HYDROGEOLOGICAL ASSESSMENT REPORT

HAWK RIDGE DEVELOPMENT
LIV (HAWKRIDGE) LP
TOWNSHIP OF SEVERN

PREPARED BY:
C.F. CROZIER & ASSOCIATES INC.
70 HURON STREET, SUITE 100
COLLINGWOOD, ON L9Y 4L4

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1.0 INTRODUCTION

C.F. Crozier & Associates Inc. (Crozier) has been retained by LIV (Hawk Ridge) LP (LIV Communities) to complete a Hydrogeological Assessment in support of an Official Plan Amendment (OPA), Zoning By-Law Amendment (ZBA) and Draft Plan of Subdivision Application for the proposed development located at 1151 Hurlwood Lane in the Township of Severn (Township), County of Simcoe (County). The proposed development will herein be referred to as the Subject Development/Subject Lands/Subject Property.

The scope of the Hydrogeological Assessment Report is intended to fulfil the requirements of regulatory planning applications as well as establish a baseline for engineering design.

The Subject Lands are approximately 126 ha and are bounded by agricultural lands and open space to the north, Burnside Line to the east, the proposed Inch Farm Development Lands and Highway 11 to the south, and Uhthoff Line to the west. The municipal boundary between the Township of Severn and City of Orillia is located west of the site, along Highway 11. Approximately 26 ha of the Subject Lands are proposed for re-development. Refer to **Figure 1** for the Site Location Plan.

Crozier is part of a team of consultants providing support for this development. Other members of the consulting team include:

- Biglieri Group (Planning)
- Azimuth Environmental Consulting Inc. (Azimuth) (Environmental)
- Green Geotechnical Ltd. (Geotechnical)
- Crozier (Civil, Transportation Engineering & Hydrogeological)
- Hutchinson Environmental Sciences (Assimilative Capacity Study)

These consultants have prepared studies/ plans to support the planning application. This report prepared by Crozier should be read in conjunction with the work of the other team members.

The following report has been prepared to fulfil the terms of reference for a municipally serviced subdivision as defined by the Lake Simcoe Region Conservation Authority (LSRCA) and the Severn Sound Environmental Association (SSEA). The report characterizes the geological and hydrogeological regime of the Subject Property and describes the seasonal high groundwater elevation at the Subject Property.

Through the findings of the field investigation, a discussion of potential impacts to groundwater resources are also explored. Although at this stage, the stormwater management strategy has yet to be finalized, further commentary on best management practices (BMP) and potential mitigation measures will be provided to help guide future design considerations.

1.1 BACKGROUND

The scope of work is based on the proposal submitted to LIV dated June 13, 2023, and Concept Plan prepared by Biglieri Group dated August 22, 2024. The elements envisioned for the Subject Lands include:

- A residential development that consists of 850 units (290 single detached units, 310 townhouses and 250 stacked townhouses)
- An 18-hole golf course routed through the future development
- Two (2) SWM facilities and on-site controls
- Well Pump House, Water Tower, Water Treatment Plant
- Wastewater Treatment Plant
- Road connections to Uhthoff Line and Hurlwood Lane

The following resources, external studies and reports have been reviewed in preparation for this Report:

- Official Plan of the Township of Severn (November 2022).
- Severn Sound Source Protection Area Approved Assessment Report (January 2015).
- Source Protection Information Atlas, Ministry of Environment, Conservation and Parks (Accessed December 2022).
- Well Records Database, Ministry of Environment, Conservation and Parks (Accessed January 2024).
- The Physiography of Southern Ontario (Chapman and Putnam, 1984).
- Severn Sound Assessment Report – Chapter 10 (South Georgian Bay Lake Simcoe Region, January 2015)
- Severn Sound Assessment Report – Appendix S (South Georgian Bay Lake Simcoe Region, January 2015)
- Hydrogeological Investigation, West Orillia Neighbourhood Plan, Residential Development (Stantec, September 2022).

Currently, there is no existing sanitary system infrastructure in the vicinity of the Subject Lands. The City of Orillia has sanitary infrastructure south of Highway 11 and along Murphy Road however, it has been assumed that a cross-boundary servicing agreement with the City of Orillia would not be satisfactory for the Township of Severn for the purposes of servicing this development. Refer to the *Master Servicing Report (Crozier, September 2024)* for further discission. The proposed sanitary servicing solution for the Subject Lands will be to construct a Wastewater Treatment Plant (WWTP) near the low point of the Site, adjacent to the Silver Creek. Additionally, there is no municipal drinking water system within the vicinity of the development. The proposed water servicing solution for the Subject Lands will be to drill 4 wells and construct a pump house and on-site treatment plant to provide clean drinking water for the development.

1.2 SITE DESCRIPTION

The Subject Lands cover an area of approximately 44.5 ha and are located in the Township of Severn (Township), County of Simcoe (County). The site is currently an active 36-hole golf course featuring tee decks, bunkers and offline irrigation ponds. The Subject Lands are bounded by agricultural lands and open space to the north; Highway 11, open space, the Inch Farm industrial lands (owned by the City of Orillia) and the Inch Farm residential development (owned by LIV Communities) to the south; Burnside Lane, Hawk Ridge Crescent, residential houses and agricultural lands to the east; and Uhthoff Line, wooded area and residential houses to the west. The Township and City boundaries also border the southern portion of the site.

The main branch of Silver Creek traverses through the center of the Subject Lands flowing in a northwest direction, following the general topography of the lands. Silver Creek is a gently winding watercourse that is contained in a shallow well-defined channel. There are several smaller tributaries of the Silver Creek which also traverse the Subject Lands.

According to the Township of Severn Official Plan (2022), the Subject Lands are currently zoned as "Open Space" within the developable area and "Environmental Protection" associated with the low-lying areas around Silver Creek. Therefore, this report will be in support of a Zoning Bylaw Amendment (ZBA) and Official Plan Amendment (OPA). There is no Conservation Authority operating for the Township and environmental matters fall under the jurisdiction of the Severn Sound Environmental Association (SSEA).

2.0 SOURCE PROTECTION

The Subject Lands are located within the Severn Sound Source Protection Area which is governed by the Severn Sound Source Protection Authority (SSSPA). The SSSPA is one of three source protection authorities for the South Georgian Bay Lake Simcoe Source Protection Region and authorized to act under legislated powers of Ontario's Clean Water Act (2006).

The Source Protection Plan applies a Vulnerability Score / Threats-Based Approach in which the product of two crucial pieces of information (vulnerability and circumstance) are combined to determine if a specific area and incorporated activity will be considered a Low, Moderate, or Significant Drinking Water Threat (LDWT, MDWT, or SDWT).

Related to the Drinking Water Threat classification, The Clean Water Act (2006) employs various levels of policy tools ranging from "Softer" tools such as Education and Outreach to "Part IV Powers" such as Restrictive Land Uses (s. 59), Risk Management Plans (S. 58), and Prohibition (S. 57). In general, only SDWTs incur the application of "Part IV Powers."

2.1 VULNERABILTY SCORE / THREATS-BASED APPROACH

In general, there are four types of vulnerable areas where activities may incur risks to drinking water sources. These areas are assigned vulnerability index scores ranging from 0 to 10 where the score is derived from numerous factors related to the physical setting. The following list constitutes of the four types of vulnerable areas: Wellhead Protection Areas (WHPA), Intake Protection Zones (IPZ), Highly Vulnerable Aquifers (HVA), and Significant Groundwater Recharge Areas (SGRA). Additionally, Event Based Areas (EBA) are delineated to address threats to systems drawing water from larger surface water bodies where the vulnerability scores are generally low.

Activities incurring threats to drinking water sources through impacts to quality and quantity within the region's Source Protection Plan are evaluated based on a hazard rating, also ranging from 0 to 10, and organized into Main and Subcategories. Main Categories within the SSSPA jurisdiction include:

1. The establishment, operation, or maintenance of a waste disposal site within the meaning of Part V of the Environmental Protection Act.

2. The establishment, operation or maintenance of a system that collects, stores, transmits, treats, or disposes of sewage.

3. The application of agricultural source material to land.

4. The storage of agricultural source material.

5. The management of agricultural source material.

6. The application of non-agricultural source material to land.

7. The handling and storage of non-agricultural source material.

8. The application of commercial fertilizer to land.

9. The handling and storage of commercial fertilizer.

10. The application of pesticide to land.

11. The handling and storage of pesticide.

12. The application of road salt.

13. The handling and storage of road salt.

14. The storage of snow.

15. The handling and storage of fuel.

16. The handling and storage of a dense non-aqueous phase liquid.

17. The handling and storage of an organic solvent.

18. The management of runoff that contains chemicals used in the de-icing of aircraft.

19. An activity that takes water from an aquifer or a surface water body without returning the water taken to the same aquifer or surface water body.

20. An activity that reduces the recharge of an aquifer.

21. The use of land as livestock grazing or pasturing land, an outdoor confinement area, or a farm-animal yard.

Note: Threats 19 and 20 are considered threats related to water quantity.

The SSSPA provides a reference table that demonstrate activities as they relate to significant drinking water threats (SDWT). SDWTs typically incur the enactment of policy tools either through mitigation of impacts by applying Restrictive Land Uses and Risk Management Plans or prevention of future impacts through Prohibition.

Drinking water threats associated with proposed activities on the Subject Property should be reviewed with the municipality's Risk Management Official (RMO).

2.2 CURRENT CONDITIONS

According to the Ministry of Environment, Conservation and Parks' (MECP) Source Protection Information Atlas, the Subject Lands are not located within any WHPAs, IPZs, or EBAs.

An HVA overlaps with the Subject Lands, generally bordering Silver Creek and its tributaries and has a vulnerability score of 6. The majority of the development onsite will occur on the western and southern portions of the site. While this HVA does cover most of the site, it overlaps with the proposed development on the western side.

Two SGRAs exist across the Subject Lands covering approximately 50% of the site. One of the SGRAs has a vulnerability score of 4 while the other has a vulnerability score of 6. The SGRA with a score of 4 exists in the central area of the site, overlying from the middle of the site from the northeast corner to the southwest corner. The SGRA with a score of 6 overlays throughout the site, appearing near all four corners of the site, along a portion of Uhthoff Line and the southern boundary of the site. Development is proposed to occur where both SGRAs exist, along the western side of the site.

See **Appendix A** for maps of the current Source Protection conditions on-site.

2.3 DEVELOPMENT CONSIDERATIONS

Due to the above mentioned HVA and SGRA presence on the Subject Lands, a Best Management Practices (BMP) approach should be taken and nearly all areas on the Subject Lands should be dealt with in a cautious manner noting the prescribed threats listed above.

According to the SSSPA, based on the proposed use of the Subject Lands, the following activities have the potential to result in *Low* to *Significant* Drinking Water Threats on the Subject Lands under these certain scenarios:

2. The establishment, operation or maintenance of a system that collects, stores, transmits, treats, or disposes of sewage.

    A. Storm water management facilities and drainage systems: Outfall from a storm water management facility or storm water drainage system.

    B. Storm water management facilities and drainage systems: Storm water infiltration facility.

8. The application of commercial fertilizer to land.

9. The handling and storage of commercial fertilizer.

10. The application of pesticide to land.

11. The handling and storage of pesticide.

12. The application of road salt.

14. The storage of snow.

19. An activity that takes water from an aquifer or a surface water body without returning the water taken to the same aquifer or surface water body.

20. An activity that reduces the recharge of an aquifer.

Based on a review of the Source Protection drinking water threats as well as the areas of the Subject Lands where the HVA and SGRAs exist, activities 2, 8, 9, 10, 11, 12, and 14 were determined to pose a Low Threat to drinking water resources. As a result, it is recommended that the HVA and SGRA regions of the site with vulnerability scores of six and lower should be dealt with using a BMP approach.

Table 1: Best Management Practices

Activity	Possible BMP
2	- SWM Pond: Install an impermeable geomembrane liner to prevent leakage - Infiltration Basin: Incorporate pretreatment and treatment design features to enhance water quality
8, 9	- Match nutrient supply with plant requirements to minimize excess nutrients - Store, mix, load, and perform cleanup 100 ft from any water source - Maintain wellheads to prevent direct contamination to groundwater
10, 11	- Monitor and assess pest population to confirm if levels warrant control - Select appropriate combination of pest controls to minimize waste - Eliminate or minimize exposure to pesticides during mixing, loading, cleaning and application - Follow all local, provincial, and federal regulations regarding transport of pesticides - Wear appropriate PPE and be aware of proper protocol if you come in contact with pesticides
12	- Utilize alternatives to NaCl (Road Salt), such as sand - Use Smart about Salt contractors - Direct runoff to stormwater infrastructure and avoid areas of ponding such that ice formation is minimized in high traffic areas
14	- Provide near impervious snow storage locations to direct melted runoff into storm water infrastructure - Snow disposal areas should be located at least 500 ft from storm drain inlets, drainage ditches, and surface water to minimize transport of pollutants from snowmelt - Snow storage areas should be maintained to reduce erosion and promote easy removal of accumulated pollutants or sediment

Based on the areas of the Subject Lands in which the HVA and SGRAs exist, as well as the vulnerability index scores of 4 and 6, activity 19 and 20 do not have the potential to incur significant Drinking Water Threats to quantity by way of alterations to the local groundwater recharge.

In summary, for seven identified activities above, implementation of best management practices should be considered to prevent potential impacts to drinking water sources in the area.

2.4 FUTURE CONSIDERATONS

Currently, the Subject Lands are not serviced by any municipal services or wells. It is proposed that the site will be serviced by 4 drilled supply wells. The development of drinking water wells may lead to the introduction of WHPAs within the Subject Lands.

3.0 PHYSICAL SETTING

The following sections describe the local and regional geology of the Subject Lands, including the physiography, topography, and drainage of the area.

3.1 PHYSIOGRAPHY, TOPOGRAPHY AND DRAINAGE

The Subject Lands fall within the border of the Simcoe Lowlands physiographic region (**Figure 3**). The Simcoe lowlands are defined as the low-lying areas bordering Georgian Bay and Lake Simcoe, covering an area of approximately 2,850 km^2. The lowlands naturally fall into two major divisions separated by the uplands of Simcoe County (Chapman and Putnam, 1984). The Subject Lands are located in the northern portion of the Simcoe Lowlands, between the Simcoe Uplands and the Carden Plain. Approximately 500 m east and south of the Site lie the Simcoe Uplands, which are characterized by broad, rolling till plains and steep-sided valleys. Located approximately 3.5 km northwest of the Site, the Carden Plains span over 580 km^2 of land and consist of limestone bedrock with minimal overburden. The Oro Moraine is also located just southwest of the site, extending from near Midhurst through to Bass Lake. It forms the highest land in the vicinity of the site, rising to 396 meters above sea level (masl).

Occurrences of boulder pavement has been mapped near the site, which are defined as a boulder-strewn surface on a wave-cut or stream-cut terrace. Physiographic landforms such as drumlins and sand plains are mapped near the site.

According to Ontario topographic mapping, the Subject Lands are generally flat with rolling hills. The terrain gently slopes towards Silver Creek which runs through the site and follows a northwest gradient, with ground elevation ranging from approximately 215 – 240 masl.

The Subject Lands are located within the Silver Creek subwatershed, a subwatershed of the North River and Matchedash Bay watersheds. There appears to be several small tributaries on the Subject Lands which drain towards the main branch of Silver Creek, flowing northwest on the Site. Approximately 3 km northwest of the site, Silver Creek and North River converge and the North River eventually drains into Matchedash Bay.

3.2 SURIFICIAL AND BEDROCK GEOLOGY

The surface geology composition of the site and surrounding areas is derived from the glacial processes that occurred throughout Simcoe County. Most of the area is covered by glaciolacustrine derived soils, deposited by glacial Lake Algonquin. Pockets of silty sand to sandy silt till are mapped across the landscape (**Figure 4**). A breakdown of the geology can be found in **Table 2**.

Table 2: Composition of Surficial Geology

Surficial Geology Unit	Composition
5b	- Stone-poor, sandy silt to silty sand-textured till on Paleozoic terrain
9b	- Sand, gravel, minor silt and clay - Littoral deposits
9c	- Sand, gravel, minor silt and clay - Foreshore and basinal deposits
8a	- Silt and clay, minor sand and gravel - Massive to well laminated

Several linear and point features are noted around the site including drumlin or drumlinoid ridges and shore bluff/scarp near the northeastern portion of the site, and beach ridges and near shore bars throughout. Beneath the overburden, the site and the surrounding area is atop the Bobcaygeon Formation (**Figure 5**). The Bobcaygeon Formation is composed of fossiliferous limestone found approximately 22 – 44 mbgs below ground surface.

4.0 HYDROGEOLOGY

The following sections describe the local and regional hydrogeology and hydrostratigraphy of the Subject Property.

4.1 MECP WELL RECORDS REVIEW

A review of the MECP Well Record Database identified a total of ninety-seven (97) well records within a 500-meter radius of the Subject Property boundary (**Figure 6**). Well record logs indicate that most wells are used for monitoring, test hole or domestic supply purposes. A summary of the key points from the well records is as follows:

- Of the 97 wells, 9 are abandoned/decommissioned, 71 are for agriculture/domestic/ commercial/industrial use, 9 are used for monitoring/observation, 7 are test holes, and 1 is unknown.

- Out of the wells that were screened, 27 wells were screened in the bedrock aquifer and 58 wells were screened in the overburden aquifer. Within the overburden aquifer, the most common subsurface materials are brown and grey sands, brown and grey clay and gravel, and till, overlaying a bedrock aquifer of mostly grey limestone. This seems to be representative of the local stratigraphy of the area.

- Well depth ranged from 4.6 mbgs to 79.2 mbgs, with an average depth of 24.4 mbgs.

- Static water levels ranged from 0 mbgs to 38.1 mbgs, with an average water level of 6.3 mbgl.

- Pumping rates ranged from 0.8 litres per minute (LPM) to 208.2 LPM, with an average of 35.4 LPM.

A summary table of the MECP well records is found in **Appendix B**.

4.2 GROUNDWATER PROPERTIES

4.2.1 REGIONAL

South Georgian Bay-Lake Simcoe Source Protection Region completed an assessment report of the Severn Sound Source Protection Area, which evaluated the surface water and groundwater conditions of the North River watershed. Chapter 10 of the Approved Assessment Report for Severn Sound details the groundwater quality in the Township of Severn. This includes the Severn Estates community, Bass Lake Woodlands, and Coldwater.

According to Appendix S of the assessment report, most of the parameters that were commonly found in the municipal water system in the Township of Severn were not identified as drinking water issues, though some did exceed Ontario Drinking Water Quality Standards (ODWQS) values.

- Coliforms have been detected in raw groundwater samples; however, the inconsistency and infrequency of these events deem the rare detections a non-issue. Disinfection is currently in place and is effective.

- Iron, manganese, and turbidity were occasionally found to exceed ODWQS aesthetic values or operational objectives. These parameters were deemed to be naturally occurring and therefore were not considered drinking water issues. Treatment of these parameters is currently provided at the Coldwater Well Supply.

- Lead concentrations in exceedance with the ODWQS have been noted in the past at the Severn Estates Well Supply, yet concentrations have consistently been less than ODWQS objectives during other sampling events during other sampling events and have not increased.

- Sodium concentrations have been found to exceed the guideline of 20 mg/L, and a reduction in sodium use in the contributing watershed would improve water quality, but it is not considered a drinking water issue.

- Trihalomethanes have been detected in the Severn Estates Well Supply as a result of the by-product of disinfection by chlorination. However, concentrations have been trace and far below ODWQS. Trihalomethanes are not considered to be a concern to drinking water quality in the area.

Trichloroethylene (TCE) has been detected in low concentrations in all three Coldwater wells in exceedance of the ODWQS value of 0.005 mg/L and is considered a Drinking Water Issue. There is no clear trend and observed concentrations of TCE have been variable. Additionally, monitoring to date has not identified any degradation products of TCE, such as vinyl chloride in the groundwater.

Studies were completed to identify potential sources of TCE, yet tests were unsuccessful in locating a source or determining the extent of the impacts from TCE in groundwater. Therefore, it was concluded that the TCE contamination was a result of historical land use rather than a current land use activity.

The Township of Severn has proceeded in providing treatment to remove TCE from the groundwater. A Granular Activated Carbon (GAC) filtration system was installed and began operating in 2008 and has been effectively removing TCE from the groundwater since. No increases in TCE have been noted since the establishment of the filtration system and it is anticipated that the existing treatment system will be capable of continuing to provide effective treatment in the future.

4.2.2 GROUNDWATER FLOW

Per review of the Bedrock Topography Map from the Ontario Geological Survey, the bedrock elevation on-site is approximately 22 to 44 mbgs.

Locally, the groundwater flow direction appears match the surficial topography, flowing towards Silver Creek. Though Lake Couchiching, Bass Lake, and Lake Simcoe are located within 5 km of the Subject Lands boundary, there is an increase in bedrock elevation around the eastern, western and southern portions of the site, with a large increase around the southeastern corner. Due to this slope, it has been presumed that the groundwater continues to follow the slope of Silver Creek, draining towards Black River and its eventual outlet, Matchedash Bay.

4.3 AQUIFER PROPERTIES

Stantec conducted a Hydrogeological Impact Assessment for a development site at located east of Line 15 North and south of Bass Lake Sideroad East, in the City of Orillia, located approximately 1.7 km southwest of the Subject Lands. Stantec characterized the regional stratigraphic profile of the area, which is comprised of eight layers of hydrostratigraphic units. These layers are described as follows:

- The Oro Moraine Aquifer: A surficial ice-contact stratified drift composed of sand and gravel with lenses of silt and clay, and outwash deposits associated with the Oro Moraine. This layer is thickest in the central portions of the moraine (up to 69 m) and become thinner moving towards the edges of the moraine (less than 1 m of thickness).

- Newmarket Aquitard: Composed primarily of the Newmarket Till (i.e., stony sandy silt to silty sand till), with deep-water glaciolacustrine deposits of interbedded silt to silty clay. The aquitard is extensive in the region (ranging from 1 m to 20 m thick), yet in low-lying areas, sediments of the Algonquin Aquifer can overlay the Newmarket Aquitard. The horizontal hydraulic conductivity within this aquifer is 10^{-8} m/s to 10^{-6} m/s and the vertical hydraulic conductivity is 10^{-9} m/s.

- Upper Aquifer Complex: An aquifer complex consisting of a regionally significant upper aquifer (gravel, sand, silty sand) and a smaller local aquifer (gravel, sand, silty sand), separated by a local aquitard (silt, silty clay, clay). The upper aquifer is 1 m – 78 m, the smaller aquifer is less than 15 m, and the local aquitard is 1 m – 45 m. The horizontal hydraulic conductivity of the upper aquifer is 10^{-5} m/s.

- Regional Aquitard: A fine textured poorly sorted deposit extends from Lake Simcoe and under the Oro Moraine. It is comprised of both glacial till and deep-water glaciolacustrine deposits. This diamicton varies from 1 m to 35 m in thickness.

- Regional Aquifer: This aquifer is comprised of medium to coarse-textured sand, sandy gravel and boulder gravel beds. This layer ranges from 1 m to 54 m in thickness. This aquifer is hydraulically connected to the overlying Upper Aquifer Complex. This is one of the most important aquifers in the region.

- Lower Drift: This sediment complex is comprised of three aquitards and two aquifers, as described in **Table 3** below. These aquifer units are notably used for local water supply.

Table 3: Aquifer/Aquitard Composition

Aquitard/Aquifer	Thickness	Composition
Lower Drift Upper Aquitard	1 m to 43 m, typically <25 m	Silty sand to sand till
Lower Drift Middle Aquitard	1 m to 53 m, typically <35 m	Clayey silt till
Lower Drift Lower Aquitard	1 m to 55 m, typically <35 m	Sandy silt to silty sand till
Lower Drift Local Aquifer	1 m to 32 m, typically <15 m	Glacial outwash deposit of sand and gravel on occasion
Lower Drift Lower Aquifer	1 m to 45 m, typically <25 m	Fine-textured sand and silt

- Basal Aquifer: Small isolated pockets of gravel and cobble overlying bedrock surface, ranging from 1 m to 22 m in thickness, typically less than 15 m thick.
- Bedrock Aquifer: Bedrock of Simcoe Group, consisting of the Bobcaygeon Formation (limestone). The water-yielding capacity of the bedrock formations in the Simcoe Group is fair (for domestic water supply purposes), with an average transmissivity of 5.7 m^2/day.

5.0 MONITORING NETWORK & FIELD WORK

5.1 2024 MONITORING WELL CONSTRUCTION (ACE Environmental Drilling Ltd.)

During the period of January 3-5 and 8-12 2024, ACE Environmental Drilling Ltd., Green Geotechnical Ltd., and Crozier were on-site for a drilling program on the site. ACE was retained by Green for the drilling of twenty-four (24) boreholes, all to be outfitted with monitoring wells. The purpose of this drilling program was to establish hydrogeological conditions across the Subject Lands and to assess the potential requirement for construction dewatering and/or long-term dewatering.

Key monitoring well construction details can be found in **Table 4**. Full borehole records and monitoring well construction logs can be found in **Appendix C**.

Table 4: 2024 Monitoring Well Construction Details

Monitoring Well	Ground Elevation (masl)	Well Depth (mbgl)	Screened Interval (masl)	Primary Formation
MW-1	240.0	6.10	236.95 - 233.90	Silty Sand and Silty Clay
MW-2	238.5	6.10	235.45 - 232.40	Silty Sand and Silty Clay
MW-3	239.5	6.10	236.45 - 233.40	Clayey to Gravelly Till
MW-4	238.17	6.10	235.12 - 232.07	Silty Clay and Till
MW-5	239.0	6.10	235.95 - 232.90	Silty Sand/Sandy Silt, some clay
MW-6	241.5	5.79	238.76 – 235.71	Clayey Till
MW-7	230.0	6.10	226.95 – 223.90	Silty Sand/Sandy Silt, Sandy Clay, and Till
MW-8	229.19	6.10	226.14 - 223.09	Silty Sand/Sandy Silt and Sandy Clay
MW-9	231.91	6.10	228.86 - 225.81	Sand, trace to some silt, and Silty Clay/Clayey Silt
MW-10	235.98	6.10	232.93 – 229.88	Sand, Clay, Till
MW-11	238.65	6.10	235.60 – 232.55	Sandy Silt, and Till
MW-12	238.46	6.10	235.41 – 232.36	Sand, Silty Sand, Silty Clay and Till
MW-13	247.00	6.10	243.95 - 240.90	Silty Sand and Silty Clay
MW-14	241.55	6.10	238.50 – 235.45	Sand, some-trace silt and Clayey Silt/Silty Clay
MW-15	237.46	6.10	234.41 – 231.36	Sand, Silty Sand, Silty Clay, and Till
MW-16	240.60	6.10	237.55 – 234.50	Sand, some-trace silt, and Clayey Silt/Silty Clay
MW-17	237.27	N/A	N/A	Silty Sand, Silty Clay, Till, Gravelly Sand
MW-18	227.31	6.10	224.46 – 221.21	Silty Sand and Silty Clay
MW-19	228.43	6.10	225.38 – 222.33	Silty Sand/Sandy Silt and Clay
MW-20	230.61	6.10	227.56 – 224.51	Silty Sand/Sandy Silt, some clay
MW-21	229.82	6.10	226.77 – 223.72	Sandy Silt/Silty Sand
MW-22	228.93	6.10	225.88 – 222.83	Sandy Silt and Silty Clay
MW-23	231.28	6.10	228.23 – 225.18	Clayey Silty Sand
MW-24	237.27	6.10	234.22 – 231.17	Sandy Silt and Silty Clay

Most of the monitoring wells installed in January 2024 were drilled to a depth of 6.10 mbgl and screened between 221 – 243 masl. The primary noted formations encountered during drilling include sandy silt, silty sand, sand, silty clay, clay and till. All wells constructed as part of the January 2024 program were installed with a 50 mm diameter Schedule 40 PVC pipe with #10 slot PVC screens complete with a sand pack at the screened interval and bentonite plug to the ground surface.

5.2 WELL EXPLORATION PROGRAM

As part of the well exploration program implemented to assess the potential for a new water supply within the Subject Lands, Crozier has initiated the drilling, developing, and testing of three (3) test wells throughout 2023-2024. The test wells were installed to determine if the source could meet the needs of the proposed development concept. Additionally, preliminary water quality samples were collected and analyzed through a raw water quality analysis package and microbiological assessment. The samples were collected by Crozier staff and submitted to an accredited lab (AGAT Laboratories).

5.3 SURFACE WATER MONITORING

Per request of reviewing parties, the characterization of surface-groundwater interactions is required. This characterization will be completed through the deployment of surface water monitoring devices, including the installation of piezometers, surface water gauges and water level loggers. Results will be analyzed and submitted post first submission in an amended hydrogeological assessment report.

6.0 RESULTS

The following sections outline the results of the investigation at the time of this report. Note that the groundwater monitoring is ongoing, and this report will be updated as additional results are obtained.

6.1 GROUNDWATER MONITORING

Following the installation of the monitoring wells in January 2024, manual measurements were collected using an electronic water level meter and automatic level loggers were deployed in select monitoring wells across the Subject Lands. The water level loggers were set to measure water levels on an hourly basis to collect a more comprehensive data set for a greater understanding of the shallow groundwater system. Please see **Figure 7** for the location of the monitoring wells.

6.2 GROUNDWATER LEVELS

Following the installation of the wells, periodic measurements were collected. Three (3) manual groundwater readings have been collected to date and are summarized in **Table 5** below. Note that the groundwater monitoring is ongoing on the property and additional results will be provided following additional monitoring.

Table 5: Manual Groundwater Levels

Monitoring Well	Ground Elevation (masl)	Groundwater Level (mbgl)			
		2024-03-04	2024.04.09	2024.05.27	2024-09-13
MW-2	238.50	0.06	0.09	0.33	0.53
MW-4	238.17	0.09	0.09	0.09	0.09
MW-8	229.19	0.12	0.12	0.17	0.68
MW-9	231.91	0.13	0.22	0.19	1.36
MW-10	235.98	0.08	0.18	0.40	1.43
MW-11	238.65	0.47	0.54	0.50	1.44
MW-12	238.46	0.32	0.31	1.50	1.87
MW-13	247.00	0.45	0.53	1.27	1.97
MW-14	241.55	0.27	0.21	0.29	1.92
MW-15	237.46	0.23	0.30	0.84	1.41
MW-16	240.60	0.48	0.54	0.89	1.40
MW-18	237.27	0.59	0.52	1.36	1.77
MW-19	227.31	0.13	0.20	0.23	-
MW-20	228.43	0.15	0.21	0.56	1.66
MW-21	230.61	1.05	0.80	0.89	1.30
MW-22	229.82	0.19	0.19	0.21	-
MW-23	228.93	0.34	0.59	1.08	-
MW-24	231.28	0.17	0.22	-	-

1. Ground elevations are estimated based on topographic mapping

Based on the manual water level measurements, the highest groundwater levels were observed at MW-2 with an elevation of 0.06 meters below ground level (mbgl) on March 4, 2024. Lowest groundwater levels to date were observed at MW-13 with an elevation of 1.97 mbgl on September 13, 2024. During September 13 site visit, MW-19, 22, and 23 were buried and manual/continuous water levels were not retrievable.

6.2.1 SEASONALLY HIGH GROUNDWATER

A summary of the recorded data collected through the deployed loggers is provided in Table 6 below. Seasonally recorded maximums and minimums are provided.

Table 6: Water Level Range (mbgl)

Monitoring Well	Seasonally Recorded Maximum		Seasonally Recorded Minimum	
	Date	W/L	Date	W/L
MW-2	2024-04-29 4:12	-0.07	2024-08-17 12:12	1.13
MW-4	2024-07-16 13:00	At Surface	2024-08-24 17:00	0.19
MW-8	2024-07-13 7:00	0.014	2024-08-28 10:00	1.10
MW-9	2024-05-27 12:00	-0.01	2024-08-30 20:00	2.01
MW-10	2024-04-12 5:00	-0.06	2024-08-30 21:00	1.85
MW-11	2024-04-12 7:00	0.11	2024-08-30 19:00	1.49
MW-12	2024-04-14 7:00	At Surface	2024-08-30 21:00	1.95
MW-13	2024-04-04 15:00	0.10	2024-08-30 19:00	2.17
MW-14	2024-05-28 1:00	-0.05	2024-09-06 15:00	1.95
MW-15	2024-04-12 9:00	0.06	2024-08-29 12:00	1.50
MW-16	2024-04-13 6:00	0.18	2024-08-30 22:00	1.46
MW-18	2024-04-03 16:00	0.03	2024-08-30 23:00	1.87
MW-19	2024-04-29 9:00	-0.09	2024-05-27 10:00	0.44
MW-20	2024-04-29 6:00	-0.04	2024-08-30 21:00	1.84
MW-21	2024-04-12 9:00	0.16	2024-08-30 22:08	1.76
MW-22	2024-04-12 5:00	0.04	2024-05-20 16:00	0.54
MW-23	2024-04-12 7:00	0.02	2024-05-27 2:00	1.18
MW-24	2024-03-09 14:00	-0.05	2024-04-03 2:00	0.48

Hydrographs were developed for each monitoring well with a logger and the groundwater elevations were reviewed. Seasonal highs ranged from -0.09 to 0.18 mbgl at MW-19 and MW-16, respectively. Seasonal lows ranged from 0.19 mbgl to 2.17 mbgl at MW-4 and MW-13, respectively. At the time of submission, monitoring has been completed from March 4, 2024 to September 13, 2024. Throughout this time, lows were typically noted in August while most highs were noted during the freshet in April. MW-19, MW-22, and MW-23 could not be located during the September monitoring round, therefore manual and continuous levels could not be retrieved.

The majority of the monitoring wells showed moderate response to precipitation events which indicates the wells are located within an unconfined aquifer. MWs 2, 4, 8-11, 14, 19, and 22 had more consistent groundwater levels throughout the monitoring period from April - May, in which water levels only fluctuated approximately 0.5 m before dropping up to 2.0 m during drier months. During larger rain events in drier months (i.e. June-August), water levels were elevated within 0.5 m of the ground surface before decreasing. MW-12, 13, 15, 16, 18, 20, 21, and 23 had elevated water levels during the freshet and rain events but experienced a higher rate of infiltration between each rain event. Groundwater levels during larger rain events in drier months experienced a muted response and typically did not increase beyond 0.75 mbgl. MW-4 was an outlier, showing very minimal fluctuation in water level during precipitation events. A review of the hydrographs and field notes show that MW-4 was fully saturated at install and during all manual monitoring rounds completed on-site, therefore minimal response to precipitation events can be expected. The well may potentially be impacted by surface water but is not of concern as the well is not located with the development boundary.

Please refer to **Appendix D** for hydrographs displaying continuous groundwater level data collected through the automatic loggers.

Data generated through a compilation of manual measurements in 2023 and 2024 has been used to provide the Crozier design team with conservative seasonal groundwater highs. Groundwater level measurements are still ongoing, though it is believed that the seasonally high point has been captured. Should any impacting updates be determined prior to the end of the monitoring period, detailed design will be revised accordingly.

As shown in **Figure 7**, shallow groundwater flow from the east is directed west and from the west towards the east; groundwater flow is directed towards Silver Creek.

6.3 GROUNDWATER QUALITY

Water quality sampling was completed on-site at the three different test well locations and at MW-24. Each well was sampled for general water quality results including microbiological parameters and the results were compared against the ODWQS. The table below presents a high-level review of key water quality parameters and any exceedances. Full results can be found in **Appendix E**.

Table 7: Summary of Key Water Quality Parameters

Sample			MW-24	TW23-1	TW24-1	TW24-3
Date			04/15/2024	04/18/2023	04/16/2024	05/01/2024
Parameter	**Unit**	**ODWQS**				
HPC	CFU/1ml		/	/	0	0
E. Coli	CFU/100ml	0	/	0	0	0
Total Coliforms	CFU/100ml	0	/	1	0	0
EC	µS/cm		497	1030	927	732
pH	pH Units	6.5-8.5	7.77	7.80	7.64	7.88
Hardness	mg/L	80-100	**323**	**369**	**369**	**314**
TDS	mg/L	500	418	**682**	**664**	402
Alkalinity	mg/L	30-500	250	216	308	316
Chloride	mg/L	250	9.78	167	206	51.5
Nitrate as N	mg/L	10	<0.05	<0.05	2.19	0.29
Nitrite as N	mg/L	1	<0.05	<0.05	<0.05	0.16
Apparent Colour	TCU	5	**50.3**	<2.50	<2.50	<2.50
Turbidity	NTU	5	**66.3**	**5.3**	0.8	<0.5
Total Calcium	mg/L		87.9	84.8	96.0	88.5
Total Sodium	mg/L	200	18.5	62.6	89.4	27.4
Total Iron	mg/L	0.3	**2.28**	0.317	<0.050	<0.050
Total Manganese	mg/L	0.05	**1.19**	0.040	0.004	0.040

Exceedances relative to ODWQS shown in RED.

Per a review of the sampling results, multiple exceedances were noted. Results from MW-24 represent the water quality of the shallow unconfined aquifer located on the western portion of the site. The results from the test wells indicate the potential water quality of a deeper aquifer. The shallow aquifer had exceedances in hardness, apparent colour, turbidity, iron and manganese. The deeper aquifer had exceedances of hardness and total dissolved solids in all three test wells, and turbidity and total coliforms in TW23-1.

7.0 IMPACT ASSESSMENT AND MITIGATION

The residential development is proposed to include single detached, front-lane and stacked townhomes along with inground servicing, two SWM ponds and an infiltration basin, according to the Concept Draft Plan prepared by Biglieri Group dated August 20, 2024.

Discussion on the potential for future dewatering below is based on the interaction between the groundwater surface and proposed design elements for the Subject Property. Discharge of any dewatering flows should be analyzed against PWQO to ensure that they are within the allowable tolerance of the guidelines.

7.1 GROUNDWATER CONDITIONS

It should be noted that not all monitoring wells are located within the proposed development area. Based on the current Concept Draft Plan, the groundwater elevations from MW-8 to MW-24 should be considered.

The seasonal high groundwater levels range from -0.18 mbgl to 0.18 mbgl, at MW-14 and MW-16, respectively. Given that the aquifer units noted during the geotechnical investigation were semi-permeable and that ponding has been noted on-site during field investigations, water seepage is expected during excavation.

7.2 CONSTRUCTION DEWATERING REQUIREMENTS

While it has not been confirmed at the time of this report whether the residential lots will be outfitted with basements, it is expected that the excavations will encounter the water table during construction. Buildings footings are to be installed 1.6 m below grade per recommendation of the Geotechnical Engineer to achieve frost cover. Basements are to be sited above the seasonal high groundwater level. Therefore, based on the elevations, it is anticipated that short-term dewatering during construction for the purposes of excavation will be required. Additionally, it is predicted that temporary construction dewatering will be required for the proper installation of inground services and the proposed SWM facilities.

It is recommended that a pre-construction dewatering assessment be undertaken prior to breaking ground to ensure that sufficient pumping capacity can be provided on the Subject Lands during construction works. It is advised that seepage at or near the groundwater levels should be handled adequately using a filtered sump pump placed at the base of the excavation.

The quantity of water to be discharged on a daily basis will be dependent on the final proposed excavation depths and the excavated area, along with the groundwater elevation and hydraulic conductivity of the soils. The requirement for an Environmental Activity and Sector Registry Application (EASR) or Permit to Take Water (PTTW) will be dependent on the daily dewatering quantities exceeding rates of 50,000 L/day and 400,000 L/day, respectively.

7.3 GROUNDWATER IMPACTS

Impacts to both private and municipal water supplies in the area are predicted to be minimal based on the relatively shallow depth of potentially required dewatering when compared to the depths of drinking water wells in the area.

Impacts to groundwater quality in the area may occur in the case of the SWM ponds. To reduce the potential interaction between the ponds' permanent pools and the groundwater table, the installation of a non-porous liner is recommended for the entirety of the ponds' basins. Where the final depth of the SWM pond is beneath the water table, the liner should be designed to account for the hydrostatic uplift. The design of the liner is outside the scope of the hydrogeological assessment report.

An infiltration basin is also proposed within to promote groundwater recharge. Treatment train approaches and treatment design features should be considered for the infiltration basin to ensure the water quality does not impact the groundwater.

7.4 FEATURE-BASED WATER BALANCE

As per Township of Severn discussions, a feature-based water balance is required to address sensitive wetlands located in the development lands. The water balance will be supported by the installation of additional piezometers and surface water gauges as part of the surface water monitoring program. This section will include an analysis on three (3) different sensitive wetland areas and the associated pre- and post-development catchments. Additionally, insight will be provided regarding the direction of infiltration deficits within each wetland catchment and commentary on potential mitigation strategies to be used. Additional figures will be included to describe conditions. These tasks will be completed for the proposed development as part of forthcoming design submissions.

8.0 CONCLUSIONS AND RECOMMENDATIONS

At the time of this report, Crozier is prepared to make the following conclusions:

- The soils in the Study Area primarily consists of a combination of silt, sand, and clay and till. Bedrock was not encountered during the drilling of the monitoring wells.

- In consideration of Drinking Water Source Protection, due to the presence of HVAs and SGRAs on the Subject Lands, the following activities are considered to pose low drinking water threats:

    - The establishment, operation or maintenance of a system that collects, stores, transmits, treats, or disposes of sewage.

    - The application of commercial fertilizer to land.

    - The handling and storage of commercial fertilizer.

    - The application of pesticide to land.

    - The handling and storage of pesticide.

    - The application of road salt.

    - The storage of snow.

    - An activity that takes water from an aquifer or a surface water body without returning the water taken to the same aquifer or surface water body.

    - An activity that reduces the recharge of an aquifer.

- Best management practices should be considered including installing impermeable liners to prevent leakage in ponds, minimize excess use of nutrients in fertilizers, use groundwater friendly road treatments in lieu of road salt, and design and maintain snow storage areas to promote drainage of contaminated runoff towards SWM facilities.

- A review of the MECP Well Record Database identified a total of ninety-seven (97) well records within a 500-meter radius from the Subject Property boundaries. Well record logs indicated that most of the wells were used for monitoring, test hole or domestic supply purposes, with a few indicating abandonment, decommissioning, or commercial purposes.

- Coliforms, iron, manganese, turbidity, lead, sodium, and TCE levels have been found in exceedance of the ODWQ standards in municipal water systems in the Township of Severn. Yet most parameters in exceedance were not identified as drinking water issues and have been treated accordingly.

- A local water quality sample was taken from MW-24 and had exceedances in hardness, apparent colour, turbidity, iron and manganese. Water quality should be confirmed prior to discharge of groundwater into the environment or SWM system. However, quality should not be considered an issue as all exceedances can be reduced using commonly used dewatering treatment systems.

- Groundwater levels have been observed to be between -0.18 mbgl and 1.50 mbgl, with seasonal highs ranging between -0.18 mbgl and 0.18 mbgl.

- Due to the high groundwater levels recorded to date, it is anticipated that active construction dewatering will be required should excavations extend below elevations of 241.37 masl. Dewatering volumes should be evaluated once final excavation depths are determined for the proposed development. Construction dewatering is anticipated to be required for the construction of SWM facilities and inground services.

- Where the final depth of a SWM facility is beneath the water table, an impervious liner is recommended to prevent groundwater interaction and should be designed to account for hydrostatic uplift. Treatment train approaches and treatment design features should be considered for the infiltration basin to ensure the water quality does not impact the groundwater.

- Impacts to groundwater resources as a result of the Hawk Ridge development should be considered negligible.

- A feature-based water balance and complete analysis of the surface to groundwater interactions will be completed under an amended hydrogeological assessment report at a later date.

- This report and its findings are advised to be preliminary and should not be used for final design purposes.

Respectfully submitted,

C.F. CROZIER & ASSOCIATES INC.

Kelly Reid.
Engineering Intern, Hydrogeology

C.F. CROZIER & ASSOCIATES INC.

