REPORT

Blue Triton Brands Erin Spring Site

2021 Annual Monitoring Report

Submitted to:

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Distribution List

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Key Facts for 2021 Operations at Erin

Key facts for the 2021 operations at Erin are summarized below.

1) Between January 1, 2021 and November 15, 2021, Blue Triton Brands (Blue Triton) operated under the terms of Permit to Take Water (PTTW) 3716-8UZMCU for well TW188. Since November 15, 2021, Blue Triton operates under PTTW 4788-C5TJTZ.

2) Blue Triton has complied with all the conditions of both permits for the Erin well TW1-88 in 2021.

3) Comprehensive annual monitoring reports are prepared for the Erin well (TW1-88) under the conditions of the PTTW.

4) No complaints arising from the taking of water authorized under the PTTWs were received in 2021.

5) The Grand River Low Water Response Team declared a Level 1 Low Water Condition for the entire Grand River Watershed, including the Eramosa River, on June 4, 2021. The Level 1 Low Water Condition was removed on September 29, 2021. Blue Triton complied with the request by the Grand River Conservation Authority for all water-users in the Grand River watershed to voluntarily limit water takings to 90% of their monthly maximum permitted volume during the Level 1 Condition.

6) TW1-88 is completed in the dolostone bedrock aquifer that is overlain by a sandy silt/clay aquitard and a surficial sand and gravel aquifer.

7) The daily water takings at TW1-88 ranged from 0 L to 263,843 L. The average daily water taking was 62,908 L. The maximum daily taking corresponded to 24% of the permitted maximum daily taking and the instantaneous pumping rate remained a relatively small fraction of the maximum permitted rate of 773 L/min.

8) The total volume of water taken in 2021 from TW1-88 was 22,961,540 L, approximately 6% of the permitted annual volume assuming continuous well operation. The water supply from TW1-88 is considered a supplemental supply to the Aberfoyle TW3-80 water supply.

9) 84.4% of the water pumped from TW1-88 was transported by tanker to the Blue Triton bottling facility at 101 Brock Road South in Puslinch, Ontario. The water was transferred into 500 mL plastic bottles. The remaining 15.6% of the pumped water was used as flush water (from the water storage silo to a pond located at the loading station) or used for CIP (clean in place) water. Flushing was completed to prevent the water from becoming stagnant during periods of low water use.

10) The variations in water level in TW1-88 are due mainly to short-term changes in the pumping rate. The long-term water level trends in TW1-88 are relatively stable. Water levels in the bedrock aquifer have been similar over the past five years with no long-term increasing or decreasing trend.

11) The University of Guelph, in partnership with Blue Triton, has drilled, installed and tested multi-level monitoring wells at two sites northwest and southwest of TW1-88 which are now part of the Blue Triton monitoring program. During the drilling and construction, at the beginning of January and in late April/early May 2021, the water levels declined approximately 1 m in the bedrock aquifer around the site. The decline in water levels was due to the drilling and construction of the above noted monitoring wells, which created a

temporary conduit between the upper and lower bedrock aquifers allowing the upper bedrock aquifer water to flow into the lower bedrock aquifer.

12) With the exception of the temporary short-term declines due to the new monitoring well construction, the water levels in the bedrock monitoring wells have shown similar trends over the past five-year period.

13) The influence that pumping TW1-88 has on water levels in other wells decreases with distance from TW1-88.

14) Water levels measured within the overburden in 2021 were within the range measured over the past five years. Overall, the similarity in water level trends, regardless of distance from TW1-88, indicates that water level fluctuations in the overburden are not due to pumping TW1-88, but due to natural seasonal changes and recharge.

15) There is no significant interaction between the bedrock and overburden aquifers at the current rate of taking.

16) Water levels in the mini-piezometers fluctuate seasonally, with higher water levels observed in the spring and lower water levels observed in the late summer. The water levels also show a response to precipitation and melt events. Water levels measured in the mini-piezometers in 2021 are within the ranges measured over the past five years.

17) Long-term surface water levels and flows are stable and pumping at TW1-88 does not influence the water levels or flows in the surface water features. Water levels in the surface water features respond to precipitation and melt events.

