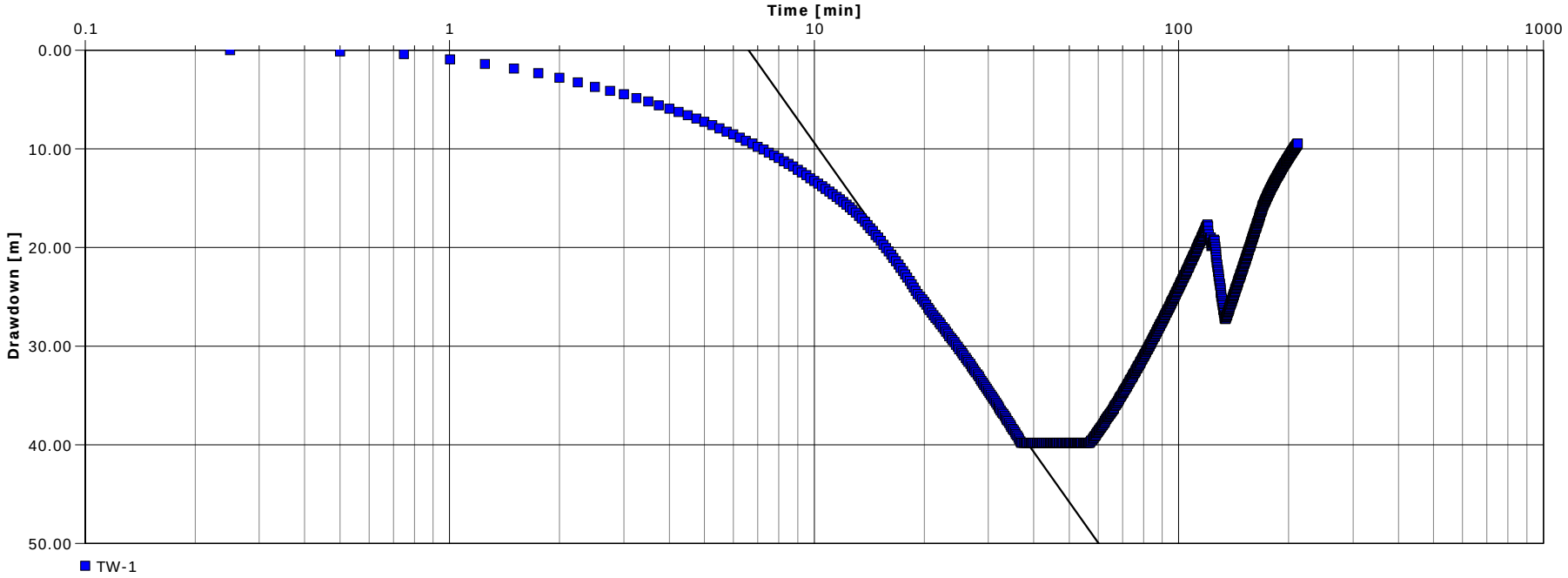
Pumping Test Analysis Report

Project: Pilgrim's Rest

Number: 12-1629

Client: Pieter Venema

Location: Burleigh	Pumping Test: TW-1 Prelim.	Pumping well: TW-1
Test conducted by: DM/MC		Test date: 5/6/2013
Analysis performed by: DM/BK	Cooper-Jacob I - pumped well only	Analysis date: 4/24/2015
Aquifer Thickness:	Discharge: variable, average rate 0.5272 [l/s]	

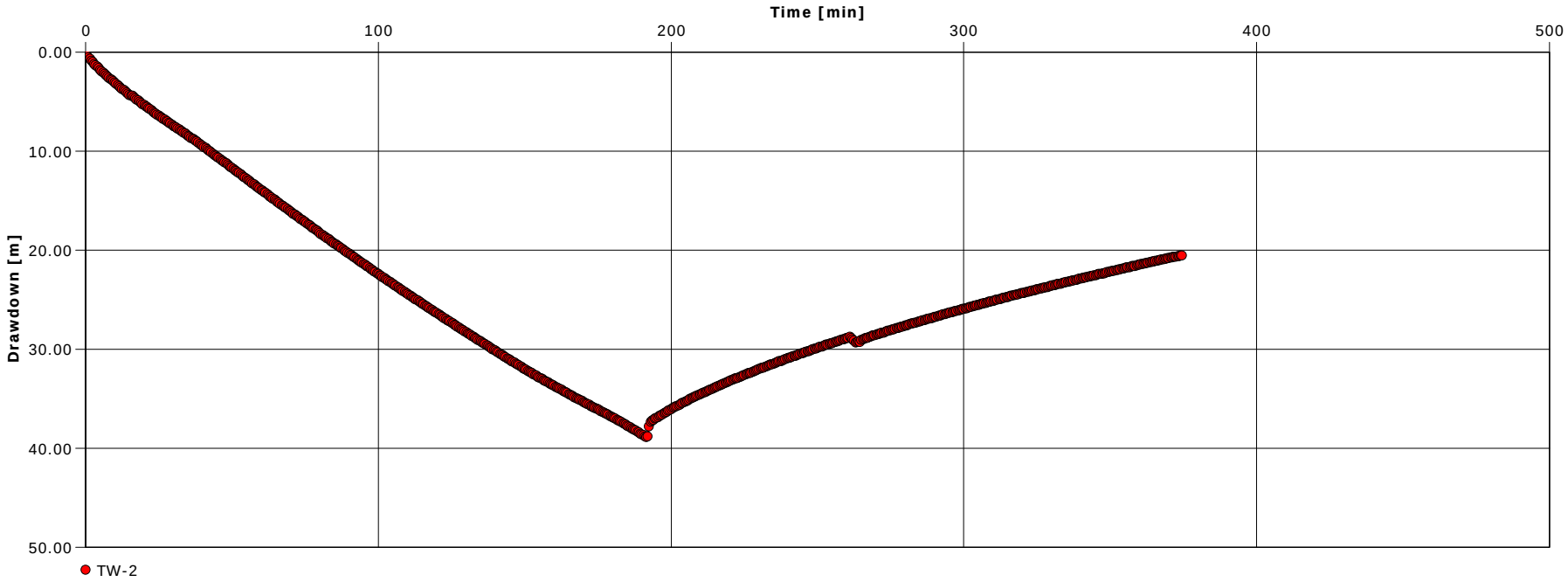


Calculation after Cooper & Jacob

Observation well	Transmissivity [m²/d]	Storage coefficient	Radial distance to PW [m]	
TW-1	1.60×10^{-1}		0.08	

Oakridge Environmental Ltd. **380 Armour Road, Suite 127** **Peterborough, Ontario** **K9H 7L7**	**Pumping Test Analysis Report**
	Project: Pilgrim's Rest
	Number: 12-1629
	Client: Pieter Venema

Location: Burleigh	Pumping Test: TW-2 Prelim.	Pumping well: TW-2
Test conducted by: DM/MC		Test date: 6/12/2013
Analysis performed by: DM/BK	TW-2, Time-Drawdown pumped well	Analysis date: 5/12/2014
Aquifer Thickness:	Discharge: variable, average rate 0.126 [l/s]	



Oakridge Environmental Ltd.
380 Armour Road, Suite 127
Peterborough, Ontario
K9H 7L7

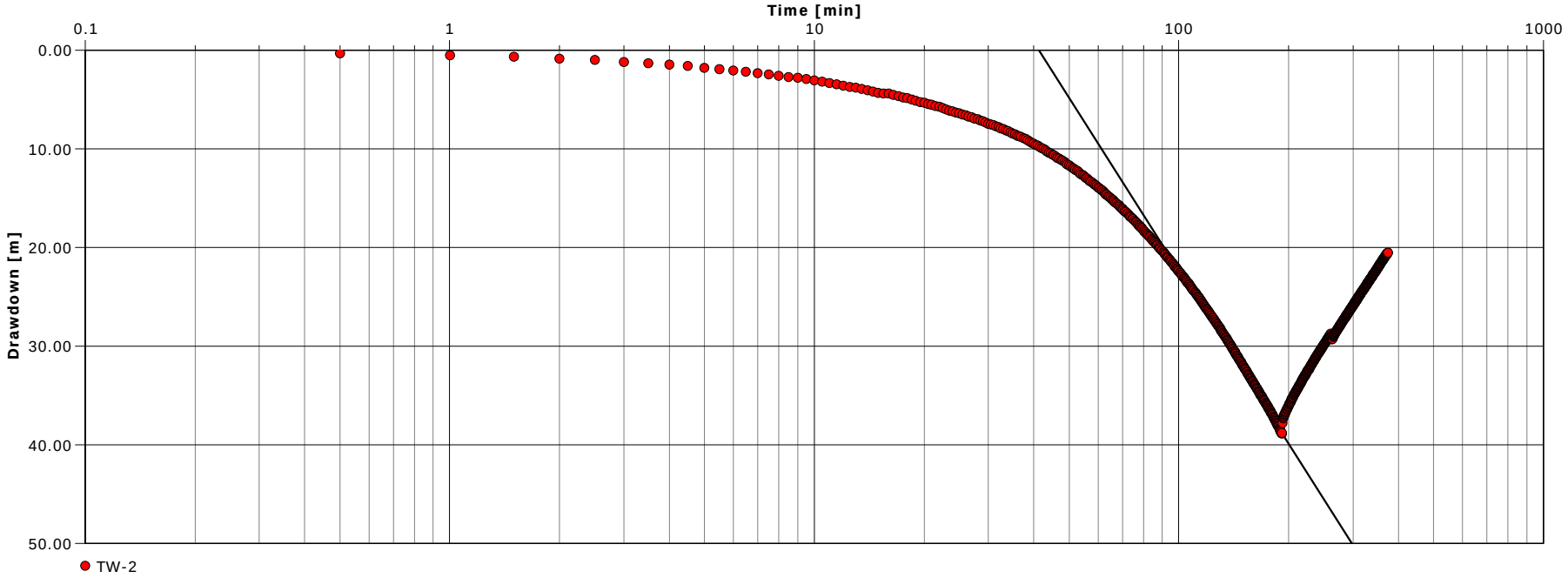
Pumping Test Analysis Report

Project: Pilgrim's Rest

Number: 12-1629

Client: Pieter Venema

Location: Burleigh	Pumping Test: TW-2 Prelim.	Pumping well: TW-2
Test conducted by: DM/MC		Test date: 6/12/2013
Analysis performed by: DM/BK	TW-2, Cooper-Jacob, pumped well	Analysis date: 4/24/2015
Aquifer Thickness:	Discharge: variable, average rate 0.126 [l/s]	

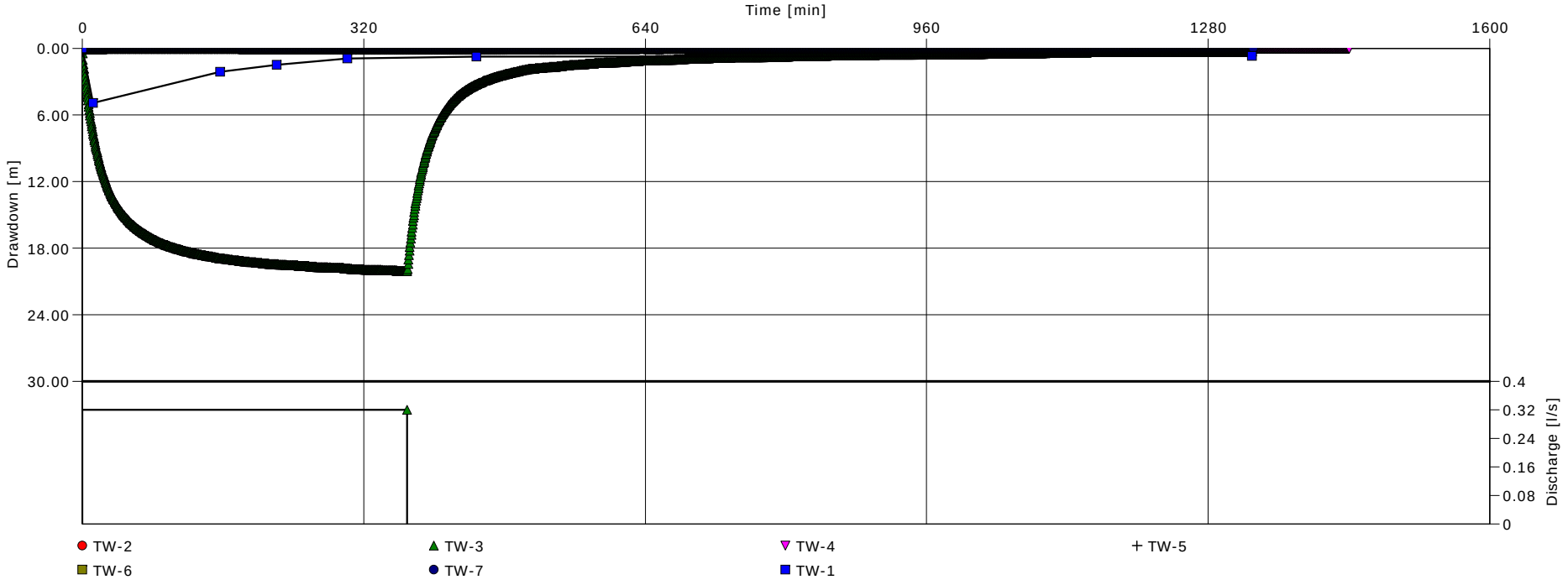


Calculation after Cooper & Jacob

Observation well	Transmissivity [m²/d]	Storage coefficient	Radial distance to PW [m]	
TW-2	3.42×10^{-2}	3.45×10^{-1}	0.08	

Oakridge Environmental Ltd. **380 Armour Road, Suite 127** **Peterborough, Ontario** **K9H 7L7**	**Pumping Test Analysis Report** Project: Pilgrim's Rest Number: 12-1629 Client: Pieter Venema

Location: Burleigh	Pumping Test: TW-3 (6hr)	Pumping well: TW-3
Test conducted by: DM/BP		Test date: 7/17/2014
Analysis performed by: DM/BK	TW-3 Time - Drawdown	Analysis date: 4/22/2015
Aquifer Thickness: 91.99 m	Discharge: variable, average rate 0.32 [l/s]	



Oakridge Environmental Ltd.
380 Armour Road, Suite 127
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K9H 7L7

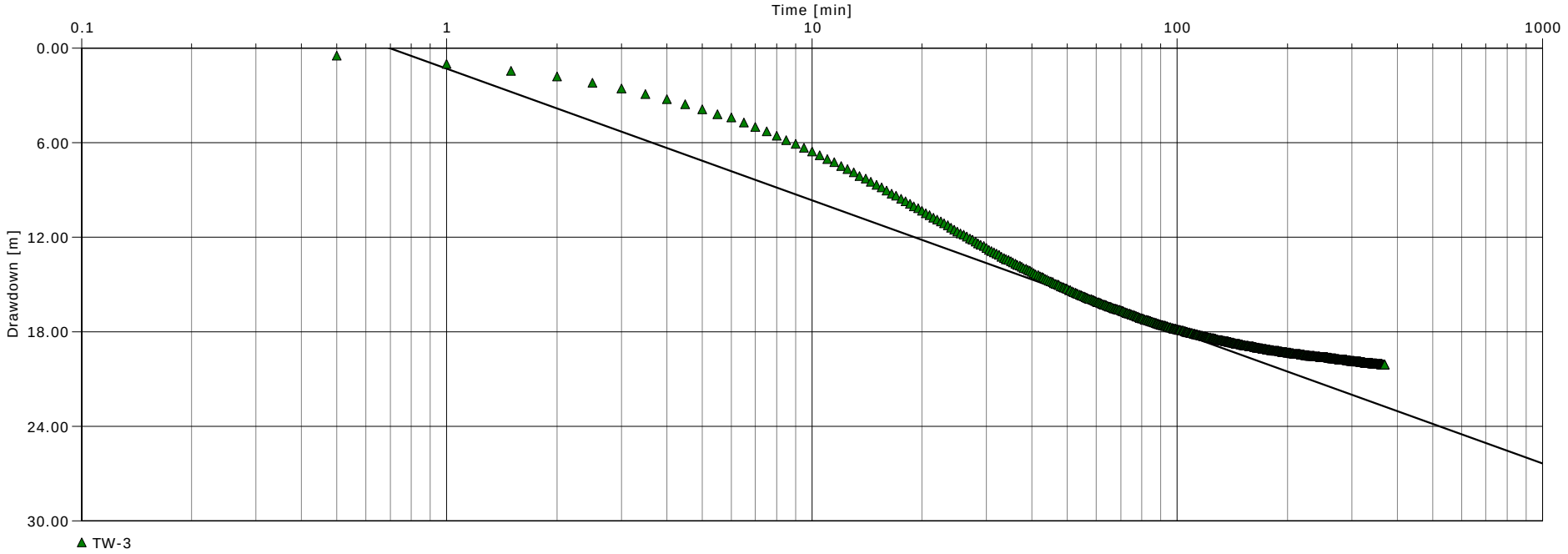
Pumping Test Analysis Report

Project: Pilgrim's Rest

Number: 12-1629

Client: Pieter Venema

Location: Burleigh	Pumping Test: TW-3 (6hr)	Pumping well: TW-3
Test conducted by: DM/BP		Test date: 7/17/2014
Analysis performed by: DM/BK	TW-3 Cooper-Jacob Drawdown pumped well	Analysis date: 4/22/2015
Aquifer Thickness: 91.99 m	Discharge: variable, average rate 0.32 [l/s]	