Evan Finbow, P.Geo
Project Manager, Hydrogeology

KR;CM

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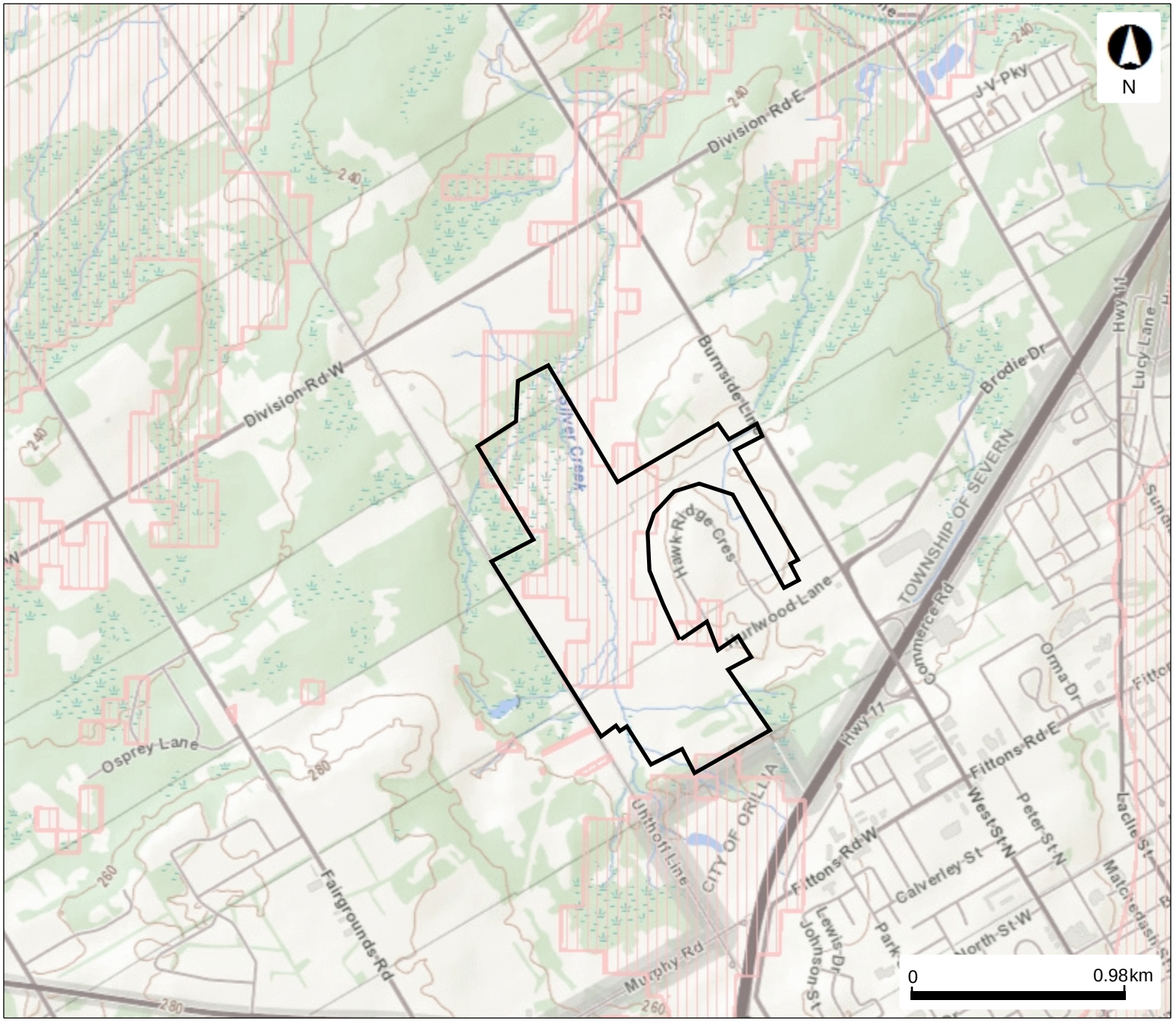
APPENDIX A

Source Protection Mapping

Highly Vulnerable Aquifer



Legend

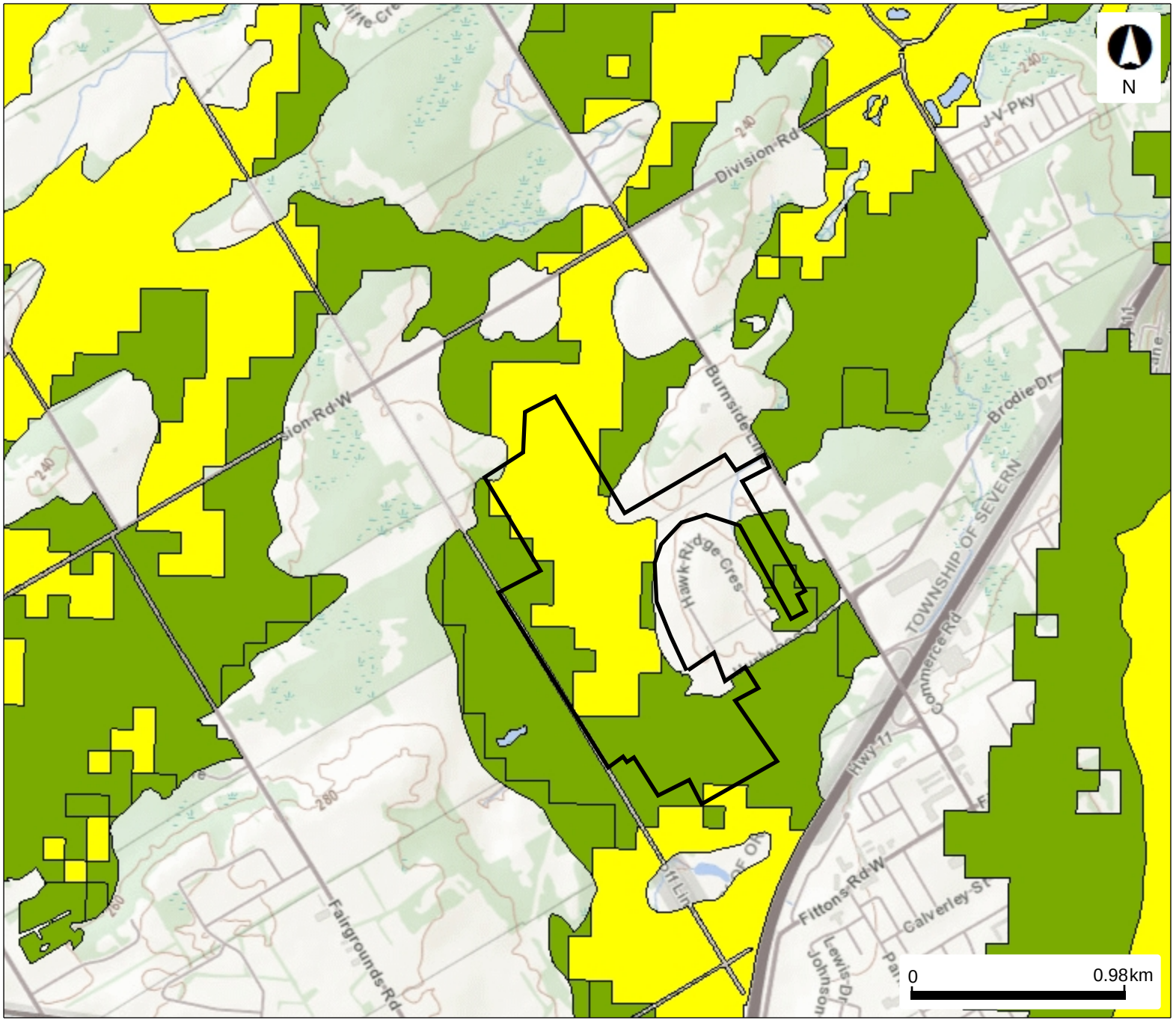
- Highly Vulnerable Aquifers
- Approximate Site Boundary

This map should not be relied on as a precise indicator of routes or locations, nor as a guide to navigation. The Ontario Ministry of Environment, Conservation and Parks (MECP) shall not be liable in any way for the use or any information on this map. of, or reliance upon, this map.

Ontario

Map Created: 1/23/2024
Map Center: 44.63345 N, -79.45323 W

Significant Groundwater Recharge Areas



Legend

Significant Groundwater Recharge Area

- N/A
- 0
- 2
- 4
- 6

Approximate Site Boundary

This map should not be relied on as a precise indicator of routes or locations, nor as a guide to navigation. The Ontario Ministry of Environment, Conservation and Parks (MECP) shall not be liable in any way for the use or any information on this map. of, or reliance upon, this map.

Map Created: 1/23/2024
Map Center: 44.63467 N, -79.45366 W

APPENDIX B

MECP Well Records Review

MECP WATER WELL RECORDS

Project Number: 1935-6133
Prepared by: Kelly Reid

Address: 1151 Hurlwood Lane, Township of Severn
Date completed: 2024-01-23

Well ID	Key Number	Diameter (cm)	Depth (m)	Static Level (m)	Quantity (lpm)	Quality	Material / Notes	Aquifer[1]	Use	Date Completed
5702962	N/A	--	22.3	9.14	15.1	Clear	--	--	Agriculture	09/30/1959
5702972	N/A	14.3	17.7	9.14	0.8	Clear	Gravel	OB	Domestic	01/04/1958
5702973	N/A	14.2	24.7	8.23	3.0	Clear	Sandy gravel	OB	Agriculture	12/01/1956
5707057	N/A	15.2	15.5	2.13	45.4	Clear	Brown sandy clay, brown sand, grey hardpan & boulders, gravel (coarse & medium)	OB	Domestic	01/17/1970
5707059	N/A	15.2	16.2	6.71	37.9	Clear	Fine brown clay (with sand), fine brown sand	OB	Domestic	08/27/1969
5713091	N/A	15.2	29.0	4.27	143.8	N/A	Hard brown sand (gravel, boulders),soft grey sandy clay, grey clay (gravel, boulders, silt), med-course brown sand (with boulders), coarse brown sand	OB	Commercial	01/31/1975
5713121	N/A	15.2	24.4	3.66	18.9	N/A	Dug Well. Hard blue gravel (with clay, boulders), blue clay, coarse grey gravel (with sand)	OB	Domestic	08/15/1975
5713142	N/A	15.2	30.8	4.27	15.1	Clear	Dug Well. Yellow sand & gravel (brown clay boulders), grey clay sand (with gravel), yellow sand (with gravel)	OB	Domestic	11/19/1975
5714570	N/A	--	32.9	11.58	18.9	Clear	Dug Well. Sand & clay, gravel & sand	OB	Domestic	08/19/1977
5714908	N/A	15.2	29.9	11.58	26.5	Clear	Handpan & boulders, sandy clay, gravelly sand	OB	Domestic	10/14/1977
5714909	N/A	15.2	35.1	--	--	N/A	Hardpan & clay, limestone. Abandoned. Sulphur noted.	BR	Domestic. Abandoned	10/15/1977
5714910	N/A	15.2	19.2	5.49	30.3	Clear	Handpan & clay & boulders. Clay & gravel & sand	OB	Domestic	11/11/1977
5715557	N/A	12.7	76.2	4.88	11.4	Cloudy	Brown sand, gravel (with clay & stones), gray sandy clay & gravel, gray silt & gravel, gray limestone, green limestone, red & brown granite	OB	Domestic	10/14/1978
5715686	N/A	--	45.1	--	--	Cloudy	Hardpan, boulders, limestone	BR	Commercial, Abandoned	10/15/1978
5717899	N/A	15.2	16.2	3.66	30.3	Clear	Sand and clay, gravel	OB	Domestic	10/22/1981
5720646	N/A	15.2	17.7	--	113.6	Clear	Soft brown sand (with silt), hard grey hardpan (with stones), hard brown sand (with gravel)	OB	Domestic and Industrial	03/21/1986
5722678	N/A	15.2	36.6	7.62	113.6	Clear	Soft brown clay (with stones), soft grey clay (with stones), soft grey gravel (with sand)	OB	Domestic and Industrial	11/05/1987
5728256	N/A	17.8	18.9	0.30	208.2	Clear	Black, brown, grey clay, brown sand, with stones, sand & silty streaks, & gravel	OB	Domestic	12/02/1989
5729034	N/A	15.9	35.4	8.23	113.6	Clear	Brown clay, dirty brown sand (with gravel), grey clay, gray clay (with gravel, stones), grey limestone	BR	Domestic	12/20/1991
5730577	N/A	15.6	25.0	3.05	15.1	Clear	Topsoil, brown gravel (with boulders), brown clay (with stones, boulders), cemented brown gravel (with clay), dry brown sand, cemented brown clay (with gravel), water bearing brown sand (with silt), grey limestone bedrock	BR	Domestic	12/16/1993
5730597	N/A	15.9	11.0	Flow	30.3	Clear	Brown clay (with boulders), soft grey clay, grey gravel	OB	Domestic	02/07/1994
5730598	N/A	5.1	9.8	Flow	22.7	Clear	Grey clay, brown gravel (with sand)	OB	Domestic	03/07/1994
5730725	N/A	15.9	33.5	10.06	26.5	Cloudy	Topsoil, sand (with gravel, clay, stones), sand (with gravel), grey clay, sand (with gravel, clay), clay (with gravel, streaks of sand), limestone broken, grey limestone	BR	Domestic	04/11/1994
5730976	N/A	15.2	21.3	7.62	30.3	Clear	Topsoil, brown sand (with stones), grey clay (with gravel), fine brown sand	OB	Domestic	09/01/1994
5731274	N/A	13.3	30.2	7.92	11.4	Clear	Brown clay (with gravel, boulders), grey clay (with gravel, boulders), brown sand, grey clay (with gravel, boulders), cemented brown sand (with clay), grey limestone	BR	Domestic	09/16/1994
5731286	N/A	4.5	68.0	38.10	37.9	Clear	Sand gravel & hardpan, clay, gravel	OB	Domestic	12/06/1994
5731584	N/A	4.5	24.4	10.67	17.0	Cloudy	Soft topsoil, soft brown clay (with stones), soft grey clay (with stones), soft brown sand (with gravel)	OB	Domestic	01/24/1995
5732234	N/A	15.2	18.9	10.67	37.9	Clear	Hardpan & gravel, sand, fine gravel	OB	Domestic	06/14/1996
5732745	N/A	76.2	18.3	3.05	15.1	Clear	Topsoil, brown clay, grey clay (with sand layers)	OB	Domestic	11/01/1996
5733313	N/A	--	36.6	12.19	3.8	Clear	Grey clay (with boulders), grey hardpan, grey limestone	BR	Domestic	08/12/1997
5733936	N/A	15.9	23.2	0.30	15.1	Clear	Brown clay (with boulders), soft grey clay, hard grey clay (with gravel), brown sand, hard grey clay (with gravel), fractured brown limestone	BR	Domestic	11/19/1998
5733937	N/A	15.9	20.7	0.00	15.1	Clear	Brown clay (with boulders), soft grey clay, very hard grey clay (with gravel), fractured brown limestone	BR	Domestic	11/26/1998
5734047	N/A	15.9	37.2	12.19	30.3	Clear	Brown clay (with stones), brown silt, clay, sand, grey clay, grey clay (with stones & broken limestone), grey limestone	BR	Domestic	01/25/1999
5734323	N/A	--	23.8	4.57	30.3	Clear	Brown sandy clay, grey clay, grey hardpan, grey gravel	OB	Domestic	04/30/1999
5734510	N/A	15.2	68.9	38.10	37.9	Clear	Fine brown sand, brown sand (with clay), grey clay (with gravel), fine grey sand (with silt), crushed grey limestone	BR	Domestic	08/18/1999
5734817	N/A	15.9	24.1	0.61	18.9	Clear	Brown clay, grey clay (with boulders & gravel), fractured grey limestone	BR	Domestic	08/26/1999
5734818	N/A	--	24.1	0.91	18.9	Clear	Grey clay (with boulders and gravel), fractured grey limestone (with gravel)	BR	Domestic	09/24/1999
5734819	N/A	15.9	25.6	2.13	18.9	Clear	Grey clay (with boulders and gravel), fractured grey limestone (with gravel)	BR	Domestic	09/30/1999
5734820	N/A	15.9	21.0	0.30	11.4	Clear	Brown clay, grey clay (with boulders and gravel), brown sand	OB	Domestic	08/19/1999
5736301	N/A	15.2	79.2	--	--	N/A	Stoney brown clay (with sand), stoney grey hardpan, grey limestone, brown shale, red granite	BR	Abandoned	08/18/2001
5736302	N/A	15.2	22.9	12.19	7.6	Clear	Stoney brown clay (with sand), stoney grey hardpan, brown sand (with gravel)	OB	Domestic	08/17/2001
5736479	N/A	15.9	27.1	1.83	37.9	Clear	Brown sand, grey clay, brown sand & gravel, grey clay (with gravel), shale, limestone gravel, fractured limestone	BR	Domestic	11/01/2001
5736633	N/A	15.9	26.2	2.44	22.7	Clear	Clay fill, brown clay, cemented grey clay (with gravel boulders), fractured grey limestone	BR	Domestic	12/10/2001
5736634	N/A	15.9	22.9	4.27	15.1	Clear	Topsoil, grey clay, gravel & sand, cemented grey clay (with boulders & gravel), brown sand (with gravel), brown fractured limestone	BR	Domestic	12/17/2001
5736975	N/A	15.9	24.4	1.22	22.7	Clear	Brown clay, brown sand, brown clay, hard grey clay (with gravel & boulders), fractured brown limestone	BR	Domestic	05/13/2002
5737280	N/A	15.9	16.8	Flow	11.4	Clear	Fine brown sand, grey clay (with sand), stones, grey clay, grey gravel (with sand)	OB	Domestic	07/25/2002
5737949	N/A	121.9	5.5	2.44	11.4	Clear	Topsoil, brown sand, brown sand, grey sand (with clay layers), grey sand	OB	Domestic	06/23/2003
5738630	A003725	15.9	24.1	0.61	37.9	Clear	Brown clay, grey clay, yellow sand, grey clay	OB	Domestic	03/03/2004
5738871	A011982	15.9	21.3	2.13	37.9	Clear	Grey clay (with boulders), cemented grey clay (with sand, gravel, boulders), fine yellow sand (with silt), coarse yellow sand	OB	Domestic	05/04/2004
5739127	A009095	15.2	41.5	7.62	56.8	Clear	Brown sand (with gravel), gray silty gravel, gray sand/fine gravel, brown limestone (with sand and gravel layers), brown sand (with gravel)	BR	Domestic	10/05/2004
5740334	A024319	15.9	11.0	1.52	37.9	Clear	Brown clay (with boulders), soft grey clay (with boulders), cemented grey clay (with gravel), coarse brown gravel (water bearing)	OB	Domestic	08/15/2005
5740341	A024309	15.9	11.3	1.52	45.4	Clear	Brown sand (with clay), grey clay (with silt), grey clay (with boulders & gravel), coarse brown gravel (waterbearing)	OB	Domestic	10/12/2005
5740343	A024310	15.9	9.1	Flow	37.9	Clear	Grey clay (with silt), grey clay (with gravel), coarse brown gravel (water bearing)	OB	Domestic	10/14/2005
5741423	A039948	15.9	16.5	0.00	37.9	Clear	Soft grey clay, cemented grey clay (with gravel), grey gravel (with clay, water bearing)	OB	Domestic	11/17/2006
5741424	A024295	15.9	11.0	0.30	18.9	Clear	Brown sand, grey clay, cemented grey clay (with gravel), brown gravel (water bearing)	OB	Domestic	11/02/2006
5741425	A024294	15.9	10.1	Flow	37.9	Clear	Brown clay (with sand), grey clay, coarse brown gravel (water bearing)	OB	Domestic	10/11/2006
5741448	A023815	15.7	26.2	2.12	40.1	Clear	Brown clay (with stones), grey hardpan (with clay), grey sand, grey hardpan (with clay), brown sand (with silt), grey limestone	BR	Domestic	11/15/2006
7051772	A065492	15.9	36.6	2.77	22.0	Clear	Brown sand (with stones), grey clay, grey hardpan, grey limestone	BR	Domestic	07/12/2007
7127577	A059110	15.2	17.7	3.66	45.4	Clear	Stoney brown sand (with clay), brown sand, grey clay, stoney grey hardpan, fine brown sand	OB	Domestic	08/05/2009
7245721	A169378	15.2	54.9	7.16	15.1	Clear	Stoney brown clay, grey hardpan (with boulders), grey clay (with gravel), broken grey limestone, grey limestone	BR	Domestic	07/16/2015
7295360	A225116	15.2	24.4	3.29	37.9	Clear	Brown clay (with cobbles), hard grey clay (with gravel), grey gravel (with clay), very hard grey clay & gravel	OB	Domestic	07/06/2017
7314587	A210682	15.7	31.0	4.68	60.0	Clear	Brown sand (with stones), grey clay (with stone & fill), grey gravel, grey clay (with stone & fill), brown sand, grey sand (with silt), grey limestone	BR	Other (Animal Hospital)	06/20/2018
7324663	A253096	15.2	N/A	6.89	30.3	Clear	No material information. Existing well was upgraded.	--	Commercial	10/12/2018
7330975	N/A	--	N/A	--	--	N/A	--	--	Test Hole, Decom.	02/08/2019
7330976	N/A	--	N/A	--	--	N/A	--	--	Test Hole, Decom.	02/08/2019
7330977	N/A	--	N/A	--	--	N/A	--	--	Test Hole, Decom.	02/08/2019
7330978	N/A	--	N/A	--	--	N/A	--	--	Test Hole, Decom.	02/08/2019
7330979	N/A	5.1	5.5	--	--	N/A	Soft brown fill (with sand, gravel), very dense brown silty sand (with cobbles)	OB	Test Hole	02/07/2019
7330980	N/A	5.1	6.1	--	--	N/A	Dense brown fill (with sand, gravel), very dense brown silty sand (with cobbles)	OB	Test Hole	02/07/2019
7330981	N/A	5.1	5.6	--	--	N/A	Brown fill (with sand & gravel), brown silty sand (with cobbles)	OB	Test Hole	02/07/2019
7330982	A259444	5.1	5.2	--	--	N/A	Brown fill (with sand/gravel), brown silty sand (with cobbles)	OB	Test Hole	02/05/2019
7334455	A253116	15.2	15.8	6.86	45.4	Clear	Brown sand (with boulders), stoney brown hardpan, stoney brown gravel	OB	Domestic	05/02/2019
7334484	A210713	15.2	27.4	12.05	25.0	Clear	Brown sand (with gravel & stones), brown sand (with clay), brown sand	OB	Domestic	05/01/2019
7336083	A249972	5.1	15.2	--	--	N/A	Till/Sand	--	Test Hole	05/29/2019
7336511	A241643	7.6	15.2	8.53	--	N/A	Brown loam, brown sand (with gravel), grey silt (with sand, till)	--	--	04/05/2019
7341726	N/A	5.1	N/A	--	--	N/A	--	--	Monitoring	08/30/2019
7341727	N/A	5.1	N/A	--	--	N/A	--	--	Monitoring	08/30/2019
7365959	A300069	6.4	18.1	--	--	N/A	Moist light brown fill/sand (with silt), brown sand (with silt/clay, trace gravel), dense brown sand (with silt)	OB	Monitoring/Observation	07/10/2020
7365960	A300070	5.1	9.2	0.30	--	N/A	Topsoil (organic), moist brown sand (with silt, gravel, fill), medium-coarse wet brown sand (with gravel)	OB	Monitoring/Observation	07/10/2020
7368030	A300604	5.1	19.8	--	--	N/A	Brown sand (fill), brown sand (with silt)	OB	Monitoring/Observation	08/31/2020
7381917	A283133	15.2	N/A	4.75	25.0	Clear	Stoney brown clay, grey clay (hard packed boulders), grey limestone	BR	Domestic	02/15/2021
7388373	A287879	15.2	44.2	4.89	25.0	Clear	Brown clay (with stones), brown sand (with clay), grey clay (with stones), broken grey limestone, grey limestone	BR	Other (Town Yard)	04/26/2021
7389708	A313540	5.1	28.7	12.19	--	N/A	Dense brown sand (with gravel), dense grey silt (till)	OB	Monitoring/Observation	06/10/2021
7402038	A338401	15.2	25.3	1.31	18.9	Clear	Brown sand, brown sand (with clay), grey clay, brown sand	OB	Domestic	10/21/2021
5702705	N/A	13.3	10.7	0.91	37.9	Clear	Brown sandy clay, sand & boulders, brown sand, brown clay, hardpan	OB	Domestic	05/22/1967
5702963	N/A	12.7	41.8	21.34	75.7	Clear	Clay, hardpan, cemented gravel	OB	Domestic	06/30/1955
5702965	N/A	14.0	24.4	13.72	26.5	Clear	Dug well. Sandy clay, sand & gravel	OB	Domestic	02/04/1956
5726019	N/A	15.2	11.0	0.61	15.1	Cloudy	Topsoil, soft grey clay (with silt), soft brown clay (with silt, sand), soft brown sand (with gravel)	OB	Domestic	11/27/1989
5738205	N/A	15.9	25.6	1.83	37.9	Clear	Brown clay, cemented grey clay (with boulders, gravel), dirty grey sand, grey fractured limestone, grey limestone bedrock	BR	Domestic	08/21/2003
7118719	A044294	15.2	19.8	1.17	60.0	Clear	Brown sand (with stones), grey sand (with clay, silt), brown gravel	OB	Domestic	11/14/2008
7287831	A158261	15.9	N/A	--	--	N/A	Sand & Fill, bentonite slurry (Abandonment)	--	Decom.	05/26/2017
7371135	A296916	--	N/A	--	--	N/A	--	--	Abandoned	07/19/2020
7381843	A301575	5.1	N/A	--	--	N/A	Wet grey sand (with silty till)	OB	Test hole	03/05/2021
7384362	A316364	5.1	6.1	4.57	--	N/A	Brown sand (with silt)	OB	Monitoring/Observation	03/03/2021
7384363	A316365	5.1	4.6	3.05	--	N/A	Brown sand (with silt)	OB	Monitoring/Observation	03/03/2021
7381843	A301575	5.1	N/A	--	--	N/A	Wet grey sand (with silty fill)	OB	Test hole	03/05/2021
7384373	A316385	5.1	9.1	7.62	--	N/A	Brown sand (with gravel), grey clay (with silt), brown coarse sand	OB	Monitoring/Observation	02/11/2021

Data Source: Ministry of the Environment, Conservation, and Parks, retrieved January 23, 2024.
1. OB = Overburden Aquifer, BR = Bedrock Aquifer

APPENDIX C

Borehole Logs

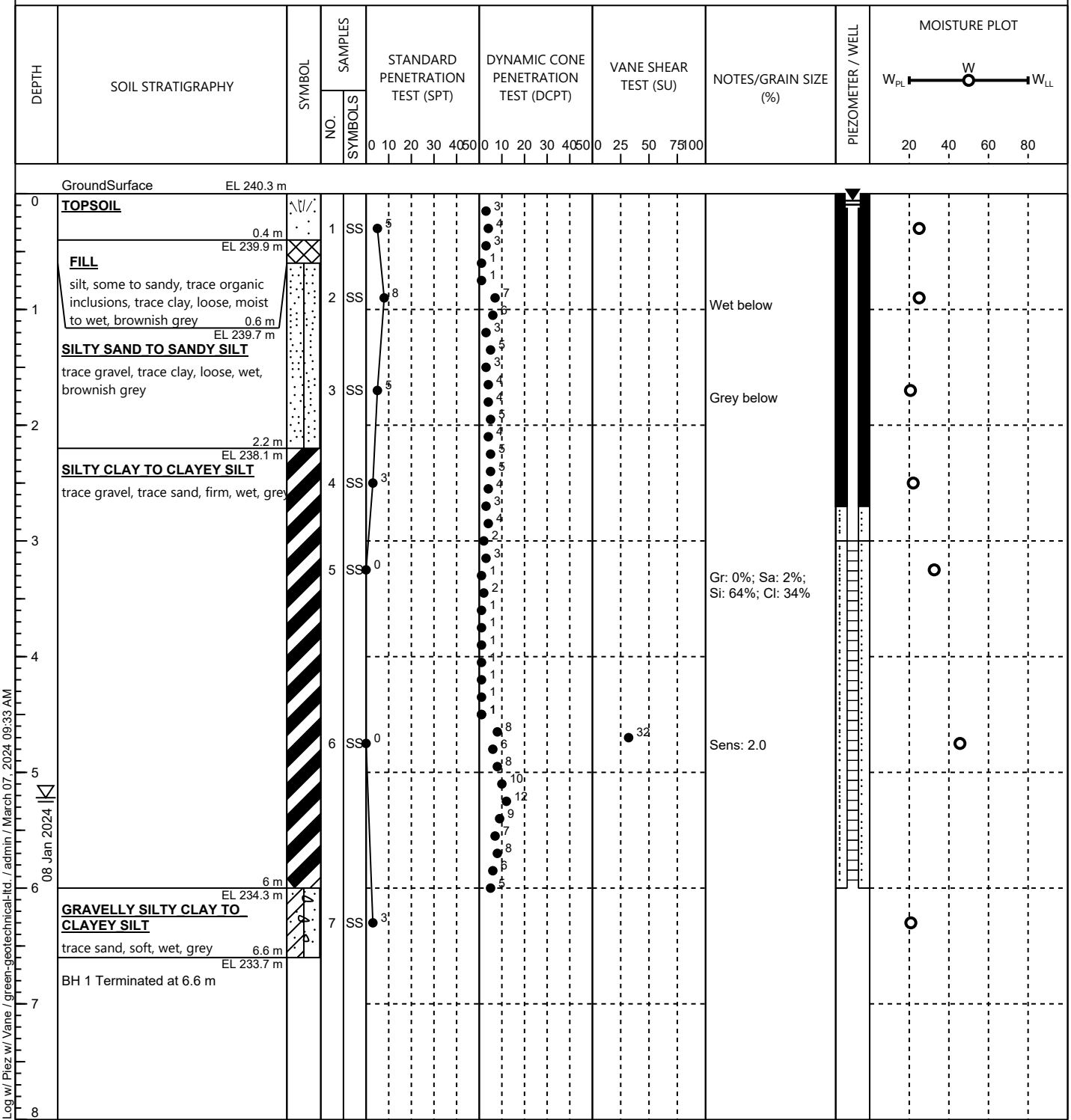
BOREHOLE LOG: BH 1

Project: Hawk Ridge Heights Residential Development | Project No.: 23-117

Site Address: Hawkridge Golf Course, Severn, ON | Client: LIV Communities

Easting: 623594 | Northing: 4943167 | Elevation:240.3 m

Logged By: NC/SO | Reviewed By: TK | Investigation Date: 2024-01-08



Notes:

Borehole had water at 5.2 mbg and was open upon completion of drilling.
Stabilized water level measured at 0.1 mbg (elev. 240.2m) on 01-31-24.

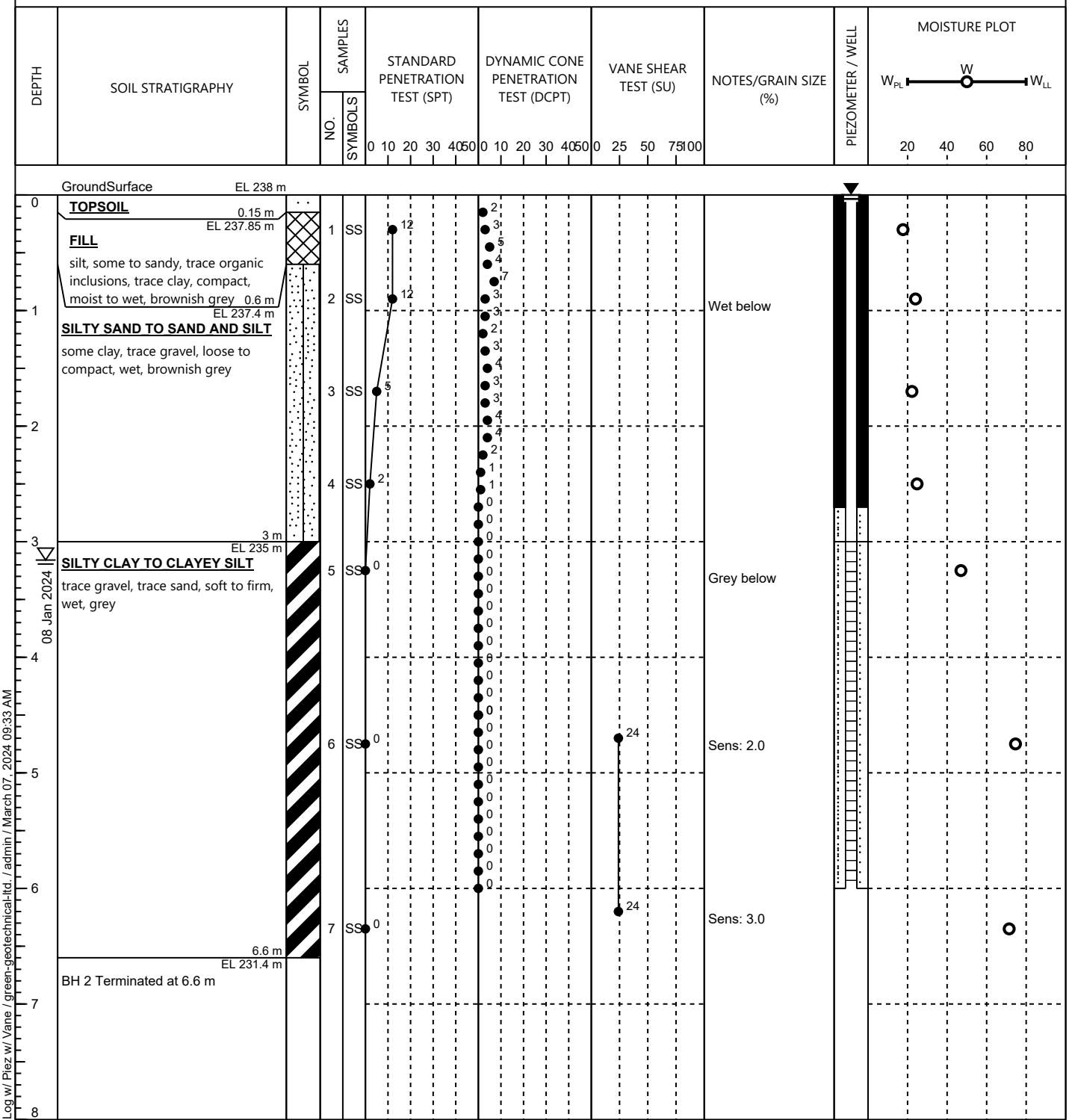
BOREHOLE LOG: BH 2

Project: Hawk Ridge Heights Residential Development | Project No.: 23-117

Site Address: Hawkridge Golf Course, Severn, ON | Client: LIV Communities

Easting: 623452 | Northing: 4943346 | Elevation:238 m

Logged By: NC/SO | Reviewed By: TK | Investigation Date: 2024-01-08



Notes:

Borehole had water at 3.2 mbg and was open upon completion of drilling.

Stabilized water level measured at 0.0 mbg (elev. 238.0m) on 01-31-24.

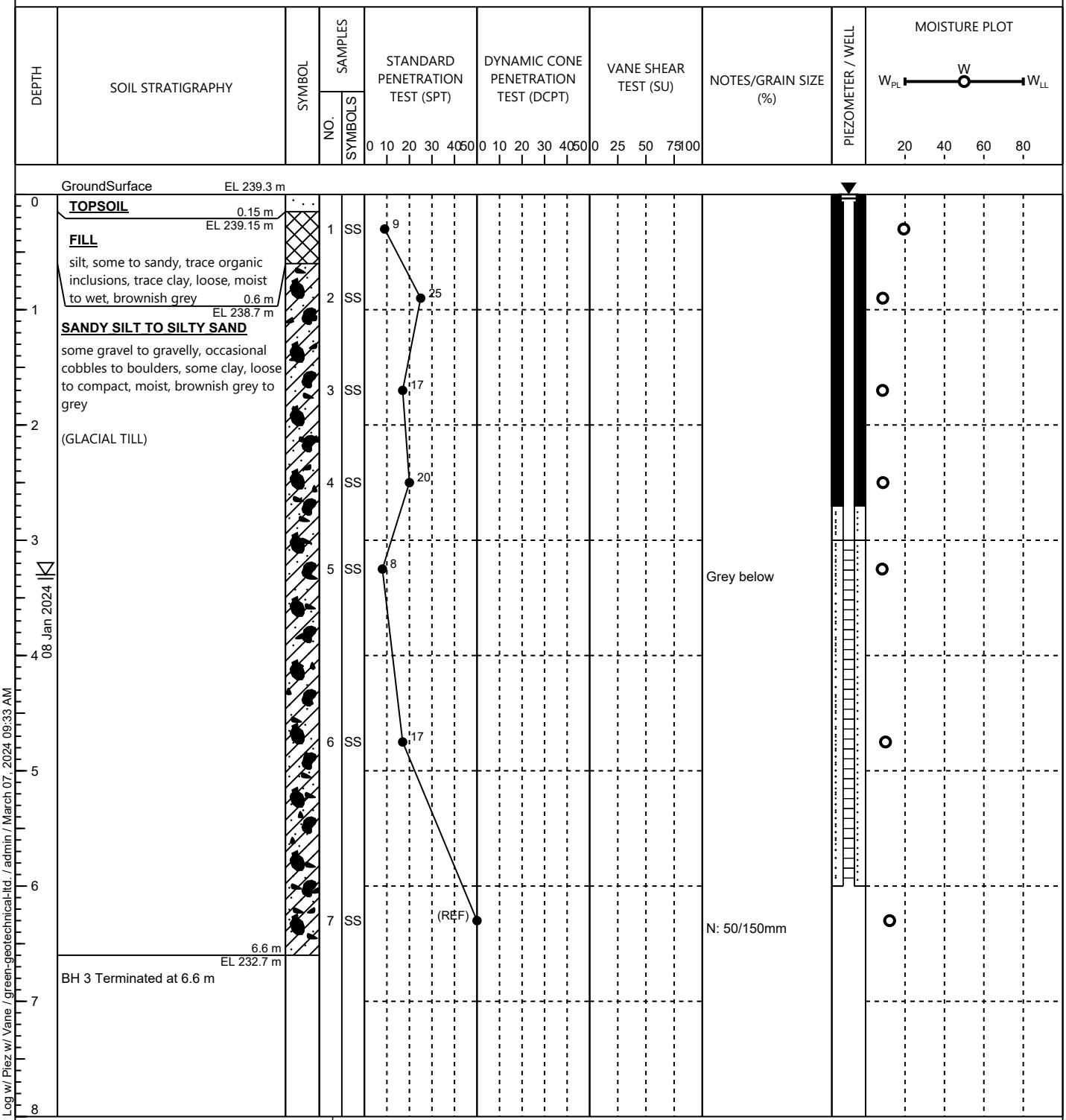
BOREHOLE LOG: BH 3

Project: Hawk Ridge Heights Residential Development | Project No.: 23-117

Site Address: Hawkridge Golf Course, Severn, ON | Client: LIV Communities

Easting: 623412 | Northing: 4943539 | Elevation:239.3 m

Logged By: NC/SO | Reviewed By: TK | Investigation Date: 2024-01-08



Notes:

Borehole had water at 3.3 mbg and was open upon completion of drilling.

Stabilized water level measured at 0.1 mbg (elev. 239.2m) on 01-31-24.

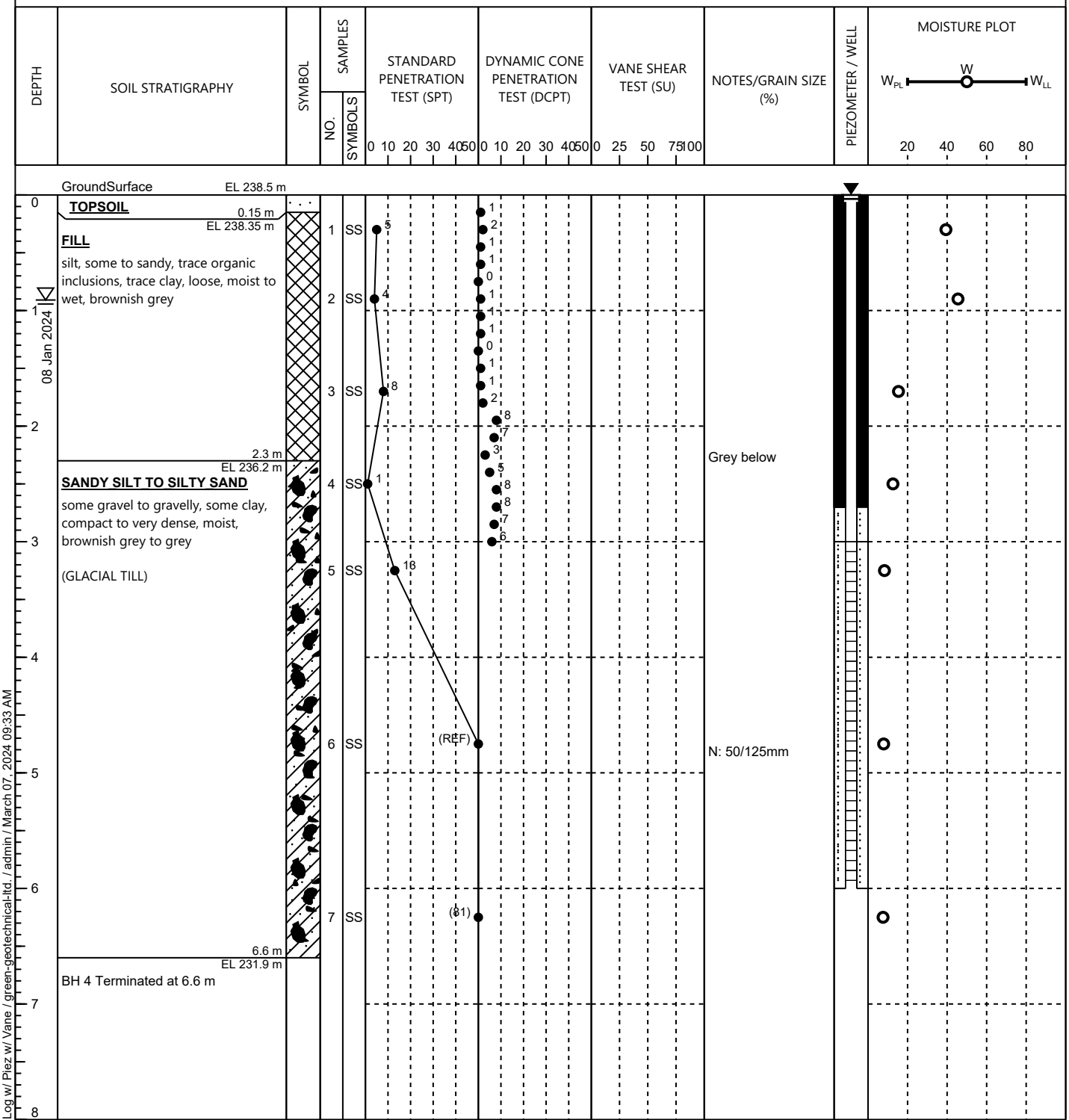
BOREHOLE LOG: BH 4

Project: Hawk Ridge Heights Residential Development | Project No.: 23-117

Site Address: Hawkridge Golf Course, Severn, ON | Client: LIV Communities

Easting: 623247 | Northing: 4943522 | Elevation:238.5 m

Logged By: NC/SO | Reviewed By: TK | Investigation Date: 2024-01-08



Notes:

Borehole had water at 0.9 mbg and caved to 5.5 mbg upon completion of drilling.
Stabilized water level measured at 0.0 mbg (elev. 238.5m) on 01-31-24.

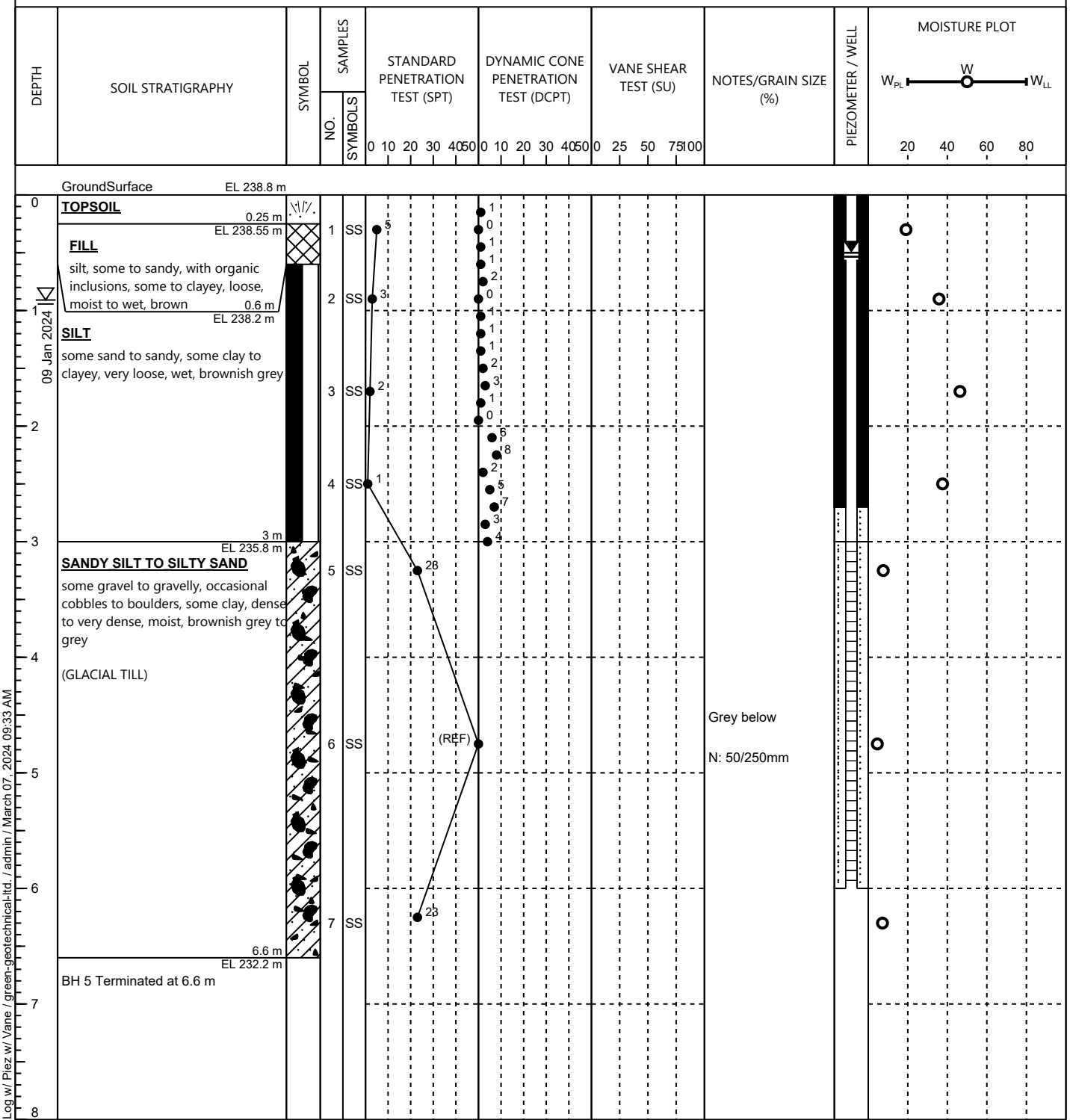
BOREHOLE LOG: BH 5

Project: Hawk Ridge Heights Residential Development | Project No.: 23-117

Site Address: Hawkridge Golf Course, Severn, ON | Client: LIV Communities

Easting: 623216 | Northing: 4943706 | Elevation:238.8 m

Logged By: NC/SO | Reviewed By: TK | Investigation Date: 2024-01-09



Notes:

Borehole had water at 0.9 mbg and was open upon completion of drilling.

Stabilized water level measured at 0.5 mbg (elev. 238.3m) on 01-31-24.

BOREHOLE LOG: BH 6

Project: Hawk Ridge Heights Residential Development | Project No.: 23-117

Site Address: Hawkridge Golf Course, Severn, ON | Client: LIV Communities

Easting: 623019 | Northing: 4943592 | Elevation:240.5 m

Logged By: NC/SO | Reviewed By: TK | Investigation Date: 2024-01-05

GroundSurface EL 240.5 m

TOPSOIL 0.15 m, EL 240.35 m

FILL

silt, some to sandy, with organic inclusions, trace clay, loose, moist to wet, brownish grey 0.6 m, EL 239.9 m

05 Jan 2024

SANDY SILT TO SILTY SAND

some gravel to gravelly, occasional cobbles to boulders, some clay, dense to very dense, wet, brownish grey

(GLACIAL TILL)

4.5 m, EL 236 m

BH 6 Terminated at 4.5 m

NO.	SYMBOLS	STANDARD PENETRATION TEST (SPT)	NOTES/GRAIN SIZE (%)
1	SS	3	
2	SS	9	
3	SS	(REF)	Wet below
4	SS	(REF)	N: 50/280mm
5	SS	30	50/450mm
6	SS	32	Gr: 24; Sa: 31%; Si: 33%; Cl: 12%
			Borehole terminated at 4.5m due to auger refusal on inferred boulder encountered

DYNAMIC CONE PENETRATION TEST (DCPT): 0 10 20 30 40 50

VANE SHEAR TEST (SU): 0 25 50 75 100

MOISTURE PLOT: W_{PL} W W_{LL}; 20 40 60 80

PIEZOMETER / WELL

Notes:

Borehole had water at 0.6 mbg and was open upon completion of drilling.

Stabilized water level measured at 1.5 mbg (elev. 239.0m) on 01-31-24.