Table of Contents

TABLES

FIGURES

APPENDICES

1.0 INTRODUCTION

Blue Triton Brands (Blue Triton), formerly Nestlé Waters Canada (Nestlé), has retained Golder Associates Ltd. (Golder) to conduct the annual monitoring program and report preparation for the Blue Triton Erin Springs Site, as required by Permit To Take Water (PTTW) Number 4788-C5TJTZ issued by the Ministry of the Environment, Conservation and Parks (MECP). The PTTW is provided Appendix A. The PTTW was issued on November 15, 2021 and replaces the previous PTTW 3716-8UZMCU.

The location of the Erin Springs Site (the Site) is shown on Figure 1.1. The PTTW authorizes water taking from one bedrock well located on Lot 24, Concession 7, Geographic Township of Erin, County of Wellington, Ontario. Water from well TW1-88 is taken for the purpose of bottling water.

A summary of the PTTW Conditions and where the information can be found in this report are outlined in Table 1:

Table 1: Permit To Take Water Conditions

Condition Number	Condition Description	Report Section
3.2	Identifies use, rates, time and total takings allowed.	3.1.1, 4.1, Appendix C
3.3	Low Water Response Plan	4.1
4.1, 4.2	Establish the specified groundwater and surface water monitoring programs including monitoring requirements and monitoring timing.	3.1.2, 3.1.3
4.3	Condition for plotting gradient data and assessing hydraulic connection of the groundwater with the surface water.	4.2.4, 4.3.1
4.4	Notify the Director of monitoring locations that become inaccessible or abandoned and provide a recommendation for replacement.	3.1.2.1, 3.1.3.1, 3.1.4
4.5	Maintain a daily record of all water takings including date, volume of water taken and rate at which it was taken.	Appendix C
4.6	Prepare and submit an annual monitoring report to the Director, which presents and interprets the data collected under the conditions of the PTTW.	This report
4.7	Submit details of the bottling operations to the Director.	4.1
4.8, 5.1	Notify the local District Office of any complaint arising from the taking of water and proposed action to rectify the complaint.	4.1
4.9.1, 4.9.2, 4.9.3	Establish a publicly accessible website and have select technical data available for download.	Completed outside of report
4.10	Host an annual stakeholder meeting.	Completed outside of report

Condition Number	Condition Description	Report Section
5.2	Supply water to anyone with a water supply (in effect prior to this taking) that has been negatively impacted.	Not applicable

Golder began monitoring at the Site in May 2014 on behalf of Nestlé and continues to monitor the site on behalf of its new owner Blue Triton. Prior to that time, monitoring was performed by Conestoga Rovers and Associates (CRA) and Nestlé. The MECP has requested that the reporting follow the same outline and format as previous reports.

The report is structured as follows:

- Section 1.0: Introduction including site location, history, and construction details for supply well TW1-88;
- Section 2.0: Regional setting including a description of topography, drainage, ecology, physiography, geology and hydrogeology;
- Section 3.0: Summary of 2021 field investigations including a description of field activities conducted in 2021;
- Section 4.0: Monitoring program results including a summary and analysis of the data collected in 2021;
- Section 5.0: Conclusions from the 2021 monitoring program; and
- Section 6.0: Recommendations from the 2021 monitoring program.

1.1 Historical Summary

TW1-88 was constructed in August 1988 for a party other than Nestlé (now Blue Triton). In 1989, water was permitted to be taken from the well for a 10-year period at a maximum withdrawal rate of 1,112,860.8 L/day. However, the well was only used one day during this initial 10-year period.

In 1999, further testing was completed at TW1-88 and the well was re-permitted by the original owner. Nestlé (now Blue Triton) purchased the property and began pumping for commercial purposes in March 2000; the well has been permitted continuously since that time. The current permit allows for water taking for bottling water purposes at a maximum pumping rate of 773 L/min and a maximum daily withdrawal rate of 1,113,000 L over the year.

The Erin property is located on a 75.5 hectare parcel approximately 4 km west of the Town of Erin (Figure 1.1), 24 km north-northeast of Guelph, and approximately 35 km north of the Blue Triton Aberfoyle bottling facility, where the water is transported for processing. The Erin property consists of a water silo, house, barns, paved access drives, ponds, and open fields with wooded areas and wetlands. TW1-88 is located in the northern portion of the property and the loading station is situated in the southern portion of the property.

When water withdrawals for bottling began at the property, tankers were filled directly from the well. Starting in 2001, water pumped from TW1-88 has been transferred via pipeline to a 227,305 L stainless steel water storage silo. The silo is used for short-term storage where highway tanker trucks are filled for transport to the Blue Triton Aberfoyle facility.