Calculation after Cooper & Jacob

Observation well	Transmissivity [m²/d]	Hydraulic Conductivity [m/d]	Storage coefficient	Radial distance to PW [m]	
TW-3	6.06×10^{-1}	6.59×10^{-3}		0.08	

Oakridge Environmental Ltd.
380 Armour Road, Suite 127
Peterborough, Ontario
K9H 7L7

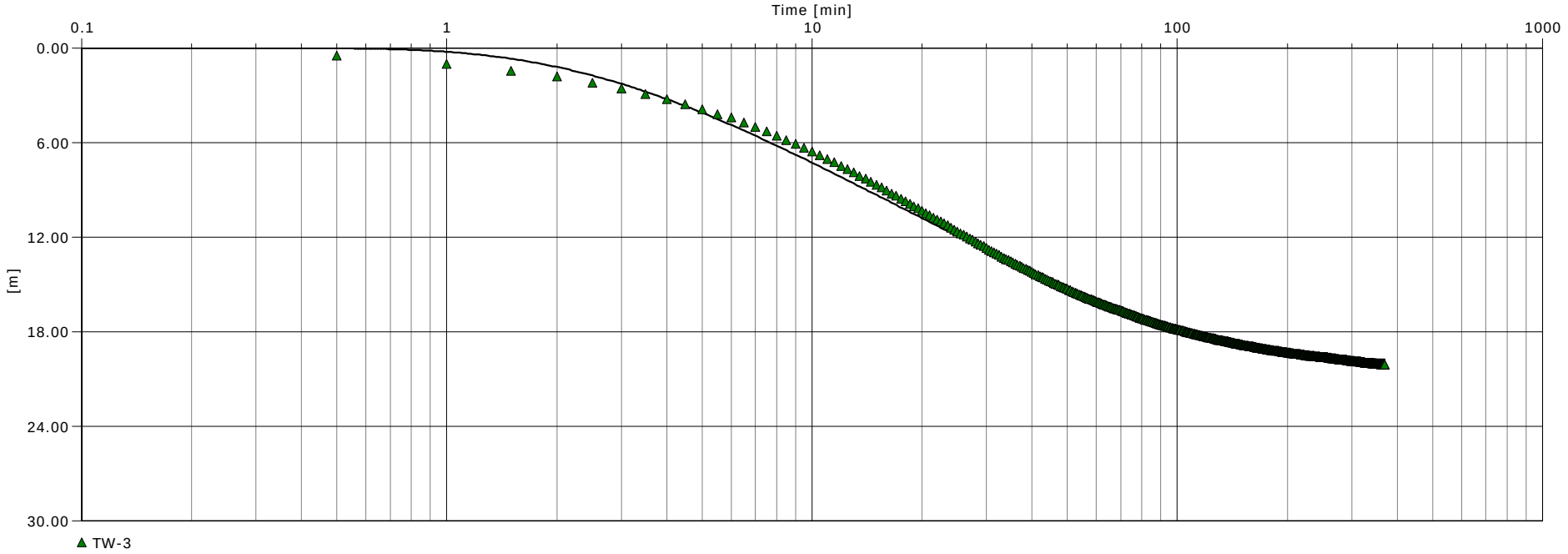
Pumping Test Analysis Report

Project: Pilgrim's Rest

Number: 12-1629

Client: Pieter Venema

Location: Burleigh	Pumping Test: TW-3 (6hr)	Pumping well: TW-3
Test conducted by: DM/BP		Test date: 7/17/2014
Analysis performed by: DM/BK	TW-3 Hantush - pumped well	Analysis date: 4/22/2015
Aquifer Thickness: 91.99 m	Discharge: variable, average rate 0.32 [l/s]	



Calculation after Hantush

Observation well	Transmissivity [m²/d]	Hydraulic Conductivity [m/d]	Storage coefficient	Hydr. resistance [min]	Radial distance to PW [m]	
TW-3	3.30×10^{-1}	3.59×10^{-3}		4.00×10^{2}	0.08	

Oakridge Environmental Ltd.
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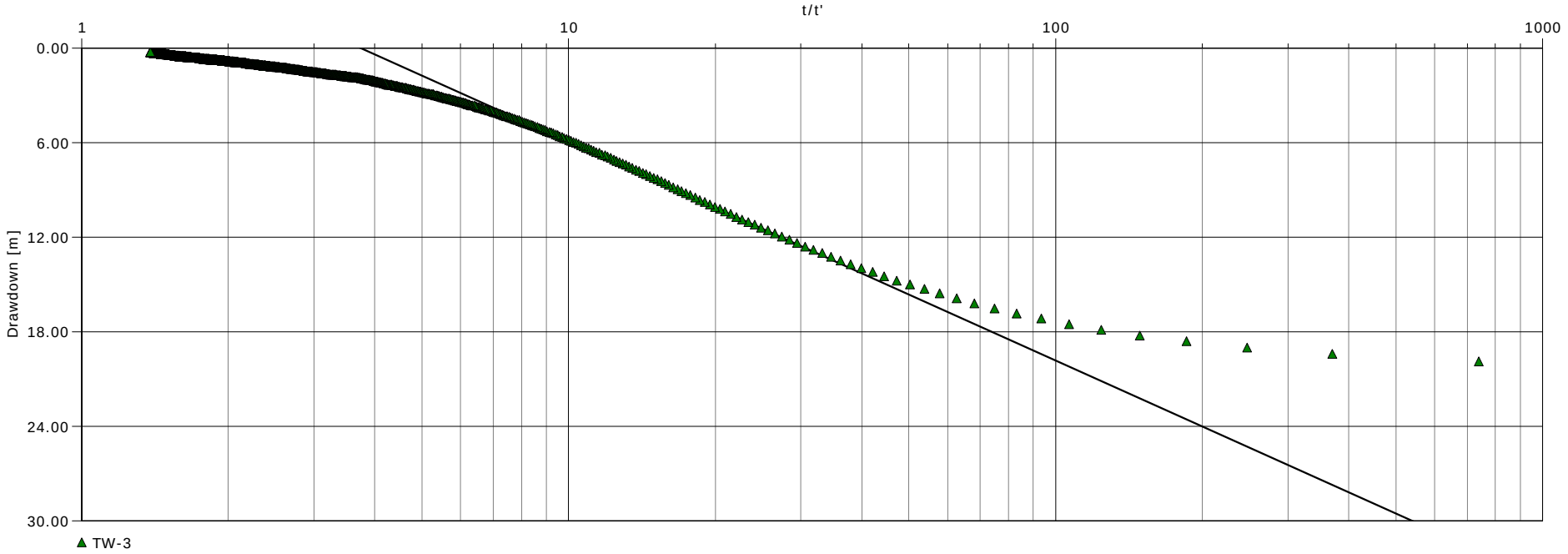
Pumping Test Analysis Report

Project: Pilgrim's Rest

Number: 12-1629

Client: Pieter Venema

Location: Burleigh	Pumping Test: TW-3 (6hr)	Pumping well: TW-3
Test conducted by: DM/BP		Test date: 7/17/2014
Analysis performed by: DM/BK	TW-3 Theis Recovery	Analysis date: 4/22/2015
Aquifer Thickness: 91.99 m	Discharge: variable, average rate 0.32 [l/s]	

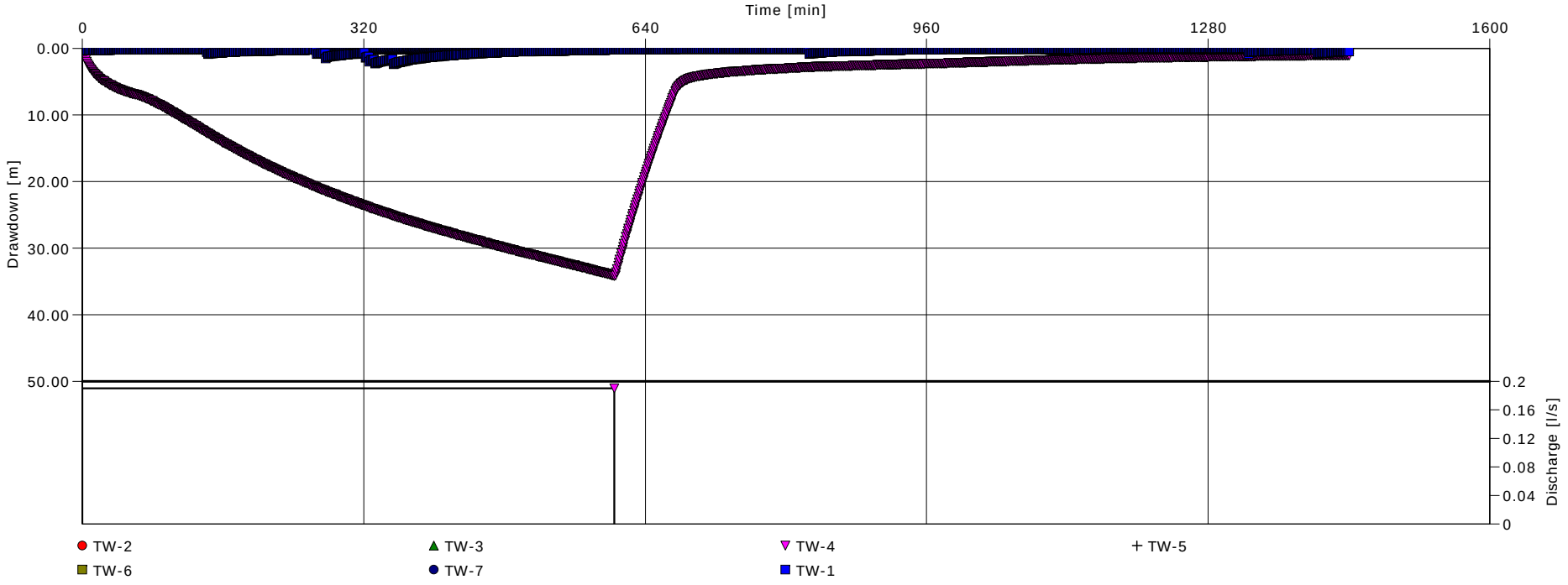


Calculation after Theis & Jacob

Observation well	Transmissivity [m²/d]	Hydraulic Conductivity [m/d]	Radial distance to PW [m]	
TW-3	3.64×10^{-1}	3.96×10^{-3}	0.08	

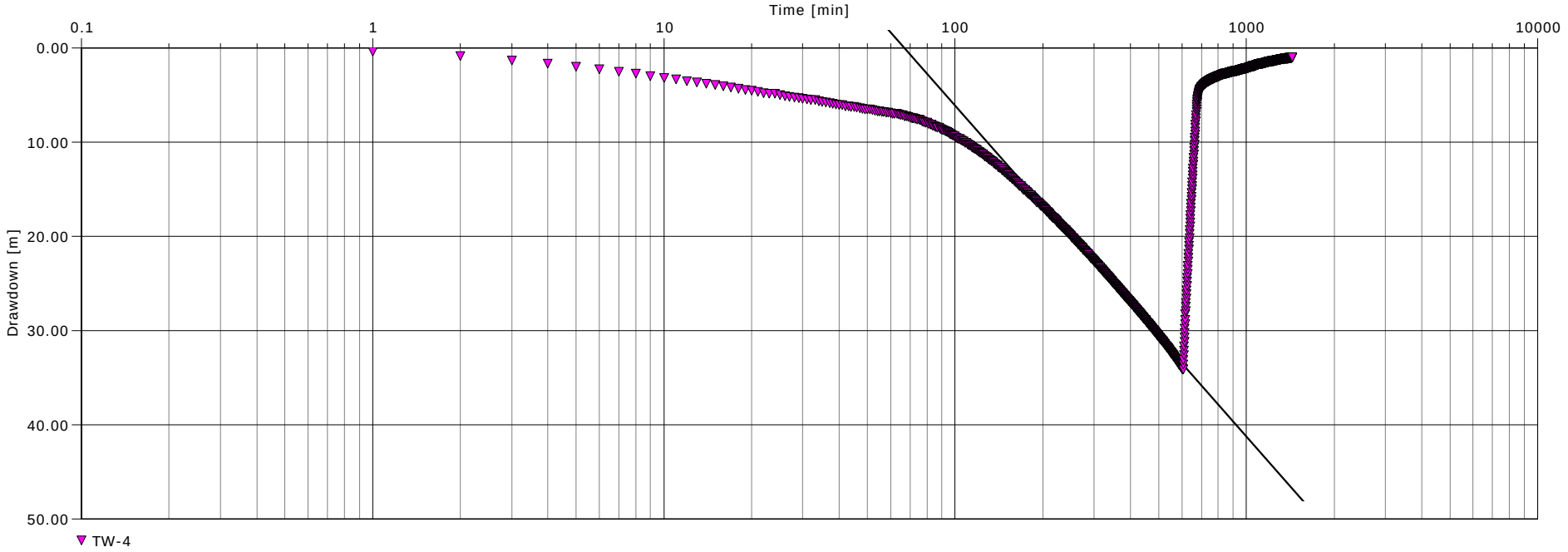
Oakridge Environmental Ltd. **380 Armour Road, Suite 127** **Peterborough, Ontario** **K9H 7L7**	**Pumping Test Analysis Report**
	Project: Pilgrim's Rest
	Number: 12-1629
	Client: Pieter Venema

Location: Burleigh	Pumping Test: TW-4(10hr)	Pumping well: TW-4
Test conducted by: DM/BP		Test date: 12/2/2014
Analysis performed by: DM/BK	TW-4 Time - Drawdown all wells	Analysis date: 4/22/2015
Aquifer Thickness: 89.47 m	Discharge: variable, average rate 0.19 [l/s]	



Oakridge Environmental Ltd. 380 Armour Road, Suite 127 Peterborough, Ontario K9H 7L7	**Pumping Test Analysis Report**
	Project: Pilgrim's Rest
	Number: 12-1629
	Client: Pieter Venema

Location: Burleigh	Pumping Test: TW-4(10hr)	Pumping well: TW-4
Test conducted by: DM/BP		Test date: 12/2/2014
Analysis performed by: DM/BK	TW-4 Cooper- Jacob I	Analysis date: 4/24/2015
Aquifer Thickness: 89.47 m	Discharge: variable, average rate 0.19 [l/s]	