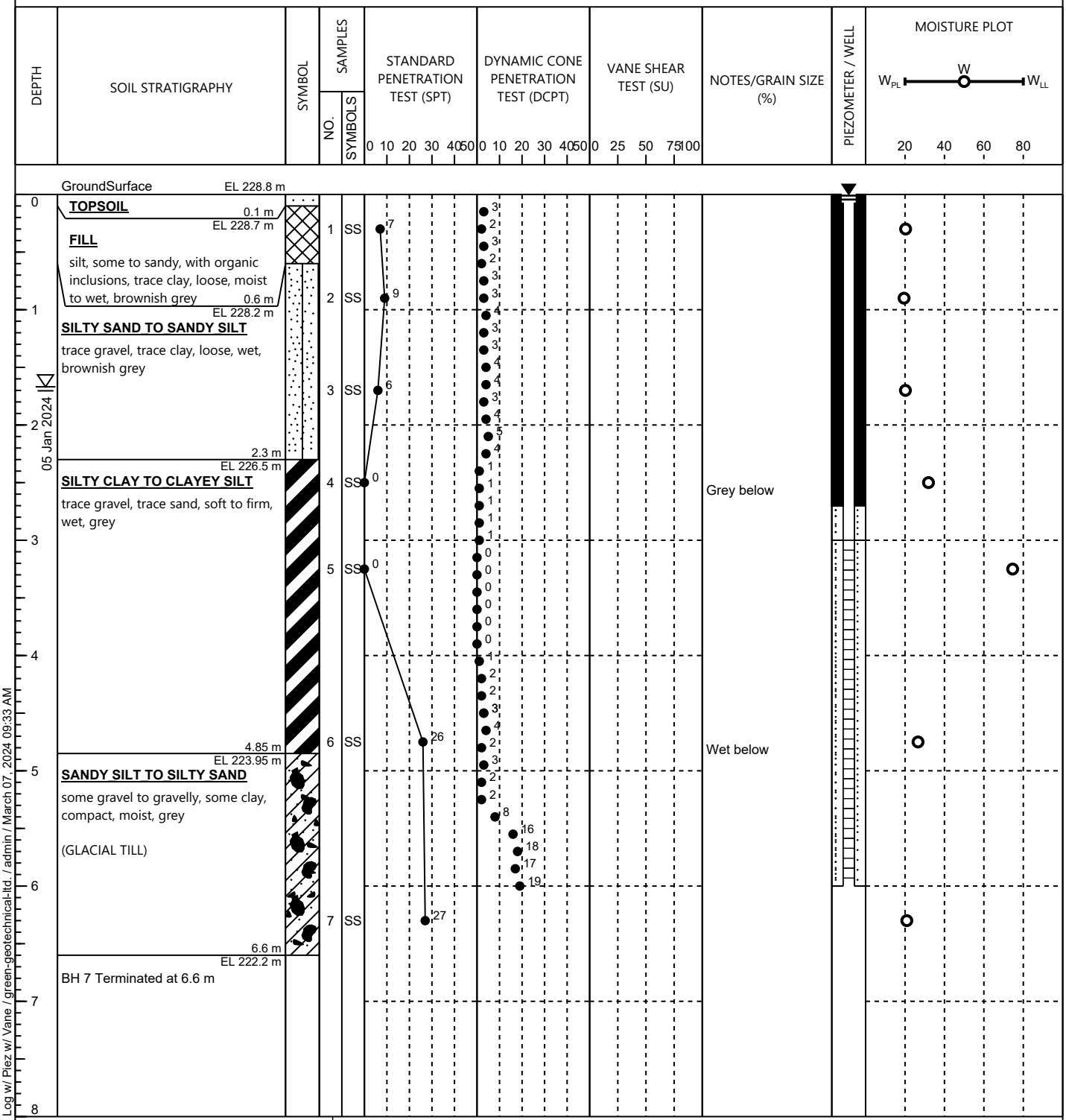
BOREHOLE LOG: BH 7

Project: Hawk Ridge Heights Residential Development | Project No.: 23-117

Site Address: Hawkridge Golf Course, Severn, ON | Client: LIV Communities

Easting: 622748 | Northing: 4943603 | Elevation:228.8 m

Logged By: NC/SO | Reviewed By: TK | Investigation Date: 2024-01-05



Notes:

Borehole had water at 1.7 mbg and was open upon completion of drilling.

Stabilized water level measured at 0.0 mbg (elev. 228.7m) on 01-31-24.

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BOREHOLE LOG: BH 8

Project: Hawk Ridge Heights Residential Development | Project No.: 23-117

Site Address: Hawkridge Golf Course, Severn, ON | Client: LIV Communities

Easting: 622898 | Northing: 4943291 | Elevation:229 m

Logged By: NC/SO | Reviewed By: TK | Investigation Date: 2024-01-04

GroundSurface EL 229 m

TOPSOIL 0.1 m, EL 228.9 m

FILL
silt, some to sandy, with organic inclusions, trace clay, loose, moist to wet, brownish grey 0.6 m, EL 228.4 m

SILTY SAND TO SANDY SILT
trace gravel, trace clay, loose, wet, brownish grey to grey

04 Jan 2024

3 m, EL 226 m

SILT
some sand to sandy, some clay to clayey, trace gravel, very soft, wet, grey

4.5 m, EL 224.5 m

SILTY CLAY TO CLAYEY SILT
trace gravel, trace sand, soft to firm, wet, grey

6 m, EL 223 m

SANDY SILT TO SILTY SAND
some gravel to gravelly, some clay, very loose, wet, grey

(GLACIAL TILL) 6.6 m, EL 222.4 m

BH 8 Terminated at 6.6 m

NO.	SYMBOLS	STANDARD PENETRATION TEST (SPT)	NOTES/GRAIN SIZE (%)
1	SS	8	
2	SS	4	
3	SS	4	
4	SS	5	
5	SS	0	Grey below
6	SS	0	
7	SS	0	Wet below

Notes:
Borehole had water at 1.7 mbg and was open upon completion of drilling.
Stabilized water level measured at 1.3 mbg (elev. 227.7m) on 01-31-24.

BOREHOLE LOG: BH 9

Project: Hawk Ridge Heights Residential Development | Project No.: 23-117

Site Address: Hawkridge Golf Course, Severn, ON | Client: LIV Communities

Easting: 622966 | Northing: 4942978 | Elevation:232.3 m

Logged By: NC/SO | Reviewed By: TK | Investigation Date: 2024-01-09

GroundSurface EL 232.3 m

TOPSOIL
0.3 m
EL 232 m

FILL
silt, some to sandy, with organic inclusions, trace clay, loose, moist, brown
0.6 m
EL 231.7 m

SILTY SAND TO SANDY SILT
trace gravel, trace clay, loose to compact, wet, brownish grey

09 Jan 2024

3 m
EL 229.3 m

SILTY CLAY TO CLAYEY SILT
trace gravel, trace sand, wet, firm, grey

6.6 m
EL 225.7 m

BH 9 Terminated at 6.6 m

NO.	SYMBOLS	STANDARD PENETRATION TEST (SPT)	DYNAMIC CONE PENETRATION TEST (DCPT)	VANE SHEAR TEST (SU)	NOTES/GRAIN SIZE (%)
1	SS	2			
2	SS	8			
3	SS	10			
4	SS	12			
5	SS	1		32	Sens: 2.0
6	SS	7		40	Sens: 2.5
7	SS	0		48	Wet below Sens: 1.7

PIEZOMETER / WELL

MOISTURE PLOT: W_{PL} — W — W_{LL}

Notes:
Borehole had water at 1.8 mbg and was open upon completion of drilling.
Stabilized water level measured at 0.2 mbg (elev. 232.1m) on 02-01-24.

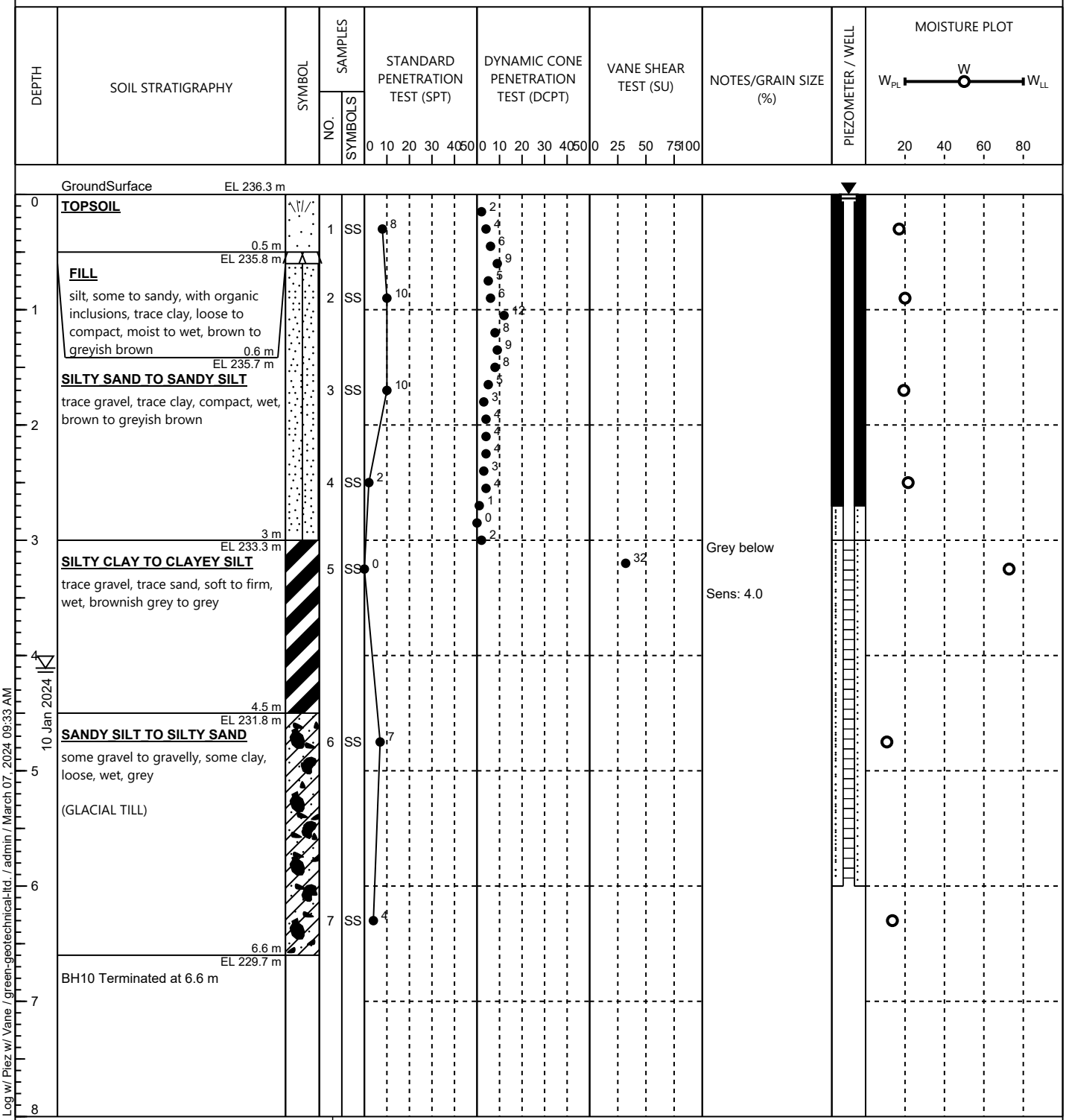
BOREHOLE LOG: BH10

Project: Hawk Ridge Heights Residential Development | Project No.: 23-117

Site Address: Hawkridge Golf Course, Severn, ON | Client: LIV Communities

Easting: 623094 | Northing: 4942903 | Elevation:236.3 m

Logged By: NC/SO | Reviewed By: TK | Investigation Date: 2024-01-10



RSLog / (DCPT) Soil Log w/ Piez w/ Vane / green-geotechnical-ltd. / admin / March 07, 2024 09:33 AM

GREEN GEOTECHNICAL

Notes:

Borehole had water at 4.1 mbg and was open upon completion of drilling.

Stabilized water level measured at 0.0 mbg (elev. 236.3m) on 02-01-24.

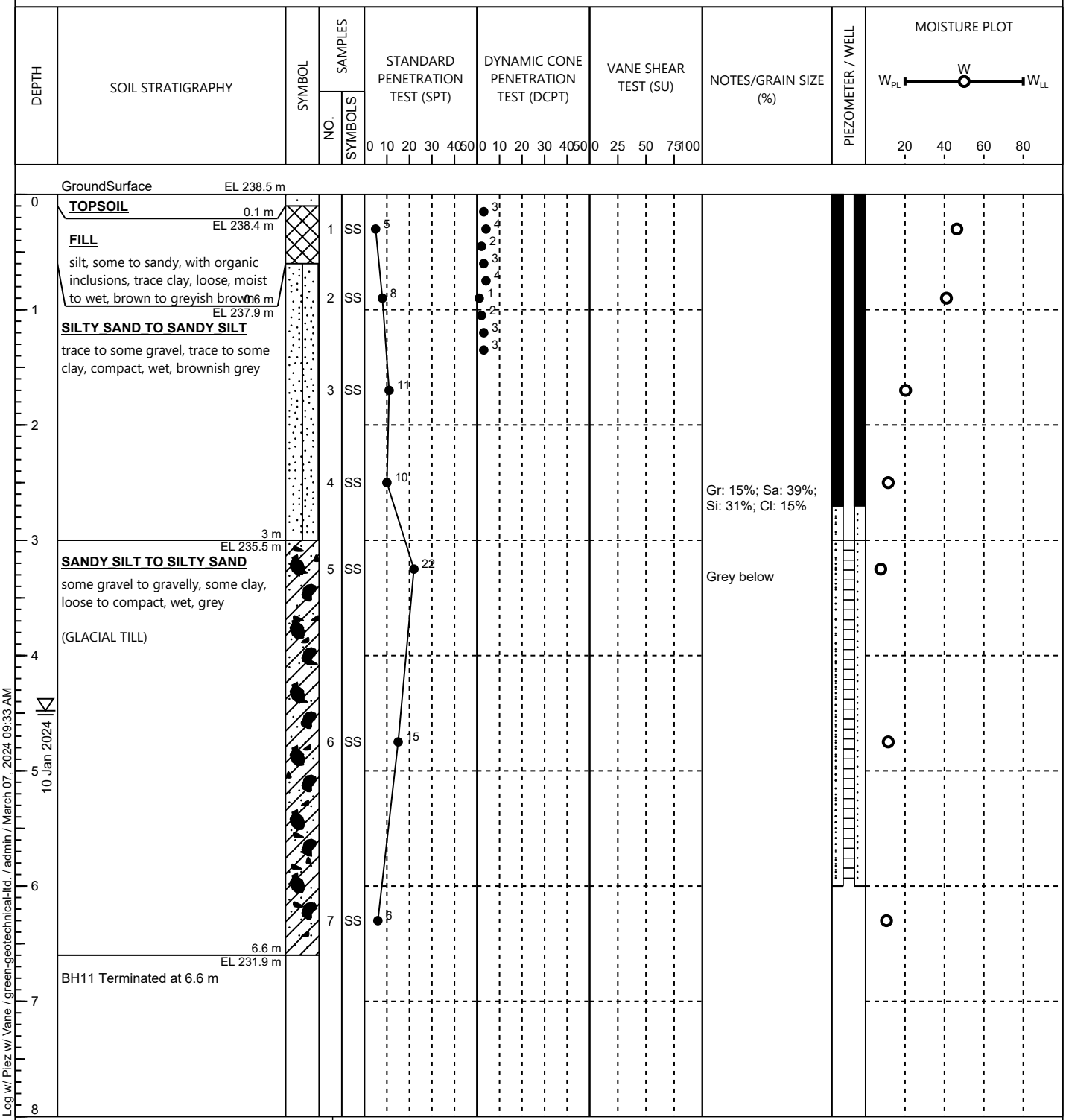
BOREHOLE LOG: BH11

Project: Hawk Ridge Heights Residential Development | Project No.: 23-117

Site Address: Hawkridge Golf Course, Severn, ON | Client: LIV Communities

Easting: 623223 | Northing: 4942846 | Elevation:238.5 m

Logged By: NC/SO | Reviewed By: TK | Investigation Date: 2024-01-10



Notes:

Borehole had water at 4.4 mbg and was open upon completion of drilling.

Stabilized water level measured at 0.3 mbg (elev. 238.2m) on 02-01-24.

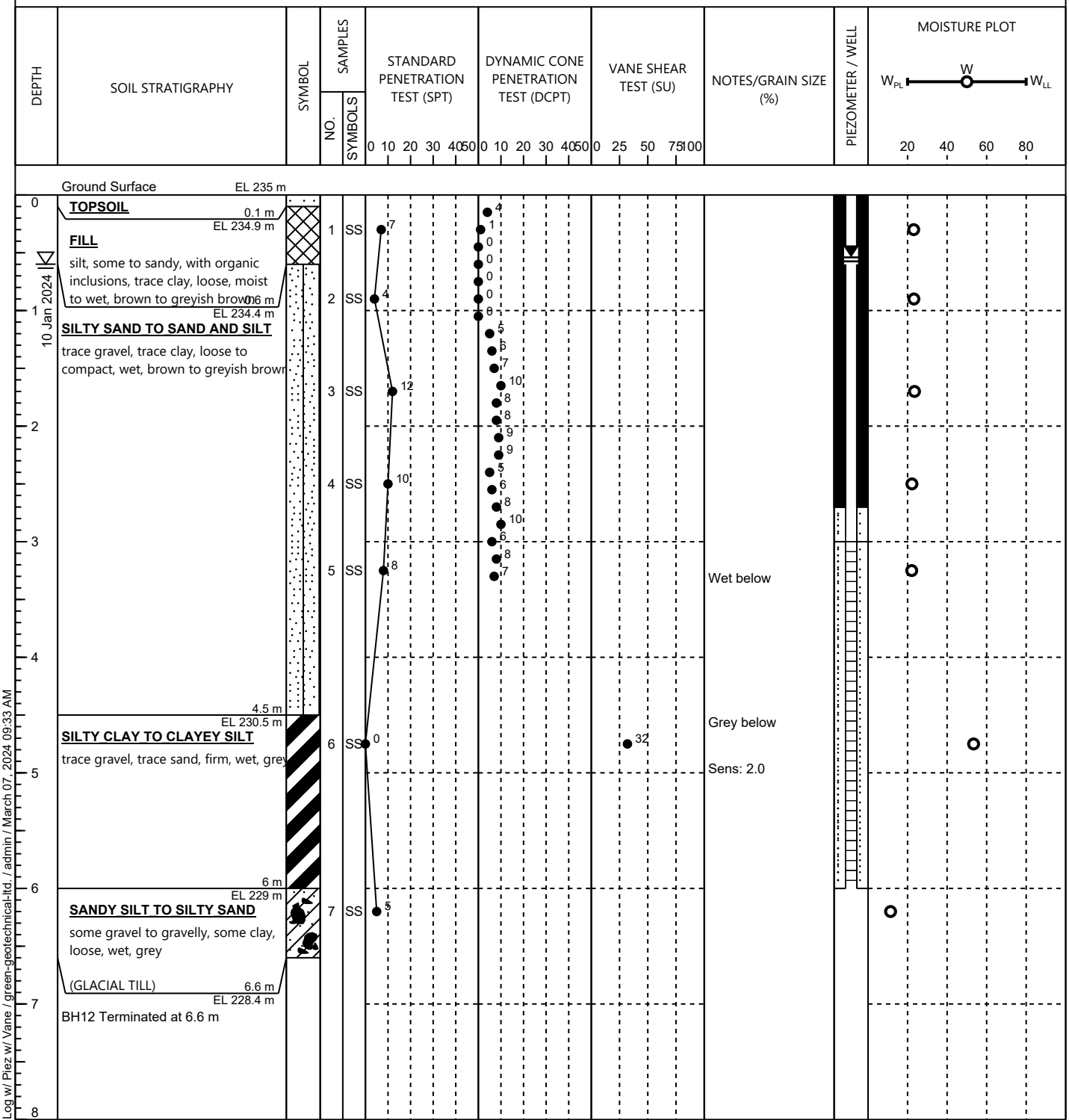
BOREHOLE LOG: BH12

Project: Hawk Ridge Heights Residential Development | Project No.: 23-117

Site Address: Hawkridge Golf Course, Severn, ON | Client: LIV Communities

Easting: 623115 | Northing: 4942699 | Elevation:235 m

Logged By: NC/SO | Reviewed By: TK | Investigation Date: 2024-01-10



Notes:

Borehole had water at 0.6 mbg and caved at 4.9 mbg upon completion of drilling.
Stabilized water level measured at 0.5 mbg (elev. 234.5m) on 02-01-24.

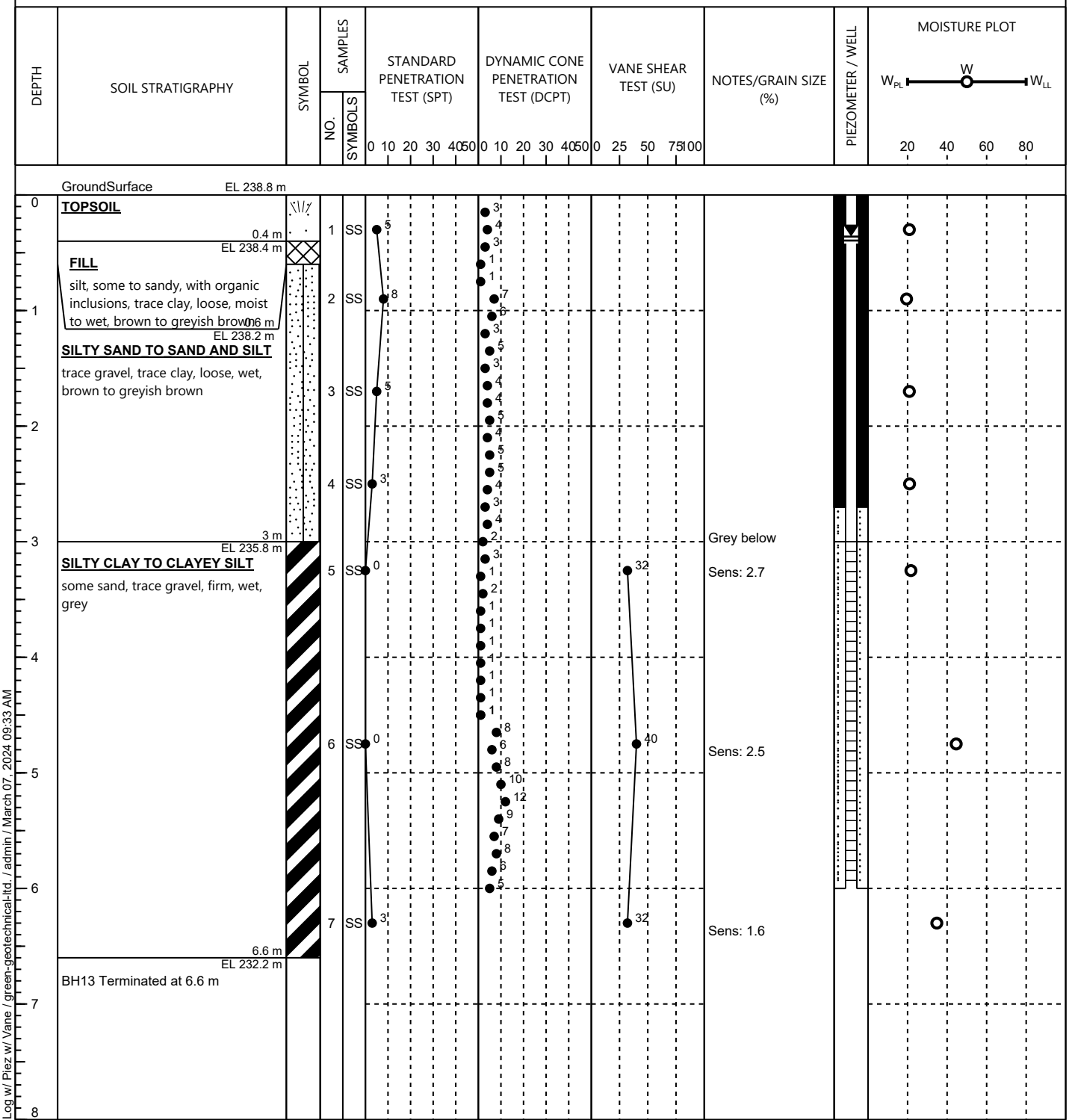
BOREHOLE LOG: BH13

Project: Hawk Ridge Heights Residential Development | Project No.: 23-117

Site Address: Hawkridge Golf Course, Severn, ON | Client: LIV Communities

Easting: 623405 | Northing: 4942594 | Elevation:238.8 m

Logged By: NC/SO | Reviewed By: TK | Investigation Date: 2024-01-11



Notes:

Borehole was dry and caved at 4.3 mbg upon completion of drilling.

Stabilized water level measured at 0.4 mbg (elev. 238.4m) on 02-01-24.

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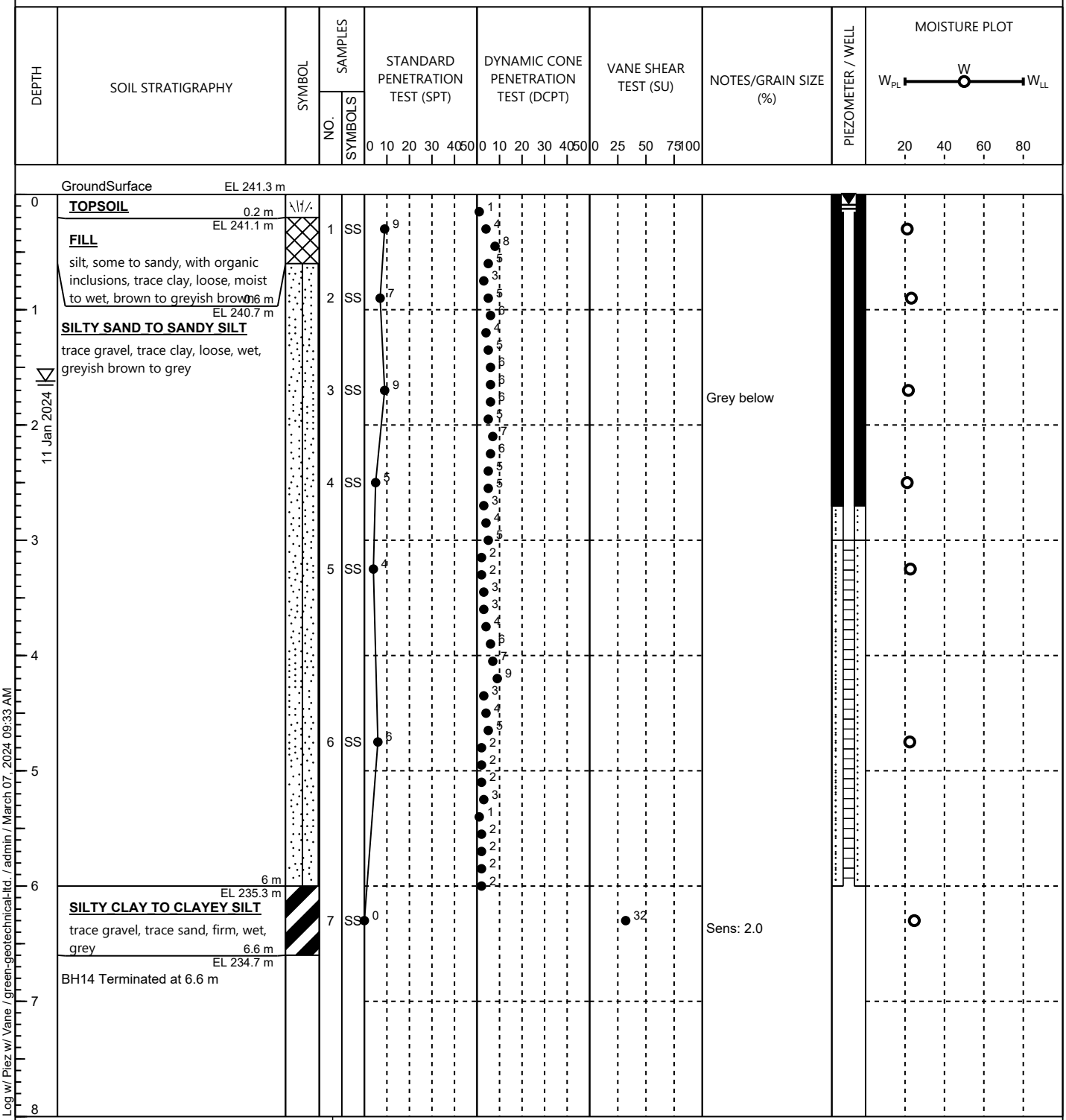
BOREHOLE LOG: BH14

Project: Hawk Ridge Heights Residential Development | Project No.: 23-117

Site Address: Hawkridge Golf Course, Severn, ON | Client: LIV Communities

Easting: 623460 | Northing: 4942378 | Elevation:241.3 m

Logged By: NC/SO | Reviewed By: TK | Investigation Date: 2024-01-11



Notes:

Borehole had water at 1.6 mbg and caved at 4.6 mbg upon completion of drilling.
Stabilized water level measured at 0.1 mbg (elev. 241.2m) on 02-01-24.

BOREHOLE LOG: BH15

Project: Hawk Ridge Heights Residential Development | Project No.: 23-117

Site Address: Hawkridge Golf Course, Severn, ON | Client: LIV Communities

Easting: 623300 | Northing: 4942456 | Elevation:237.8 m

Logged By: NC/SO | Reviewed By: TK | Investigation Date: 2024-01-12

GroundSurface EL 237.8 m

TOPSOIL
0.3 m
EL 237.5 m

FILL
silt, some to sandy, with organic inclusions, trace clay, loose, moist to wet, brown
0.6 m
EL 237.2 m

SILTY SAND TO SAND AND SILT
trace to some clay, trace gravel, loose to compact, wet, brown to greyish brown
3 m
EL 234.8 m

SILTY CLAY TO CLAYEY SILT
trace gravel, trace sand, soft to firm, wet, brownish grey to grey
6 m
EL 231.8 m

SANDY SILT TO SILTY SAND
some gravel to gravelly, trace to some clay, very loose, wet, grey
(GLACIAL TILL)
6.6 m
EL 231.2 m

BH15 Terminated at 6.6 m

NO.	SYMBOLS	SPT	DCPT	VANE SHEAR TEST (SU)	NOTES/GRAIN SIZE (%)
1	SS	3			
2	SS	9			
3	SS	11			
4	SS	1			
5	SS	0		40	Grey below Sens: 2.5
6	SS	0		24	Sens: 2.0
7	SS	1			

12 Jan 2024

Notes:
Borehole had water at 4.3 mbg and caved at 4.6 mbg upon completion of drilling.
Stabilized water level measured at 0.3 mbg (elev. 237.5m) on 02-01-24.

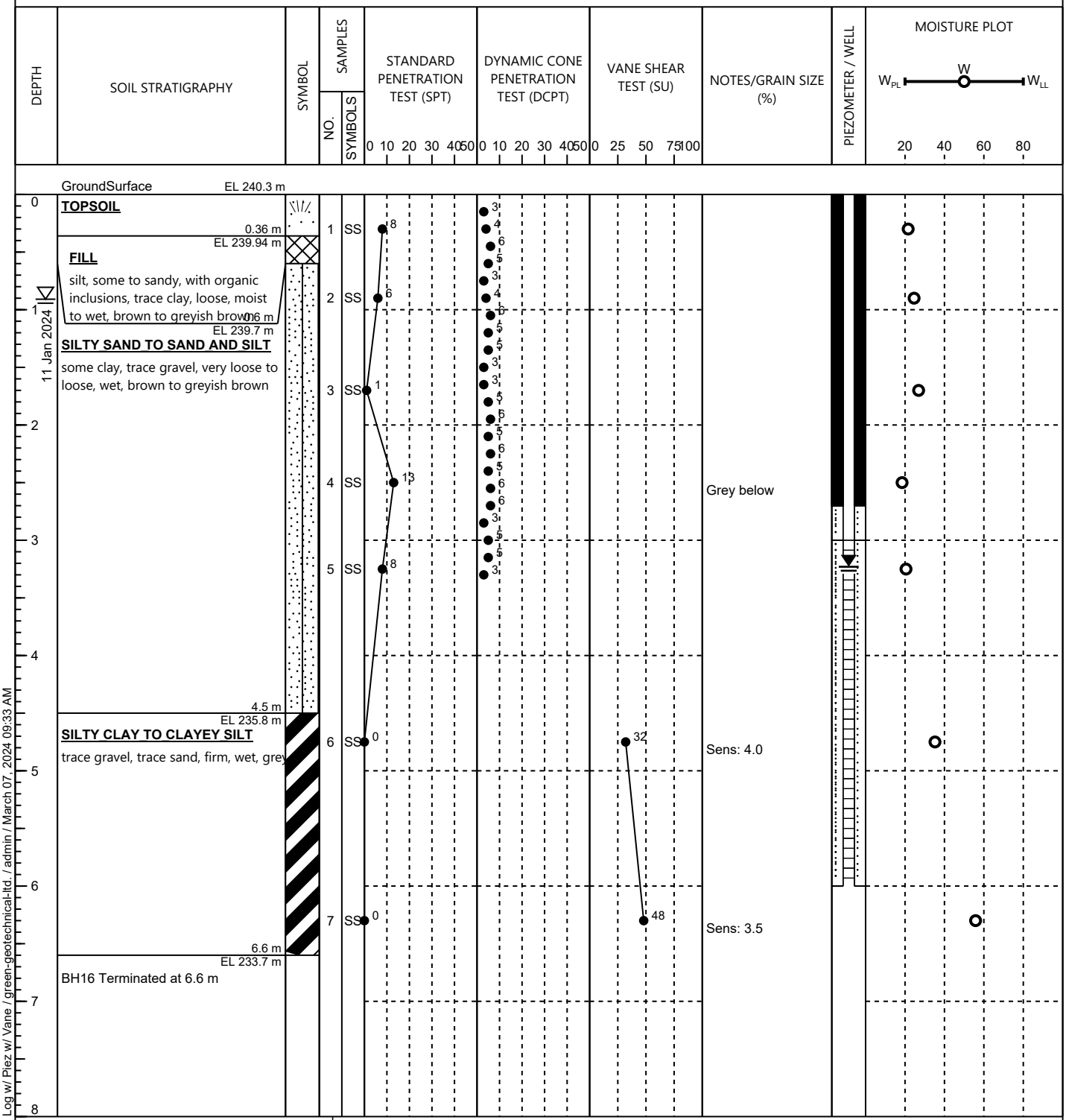
BOREHOLE LOG: BH16

Project: Hawk Ridge Heights Residential Development | Project No.: 23-117

Site Address: Hawkridge Golf Course, Severn, ON | Client: LIV Communities

Easting: 623313 | Northing: 4942232 | Elevation:240.3 m

Logged By: NC/SO | Reviewed By: TK | Investigation Date: 2024-01-11



Notes:

Borehole had water at 0.9 mbg and caved at 3.7 mbg upon completion of drilling.
Stabilized water level measured at 3.2 mbg (elev. 237.0m) on 02-01-24.

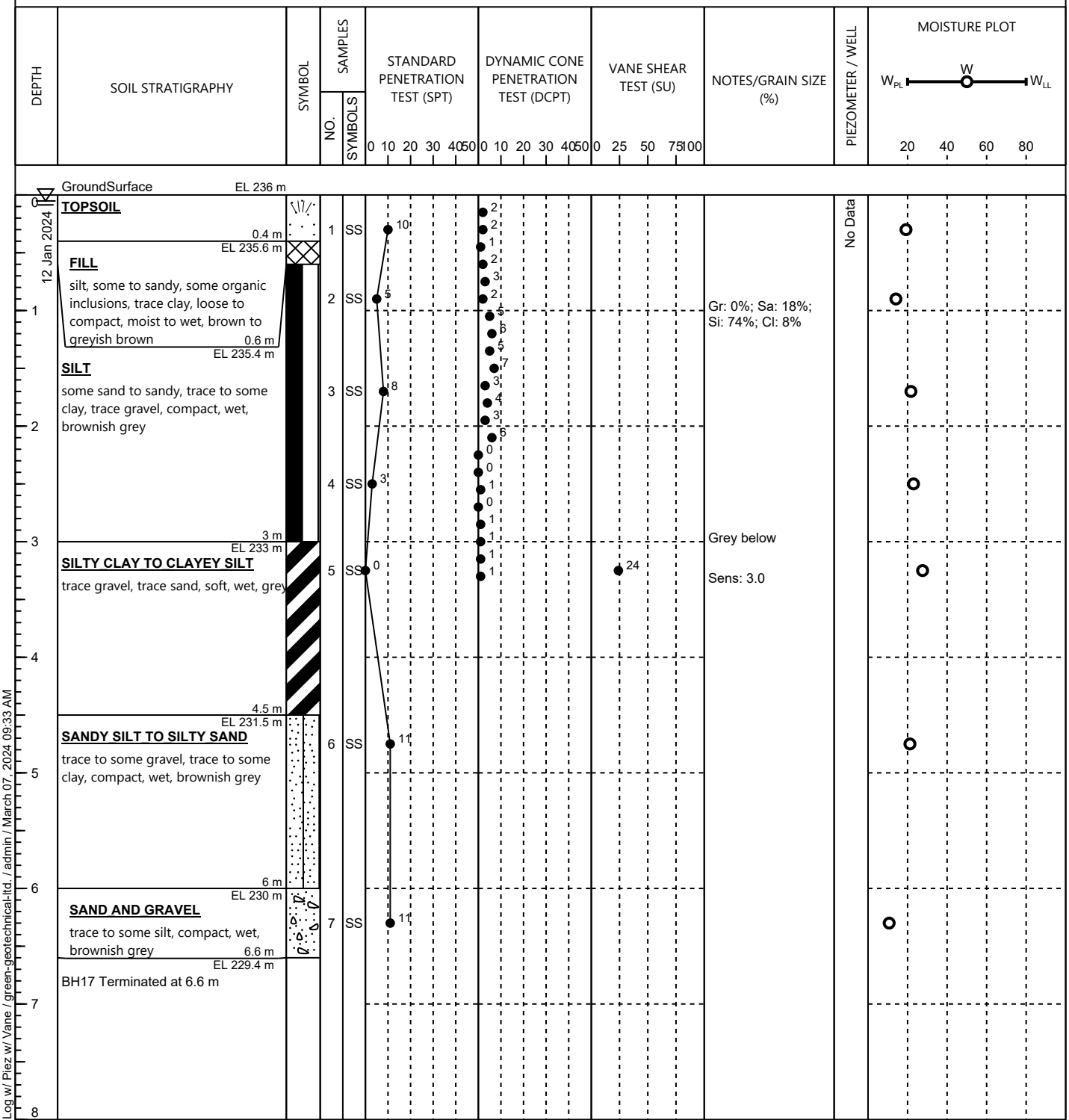
BOREHOLE LOG: BH17

Project: Hawk Ridge Heights Residential Development | Project No.: 23-117

Site Address: Hawkridge Golf Course, Severn, ON | Client: LIV Communities

Easting: 623113 | Northing: 4942351 | Elevation:236 m

Logged By: NC/SO | Reviewed By: TK | Investigation Date: 2024-01-12



Notes:

Borehole had flowing artesian conditions and was open upon completion of drilling.
No well installed due to the encountered flowing artesian conditions.

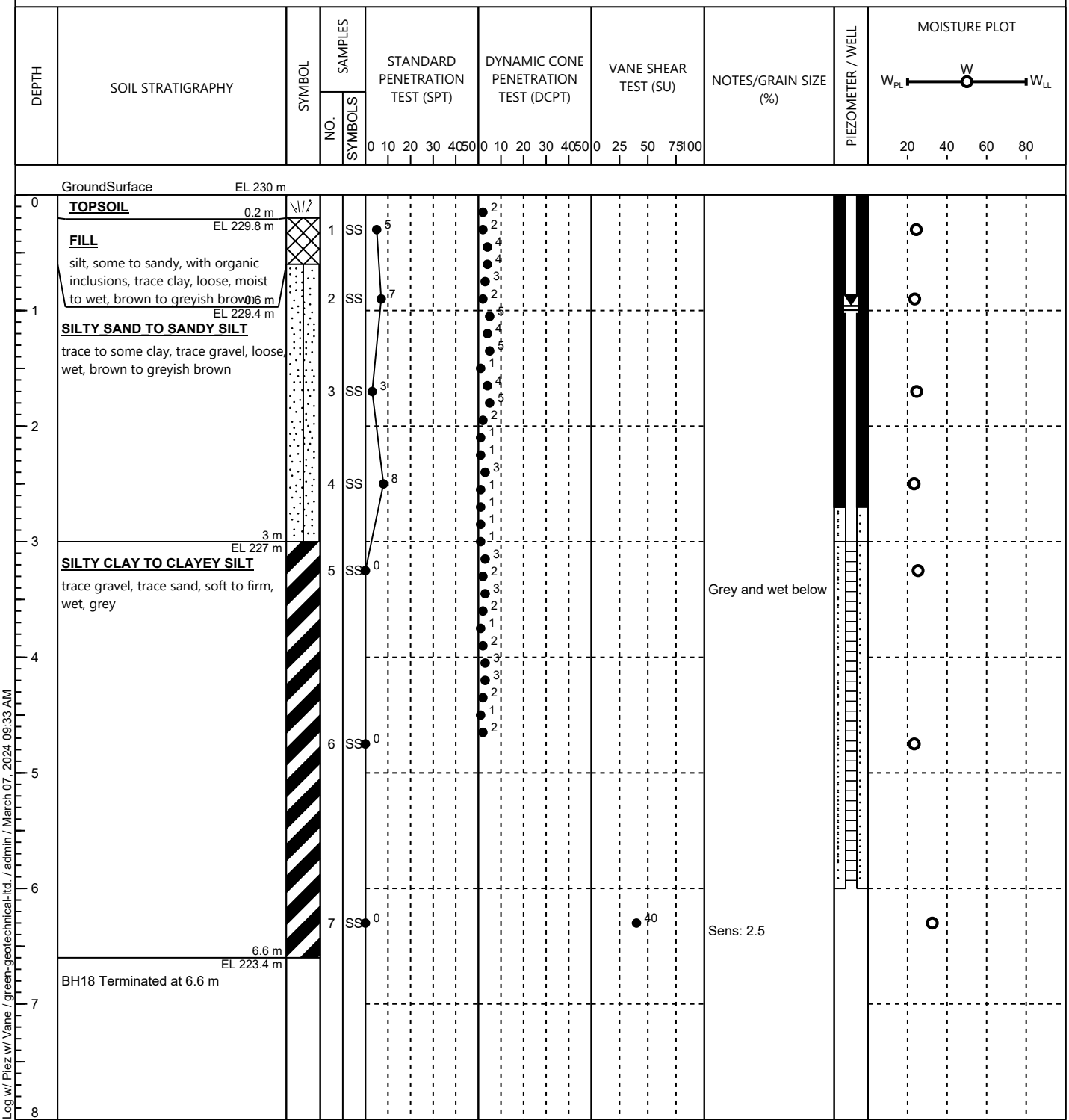
BOREHOLE LOG: BH18

Project: Hawk Ridge Heights Residential Development | Project No.: 23-117

Site Address: Hawkridge Golf Course, Severn, ON | Client: LIV Communities

Easting: 622914 | Northing: 4942754 | Elevation:230 m

Logged By: NC/SO | Reviewed By: TK | Investigation Date: 2024-01-10



Notes:

Borehole had no water and was open upon completion of drilling.

Stabilized water level measured at 1.0 mbg (elev. 229.0m) on 02-01-24.

RSLog / (DCPT) Soil Log w/ Piez w/ Vane / green-geotechnical-ltd. / admin / March 07, 2024 09:33 AM

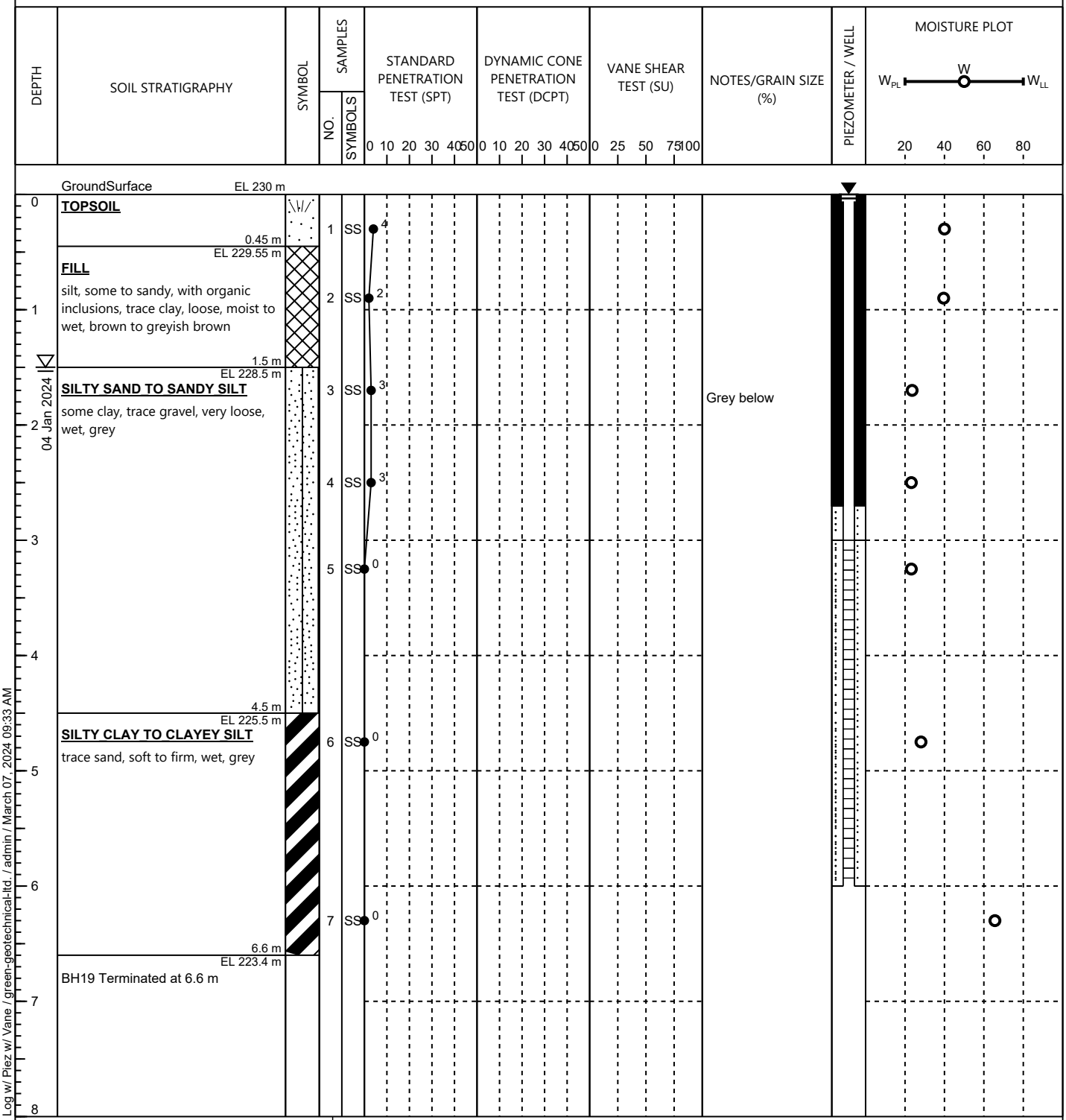
BOREHOLE LOG: BH19

Project: Hawk Ridge Heights Residential Development | Project No.: 23-117

Site Address: Hawkridge Golf Course, Severn, ON | Client: LIV Communities

Easting: 622771 | Northing: 4943009 | Elevation:230 m

Logged By: NC/SO | Reviewed By: TK | Investigation Date: 2024-01-04



Notes:

Borehole had water at 1.5 mbg and was open upon completion of drilling.

Stabilized water level measured at 0.0 mbg (elev. 230.0m) on 02-01-24.

RSLog / (DCPT) Soil Log w/ Piez w/ Vane / green-geotechnical-ltd. / admin / March 07, 2024 09:33 AM

BOREHOLE LOG: BH20

Project: Hawk Ridge Heights Residential Development | Project No.: 23-117

Site Address: Hawkridge Golf Course, Severn, ON | Client: LIV Communities

Easting: 622581 | Northing: 4943086 | Elevation:228.5 m

Logged By: NC/SO | Reviewed By: TK | Investigation Date: 2024-01-04

GroundSurface EL 228.5 m

TOPSOIL 0.2 m, EL 228.3 m

FILL

silt, some to sandy, with organic inclusions, trace clay, loose to compact, moist to wet, brown to greyish brown

1.5 m, EL 227 m

SILTY SAND TO SANDY SILT

trace to some gravel, trace to some clay, very loose to loose, wet, greyish brown

Grey and wet below

6.6 m, EL 221.9 m

BH20 Terminated at 6.6 m

04 Jan 2024

Notes:

Borehole had water at 4.4 mbg and caved at 5.2 mbg upon completion of drilling.
Stabilized water level measured at 0.0 mbg (elev. 228.5m) on 02-01-24.