1.2 Construction Details for Supply Well TW1-88

The borehole log for TW1-88 is provided in Appendix B. TW1-88 is interpreted to be completed within the Guelph Formation limestone and dolostone. The bedrock is overlain by glacial sediments that are 19.5 m thick at TW1-88. The overburden consists of two general units: the uppermost unit consists of interlayered sand and gravel with varying amounts of silt to a depth of 12.2 m below grade, and the lower unit consists of 7.3 m of sandy silt till/clay till. A 170 mm diameter high-carbon steel casing was drilled through the overburden and into the bedrock and grouted 1.4 m into the bedrock at a depth of 20.9 m below grade. The well was completed as a 160 mm diameter open borehole in bedrock with a depth of 57.3 m.

In 2010, a downhole video survey revealed that the original high carbon steel casing had some pitting (CRA, 2014). To prevent potential casing failure in the future and to upgrade the well to Nestlé (now Blue Triton) standards, the original casing was overdrilled and removed, and a 200 mm diameter stainless steel casing was installed to a depth of 21.8 m. The new casing was cement grouted in place.

The lower portion of the well was noted to have been completed within a poor production zone (CRA, 2014). The bottom 18.3 m of the well was grouted with cement from 57.3 m to 39 m below grade in 2010. The revised water well record (Well Tag No. A095193) is included in Appendix B, and a schematic of the well is shown on Figure 1.2.

2.0 REGIONAL SETTING

The following sections provide a summary of the regional and local topography, drainage, physiography, and overburden and bedrock geology/hydrogeology for the Site.

2.1 Topography and Drainage

The topography and drainage of the property and surrounding area is shown on Figure 2.1. The regional topography is characterized by knobby hills surrounded by low-lying wetlands and/or streams, with overall ground elevations increasing to the northwest. Ground surface elevations are highest near the middle of the property (450 masl) and decline toward the northwest (430 masl) and southern (410 masl) parts of the property. The topography is relatively flat in the northern part of the property and rolling elsewhere. In general, surface water features occur within the topographic lows.

Well TW1-88 is situated in the Grand River watershed, near the surface water divide with the Credit River watershed (Figure 1.1). Specifically, the TW1-88 is located in the Eramosa River subwatershed of the Grand River. The Eramosa River and its tributaries are generally situated west of the Site.

There are two ponds on the Blue Triton property within the Grand River Watershed as shown on Figure 2.1: one pond referred to as the “On-Site Pond” is located approximately 135 m southwest of TW1-88, and one pond referred to as “Wetland Pond” is located approximately 265 m south-southeast of TW1-88. The ponds discharge to an unnamed perennial tributary of the Eramosa River that flows in a southwest direction.

Within the Credit River Watershed, the Erin Branch of the West Credit River is located east of the Site and flows in a general southeasterly direction, ultimately discharging to the Credit River. At its closest point, the Erin Branch tributary is located approximately 470 m from TW1-88. Off the property (to the north and east), there are three large on-line ponds located along the Erin Branch of the Credit River. Another large surface water body located within the Credit River Watershed, referred to as Roman Lake, is located about 1.2 km southeast of TW1-88.

2.2 Ecological Setting

The upland portions of the property comprise agricultural fields while the low-lying areas support forest and wetlands. The wetlands on the Grand River watershed portion of the property are part of the Speed Lutteral Swan Creek Wetland Complex. The wetlands on the Credit River watershed portion of the property are part of the West Credit River Wetland Complex. Both wetland complexes are designated as Provincially Significant Wetlands. The wetlands are generally undisturbed and support a diverse range of flora and fauna, including some that are ranked as locally significant. For more details on the ecological setting see the 2021 Biological Monitoring Program Report (Beacon Environmental, 2022).

2.3 Physiography

The area is situated between the physiographic regions described by Chapman and Putnam (1984) as the Guelph Drumlin Field (to the south) and the Hillsburgh Sandhills (to the north). Chapman and Putman (1984) characterize the Guelph Drumlin Field as drumlins fringed by gravel terraces and separated by swampy valleys in which flow sluggish tributaries of the Grand River. The drumlins are made up of glacial till. Chapman and Putnam (1984) characterize the Hillsburgh Sandhills as a glacial spillway with knobby hills. Surficial soils are generally sandy with swampy valleys.