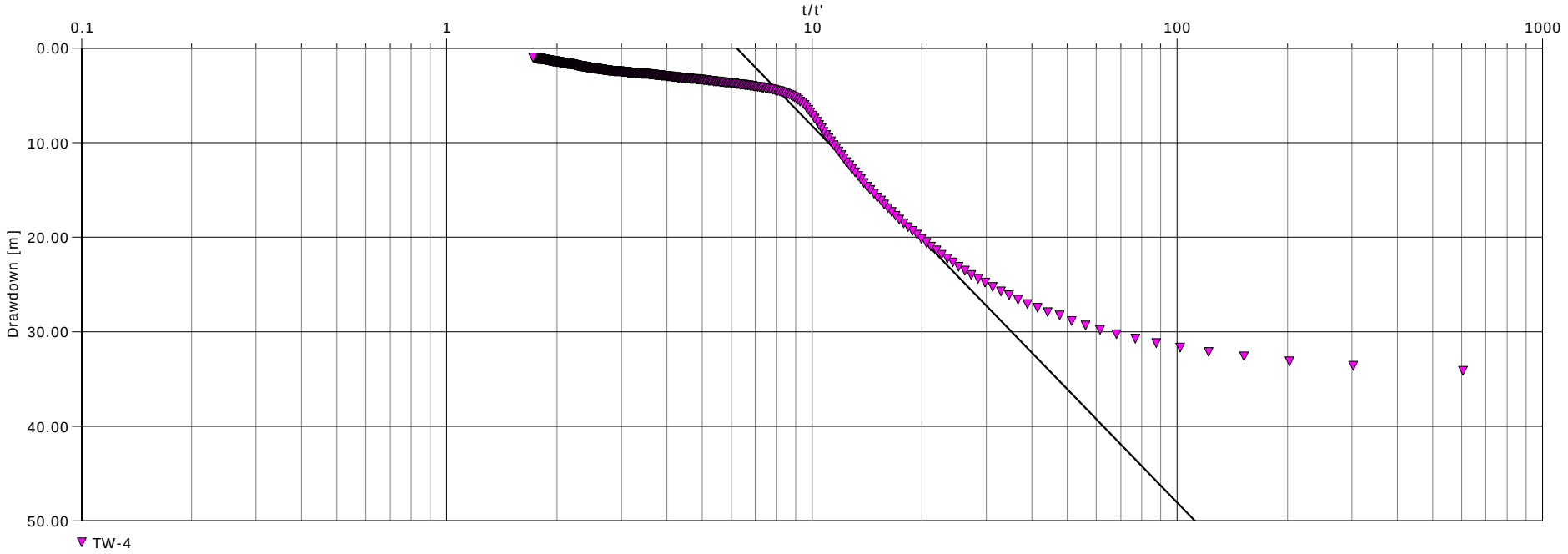


Calculation after Cooper & Jacob

Observation well	Transmissivity [m²/d]	Hydraulic Conductivity [m/d]	Storage coefficient	Radial distance to PW [m]	
TW-4	8.56×10^{-2}	9.56×10^{-4}		0.08	

Oakridge Environmental Ltd. 380 Armour Road, Suite 127 Peterborough, Ontario K9H 7L7	**Pumping Test Analysis Report** Project: Pilgrim's Rest Number: 12-1629 Client: Pieter Venema

Location: Burleigh	Pumping Test: TW-4(10hr)	Pumping well: TW-4
Test conducted by: DM/BP		Test date: 12/2/2014
Analysis performed by: DM/BK	TW-4 Theis Recovery pumped well	Analysis date: 4/24/2015
Aquifer Thickness: 89.47 m	Discharge: variable, average rate 0.19 [l/s]	

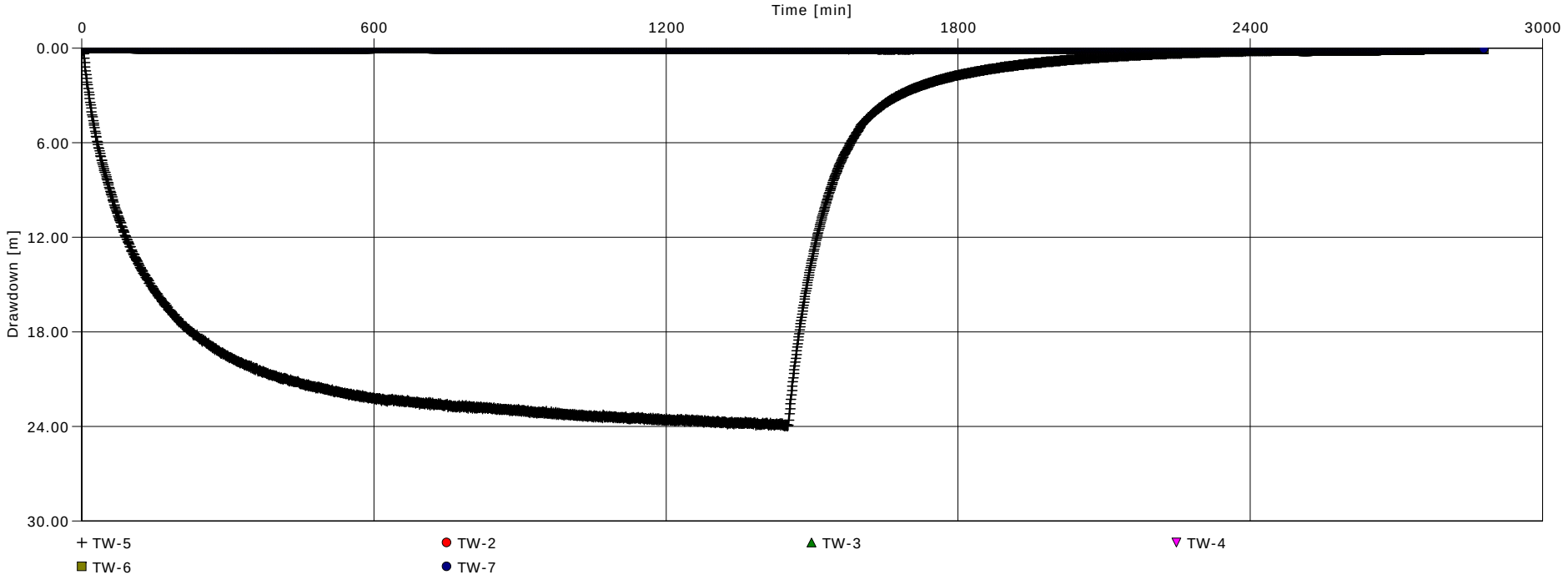


Calculation after Theis & Jacob

Observation well	Transmissivity [m²/d]	Hydraulic Conductivity [m/d]	Radial distance to PW [m]	
TW-4	7.54×10^{-2}	8.43×10^{-4}	0.08	

Oakridge Environmental Ltd. **380 Armour Road, Suite 127** **Peterborough, Ontario** **K9H 7L7**	**Pumping Test Analysis Report** Project: Pilgrim's Rest Number: 12-1629 Client: Pieter Venema

Location: Burleigh	Pumping Test: TW-5 (24hr)	Pumping well: TW-5
Test conducted by: DM/BP		Test date: 2/19/2015
Analysis performed by: DM/BK	TW-5 Time - Drawdown all wells	Analysis date: 4/22/2015
Aquifer Thickness: 79.55 m	Discharge: variable, average rate 0.09 [l/s]	



Oakridge Environmental Ltd.
380 Armour Road, Suite 127
Peterborough, Ontario
K9H 7L7

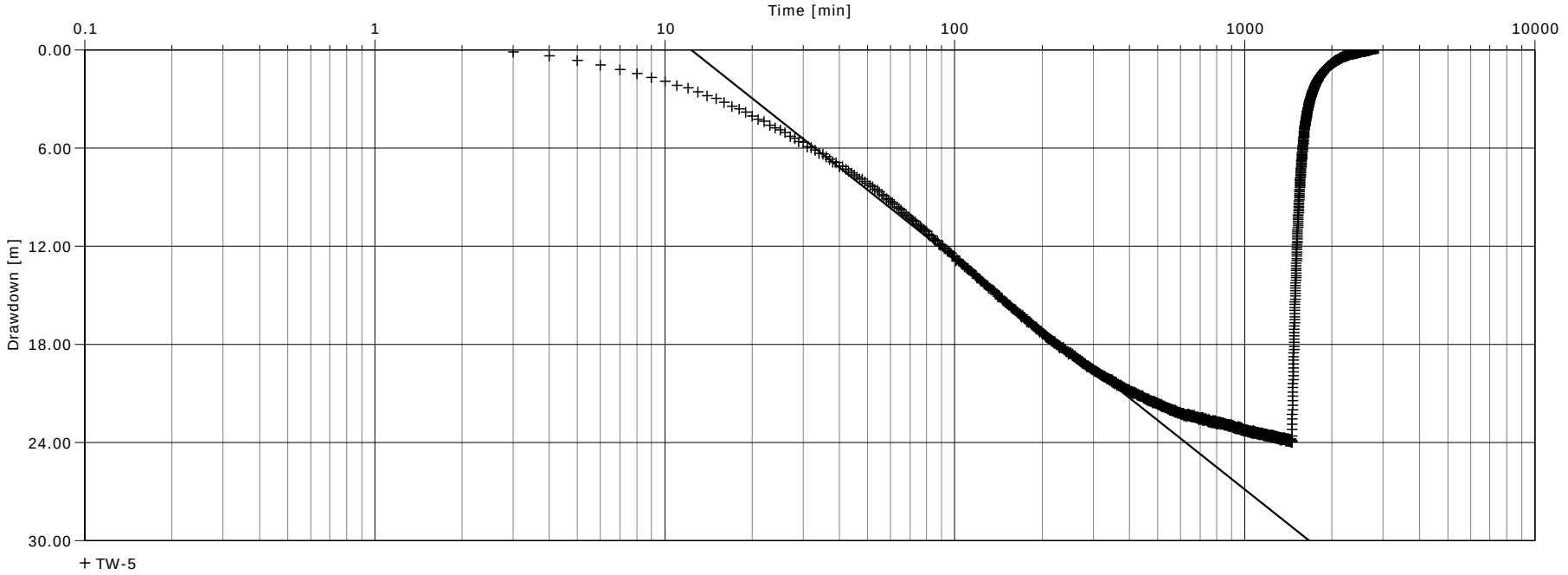
Pumping Test Analysis Report

Project: Pilgrim's Rest

Number: 12-1629

Client: Pieter Venema

Location: Burleigh	Pumping Test: TW-5 (24hr)	Pumping well: TW-5
Test conducted by: DM/BP		Test date: 2/19/2015
Analysis performed by: DM/BK	TW-5 Cooper - Jacob 1 pumped well	Analysis date: 4/24/2015
Aquifer Thickness: 79.55 m	Discharge: variable, average rate 0.09 [l/s]	



Calculation after Cooper & Jacob

Observation well	Transmissivity [m²/d]	Hydraulic Conductivity [m/d]	Storage coefficient	Radial distance to PW [m]	
TW-5	1.01×10^{-1}	1.27×10^{-3}	3.04×10^{-1}	0.08	

Oakridge Environmental Ltd.
380 Armour Road, Suite 127
Peterborough, Ontario
K9H 7L7

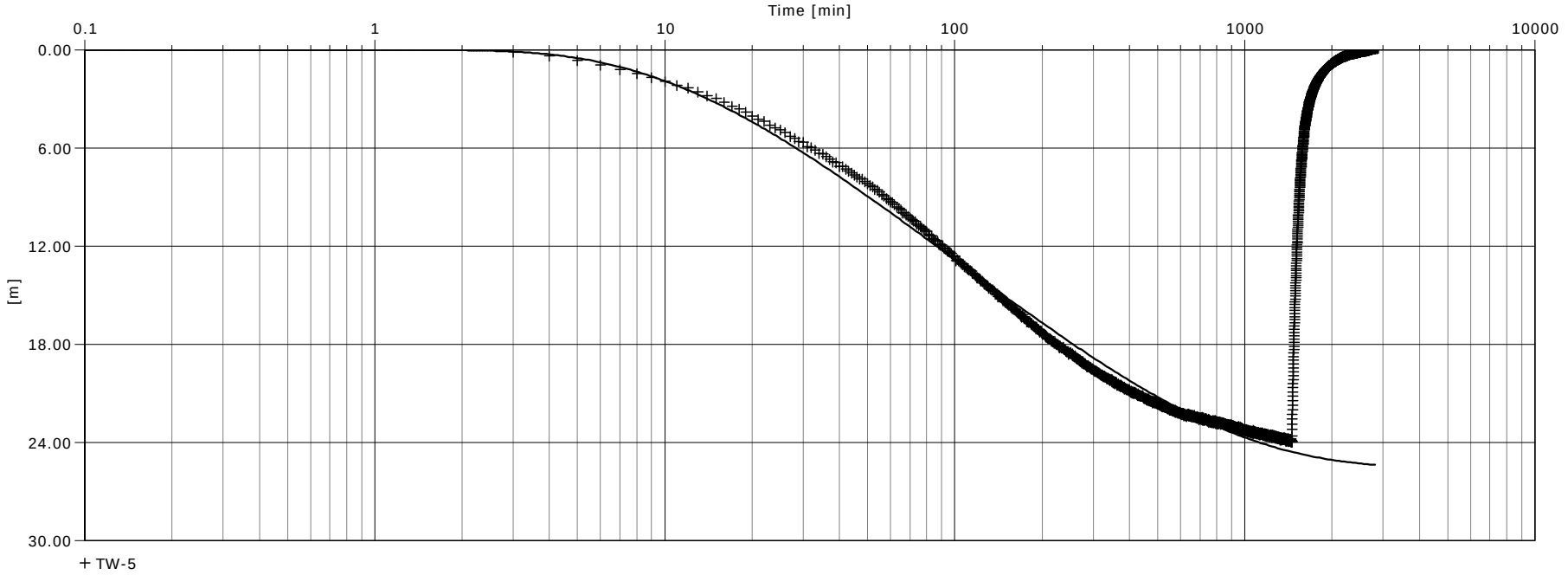
Pumping Test Analysis Report

Project: Pilgrim's Rest

Number: 12-1629

Client: Pieter Venema

Location: Burleigh	Pumping Test: TW-5 (24hr)	Pumping well: TW-5
Test conducted by: DM/BP		Test date: 2/19/2015
Analysis performed by: DM/BK	TW-5 Hantush pumped well	Analysis date: 4/24/2015
Aquifer Thickness: 79.55 m	Discharge: variable, average rate 0.09 [l/s]	



Calculation after Hantush

Observation well	Transmissivity [m²/d]	Hydraulic Conductivity [m/d]	Storage coefficient	Hydr. resistance [min]	Radial distance to PW [m]	
TW-5	9.20×10^{-2}	1.16×10^{-3}		3.40×10^{3}	0.08	

Oakridge Environmental Ltd.
380 Armour Road, Suite 127
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K9H 7L7

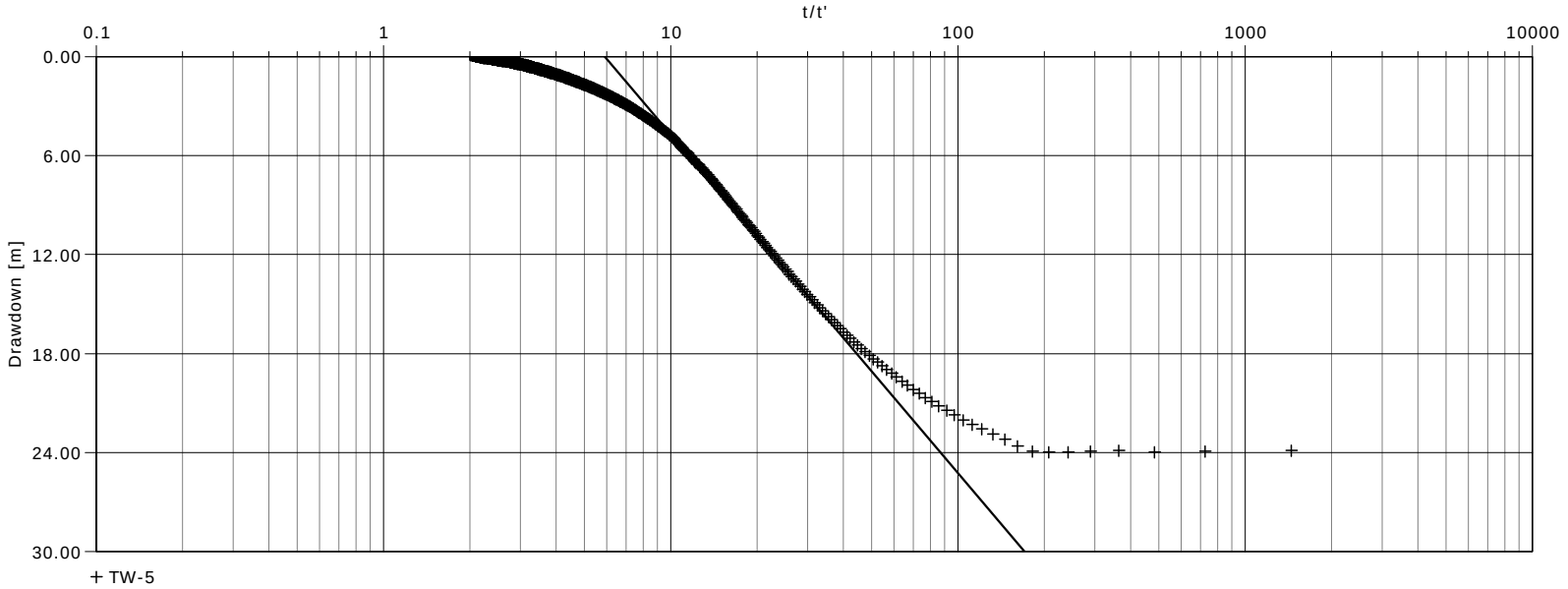
Pumping Test Analysis Report

Project: Pilgrim's Rest

Number: 12-1629

Client: Pieter Venema

Location: Burleigh	Pumping Test: TW-5 (24hr)	Pumping well: TW-5
Test conducted by: DM/BP		Test date: 2/19/2015
Analysis performed by: DM/BK	TW-5 Theis Recovery pumped well	Analysis date: 4/24/2015
Aquifer Thickness: 79.55 m	Discharge: variable, average rate 0.09 [l/s]	