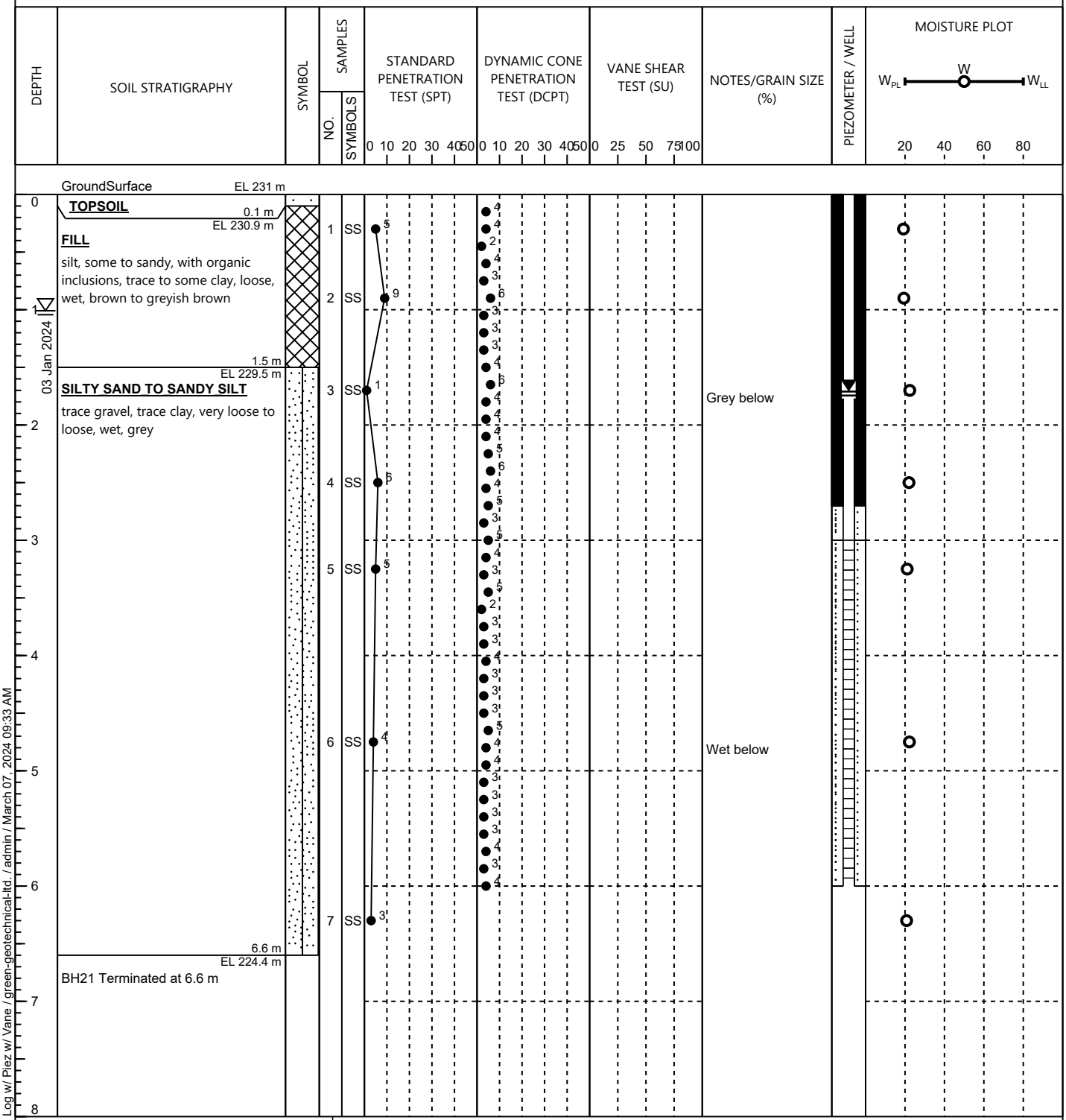
BOREHOLE LOG: BH21

Project: Hawk Ridge Heights Residential Development | Project No.: 23-117

Site Address: Hawkridge Golf Course, Severn, ON | Client: LIV Communities

Easting: 622377 | Northing: 4943067 | Elevation:231 m

Logged By: NC/SO | Reviewed By: TK | Investigation Date: 2024-01-03



Notes:

Borehole had water at 1.0 mbg and caved at 5.9 mbg upon completion of drilling.
Stabilized water level measured at 1.7 mbg (elev. 229.3m) on 02-01-24.

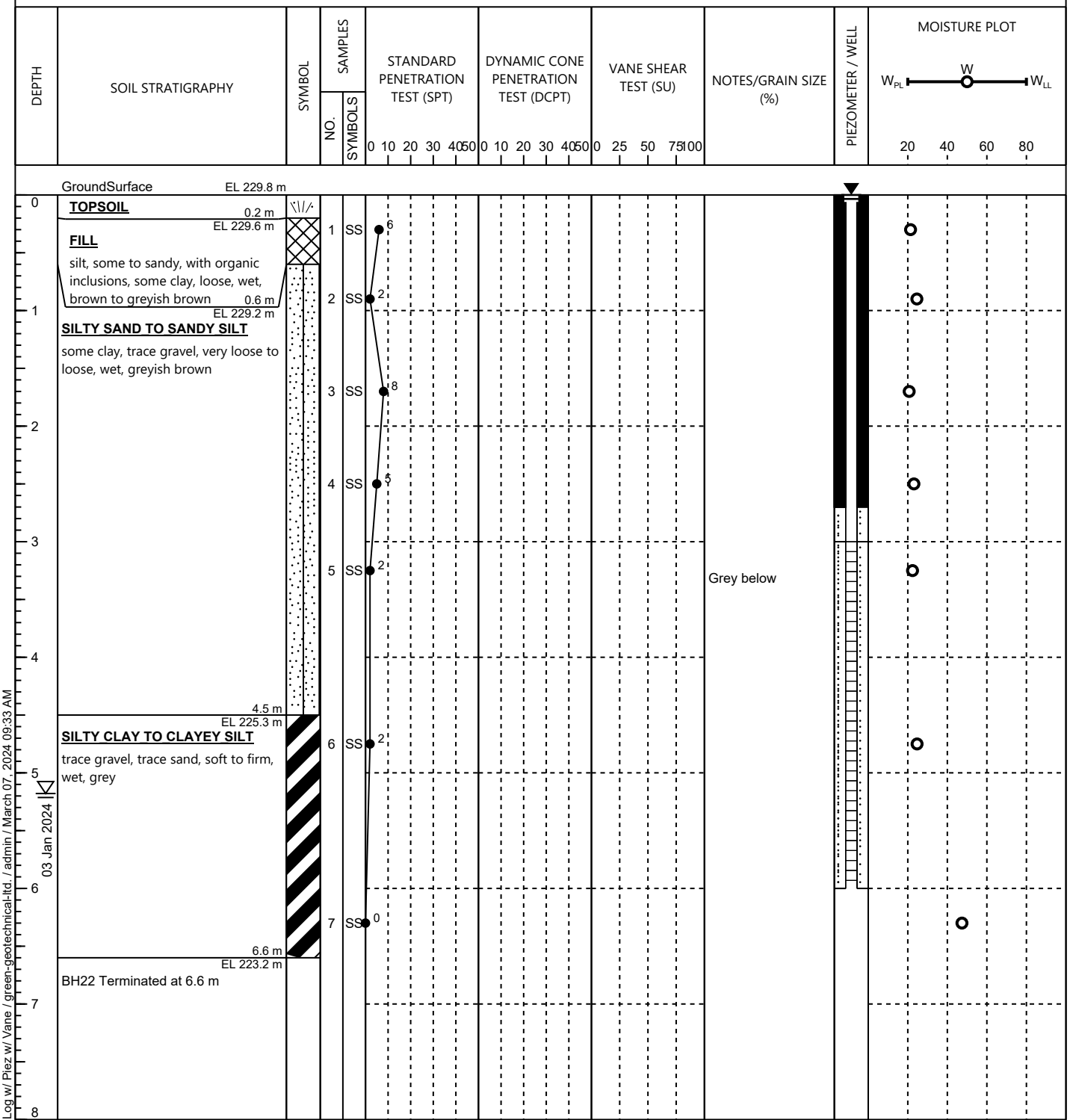
BOREHOLE LOG: BH22

Project: Hawk Ridge Heights Residential Development | Project No.: 23-117

Site Address: Hawkridge Golf Course, Severn, ON | Client: LIV Communities

Easting: 622472 | Northing: 4942938 | Elevation:229.8 m

Logged By: NC/SO | Reviewed By: TK | Investigation Date: 2024-01-03



Notes:

Borehole had water at 5.2 mbg and caved at 5.8 mbg upon completion of drilling.
Stabilized water level measured at 0.0 mbg (elev. 229.8m) on 02-01-24.

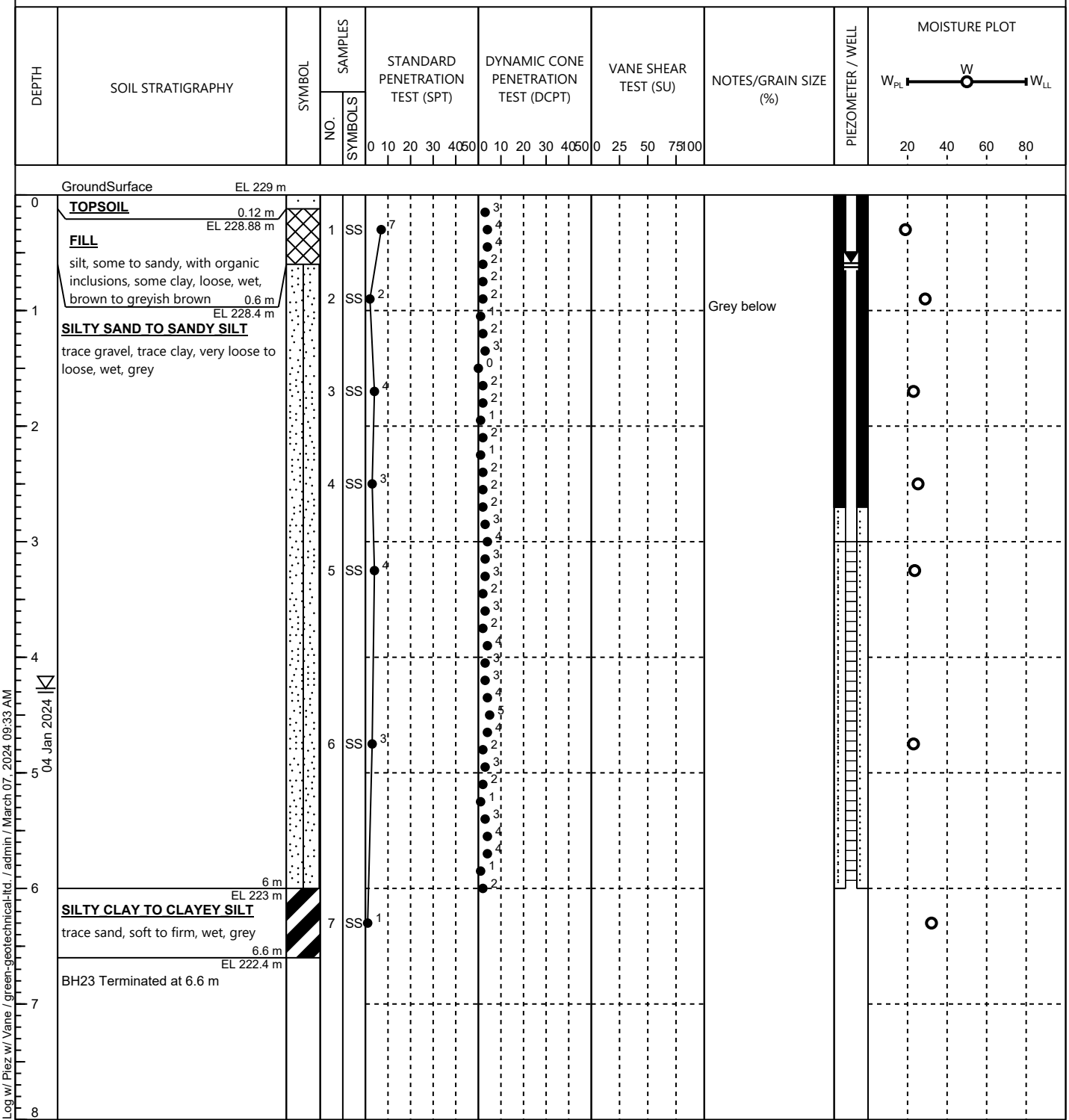
BOREHOLE LOG: BH23

Project: Hawk Ridge Heights Residential Development | Project No.: 23-117

Site Address: Hawkridge Golf Course, Severn, ON | Client: LIV Communities

Easting: 622579 | Northing: 4942915 | Elevation:229 m

Logged By: NC/SO | Reviewed By: TK | Investigation Date: 2024-01-04



Notes:

Borehole had water at 4.3 mbg and was open upon completion of drilling.

Stabilized water level measured at 0.6 mbg (elev. 228.4m) on 02-01-24.

RSLog / (DCPT) Soil Log w/ Piez w/ Vane / green-geotechnical-ltd. / admin / March 07, 2024 09:33 AM

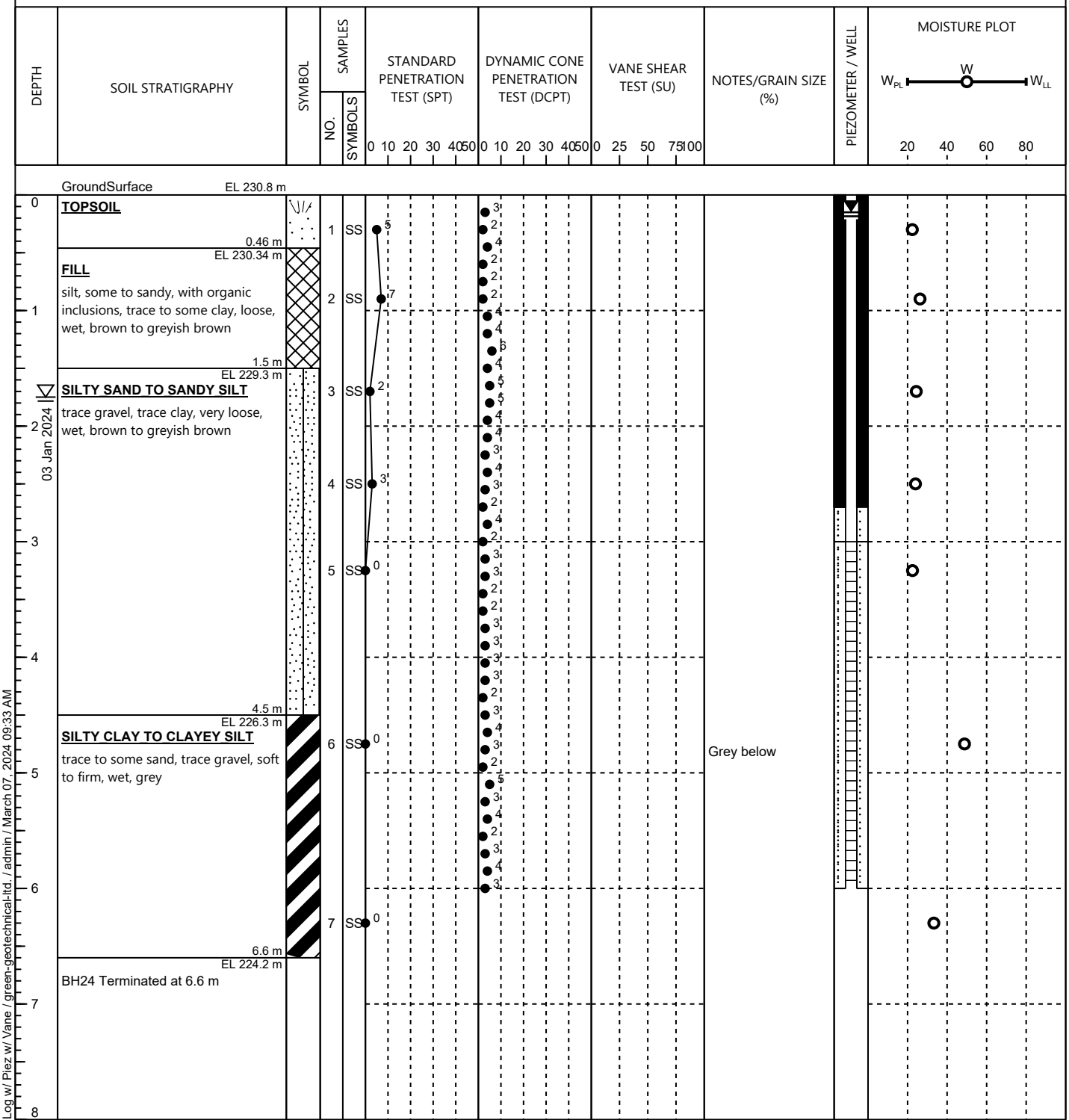
BOREHOLE LOG: BH24

Project: Hawk Ridge Heights Residential Development | Project No.: 23-117

Site Address: Hawkridge Golf Course, Severn, ON | Client: LIV Communities

Easting: 622615 | Northing: 4942743 | Elevation:230.8 m

Logged By: NC/SO | Reviewed By: TK | Investigation Date: 2024-01-03

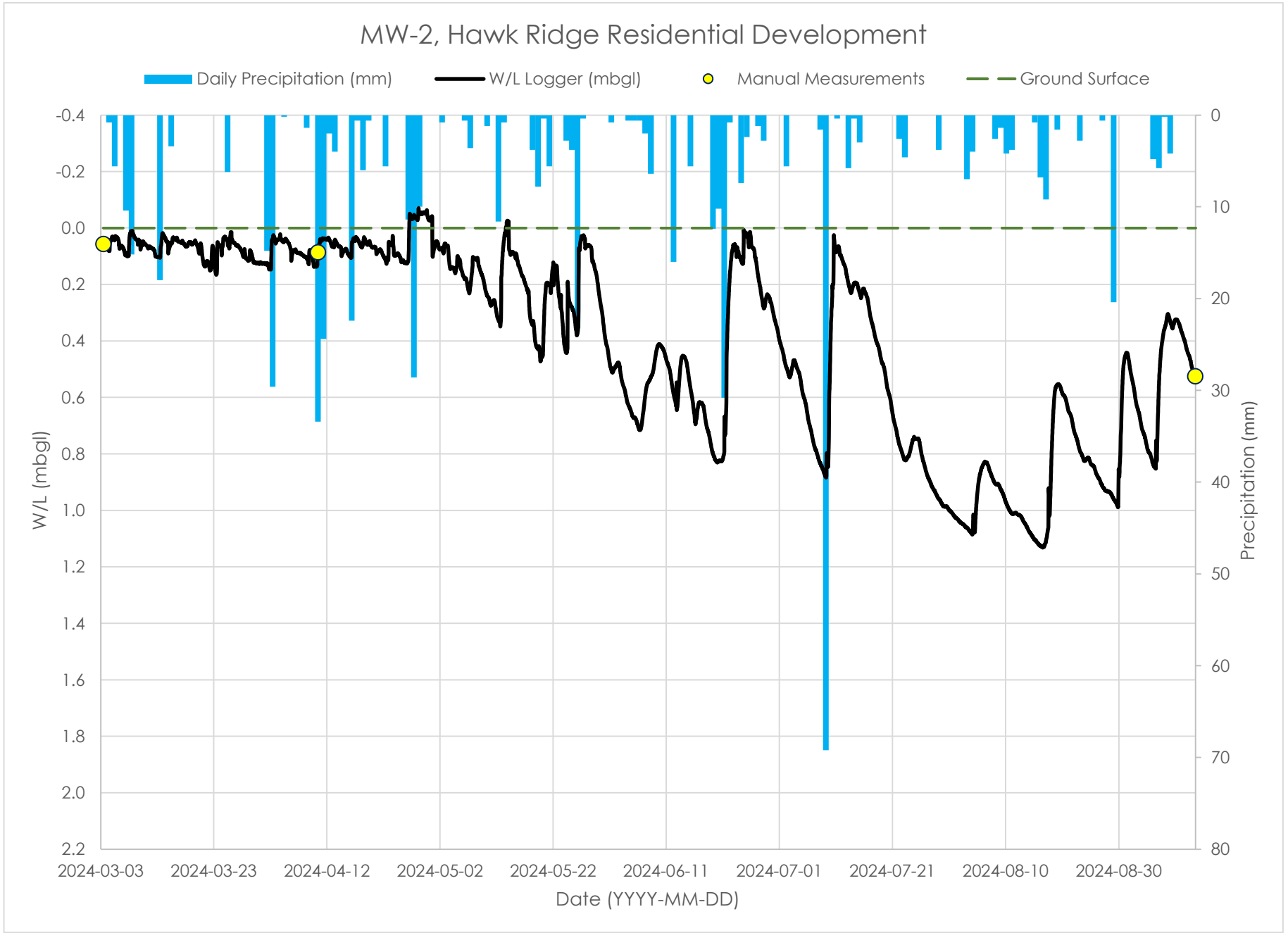


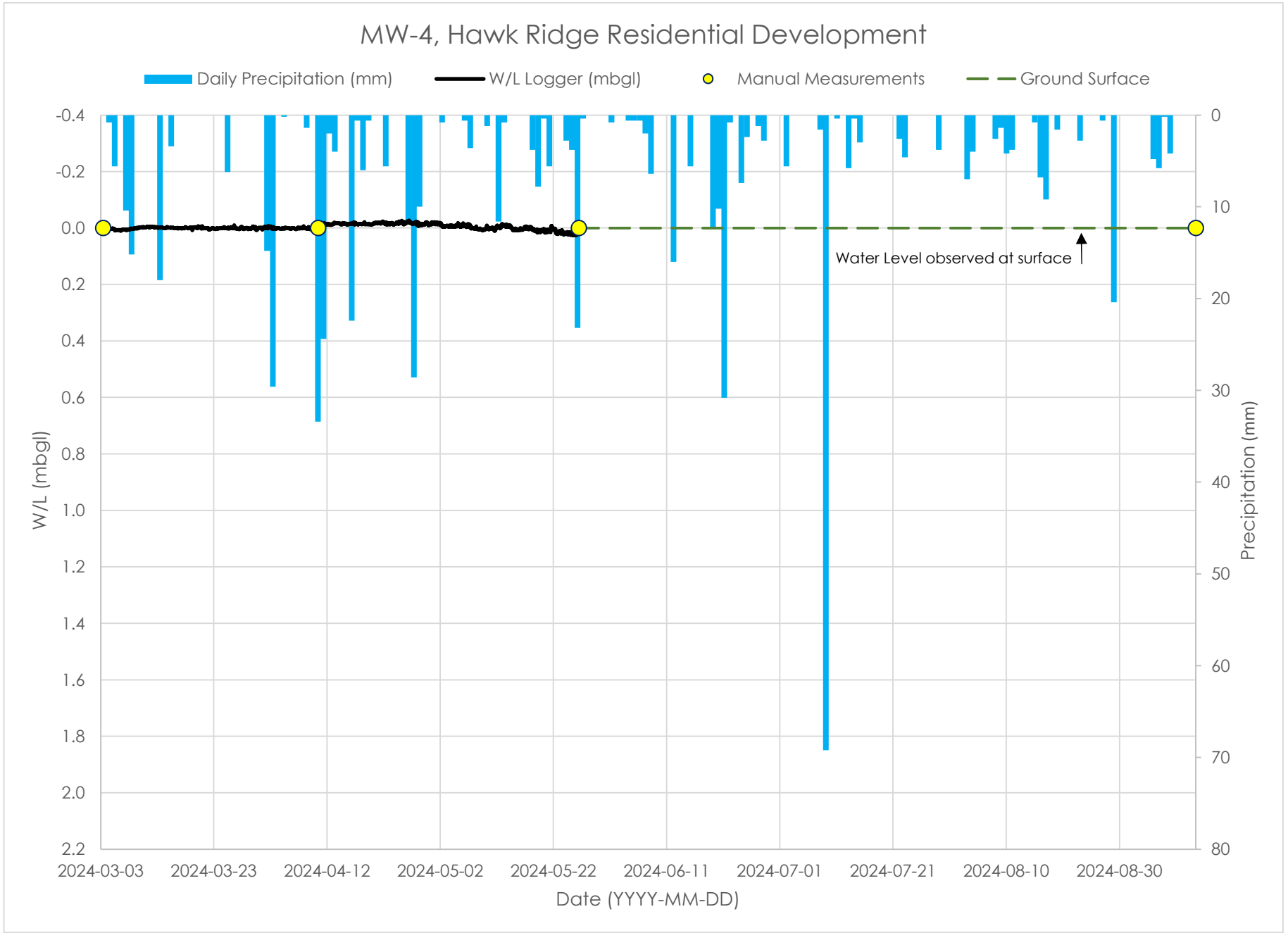
Notes:

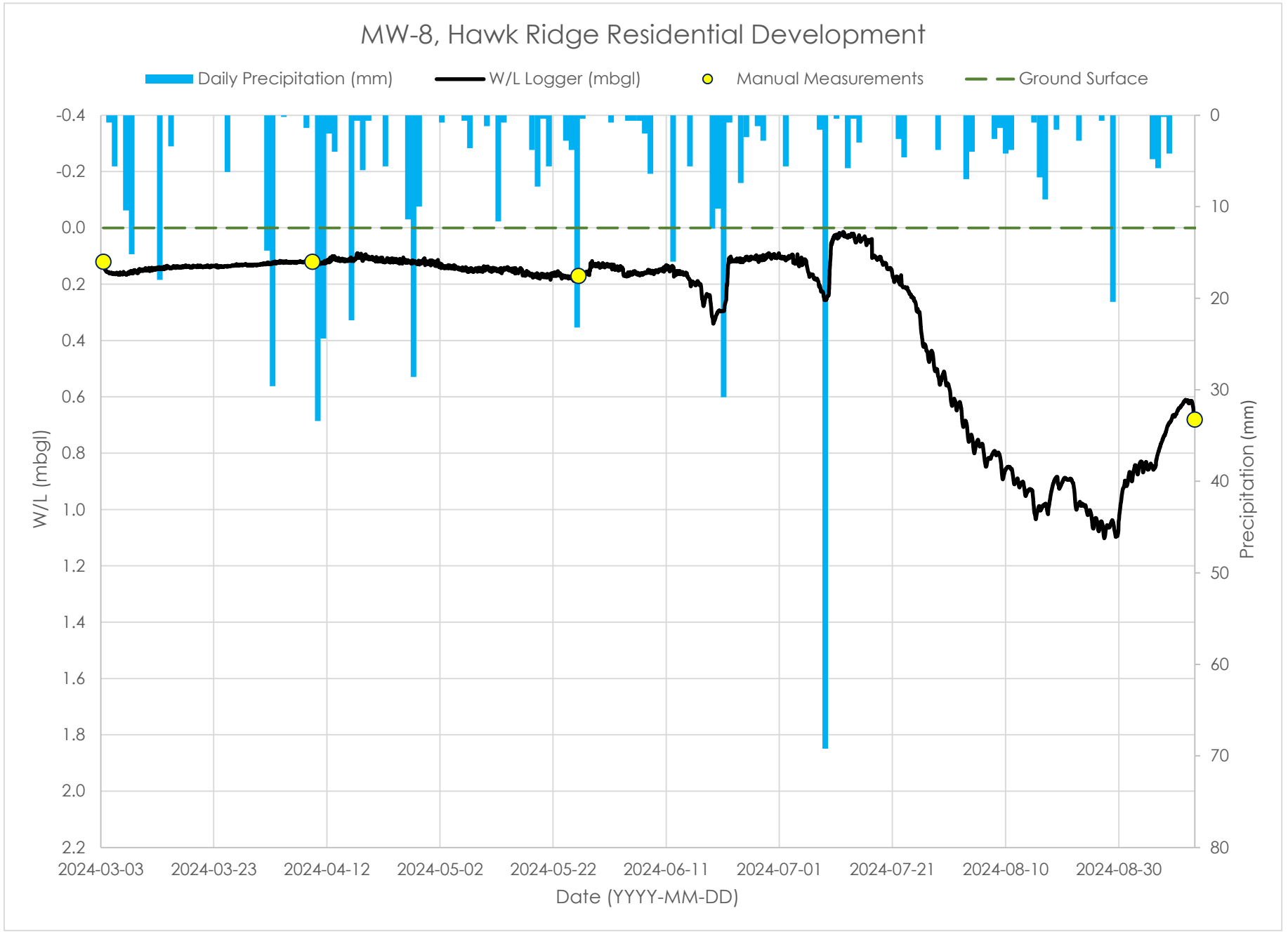
Borehole had water at 1.8mbg and caved at 3.4mbg upon completion of drilling.
Stabilized water level measured at 0.2 mbg (elev. 230.6m) on 02-01-24.

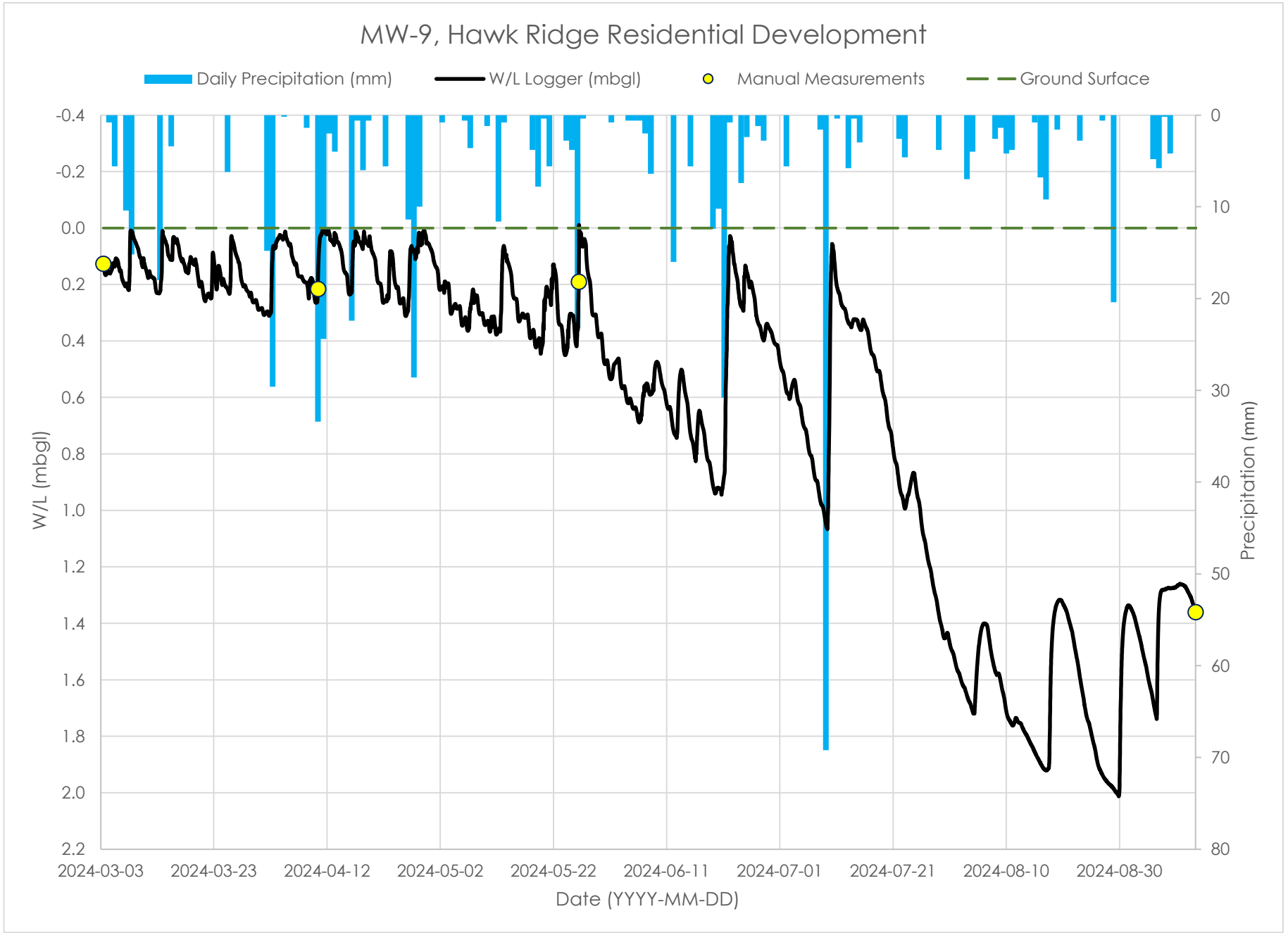
APPENDIX D

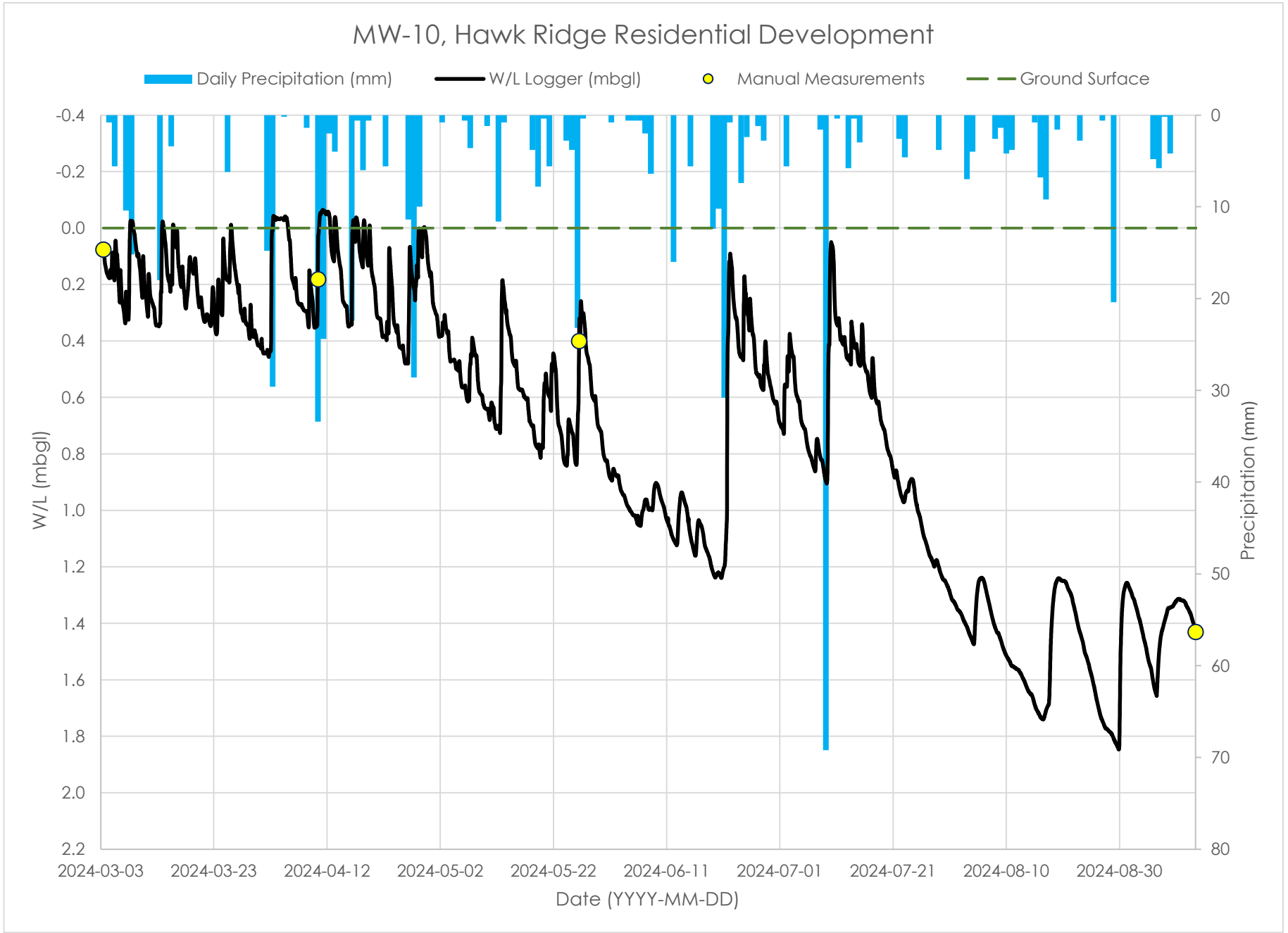
Monitoring Well Hydrographs

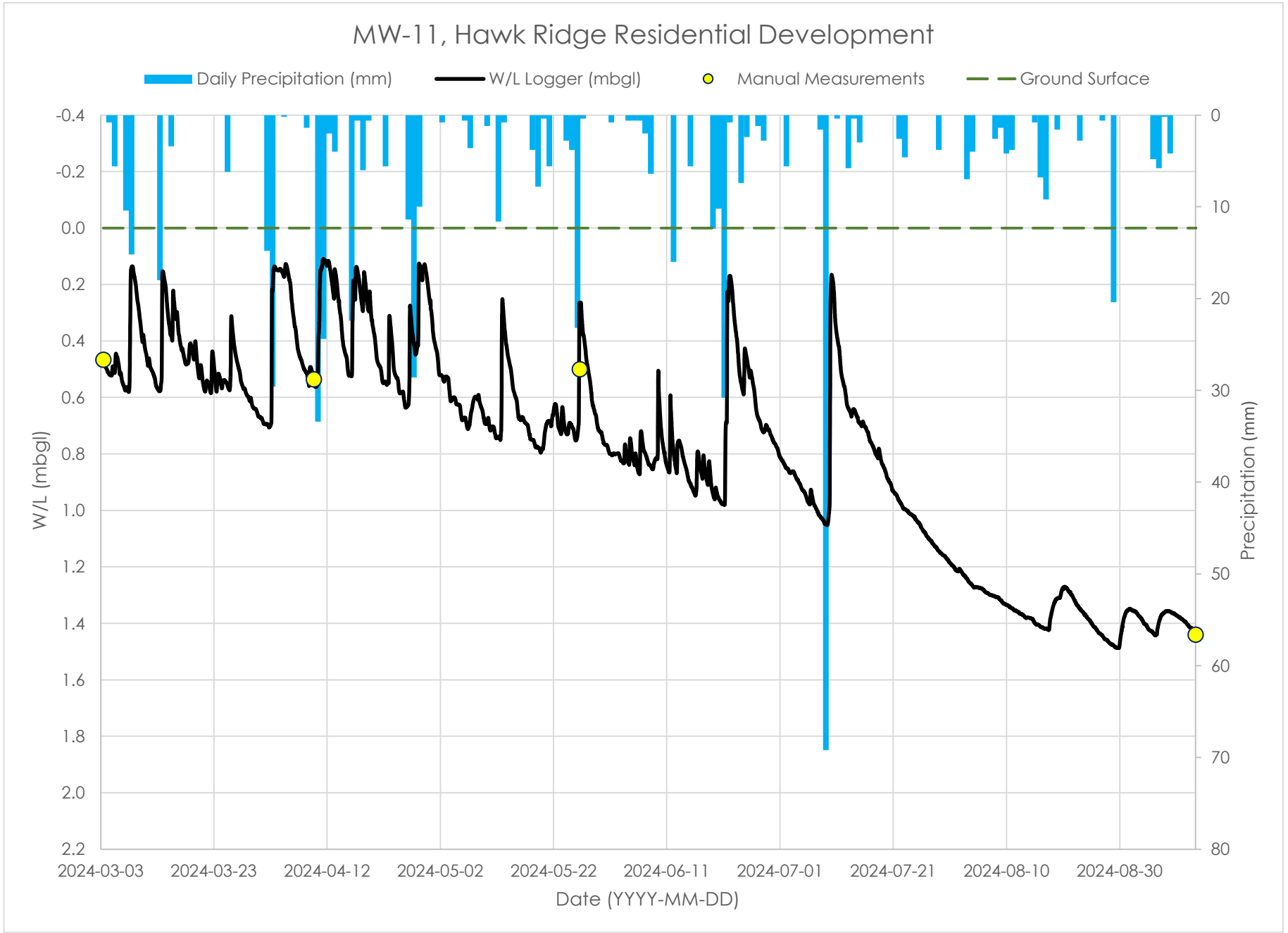

MW-2, Hawk Ridge Residential Development
Daily Precipitation (mm)
W/L Logger (mbgl)
Manual Measurements
Ground Surface
W/L (mbgl)
-0.4
-0.2
0.0
0.2
0.4
0.6
0.8
1.0
1.2
1.4
1.6
1.8
2.0
2.2
Precipitation (mm)
0
10
20
30
40
50
60
70
80
2024-03-03
2024-03-23
2024-04-12
2024-05-02
2024-05-22
2024-06-11
2024-07-01
2024-07-21
2024-08-10
2024-08-30
Date (YYYY-MM-DD)

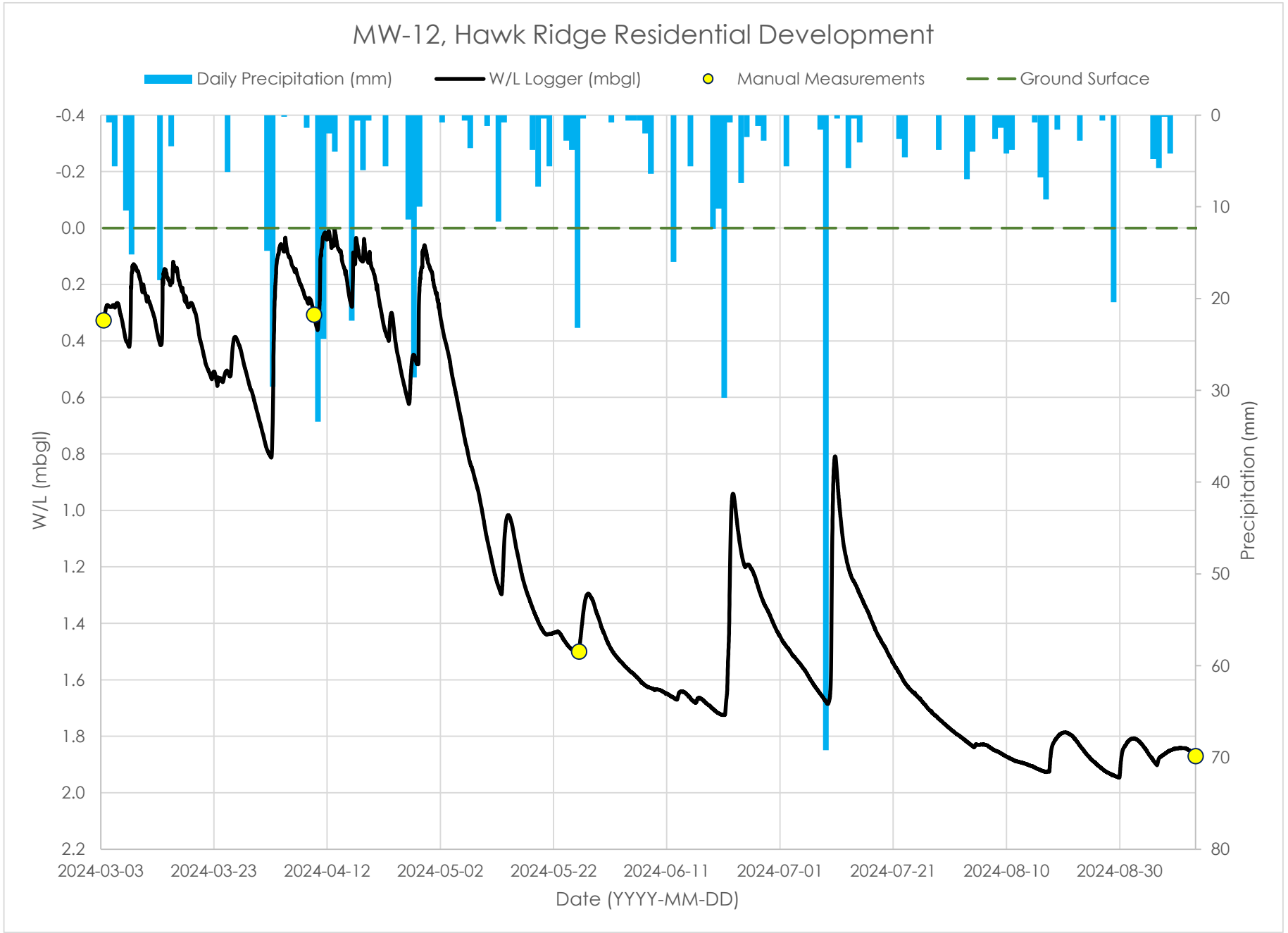

MW-4, Hawk Ridge Residential Development
Daily Precipitation (mm)
W/L Logger (mbgl)
Manual Measurements
Ground Surface
Water Level observed at surface
W/L (mbgl)
Precipitation (mm)
-0.4
-0.2
0.0
0.2
0.4
0.6
0.8
1.0
1.2
1.4
1.6
1.8
2.0
2.2
0
10
20
30
40
50
60
70
80
2024-03-03
2024-03-23
2024-04-12
2024-05-02
2024-05-22
2024-06-11
2024-07-01
2024-07-21
2024-08-10
2024-08-30
Date (YYYY-MM-DD)

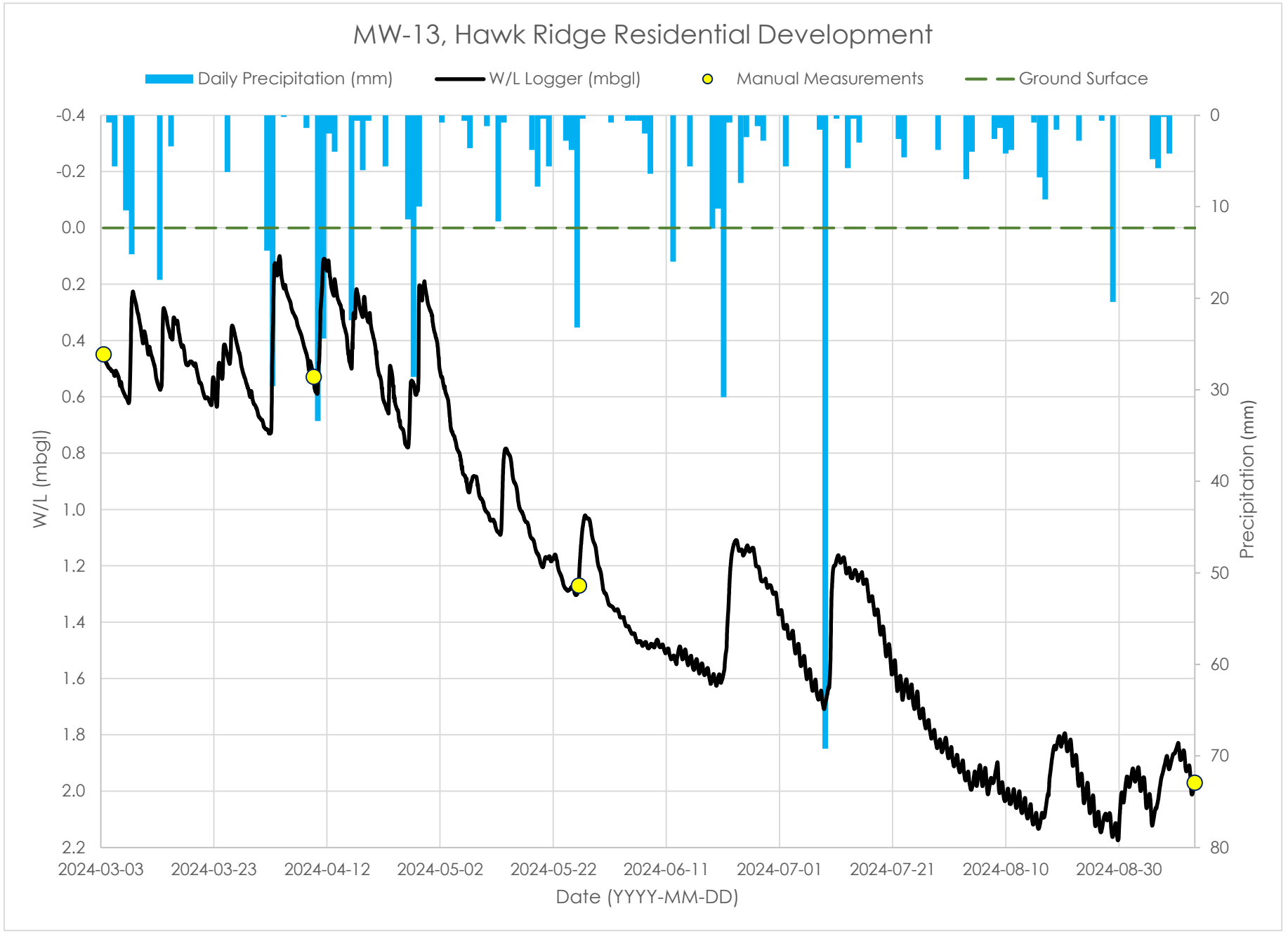

MW-8, Hawk Ridge Residential Development
Daily Precipitation (mm)
W/L Logger (mbgl)
Manual Measurements
Ground Surface
W/L (mbgl)
Precipitation (mm)
-0.4
-0.2
0.0
0.2
0.4
0.6
0.8
1.0
1.2
1.4
1.6
1.8
2.0
2.2
0
10
20
30
40
50
60
70
80
2024-03-03
2024-03-23
2024-04-12
2024-05-02
2024-05-22
2024-06-11
2024-07-01
2024-07-21
2024-08-10
2024-08-30
Date (YYYY-MM-DD)