2.4 Geology and Hydrogeology

The geology in the area has been interpreted based on published mapping, water well records and detailed stratigraphic logging (CRA, 2014).

2.4.1 Overburden Geology

The regional Quaternary geology in the area of the Site is shown on Figure 2.2 (Cowan, 1976). The surficial overburden at the Site is characterized by the following units:

- Organic deposits;
- Glaciofluvial sandy deposits;
- Ice-contact stratified deposits; and
- Silty to sandy till.

The area to the south, southeast and east of the Site generally contains silty to sandy till at surface, with ice contact stratified drift and glaciofluvial sand and gravel deposits occurring mainly in the low-lying areas. The area west, northwest and north of the Site generally contains ice-contact stratified deposits that make up the surficial soils of the Orangeville Moraine. The Site lies between these features, with till deposits occurring through the middle of the Site where ground elevation is higher and sand and gravel deposits occurring toward the northwest and southeast parts of the property.

Three cross-sections through the Site have been developed (Figures 2.3 through 2.5) with the locations shown on Figure 2.2 (CRA, 2014). Two overburden stratigraphic units are interpreted to be present in the vicinity of the Site:

- An upper sand and gravel originating from glaciofluvial outwash or ice-contact stratified drift; and
- A lower sandy silt/clay till.

The sand and gravel unit consists of sand, gravel, or sand and gravel, and generally increases in thickness to the northwest of TW1-88, but is generally absent to the south, southeast, and east of TW1-88. The sandy silt/clay till is continuous across the Site and is present below the sand and gravel unit or at surface where the sand and gravel unit is not present. The till typically ranges in thickness from about 5 m to 35 m within 1 km of TW1-88. Based on the MECP water well records, sand and gravel deposits are present within the till or directly below the till overlying bedrock.

2.4.2 Bedrock Geology

The regional bedrock geology is shown on Figure 2.6 (Liberty, 1975). The uppermost bedrock unit consists of dolostone of the Guelph Formation below the Site, and dolostone of the Amabel Formation (the Ontario Geological Survey now identifies the rock of the Amabel Formation as comprising the Eramosa, Goat Island, Gasport or Irondequoit Formations) east of the Site. Liberty (1975) describes the Guelph Formation in this area as light brown, fine to medium crystalline sucrosic dolostone. TW1-88 is completed within the Guelph Formation.

2.4.3 Hydrogeology

There are three hydrostratigraphic units present at the Site as follows (from top to bottom):

- Surficial sand and gravel aquifer;
- Sandy silt/clay till aquitard; and
- Dolostone bedrock aquifer (Guelph Formation).

The Erin property is located in a regional recharge area of a very large and robust bedrock aquifer system. The water table generally lies within the surficial sand and gravel aquifer. The direction of groundwater flow within the water table aquifer occurs in a southerly to southwesterly direction in the vicinity of TW1-88. Water recharges regionally through the glacial overburden and into the Guelph aquifer on the Orangeville Moraine, generally north and northwest of the Erin property.

The surficial sand and gravel aquifer and bedrock aquifer are separated by a sandy silt/clay till unit. The difference in water levels between the aquifers indicates that the till is acting as an aquitard and that mean vertical groundwater flow is downward under pumping and non-pumping conditions.

The bedrock aquifer does not supply the pond network on the Erin property. The potentiometric surface of the bedrock aquifer is approximately 5 metres below the surface elevation of the On-Site pond which is part of the shallow groundwater system. The bedrock aquifer also does not discharge to the tributary of the Eramosa River that flows from the wetland to the pond network. The tributary is supplied almost exclusively by runoff from surrounding topography, precipitation on the wetlands and pond and discharge from the overburden aquifer.

The carbonate units of the Guelph Formation comprise a regional aquifer, utilized by residential, commercial, and municipal water supplies. The bedrock aquifer is the main water supply aquifer in the vicinity of the property for both the Blue Triton supply well and private wells.

The potentiometric surface prior to pumping (January 24, 2000) is shown on Figure 2.7 (CRA, 2014). Groundwater flow in the absence of pumping is to the south-southeast with a horizontal gradient of about 0.015 m/m. CRA (2014) notes that static water levels typically ranged from 6 to 16 m bgs, and the water level at TW1-88 before pumping began was about 10 m bgs (i.e., elevation of 424.3 masl).