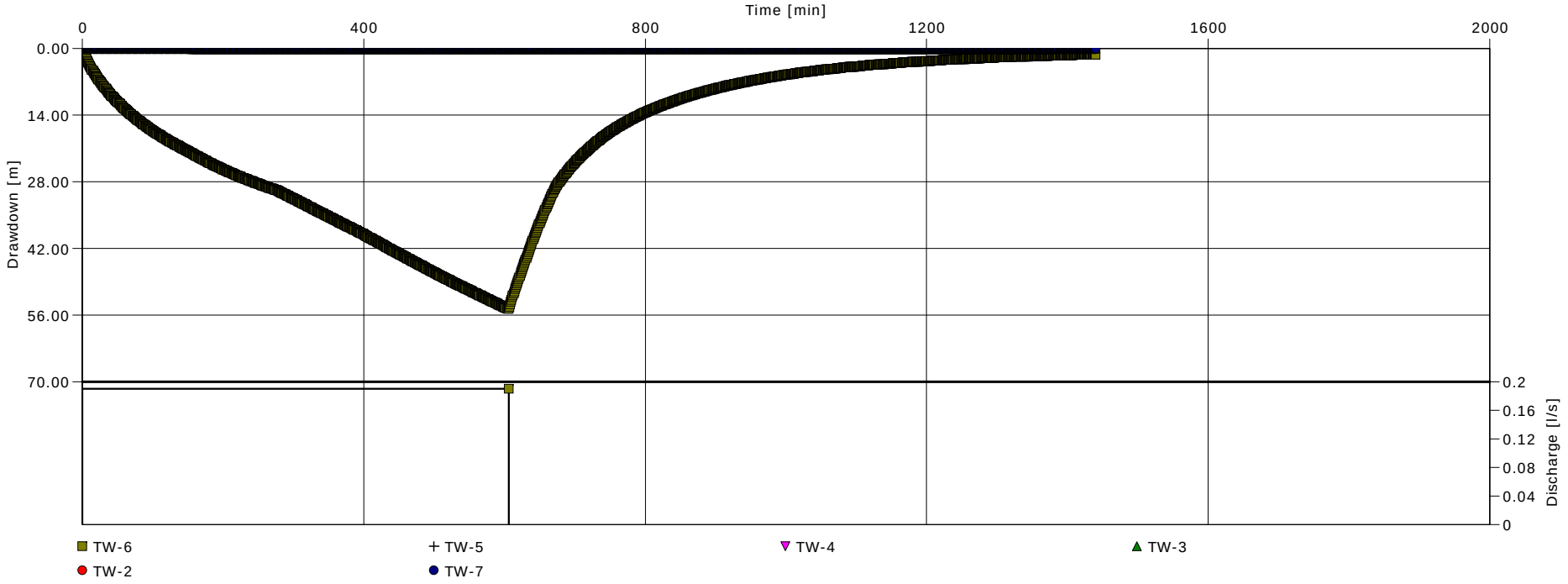


Calculation after Theis & Jacob

Observation well	Transmissivity [m²/d]	Hydraulic Conductivity [m/d]	Radial distance to PW [m]	
TW-5	6.93×10^{-2}	8.71×10^{-4}	0.08	

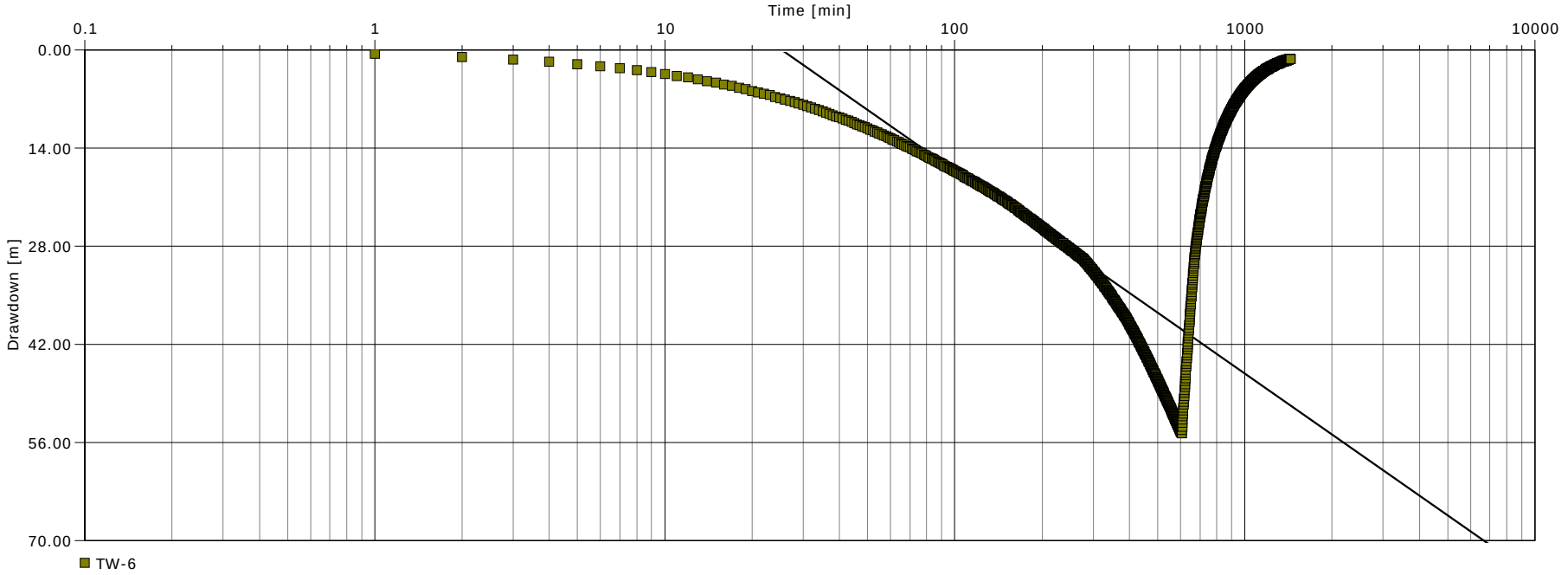
Oakridge Environmental Ltd. **380 Armour Road, Suite 127** **Peterborough, Ontario** **K9H 7L7**	**Pumping Test Analysis Report** Project: Pilgrim's Rest Number: 12-1629 Client: Pieter Venema

Location: Burleigh	Pumping Test: TW-6 (10hr)	Pumping well: TW-6
Test conducted by: DM/BP		Test date: 9/3/2014
Analysis performed by: DM/BK	TW-6 Time - Drawdown all wells	Analysis date: 9/10/2014
Aquifer Thickness: 97.96 m	Discharge: variable, average rate 0.19 [l/s]	



Oakridge Environmental Ltd. 380 Armour Road, Suite 127 Peterborough, Ontario K9H 7L7	**Pumping Test Analysis Report**
	Project: Pilgrim's Rest
	Number: 12-1629
	Client: Pieter Venema

Location: Burleigh	Pumping Test: TW-6 (10hr)	Pumping well: TW-6
Test conducted by: DM/BP		Test date: 9/3/2014
Analysis performed by: DM/BK	TW-6 Cooper & Jacob 1 pumped well	Analysis date: 4/24/2015
Aquifer Thickness: 97.96 m	Discharge: variable, average rate 0.19 [l/s]	



Calculation after Cooper & Jacob

Observation well	Transmissivity [m²/d]	Hydraulic Conductivity [m/d]	Storage coefficient	Radial distance to PW [m]	
TW-6	1.04×10^{-1}	1.06×10^{-3}		0.08	

Oakridge Environmental Ltd.
380 Armour Road, Suite 127
Peterborough, Ontario
K9H 7L7

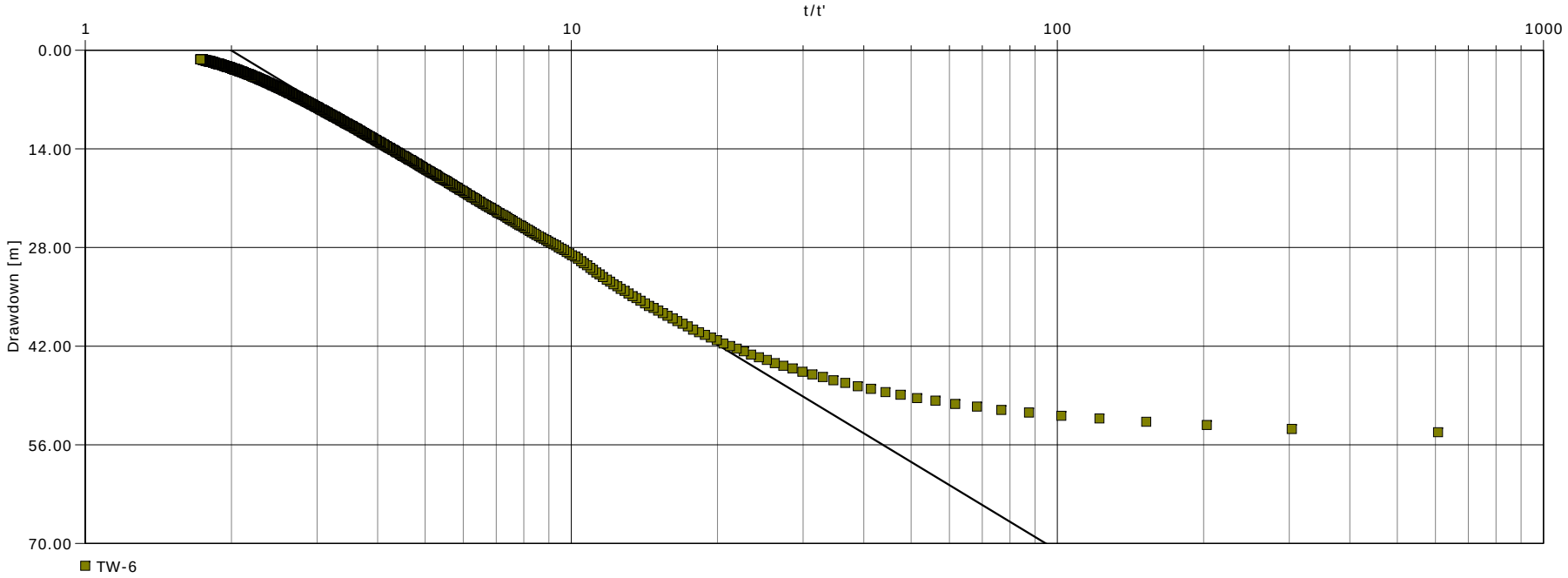
Pumping Test Analysis Report

Project: Pilgrim's Rest

Number: 12-1629

Client: Pieter Venema

Location: Burleigh	Pumping Test: TW-6 (10hr)	Pumping well: TW-6
Test conducted by: DM/BP		Test date: 9/3/2014
Analysis performed by: DM/BK	TW-6 Theis Recovery pumped well	Analysis date: 4/24/2015
Aquifer Thickness: 97.96 m	Discharge: variable, average rate 0.19 [l/s]	

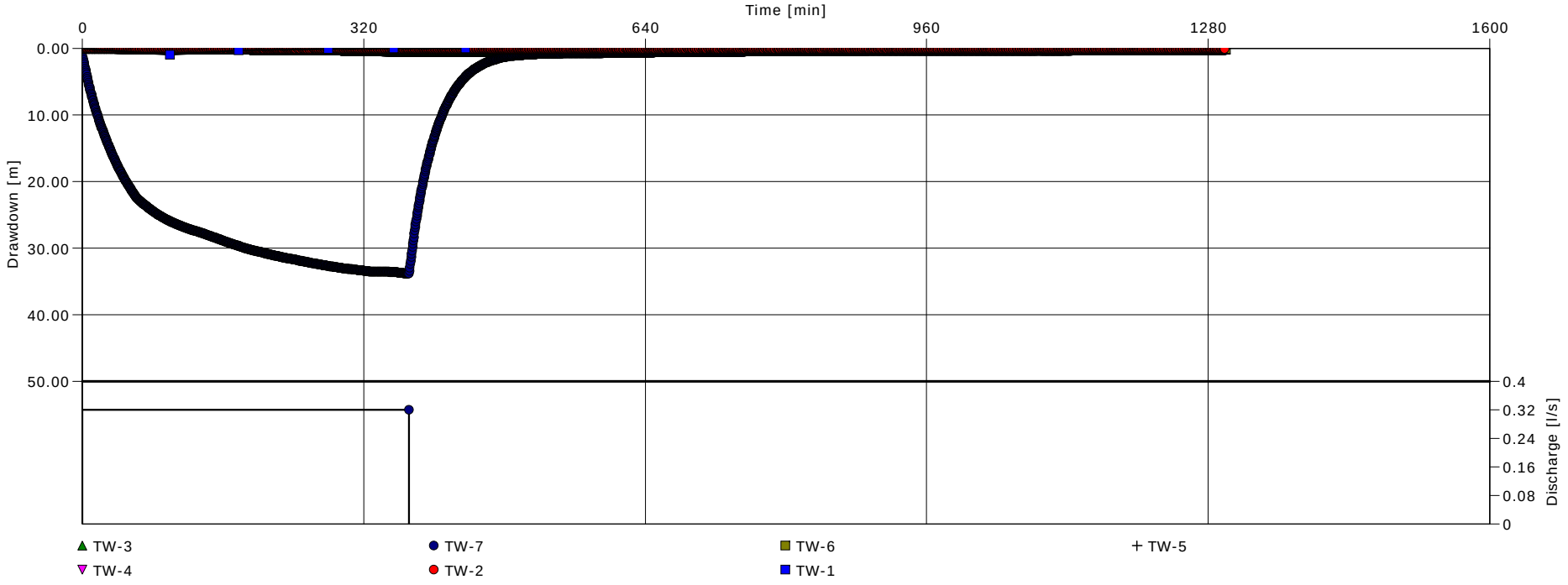


Calculation after Theis & Jacob

Observation well	Transmissivity [m²/d]	Hydraulic Conductivity [m/d]	Radial distance to PW [m]	
TW-6	7.19×10^{-2}	7.34×10^{-4}	0.08	

Oakridge Environmental Ltd. **380 Armour Road, Suite 127** **Peterborough, Ontario** **K9H 7L7**	**Pumping Test Analysis Report** Project: Pilgrim's Rest Number: 12-1629 Client: Pieter Venema

Location: Burleigh	Pumping Test: TW-7 (6hr)	Pumping well: TW-7
Test conducted by: DM/BP		Test date: 7/16/2014
Analysis performed by: DM/BK	TW-7 Time - Drawdown all wells	Analysis date: 4/21/2015
Aquifer Thickness: 52.76 m	Discharge rate: 0.32 [l/s]	



Oakridge Environmental Ltd.
380 Armour Road, Suite 127
Peterborough, Ontario
K9H 7L7