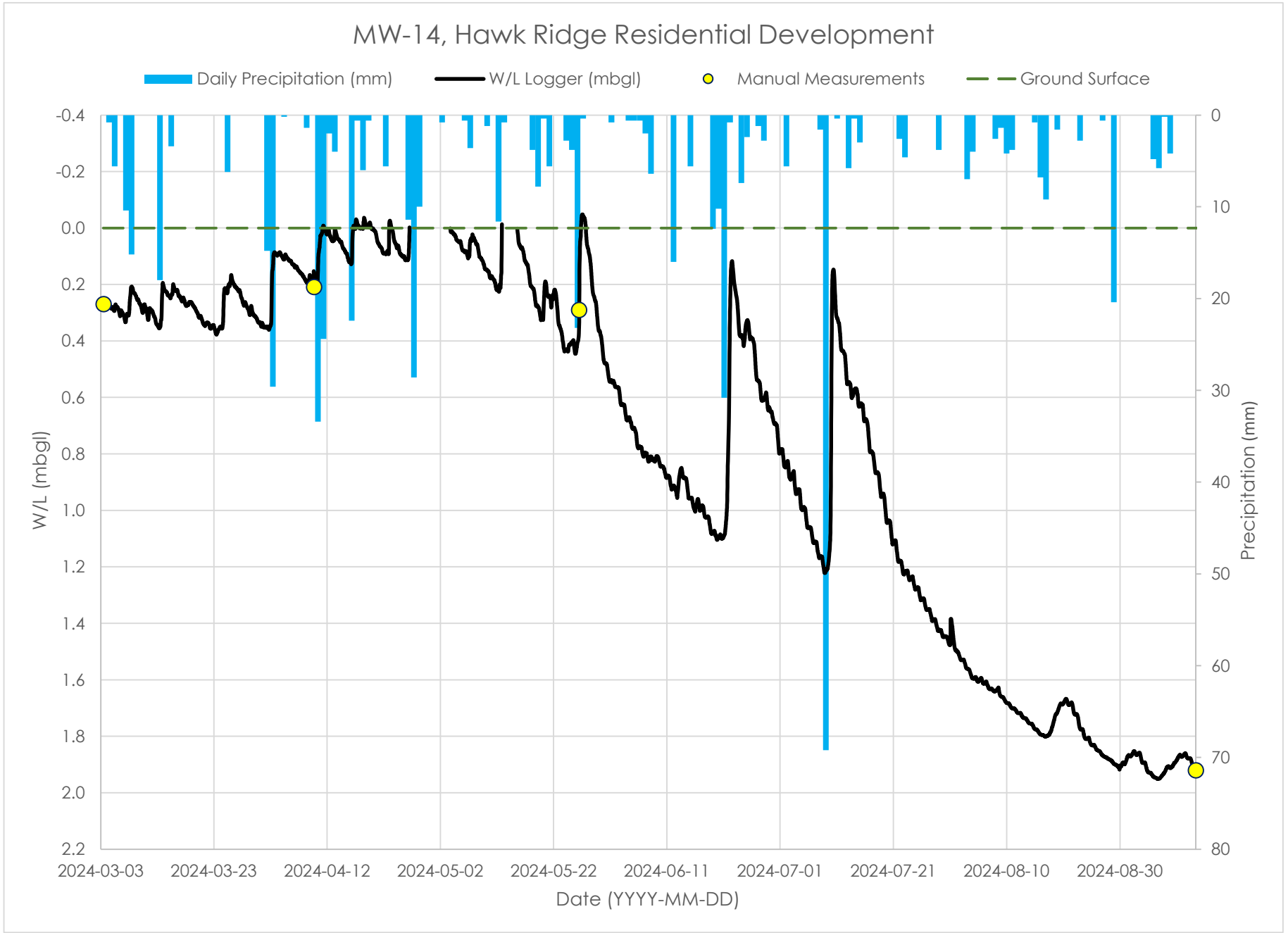

MW-9, Hawk Ridge Residential Development
Daily Precipitation (mm)
W/L Logger (mbgl)
Manual Measurements
Ground Surface
W/L (mbgl)
Precipitation (mm)
-0.4
-0.2
0.0
0.2
0.4
0.6
0.8
1.0
1.2
1.4
1.6
1.8
2.0
2.2
0
10
20
30
40
50
60
70
80
2024-03-03
2024-03-23
2024-04-12
2024-05-02
2024-05-22
2024-06-11
2024-07-01
2024-07-21
2024-08-10
2024-08-30
Date (YYYY-MM-DD)

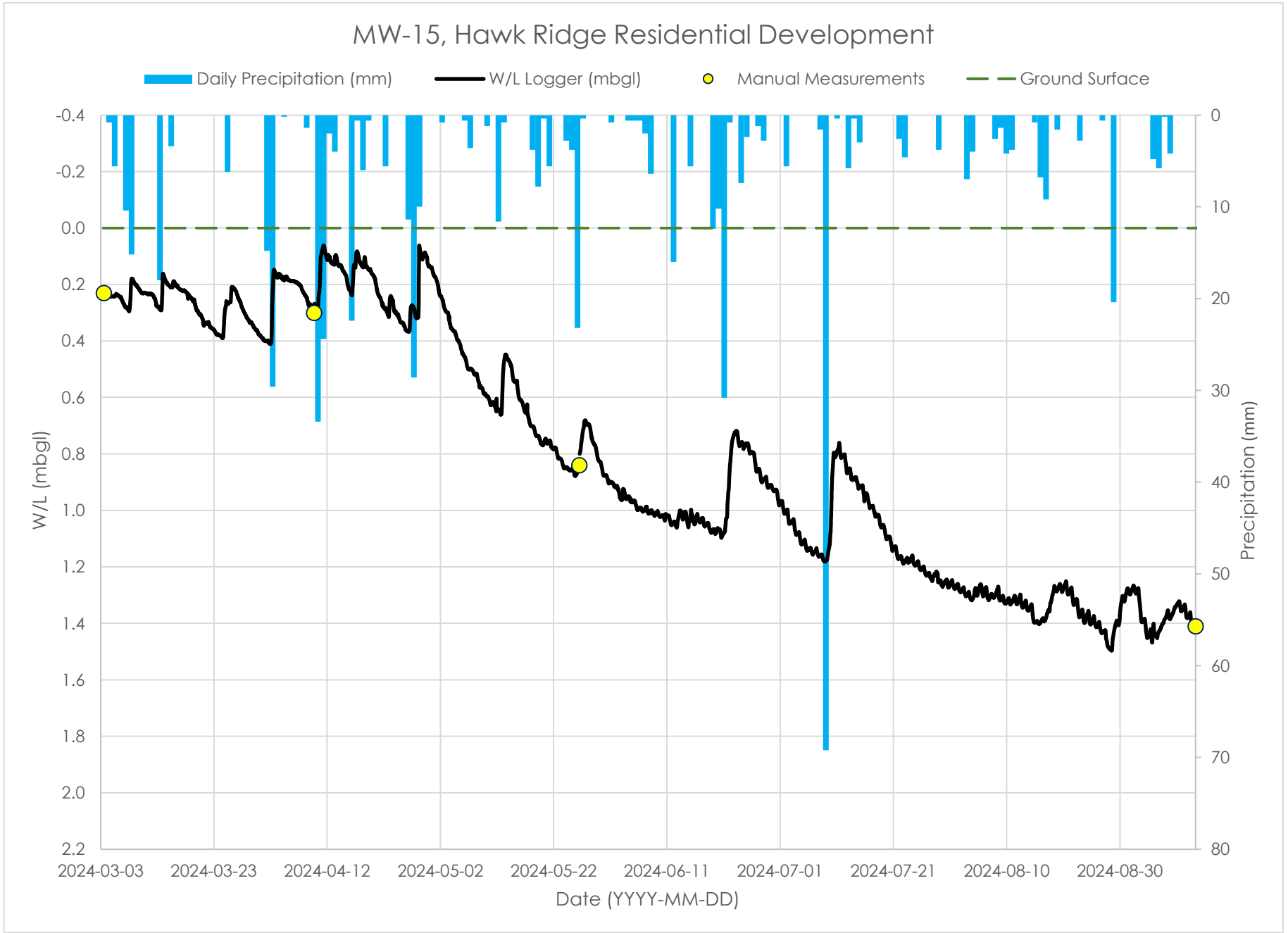

MW-10, Hawk Ridge Residential Development
Daily Precipitation (mm)
W/L Logger (mbgl)
Manual Measurements
Ground Surface
W/L (mbgl)
Precipitation (mm)
-0.4
-0.2
0.0
0.2
0.4
0.6
0.8
1.0
1.2
1.4
1.6
1.8
2.0
2.2
0
10
20
30
40
50
60
70
80
2024-03-03
2024-03-23
2024-04-12
2024-05-02
2024-05-22
2024-06-11
2024-07-01
2024-07-21
2024-08-10
2024-08-30
Date (YYYY-MM-DD)

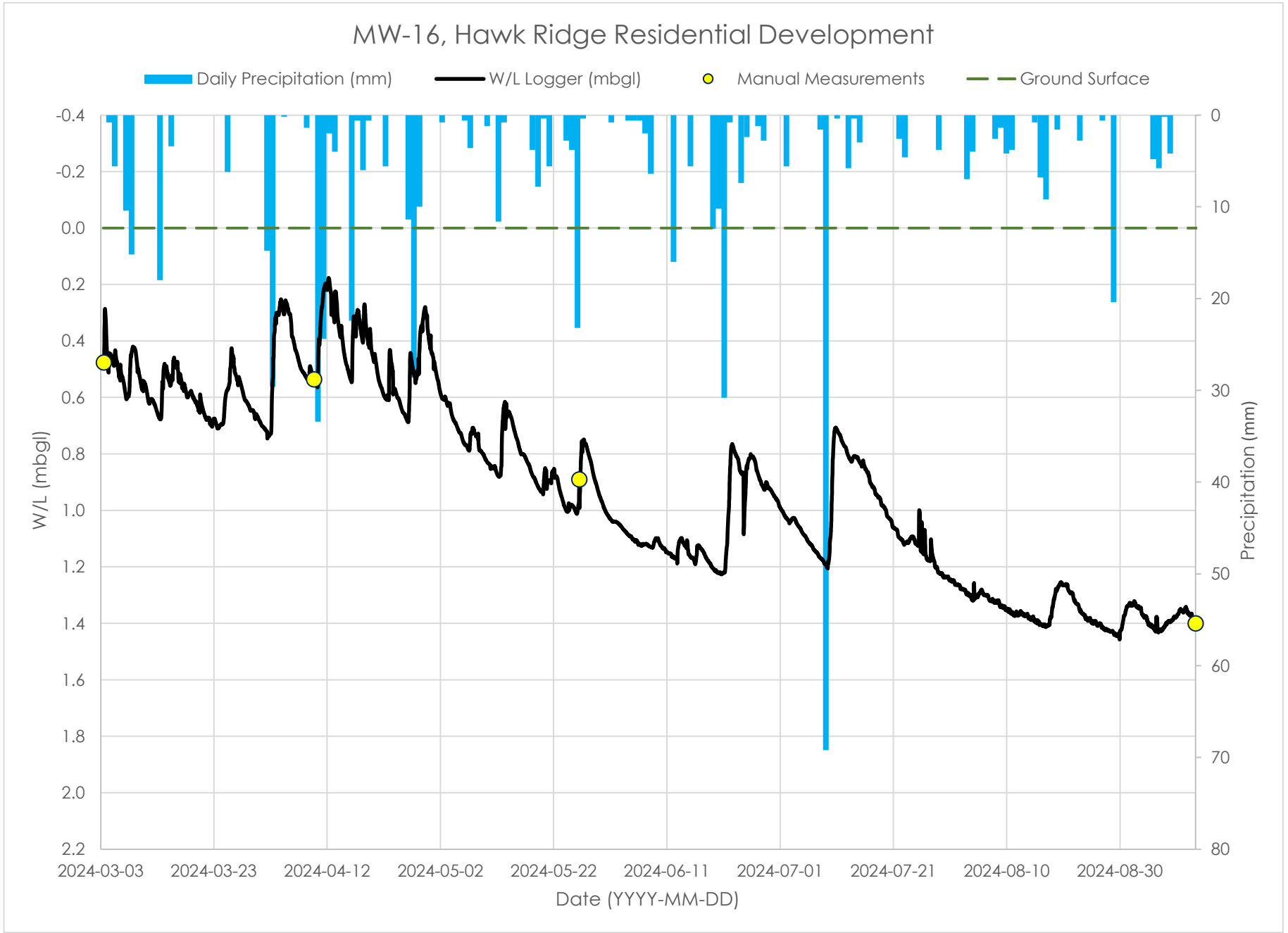

MW-11, Hawk Ridge Residential Development
Daily Precipitation (mm)
W/L Logger (mbgl)
Manual Measurements
Ground Surface
W/L (mbgl)
Precipitation (mm)
-0.4
-0.2
0.0
0.2
0.4
0.6
0.8
1.0
1.2
1.4
1.6
1.8
2.0
2.2
0
10
20
30
40
50
60
70
80
2024-03-03
2024-03-23
2024-04-12
2024-05-02
2024-05-22
2024-06-11
2024-07-01
2024-07-21
2024-08-10
2024-08-30
Date (YYYY-MM-DD)

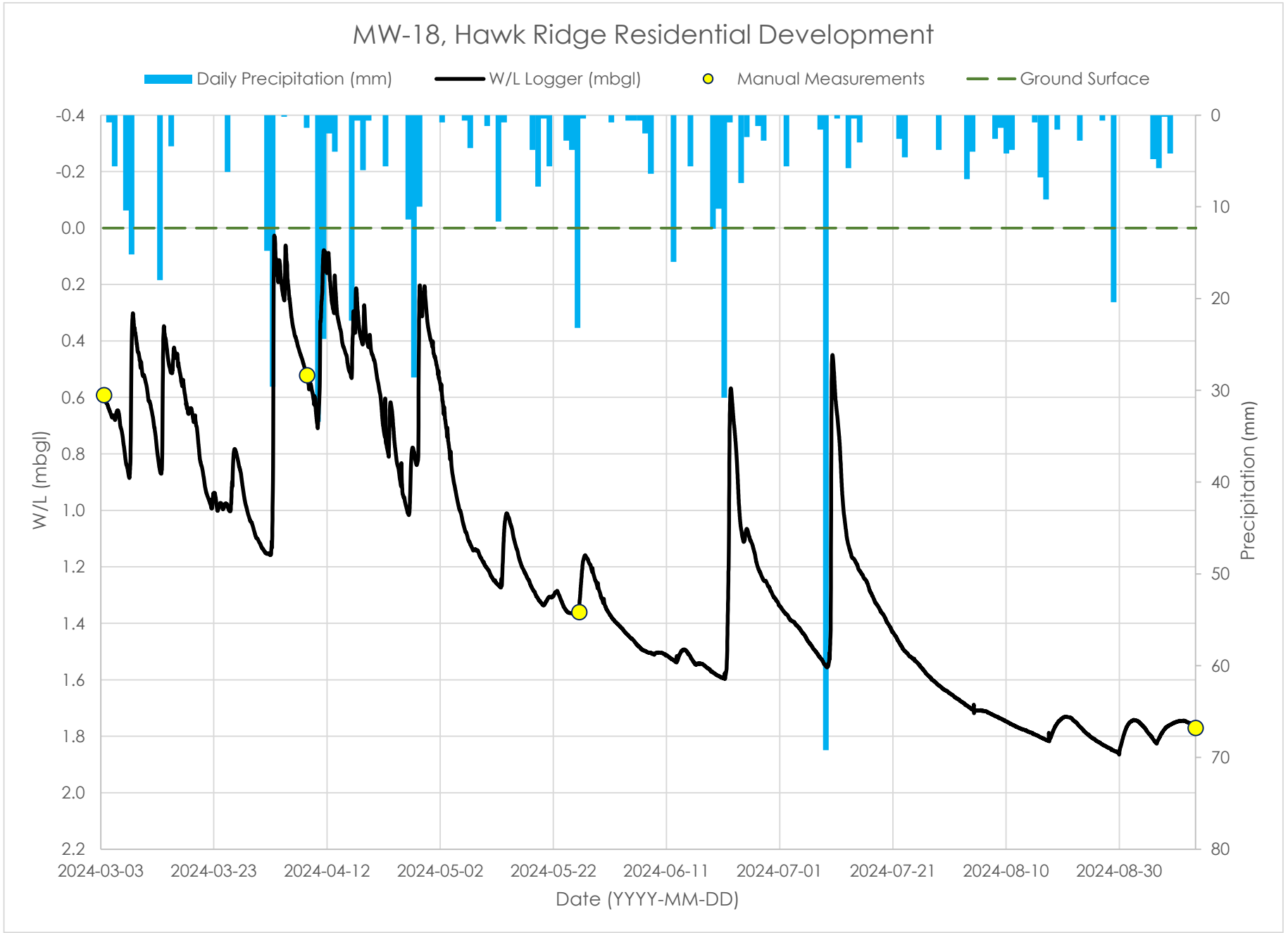

MW-12, Hawk Ridge Residential Development
Daily Precipitation (mm)
W/L Logger (mbgl)
Manual Measurements
Ground Surface
W/L (mbgl)
Precipitation (mm)
-0.4
-0.2
0.0
0.2
0.4
0.6
0.8
1.0
1.2
1.4
1.6
1.8
2.0
2.2
0
10
20
30
40
50
60
70
80
2024-03-03
2024-03-23
2024-04-12
2024-05-02
2024-05-22
2024-06-11
2024-07-01
2024-07-21
2024-08-10
2024-08-30
Date (YYYY-MM-DD)

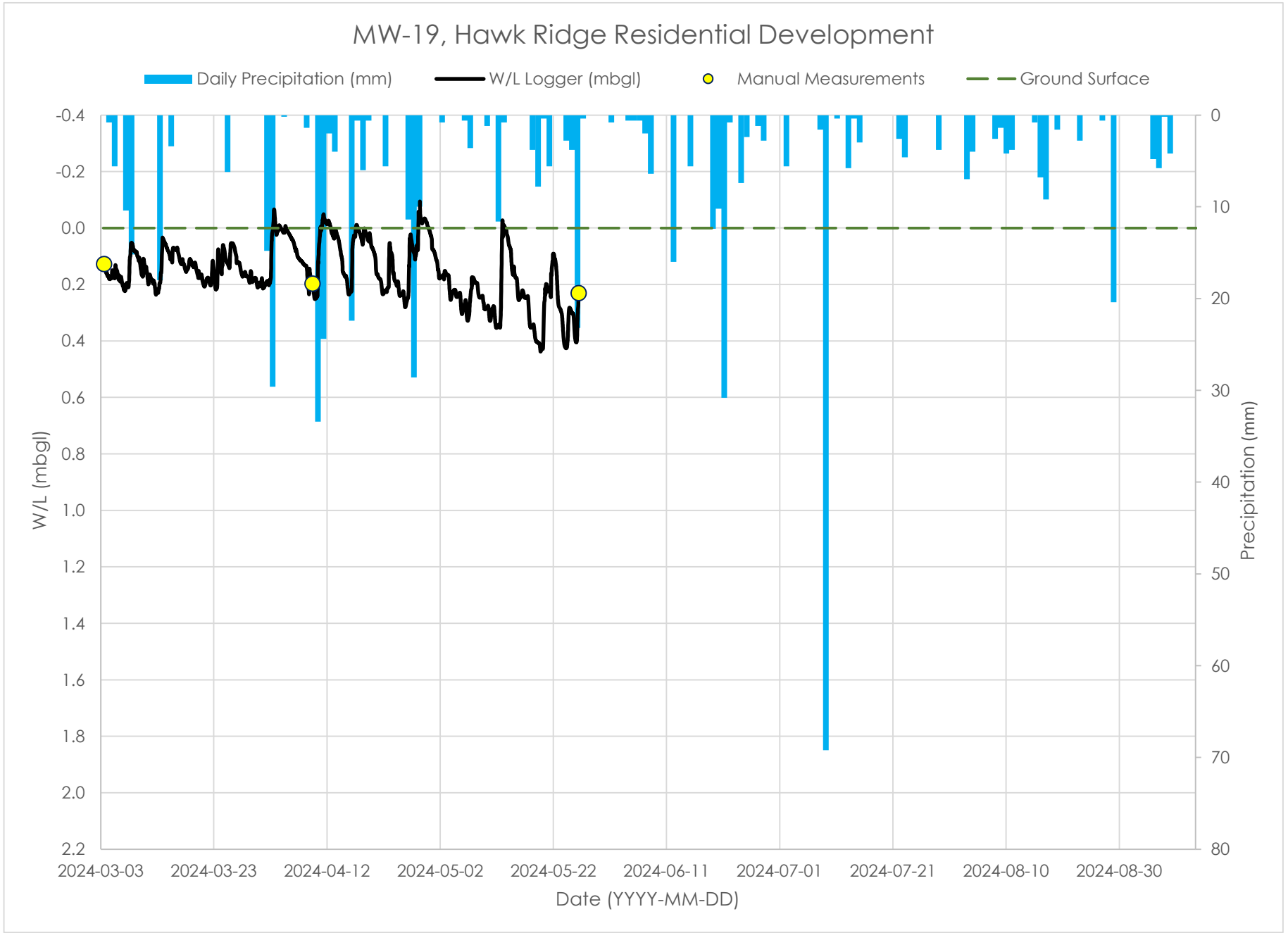

MW-13, Hawk Ridge Residential Development
Daily Precipitation (mm)
W/L Logger (mbgl)
Manual Measurements
Ground Surface
W/L (mbgl)
Precipitation (mm)
-0.4
-0.2
0.0
0.2
0.4
0.6
0.8
1.0
1.2
1.4
1.6
1.8
2.0
2.2
0
10
20
30
40
50
60
70
80
2024-03-03
2024-03-23
2024-04-12
2024-05-02
2024-05-22
2024-06-11
2024-07-01
2024-07-21
2024-08-10
2024-08-30
Date (YYYY-MM-DD)

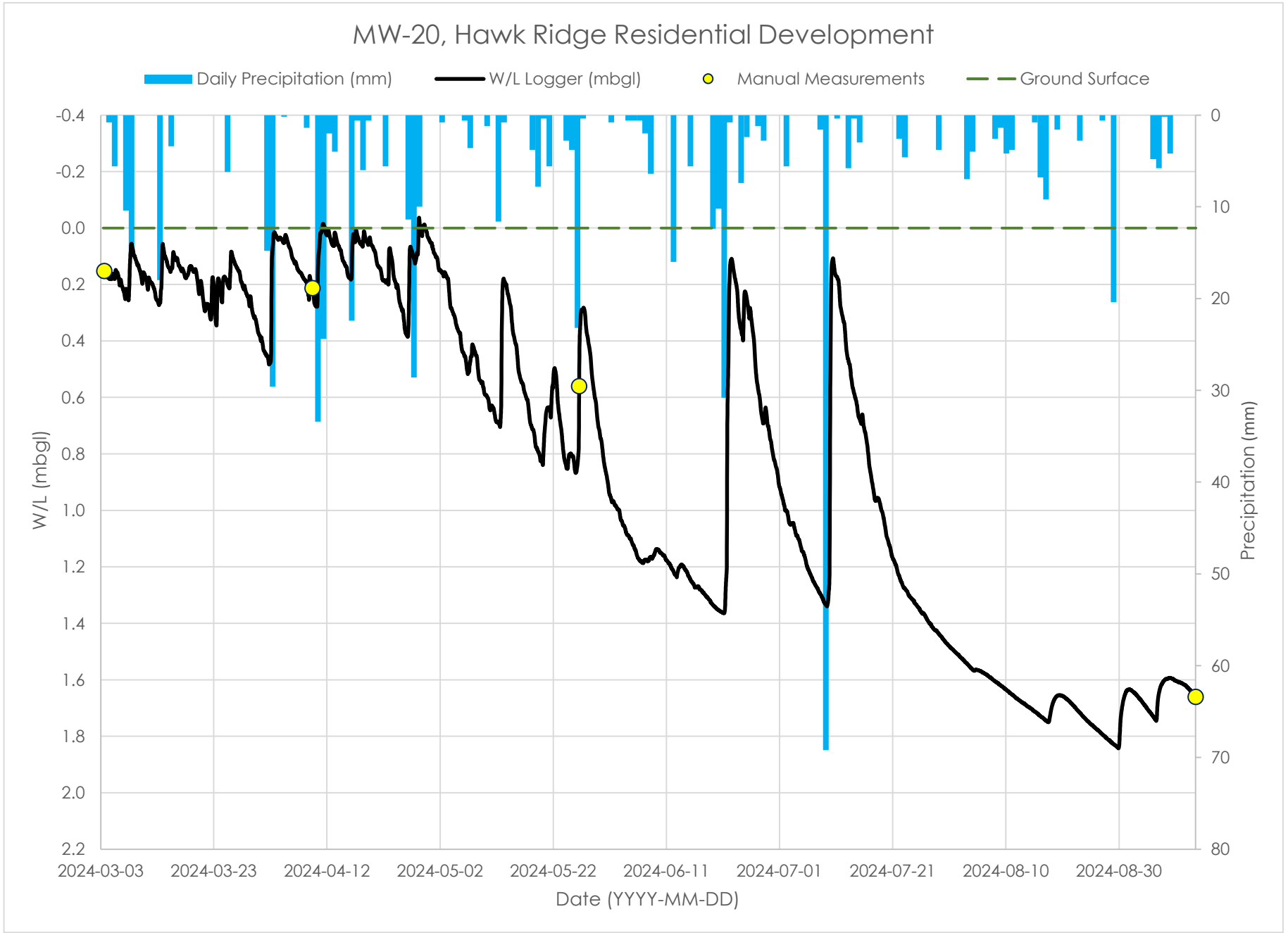

MW-14, Hawk Ridge Residential Development
Daily Precipitation (mm)
W/L Logger (mbgl)
Manual Measurements
Ground Surface
W/L (mbgl)
Precipitation (mm)
-0.4
-0.2
0.0
0.2
0.4
0.6
0.8
1.0
1.2
1.4
1.6
1.8
2.0
2.2
0
10
20
30
40
50
60
70
80
2024-03-03
2024-03-23
2024-04-12
2024-05-02
2024-05-22
2024-06-11
2024-07-01
2024-07-21
2024-08-10
2024-08-30
Date (YYYY-MM-DD)

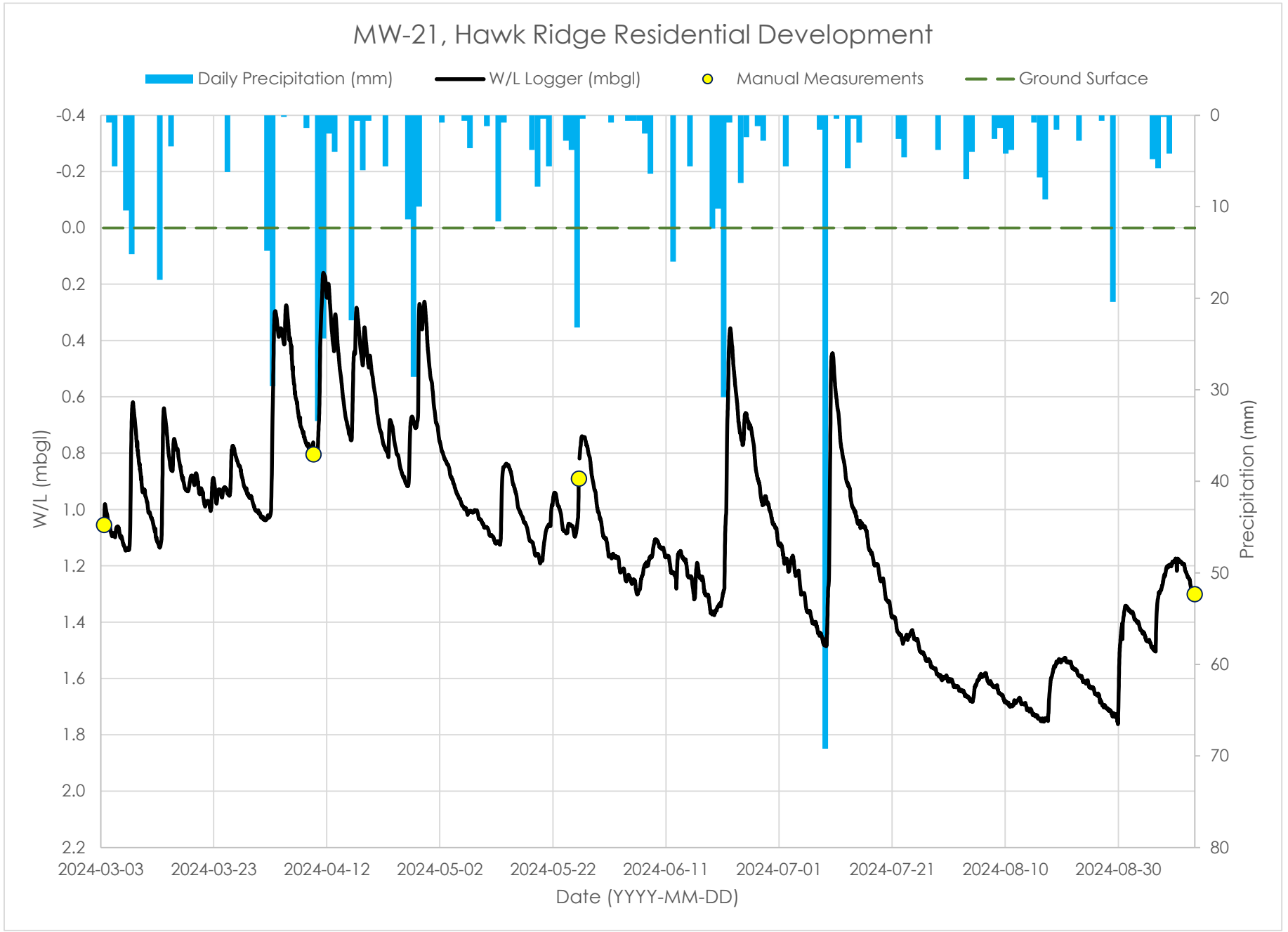

MW-15, Hawk Ridge Residential Development
Daily Precipitation (mm)
W/L Logger (mbgl)
Manual Measurements
Ground Surface
W/L (mbgl)
Precipitation (mm)
-0.4
-0.2
0.0
0.2
0.4
0.6
0.8
1.0
1.2
1.4
1.6
1.8
2.0
2.2
0
10
20
30
40
50
60
70
80
2024-03-03
2024-03-23
2024-04-12
2024-05-02
2024-05-22
2024-06-11
2024-07-01
2024-07-21
2024-08-10
2024-08-30
Date (YYYY-MM-DD)

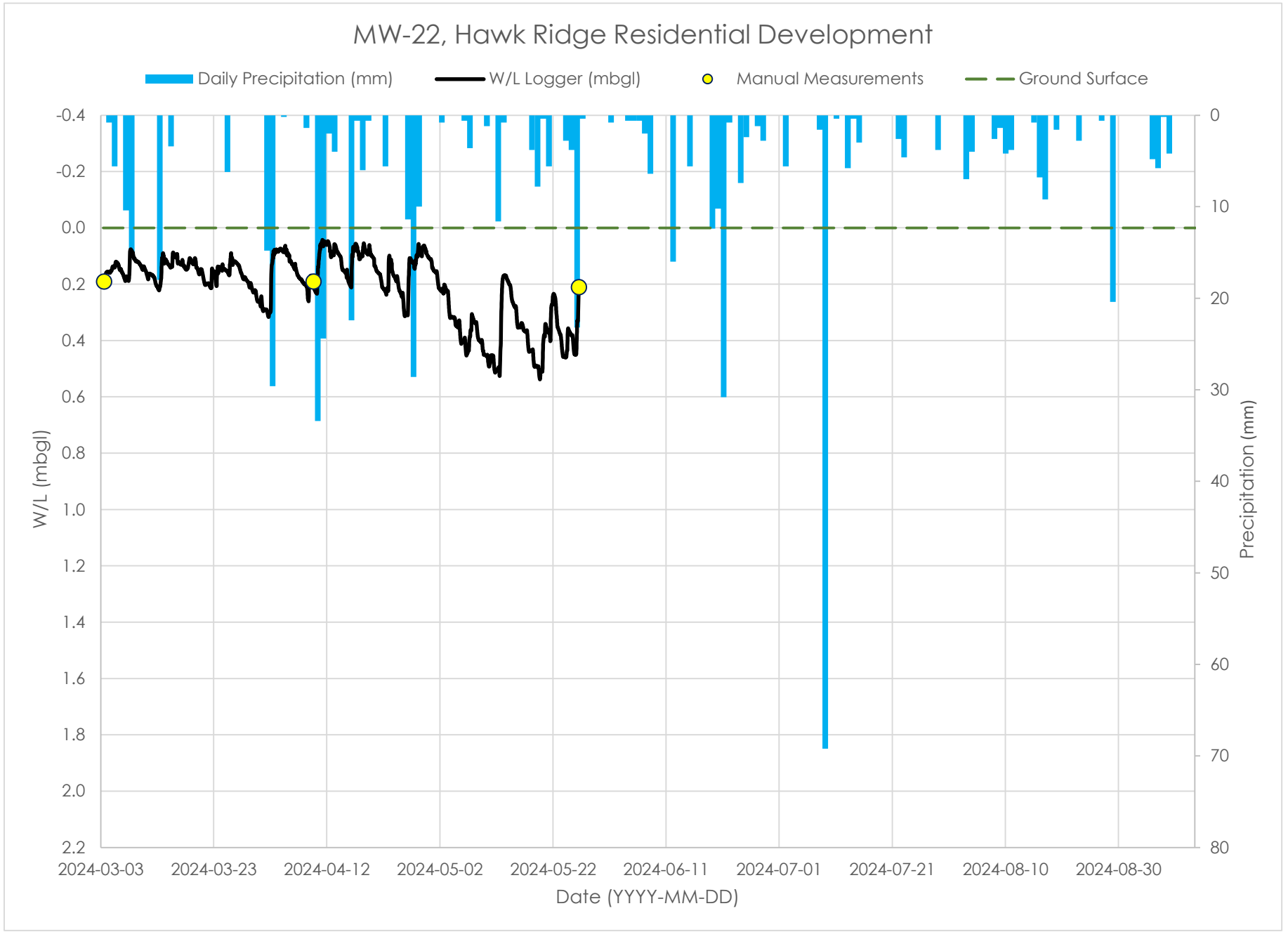

MW-16, Hawk Ridge Residential Development
Daily Precipitation (mm)
W/L Logger (mbgl)
Manual Measurements
Ground Surface
W/L (mbgl)
Precipitation (mm)
-0.4
-0.2
0.0
0.2
0.4
0.6
0.8
1.0
1.2
1.4
1.6
1.8
2.0
2.2
0
10
20
30
40
50
60
70
80
2024-03-03
2024-03-23
2024-04-12
2024-05-02
2024-05-22
2024-06-11
2024-07-01
2024-07-21
2024-08-10
2024-08-30
Date (YYYY-MM-DD)

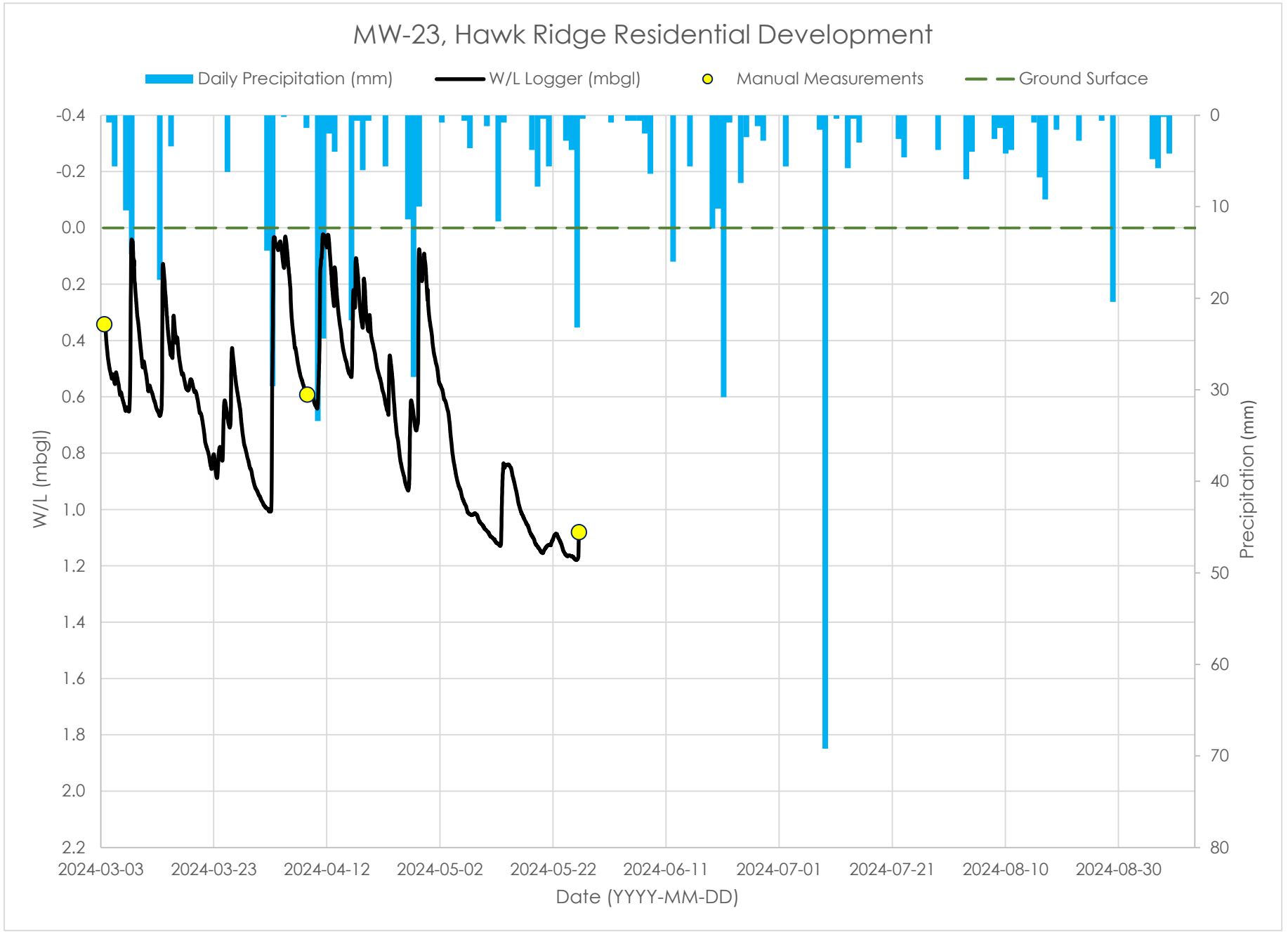

MW-18, Hawk Ridge Residential Development
Daily Precipitation (mm)
W/L Logger (mbgl)
Manual Measurements
Ground Surface
W/L (mbgl)
Precipitation (mm)
-0.4
-0.2
0.0
0.2
0.4
0.6
0.8
1.0
1.2
1.4
1.6
1.8
2.0
2.2
0
10
20
30
40
50
60
70
80
2024-03-03
2024-03-23
2024-04-12
2024-05-02
2024-05-22
2024-06-11
2024-07-01
2024-07-21
2024-08-10
2024-08-30
Date (YYYY-MM-DD)

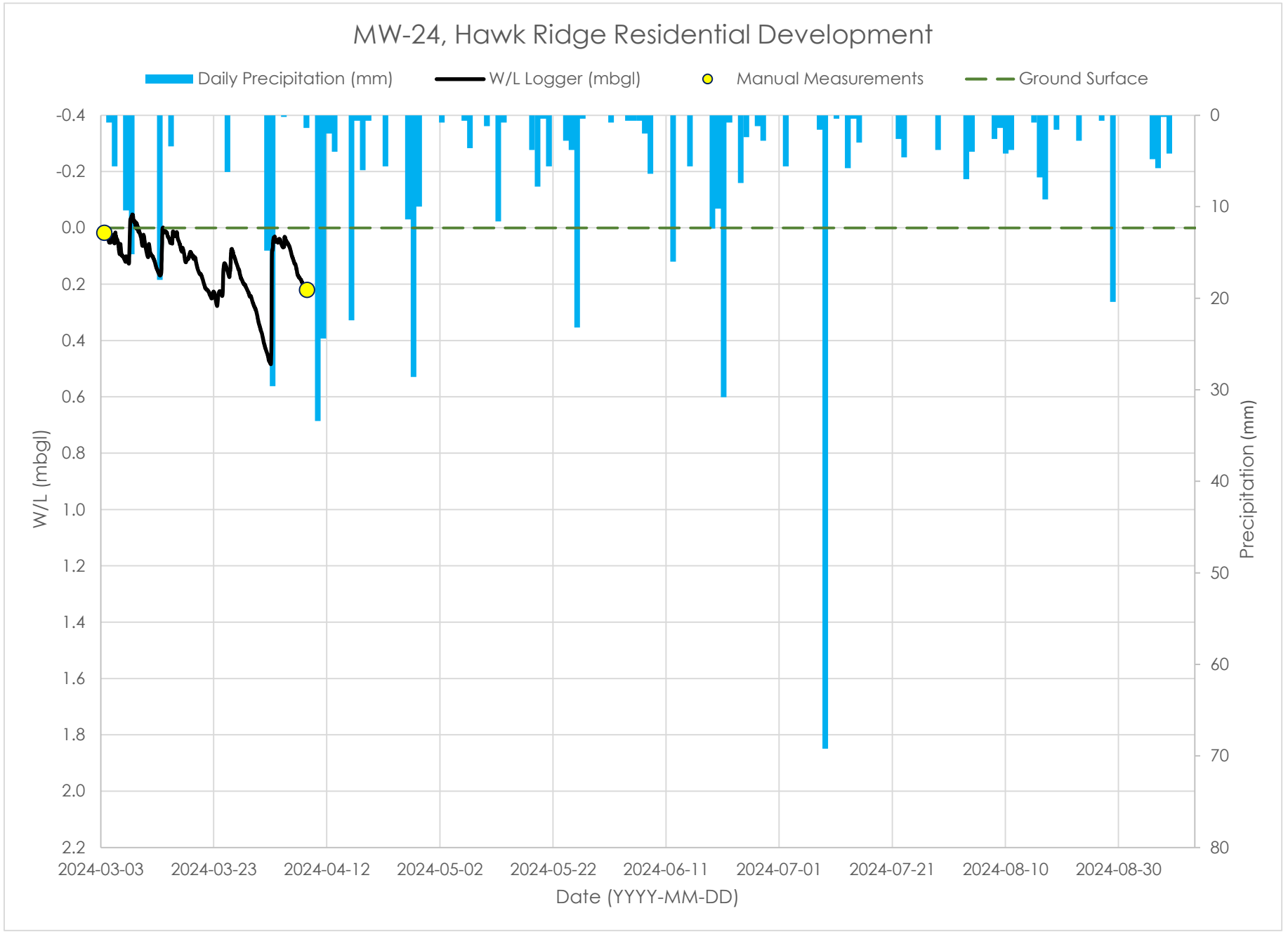

MW-19, Hawk Ridge Residential Development
Daily Precipitation (mm)
W/L Logger (mbgl)
Manual Measurements
Ground Surface
W/L (mbgl)
-0.4
-0.2
0.0
0.2
0.4
0.6
0.8
1.0
1.2
1.4
1.6
1.8
2.0
2.2
Precipitation (mm)
0
10
20
30
40
50
60
70
80
2024-03-03
2024-03-23
2024-04-12
2024-05-02
2024-05-22
2024-06-11
2024-07-01
2024-07-21
2024-08-10
2024-08-30
Date (YYYY-MM-DD)


MW-20, Hawk Ridge Residential Development
Daily Precipitation (mm)
W/L Logger (mbgl)
Manual Measurements
Ground Surface
W/L (mbgl)
Precipitation (mm)
-0.4
-0.2
0.0
0.2
0.4
0.6
0.8
1.0
1.2
1.4
1.6
1.8
2.0
2.2
0
10
20
30
40
50
60
70
80
2024-03-03
2024-03-23
2024-04-12
2024-05-02
2024-05-22
2024-06-11
2024-07-01
2024-07-21
2024-08-10
2024-08-30
Date (YYYY-MM-DD)


MW-21, Hawk Ridge Residential Development
Daily Precipitation (mm)
W/L Logger (mbgl)
Manual Measurements
Ground Surface
W/L (mbgl)
Precipitation (mm)
-0.4
-0.2
0.0
0.2
0.4
0.6
0.8
1.0
1.2
1.4
1.6
1.8
2.0
2.2
0
10
20
30
40
50
60
70
80
2024-03-03
2024-03-23
2024-04-12
2024-05-02
2024-05-22
2024-06-11
2024-07-01
2024-07-21
2024-08-10
2024-08-30
Date (YYYY-MM-DD)


MW-22, Hawk Ridge Residential Development
Daily Precipitation (mm)
W/L Logger (mbgl)
Manual Measurements
Ground Surface
W/L (mbgl)
Precipitation (mm)
-0.4
-0.2
0.0
0.2
0.4
0.6
0.8
1.0
1.2
1.4
1.6
1.8
2.0
2.2
0
10
20
30
40
50
60
70
80
2024-03-03
2024-03-23
2024-04-12
2024-05-02
2024-05-22
2024-06-11
2024-07-01
2024-07-21
2024-08-10
2024-08-30
Date (YYYY-MM-DD)


MW-23, Hawk Ridge Residential Development
Daily Precipitation (mm)
W/L Logger (mbgl)
Manual Measurements
Ground Surface
W/L (mbgl)
Precipitation (mm)
-0.4
-0.2
0.0
0.2
0.4
0.6
0.8
1.0
1.2
1.4
1.6
1.8
2.0
2.2
0
10
20
30
40
50
60
70
80
2024-03-03
2024-03-23
2024-04-12
2024-05-02
2024-05-22
2024-06-11
2024-07-01
2024-07-21
2024-08-10
2024-08-30
Date (YYYY-MM-DD)