A map showing the interpreted drawdown in the bedrock aquifer on June 15, 2001, after 18 hours of pumping at 773 L/min, is included on Figure 2.8 (CRA, 2014). The map shows that the zone of influence at this pumping rate (based on a drawdown of 0.1 m) extended approximately 1,000 m from TW1-88 to the west, north and east; and to the south and southwest. To the west the zone of influence is inferred to exceed 700 m, although there are limited available data in that direction. At TW1-88, the drawdown was approximately 8.1 m.

It is noted that Golder previously developed a groundwater flow model for Wellington County in 2005, which indicated that pumping from TW1-88 at 1,113,000 L/day does not interfere with the Wellhead Protection Area designated for the two Hillsburgh municipal wells (Golder, 2006). The closest Hillsburgh municipal well is located approximately 1.5 km north-northeast of TW1-88 and is beyond the 0.1 m drawdown contour (Figure 2.8) located approximately 1 km from TW1-88.

2.5 Source Water Protection

Since the passing of the Clean Water Act (2006), municipalities in Ontario have been required to develop source protection plans to protect their municipal sources of drinking water. These plans identify both water quality and water quantity risks to local drinking water sources and develop strategies to reduce or eliminate these risks. Potential and existing risks for a municipal source are identified within wellhead protection areas (WHPA). A WHPA is an area projected to ground surface that delineates the zone in an aquifer where groundwater is flowing to a municipal drinking water source (pumping well). These are defined to protect water quality. The Blue Triton Erin property and well TW1-88 is located more than 1.4 km from the closest WHPAs, which include the Hillsburgh WHPA to the north and the Erin WHPA to the east (CTC Source Protection Committee, 2015).

In addition to protecting water quality, water quantity is also a concern and is considered under Water Quantity Protection Plans. A Water Quantity Risk Assessment is completed to ensure that future water needs of a community can be met. It identifies existing and potential water quantity threats and future activities that may limit municipal water supplies. This is important because when more water is taken from an area than can be naturally replenished, water supplies are threatened, and water shortages are possible. The Erin property falls within the upper end of a Water Quantity Intake Protection Zone (IPZ-Q) for the City of Guelph Eramosa Intake on the Eramosa River, which has been assigned a significant risk level (Matrix Solutions 2017). The IPZ-Q was assigned a significant risk level because of interconnection through the City of Guelph Arkell Water System. As a result, each of the consumptive water uses within the IPZ-Q are categorized as significant; however, the net consumptive water use within the IPZ-Q is small compared to the natural variability in flow of the Eramosa River at the intake (Matrix Solutions 2018a). Therefore, on an average basis, consumptive water taking threats are not expected to affect the municipal surface water intake’s ability to obtain water. Further assessment of the threats was carried out as part of the climate changes assessment (Matrix Solutions 2018b). The municipal and non-municipal threats were ranked as follows: 1) Arkell Wells, 2) Glen Collector, 3) Non-Municipal PTTWs, and 4) Rockwood Wells. The Blue Triton water taking is one of twelve water takings that fall within the third-ranked threat of four threats. The study indicates that the total potential influence of municipal and non-municipal takings on streamflow in the Eramosa River at Gauge 02GA029 is a reduction in flow of 0.287 m^3/s; the amount represents approximately 12% of the mean annual flow (2.3 m^3/s) (Matrix Solutions 2018b). Within this total, the impact of permitted municipal pumping rates represents 85% of the total potential impact of permitted water takings on the Eramosa River intake. The Arkell Wells/Glen Collector are located approximately 24 km south of TW1-88.

3.0 SUMMARY OF 2021 FIELD PROGRAM

This section describes the field activities performed in 2021 associated with PTTW 4788-C5TJTZ (and previous PTTW 3716-8UZMCU) for TW1-88.

3.1 Groundwater and Surface Water Monitoring Program

Groundwater and surface water monitoring was initiated in 2000 and has evolved over the years with the objectives to 1) characterize the existing hydrogeologic setting, and 2) document potential long-term changes to the groundwater and surface water resources in the area. The monitoring program includes measurement and record-keeping of water takings, groundwater levels, mini-piezometer levels, surface water levels and surface water flow. The monitoring program for PTTW 4788-C5TJTZ includes the following instrumentation, with the locations shown on Figures 3.1 through 3.3:

- Groundwater levels and water takings in the production well (TW1-88);
- Groundwater levels in 14 monitors at 8 locations;
- Shallow groundwater levels in 7 piezometer nests with a total of 14 monitors (shallow and deep pair);
- Surface water levels at 7 stations;
- Surface water flow at 4 stations; and
- Water levels at 1 private well.