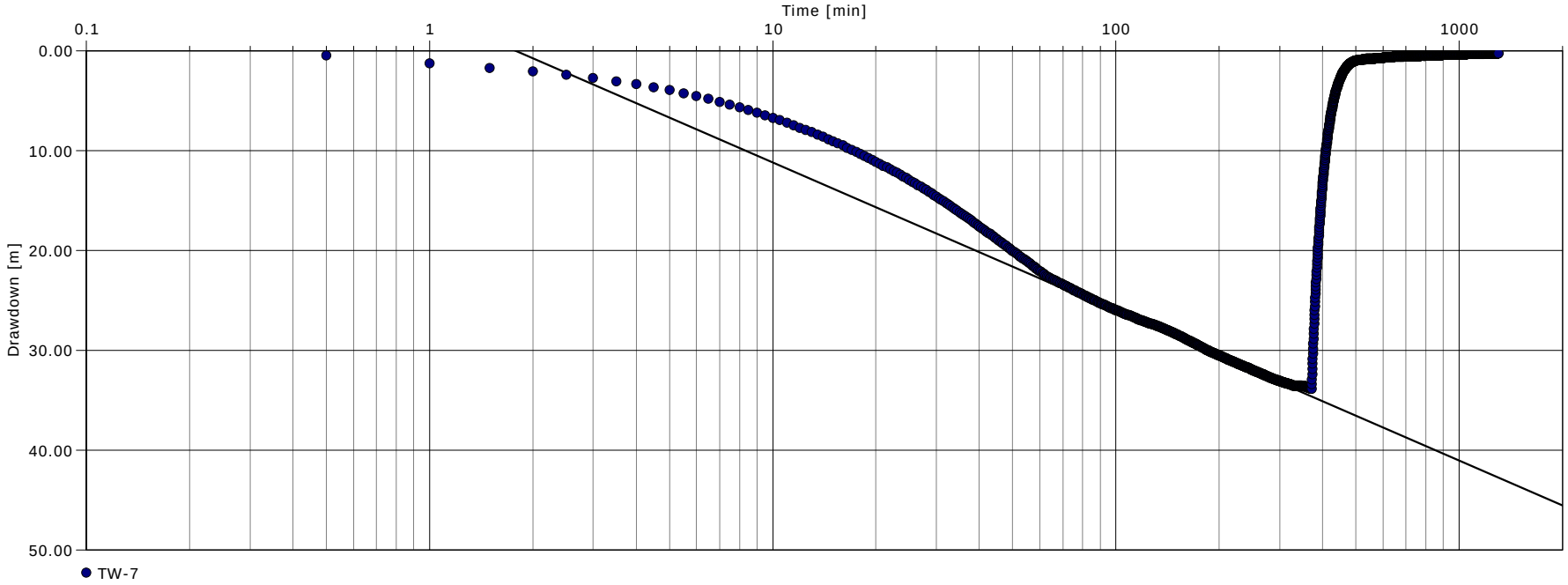
Pumping Test Analysis Report

Project: Pilgrim's Rest

Number: 12-1629

Client: Pieter Venema

Location: Burleigh	Pumping Test: TW-7 (6hr)	Pumping well: TW-7
Test conducted by: DM/BP		Test date: 7/16/2014
Analysis performed by: DM/BK	TW-7 Cooper- Jacob 1 pumped well	Analysis date: 4/24/2015
Aquifer Thickness: 52.76 m	Discharge rate: 0.32 [l/s]	



Calculation after Cooper & Jacob

Observation well	Transmissivity [m²/d]	Hydraulic Conductivity [m/d]	Storage coefficient	Radial distance to PW [m]	
TW-7	3.39×10^{-1}	6.43×10^{-3}		0.08	

Oakridge Environmental Ltd.
380 Armour Road, Suite 127
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K9H 7L7

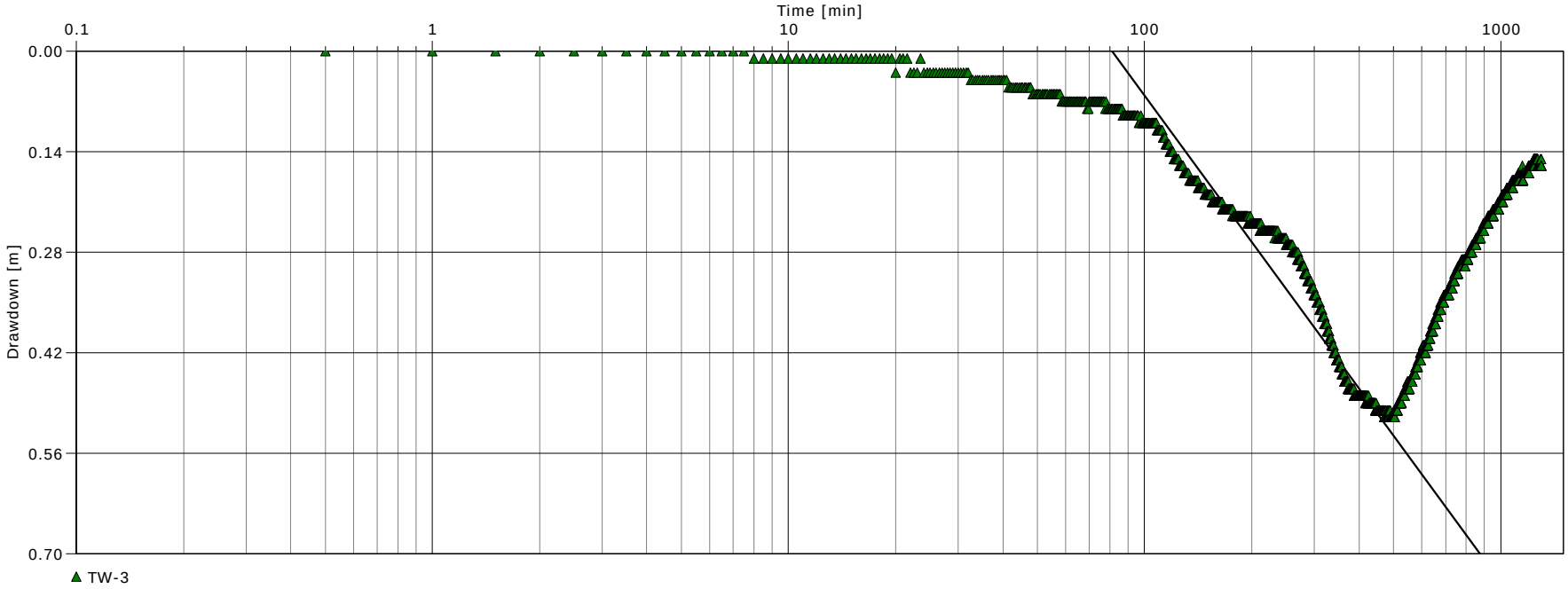
Pumping Test Analysis Report

Project: Pilgrim's Rest

Number: 12-1629

Client: Pieter Venema

Location: Burleigh	Pumping Test: TW-7 (6hr)	Pumping well: TW-7
Test conducted by: DM/BP		Test date: 7/16/2014
Analysis performed by: DM/BK	TW-7 (TW-3 obs) Cooper - Jacob	Analysis date: 4/24/2015
Aquifer Thickness: 52.76 m	Discharge rate: 0.32 [l/s]	



Calculation after Cooper & Jacob

Observation well	Transmissivity [m²/d]	Hydraulic Conductivity [m/d]	Storage coefficient	Radial distance to PW [m]	
TW-3	7.47×10^{0}	1.42×10^{-1}	4.61×10^{-5}	143.13	

Oakridge Environmental Ltd.
380 Armour Road, Suite 127
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K9H 7L7

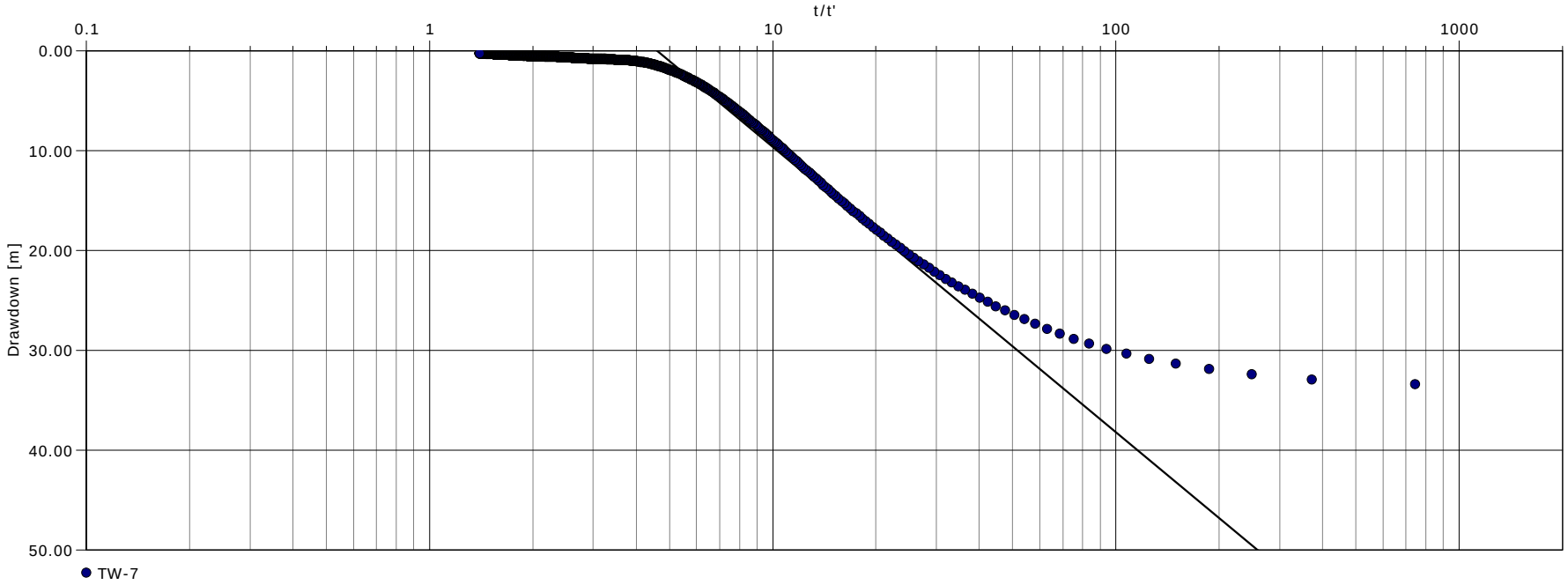
Pumping Test Analysis Report

Project: Pilgrim's Rest

Number: 12-1629

Client: Pieter Venema

Location: Burleigh	Pumping Test: TW-7 (6hr)	Pumping well: TW-7
Test conducted by: DM/BP		Test date: 7/16/2014
Analysis performed by: DM/BK	TW-7 Theis Recovery pumped well	Analysis date: 4/24/2015
Aquifer Thickness: 52.76 m	Discharge rate: 0.32 [l/s]	



Calculation after Theis & Jacob

Observation well	Transmissivity [m²/d]	Hydraulic Conductivity [m/d]	Radial distance to PW [m]	
TW-7	1.77×10^{-1}	3.36×10^{-3}	0.08	

APPENDIX F

Water Quality Data

Parameter	Units (a)	TW-3 (4hrs)	TW-3 (6HRS)	TW-4 (5HRS)	TW-4 (10 hrs.)	TW-4	TW-5 (6 hrs.)	TW-5 (12 hrs.)	TW-5 (18 hrs.)	TW-5 (24 hrs.)	TW-6 (6hrs)	TW-6 (12 hrs.)	TW-6 (18 hrs.)
		17-Jul-14	17-Jul-14	2-Dec-14	2-Dec-14	7-May-15	19-Feb-15	19-Feb-15	19-Feb-15	19-Feb-15	26-Nov-14	26-Nov-14	26-Nov-14
Hardness (CaCO3)		194	194	181	159		75	59	57	58	30	20	18
Alkalinity (CaCO3) to pH 4.5		161	158	145	143		168	162	158	157	154	151	145
Bicarbonate (as CaCO3)		161	158	145	143		168	162	158	157	121	119	117
Carbonate (as CaCO3)		< 5	< 5	< 5	< 3		<5	<5	<5	<5	33	32	29
Conductivity @ 25°C	µmho/cm	380	373	338	336		339	339	339	338	329	325	329
pH @ 25°C	pH Units	7.92	7.94	7.74	7.8		7.76	8.01	8.05	8.07	9.03	9.01	9
Colour	TCU	3	4	19	< 2		13	27	19	17	13	9	10
Turbidity	NTU	11.3	25.2	134	75.2		13.8	2.5	2.1	1.3	19.5	6.2	5.6
Turbidity (field)	NTU	5.96	2.41*	4.11	3.85	2.04*	-	2.49	1.39	1.19*	20.8	9.31	4.58
Chloride		4.2	3.2	4.4	5.4		3.2	3.6	3.7	3.6	3.9	3.2	3.3
Fluoride		0.2	0.2	0.3	0.3		0.7	0.9	1	0.9	1.8	2.1	2.1
Nitrite (N)		< 0.1	< 0.1	< 0.1	< 0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Nitrate (N)		< 0.1	< 0.1	< 0.1	< 0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Sulphate		25	25	29	32		19	20	20	20	20	21	24
Calcium		63.4	63.3	63.3	55		22.6	17.3	16.7	16.8	4.92	3.5	3.27
Magnesium		8.73	8.76	5.64	5.16		4.54	3.7	3.7	3.8	4.32	2.83	2.37
Sodium		7	6	8.5	11.5		50.8	57.8	58.7	58.3	78.5	80	78.9
Potassium		1.7	1.7	2.6	2.3		1.9	1.7	1.7	1.7	1	0.8	0.8
Iron		3.48	3.77	9.98	7.79		2.19	0.355	0.177	0.129	2.03	1.19	0.949
Copper		< 0.002	< 0.002	< 0.002	< 0.002		<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Manganese		0.529	0.522	0.693	0.596		0.232	0.119	0.096	0.087	0.055	0.025	0.02
Zinc		< 0.005	< 0.005	0.018	0.012		<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Ammonia (N)-Total		0.04	0.05	< 0.01	0.04		0.05	0.05	0.05	0.05	<0.01	<0.01	<0.01
o-Phosphate (P)		< 0.01	< 0.01	< 0.01	0.02		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Dissolved Organic Carbon		2.4	2.6	4.6	22.9		4	3.6	3.6	3.5	2.5	2	1.8
Total Coliform	cfu/100mL	0	0	0	12			0		0		(d)	
E coli	cfu/100mL	0	0	0	0			0		0		(d)	
Heterotrophic Plate Count	cfu/mL	118	< 2	46	90			112		34		>500	
TDS (ion sum calc.)		210	207	211	226		205	203	201	200	209	205	203

(a) All units are in mg/L unless specified otherwise

(b) When both nitrate and nitrite are present, the sum of both should not exceed 10 mg/L

(c) Yellow highlighted values indicate that sodium levels exceed the 20 mg/L warning level for sodium restricted diets

(d) No result due to sample matrix interference

(e) Turbidity limit for wells requiring disinfection due to bacteria issues is 1 ntu, otherwise the aesthetic limit is 5 ntu

*Stabilized in 120 mL bottle containing 0.5 mL of 50% HNO_3 solution to prevent the formation of iron precipitates

Parameter	Units (a)	TW-6 (24 hrs.) 26-Nov-14	TW-6 (5 hrs.) 5-Feb-15	TW-6 (10 hrs.) 5-Feb-15	TW-7 (3 hrs.) 16-Jul-14	TW-7 (6 hrs.) 16-Jul-14	ODWQS
Hardness (CaCO3)		16	12	13	170	168	80-100
Alkalinity (CaCO3) to pH 4.5		145	147	145	144	145	30-500
Bicarbonate (as CaCO3)		119	147	145	144	145	-
Carbonate (as CaCO3)		26	26	18	<5	<5	-
Conductivity @ 25°C	µmho/cm	325	315	329	332	330	-
pH @ 25°C	pH Units	8.99	8.85	8.78	7.78	7.74	6.5-8.5
Colour	TCU	9	6	7	7	6	5
Turbidity	NTU	4.5	3.2	2.8	77.6	60.9	5 (1)[(e)]
Turbidity (field)	NTU	2.18*	2.46	1.84	2.65	0.89	5 (1)[(e)]
Chloride		3.2	1.7	2.1	4	4.1	250
Fluoride		2.2	1.9	2	0.3	0.3	1.5
Nitrite (N)		<0.1	<0.1	<0.1	<0.1	<0.1	1(b)
Nitrate (N)		<0.1	<0.1	<0.1	<0.1	<0.1	10 (b)
Sulphate		24	18	24	22	21	500
Calcium		3.07	3.4	3.3	58.2	57.4	-
Magnesium		1.94	0.97	1.06	5.93	5.92	-
Sodium		78	69.3	71.9	5.3	5.9	200
Potassium		0.8	0.9	0.8	1.8	1.8	-
Iron		0.703	0.248	0.266	5.82	5.37	0.3
Copper		<0.002	<0.002	<0.002	<0.002	<0.002	1
Manganese		0.015	0.009	0.009	0.494	0.469	0.05
Zinc		<0.005	<0.005	<0.005	<0.005	<0.005	5
Ammonia (N)-Total		<0.01	0.04	0.03	0.03	0.03	-
o-Phosphate (P)		<0.01	<0.01	<0.01	<0.01	<0.01	-
Dissolved Organic Carbon		2	1.3	1.3	3.2	2.9	5
Total Coliform	cfu/100mL	(d)	0	0		0	0
E coli	cfu/100mL	(d)	0	0		0	0
Heterotrophic Plate Count	cfu/mL	>500	358	142		2	-
TDS (ion sum calc.)		201	184	192	190	189	500

CADUCEON ENVIRONMENTAL LABORATORIES
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CERTIFICATE OF ANALYSIS

Final Report

C.O.C.: G34505 **REPORT No. B14-17749**

Report To:

Oakridge Environmental
PO Box 431 ,
Peterborough ON K9J 6Z3 Canada
Attention: Dan MacIntyre

Caduceon Environmental Laboratories
2378 Holly Lane
Ottawa Ontario K1V 7P1
Tel: 613-526-0123
Fax: 613-526-1244

DATE RECEIVED: 17-Jul-14
DATE REPORTED: 22-Jul-14
SAMPLE MATRIX: Groundwater

JOB/PROJECT NO.: Pilgrims Rest
P.O. NUMBER: 12-1629
WATERWORKS NO.