MW-24, Hawk Ridge Residential Development
Daily Precipitation (mm)
W/L Logger (mbgl)
Manual Measurements
Ground Surface
-0.4
-0.2
0.0
0.2
0.4
0.6
0.8
1.0
1.2
1.4
1.6
1.8
2.0
2.2
W/L (mbgl)
0
10
20
30
40
50
60
70
80
Precipitation (mm)
2024-03-03
2024-03-23
2024-04-12
2024-05-02
2024-05-22
2024-06-11
2024-07-01
2024-07-21
2024-08-10
2024-08-30
Date (YYYY-MM-DD)

APPENDIX E

Water Quality Sampling Results

AGAT Laboratories

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
http://www.agatlabs.com

CLIENT NAME: CROZIER & ASSOCIATES
301-40 HURON STREET
COLLINGWOOD, ON L9Y4R3
905-875-0026
ATTENTION TO: Evan Finbow
PROJECT: Hawk Ridge
AGAT WORK ORDER: 23T015508
MICROBIOLOGY ANALYSIS REVIEWED BY: Nivine Basily, Inorganics Report Writer
WATER ANALYSIS REVIEWED BY: Yris Verastegui, Report Reviewer
DATE REPORTED: Apr 25, 2023
PAGES (INCLUDING COVER): 12
VERSION*: 1

Should you require any information regarding this analysis please contact your client services representative at (905) 712-5100

Notes

Disclaimer:

- *All work conducted herein has been done using accepted standard protocols, and generally accepted practices and methods. AGAT test methods may incorporate modifications from the specified reference methods to improve performance.*
- *All samples will be disposed of within 30 days after receipt unless a Long Term Storage Agreement is signed and returned. Some specialty analysis may be exempt, please contact your Client Project Manager for details.*
- *AGAT's liability in connection with any delay, performance or non-performance of these services is only to the Client and does not extend to any other third party. Unless expressly agreed otherwise in writing, AGAT's liability is limited to the actual cost of the specific analysis or analyses included in the services.*
- *This Certificate shall not be reproduced except in full, without the written approval of the laboratory.*
- *The test results reported herewith relate only to the samples as received by the laboratory.*
- *Application of guidelines is provided "as is" without warranty of any kind, either expressed or implied, including, but not limited to, warranties of merchantability, fitness for a particular purpose, or non-infringement. AGAT assumes no responsibility for any errors or omissions in the guidelines contained in this document.*
- *All reportable information as specified by ISO/IEC 17025:2017 is available from AGAT Laboratories upon request.*
- *For environmental samples in the Province of Quebec: The analysis is performed on and results apply to samples as received. A temperature above 6°C upon receipt, as indicated in the Sample Reception Notification (SRN), could indicate the integrity of the samples has been compromised if the delay between sampling and submission to the laboratory could not be minimized.*

AGAT Laboratories

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Certificate of Analysis

AGAT WORK ORDER: 23T015508

PROJECT: Hawk Ridge

CLIENT NAME: CROZIER & ASSOCIATES

ATTENTION TO: Evan Finbow

SAMPLING SITE:Severn, ON

SAMPLED BY:Evan Finbow

Total Coliforms & E. Coli

DATE RECEIVED: 2023-04-18

DATE REPORTED: 2023-04-25

				SAMPLE DESCRIPTION:	1
				SAMPLE TYPE:	Water
				DATE SAMPLED:	2023-04-18 13:40
Parameter	**Unit**	**G / S**	**RDL**	**4923654**	
Escherichia coli - DC Agar	CFU/100mL			0	
Total Coliforms - DC Agar	CFU/100mL			1	

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard

4923654 Escherichia coli, Total Coliforms RDL = 1 CFU/100mL.

Analysis performed at AGAT Toronto (unless marked by *)

Certified By:

ASSOCIATION OF THE CHEMICAL PROFESSION OF ONTARIO
CHARTERED
NIVINE BASILY
CHEMIST

AGAT Laboratories

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Certificate of Analysis

AGAT WORK ORDER: 23T015508

PROJECT: Hawk Ridge

CLIENT NAME: CROZIER & ASSOCIATES

ATTENTION TO: Evan Finbow

SAMPLING SITE:Severn, ON

SAMPLED BY:Evan Finbow

Water Quality Assessment (mg/L)

DATE RECEIVED: 2023-04-18

DATE REPORTED: 2023-04-25

		SAMPLE DESCRIPTION:		1
		SAMPLE TYPE:		Water
		DATE SAMPLED:		2023-04-18 13:40
Parameter	**Unit**	**G / S**	**RDL**	**4923654**
Electrical Conductivity	µS/cm		2	1030
pH	pH Units		NA	7.80
Saturation pH (Calculated)				6.99
Langelier Index (Calculated)				0.812
Hardness (as CaCO3) (Calculated)	mg/L		0.5	369
Total Dissolved Solids	mg/L		10	682
Alkalinity (as CaCO3)	mg/L		5	216
Bicarbonate (as CaCO3)	mg/L		5	216
Carbonate (as CaCO3)	mg/L		5	<5
Hydroxide (as CaCO3)	mg/L		5	<5
Fluoride	mg/L		0.05	<0.05
Chloride	mg/L		0.12	167
Nitrate as N	mg/L		0.05	<0.05
Nitrite as N	mg/L		0.05	<0.05
Bromide	mg/L		0.05	<0.05
Sulphate	mg/L		0.10	24.5
Ortho Phosphate as P	mg/L		0.10	<0.10
Ammonia as N	mg/L		0.02	<0.02
Total Phosphorus	mg/L		0.02	0.03
Total Organic Carbon	mg/L		0.5	<0.5
True Colour	TCU		2.50	<2.50
Turbidity	NTU		0.5	5.3
Total Calcium	mg/L		0.20	84.8
Total Magnesium	mg/L		0.10	38.2
Total Potassium	mg/L		0.50	3.37
Total Sodium	mg/L		0.10	62.6
Total Aluminum	mg/L		0.010	0.073
Total Antimony	mg/L		0.003	<0.003
Total Arsenic	mg/L		0.003	<0.003

Certified By: Iris Verástegui

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Certificate of Analysis

AGAT WORK ORDER: 23T015508

PROJECT: Hawk Ridge

CLIENT NAME: CROZIER & ASSOCIATES

ATTENTION TO: Evan Finbow

SAMPLING SITE:Severn, ON

SAMPLED BY:Evan Finbow

Water Quality Assessment (mg/L)

DATE RECEIVED: 2023-04-18

DATE REPORTED: 2023-04-25

		SAMPLE DESCRIPTION:		1
		SAMPLE TYPE:		Water
		DATE SAMPLED:		2023-04-18 13:40
Parameter	**Unit**	**G / S**	**RDL**	**4923654**
Total Barium	mg/L		0.002	0.279
Total Beryllium	mg/L		0.001	<0.001
Total Boron	mg/L		0.010	0.046
Total Cadmium	mg/L		0.001	<0.001
Total Chromium	mg/L		0.003	<0.003
Total Cobalt	mg/L		0.001	<0.001
Total Copper	mg/L		0.003	<0.003
Total Iron	mg/L		0.010	0.317
Total Lead	mg/L		0.001	<0.001
Total Manganese	mg/L		0.002	0.040
Total Mercury	mg/L		0.0001	<0.0001
Total Molybdenum	mg/L		0.002	<0.002
Total Nickel	mg/L		0.003	<0.003
Total Selenium	mg/L		0.002	<0.002
Total Silver	mg/L		0.002	<0.002
Total Strontium	mg/L		0.005	1.26
Total Thallium	mg/L		0.006	<0.006
Total Tin	mg/L		0.002	<0.002
Total Titanium	mg/L		0.010	<0.010
Total Tungsten	mg/L		0.010	<0.010
Total Uranium	mg/L		0.002	<0.002
Total Vanadium	mg/L		0.002	<0.002
Total Zinc	mg/L		0.020	<0.020
Total Zirconium	mg/L		0.004	<0.004
Aluminum-dissolved	mg/L		0.004	<0.004
Lab Filtration Aluminum Dissolved				2023/04/19

Certified By: Iris Verástegui

AGAT Laboratories

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FAX (905)712-5122
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Certificate of Analysis

AGAT WORK ORDER: 23T015508

PROJECT: Hawk Ridge

CLIENT NAME: CROZIER & ASSOCIATES

ATTENTION TO: Evan Finbow

SAMPLING SITE:Severn, ON

SAMPLED BY:Evan Finbow

Water Quality Assessment (mg/L)

DATE RECEIVED: 2023-04-18

DATE REPORTED: 2023-04-25

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard

4923654 Dilution required, RDL has been increased accordingly.

Analysis performed at AGAT Toronto (unless marked by *)

Certified By: Iris Verástegui

AGAT Laboratories

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Quality Assurance

CLIENT NAME: CROZIER & ASSOCIATES

AGAT WORK ORDER: 23T015508

PROJECT: Hawk Ridge

ATTENTION TO: Evan Finbow

SAMPLING SITE:Severn, ON

SAMPLED BY:Evan Finbow

Microbiology Analysis

RPT Date: Apr 25, 2023			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
Total Coliforms & E. Coli															
Escherichia coli - DC Agar	4921178		0	0	NA										
Total Coliforms - DC Agar	4921178		0	0	NA										

Comments: NA - % RPD Not Applicable.

Certified By:

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Quality Assurance

CLIENT NAME: CROZIER & ASSOCIATES
AGAT WORK ORDER: 23T015508
PROJECT: Hawk Ridge
ATTENTION TO: Evan Finbow
SAMPLING SITE:Severn, ON
SAMPLED BY:Evan Finbow

Water Analysis

RPT Date: Apr 25, 2023

PARAMETER	Batch	Sample Id	DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
			Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
Water Quality Assessment (mg/L)															
Electrical Conductivity	4920940		9400	9410	0.1%	< 2	102%	90%	110%						
pH	4920940		7.60	7.63	0.4%	NA	100%	90%	110%						
Total Dissolved Solids	4925761		312	322	3.2%	< 10	100%	80%	120%						
Alkalinity (as CaCO3)	4920940		350	351	0.3%	< 5	101%	80%	120%						
Bicarbonate (as CaCO3)	4920940		350	351	0.3%	< 5	NA								
Carbonate (as CaCO3)	4920940		<5	<5	NA	< 5	NA								
Hydroxide (as CaCO3)	4920940		<5	<5	NA	< 5	NA								
Fluoride	4923654	4923654	<0.05	<0.05	NA	< 0.05	102%	70%	130%	103%	80%	120%	99%	70%	130%
Chloride	4923654	4923654	167	171	2.4%	< 0.10	94%	70%	130%	96%	80%	120%	NA	70%	130%
Nitrate as N	4923654	4923654	<0.05	<0.05	NA	< 0.05	95%	70%	130%	96%	80%	120%	97%	70%	130%
Nitrite as N	4923654	4923654	<0.05	<0.05	NA	< 0.05	95%	70%	130%	94%	80%	120%	101%	70%	130%
Bromide	4923654	4923654	<0.05	<0.05	NA	< 0.05	94%	70%	130%	98%	80%	120%	100%	70%	130%
Sulphate	4923654	4923654	24.5	26.9	9.3%	< 0.10	97%	70%	130%	96%	80%	120%	96%	70%	130%
Ortho Phosphate as P	4923654	4923654	<0.10	<0.10	NA	< 0.10	102%	70%	130%	95%	80%	120%	103%	70%	130%
Ammonia as N	4925770		0.04	<0.02	NA	< 0.02	104%	70%	130%	99%	80%	120%	90%	70%	130%
Total Phosphorus	4914385		0.04	0.04	NA	< 0.02	102%	70%	130%	99%	80%	120%	88%	70%	130%
Total Organic Carbon	4923654	4923654	<0.5	<0.5	NA	< 0.5	95%	90%	110%	96%	90%	110%	94%	80%	120%
True Colour	4923925		<2.50	<2.50	NA	< 2.5	102%	90%	110%						
Turbidity	4921737		0.7	0.8	NA	< 0.5	NA	80%	120%						
Total Calcium	4923654	4923654	84.8	82.2	3.1%	< 0.20	105%	70%	130%	92%	80%	120%	93%	70%	130%
Total Magnesium	4923654	4923654	38.2	38.1	0.3%	< 0.10	100%	70%	130%	98%	80%	120%	110%	70%	130%
Total Potassium	4923654	4923654	3.37	3.38	0.3%	< 0.50	100%	70%	130%	111%	80%	120%	109%	70%	130%
Total Sodium	4923654	4923654	62.6	62.4	0.3%	< 0.10	99%	70%	130%	104%	80%	120%	117%	70%	130%
Total Aluminum	4923654	4923654	0.073	0.062	16.3%	< 0.010	101%	70%	130%	102%	80%	120%	106%	70%	130%
Total Antimony	4923654	4923654	<0.003	<0.003	NA	< 0.003	101%	70%	130%	100%	80%	120%	105%	70%	130%
Total Arsenic	4923654	4923654	<0.003	<0.003	NA	< 0.003	105%	70%	130%	98%	80%	120%	110%	70%	130%
Total Barium	4923654	4923654	0.279	0.273	2.2%	< 0.002	100%	70%	130%	99%	80%	120%	109%	70%	130%
Total Beryllium	4923654	4923654	<0.001	<0.001	NA	< 0.001	100%	70%	130%	99%	80%	120%	108%	70%	130%
Total Boron	4923654	4923654	0.046	0.043	NA	0.012	99%	70%	130%	100%	80%	120%	109%	70%	130%
Total Cadmium	4923654	4923654	<0.001	<0.001	NA	< 0.001	100%	70%	130%	100%	80%	120%	106%	70%	130%
Total Chromium	4923654	4923654	<0.003	<0.003	NA	< 0.003	101%	70%	130%	93%	80%	120%	94%	70%	130%
Total Cobalt	4923654	4923654	<0.001	<0.001	NA	< 0.001	99%	70%	130%	94%	80%	120%	97%	70%	130%
Total Copper	4923654	4923654	<0.003	<0.003	NA	< 0.003	100%	70%	130%	94%	80%	120%	90%	70%	130%
Total Iron	4923654	4923654	0.317	0.263	18.6%	< 0.010	100%	70%	130%	96%	80%	120%	102%	70%	130%
Total Lead	4923654	4923654	<0.001	<0.001	NA	< 0.001	100%	70%	130%	98%	80%	120%	102%	70%	130%
Total Manganese	4923654	4923654	0.040	0.043	7.2%	< 0.002	100%	70%	130%	90%	80%	120%	103%	70%	130%
Total Mercury	4921737		<0.0001	<0.0001	NA	< 0.0001	102%	70%	130%	98%	80%	120%	106%	70%	130%
Total Molybdenum	4923654	4923654	<0.002	<0.002	NA	< 0.002	101%	70%	130%	99%	80%	120%	97%	70%	130%
Total Nickel	4923654	4923654	<0.003	0.006	NA	< 0.003	96%	70%	130%	91%	80%	120%	92%	70%	130%

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Quality Assurance

CLIENT NAME: CROZIER & ASSOCIATES

AGAT WORK ORDER: 23T015508

PROJECT: Hawk Ridge

ATTENTION TO: Evan Finbow

SAMPLING SITE:Severn, ON

SAMPLED BY:Evan Finbow

Water Analysis (Continued)

RPT Date: Apr 25, 2023			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
Total Selenium	4923654	4923654	<0.002	<0.002	NA	< 0.002	101%	70%	130%	94%	80%	120%	102%	70%	130%
Total Silver	4923654	4923654	<0.002	<0.002	NA	< 0.002	102%	70%	130%	93%	80%	120%	93%	70%	130%
Total Strontium	4923654	4923654	1.26	1.15	9.1%	< 0.005	97%	70%	130%	94%	80%	120%	94%	70%	130%
Total Thallium	4923654	4923654	<0.006	<0.006	NA	< 0.006	101%	70%	130%	100%	80%	120%	102%	70%	130%
Total Tin	4923654	4923654	<0.002	<0.002	NA	< 0.002	104%	70%	130%	102%	80%	120%	107%	70%	130%
Total Titanium	4923654	4923654	<0.010	<0.010	NA	< 0.010	88%	70%	130%	108%	80%	120%	126%	70%	130%
Total Tungsten	4923654	4923654	<0.010	<0.010	NA	< 0.010	100%	70%	130%	100%	80%	120%	106%	70%	130%
Total Uranium	4923654	4923654	<0.002	<0.002	NA	< 0.002	98%	70%	130%	98%	80%	120%	99%	70%	130%
Total Vanadium	4923654	4923654	<0.002	<0.002	NA	< 0.002	98%	70%	130%	97%	80%	120%	98%	70%	130%
Total Zinc	4923654	4923654	<0.020	<0.020	NA	< 0.020	98%	70%	130%	100%	80%	120%	84%	70%	130%
Total Zirconium	4923654	4923654	<0.004	<0.004	NA	< 0.004	102%	70%	130%	105%	80%	120%	103%	70%	130%
Aluminum-dissolved	4923654	4923654	<0.004	<0.004	NA	< 0.004	94%	70%	130%	101%	80%	120%	99%	70%	130%

Comments: NA signifies Not Applicable.
If the RPD value is NA, the results of the duplicates are under 5X the RDL and will not be calculated.
Matrix spike NA: Spike level < native concentration. Matrix spike acceptance limits do not apply and are not calculated.

Certified By: Iris Verástegui

AGAT Laboratories

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Method Summary

CLIENT NAME: CROZIER & ASSOCIATES

AGAT WORK ORDER: 23T015508

PROJECT: Hawk Ridge

ATTENTION TO: Evan Finbow

SAMPLING SITE:Severn, ON

SAMPLED BY:Evan Finbow

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Microbiology Analysis			
Escherichia coli - DC Agar	MIC-93-7010	MOE Method E3407	MF/INCUBATOR
Total Coliforms - DC Agar	MIC-93-7010	EPA 1604	MF/INCUBATOR

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Method Summary

CLIENT NAME: CROZIER & ASSOCIATES

AGAT WORK ORDER: 23T015508

PROJECT: Hawk Ridge

ATTENTION TO: Evan Finbow

SAMPLING SITE:Severn, ON

SAMPLED BY:Evan Finbow

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Water Analysis			
Electrical Conductivity	INOR-93-6000	modified from SM 2510 B	PC TITRATE
pH	INOR-93-6000	modified from SM 4500-H+ B	PC TITRATE
Saturation pH (Calculated)		SM 2320 B	CALCULATION
Langelier Index (Calculated)		SM 2330B	CALCULATION
Hardness (as CaCO3) (Calculated)	MET-93-6105	modified from EPA SW-846 6010C & 200.7 & SM 2340 B	CALCULATION
Total Dissolved Solids	INOR-93-6028	modified from EPA 1684,ON MOECC E3139,SM 2540C,D	BALANCE
Alkalinity (as CaCO3)	INOR-93-6000	Modified from SM 2320 B	PC TITRATE
Bicarbonate (as CaCO3)	INOR-93-6000	modified from SM 2320 B	PC TITRATE
Carbonate (as CaCO3)	INOR-93-6000	modified from SM 2320 B	PC TITRATE
Hydroxide (as CaCO3)	INOR-93-6000	modified from SM 2320 B	PC TITRATE
Fluoride	INOR-93-6004	modified from SM 4110 B	ION CHROMATOGRAPH
Chloride	INOR-93-6004	modified from SM 4110 B	ION CHROMATOGRAPH
Nitrate as N	INOR-93-6004	modified from SM 4110 B	ION CHROMATOGRAPH
Nitrite as N	INOR-93-6004	modified from SM 4110 B	ION CHROMATOGRAPH
Bromide	INOR-93-6004	modified from SM 4110 B	ION CHROMATOGRAPH
Sulphate	INOR-93-6004	modified from SM 4110 B	ION CHROMATOGRAPH
Ortho Phosphate as P	INOR-93-6004	modified from SM 4110 B	ION CHROMATOGRAPH
Ammonia as N	INOR-93-6059	modified from SM 4500-NH3 H	LACHAT FIA
Total Phosphorus	INOR-93-6057	modified from LACHAT 10-115-01-3A	LACHAT FIA
Total Organic Carbon	INOR-93-6049	modified from SM 5310 B	SHIMADZU CARBON ANALYZER
True Colour	INOR-93-6074	modified from SM 2120 B	LACHAT FIA
Turbidity	INOR-93-6000	modified from SM 2130 B	PC TITRATE
Total Calcium	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP/MS
Total Magnesium	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP/MS
Total Potassium	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP/MS
Total Sodium	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP/MS
Total Aluminum	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Antimony	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Arsenic	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Barium	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Beryllium	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Boron	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Cadmium	MET -93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Chromium	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Cobalt	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Copper	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS

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Method Summary

CLIENT NAME: CROZIER & ASSOCIATES

AGAT WORK ORDER: 23T015508

PROJECT: Hawk Ridge

ATTENTION TO: Evan Finbow

SAMPLING SITE:Severn, ON

SAMPLED BY:Evan Finbow

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Total Iron	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Lead	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Manganese	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Mercury	MET-93-6100	modified from EPA 245.2 and SM 3112 B	CVAAS
Total Molybdenum	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Nickel	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Selenium	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Silver	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Strontium	INOR-93-6003	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Thallium	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Tin	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Titanium	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Tungsten	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Uranium	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Vanadium	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Zinc	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Zirconium	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Aluminum-dissolved	MET-93-6103	modified from EPA 200.8 and EPA 3005A	ICP-MS
Lab Filtration Aluminum Dissolved	SR-78-9001		FILTRATION

AGAT Laboratories

5835 Coopers Avenue
Mississauga, Ontario L4Z 1Y2
Ph: 905.712.5100 Fax: 905.712.5122
webearth.agatlabs.com

Chain of Custody Record

If this is a Drinking Water sample, please use Drinking Water Chain of Custody Form (potable water consumed by humans)

Laboratory Use Only

Work Order #: 23T015508

Cooler Quantity: 1 med

Arrival Temperatures: 8.0 | 8.1 | 7.9

Custody Seal Intact: ☐ Yes ☐ No ☑ N/A

Notes: no ice

Report Information:

Company: Crozier Consulting Engineers
Contact: Katrina Shields
Address: 1 First St. Collingwood
Phone: (705) 446-3516 Fax:
Reports to be sent to:
1. Email: Efinbow@cfcrozier.ca
2. Email:

Regulatory Requirements:

(Please check all applicable boxes)

☐ Regulation 153/04
Table (Indicate One) ☐ Ind/Com ☐ Res/Park ☐ Agriculture
Soil Texture (Check One) ☐ Coarse ☐ Fine

☐ Excess Soils R406
Table (Indicate One)
☐ Regulation 558
☐ CCME

☐ Sewer Use ☐ Sanitary ☐ Storm
Region
☐ Prov. Water Quality Objectives (PWQO)
☐ Other
Indicate One

Turnaround Time (TAT) Required:

Regular TAT ☑ 5 to 7 Business Days

Rush TAT (Rush Surcharges Apply)

☐ 3 Business Days ☐ 2 Business Days ☐ Next Business Day

OR Date Required (Rush Surcharges May Apply):

Please provide prior notification for rush TAT
*TAT is exclusive of weekends and statutory holidays

For 'Same Day' analysis, please contact your AGAT CPM

Project Information:

Project: Hawk Ridge
Site Location: Severn, ON
Sampled By: Evan Finbow
AGAT Quote #: PO:
Please note: If quotation number is not provided, client will be billed full price for analysis.

Is this submission for a **Record of Site Condition?** ☐ Yes ☐ No

Report Guideline on *Certificate of Analysis* ☐ Yes ☐ No

Invoice Information:

Bill To Same: Yes ☐ No ☐

Company: Crozier
Contact: Evan Finbow
Address: 1 First St. Collingwood
Email: efinbow@cfcrozier.ca

Sample Matrix Legend

B	Biota
GW	Ground Water
O	Oil
P	Paint
S	Soil
SD	Sediment
SW	Surface Water

Sample Identification	Date Sampled	Time Sampled	# of Containers	Sample Matrix	Comments/ Special Instructions	Field Filtered - Metals, Hg, CrVI, DOC (Y/N)	O. Reg 153: Metals & Inorganics	O. Reg 153: Metals - ☐ CrVI, ☐ Hg, ☐ HWSB	O. Reg 153: BTEX, F1-F4 PHCs	O. Reg 153: PAHs	O. Reg 153: PCBs	O. Reg 153: VOC	O. Reg 153: Aroclors	O. Reg 558: Landfill Disposal Characterization TCLP: ☐ M&I ☐ VOCs ☐ ABNs ☐ B(a)P ☐ PCBs	O. Reg 406: Excess Soils SPLP Rainwater Leach ☐ VOCs ☐ SVOCs	O. Reg 406: Excess Soils Characterization Package pH, ICPMS Metals, BTEX, F1-F4	Corrosivity: Include Moisture ☐ Sulphide ☐	WQA	E.coli, Coliforms					Potentially Hazardous or High Concentration (Y/N)
1	Mar 18/23	1:40 AM PM		GW														4	1					
2		AM PM																						
3		AM PM																						
4		AM PM																						
		AM PM																						
		AM PM																						
		AM PM																						
		AM PM																						
		AM PM																						
		AM PM																						
		AM PM																						

Samples Relinquished By (Print Name and Sign):	Date	Time	Samples Received By (Print Name and Sign):	Date	Time
Katrina Shields	Mar 18/23	3:15	T-Personnel	Apr 18	3:21 pm
Samples Relinquished By (Print Name and Sign):	Date	Time	Samples Received By (Print Name and Sign):	Date	Time
Samples Relinquished By (Print Name and Sign):	Date	Time	Samples Received By (Print Name and Sign):	Date	Time

Page ____ of ____

N°: T - 140964

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MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
http://www.agatlabs.com

CLIENT NAME: CROZIER & ASSOCIATES
301-40 HURON STREET
COLLINGWOOD, ON L9Y4R3
905-875-0026

ATTENTION TO: Evan Finbow

PROJECT: 1935-6133

AGAT WORK ORDER: 24T140380

MICROBIOLOGY ANALYSIS REVIEWED BY: Sheetal Koul , Laboratory Team Lead

WATER ANALYSIS REVIEWED BY: Nivine Basily, Inorganic Team Lead

DATE REPORTED: Apr 26, 2024

PAGES (INCLUDING COVER): 15

VERSION*: 1

Should you require any information regarding this analysis please contact your client services representative at (905) 712-5100

Notes

Disclaimer:

- *All work conducted herein has been done using accepted standard protocols, and generally accepted practices and methods. AGAT test methods may incorporate modifications from the specified reference methods to improve performance.*
- *All samples will be disposed of within 30 days after receipt unless a Long Term Storage Agreement is signed and returned. Some specialty analysis may be exempt, please contact your Client Project Manager for details.*
- *AGAT's liability in connection with any delay, performance or non-performance of these services is only to the Client and does not extend to any other third party. Unless expressly agreed otherwise in writing, AGAT's liability is limited to the actual cost of the specific analysis or analyses included in the services.*
- *This Certificate shall not be reproduced except in full, without the written approval of the laboratory.*
- *The test results reported herewith relate only to the samples as received by the laboratory.*
- *Application of guidelines is provided "as is" without warranty of any kind, either expressed or implied, including, but not limited to, warranties of merchantability, fitness for a particular purpose, or non-infringement. AGAT assumes no responsibility for any errors or omissions in the guidelines contained in this document.*
- *All reportable information as specified by ISO/IEC 17025:2017 is available from AGAT Laboratories upon request.*
- *For environmental samples in the Province of Quebec: The analysis is performed on and results apply to samples as received. A temperature above 6°C upon receipt, as indicated in the Sample Reception Notification (SRN), could indicate the integrity of the samples has been compromised if the delay between sampling and submission to the laboratory could not be minimized.*

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Certificate of Analysis

AGAT WORK ORDER: 24T140380

PROJECT: 1935-6133

CLIENT NAME: CROZIER & ASSOCIATES

ATTENTION TO: Evan Finbow

SAMPLING SITE:

SAMPLED BY:Kelly Reid

Heterotrophic Plate Count in Water

DATE RECEIVED: 2024-04-18

DATE REPORTED: 2024-04-26

				SAMPLE DESCRIPTION:	TW1-24
				SAMPLE TYPE:	Water
				DATE SAMPLED:	2024-04-16 13:45
Parameter	**Unit**	**G / S**	**RDL**	**5804524**	
Heterotrophic Plate Count	CFU/1ml			0	

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard

5804524 Heterotrophic Plate Count RDL = 5 CFU/mL

Analysis performed at AGAT Toronto (unless marked by *)

Certified By:

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Certificate of Analysis

AGAT WORK ORDER: 24T140380

PROJECT: 1935-6133

CLIENT NAME: CROZIER & ASSOCIATES

ATTENTION TO: Evan Finbow

SAMPLING SITE:

SAMPLED BY:Kelly Reid

Total Coliforms & E.Coli (MI-Agar)

DATE RECEIVED: 2024-04-18

DATE REPORTED: 2024-04-26

				SAMPLE DESCRIPTION:	TW1-24
				SAMPLE TYPE:	Water
				DATE SAMPLED:	2024-04-16 13:45
Parameter	**Unit**	**G / S**	**RDL**	**5804524**	
Escherichia coli	CFU/100mL	0		0	
Total Coliforms	CFU/100mL	0		0	

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to O. Reg 169/03 - Ontario Drinking Water Quality Standards. Na value derived from O. Reg 248
Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.

5804524 Escherichia coli, Total Coliforms RDL = 1 CFU/100mL.

Analysis performed at AGAT Toronto (unless marked by *)

Certified By:

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Certificate of Analysis

AGAT WORK ORDER: 24T140380

PROJECT: 1935-6133

CLIENT NAME: CROZIER & ASSOCIATES

ATTENTION TO: Evan Finbow

SAMPLING SITE:

SAMPLED BY:Kelly Reid

DRINKING WATER - Water Quality Assessment (mg/L)

DATE RECEIVED: 2024-04-18

DATE REPORTED: 2024-04-26

				SAMPLE DESCRIPTION:	TW1-24
				SAMPLE TYPE:	Water
				DATE SAMPLED:	2024-04-16 13:45
Parameter	Unit	G / S: A	G / S: B	RDL	5804524
Electrical Conductivity	µS/cm			2	927
pH	pH Units	6.5-8.5		NA	7.64
Hardness (as CaCO3) (Calculated)	mg/L	80-100		0.5	369
Total Dissolved Solids	mg/L	500		10	664[>A]
Alkalinity (as CaCO3)	mg/L	30-500		5	308
Fluoride	mg/L		1.5	0.05	<0.05[<B]
Chloride	mg/L	250		0.12	206[<A]
Nitrate as N	mg/L		10.0	0.05	2.19[<B]
Nitrite as N	mg/L		1.0	0.05	<0.05[<B]
Bromide	mg/L			0.05	<0.05
Sulphate	mg/L	500		0.10	25.9[<A]
Ortho Phosphate as P	mg/L			0.10	<0.10
Ammonia as N	mg/L			0.02	<0.02
Total Phosphorus	mg/L			0.02	<0.02
Total Organic Carbon	mg/L			0.5	0.6
Apparent Colour	TCU	5		2.50	<2.50[<A]
Turbidity	NTU	5		0.5	0.8[<A]
Total Calcium	mg/L			0.32	96.0
Total Magnesium	mg/L			0.34	31.3
Total Potassium	mg/L			1.15	3.46
Total Sodium	mg/L	200	20	0.45	89.4[B-A]
Total Aluminum	mg/L	0.1		0.010	0.017[<A]
Total Antimony	mg/L		0.006	0.003	<0.003[<B]
Total Arsenic	mg/L		0.01	0.003	<0.003[<B]
Total Barium	mg/L		1.0	0.002	0.321[<B]
Total Beryllium	mg/L			0.001	<0.001
Total Boron	mg/L		5.0	0.010	0.026[<B]
Total Cadmium	mg/L		0.005	0.0001	<0.0001[<B]
Total Chromium	mg/L		0.05	0.003	<0.003[<B]

Certified By:

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Certificate of Analysis

AGAT WORK ORDER: 24T140380

PROJECT: 1935-6133

CLIENT NAME: CROZIER & ASSOCIATES

ATTENTION TO: Evan Finbow

SAMPLING SITE:

SAMPLED BY:Kelly Reid

DRINKING WATER - Water Quality Assessment (mg/L)

DATE RECEIVED: 2024-04-18

DATE REPORTED: 2024-04-26

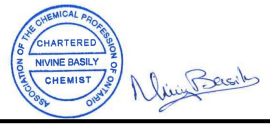
				SAMPLE DESCRIPTION:	TW1-24
				SAMPLE TYPE:	Water
				DATE SAMPLED:	2024-04-16 13:45
Parameter	**Unit**	**G / S: A**	**G / S: B**	**RDL**	**5804524**
Total Cobalt	mg/L			0.0005	<0.0005
Total Copper	mg/L	1		0.002	<0.002[<A]
Total Iron	mg/L	0.3		0.050	<0.050[<A]
Total Lead	mg/L		0.010	0.0005	<0.0005[<B]
Total Manganese	mg/L	0.05		0.002	0.004[<A]
Total Mercury	mg/L		0.001	0.0001	<0.0001[<B]
Total Molybdenum	mg/L			0.002	<0.002
Total Nickel	mg/L			0.003	<0.003
Total Selenium	mg/L	0.01	0.01	0.002	<0.002[<A]
Total Silver	mg/L			0.0001	<0.0001
Total Strontium	mg/L			0.005	0.293
Total Thallium	mg/L			0.0003	<0.0003
Total Tin	mg/L			0.002	<0.002
Total Titanium	mg/L			0.010	<0.010
Total Tungsten	mg/L			0.010	<0.010
Total Uranium	mg/L		0.02	0.0005	0.0008[<B]
Total Vanadium	mg/L			0.002	<0.002
Total Zinc	mg/L	5		0.020	<0.020[<A]
Total Zirconium	mg/L			0.004	<0.004

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: A Refers to O. Reg 169/03 - Ontario Drinking Water Quality Standards - Aesthetic Objectives and Operational Guidelines, B Refers to O. Reg 169/03 - Ontario Drinking Water Quality Standards. Na value derived from O. Reg 248
Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.

5804524 Dilution required, RDL has been increased accordingly.

Analysis performed at AGAT Toronto (unless marked by *)

Certified By:



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Exceedance Summary

AGAT WORK ORDER: 24T140380

PROJECT: 1935-6133

CLIENT NAME: CROZIER & ASSOCIATES

ATTENTION TO: Evan Finbow

SAMPLEID	SAMPLE TITLE	GUIDELINE	ANALYSIS PACKAGE	PARAMETER	UNIT	GUIDEVALUE	RESULT
5804524	TW1-24	ON 169/03 AO&OG	DRINKING WATER - Water Quality Assessment (mg/L)	Hardness (as CaCO3) (Calculated)	mg/L	80-100	369
5804524	TW1-24	ON 169/03 AO&OG	DRINKING WATER - Water Quality Assessment (mg/L)	Total Dissolved Solids	mg/L	500	664
5804524	TW1-24	ON 169/03 MAC/IMAC	DRINKING WATER - Water Quality Assessment (mg/L)	Total Sodium	mg/L	20	89.4

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Quality Assurance

CLIENT NAME: CROZIER & ASSOCIATES

AGAT WORK ORDER: 24T140380

PROJECT: 1935-6133

ATTENTION TO: Evan Finbow

SAMPLING SITE:

SAMPLED BY:Kelly Reid

Microbiology Analysis

RPT Date: Apr 26, 2024			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
Total Coliforms & E.Coli (MI-Agar)															
Escherichia coli	5804524	5804524	0	0	NA										
Total Coliforms	5804524	5804524	0	0	NA										
Heterotrophic Plate Count in Water															
Heterotrophic Plate Count	5804524	5804524	0	0	NA										

Comments: NA - % RPD Not Applicable

Certified By:

AGAT Laboratories
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Quality Assurance

CLIENT NAME: CROZIER & ASSOCIATES

AGAT WORK ORDER: 24T140380

PROJECT: 1935-6133

ATTENTION TO: Evan Finbow

SAMPLING SITE:

SAMPLED BY:Kelly Reid

Water Analysis

RPT Date: Apr 26, 2024

PARAMETER	Batch	Sample Id	DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
			Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
DRINKING WATER - Water Quality Assessment (mg/L)															
Electrical Conductivity	5804524	5804524	927	1010	8.6%	< 2	97%	90%	110%						
pH	5804524	5804524	7.64	7.70	0.8%	NA	100%	90%	110%						
Total Dissolved Solids	5798660		692	694	0.3%	< 10	96%	80%	120%						
Alkalinity (as CaCO3)	5804524	5804524	308	317	2.9%	< 5	108%	80%	120%						
Fluoride	5801067		<0.05	<0.05	NA	< 0.05	101%	70%	130%	100%	80%	120%	104%	70%	130%
Chloride	5801067		24.8	23.5	5.4%	< 0.10	102%	70%	130%	106%	80%	120%	107%	70%	130%
Nitrate as N	5801067		0.80	0.84	4.9%	< 0.05	95%	70%	130%	98%	80%	120%	103%	70%	130%
Nitrite as N	5801067		<0.05	<0.05	NA	< 0.05	98%	70%	130%	99%	80%	120%	101%	70%	130%
Bromide	5801067		<0.05	<0.05	NA	< 0.05	103%	70%	130%	96%	80%	120%	94%	70%	130%
Sulphate	5801067		118	117	0.9%	< 0.10	97%	70%	130%	103%	80%	120%	105%	70%	130%
Ortho Phosphate as P	5801067		<0.10	<0.10	NA	< 0.10	100%	70%	130%	96%	80%	120%	101%	70%	130%
Ammonia as N	5818589		<0.02	<0.02	NA	< 0.02	109%	70%	130%	100%	80%	120%	96%	70%	130%
Total Phosphorus	5805916		<0.02	<0.02	NA	< 0.02	102%	70%	130%	84%	80%	120%	91%	70%	130%
Total Organic Carbon	5804524	5804524	0.6	0.6	NA	< 0.5	106%	90%	110%	101%	90%	110%	99%	80%	120%
Apparent Colour	5808024		7.69	7.36	NA	< 2.5	100%	90%	110%						
Turbidity	5804524	5804524	0.8	0.7	NA	< 0.5	91%	80%	120%						
Total Calcium	5804531		87.9	87.1	0.9%	< 0.20	98%	70%	130%	97%	80%	120%	97%	70%	130%
Total Magnesium	5804531		25.2	24.7	2.0%	< 0.10	97%	70%	130%	96%	80%	120%	95%	70%	130%
Total Potassium	5804531		4.07	4.10	0.7%	< 0.50	99%	70%	130%	97%	80%	120%	95%	70%	130%
Total Sodium	5804531		18.5	18.2	1.6%	< 0.10	99%	70%	130%	98%	80%	120%	96%	70%	130%
Total Aluminum	5808024		0.054	0.032	NA	< 0.010	89%	70%	130%	106%	80%	120%	108%	70%	130%
Total Antimony	5808024		<0.003	<0.003	NA	< 0.003	99%	70%	130%	101%	80%	120%	91%	70%	130%
Total Arsenic	5808024		<0.003	<0.003	NA	< 0.003	94%	70%	130%	95%	80%	120%	94%	70%	130%
Total Barium	5808024		0.025	0.022	12.8%	< 0.002	102%	70%	130%	102%	80%	120%	101%	70%	130%
Total Beryllium	5808024		<0.001	<0.001	NA	< 0.001	88%	70%	130%	82%	80%	120%	89%	70%	130%
Total Boron	5808024		0.022	0.022	NA	< 0.010	102%	70%	130%	95%	80%	120%	101%	70%	130%
Total Cadmium	5808024		0.0001	0.0002	NA	< 0.0001	100%	70%	130%	95%	80%	120%	82%	70%	130%
Total Chromium	5808024		<0.003	<0.003	NA	< 0.003	106%	70%	130%	98%	80%	120%	105%	70%	130%
Total Cobalt	5808024		<0.0005	<0.0005	NA	< 0.0005	89%	70%	130%	101%	80%	120%	105%	70%	130%
Total Copper	5808024		0.294	0.302	2.7%	< 0.002	100%	70%	130%	95%	80%	120%	100%	70%	130%
Total Iron	5808024		0.275	0.276	0.4%	< 0.050	95%	70%	130%	98%	80%	120%	108%	70%	130%
Total Lead	5808024		0.0040	0.0036	10.5%	< 0.0005	95%	70%	130%	96%	80%	120%	89%	70%	130%
Total Manganese	5808024		0.014	0.013	7.4%	< 0.002	101%	70%	130%	95%	80%	120%	109%	70%	130%
Total Mercury	5804524	5804524	<0.0001	<0.0001	NA	< 0.0001	104%	70%	130%	101%	80%	120%	99%	70%	130%
Total Molybdenum	5808024		<0.002	<0.002	NA	< 0.002	101%	70%	130%	102%	80%	120%	95%	70%	130%
Total Nickel	5808024		0.013	0.013	NA	< 0.003	91%	70%	130%	101%	80%	120%	101%	70%	130%
Total Selenium	5808024		<0.002	<0.002	NA	< 0.002	97%	70%	130%	93%	80%	120%	86%	70%	130%
Total Silver	5808024		<0.0001	<0.0001	NA	< 0.0001	99%	70%	130%	91%	80%	120%	86%	70%	130%
Total Strontium	5808024		0.184	0.185	0.5%	< 0.005	102%	70%	130%	96%	80%	120%	120%	70%	130%

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Quality Assurance

CLIENT NAME: CROZIER & ASSOCIATES

AGAT WORK ORDER: 24T140380

PROJECT: 1935-6133

ATTENTION TO: Evan Finbow

SAMPLING SITE:

SAMPLED BY:Kelly Reid

Water Analysis (Continued)

RPT Date: Apr 26, 2024			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
Total Thallium	5808024		<0.0003	<0.0003	NA	< 0.0003	92%	70%	130%	94%	80%	120%	93%	70%	130%
Total Tin	5808024		0.005	0.004	NA	< 0.002	106%	70%	130%	99%	80%	120%	92%	70%	130%
Total Titanium	5808024		<0.010	<0.010	NA	< 0.010	89%	70%	130%	91%	80%	120%	120%	70%	130%
Total Tungsten	5808024		<0.010	<0.010	NA	< 0.010	94%	70%	130%	96%	80%	120%	88%	70%	130%
Total Uranium	5808024		<0.0005	<0.0005	NA	< 0.0005	94%	70%	130%	101%	80%	120%	92%	70%	130%
Total Vanadium	5808024		<0.002	<0.002	NA	< 0.002	92%	70%	130%	98%	80%	120%	111%	70%	130%
Total Zinc	5808024		0.249	0.258	3.6%	< 0.020	102%	70%	130%	93%	80%	120%	90%	70%	130%
Total Zirconium	5808024		<0.004	<0.004	NA	< 0.004	100%	70%	130%	99%	80%	120%	97%	70%	130%

Comments: NA Signifies Not Applicable
Duplicate NA: results are under 5X the RDL and will not be calculated.

Certified By:

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Method Summary

CLIENT NAME: CROZIER & ASSOCIATES

AGAT WORK ORDER: 24T140380

PROJECT: 1935-6133

ATTENTION TO: Evan Finbow

SAMPLING SITE:

SAMPLED BY:Kelly Reid

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Microbiology Analysis			
Heterotrophic Plate Count	MIC-93- 7020	SM 9215 C	INCUBATOR
Escherichia coli	MIC-93-7010	EPA 1604	Membrane Filtration
Total Coliforms	MIC-93-7010	EPA 1604	Membrane Filtration

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Method Summary

CLIENT NAME: CROZIER & ASSOCIATES

AGAT WORK ORDER: 24T140380

PROJECT: 1935-6133

ATTENTION TO: Evan Finbow

SAMPLING SITE:

SAMPLED BY:Kelly Reid

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Water Analysis			
Electrical Conductivity	INOR-93-6000	modified from SM 2510 B	PC TITRATE
pH	INOR-93-6000	modified from SM 4500-H+ B	PC TITRATE
Hardness (as CaCO3) (Calculated)	MET-93-6105	modified from EPA SW-846 6010C & 200.7 & SM 2340 B	CALCULATION
Total Dissolved Solids	INOR-93-6028	modified from EPA 1684,ON MOECC E3139,SM 2540C,D	BALANCE
Alkalinity (as CaCO3)	INOR-93-6000	Modified from SM 2320 B	PC TITRATE
Fluoride	INOR-93-6004	modified from SM 4110 B	ION CHROMATOGRAPH
Chloride	INOR-93-6004	modified from SM 4110 B	ION CHROMATOGRAPH
Nitrate as N	INOR-93-6004	modified from SM 4110 B	ION CHROMATOGRAPH
Nitrite as N	INOR-93-6004	modified from SM 4110 B	ION CHROMATOGRAPH
Bromide	INOR-93-6004	modified from SM 4110 B	ION CHROMATOGRAPH
Sulphate	INOR-93-6004	modified from SM 4110 B	ION CHROMATOGRAPH
Ortho Phosphate as P	INOR-93-6004	modified from SM 4110 B	ION CHROMATOGRAPH
Ammonia as N	INOR-93-6059	modified from SM 4500-NH3 H	LACHAT FIA
Total Phosphorus	INOR-93-6022	modified from SM 4500-P B and SM 4500-P E	SPECTROPHOTOMETER
Total Organic Carbon	INOR-93-6049	modified from SM 5310 B	SHIMADZU CARBON ANALYZER
Apparent Colour	INOR-93-6074	modified from SM 2120 B	LACHAT FIA
Turbidity	INOR-93-6000	modified from SM 2130 B	PC TITRATE
Total Calcium	MET-93-6105	modified from EPA 6010D	ICP/OES
Total Magnesium	MET-93-6105	modified from EPA 6010D	ICP/OES
Total Potassium	MET-93-6105	modified from EPA 6010D	ICP/OES
Total Sodium	MET-93-6105	modified from EPA 6010D	ICP/OES
Total Aluminum	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Antimony	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Arsenic	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Barium	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Beryllium	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Boron	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Cadmium	MET -93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Chromium	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Cobalt	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Copper	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Iron	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Lead	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Manganese	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Mercury	MET-93-6100	modified from EPA 245.2 and SM 3112 B	CVAAS

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Method Summary

CLIENT NAME: CROZIER & ASSOCIATES

AGAT WORK ORDER: 24T140380

PROJECT: 1935-6133

ATTENTION TO: Evan Finbow

SAMPLING SITE:

SAMPLED BY:Kelly Reid

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Total Molybdenum	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Nickel	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Selenium	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Silver	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Strontium	INOR-93-6003	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Thallium	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Tin	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Titanium	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Tungsten	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Uranium	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Vanadium	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Zinc	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Zirconium	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS

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5835 Coopers Avenue
Mississauga, ON
L4Z 1Y2

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Drinking Water Chain of Custody Record

Laboratory Use Only

Arrival Condition: ☐ Good ☐ Poor (complete notes)
Arrival Temperature: 3.1, 3.7, 3.8
AGAT Job Number: 24T140380
Notes: loose ice, 1 melt

Client Information

Company: Crozier Consulting Engineers
Contact: Evan Finbow
Address: 70 Huron St
Collingwood L9Y 3Z1
Phone: 705 434 3436 Fax:
PO #:
Client Project #: 1935-6133
AGAT Quotation #:

Report Information

1. Name: Evan Finbow
Email: efinbow@cfcrozier.ca
2. Name: Kelly Reid
Email: kreid@cfcrozier.ca

Report Format

☑ Single Sample per page
☐ Multiple Samples per page

Facility Type *(Check all that are applicable)*

☐ Large OR ☐ Small
☐ Residential OR ☐ Non-Residential
☐ Municipal OR ☐ Non-Municipal

+ Water Type

(Specify in column below)
Raw (R), Treated (TR), Distribution (D), Tap (TP) Private Well (P)

Turnaround Time Required (TAT) *

Regular TAT	7 to 14 business days	☐	Sch 23/24 only
	5 to 7 business days	☑	
Rush TAT (please provide prior notification)	3 to 4 business days	☐	**Rush surcharges apply**
	2 business days	☐	
	1 business days	☐	

Date Required (Rush surcharges may apply):

Requirements *(Check one)*

☑ O. Regulation 170 ☐ Not Applicable
☐ O. Regulation 243 ☐ Federal
☐ O. Regulation 318/319 ☐ Other

IS THIS WATER BEING CONSUMED BY HUMANS? ☐ Yes ☑ No
DO THE RESULTS REQUIRE REPORTING TO THE MECP OR LOCAL PUBLIC HEALTH UNIT? ☐ Yes ☑ No
FOR RAW WATER (E.G. UNTREATED), IS THE SAMPLE COLLECTED FROM A POINT OF HUMAN CONSUMPTION? ☐ Yes ☑ No

CLIENT IS RESPONSIBLE TO COMPLETE AND SUBMIT LAB SERVICE NOTIFICATION (LSN) FORM TO THE MOECC/PHU. FAILURE TO DO SO MAY DELAY REPORTING.
"NOTIFICATION INFORMATION" MUST BE COMPLETE BELOW UPON SUBMISSION OF SAMPLES. LABORATORY ANALYSIS WILL NOT COMMENCE UNTIL ALL INFORMATION HAS BEEN PROVIDED.