Differences in the monitoring requirements with respect to PTTW 3716-8UZMCU, which prevailed until November 2021 are discussed below.

3.1.1 Water Taking

Water taking from TW1-88 in 2021 was measured using an Endress+Hauser Promag magnetic flow meter connected to an Allen-Bradley industrial Programmable Logic Controller. The instantaneous flow and cumulative volume pumped are recorded every minute. The flow meter was most recently calibrated on December 1, 2021 by Endress+Hauser.

The daily volumes taken from supply well TW1-88 in 2021 are provided in Appendix C.

3.1.2 Groundwater Monitoring Program

Groundwater levels have been measured at various locations for varying periods of time since a monthly water level monitoring program was initiated in January 2000. Modifications to the monitoring program have been made over time as wells have become inaccessible. In 2014 and 2020, some homeowners requested that monitoring be discontinued at their well (see Section 3.1.4). In 2020 and 2021, well D26C could not be accessed due to pandemic restrictions. No wells required as part of the monitoring program became inaccessible during the 2021 monitoring period. Previous wells that have been decommissioned or are no longer part of the monitoring program are shown on Figure 3.4 (not including private wells). All of the existing monitoring locations and the decommissioned or unused wells are shown on Figure 3.5.

The monitoring locations for the 2021 groundwater monitoring program are shown on Figures 3.1 and 3.2 for the bedrock and overburden wells, respectively, and are summarized below. Wells underlined have been removed from the current PTTW and bolded wells have been added to the current PTTW.

Overburden Monitors

- TW1/99, MW2-00, MW3A/B-00, MW5B-05, MW6B-05, MW11B-08, MW12B-08, **MW13B-20-07**, **MW14B-20-06**, D2B, D26C, D36A, D27, D7B.

Bedrock Monitors

- TW1-88, MW5A-05, MW6A-05, MW11A-08, MW12A-08, **MW1-18A/B**, **MW13A-20-7**, **MW14A-20-7**, D2A, D3, D36B, D19, D24A, D24B, D26A, D26B, D8, D15, D32.

Water levels were measured at all locations during the third week of each month under PTTW 3716-8UZMCU and are now measured quarterly under PTTW 4788-C5TJTZ. Where required by the PTTW, dataloggers are used to record water levels at 60-minute intervals and downloaded quarterly (monthly in 2021). The groundwater levels measured in 2021 are presented in Appendix D.

3.1.2.1 Missing Data

The following table provides a list and description of missing data from the 2021 monitoring. There are instances when manual water levels could not be measured due to frozen conditions or restrictions due to COVID. With the exception of the COVID restrictions, the other issues were temporary and have been resolved.

Table 2: Missing Groundwater Data from the 2021 Monitoring

Monitoring Location	Missing Data	Comment
D26C	Manual water level in January through December	Well is in house and could not enter house due to health and safety restrictions (COVID)
D32	Manual water level in January	Frozen

3.1.3 Surface Water Monitoring Program

The monitoring locations for the 2021 surface water monitoring program are shown on Figure 3.3 and are summarized below. Wells underlined have been removed from the current PTTW and bolded wells have been added to the current PTTW.

Surface Water Levels

- ST03-05, SW1-08, **SW1A-20**, SW3-08, SW4-08, SW5-08, SW7-08, **SW7B-20.**

Water levels are measured at all locations during the third week of each month using a water level meter. Dataloggers are used to record water levels at 60-minute intervals, which are also downloaded once a month. The surface water levels for 2021 are presented in Appendix E.

A new station (SW7A-16) was established in the Erin Branch of the Credit River by D7B in May 2016. The site was chosen at a location with more favourable hydraulics (i.e., single channel, stable conditions and no backwater). However, due to changes in the stream, SW7A-16 was replaced with SW7B-20 approximately 100 m upstream. This station will eventually replace SW7-08, which is located in an area with changing stream conditions and flooding.