			Client I.D.		TW-7 (3hrs)	TW-7 (6hrs)		
			Sample I.D.		B14-17749-1	B14-17749-2		
			Date Collected		16-Jul-14	16-Jul-14		
Parameter	**Units**	**M.D.L.**	**Reference Method**	**Date/Site Analyzed**				
Hardness (as CaCO3)	mg/L	1	SM 3120	18-Jul-14/O	170	168		
Alkalinity(CaCO3) to pH4.5	mg/L	5	SM 2320B	18-Jul-14/O	144	145		
Carbonate (as CaCO3)	mg/L	5	SM 2320B	18-Jul-14/O	< 5	< 5		
Bicarbonate(as CaCO3)	mg/L	5	SM 2320B	18-Jul-14/O	144	145		
Conductivity @25°C	µmho/cm	1	SM 2510B	18-Jul-14/O	332	330		
pH @25°C	pH Units		SM 4500H	17-Jul-14/O	7.78	7.74		
Colour	TCU	2	SM 2120C	22-Jul-14/O	7	6		
Turbidity	NTU	0.1	SM 2130	22-Jul-14/O	77.6	60.9		
Fluoride	mg/L	0.1	SM4110C	18-Jul-14/O	0.3	0.3		
Chloride	mg/L	0.5	SM4110C	18-Jul-14/O	4.0	4.1		
Nitrite (N)	mg/L	0.1	SM4110C	18-Jul-14/O	< 0.1	< 0.1		
Nitrate (N)	mg/L	0.1	SM4110C	18-Jul-14/O	< 0.1	< 0.1		
Sulphate	mg/L	1	SM4110C	18-Jul-14/O	22	21		
Calcium	mg/L	0.02	SM 3120	18-Jul-14/O	58.2	57.4		
Magnesium	mg/L	0.01	SM 3120	18-Jul-14/O	5.93	5.92		
Sodium	mg/L	0.2	SM 3120	18-Jul-14/O	5.3	5.9		
Potassium	mg/L	0.1	SM 3120	18-Jul-14/O	1.8	1.8		
Copper	mg/L	0.002	SM 3120	18-Jul-14/O	< 0.002	< 0.002		
Iron	mg/L	0.005	SM 3120	18-Jul-14/O	5.82	5.37		
Manganese	mg/L	0.001	SM 3120	18-Jul-14/O	0.494	0.469		
Zinc	mg/L	0.005	SM 3120	18-Jul-14/O	< 0.005	< 0.005		
Ammonia (N)-Total	mg/L	0.01	MOEE 3364	17-Jul-14/O	0.03	0.03		
o-Phosphate (P)	mg/L	0.01	MOEE 3366	17-Jul-14/O	< 0.01	< 0.01		
Dissolved Organic Carbon	mg/L	0.2	EPA 415.1	21-Jul-14/O	3.2	2.9		
Total Coliform	cfu/100mL	1	MOE E3407	17-Jul-14/O		0		
E coli	cfu/100mL	1	MOE E3407	17-Jul-14/O		0		
Heterotrophic Plate Count	cfu/mL	2	SM 9215C	17-Jul-14/O		2		
Anion Sum	meq/L		Calc.	21-Jul-14/O	3.46	3.46		

K. Pipin

Krystyna Pipin , M. Sc.
Lab Supervisor

M.D.L. = Method Detection Limit
Site Analyzed=K-Kingston,W-Windsor,O-Ottawa,R-Richmond Hill

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CERTIFICATE OF ANALYSIS

Final Report

C.O.C.: G34505 **REPORT No. B14-17749**

Report To:

Oakridge Environmental
PO Box 431 ,
Peterborough ON K9J 6Z3 Canada
Attention: Dan MacIntyre

Caduceon Environmental Laboratories
2378 Holly Lane
Ottawa Ontario K1V 7P1
Tel: 613-526-0123
Fax: 613-526-1244

DATE RECEIVED: 17-Jul-14
DATE REPORTED: 22-Jul-14
SAMPLE MATRIX: Groundwater

JOB/PROJECT NO.: Pilgrims Rest
P.O. NUMBER: 12-1629
WATERWORKS NO.

			Client I.D.		TW-7 (3hrs)	TW-7 (6hrs)		
			Sample I.D.		B14-17749-1	B14-17749-2		
			Date Collected		16-Jul-14	16-Jul-14		
Parameter	**Units**	**M.D.L.**	**Reference Method**	**Date/Site Analyzed**				
Cation Sum	meq/L		Calc.	21-Jul-14/O	4.01	3.97		
% Difference	%		Calc.	21-Jul-14/O	7.41	6.78		
Ion Ratio	AS/CS		Calc.	21-Jul-14/O	0.862	0.873		
Sodium Adsorption Ratio	-		Calc.	21-Jul-14/O	0.177	0.199		
TDS(ion sum calc.)	mg/L		Calc.	21-Jul-14/O	190	189		
Conductivity (calc.)	µmho/cm		Calc.	21-Jul-14/O	343	343		
TDS(calc.)/EC(actual)	-		Calc.	21-Jul-14/O	0.572	0.574		
EC(calc.)/EC(actual)	-		Calc.	21-Jul-14/O	1.03	1.04		
Langelier Index(25°C)	S.I.		Calc.	21-Jul-14/O	0.281	0.237		

K. Pipin

Krystyna Pipin , M. Sc.
Lab Supervisor

M.D.L. = Method Detection Limit
Site Analyzed=K-Kingston,W-Windsor,O-Ottawa,R-Richmond Hill

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CERTIFICATE OF ANALYSIS

Final Report

C.O.C.: G31356

REPORT No. B14-17857

Rev. 1

Report To:

Oakridge Environmental
PO Box 431 ,
Peterborough ON K9J 6Z3 Canada
Attention: Dan MacIntyre

Caduceon Environmental Laboratories
2378 Holly Lane
Ottawa Ontario K1V 7P1
Tel: 613-526-0123
Fax: 613-526-1244

DATE RECEIVED: 18-Jul-14
DATE REPORTED: 24-Jul-14
SAMPLE MATRIX: Groundwater

JOB/PROJECT NO.: Pilgrims Rest
P.O. NUMBER: 12-1629
WATERWORKS NO.

			Client I.D.		TW-3 - (4hrs)	TW-3 - (6hrs)		
			Sample I.D.		B14-17857-1	B14-17857-2		
			Date Collected		17-Jul-14	17-Jul-14		
Parameter	**Units**	**M.D.L.**	**Reference Method**	**Date/Site Analyzed**				
Hardness (as CaCO3)	mg/L	1	SM 3120	21-Jul-14/O	194	194		
Alkalinity(CaCO3) to pH4.5	mg/L	5	SM 2320B	18-Jul-14/O	161	158		
Carbonate (as CaCO3)	mg/L	5	SM 2320B	18-Jul-14/O	< 5	< 5		
Bicarbonate(as CaCO3)	mg/L	5	SM 2320B	18-Jul-14/O	161	158		
Conductivity @25°C	µmho/cm	1	SM 2510B	18-Jul-14/O	380	373		
pH @25°C	pH Units		SM 4500H	18-Jul-14/O	7.92	7.94		
Colour	TCU	2	SM 2120C	22-Jul-14/O	3	4		
Turbidity	NTU	0.1	SM 2130	22-Jul-14/O	11.3	25.2		
Fluoride	mg/L	0.1	SM4110C	21-Jul-14/O	0.2	0.2		
Chloride	mg/L	0.5	SM4110C	21-Jul-14/O	4.2	3.2		
Nitrite (N)	mg/L	0.1	SM4110C	21-Jul-14/O	< 0.1	< 0.1		
Nitrate (N)	mg/L	0.1	SM4110C	21-Jul-14/O	< 0.1	< 0.1		
Sulphate	mg/L	1	SM4110C	21-Jul-14/O	25	25		
Calcium	mg/L	0.02	SM 3120	21-Jul-14/O	63.4	63.3		
Magnesium	mg/L	0.01	SM 3120	21-Jul-14/O	8.73	8.76		
Sodium	mg/L	0.2	SM 3120	21-Jul-14/O	7.0	6.0		
Potassium	mg/L	0.1	SM 3120	21-Jul-14/O	1.7	1.7		
Copper	mg/L	0.002	SM 3120	21-Jul-14/O	< 0.002	< 0.002		
Iron	mg/L	0.005	SM 3120	21-Jul-14/O	3.48	3.77		
Manganese	mg/L	0.001	SM 3120	21-Jul-14/O	0.529	0.522		
Zinc	mg/L	0.005	SM 3120	21-Jul-14/O	< 0.005	< 0.005		
Ammonia (N)-Total	mg/L	0.01	MOEE 3364	21-Jul-14/O	0.04	0.05		
o-Phosphate (P)	mg/L	0.01	MOEE 3366	21-Jul-14/O	< 0.01	< 0.01		
Dissolved Organic Carbon	mg/L	0.2	EPA 415.1	23-Jul-14/O	2.4	2.6		
Total Coliform	cfu/100mL	1	MOE E3407	18-Jul-14/O	0	0		
E coli	cfu/100mL	1	MOE E3407	18-Jul-14/O	0	0		
Heterotrophic Plate Count	cfu/mL	2	SM 9215C	18-Jul-14/O	118	< 2		
Anion Sum	meq/L		Calc.	22-Jul-14/O	3.85	3.77		

NOTE: Revision created to add DOC upon client request

K. Pipin

Krystyna Pipin , M. Sc.
Lab Supervisor

M.D.L. = Method Detection Limit
Site Analyzed=K-Kingston,W-Windsor,O-Ottawa,R-Richmond Hill

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CERTIFICATE OF ANALYSIS

Final Report

C.O.C.: G31356

REPORT No. B14-17857

Rev. 1

Report To:

Oakridge Environmental
PO Box 431 ,
Peterborough ON K9J 6Z3 Canada
Attention: Dan MacIntyre

Caduceon Environmental Laboratories
2378 Holly Lane
Ottawa Ontario K1V 7P1
Tel: 613-526-0123
Fax: 613-526-1244

DATE RECEIVED: 18-Jul-14
DATE REPORTED: 24-Jul-14
SAMPLE MATRIX: Groundwater

JOB/PROJECT NO.: Pilgrims Rest
P.O. NUMBER: 12-1629
WATERWORKS NO.

			Client I.D.		TW-3 - (4hrs)	TW-3 - (6hrs)		
			Sample I.D.		B14-17857-1	B14-17857-2		
			Date Collected		17-Jul-14	17-Jul-14		
Parameter	**Units**	**M.D.L.**	**Reference Method**	**Date/Site Analyzed**				
Cation Sum	meq/L		Calc.	22-Jul-14/O	4.44	4.42		
% Difference	%		Calc.	22-Jul-14/O	7.10	7.84		
Ion Ratio	AS/CS		Calc.	22-Jul-14/O	0.867	0.855		
Sodium Adsorption Ratio	-		Calc.	22-Jul-14/O	0.218	0.189		
TDS(ion sum calc.)	mg/L		Calc.	22-Jul-14/O	210	207		
Conductivity (calc.)	µmho/cm		Calc.	22-Jul-14/O	387	381		
TDS(calc.)/EC(actual)	-		Calc.	22-Jul-14/O	0.554	0.555		
EC(calc.)/EC(actual)	-		Calc.	22-Jul-14/O	1.02	1.02		
Langelier Index(25°C)	S.I.		Calc.	22-Jul-14/O	0.495	0.508		

NOTE: Revision created to add DOC upon client request

K. Pipin

Krystyna Pipin , M. Sc.
Lab Supervisor

M.D.L. = Method Detection Limit
Site Analyzed=K-Kingston,W-Windsor,O-Ottawa,R-Richmond Hill

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CERTIFICATE OF ANALYSIS

Final Report

C.O.C.: G32220 **REPORT No. B14-22908**

Report To:

Oakridge Environmental
PO Box 431 ,
Peterborough ON K9J 6Z3 Canada
Attention: Dan MacIntyre

Caduceon Environmental Laboratories
285 Dalton Ave
Kingston Ontario K7K 6Z1
Tel: 613-544-2001
Fax: 613-544-2770

DATE RECEIVED: 05-Sep-14
DATE REPORTED: 12-Sep-14
SAMPLE MATRIX: Groundwater

JOB/PROJECT NO.: Piligrims
P.O. NUMBER: 12-1629
WATERWORKS NO.

			Client I.D.		TW-6 - (10hrs)			
			Sample I.D.		B14-22908-1			
			Date Collected		03-Sep-14			
Parameter	**Units**	**M.D.L.**	**Reference Method**	**Date/Site Analyzed**				
Alkalinity(CaCO3) to pH4.5	mg/L	5	SM 2320B	05-Sep-14/O	154			
Bicarbonate(as CaCO3)	mg/L	5	SM 2320B	05-Sep-14/O	128			
Carbonate (as CaCO3)	mg/L	5	SM 2320B	05-Sep-14/O	26			
pH @25°C	pH Units		SM 4500H	05-Sep-14/O	8.95			
Conductivity @25°C	µmho/cm	1	SM 2510B	09-Sep-14/O	339			
Colour	TCU	2	SM 2120C	08-Sep-14/O	23			
Turbidity	NTU	0.1	SM 2130	09-Sep-14/O	18.6			
Fluoride	mg/L	0.1	SM4110C	08-Sep-14/O	2.5			
Chloride	mg/L	0.5	SM4110C	08-Sep-14/O	3.9			
Nitrite (N)	mg/L	0.1	SM4110C	08-Sep-14/O	< 0.1			
Nitrate (N)	mg/L	0.1	SM4110C	08-Sep-14/O	< 0.1			
Sulphate	mg/L	1	SM4110C	08-Sep-14/O	21			
o-Phosphate (P)	mg/L	0.01	MOEE 3366	08-Sep-14/O	< 0.01			
Ammonia (N)-Total	mg/L	0.01	MOEE 3364	08-Sep-14/O	0.03			
Dissolved Organic Carbon	mg/L	0.2	EPA 415.1	09-Sep-14/O	1.5			
TDS (Calc. from Cond.)	mg/L		Calc.	09-Sep-14	228			
Hardness (as CaCO3)	mg/L	1	SM 3120	08-Sep-14/O	41			
Calcium	mg/L	0.02	SM 3120	08-Sep-14/O	4.25			
Copper	mg/L	0.002	SM 3120	08-Sep-14/O	< 0.002			
Iron	mg/L	0.005	SM 3120	08-Sep-14/O	3.62			
Magnesium	mg/L	0.01	SM 3120	08-Sep-14/O	7.43			
Manganese	mg/L	0.001	SM 3120	08-Sep-14/O	0.065			
Potassium	mg/L	0.1	SM 3120	08-Sep-14/O	0.9			
Sodium	mg/L	0.2	SM 3120	08-Sep-14/O	78.7			
Zinc	mg/L	0.005	SM 3120	08-Sep-14/O	< 0.005			
Anion Sum	meq/L		Calc.	09-Sep-14/O	3.76			
Cation Sum	meq/L		Calc.	09-Sep-14/O	4.47			

M.D.L. = Method Detection Limit
Site Analyzed=K-Kingston,W-Windsor,O-Ottawa,R-Richmond Hill

Richard Lecompte
Lab Supervisor

CADUCEON ENVIRONMENTAL LABORATORIES
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CERTIFICATE OF ANALYSIS

Final Report

C.O.C.: G32220 **REPORT No. B14-22908**

Report To:

Oakridge Environmental
PO Box 431 ,
Peterborough ON K9J 6Z3 Canada
Attention: Dan MacIntyre

Caduceon Environmental Laboratories
285 Dalton Ave
Kingston Ontario K7K 6Z1
Tel: 613-544-2001
Fax: 613-544-2770

DATE RECEIVED: 05-Sep-14
DATE REPORTED: 12-Sep-14
SAMPLE MATRIX: Groundwater

JOB/PROJECT NO.: Piligrims
P.O. NUMBER: 12-1629
WATERWORKS NO.