SAMPLE IDENTIFICATION/LOCATION	DATE SAMPLED	TIME SAMPLED	WATER TYPE *	# OF CONTAINERS	CHLORINE RESIDUAL (incl. Units)	STANDING	FLUSHED	COMMENTS/STANDING TIME (IN MINUTES)	Inorganics (Sch. 23)	Organics (Sch. 24)	Lead	Fluoride	Sodium	Turbidity	Nitrate, Nitrite	Trihalomethanes / HAAs	E.coli, Total Coliforms	Water Quality Assessment Package	HPC
TW1-24	Apr 16/24	1:45 AM/PM	R,P	10	N/A		✓										X	X	X
		AM/PM																	
		AM/PM																	
		AM/PM																	
		AM/PM																	
		AM/PM																	
		AM/PM																	

Samples Taken By (Print Name and Sign): Kelly Reid Kelly Reid

* TAT is exclusive of weekends and statutory holidays. Prior arrangements must be made with the laboratory in order to submit Microbiology samples on Fridays

NOTIFICATION INFORMATION - (required to report adverse results as per the *Safe Drinking Water Act*) - Laboratory analysis will not commence until all information is received.

INFORMATION FOR ADVERSE REPORTING			MEDICAL OFFICER OF HEALTH (MOH)	
Waterworks Name:	Phone:	Fax:	Region:	
MOECC# (ie: Waterworks #):	After Hours Phone:		PHU Contact:	
Contact:	Address/Location (if different from client above)		Phone:	Fax:
Email:			Email:	

Samples Relinquished By (Print Name and Sign): Kelly Reid Kelly Reid	Date/Time: Apr 16/24 5:00 pm	Samples Received By (Print Name and Sign):	Date/Time: Apr 18 9:30	Pink Copy - Client Yellow/Golden Copy - AGAT White Copy - AGAT
Samples Relinquished By (Print Name and Sign):	Date/Time:	Samples Received By (Print Name and Sign):	Date/Time:	
Samples Relinquished By (Print Name and Sign):	Date/Time:	Samples Received By (Print Name and Sign):	Date/Time:	

Page 1 of 1

N°: DW 08269

AGAT Laboratories

Non-Reportable Drinking Water Sample Inquiry Form

This form is to ensure your water is tested and reported in accordance with Ontario Regulation 248/03 for testing of Drinking Water under the Safe Drinking Water Act. We require the information below to help uphold our high standard of regulatory compliance, for both AGAT as a laboratory and you, as our valued customer. Please ensure all information is filled out completely and accurately. If you have any questions, please do not hesitate to contact your AGAT Client Project Manager at 905-712-5100.

(1) What is the purpose for your testing? Please provide details below.

Water Quality Analysis

(2) Please answer the following questions.

(a) Is there a request from a Public Health Inspector or a Ministry of Environment Drinking Water Inspector to complete this testing? ☐ Yes ☑ No
If Yes, please contact an AGAT Client Project Manager at 905-712-5100

(b) Is there a provincial order in effect for your water system? ☐ Yes ☑ No
If Yes, please provide details below including limit for the test parameter if not listed with a standard under O.Reg.169/03

(c) Does your facility have a drinking water system (DWS) number provided by either MECP or MOHLTC? ☐ Yes ☑ No

(i) If yes, why is the sample not reportable to either MECP or MOHLTC? Please provide details below.

(ii) If yes, is the test for sodium and/or fluoride? ☐ Yes ☐ No

- If the test is for sodium and/or fluoride, was sodium and/or fluoride testing completed and reported to the ***MECP*** in the last 57 months or ***MOHLTC*** in the last 60 months?
  ☐ Yes ☑ No

As per the SWDA, Sodium and fluoride (if required by DWS) are required to be tested every 5 years (60 months) by the operator. The sodium and/or fluoride adverse are not required to be reported if two samples are less than 5 years apart.

Document #: ADM-78-2533.004
Issued Date: 2020-08-25

(d) Is the water collected from a Federally owned, operated or regulated property or water source? ☐ Yes ☑ No

If Yes, please indicate this on the COC under Requirements

(3) If you are private home owner looking to test your drinking water, please answer the following questions: N/A

(i) Are you consuming this water from the point of sample collection? ☐ Yes ☐ No

(ii) Do you have a water treatment unit installed in your system? ☐ Yes ☐ No

(iii) Is your water collected before or after treatment?

☐ Before ☐ After ☐ Not Applicable

(iv) Are you testing your water due to concerns regarding your plumbing?

☐ Yes ☐ No

If Yes, have you done any improvements to your plumbing recently? Please provide details below.

For further assistance, please contact the MECP at the following phone and email:

(1) For inquiries related to O.Reg.170 or O.Reg.318/319

Email: waterforms@ontario.ca

Phone Number: 1-866-793-2588

(2) For inquiries related to O.Reg.243 (Schools and Daycares)

Phone Number: 1-855-515-1331.

Company Name: Crozier Consulting Engineers

DWCOC#: (if applicable)

Name: Kelly Reid (please print name)

Date: 2024-04-16 (yyyy-mm-dd)

Signature: Kelly Reid

AGAT WorkOrder #: (To be entered by AGAT CPM)

Document #: ADM-78-2533.004
Issued Date: 2020-08-25

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CANADA L4Z 1Y2
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CLIENT NAME: CROZIER & ASSOCIATES
301-40 HURON STREET
COLLINGWOOD, ON L9Y4R3
905-875-0026
ATTENTION TO: Evan Finbow
PROJECT: 1935-6133
AGAT WORK ORDER: 24T140381
WATER ANALYSIS REVIEWED BY: Amanjot Bhela, Lab Operation Manager
DATE REPORTED: Apr 29, 2024
PAGES (INCLUDING COVER): 11
VERSION*: 1

Should you require any information regarding this analysis please contact your client services representative at (905) 712-5100

Notes

Disclaimer:

- *All work conducted herein has been done using accepted standard protocols, and generally accepted practices and methods. AGAT test methods may incorporate modifications from the specified reference methods to improve performance.*
- *All samples will be disposed of within 30 days after receipt unless a Long Term Storage Agreement is signed and returned. Some specialty analysis may be exempt, please contact your Client Project Manager for details.*
- *AGAT's liability in connection with any delay, performance or non-performance of these services is only to the Client and does not extend to any other third party. Unless expressly agreed otherwise in writing, AGAT's liability is limited to the actual cost of the specific analysis or analyses included in the services.*
- *This Certificate shall not be reproduced except in full, without the written approval of the laboratory.*
- *The test results reported herewith relate only to the samples as received by the laboratory.*
- *Application of guidelines is provided "as is" without warranty of any kind, either expressed or implied, including, but not limited to, warranties of merchantability, fitness for a particular purpose, or non-infringement. AGAT assumes no responsibility for any errors or omissions in the guidelines contained in this document.*
- *All reportable information as specified by ISO/IEC 17025:2017 is available from AGAT Laboratories upon request.*
- *For environmental samples in the Province of Quebec: The analysis is performed on and results apply to samples as received. A temperature above 6°C upon receipt, as indicated in the Sample Reception Notification (SRN), could indicate the integrity of the samples has been compromised if the delay between sampling and submission to the laboratory could not be minimized.*

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Certificate of Analysis

AGAT WORK ORDER: 24T140381

PROJECT: 1935-6133

CLIENT NAME: CROZIER & ASSOCIATES

ATTENTION TO: Evan Finbow

SAMPLING SITE:

SAMPLED BY:Kelly Reid

DRINKING WATER - Water Quality Assessment (mg/L)

DATE RECEIVED: 2024-04-18

DATE REPORTED: 2024-04-29

				SAMPLE DESCRIPTION:	MW24
				SAMPLE TYPE:	Water
				DATE SAMPLED:	2024-04-15 11:30
Parameter	Unit	G / S: A	G / S: B	RDL	5804531
Electrical Conductivity	µS/cm			2	497
pH	pH Units	6.5-8.5		NA	7.77
Hardness (as CaCO3) (Calculated)	mg/L	80-100		0.5	323
Total Dissolved Solids	mg/L	500		10	418[<A]
Alkalinity (as CaCO3)	mg/L	30-500		5	250
Fluoride	mg/L		1.5	0.05	<0.05[<B]
Chloride	mg/L	250		0.10	9.78[<A]
Nitrate as N	mg/L		10.0	0.05	<0.05[<B]
Nitrite as N	mg/L		1.0	0.05	<0.05[<B]
Bromide	mg/L			0.05	<0.05
Sulphate	mg/L	500		0.10	75.3[<A]
Ortho Phosphate as P	mg/L			0.10	<0.10
Ammonia as N	mg/L			0.02	0.34
Total Phosphorus	mg/L			0.02	0.15
Total Organic Carbon	mg/L			0.5	11.0
Apparent Colour	TCU	5		2.50	50.3[>A]
Turbidity	NTU	5		0.5	66.3[>A]
Total Calcium	mg/L			0.32	87.9
Total Magnesium	mg/L			0.34	25.2
Total Potassium	mg/L			1.15	4.07
Total Sodium	mg/L	200	20	0.45	18.5[<B]
Total Aluminum	mg/L	0.1		0.010	1.21[>A]
Total Antimony	mg/L		0.006	0.003	<0.003[<B]
Total Arsenic	mg/L		0.01	0.003	<0.003[<B]
Total Barium	mg/L		1.0	0.002	0.107[<B]
Total Beryllium	mg/L			0.001	<0.001
Total Boron	mg/L		5.0	0.010	0.020[<B]
Total Cadmium	mg/L		0.005	0.0001	<0.0001[<B]
Total Chromium	mg/L		0.05	0.003	0.010[<B]

Certified By:

Amanjot Bhela

ASSOCIATION OF THE CHEMICAL PROFESSION OF ONTARIO
CHARTERED
AMANJOT BHELA
CHEMIST

AGAT Laboratories

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MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
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Certificate of Analysis

AGAT WORK ORDER: 24T140381

PROJECT: 1935-6133

CLIENT NAME: CROZIER & ASSOCIATES

ATTENTION TO: Evan Finbow

SAMPLING SITE:

SAMPLED BY:Kelly Reid

DRINKING WATER - Water Quality Assessment (mg/L)

DATE RECEIVED: 2024-04-18

DATE REPORTED: 2024-04-29

				SAMPLE DESCRIPTION:	MW24
				SAMPLE TYPE:	Water
				DATE SAMPLED:	2024-04-15 11:30
Parameter	Unit	G / S: A	G / S: B	RDL	5804531
Total Cobalt	mg/L			0.0005	0.0022
Total Copper	mg/L	1		0.002	0.012[<A]
Total Iron	mg/L	0.3		0.050	2.28[>A]
Total Lead	mg/L		0.010	0.0005	<0.0005[<B]
Total Manganese	mg/L	0.05		0.002	1.19[>A]
Total Mercury	mg/L		0.001	0.0001	<0.0001[<B]
Total Molybdenum	mg/L			0.002	0.004
Total Nickel	mg/L			0.003	0.005
Total Selenium	mg/L	0.01	0.01	0.002	<0.002[<A]
Total Silver	mg/L			0.0001	<0.0001
Total Strontium	mg/L			0.005	0.397
Total Thallium	mg/L			0.0003	<0.0003
Total Tin	mg/L			0.002	0.004
Total Titanium	mg/L			0.010	0.069
Total Tungsten	mg/L			0.010	<0.010
Total Uranium	mg/L		0.02	0.0005	0.0018[<B]
Total Vanadium	mg/L			0.002	0.010
Total Zinc	mg/L	5		0.020	<0.020[<A]
Total Zirconium	mg/L			0.004	<0.004

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: A Refers to O. Reg 169/03 - Ontario Drinking Water Quality Standards - Aesthetic Objectives and Operational Guidelines, B Refers to O. Reg 169/03 - Ontario Drinking Water Quality Standards. Na value derived from O. Reg 248
Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.

5804531 Dilution required, RDL has been increased accordingly.

Analysis performed at AGAT Toronto (unless marked by *)

Certified By:

AGAT Laboratories

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
http://www.agatlabs.com

Exceedance Summary

AGAT WORK ORDER: 24T140381

PROJECT: 1935-6133

CLIENT NAME: CROZIER & ASSOCIATES

ATTENTION TO: Evan Finbow

SAMPLEID	SAMPLE TITLE	GUIDELINE	ANALYSIS PACKAGE	PARAMETER	UNIT	GUIDEVALUE	RESULT
5804531	MW24	ON 169/03 AO&OG	DRINKING WATER - Water Quality Assessment (mg/L)	Apparent Colour	TCU	5	50.3
5804531	MW24	ON 169/03 AO&OG	DRINKING WATER - Water Quality Assessment (mg/L)	Hardness (as CaCO3) (Calculated)	mg/L	80-100	323
5804531	MW24	ON 169/03 AO&OG	DRINKING WATER - Water Quality Assessment (mg/L)	Total Aluminum	mg/L	0.1	1.21
5804531	MW24	ON 169/03 AO&OG	DRINKING WATER - Water Quality Assessment (mg/L)	Total Iron	mg/L	0.3	2.28
5804531	MW24	ON 169/03 AO&OG	DRINKING WATER - Water Quality Assessment (mg/L)	Total Manganese	mg/L	0.05	1.19
5804531	MW24	ON 169/03 AO&OG	DRINKING WATER - Water Quality Assessment (mg/L)	Turbidity	NTU	5	66.3

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Quality Assurance

CLIENT NAME: CROZIER & ASSOCIATES

AGAT WORK ORDER: 24T140381

PROJECT: 1935-6133

ATTENTION TO: Evan Finbow

SAMPLING SITE:

SAMPLED BY:Kelly Reid

Water Analysis

RPT Date: Apr 29, 2024			DUPLICATE				REFERENCE MATERIAL				METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
DRINKING WATER - Water Quality Assessment (mg/L)															
Electrical Conductivity	5804524		927	1010	8.6%	< 2	97%	90%	110%	NA			NA		
pH	5804524		7.64	7.70	0.8%	NA	100%	90%	110%	NA			NA		
Total Dissolved Solids	5798660		692	694	0.3%	< 10	96%	80%	120%	NA			NA		
Alkalinity (as CaCO3)	5804524		308	317	2.9%	< 5	108%	80%	120%	NA			NA		
Fluoride	5801067		<0.05	<0.05	NA	< 0.05	101%	70%	130%	100%	80%	120%	104%	70%	130%
Chloride	5801067		24.8	23.5	5.4%	< 0.10	102%	70%	130%	106%	80%	120%	107%	70%	130%
Nitrate as N	5801067		0.80	0.84	4.9%	< 0.05	95%	70%	130%	98%	80%	120%	103%	70%	130%
Nitrite as N	5801067		<0.05	<0.05	NA	< 0.05	98%	70%	130%	99%	80%	120%	101%	70%	130%
Bromide	5801067		<0.05	<0.05	NA	< 0.05	103%	70%	130%	96%	80%	120%	94%	70%	130%
Sulphate	5801067		118	117	0.9%	< 0.10	97%	70%	130%	103%	80%	120%	105%	70%	130%
Ortho Phosphate as P	5801067		<0.10	<0.10	NA	< 0.10	100%	70%	130%	96%	80%	120%	101%	70%	130%
Ammonia as N	5818589		<0.02	<0.02	NA	< 0.02	109%	70%	130%	100%	80%	120%	96%	70%	130%
Total Phosphorus	5805916		<0.02	<0.02	NA	< 0.02	102%	70%	130%	84%	80%	120%	91%	70%	130%
Total Organic Carbon	5804524		0.6	0.6	NA	< 0.5	106%	90%	110%	101%	90%	110%	99%	80%	120%
Apparent Colour	5808024		7.69	7.36	NA	< 2.5	100%	90%	110%	NA			NA		
Turbidity	5804524		0.8	0.7	NA	< 0.5	91%	80%	120%	NA			NA		
Total Calcium	5804531	5804531	87.9	87.1	0.9%	< 0.20	98%	70%	130%	97%	80%	120%	97%	70%	130%
Total Magnesium	5804531	5804531	25.2	24.7	2.0%	< 0.10	97%	70%	130%	96%	80%	120%	95%	70%	130%
Total Potassium	5804531	5804531	4.07	4.10	0.7%	< 0.50	99%	70%	130%	97%	80%	120%	95%	70%	130%
Total Sodium	5804531	5804531	18.5	18.2	1.6%	< 0.10	99%	70%	130%	98%	80%	120%	96%	70%	130%
Total Aluminum	5808024		0.054	0.032	NA	< 0.010	89%	70%	130%	106%	80%	120%	108%	70%	130%
Total Antimony	5808024		<0.003	<0.003	NA	< 0.003	99%	70%	130%	101%	80%	120%	91%	70%	130%
Total Arsenic	5808024		<0.003	<0.003	NA	< 0.003	94%	70%	130%	95%	80%	120%	94%	70%	130%
Total Barium	5808024		0.025	0.022	12.8%	< 0.002	102%	70%	130%	102%	80%	120%	101%	70%	130%
Total Beryllium	5808024		<0.001	<0.001	NA	< 0.001	88%	70%	130%	82%	80%	120%	89%	70%	130%
Total Boron	5808024		0.022	0.022	NA	< 0.010	102%	70%	130%	95%	80%	120%	101%	70%	130%
Total Cadmium	5808024		0.0001	0.0002	NA	< 0.0001	100%	70%	130%	95%	80%	120%	82%	70%	130%
Total Chromium	5808024		<0.003	<0.003	NA	< 0.003	106%	70%	130%	98%	80%	120%	105%	70%	130%
Total Cobalt	5808024		<0.0005	<0.0005	NA	< 0.0005	89%	70%	130%	101%	80%	120%	105%	70%	130%
Total Copper	5808024		0.294	0.302	2.7%	< 0.002	100%	70%	130%	95%	80%	120%	100%	70%	130%
Total Iron	5808024		0.275	0.276	0.4%	< 0.050	95%	70%	130%	98%	80%	120%	108%	70%	130%
Total Lead	5808024		0.0040	0.0036	10.5%	< 0.0005	95%	70%	130%	96%	80%	120%	89%	70%	130%
Total Manganese	5808024		0.014	0.013	7.4%	< 0.002	101%	70%	130%	95%	80%	120%	109%	70%	130%
Total Mercury	5804524		<0.0001	<0.0001	NA	< 0.0001	104%	70%	130%	101%	80%	120%	99%	70%	130%
Total Molybdenum	5808024		<0.002	<0.002	NA	< 0.002	101%	70%	130%	102%	80%	120%	95%	70%	130%
Total Nickel	5808024		0.013	0.013	NA	< 0.003	91%	70%	130%	101%	80%	120%	101%	70%	130%
Total Selenium	5808024		<0.002	<0.002	NA	< 0.002	97%	70%	130%	93%	80%	120%	86%	70%	130%
Total Silver	5808024		<0.0001	<0.0001	NA	< 0.0001	99%	70%	130%	91%	80%	120%	86%	70%	130%
Total Strontium	5808024		0.184	0.185	0.5%	< 0.005	102%	70%	130%	96%	80%	120%	120%	70%	130%

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Quality Assurance

CLIENT NAME: CROZIER & ASSOCIATES

AGAT WORK ORDER: 24T140381

PROJECT: 1935-6133

ATTENTION TO: Evan Finbow

SAMPLING SITE:

SAMPLED BY:Kelly Reid

Water Analysis (Continued)

RPT Date: Apr 29, 2024			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
Total Thallium	5808024		<0.0003	<0.0003	NA	< 0.0003	92%	70%	130%	94%	80%	120%	93%	70%	130%
Total Tin	5808024		0.005	0.004	NA	< 0.002	106%	70%	130%	99%	80%	120%	92%	70%	130%
Total Titanium	5808024		<0.010	<0.010	NA	< 0.010	89%	70%	130%	91%	80%	120%	120%	70%	130%
Total Tungsten	5808024		<0.010	<0.010	NA	< 0.010	94%	70%	130%	96%	80%	120%	88%	70%	130%
Total Uranium	5808024		<0.0005	<0.0005	NA	< 0.0005	94%	70%	130%	101%	80%	120%	92%	70%	130%
Total Vanadium	5808024		<0.002	<0.002	NA	< 0.002	92%	70%	130%	98%	80%	120%	111%	70%	130%
Total Zinc	5808024		0.249	0.258	3.6%	< 0.020	102%	70%	130%	93%	80%	120%	90%	70%	130%
Total Zirconium	5808024		<0.004	<0.004	NA	< 0.004	100%	70%	130%	99%	80%	120%	97%	70%	130%

Comments: NA Signifies Not Applicable
Duplicate NA: results are under 5X the RDL and will not be calculated.

Certified By:

Amanjot Bhela

CHARTERED CHEMIST AMANJOT BHELA — ASSOCIATION OF THE CHEMICAL PROFESSION OF ONTARIO

AGAT Laboratories

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Method Summary

CLIENT NAME: CROZIER & ASSOCIATES

AGAT WORK ORDER: 24T140381

PROJECT: 1935-6133

ATTENTION TO: Evan Finbow

SAMPLING SITE:

SAMPLED BY:Kelly Reid

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Water Analysis			
Electrical Conductivity	INOR-93-6000	modified from SM 2510 B	PC TITRATE
pH	INOR-93-6000	modified from SM 4500-H+ B	PC TITRATE
Hardness (as CaCO3) (Calculated)	MET-93-6105	modified from EPA SW-846 6010C & 200.7 & SM 2340 B	CALCULATION
Total Dissolved Solids	INOR-93-6028	modified from EPA 1684,ON MOECC E3139,SM 2540C,D	BALANCE
Alkalinity (as CaCO3)	INOR-93-6000	Modified from SM 2320 B	PC TITRATE
Fluoride	INOR-93-6004	modified from SM 4110 B	ION CHROMATOGRAPH
Chloride	INOR-93-6004	modified from SM 4110 B	ION CHROMATOGRAPH
Nitrate as N	INOR-93-6004	modified from SM 4110 B	ION CHROMATOGRAPH
Nitrite as N	INOR-93-6004	modified from SM 4110 B	ION CHROMATOGRAPH
Bromide	INOR-93-6004	modified from SM 4110 B	ION CHROMATOGRAPH
Sulphate	INOR-93-6004	modified from SM 4110 B	ION CHROMATOGRAPH
Ortho Phosphate as P	INOR-93-6004	modified from SM 4110 B	ION CHROMATOGRAPH
Ammonia as N	INOR-93-6059	modified from SM 4500-NH3 H	LACHAT FIA
Total Phosphorus	INOR-93-6022	modified from SM 4500-P B and SM 4500-P E	SPECTROPHOTOMETER
Total Organic Carbon	INOR-93-6049	modified from SM 5310 B	SHIMADZU CARBON ANALYZER
Apparent Colour	INOR-93-6074	modified from SM 2120 B	LACHAT FIA
Turbidity	INOR-93-6000	modified from SM 2130 B	PC TITRATE
Total Calcium	MET-93-6105	modified from EPA 6010D	ICP/OES
Total Magnesium	MET-93-6105	modified from EPA 6010D	ICP/OES
Total Potassium	MET-93-6105	modified from EPA 6010D	ICP/OES
Total Sodium	MET-93-6105	modified from EPA 6010D	ICP/OES
Total Aluminum	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Antimony	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Arsenic	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Barium	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Beryllium	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Boron	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Cadmium	MET -93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Chromium	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Cobalt	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Copper	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Iron	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Lead	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Manganese	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Mercury	MET-93-6100	modified from EPA 245.2 and SM 3112 B	CVAAS

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Method Summary

CLIENT NAME: CROZIER & ASSOCIATES

AGAT WORK ORDER: 24T140381

PROJECT: 1935-6133

ATTENTION TO: Evan Finbow

SAMPLING SITE:

SAMPLED BY:Kelly Reid

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Total Molybdenum	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Nickel	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Selenium	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Silver	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Strontium	INOR-93-6003	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Thallium	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Tin	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Titanium	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Tungsten	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Uranium	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Vanadium	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Zinc	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Zirconium	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS

AGAT Laboratories

5835 Coopers Avenue
Mississauga, ON
L4Z 1Y2

Drinking Water Chain of Custody Record

P: 905.712.5100 • F: 905.712.5122 • TF: 1.800.856.6261

Laboratory Use Only

Arrival Condition: ☐ Good ☐ Poor (complete notes)
Arrival Temperature: 5·5 | 5·7 | 5·8
AGAT Job Number: 24T140381
Notes: Loose x, 1 small

Client Information

Company: Crozier Consulting Engineers
Contact: Evan Finlow
Address: 70 Huron St.
Collingwood L9Y 3Z1
Phone: 705 434 3436 Fax:
PO #:
Client Project #: 1935-6133
AGAT Quotation #:

Report Information

1. Name: Evan Finlow
Email: efinlow@cfcrozier.ca
2. Name: Kelly Reid
Email: kreid@cfcrozier.ca

Report Format

☑ Single Sample per page
☐ Multiple Samples per page

Facility Type *(Check all that are applicable)*

☐ Large OR ☐ Small
☐ Residential OR ☐ Non-Residential
☐ Municipal OR ☐ Non-Municipal

+ Water Type

(Specify in column below)
Raw (R), Treated (TR), Distribution (D), Tap (TP) Private Well (P)

Turnaround Time Required (TAT) *

Regular TAT	7 to 14 business days	☐	Sch 23/24 only
	5 to 7 business days	☑	
Rush TAT (please provide prior notification)	3 to 4 business days	☐	**Rush surcharges apply**
	2 business days	☐	
	1 business days	☐	

Date Required (Rush surcharges may apply): _____

Requirements *(Check one)*

☑ O. Regulation 170 ☐ Not Applicable
☐ O. Regulation 243 ☐ Federal
☐ O. Regulation 318/319 ☐ Other _____

IS THIS WATER BEING CONSUMED BY HUMANS? ☐ Yes ☑ No
DO THE RESULTS REQUIRE REPORTING TO THE MECP OR LOCAL PUBLIC HEALTH UNIT? ☐ Yes ☑ No
FOR RAW WATER (E.G. UNTREATED), IS THE SAMPLE COLLECTED FROM A POINT OF HUMAN CONSUMPTION? ☐ Yes ☑ No

CLIENT IS RESPONSIBLE TO COMPLETE AND SUBMIT LAB SERVICE NOTIFICATION (LSN) FORM TO THE MOECC/PHU. FAILURE TO DO SO MAY DELAY REPORTING.
"NOTIFICATION INFORMATION" MUST BE COMPLETE BELOW UPON SUBMISSION OF SAMPLES. LABORATORY ANALYSIS WILL NOT COMMENCE UNTIL ALL INFORMATION HAS BEEN PROVIDED.

SAMPLE IDENTIFICATION/LOCATION	DATE SAMPLED	TIME SAMPLED	WATER TYPE *	# OF CONTAINERS	CHLORINE RESIDUAL (incl. Units)	STANDING	FLUSHED	COMMENTS/STANDING TIME (IN MINUTES)	Inorganics (Sch. 23)	Organics (Sch. 24)	Lead	Fluoride	Sodium	Turbidity	Nitrate, Nitrite	Trihalomethanes / HAAs	E.coli, Total Coliforms	Water Quality Assessment Package		
MW24	Apr 15/24	11:30 AM/PM	R, P	8	N/A		✓											X		
		AM/PM																		
		AM/PM																		
		AM/PM																		
		AM/PM																		
		AM/PM																		
		AM/PM																		

Samples Taken By (Print Name and Sign): Kelly Reid

* TAT is exclusive of weekends and statutory holidays. Prior arrangements must be made with the laboratory in order to submit Microbiology samples on Fridays

NOTIFICATION INFORMATION - (required to report adverse results as per the *Safe Drinking Water Act*) - Laboratory analysis will not commence until all information is received.

INFORMATION FOR ADVERSE REPORTING			MEDICAL OFFICER OF HEALTH (MOH)	
Waterworks Name:	Phone:	Fax:	Region:	
MOECC# (ie: Waterworks #):	After Hours Phone:		PHU Contact:	
Contact:	Address/Location (if different from client above)		Phone:	Fax:
Email:			Email:	

Samples Relinquished By (Print Name and Sign): Kelly Reid	Date/Time: Apr 17/24 11:00 am	Samples Received By (Print Name and Sign):	Date/Time: Apr 18 9:30	White Copy - Client Yellow/Golden Copy - AGAT White Copy- AGAT
Samples Relinquished By (Print Name and Sign):	Date/Time	Samples Received By (Print Name and Sign):	Date/Time	
Samples Relinquished By (Print Name and Sign):	Date/Time	Samples Received By (Print Name and Sign):	Date/Time	

Page 1 of 1

N°: DW 08326

AGAT Laboratories

Non-Reportable Drinking Water Sample Inquiry Form

This form is to ensure your water is tested and reported in accordance with Ontario Regulation 248/03 for testing of Drinking Water under the Safe Drinking Water Act. We require the information below to help uphold our high standard of regulatory compliance, for both AGAT as a laboratory and you, as our valued customer. Please ensure all information is filled out completely and accurately. If you have any questions, please do not hesitate to contact your AGAT Client Project Manager at 905-712-5100.

(1) What is the purpose for your testing? Please provide details below.

Water Quality Analysis

(2) Please answer the following questions.

(a) Is there a request from a Public Health Inspector or a Ministry of Environment Drinking Water Inspector to complete this testing? ☐ Yes ☑ No
If Yes, please contact an AGAT Client Project Manager at 905-712-5100

(b) Is there a provincial order in effect for your water system? ☐ Yes ☑ No
If Yes, please provide details below including limit for the test parameter if not listed with a standard under O.Reg.169/03

(c) Does your facility have a drinking water system (DWS) number provided by either MECP or MOHLTC? ☐ Yes ☑ No

(i) If yes, why is the sample not reportable to either MECP or MOHLTC? Please provide details below.

(ii) If yes, is the test for sodium and/or fluoride? ☐ Yes ☐ No

- If the test is for sodium and/or fluoride, was sodium and/or fluoride testing completed and reported to the ***MECP*** in the last 57 months or ***MOHLTC*** in the last 60 months?
  ☐ Yes ☐ No

As per the SWDA, Sodium and fluoride (if required by DWS) are required to be tested every 5 years (60 months) by the operator. The sodium and/or fluoride adverse are not required to be reported if two samples are less than 5 years apart.

Document #: ADM-78-2533.004
Issued Date: 2020-08-25

(d) Is the water collected from a Federally owned, operated or regulated property or water source? ☐ Yes ☑ No

If Yes, please indicate this on the COC under Requirements

(3) If you are private home owner looking to test your drinking water, please answer the following questions: N/A

(i) Are you consuming this water from the point of sample collection? ☐ Yes ☐ No

(ii) Do you have a water treatment unit installed in your system? ☐ Yes ☐ No

(iii) Is your water collected before or after treatment?

☐ Before ☐ After ☐ Not Applicable

(iv) Are you testing your water due to concerns regarding your plumbing?

☐ Yes ☐ No

If Yes, have you done any improvements to your plumbing recently? Please provide details below.

For further assistance, please contact the MECP at the following phone and email:

(1) For inquiries related to O.Reg.170 or O.Reg.318/319

Email: waterforms@ontario.ca

Phone Number: 1-866-793-2588

(2) For inquiries related to O.Reg.243 (Schools and Daycares)

Phone Number: 1-855-515-1331.

Company Name: Crozier Consulting Engineers

DWCOC#: (if applicable)

Name: Kelly Reid (please print name)

Date: 2024-04-17 (yyyy-mm-dd)

Signature: Kelly Reid

AGAT WorkOrder #: (To be entered by AGAT CPM)

Document #: ADM-78-2533.004
Issued Date: 2020-08-25

AGAT Laboratories

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
http://www.agatlabs.com

CLIENT NAME: CROZIER & ASSOCIATES
301-40 HURON STREET
COLLINGWOOD, ON L9Y4R3
905-875-0026

ATTENTION TO: Evan Finbow

PROJECT: 1935-6133

AGAT WORK ORDER: 24T146848

MICROBIOLOGY ANALYSIS REVIEWED BY: Nivine Basily, Inorganic Team Lead

WATER ANALYSIS REVIEWED BY: Nivine Basily, Inorganic Team Lead

DATE REPORTED: May 10, 2024

PAGES (INCLUDING COVER): 15

VERSION*: 1

Should you require any information regarding this analysis please contact your client services representative at (905) 712-5100

Notes

Disclaimer:

- *All work conducted herein has been done using accepted standard protocols, and generally accepted practices and methods. AGAT test methods may incorporate modifications from the specified reference methods to improve performance.*
- *All samples will be disposed of within 30 days after receipt unless a Long Term Storage Agreement is signed and returned. Some specialty analysis may be exempt, please contact your Client Project Manager for details.*
- *AGAT's liability in connection with any delay, performance or non-performance of these services is only to the Client and does not extend to any other third party. Unless expressly agreed otherwise in writing, AGAT's liability is limited to the actual cost of the specific analysis or analyses included in the services.*
- *This Certificate shall not be reproduced except in full, without the written approval of the laboratory.*
- *The test results reported herewith relate only to the samples as received by the laboratory.*
- *Application of guidelines is provided "as is" without warranty of any kind, either expressed or implied, including, but not limited to, warranties of merchantability, fitness for a particular purpose, or non-infringement. AGAT assumes no responsibility for any errors or omissions in the guidelines contained in this document.*
- *All reportable information as specified by ISO/IEC 17025:2017 is available from AGAT Laboratories upon request.*
- *For environmental samples in the Province of Quebec: The analysis is performed on and results apply to samples as received. A temperature above 6°C upon receipt, as indicated in the Sample Reception Notification (SRN), could indicate the integrity of the samples has been compromised if the delay between sampling and submission to the laboratory could not be minimized.*

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Certificate of Analysis

AGAT WORK ORDER: 24T146848

PROJECT: 1935-6133

CLIENT NAME: CROZIER & ASSOCIATES

ATTENTION TO: Evan Finbow

SAMPLING SITE:

SAMPLED BY:Kelly Reid

Heterotrophic Plate Count in Water

DATE RECEIVED: 2024-05-03

DATE REPORTED: 2024-05-10

				SAMPLE DESCRIPTION:	TW3-24
				SAMPLE TYPE:	Water
				DATE SAMPLED:	2024-05-01 16:00
Parameter	**Unit**	**G / S**	**RDL**	**5836394**	
Heterotrophic Plate Count	CFU/1ml			0	

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard

5836394 Heterotrophic Plate Count RDL = 5 CFU/mL

Temperature of sample upon receipt was determined to be above 10 C. Evidence of attempt to cool during shipment to lab was observed.

Analysis performed at AGAT Toronto (unless marked by *)

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AGAT WORK ORDER: 24T146848

PROJECT: 1935-6133

CLIENT NAME: CROZIER & ASSOCIATES

ATTENTION TO: Evan Finbow

SAMPLING SITE:

SAMPLED BY:Kelly Reid

Total Coliforms & E.Coli (MI-Agar)

DATE RECEIVED: 2024-05-03

DATE REPORTED: 2024-05-10

				SAMPLE DESCRIPTION:	TW3-24
				SAMPLE TYPE:	Water
				DATE SAMPLED:	2024-05-01 16:00
Parameter	**Unit**	**G / S**	**RDL**	**5836394**	
Escherichia coli	CFU/100mL	0		0	
Total Coliforms	CFU/100mL	0		0	

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to O. Reg 169/03 - Ontario Drinking Water Quality Standards. Na value derived from O. Reg 248
Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.

5836394 Escherichia coli, Total Coliforms RDL = 1 CFU/100mL.

Temperature of sample upon receipt was determined to be above 10 C. Evidence of attempt to cool during shipment to lab was observed.

Microbial growth observed on the plate.

Analysis performed at AGAT Toronto (unless marked by *)

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AGAT WORK ORDER: 24T146848

PROJECT: 1935-6133

CLIENT NAME: CROZIER & ASSOCIATES

ATTENTION TO: Evan Finbow

SAMPLING SITE:

SAMPLED BY:Kelly Reid

DRINKING WATER - Water Quality Assessment (mg/L)

DATE RECEIVED: 2024-05-03

DATE REPORTED: 2024-05-10

				SAMPLE DESCRIPTION:	TW3-24
				SAMPLE TYPE:	Water
				DATE SAMPLED:	2024-05-01 16:00
Parameter	Unit	G / S: A	G / S: B	RDL	5836394
Electrical Conductivity	µS/cm			2	732
pH	pH Units	6.5-8.5		NA	7.88
Hardness (as CaCO3) (Calculated)	mg/L	80-100		0.5	314
Total Dissolved Solids	mg/L	500		10	402[<A]
Alkalinity (as CaCO3)	mg/L	30-500		5	316
Fluoride	mg/L		1.5	0.05	<0.05[<B]
Chloride	mg/L	250		0.10	51.5[<A]
Nitrate as N	mg/L		10.0	0.05	0.29[<B]
Nitrite as N	mg/L		1.0	0.05	0.16[<B]
Bromide	mg/L			0.05	<0.05
Sulphate	mg/L	500		0.10	14.9[<A]
Ortho Phosphate as P	mg/L			0.10	<0.10
Ammonia as N	mg/L			0.02	<0.02
Total Phosphorus	mg/L			0.02	<0.02
Total Organic Carbon	mg/L			0.5	1.1
Apparent Colour	TCU	5		2.50	<2.50[<A]
Turbidity	NTU	5		0.5	<0.5[<A]
Total Calcium	mg/L			0.32	88.5
Total Magnesium	mg/L			0.34	22.5
Total Potassium	mg/L			1.15	1.95
Total Sodium	mg/L	200	20	0.45	27.4[B-A]
Total Aluminum	mg/L	0.1		0.010	0.013[<A]
Total Antimony	mg/L		0.006	0.003	<0.003[<B]
Total Arsenic	mg/L		0.01	0.003	<0.003[<B]
Total Barium	mg/L		1.0	0.002	0.202[<B]
Total Beryllium	mg/L			0.001	<0.001
Total Boron	mg/L		5.0	0.010	<0.010[<B]
Total Cadmium	mg/L		0.005	0.0001	<0.0001[<B]
Total Chromium	mg/L		0.05	0.003	<0.003[<B]

Certified By:

ASSOCIATION OF THE CHEMICAL PROFESSION OF ONTARIO
CHARTERED
NIVINE BASILY
CHEMIST

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CANADA L4Z 1Y2
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Certificate of Analysis

AGAT WORK ORDER: 24T146848

PROJECT: 1935-6133

CLIENT NAME: CROZIER & ASSOCIATES

ATTENTION TO: Evan Finbow

SAMPLING SITE:

SAMPLED BY:Kelly Reid

DRINKING WATER - Water Quality Assessment (mg/L)

DATE RECEIVED: 2024-05-03

DATE REPORTED: 2024-05-10

				SAMPLE DESCRIPTION:	**TW3-24**
				SAMPLE TYPE:	**Water**
				DATE SAMPLED:	**2024-05-01 16:00**
Parameter	**Unit**	**G / S: A**	**G / S: B**	**RDL**	**5836394**
Total Cobalt	mg/L			0.0005	<0.0005
Total Copper	mg/L	1		0.002	<0.002[<A]
Total Iron	mg/L	0.3		0.050	<0.050[<A]
Total Lead	mg/L		0.010	0.0005	<0.0005[<B]
Total Manganese	mg/L	0.05		0.002	0.040[<A]
Total Mercury	mg/L		0.001	0.0001	<0.0001[<B]
Total Molybdenum	mg/L			0.002	<0.002
Total Nickel	mg/L			0.003	<0.003
Total Selenium	mg/L	0.01	0.01	0.002	<0.002[<A]
Total Silver	mg/L			0.0001	<0.0001
Total Strontium	mg/L			0.005	0.244
Total Thallium	mg/L			0.0003	<0.0003
Total Tin	mg/L			0.002	<0.002
Total Titanium	mg/L			0.010	<0.010
Total Tungsten	mg/L			0.010	<0.010
Total Uranium	mg/L		0.02	0.0005	0.0010[<B]
Total Vanadium	mg/L			0.002	<0.002
Total Zinc	mg/L	5		0.020	<0.020[<A]
Total Zirconium	mg/L			0.004	<0.004

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: A Refers to O. Reg 169/03 - Ontario Drinking Water Quality Standards - Aesthetic Objectives and Operational Guidelines, B Refers to O. Reg 169/03 - Ontario Drinking Water Quality Standards. Na value derived from O. Reg 248
Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.

5836394 Dilution required, RDL has been increased accordingly.

Analysis performed at AGAT Toronto (unless marked by *)

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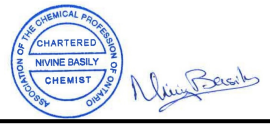

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5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
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FAX (905)712-5122
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Exceedance Summary

AGAT WORK ORDER: 24T146848

PROJECT: 1935-6133

CLIENT NAME: CROZIER & ASSOCIATES

ATTENTION TO: Evan Finbow

SAMPLEID	SAMPLE TITLE	GUIDELINE	ANALYSIS PACKAGE	PARAMETER	UNIT	GUIDEVALUE	RESULT
5836394	TW3-24	ON 169/03 AO&OG	DRINKING WATER - Water Quality Assessment (mg/L)	Hardness (as CaCO3) (Calculated)	mg/L	80-100	314
5836394	TW3-24	ON 169/03 MAC/IMAC	DRINKING WATER - Water Quality Assessment (mg/L)	Total Sodium	mg/L	20	27.4

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Quality Assurance

CLIENT NAME: CROZIER & ASSOCIATES

AGAT WORK ORDER: 24T146848

PROJECT: 1935-6133

ATTENTION TO: Evan Finbow

SAMPLING SITE:

SAMPLED BY:Kelly Reid

Microbiology Analysis

RPT Date: May 10, 2024			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
Total Coliforms & E.Coli (MI-Agar)															
Escherichia coli	5836424		0	0	NA										
Total Coliforms	5836424		0	0	NA										
Comments: NA - % RPD Not Applicable.															
Heterotrophic Plate Count in Water															
Heterotrophic Plate Count	5836394	5836394	0	0	NA										
Comments: NA - % RPD Not Applicable															

Certified By:

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CANADA L4Z 1Y2
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FAX (905)712-5122
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Quality Assurance

CLIENT NAME: CROZIER & ASSOCIATES

AGAT WORK ORDER: 24T146848

PROJECT: 1935-6133

ATTENTION TO: Evan Finbow

SAMPLING SITE:

SAMPLED BY:Kelly Reid

Water Analysis

RPT Date: May 10, 2024

PARAMETER	Batch	Sample Id	DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
			Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
DRINKING WATER - Water Quality Assessment (mg/L)															
Electrical Conductivity	5832545		15200	16000	5.1%	< 2	97%	90%	110%						
pH	5832545		7.47	7.50	0.4%	NA	99%	90%	110%						
Total Dissolved Solids	5838057		182	192	5.3%	< 10	102%	80%	120%						
Alkalinity (as CaCO3)	5834758		227	227	0.0%	< 5	109%	80%	120%						
Fluoride	5832534		<0.05	<0.05	NA	< 0.05	94%	70%	130%	92%	80%	120%	91%	70%	130%
Chloride	5832534		16.3	16.6	1.8%	< 0.10	94%	70%	130%	101%	80%	120%	103%	70%	130%
Nitrate as N	5832534		<0.05	<0.05	NA	< 0.05	90%	70%	130%	95%	80%	120%	95%	70%	130%
Nitrite as N	5832534		<0.05	<0.05	NA	< 0.05	92%	70%	130%	94%	80%	120%	95%	70%	130%
Bromide	5832534		<0.05	<0.05	NA	< 0.05	99%	70%	130%	94%	80%	120%	94%	70%	130%
Sulphate	5832534		100	102	2.0%	< 0.10	92%	70%	130%	96%	80%	120%	101%	70%	130%
Ortho Phosphate as P	5832534		<0.10	<0.10	NA	< 0.10	102%	70%	130%	107%	80%	120%	104%	70%	130%
Ammonia as N	5841935		0.02	<0.02	NA	< 0.02	75%	70%	130%	99%	80%	120%	104%	70%	130%
Total Phosphorus	5836625		<0.02	0.02	NA	< 0.02	107%	70%	130%	103%	80%	120%	91%	70%	130%
Total Organic Carbon	5834758		1.5	1.4	NA	< 0.5	95%	90%	110%	95%	90%	110%	93%	80%	120%
Apparent Colour	5838057		<2.50	<2.50	NA	< 2.5	105%	90%	110%						
Turbidity	5838057		1.3	2.2	NA	< 0.5	NA	80%	120%						
Total Calcium	5843486		34.8	34.1	2.0%	< 0.20	97%	70%	130%	97%	80%	120%	100%	70%	130%
Total Magnesium	5843486		9.11	8.77	3.8%	< 0.10	97%	70%	130%	97%	80%	120%	100%	70%	130%
Total Potassium	5843486		1.46	1.52	NA	< 0.50	98%	70%	130%	98%	80%	120%	100%	70%	130%
Total Sodium	5843486		18.7	18.5	1.1%	< 0.10	97%	70%	130%	98%	80%	120%	100%	70%	130%
Total Aluminum	5831563		0.024	0.023	NA	< 0.010	98%	70%	130%	105%	80%	120%	112%	70%	130%
Total Antimony	5831563		<0.003	<0.003	NA	< 0.003	101%	70%	130%	98%	80%	120%	100%	70%	130%
Total Arsenic	5831563		<0.003	<0.003	NA	< 0.003	94%	70%	130%	100%	80%	120%	102%	70%	130%
Total Barium	5831563		0.020	0.020	0.0%	< 0.002	98%	70%	130%	100%	80%	120%	105%	70%	130%
Total Beryllium	5831563		<0.001	<0.001	NA	< 0.001	99%	70%	130%	103%	80%	120%	111%	70%	130%
Total Boron	5831563		0.042	0.045	NA	< 0.010	99%	70%	130%	115%	80%	120%	126%	70%	130%
Total Cadmium	5831563		<0.0001	<0.0001	NA	< 0.0001	100%	70%	130%	99%	80%	120%	106%	70%	130%
Total Chromium	5831563		<0.003	<0.003	NA	< 0.003	96%	70%	130%	99%	80%	120%	101%	70%	130%
Total Cobalt	5831563		0.0008	0.0007	NA	< 0.0005	96%	70%	130%	102%	80%	120%	101%	70%	130%
Total Copper	5831563		0.150	0.145	3.4%	< 0.002	100%	70%	130%	100%	80%	120%	97%	70%	130%
Total Iron	5831563		0.425	0.409	3.8%	< 0.050	98%	70%	130%	108%	80%	120%	102%	70%	130%
Total Lead	5831563		<0.0005	<0.0005	NA	< 0.0005	100%	70%	130%	94%	80%	120%	98%	70%	130%
Total Manganese	5831563		0.048	0.047	2.1%	< 0.002	96%	70%	130%	106%	80%	120%	105%	70%	130%
Total Mercury	5838057		<0.0001	<0.0001	NA	< 0.0001	99%	70%	130%	102%	80%	120%	98%	70%	130%
Total Molybdenum	5831563		<0.002	<0.002	NA	< 0.002	101%	70%	130%	85%	80%	120%	108%	70%	130%
Total Nickel	5831563		<0.003	<0.003	NA	< 0.003	99%	70%	130%	104%	80%	120%	102%	70%	130%
Total Selenium	5831563		<0.002	<0.002	NA	< 0.002	96%	70%	130%	104%	80%	120%	98%	70%	130%
Total Silver	5831563		<0.0001	<0.0001	NA	< 0.0001	97%	70%	130%	102%	80%	120%	100%	70%	130%
Total Strontium	5831563		0.197	0.188	4.7%	< 0.005	95%	70%	130%	104%	80%	120%	98%	70%	130%

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Quality Assurance

CLIENT NAME: CROZIER & ASSOCIATES

AGAT WORK ORDER: 24T146848

PROJECT: 1935-6133

ATTENTION TO: Evan Finbow

SAMPLING SITE:

SAMPLED BY:Kelly Reid

Water Analysis (Continued)

RPT Date: May 10, 2024			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
Total Thallium	5831563		<0.0003	<0.0003	NA	< 0.0003	96%	70%	130%	98%	80%	120%	104%	70%	130%
Total Tin	5831563		<0.002	<0.002	NA	< 0.002	99%	70%	130%	95%	80%	120%	101%	70%	130%
Total Titanium	5831563		<0.010	<0.010	NA	< 0.010	99%	70%	130%	109%	80%	120%	96%	70%	130%
Total Tungsten	5831563		<0.010	<0.010	NA	< 0.010	97%	70%	130%	96%	80%	120%	103%	70%	130%
Total Uranium	5831563		<0.0005	<0.0005	NA	< 0.0005	100%	70%	130%	99%	80%	120%	107%	70%	130%
Total Vanadium	5831563		<0.002	<0.002	NA	< 0.002	98%	70%	130%	106%	80%	120%	104%	70%	130%
Total Zinc	5831563		0.051	0.048	NA	< 0.020	99%	70%	130%	98%	80%	120%	98%	70%	130%
Total Zirconium	5831563		<0.004	<0.004	NA	< 0.004	95%	70%	130%	99%	80%	120%	99%	70%	130%

Comments: NA Signifies Not Applicable
Duplicate NA: results are under 5X the RDL and will not be calculated.