			Client I.D.		TW-6 - (10hrs)			
			Sample I.D.		B14-22908-1			
			Date Collected		03-Sep-14			
Parameter	**Units**	**M.D.L.**	**Reference Method**	**Date/Site Analyzed**				
% Difference	%		Calc.	09-Sep-14/O	8.55			
Ion Ratio	AS/CS		Calc.	09-Sep-14/O	0.842			
Sodium Adsorption Ratio	-		Calc.	09-Sep-14/O	5.33			
TDS(ion sum calc.)	mg/L		Calc.	09-Sep-14/O	215			
Conductivity (calc.)	µmho/cm		Calc.	09-Sep-14/O	366			
TDS(calc.)/EC(actual)	-		Calc.	09-Sep-14/O	0.635			
EC(calc.)/EC(actual)	-		Calc.	09-Sep-14/O	1.08			
Langelier Index(25°C)	S.I.		Calc.	09-Sep-14/O	0.333			

M.D.L. = Method Detection Limit
Site Analyzed=K-Kingston,W-Windsor,O-Ottawa,R-Richmond Hill

Richard Lecompte
Lab Supervisor

CADUCEON ENVIRONMENTAL LABORATORIES
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CERTIFICATE OF ANALYSIS

Final Report

C.O.C.: G31363 **REPORT No. B14-31309**

Report To:

Oakridge Environmental
PO Box 431 ,
Peterborough ON K9J 6Z3 Canada
Attention: Dan MacIntyre

Caduceon Environmental Laboratories
2378 Holly Lane
Ottawa Ontario K1V 7P1
Tel: 613-526-0123
Fax: 613-526-1244

DATE RECEIVED: 03-Dec-14
DATE REPORTED: 08-Dec-14
SAMPLE MATRIX: Groundwater

JOB/PROJECT NO.: Pilgrims Rest
P.O. NUMBER: 12-1629
WATERWORKS NO.

			Client I.D.		TW-4 - (5hrs)			
			Sample I.D.		B14-31309-1			
			Date Collected		02-Dec-14			
Parameter	**Units**	**M.D.L.**	**Reference Method**	**Date/Site Analyzed**				
Hardness (as CaCO3)	mg/L	1	SM 3120	04-Dec-14/O	181			
Alkalinity(CaCO3) to pH4.5	mg/L	5	SM 2320B	04-Dec-14/O	145			
Bicarbonate(as CaCO3)	mg/L	5	SM 2320B	04-Dec-14/O	145			
Carbonate (as CaCO3)	mg/L	5	SM 2320B	04-Dec-14/O	< 5			
Conductivity @25°C	µmho/cm	1	SM 2510B	04-Dec-14/O	338			
pH @25°C	pH Units		SM 4500H	04-Dec-14/O	7.74			
Colour	TCU	2	SM 2120C	05-Dec-14/O	19			
Turbidity	NTU	0.1	SM 2130	05-Dec-14/O	134			
Fluoride	mg/L	0.1	SM4110C	05-Dec-14/O	0.3			
Chloride	mg/L	0.5	SM4110C	05-Dec-14/O	4.4			
Nitrite (N)	mg/L	0.1	SM4110C	05-Dec-14/O	< 0.1			
Nitrate (N)	mg/L	0.1	SM4110C	05-Dec-14/O	< 0.1			
Sulphate	mg/L	1	SM4110C	05-Dec-14/O	29			
Calcium	mg/L	0.02	SM 3120	04-Dec-14/O	63.3			
Magnesium	mg/L	0.01	SM 3120	04-Dec-14/O	5.64			
Sodium	mg/L	0.2	SM 3120	04-Dec-14/O	8.5			
Potassium	mg/L	0.1	SM 3120	04-Dec-14/O	2.6			
Copper	mg/L	0.002	SM 3120	04-Dec-14/O	< 0.002			
Iron	mg/L	0.005	SM 3120	04-Dec-14/O	9.98			
Manganese	mg/L	0.001	SM 3120	04-Dec-14/O	0.693			
Zinc	mg/L	0.005	SM 3120	04-Dec-14/O	0.018			
Ammonia (N)-Total	mg/L	0.01	MOEE 3364	04-Dec-14/O	< 0.01			
o-Phosphate (P)	mg/L	0.01	MOEE 3366	04-Dec-14/O	< 0.01			
Dissolved Organic Carbon	mg/L	0.2	EPA 415.1	04-Dec-14/O	4.6			
Total Coliform	cfu/100mL	1	MOE E3407	03-Dec-14/O	0			
E coli	cfu/100mL	1	MOE E3407	03-Dec-14/O	0			
Heterotrophic Plate Count	cfu/mL	2	SM 9215C	03-Dec-14/O	46			
Anion Sum	meq/L		Calc.	08-Dec-14/O	3.62			

NOTE: Groundwater not field-filtered for metals.

M.D.L. = Method Detection Limit
Site Analyzed=K-Kingston,W-Windsor,O-Ottawa,R-Richmond Hill

Greg Clarkin , BSc., C. Chem
Lab Manager - Ottawa District

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CERTIFICATE OF ANALYSIS

Final Report

C.O.C.: G31363 **REPORT No. B14-31309**

Report To:

Oakridge Environmental
PO Box 431 ,
Peterborough ON K9J 6Z3 Canada
Attention: Dan MacIntyre

Caduceon Environmental Laboratories
2378 Holly Lane
Ottawa Ontario K1V 7P1
Tel: 613-526-0123
Fax: 613-526-1244

DATE RECEIVED: 03-Dec-14
DATE REPORTED: 08-Dec-14
SAMPLE MATRIX: Groundwater

JOB/PROJECT NO.: Pilgrims Rest
P.O. NUMBER: 12-1629
WATERWORKS NO.

			Client I.D.		TW-4 - (5hrs)			
			Sample I.D.		B14-31309-1			
			Date Collected		02-Dec-14			
Parameter	**Units**	**M.D.L.**	**Reference Method**	**Date/Site Analyzed**				
Cation Sum	meq/L		Calc.	08-Dec-14/O	4.62			
% Difference	%		Calc.	08-Dec-14/O	12.1 [1]			
Ion Ratio	AS/CS		Calc.	08-Dec-14/O	0.783			
Sodium Adsorption Ratio	-		Calc.	08-Dec-14/O	0.274			
TDS(ion sum calc.)	mg/L		Calc.	08-Dec-14/O	211			
Conductivity (calc.)	µmho/cm		Calc.	08-Dec-14/O	370			
TDS(calc.)/EC(actual)	-		Calc.	08-Dec-14/O	0.624			
EC(calc.)/EC(actual)	-		Calc.	08-Dec-14/O	1.10			
Langelier Index(25°C)	S.I.		Calc.	08-Dec-14/O	0.269			

1 . Outside of 10% Acceptance Criteria

NOTE: Groundwater not field-filtered for metals.

M.D.L. = Method Detection Limit
Site Analyzed=K-Kingston,W-Windsor,O-Ottawa,R-Richmond Hill

Greg Clarkin , BSc., C. Chem
Lab Manager - Ottawa District

CADUCEON ENVIRONMENTAL LABORATORIES
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CERTIFICATE OF ANALYSIS

Final Report

C.O.C.: DW38874 **REPORT No. B14-31467**

Report To:

Oakridge Environmental
PO Box 431 ,
Peterborough ON K9J 6Z3 Canada
Attention: Christa Lemelin

Caduceon Environmental Laboratories
285 Dalton Ave
Kingston Ontario K7K 6Z1
Tel: 613-544-2001
Fax: 613-544-2770

DATE RECEIVED: 04-Dec-14
DATE REPORTED: 11-Dec-14
SAMPLE MATRIX: Groundwater

JOB/PROJECT NO.: Pilgrims Rest
P.O. NUMBER: 12-1629
WATERWORKS NO.

			Client I.D.		TW-4			
			Sample I.D.		B14-31467-1			
			Date Collected		02-Dec-14			
Parameter	**Units**	**M.D.L.**	**Reference Method**	**Date/Site Analyzed**				
Total Coliform	cfu/100mL	1	MOE E3407	04-Dec-14/K	12			
E coli	cfu/100mL	1	MOE E3407	04-Dec-14/K	0			
Heterotrophic Plate Count	cfu/mL	10	SM9215D	04-Dec-14/K	90			
Alkalinity(CaCO3) to pH4.5	mg/L	3	SM 2320	05-Dec-14/K	143			
Carbonate (as CaCO3)	mg/L	3	SM 2320	05-Dec-14/K	< 3			
Bicarbonate(as CaCO3)	mg/L	3	SM 2320	05-Dec-14/K	143			
pH @25°C	pH Units		SM4500H+	05-Dec-14/K	7.80			
Conductivity @25°C	µmho/cm	1	SM 2510B	08-Dec-14/O	336			
Colour	TCU	2	SM2120C	05-Dec-14/K	< 2			
Turbidity	NTU	0.2	SM2130B	05-Dec-14/K	75.2			
Fluoride	mg/L	0.1	SM4110C	08-Dec-14/O	0.3			
Chloride	mg/L	0.5	SM4110C	08-Dec-14/O	5.4			
Nitrite (N)	mg/L	0.1	SM4110C	08-Dec-14/O	< 0.1			
Nitrate (N)	mg/L	0.1	SM4110C	08-Dec-14/O	< 0.1			
Sulphate	mg/L	1	SM4110C	08-Dec-14/O	32			
o-Phosphate (P)	mg/L	0.01	PE4500-S	10-Dec-14/K	0.02			
Ammonia (N)-Total	mg/L	0.01	SM4500-NH3-H	05-Dec-14/K	0.04			
Dissolved Organic Carbon	mg/L	0.2	EPA 415.1	09-Dec-14/O	22.9			
TDS (Calc. from Cond.)	mg/L		Calc.	09-Dec-14	226			
Hardness (as CaCO3)	mg/L	1	SM 3120	08-Dec-14/O	159			
Calcium	mg/L	0.02	SM 3120	08-Dec-14/O	55.0			
Copper	mg/L	0.002	SM 3120	08-Dec-14/O	< 0.002			
Iron	mg/L	0.005	SM 3120	08-Dec-14/O	7.79			
Magnesium	mg/L	0.01	SM 3120	08-Dec-14/O	5.16			
Manganese	mg/L	0.001	SM 3120	08-Dec-14/O	0.596			
Potassium	mg/L	0.1	SM 3120	08-Dec-14/O	2.3			
Sodium	mg/L	0.2	SM 3120	08-Dec-14/O	11.5			

Richard Lecompte
Lab Supervisor

M.D.L. = Method Detection Limit
Site Analyzed=K-Kingston,W-Windsor,O-Ottawa,R-Richmond Hill

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CERTIFICATE OF ANALYSIS

Final Report

C.O.C.: DW38874 **REPORT No. B14-31467**

Report To:

Oakridge Environmental
PO Box 431 ,
Peterborough ON K9J 6Z3 Canada
Attention: Christa Lemelin

Caduceon Environmental Laboratories
285 Dalton Ave
Kingston Ontario K7K 6Z1
Tel: 613-544-2001
Fax: 613-544-2770

DATE RECEIVED: 04-Dec-14
DATE REPORTED: 11-Dec-14
SAMPLE MATRIX: Groundwater

JOB/PROJECT NO.: Pilgrims Rest
P.O. NUMBER: 12-1629
WATERWORKS NO.

			Client I.D.		TW-4			
			Sample I.D.		B14-31467-1			
			Date Collected		02-Dec-14			
Parameter	**Units**	**M.D.L.**	**Reference Method**	**Date/Site Analyzed**				
Zinc	mg/L	0.005	SM 3120	08-Dec-14/O	0.012			
Anion Sum	meq/L		Calc.	09-Dec-14/O	3.70			
Cation Sum	meq/L		Calc.	09-Dec-14/O	4.17			
% Difference	%		Calc.	09-Dec-14/O	6.04			
Ion Ratio	AS/CS		Calc.	09-Dec-14/O	0.886			
Sodium Adsorption Ratio	-		Calc.	09-Dec-14/O	0.397			
Langelier Index(25°C)	S.I.		Calc.	09-Dec-14/O	0.264			

M.D.L. = Method Detection Limit
Site Analyzed=K-Kingston,W-Windsor,O-Ottawa,R-Richmond Hill

Richard Lecompte
Lab Supervisor

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CERTIFICATE OF ANALYSIS

Final Report

C.O.C.: G31370 **REPORT No. B15-02668**

Report To:

Oakridge Environmental
PO Box 431 ,
Peterborough ON K9J 6Z3 Canada
Attention: Brad Pettersone

Caduceon Environmental Laboratories
2378 Holly Lane
Ottawa Ontario K1V 7P1
Tel: 613-526-0123
Fax: 613-526-1244

DATE RECEIVED: 09-Feb-15
DATE REPORTED: 11-Feb-15
SAMPLE MATRIX: Groundwater

JOB/PROJECT NO.: Pilgrims Rest
P.O. NUMBER: 12-1629
WATERWORKS NO.

			Client I.D.		TW-6 - (5hrs)	TW-6 - (10hrs)		
			Sample I.D.		B15-02668-1	B15-02668-2		
			Date Collected		05-Feb-15	05-Feb-15		
Parameter	**Units**	**M.D.L.**	**Reference Method**	**Date/Site Analyzed**				
Hardness (as CaCO3)	mg/L	1	SM 3120	09-Feb-15/O	12	13		
Alkalinity(CaCO3) to pH4.5	mg/L	5	SM 2320B	09-Feb-15/O	147	145		
Bicarbonate(as CaCO3)	mg/L	5	SM 2320B	09-Feb-15/O	147	145		
Carbonate (as CaCO3)	mg/L	5	SM 2320B	09-Feb-15/O	26	18		
Conductivity @25°C	µmho/cm	1	SM 2510B	09-Feb-15/O	315	329		
pH @25°C	pH Units		SM 4500H	09-Feb-15/O	8.85	8.78		
Colour	TCU	2	SM 2120C	10-Feb-15/O	6	7		
Turbidity	NTU	0.1	SM 2130	09-Feb-15/O	3.2	2.8		
Chloride	mg/L	0.5	SM4110C	09-Feb-15/O	1.7	2.1		
Fluoride	mg/L	0.1	SM4110C	09-Feb-15/O	1.9	2.0		
Nitrite (N)	mg/L	0.1	SM4110C	09-Feb-15/O	< 0.1	< 0.1		
Nitrate (N)	mg/L	0.1	SM4110C	09-Feb-15/O	< 0.1	< 0.1		
Sulphate	mg/L	1	SM4110C	09-Feb-15/O	18	24		
Ammonia (N)-Total	mg/L	0.01	MOEE 3364	11-Feb-15/O	0.04	0.03		
o-Phosphate (P)	mg/L	0.01	MOEE 3366	11-Feb-15/O	< 0.01	< 0.01		
Dissolved Organic Carbon	mg/L	0.2	EPA 415.1	09-Feb-15/O	1.3	1.3		
Calcium	mg/L	0.02	SM 3120	09-Feb-15/O	3.40	3.30		
Magnesium	mg/L	0.01	SM 3120	09-Feb-15/O	0.97	1.06		
Sodium	mg/L	0.2	SM 3120	09-Feb-15/O	69.3	71.9		
Potassium	mg/L	0.1	SM 3120	09-Feb-15/O	0.9	0.8		
Copper	mg/L	0.002	SM 3120	09-Feb-15/O	< 0.002	< 0.002		
Iron	mg/L	0.005	SM 3120	09-Feb-15/O	0.248	0.266		
Manganese	mg/L	0.001	SM 3120	09-Feb-15/O	0.009	0.009		
Uranium	mg/L	0.00005	EPA 200.8	09-Feb-15/O	0.00950	0.00939		
Zinc	mg/L	0.005	SM 3120	09-Feb-15/O	< 0.005	< 0.005		
Total Coliform	cfu/100mL	1	MOE E3407	07-Feb-15/O	0	0		
E coli	cfu/100mL	1	MOE E3407	07-Feb-15/O	0	0		

K. Pipin

Krystyna Pipin , M. Sc.
Lab Supervisor

M.D.L. = Method Detection Limit
Site Analyzed=K-Kingston,W-Windsor,O-Ottawa,R-Richmond Hill

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CERTIFICATE OF ANALYSIS

Final Report

C.O.C.: G31370 **REPORT No. B15-02668**

Report To:

Oakridge Environmental
PO Box 431 ,
Peterborough ON K9J 6Z3 Canada
Attention: Brad Pettersone

Caduceon Environmental Laboratories
2378 Holly Lane
Ottawa Ontario K1V 7P1
Tel: 613-526-0123
Fax: 613-526-1244

DATE RECEIVED: 09-Feb-15
DATE REPORTED: 11-Feb-15
SAMPLE MATRIX: Groundwater

JOB/PROJECT NO.: Pilgrims Rest
P.O. NUMBER: 12-1629
WATERWORKS NO.

			Client I.D.		TW-6 - (5hrs)	TW-6 - (10hrs)		
			Sample I.D.		B15-02668-1	B15-02668-2		
			Date Collected		05-Feb-15	05-Feb-15		
Parameter	**Units**	**M.D.L.**	**Reference Method**	**Date/Site Analyzed**				
Heterotrophic Plate Count	cfu/mL	2	SM 9215C	07-Feb-15/O	358 [1]	142		
Anion Sum	meq/L		Calc.	10-Feb-15/O	3.45	3.55		
Cation Sum	meq/L		Calc.	10-Feb-15/O	3.30	3.42		
% Difference	%		Calc.	10-Feb-15/O	2.19	1.89		
Ion Ratio	AS/CS		Calc.	10-Feb-15/O	1.04	1.04		
Sodium Adsorption Ratio	-		Calc.	10-Feb-15/O	8.53	8.82		
TDS(ion sum calc.)	mg/L		Calc.	10-Feb-15/O	184	192		
Conductivity (calc.)	µmho/cm		Calc.	10-Feb-15/O	309	322		
TDS(calc.)/EC(actual)	-		Calc.	10-Feb-15/O	0.585	0.583		
EC(calc.)/EC(actual)	-		Calc.	10-Feb-15/O	0.982	0.978		
Langelier Index(25°C)	S.I.		Calc.	10-Feb-15/O	0.135	0.0366		

1 . HPC duplicate = 270 cfu

K. Pipin

Krystyna Pipin , M. Sc.
Lab Supervisor

M.D.L. = Method Detection Limit
Site Analyzed=K-Kingston,W-Windsor,O-Ottawa,R-Richmond Hill

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CERTIFICATE OF ANALYSIS

Final Report

C.O.C.: G31373

REPORT No. B15-03624

Rev. 1

Report To:

Oakridge Environmental
PO Box 431 ,
Peterborough ON K9J 6Z3 Canada
Attention: Dan MacIntyre

Caduceon Environmental Laboratories
2378 Holly Lane
Ottawa Ontario K1V 7P1
Tel: 613-526-0123
Fax: 613-526-1244

DATE RECEIVED: 21-Feb-15
DATE REPORTED: 17-Apr-15
SAMPLE MATRIX: Groundwater

JOB/PROJECT NO.: Piligrim's
P.O. NUMBER: 12-1629
WATERWORKS NO.

			Client I.D.		TW-5 - (6hrs)	TW-5 - (12hrs)	TW-5 - (18hrs)	TW-5 - (24hrs)
			Sample I.D.		B15-03624-1	B15-03624-2	B15-03624-3	B15-03624-4
			Date Collected		19-Feb-15	19-Feb-15	20-Feb-15	20-Feb-15
Parameter	**Units**	**M.D.L.**	**Reference Method**	**Date/Site Analyzed**				
Hardness (as CaCO3)	mg/L	1	SM 3120	23-Feb-15/O	75	59	57	58
Alkalinity(CaCO3) to pH4.5	mg/L	5	SM 2320B	23-Feb-15/O	168	162	158	157
Bicarbonate(as CaCO3)	mg/L	5	SM 2320B	23-Feb-15/O	168	162	158	157
Carbonate (as CaCO3)	mg/L	5	SM 2320B	23-Feb-15/O	< 5	< 5	< 5	< 5
Conductivity @25°C	µmho/cm	1	SM 2510B	23-Feb-15/O	339	339	339	338
pH @25°C	pH Units		SM 4500H	23-Feb-15/O	7.76	8.01	8.05	8.07
Colour	TCU	2	SM 2120C	25-Feb-15/O	13	27	19	17
Turbidity	NTU	0.1	SM 2130	25-Feb-15/O	13.8	2.5	2.1	1.3
Fluoride	mg/L	0.1	SM4110C	23-Feb-15/O	0.7	0.9	1.0	0.9
Chloride	mg/L	0.5	SM4110C	23-Feb-15/O	3.2	3.6	3.7	3.6
Nitrite (N)	mg/L	0.1	SM4110C	23-Feb-15/O	< 0.1	< 0.1	< 0.1	< 0.1
Nitrate (N)	mg/L	0.1	SM4110C	23-Feb-15/O	< 0.1	< 0.1	< 0.1	< 0.1
Sulphate	mg/L	1	SM4110C	23-Feb-15/O	19	20	20	20
Calcium	mg/L	0.02	SM 3120	23-Feb-15/O	22.6	17.3	16.7	16.8
Magnesium	mg/L	0.01	SM 3120	23-Feb-15/O	4.54	3.70	3.70	3.80
Sodium	mg/L	0.2	SM 3120	23-Feb-15/O	50.8	57.8	58.7	58.3
Potassium	mg/L	0.1	SM 3120	23-Feb-15/O	1.9	1.7	1.7	1.7
Copper	mg/L	0.002	SM 3120	23-Feb-15/O	< 0.002	< 0.002	< 0.002	< 0.002
Iron	mg/L	0.005	SM 3120	23-Feb-15/O	2.15	0.315	0.137	0.089
Manganese	mg/L	0.001	SM 3120	23-Feb-15/O	0.232	0.119	0.096	0.087
Zinc	mg/L	0.005	SM 3120	23-Feb-15/O	< 0.005	< 0.005	< 0.005	< 0.005
Ammonia (N)-Total	mg/L	0.01	MOEE 3364	23-Feb-15/O	0.05	0.05	0.05	0.05
o-Phosphate (P)	mg/L	0.01	MOEE 3366	23-Feb-15/O	< 0.01	< 0.01	< 0.01	< 0.01
Dissolved Organic Carbon	mg/L	0.2	EPA 415.1	23-Feb-15/O	4.0	3.6	3.6	3.5
Total Coliform	cfu/100mL	1	MOE E3407	21-Feb-15/O		0		0
E coli	cfu/100mL	1	MOE E3407	21-Feb-15/O		0		0
Heterotrophic Plate Count	cfu/mL	2	SM 9215C	21-Feb-15/O		112 [1]		34

Note: Revision created to correct Typo in sample I.D.

M.D.L. = Method Detection Limit
Site Analyzed=K-Kingston,W-Windsor,O-Ottawa,R-Richmond Hill

Gord Murphy
Lab Supervisor

CADUCEON ENVIRONMENTAL LABORATORIES
Client committed. Quality assured.

CERTIFICATE OF ANALYSIS

Final Report

C.O.C.: G31373

REPORT No. B15-03624

Rev. 1

Report To:

Oakridge Environmental
PO Box 431 ,
Peterborough ON K9J 6Z3 Canada
Attention: Dan MacIntyre

Caduceon Environmental Laboratories
2378 Holly Lane
Ottawa Ontario K1V 7P1
Tel: 613-526-0123
Fax: 613-526-1244

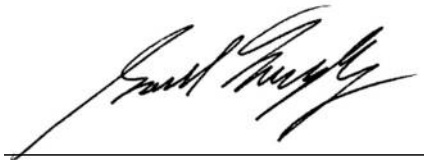
DATE RECEIVED: 21-Feb-15
DATE REPORTED: 17-Apr-15
SAMPLE MATRIX: Groundwater

JOB/PROJECT NO.: Piligrim's
P.O. NUMBER: 12-1629
WATERWORKS NO.

			Client I.D.		TW-5 - (6hrs)	TW-5 - (12hrs)	TW-5 - (18hrs)	TW-5 - (24hrs)
			Sample I.D.		B15-03624-1	B15-03624-2	B15-03624-3	B15-03624-4
			Date Collected		19-Feb-15	19-Feb-15	20-Feb-15	20-Feb-15
Parameter	**Units**	**M.D.L.**	**Reference Method**	**Date/Site Analyzed**				
Anion Sum	meq/L		Calc.	24-Feb-15/O	3.86	3.81	3.73	3.71
Cation Sum	meq/L		Calc.	24-Feb-15/O	3.89	3.76	3.75	3.74
% Difference	%		Calc.	24-Feb-15/O	0.409	0.694	0.333	0.418
Ion Ratio	AS/CS		Calc.	24-Feb-15/O	0.992	1.01	0.993	0.992
Sodium Adsorption Ratio	-		Calc.	24-Feb-15/O	2.55	3.29	3.38	3.34
TDS(ion sum calc.)	mg/L		Calc.	24-Feb-15/O	205	203	201	200
Conductivity (calc.)	µmho/cm		Calc.	24-Feb-15/O	353	350	347	346
TDS(calc.)/EC(actual)	-		Calc.	24-Feb-15/O	0.606	0.599	0.592	0.591
EC(calc.)/EC(actual)	-		Calc.	24-Feb-15/O	1.04	1.03	1.02	1.02
Langelier Index(25°C)	S.I.		Calc.	24-Feb-15/O	-0.0937	0.0260	-0.0806	0.0687

1 . Duplicate HPC = 60 cfu/mL

Note: Revision created to correct Typo in sample I.D.



Gord Murphy
Lab Supervisor

M.D.L. = Method Detection Limit
Site Analyzed=K-Kingston,W-Windsor,O-Ottawa,R-Richmond Hill

APPENDIX G

Well Certification Program

Well Certification Program

1.0 Introduction

All development lots are subject to this *Well Certification Program*. It is the responsibility of the lot owner to ensure that this program is undertaken.

The Program requires that prior to issuance of a Building Permit for the lot, a Qualified Person is to be retained to provide assistance with respect to the placement and testing of private wells. A Qualified Person (QP) is a Hydrogeologist who is a licensed Professional Geoscientist in the Province of Ontario (APGO) or a licensed Professional Engineer with appropriate hydrogeological training and experience.

This Program draws upon the results of the hydrogeological study submitted in support of the development, County of Peterborough peer review, the Ontario Building Code, MOECC Procedure D-5-5 and/or the Ontario Drinking Water Quality Standards. Nothing in this Program should limit the Qualified Person from modifying the requirements as needed to suit the site conditions.

2.0 Water Wells

The Program requires that a water well is to be constructed under the supervision of, and tested by, a Qualified Person who will certify as part of a written report that a drilled well has been constructed, meeting the minimum construction, water demand and water quality requirements as set forth herein. The report shall be submitted to the municipality as part of the Building Permit application. The Qualified Person is to ensure that the following tasks are completed:

- As a general guide, unless the Qualified Person recommends otherwise, new drilled wells are to be constructed at the locations illustrated on the accompanying Recommended Lot Servicing Plan - Figure 12, from the Hydrogeological Study.

- Wherever possible, the distance separating wells and sewage systems is to be maximized, while complying with all required setbacks of O. Reg. 903, as amended, and the Ontario Building Code.

- Once the preceding constraints have been accommodated, a location for the new wells shall be staked-out in the field.

- All wells are to be drilled, constructed and sealed in accordance with O. Reg. 903, as amended at the location staked-out in the field.

- The target aquifer occurs within the Precambrian bedrock. Previous test well construction (during the hydrogeological study) has indicated that the aquifer(s) may require aggressive hydrofracturing in order to achieve an acceptable yield. The drilling contractor should be advised of this potential requirement in advance. Additional well development costs may, therefore, be incurred by the lot owner to

achieve a satisfactory outcome.

- The lot owner should be aware and understand that there is no guarantee that any new well constructed on the lot will be successful. More than one attempt to construct a well may be needed.

- The Qualified Person shall conduct a pumping test of the new well. The pumping test shall have a 6-hour minimum duration at a predetermined pumping rate as per the anticipated peak demand requirement referenced in MOECC Procedure D-5-5 (i.e., typically 18.75 L/m for a 4 bedroom residence). Following the pumping test there must be at least 95% water level recovery within 24 hours. The pumping test is to be conducted to determine if the well has an adequate and sustainable yield and whether supplemental water storage is required. A longer pumping test may be required in the case of a low yield well.

- The pumping test is to include water sampling and analysis of the parameters listed in MOECC Procedure D-5-5. Further well development may be necessary to demonstrate that turbidity is acceptable (i.e., not to exceed 5 NTU, in the absence of bacteria issue). Note: wellhead turbidity measurements can be more representative than laboratory reported data in some instances.

- Upon completion of the pumping test, the Qualified Person should advise the lot owner as to whether or not the well is acceptable for future use.

- In the event that any well is found to produce insufficient supply for domestic use, the Qualified Person shall instruct the lot owner as to the requirements of Ont. Reg. 903, as amended, with respect to the requirement for proper well abandonment. Alternatively, if deemed safe to do so by the Qualified Person, the well may be utilized as a supplementary source for lawn watering and other outdoor uses provided it does not constitute a route of access for surface or near surface sources of contamination. The Qualified Person supervising the well construction shall also ensure that the driller's contract includes appropriate stipulations concerning well abandonment. The lot owner should be aware that additional costs for well abandonment may be incurred, in the event that a well is not successful. The abandonment water well record shall be retained by the well owner and a copy included in the Qualified Person's report.

- In the event that a well is found to be unacceptable, hydraulic fracturing and/or a second attempt to construct a new well can be undertaken if desired. The Qualified Person shall ensure that the testing procedures outlined above are conducted on all new and hydrofracked wells. While there is no limit to the number of attempts that may be undertaken, the Qualified Person may provide recommendations for an alternative water supply, should well construction on the lot be deemed "unlikely to succeed" (see below).

3.0 Alternative Water Supply

In the event that a minimum of three attempts to obtain a suitable water source for the lot are not successful, the Qualified Person may recommend any of the following alternatives, subject to obtaining permission from the municipality.

Shared Wells

- In the event that a suitable well, with sufficient excess yield is available on an immediately adjacent lot, the subject lot owner may enter into a private agreement with that lot owner for the sharing of the adjacent lot well. The owner of the subject lot will be responsible for arranging any legal agreements, contracts and/or easements necessary to facilitate the well sharing, sharing of water treatment (if applicable) sharing of well maintenance tasks/costs and sharing of wellhead protection tasks/costs.

- Prior to any such connection to a neighbouring well, the Qualified Person must either:

  a) review an existing *Well Certification Program* report to verify that the neighbouring well has the needed yield and quality to support the combined water demands, or

  b) conduct a new pumping test as outlined above, modified as needed to be applicable to the combined water demands, and

  c) shall prepare the *Well Certification Program* report for the subject lot (see additional requirements, below) indicating how the subject lot will be serviced for water supply by the neighbouring well.

- Although there is no specific prohibition with regard to the sharing of private wells, the lot owner should be discouraged from utilizing this alternative unless absolutely necessary.

- Under no circumstances should a single well be connected to more than five (5) residences.

Surface Water Supply

- In the unlikely event that an approved well water supply is not possible, then the lot owner may employ as a last resort and only with the written permission of the municipality, a surface water source to ensure a supply of potable water to the subject lot. A surface water source would be subject to the recommendations of a Qualified Person with respect to water quality treatment requirements to meet the Ontario Drinking Water Quality Standards and security of the water source. Prior to applying for such permission, the lot owner must demonstrate that reasonable attempts have been made to secure an acceptable groundwater source. Use of a surface water source may not be practical for all lots.

- To implement a surface water supply, if approved (in concept) by the Municipality, the Qualified Person shall conduct whatever investigation is necessary to select the best location for a lake intake based on factors such as water quality, avoidance of navigation hazard, avoidance of impact to sensitive environmental features (in-water and/or within the shoreline buffer), etc. Consultation with, and/or approval by review agencies may be required in this instance.

- The Qualified Person shall provide a recommendation with regard to the appropriate treatment requirements to ensure a safe water supply. An opinion from a water treatment specialist may be required.

4.0 Report

A *Well Certification Program* report is to be prepared by a Qualified Person and submitted to the municipality in support of the application for a Building Permit for each lot. The report shall include the following.

- A description of the subject lot with regard to size, topography, drainage, soil conditions and any sensitive environmental features. Information may be obtained from a combination of in-field observations and descriptions provided in the hydrogeological study.

- A recent survey of the lot boundaries.

- The location of the on-site water well (or alternative supply, in exceptional circumstances). The location (footprint) of the on-site sewage system (existing or proposed).

- A copy of the well record(s).

- A description of the required pumping test and water quality data.

- A professional opinion indicating that the source and treatment system (as outlined in the report), will provide an adequate and sustainable supply of acceptable quality water for the subject lot. A summary of any unknowns or limitations on that opinion shall also be provided.

- Recommendations regarding, but not limited to: water treatment; supplemental water storage; wellhead protection; regular testing; maintenance; water conservation, and any other matters deemed appropriate by the Qualified Person.

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