Certified By:

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Method Summary

CLIENT NAME: CROZIER & ASSOCIATES

AGAT WORK ORDER: 24T146848

PROJECT: 1935-6133

ATTENTION TO: Evan Finbow

SAMPLING SITE:

SAMPLED BY:Kelly Reid

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Microbiology Analysis			
Heterotrophic Plate Count	MIC-93- 7020	SM 9215 C	INCUBATOR
Escherichia coli	MIC-93-7010	EPA 1604	Membrane Filtration
Total Coliforms	MIC-93-7010	EPA 1604	Membrane Filtration

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Method Summary

CLIENT NAME: CROZIER & ASSOCIATES

AGAT WORK ORDER: 24T146848

PROJECT: 1935-6133

ATTENTION TO: Evan Finbow

SAMPLING SITE:

SAMPLED BY:Kelly Reid

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Water Analysis			
Electrical Conductivity	INOR-93-6000	modified from SM 2510 B	PC TITRATE
pH	INOR-93-6000	modified from SM 4500-H+ B	PC TITRATE
Hardness (as CaCO3) (Calculated)	MET-93-6105	modified from EPA SW-846 6010C & 200.7 & SM 2340 B	CALCULATION
Total Dissolved Solids	INOR-93-6028	modified from EPA 1684,ON MOECC E3139,SM 2540C,D	BALANCE
Alkalinity (as CaCO3)	INOR-93-6000	Modified from SM 2320 B	PC TITRATE
Fluoride	INOR-93-6004	modified from SM 4110 B	ION CHROMATOGRAPH
Chloride	INOR-93-6004	modified from SM 4110 B	ION CHROMATOGRAPH
Nitrate as N	INOR-93-6004	modified from SM 4110 B	ION CHROMATOGRAPH
Nitrite as N	INOR-93-6004	modified from SM 4110 B	ION CHROMATOGRAPH
Bromide	INOR-93-6004	modified from SM 4110 B	ION CHROMATOGRAPH
Sulphate	INOR-93-6004	modified from SM 4110 B	ION CHROMATOGRAPH
Ortho Phosphate as P	INOR-93-6004	modified from SM 4110 B	ION CHROMATOGRAPH
Ammonia as N	INOR-93-6059	modified from SM 4500-NH3 H	LACHAT FIA
Total Phosphorus	INOR-93-6022	modified from SM 4500-P B and SM 4500-P E	SPECTROPHOTOMETER
Total Organic Carbon	INOR-93-6049	modified from SM 5310 B	SHIMADZU CARBON ANALYZER
Apparent Colour	INOR-93-6074	modified from SM 2120 B	LACHAT FIA
Turbidity	INOR-93-6000	modified from SM 2130 B	PC TITRATE
Total Calcium	MET-93-6105	modified from EPA 6010D	ICP/OES
Total Magnesium	MET-93-6105	modified from EPA 6010D	ICP/OES
Total Potassium	MET-93-6105	modified from EPA 6010D	ICP/OES
Total Sodium	MET-93-6105	modified from EPA 6010D	ICP/OES
Total Aluminum	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Antimony	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Arsenic	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Barium	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Beryllium	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Boron	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Cadmium	MET -93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Chromium	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Cobalt	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Copper	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Iron	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Lead	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Manganese	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Mercury	MET-93-6100	modified from EPA 245.2 and SM 3112 B	CVAAS

AGAT Laboratories

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
http://www.agatlabs.com

Method Summary

CLIENT NAME: CROZIER & ASSOCIATES

AGAT WORK ORDER: 24T146848

PROJECT: 1935-6133

ATTENTION TO: Evan Finbow

SAMPLING SITE:

SAMPLED BY:Kelly Reid

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Total Molybdenum	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Nickel	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Selenium	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Silver	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Strontium	INOR-93-6003	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Thallium	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Tin	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Titanium	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Tungsten	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Uranium	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Vanadium	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Zinc	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS
Total Zirconium	MET-93-6103	modified from EPA 200.8, 3005A, 3010A & 6020B	ICP-MS

AGAT Laboratories

5835 Coopers Avenue
Mississauga, ON
L4Z 1Y2

Drinking Water Chain of Custody Record

P: 905.712.5100 • F: 905.712.5122 • TF: 1.800.856.6261

Laboratory Use Only

Arrival Condition: ☐ Good ☐ Poor (complete notes)
Arrival Temperature: 1 Med: 13.8 13.7 13.0
AGAT Job Number: (1 Bag of melted Ice)
Notes: 24T146848

Client Information

Company: Crozier Consulting Engineers
Contact: Evan Finbow
Address: 70 Huron St.
Collingwood L9Y 3Z1
Phone: 705 434 3436 Fax:
PO #:
Client Project #: 1935-6133
AGAT Quotation #:

Report Information

1. Name: Evan Finbow
Email: efinbow@cfcrozier.ca
2. Name: Kelly Reid
Email: kreid@cfcroziers.ca

Report Format

☑ Single Sample per page
☐ Multiple Samples per page

Facility Type (Check all that are applicable)

☐ Large OR ☐ Small
☐ Residential OR ☐ Non-Residential
☐ Municipal OR ☐ Non-Municipal

+ Water Type

(Specify in column below)
Raw (R), Treated (TR), Distribution (D), Tap (TP), Private Well (P)

Turnaround Time Required (TAT) *

Regular TAT	7 to 14 business days	☐	Sch 23/24 only
	5 to 7 business days	☑	
Rush TAT (please provide prior notification)	3 to 4 business days	☐	**Rush surcharges apply**
	2 business days	☐	
	1 business day	☐	

Date Required (Rush surcharges may apply):

Requirements (Check one)

☑ O. Regulation 170 ☐ Not Applicable
☐ O. Regulation 243 ☐ Federal
☐ O. Regulation 318/319 ☐ Other

IS THIS WATER BEING CONSUMED BY HUMANS? ☐ Yes ☑ No
DO THE RESULTS REQUIRE REPORTING TO THE MECP OR LOCAL PUBLIC HEALTH UNIT? ☐ Yes ☑ No
FOR RAW WATER (E.G. UNTREATED), IS THE SAMPLE COLLECTED FROM A POINT OF HUMAN CONSUMPTION? ☐ Yes ☑ No

CLIENT IS RESPONSIBLE TO COMPLETE AND SUBMIT LAB SERVICE NOTIFICATION (LSN) FORM TO THE MOECC/PHU. FAILURE TO DO SO MAY DELAY REPORTING.
"NOTIFICATION INFORMATION" MUST BE COMPLETE BELOW UPON SUBMISSION OF SAMPLES. LABORATORY ANALYSIS WILL NOT COMMENCE UNTIL ALL INFORMATION HAS BEEN PROVIDED.

SAMPLE IDENTIFICATION/LOCATION	DATE SAMPLED	TIME SAMPLED	WATER TYPE *	# OF CONTAINERS	CHLORINE RESIDUAL (incl. Units)	STANDING	FLUSHED	COMMENTS/STANDING TIME (IN MINUTES)	Inorganics (Sch. 23)	Organics (Sch. 24)	Lead	Fluoride	Sodium	Turbidity	Nitrate, Nitrite	Trihalomethanes / HAAs	E.coli, Total Coliforms	Water Quality Assessment Package	HPC
TW3-24	May 1, 2024	4:00 AM/PM	R,P	10	N/A		✓										X	X	X
		AM/PM																	
		AM/PM																	
		AM/PM																	
		AM/PM																	
		AM/PM																	
		AM/PM																	

Samples Taken By (Print Name and Sign): Kelly Reid Kelly Reid

* TAT is exclusive of weekends and statutory holidays. Prior arrangements must be made with the laboratory in order to submit Microbiology samples on Fridays

NOTIFICATION INFORMATION - (required to report adverse results as per the *Safe Drinking Water Act*) - **Laboratory analysis will not commence until all information is received.**

INFORMATION FOR ADVERSE REPORTING			MEDICAL OFFICER OF HEALTH (MOH)	
Waterworks Name:	Phone:	Fax:	Region:	
MOECC# (ie: Waterworks #):	After Hours Phone:		PHU Contact:	
Contact:	Address/Location (if different from client above)		Phone:	Fax:
Email:			Email:	

Samples Relinquished By (Print Name and Sign): Kelly Reid Kelly Reid	Date/Time: May 2, 2024 10:00	Samples Received By (Print Name and Sign): Neil Ramnarain	Date/Time	Pink Copy - Client Yellow/Golden Copy - AGAT White Copy- AGAT
Samples Relinquished By (Print Name and Sign):	Date/Time	Samples Received By (Print Name and Sign):	Date/Time	
Samples Relinquished By (Print Name and Sign):	Date/Time	Samples Received By (Print Name and Sign):	Date/Time	

Page 1 of 1

N°: DW 08272

24MAY 310:54AM

Document #: DIV-78-1512.011

Date Revised: March 18, 2021

AGAT Laboratories

Non-Reportable Drinking Water Sample Inquiry Form

This form is to ensure your water is tested and reported in accordance with Ontario Regulation 248/03 for testing of Drinking Water under the Safe Drinking Water Act. We require the information below to help uphold our high standard of regulatory compliance, for both AGAT as a laboratory and you, as our valued customer. Please ensure all information is filled out completely and accurately. If you have any questions, please do not hesitate to contact your AGAT Client Project Manager at 905-712-5100.

(1) What is the purpose for your testing? Please provide details below.

Water Quality Analysis

(2) Please answer the following questions.

(a) Is there a request from a Public Health Inspector or a Ministry of Environment Drinking Water Inspector to complete this testing? ☐ Yes ☑ No
If Yes, please contact an AGAT Client Project Manager at 905-712-5100

(b) Is there a provincial order in effect for your water system? ☐ Yes ☑ No
If Yes, please provide details below including limit for the test parameter if not listed with a standard under O.Reg.169/03

(c) Does your facility have a drinking water system (DWS) number provided by either MECP or MOHLTC? ☐ Yes ☑ No

(i) If yes, why is the sample not reportable to either MECP or MOHLTC? Please provide details below.

(ii) If yes, is the test for sodium and/or fluoride? ☐ Yes ☐ No N/A

- If the test is for sodium and/or fluoride, was sodium and/or fluoride testing completed and reported to the ***MECP*** in the last 57 months or ***MOHLTC*** in the last 60 months?
  ☐ Yes ☐ No N/A

As per the SWDA, Sodium and fluoride (if required by DWS) are required to be tested every 5 years (60 months) by the operator. The sodium and/or fluoride adverse are not required to be reported if two samples are less than 5 years apart.

Document #: ADM-78-2533.004
Issued Date: 2020-08-25

(d) Is the water collected from a Federally owned, operated or regulated property or water source? ☐ Yes ☑ No

If Yes, please indicate this on the COC under Requirements

(3) If you are private home owner looking to test your drinking water, please answer the following questions: N/A

(i) Are you consuming this water from the point of sample collection? ☐ Yes ☐ No

(ii) Do you have a water treatment unit installed in your system? ☐ Yes ☐ No

(iii) Is your water collected before or after treatment?

☐ Before ☐ After ☐ Not Applicable

(iv) Are you testing your water due to concerns regarding your plumbing?

☐ Yes ☐ No

If Yes, have you done any improvements to your plumbing recently? Please provide details below.

For further assistance, please contact the MECP at the following phone and email:

(1) For inquiries related to O.Reg.170 or O.Reg.318/319

Email: waterforms@ontario.ca

Phone Number: 1-866-793-2588

(2) For inquiries related to O.Reg.243 (Schools and Daycares)

Phone Number: 1-855-515-1331.

Company Name: Crozier Consulting Engineers

DWCOC#: (if applicable)

Name: Kelly Reid (please print name)

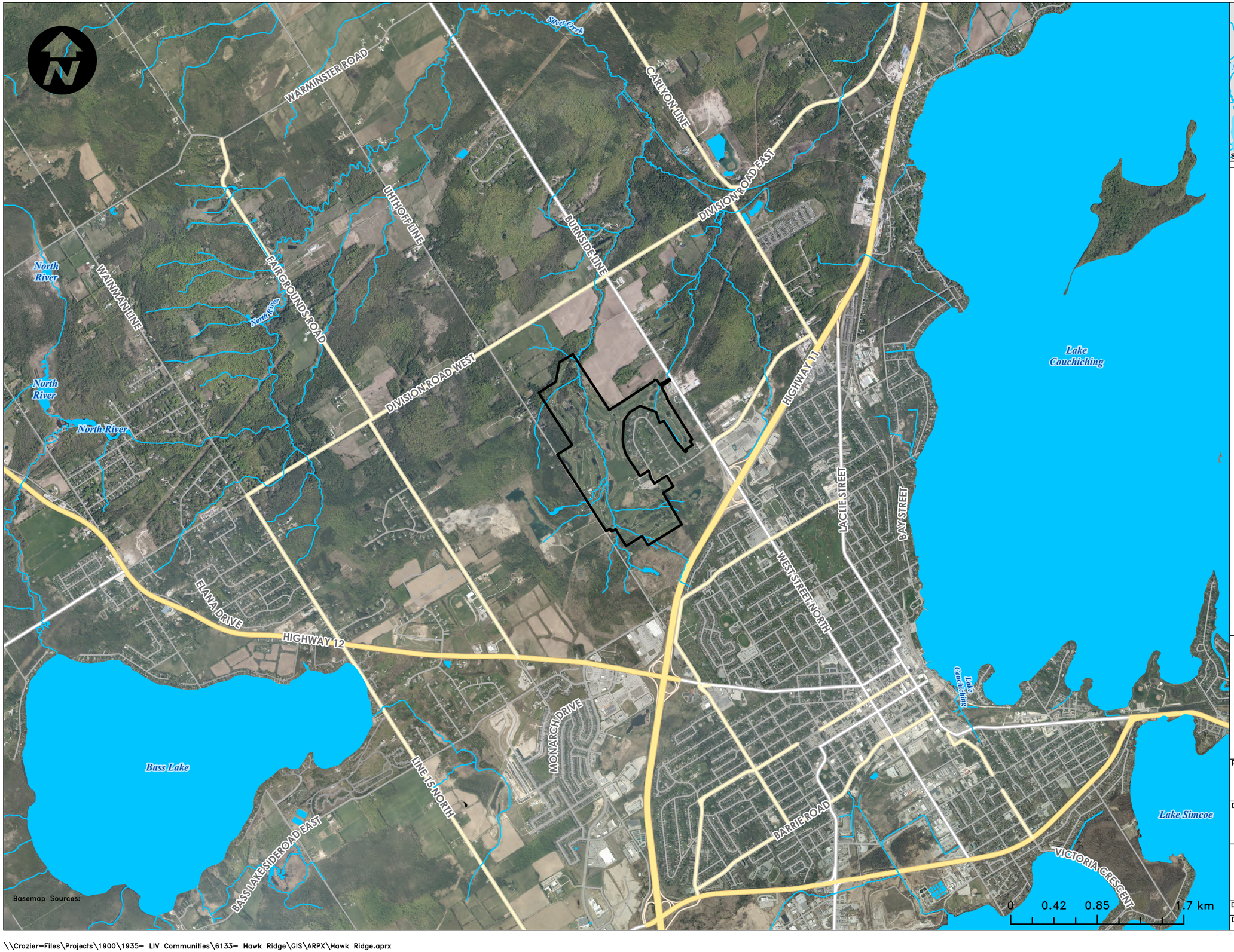
Date: 2024-05-01 (yyyy-mm-dd)

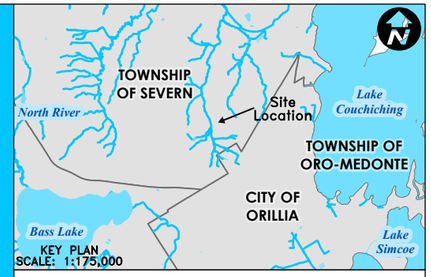
Signature: Kelly Reid

AGAT WorkOrder #: (To be entered by AGAT CPM)

Document #: ADM-78-2533.004
Issued Date: 2020-08-25

FIGURES





LEGEND

- Hawk Ridge Golf & Country Club
- Watercourse
- Waterbody

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ALL EXISTING UNDERGROUND UTILITIES TO BE VERIFIED IN THE FIELD BY THE CONTRACTOR PRIOR TO CONSTRUCTION.

Project

HAWK RIDGE GOLF & COUNTRY CLUB
TOWNSHIP OF SEVERN

Drawing

SITE LOCATION PLAN

CROZIER
2800 High Point Drive
Suite 100
Milton, ON L9T 6P4
905-875-0026 T
905-875-4915 F
www.cfcrozier.ca

Drawn C.M.	Design C.M.	Project No.	1932-5666
Date 2024-08-29	Projection EPSG:26917	Scale 1:35,000	Dwg. FIG. 01

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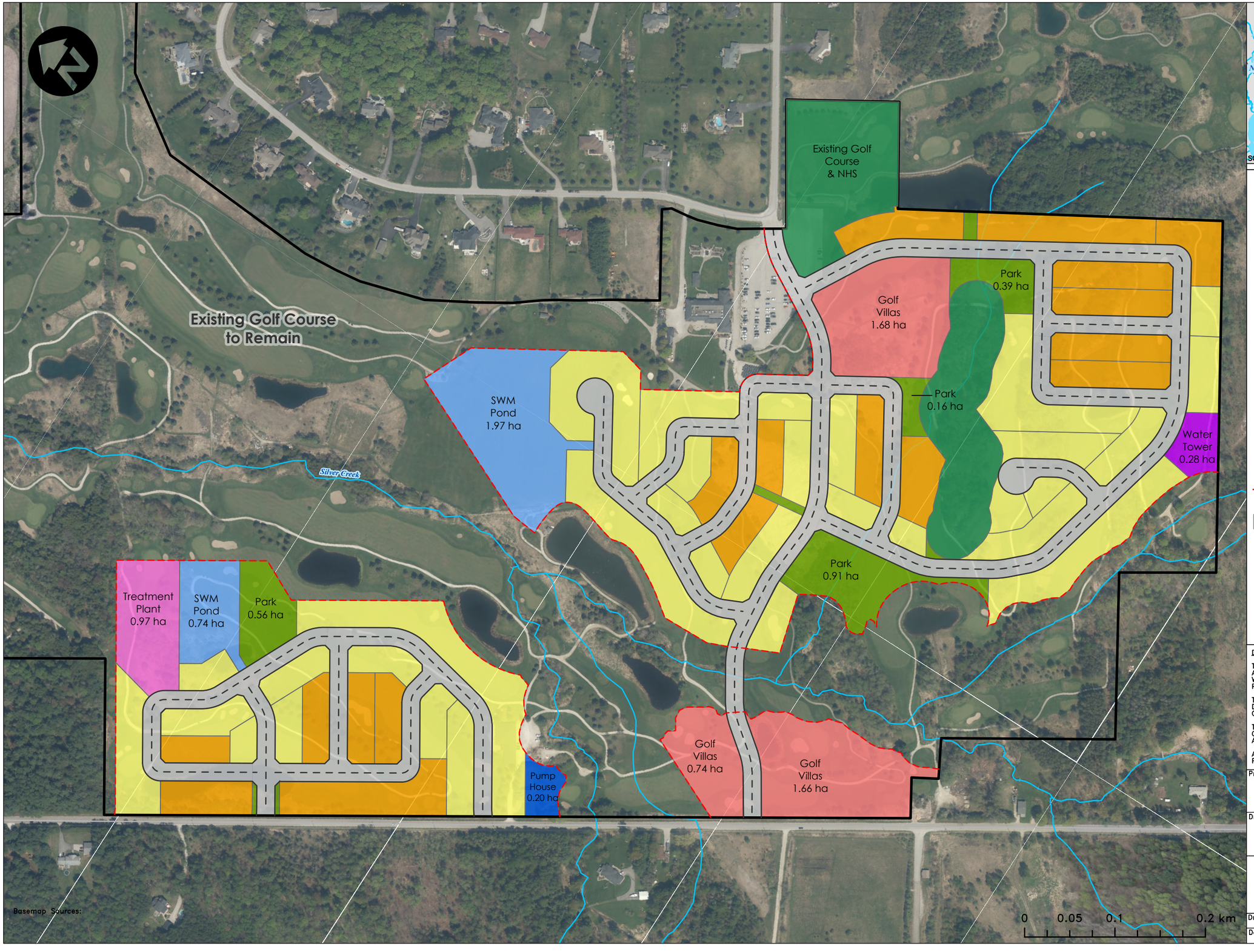

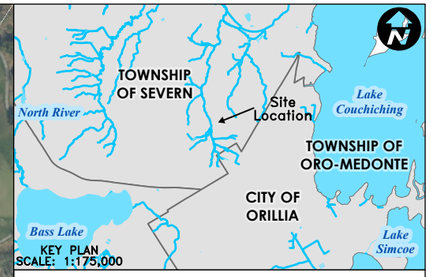

LEGEND

Proposed Development Plan (June 2024)

- Golf Villas
- Parkland and Open Space
- Single Detached
- Stormwater Management Facility
- Townhomes
- Treatment Plant
- Water Tower
- Well Pump House
- Proposed ROW

- Hawk Ridge Golf & Country Club
- Watercourse
- Waterbody
- Proposed Floodplain Adjustment for New Developable Area
- Natural Heritage System

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Project

HAWK RIDGE GOLF & COUNTRY CLUB
TOWNSHIP OF SEVERN

Drawing

PROPOSED DEVELOPMENT PLAN

CROZIER
2800 High Point Drive
Suite 100
Milton, ON L9T 6P4
905-875-0026 T
905-875-4915 F
www.cfcrozier.ca

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Date 2024-09-25	Projection EPSG:26917	Scale 1:4,000	Dwg. FIG. 02

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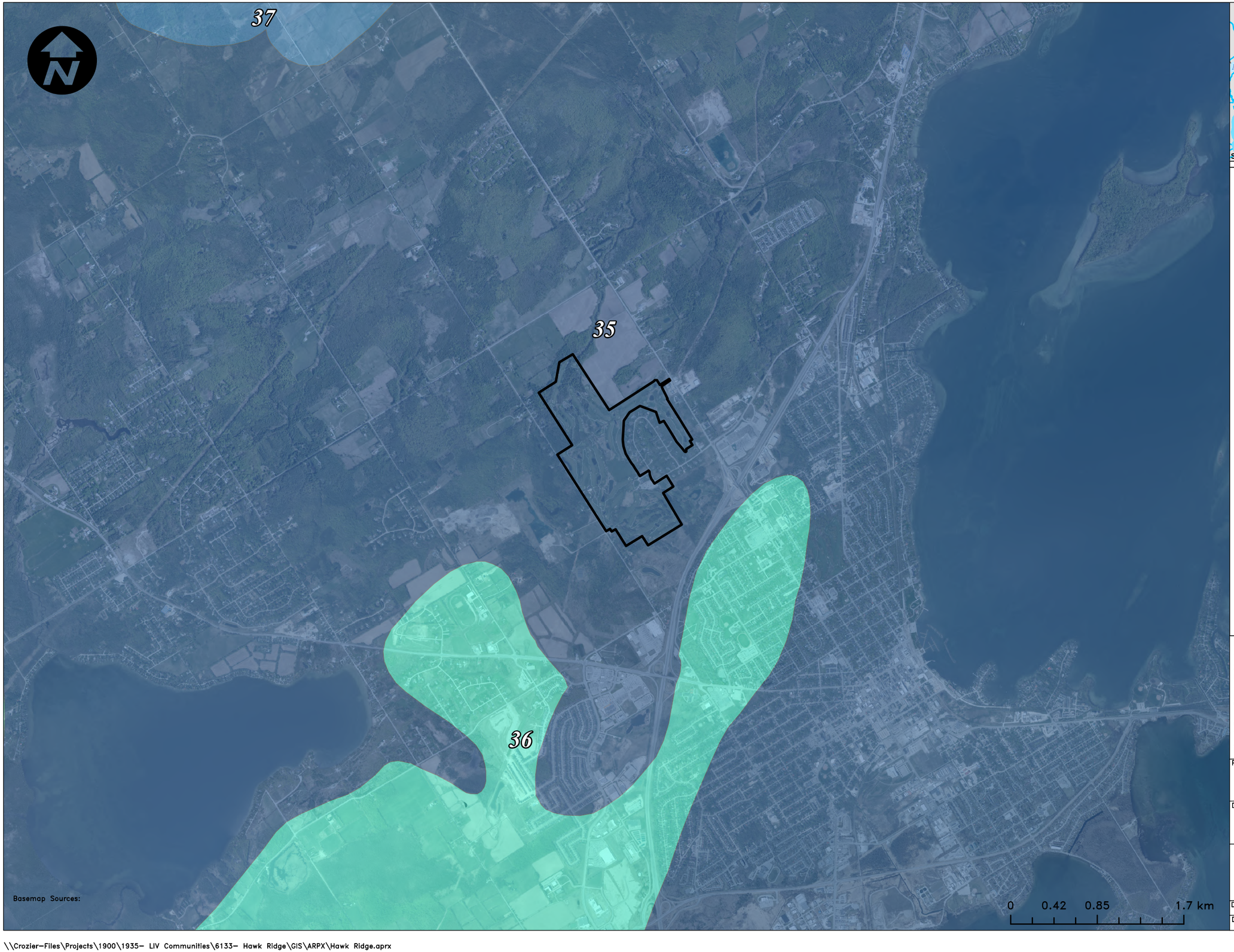

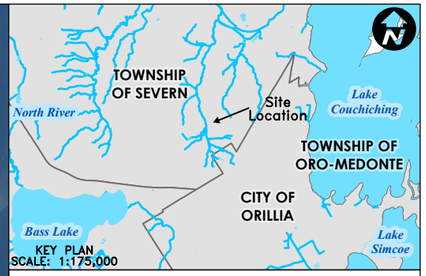

LEGEND

- Hawk Ridge Golf & Country Club

Physiographic Region

- 35: Simcoe Lowlands
- 36: Simcoe Uplands
- 37: Carden Plain

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Project

HAWK RIDGE GOLF & COUNTRY CLUB
TOWNSHIP OF SEVERN

Drawing

PHYSIOGRAPHY

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905-875-4915 F
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2024-08-29	EPSG:26917	1:35,000 / FIG 03

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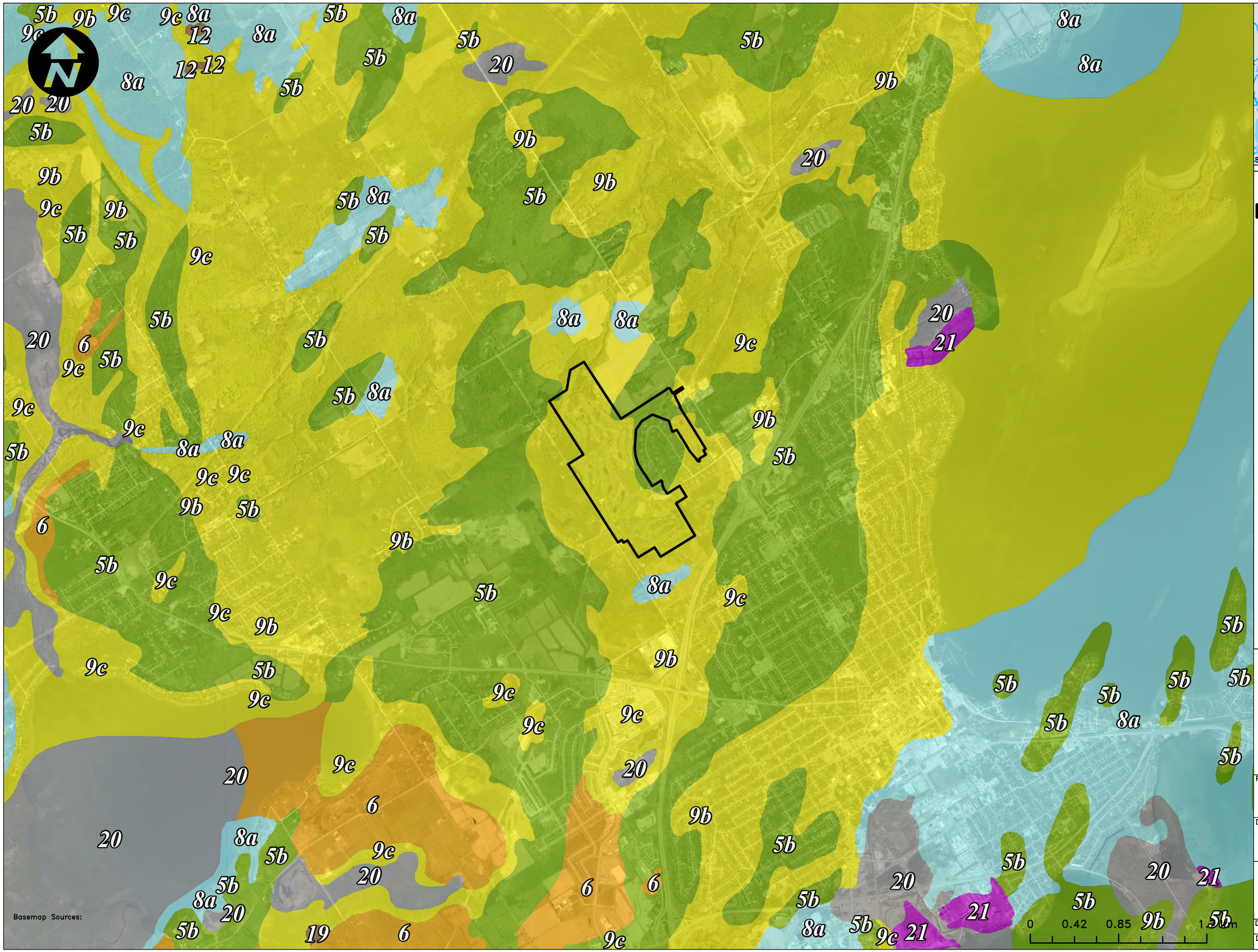

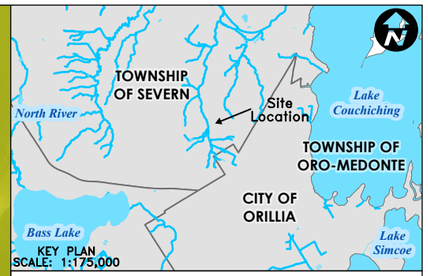

LEGEND

Hawk Ridge Golf & Country Club

Surficial Geology

- 21: Man-made deposits
- 20: Organic deposits
- 19: Modern fluvial silt, sand and gravel
- 9: Coarse-textured glaciolacustrine deposits (sand and gravel)
- 8a: Fine-textured, glaciolacustrine silt and clay
- 6: Ice-contact stratified deposits
- 5b: Stone-poor, carbonate-derived silty to sandy till

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Project

HAWK RIDGE GOLF & COUNTRY CLUB
TOWNSHIP OF SEVERN

Drawing

SURFICIAL GEOLOGY

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Date	Projection	Scale / Dwg.
2024-08-29	EPSG:26917	1:35,000 / FIG 04

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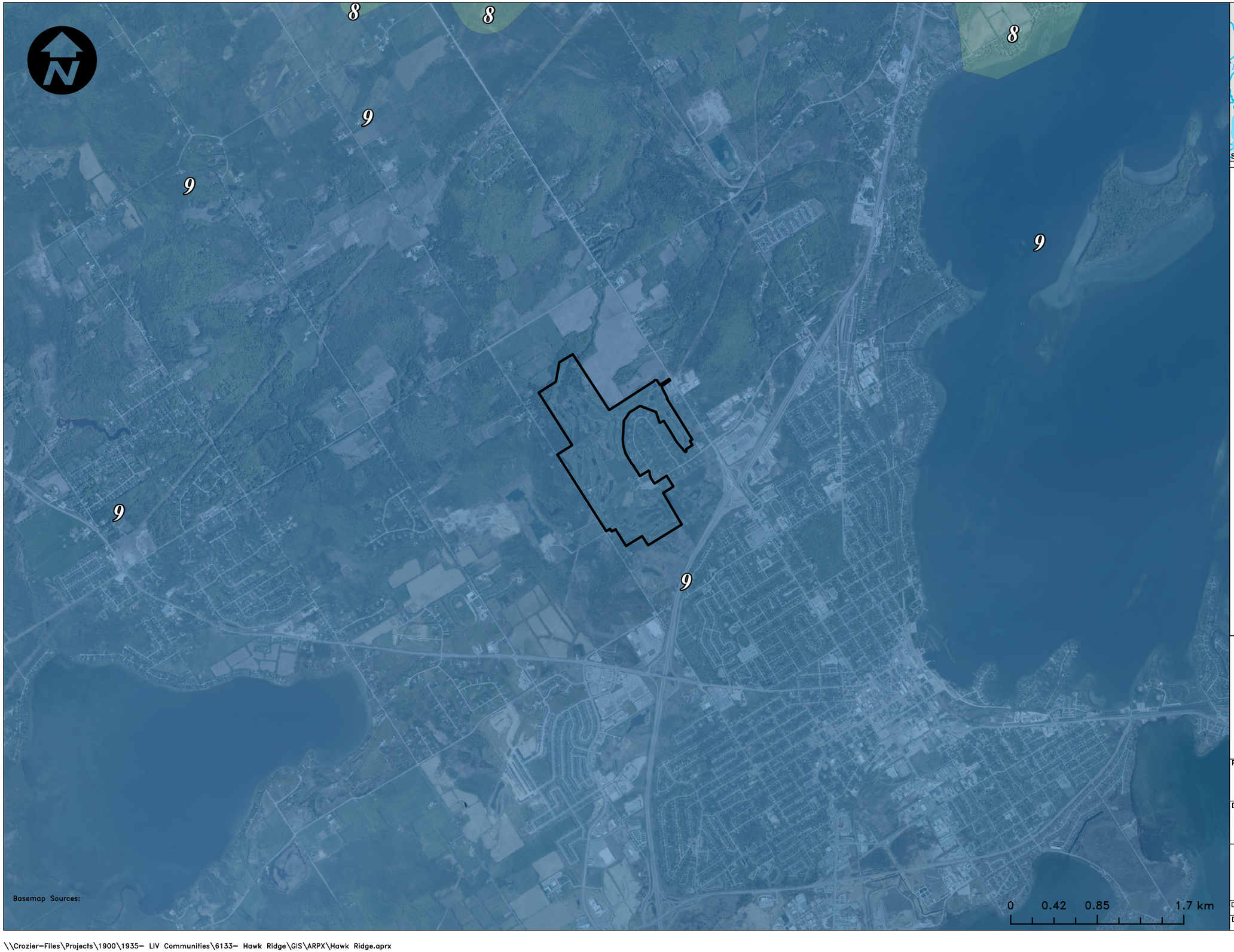

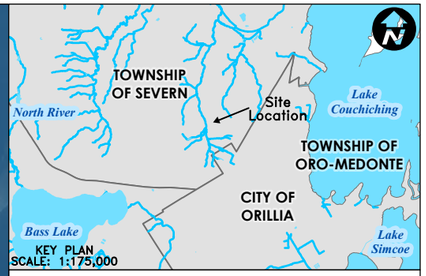

LEGEND

Hawk Ridge Golf & Country Club

Bedrock Geology

- 9: Bobcaygeon
- 8: Gull River
- 1: Precambrian

Basemap Sources:

Project

HAWK RIDGE GOLF & COUNTRY CLUB
TOWNSHIP OF SEVERN

Drawing

BEDROCK GEOLOGY

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Drawn	Design	Project No.	1932-5666
C.M.	C.M.		
Date	Projection	Scale	Dwg.
2024-08-29	EPSG:26917	1:35,000	FIG 05

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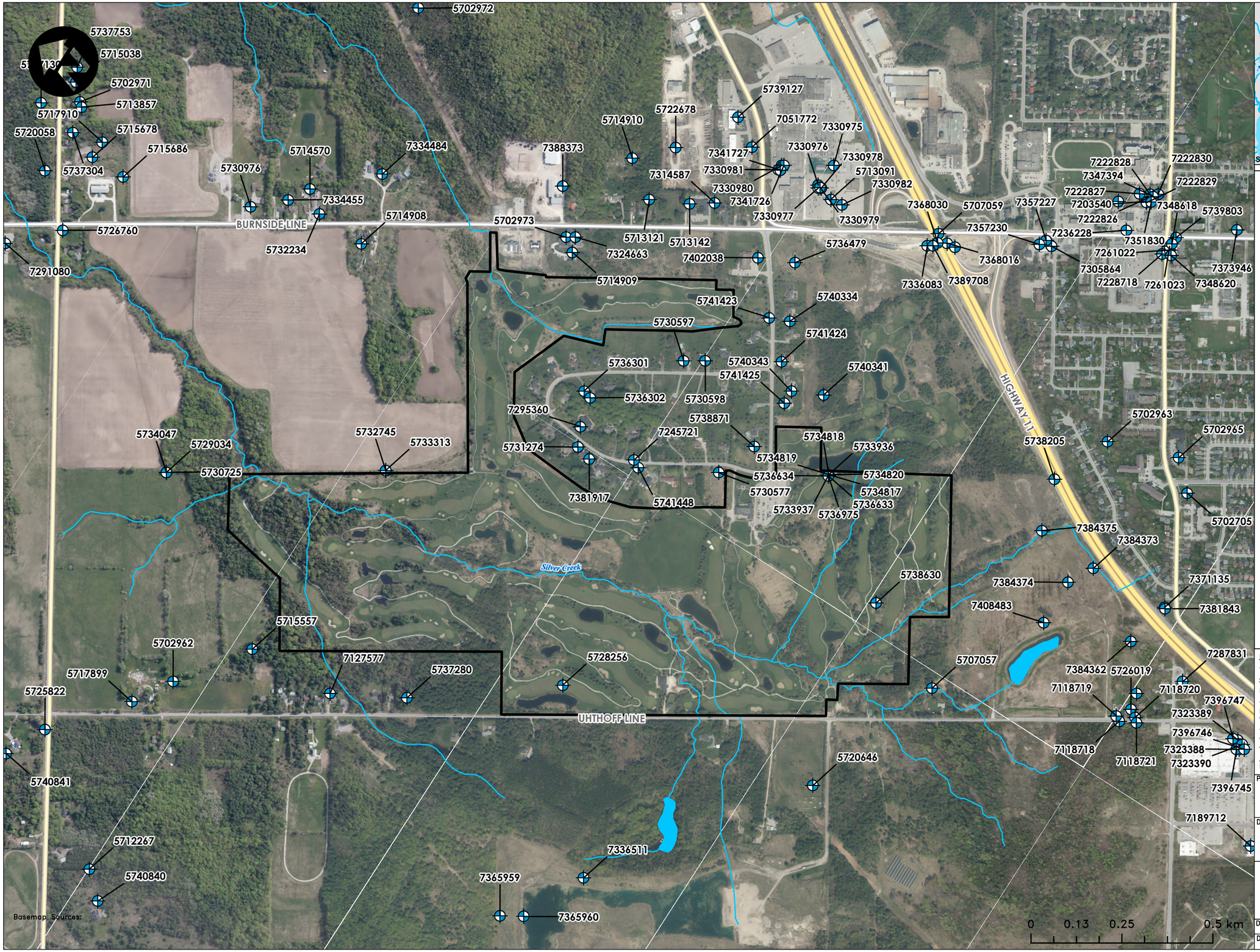

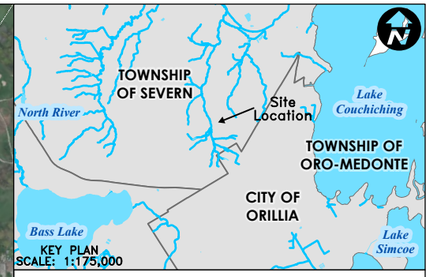

LEGEND

- Hawk Ridge Golf & Country Club
- MECP Well
- Watercourse
- Waterbody

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Project

HAWK RIDGE GOLF & COUNTRY CLUB
TOWNSHIP OF SEVERN

Drawing

MECP WELL LOCATION PLAN

CROZIER
2800 High Point Drive
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Date	Projection	Scale / Dwg.
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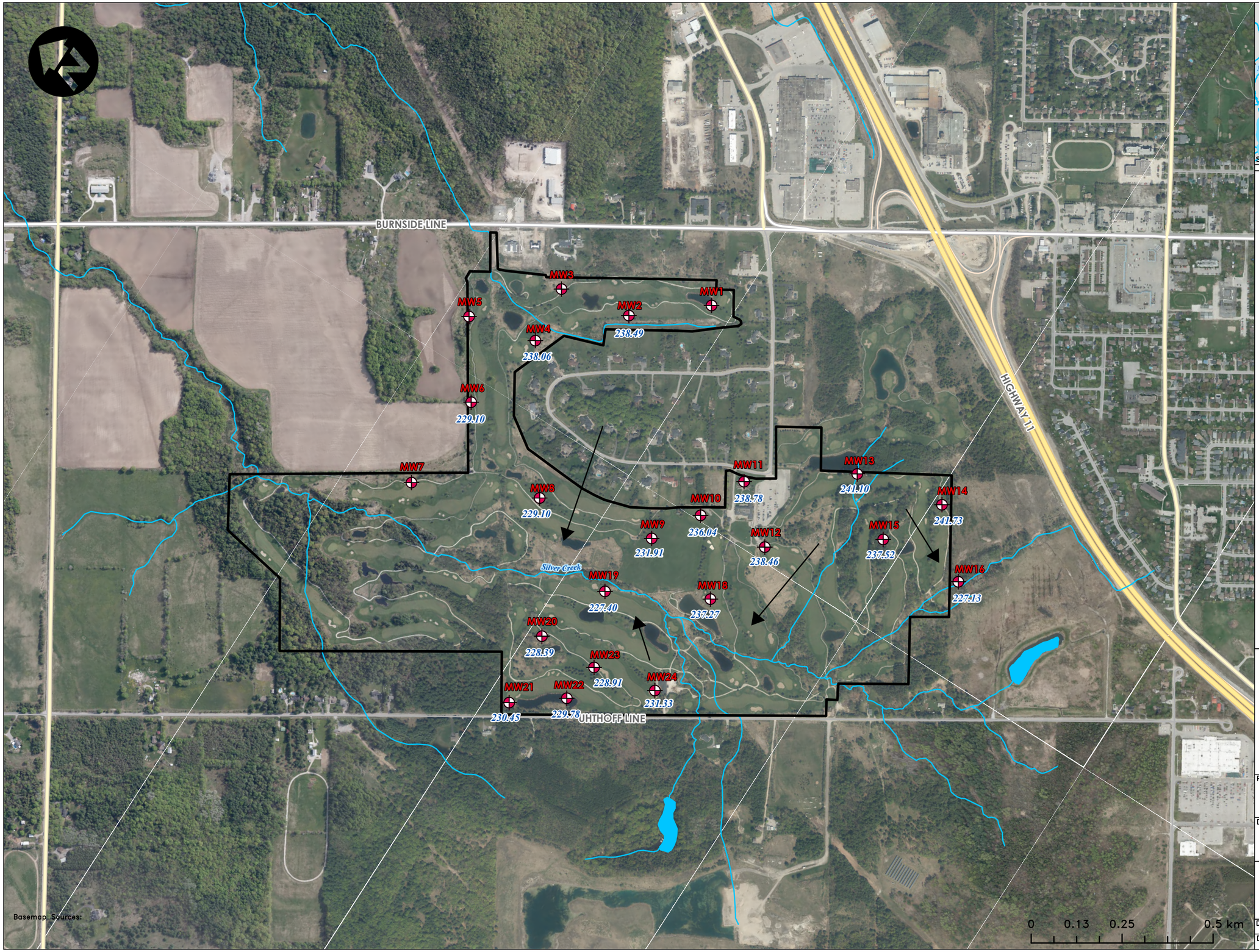

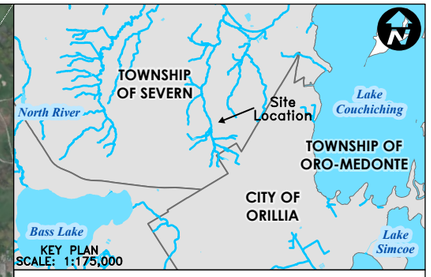

LEGEND

- Hawk Ridge Golf & Country Club
- Watercourse
- Waterbody
- Monitoring Well
- Interpreted Direction of Groundwater Flow

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Project

HAWK RIDGE GOLF & COUNTRY CLUB
TOWNSHIP OF SEVERN

Drawing

GROUNDWATER FLOW DIRECTION

CROZIER
2800 High Point Drive
Suite 100
Milton, ON L9T 6P4
905-875-0026 T
905-875-4915 F
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Drawn	C.M.	Design	C.M.	Project No.	1932-5666
Date	2024-08-29	Projection	EPSG:26917	Scale	1:10,000
				Dwg.	FIG 07

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