Stream Flows

- SW1-08, SW3-08, SW7-08, **SW7B-20.**

Stream flow was measured at four locations during the third week of each month. Stream flow velocities were measured using a Hach electromagnetic flow meter and the surface water flows were calculated using the cross-sectional area-velocity method. The surface water flow measurements for 2021 are presented in Appendix F.

The monthly surface water elevations (“stage”) and stream flow measurements (“discharge”) collected in 2021 were used to update the stage-discharge relationships (rating curves) at SW1-08, SW7-08 and SW7B-20. The rating curves were used to calculate stream flow from the continuous water level measurements at these stations. A stage-discharge curve was not developed for SW3-08 as flow at SW3-08, which is the outlet from the On-site Pond, is measured on a continuous basis using a Stingray Flow Meter.

Mini-Piezometers

- P01A/B-07, P03A/B-05, P06A/B-07, P10A/B-05, P11A/B-05, P12A/B-07, P13A/B-07.

In 2021, water levels were measured in mini-piezometers at seven locations, each containing a shallow and a deep monitor installed beneath the stream to assess water levels in the shallow sediments. Dataloggers are used to record water levels at 60-minute intervals. Water levels were measured and dataloggers downloaded at all locations during the third week of each month. The water levels measured in 2021 are presented in Appendix E.

3.1.3.1 Missing Data

The following table provides descriptions of missing data from the 2021 monitoring, which are technically not missing but rather are due to winter conditions (i.e., stations were frozen). The water levels in the mini-piezometers are close to surface and can become frozen in the winter. Slow moving water can also become frozen in the winter. The water level is not necessarily representative of the actual water level under these frozen winter conditions. The issues were temporary and have been resolved.

Table 3: Missing Surface Water Data from the 2021 Monitoring

Monitoring Location	Missing Data	Comment
P03A/B-07	Frozen	Frozen in February
P06A/B-07	Frozen	Frozen in February
P10A-05	Frozen	Frozen in February
P10B-05	Frozen	Frozen in February and December
P11B-05	Frozen	Frozen in January
P12A-07	Frozen	Frozen in January, February, and December
SW5-08	Frozen	Frozen in January, February, and March

3.1.4 Notification Regarding Locations Which Become Inaccessible

A list of the wells that homeowners requested be removed from the monitoring program, along with replacements that were recommended, are provided in the following table.

Table 4: Inaccessible Monitors

Monitoring Location	Reason for Inaccessibility	Action recommended by Nestlé	Documented in Letter to MECP
D19	In October 2014, the resident notified Nestlé that they would no longer like their well monitored.	No additional wells to be monitored in place of D19 as there are other wells in the area that can be monitored.	October 10, 2014
D2A	In December 2014, the resident notified Nestlé that they would no longer like their well monitored.	Install a monitoring well on a neighbouring property (see Recommendations Section).	December 2, 2014
D2B	In December 2014, the resident notified Nestlé that they would no longer like their well monitored.	No additional wells will be monitored in place of D2B as there are no impacts to the overburden aquifer and there are other wells being monitored in the overburden.	December 2, 2014
D27	In March 2020, the resident notified Nestlé that they would no longer like their well monitored.	No additional wells will be monitored in place of D27 as there are no impacts to the overburden aquifer and there are other wells being monitored in the overburden.	March 9, 2020

3.2 Surveying

The new wells MW13A-20, MW13B-20, MW14A-20 and MW14B-20 were surveyed in 2021. No additional surveying was necessary in 2021.

3.3 Precipitation

A record of precipitation in 2021 was compiled from the Fergus Shand Dam meteorological station with missing data filled in from the Elora RCS meteorological station. Missing data were previously filled in from the Fergus MOE meteorological station but the data were not available after 2020. Prior to 2016, the record of precipitation was compiled from the Orangeville meteorological station, with missing data obtained from the Fergus Shand Dam Station; however, data are no longer available from the Orangeville station. The following table provides a summary of the annual precipitation. The annual average (1981-2010) precipitation at the Fergus Shand Dam Station is 945.7 mm and it is 901.5 mm at the Orangeville Station. The total precipitation measured in 2021 was 890.6 mm, which is approximately 6% below the 1981-2010 average. This is the first year since 2015 with below-average precipitation. Annual precipitation is also shown graphically on Figure 3.6 along with the 30-year average (or normal as reported by Environment Canada).

Table 5: Annual Precipitation

Year	Precipitation (mm)	% Difference from Average
2008	1444.8 (Orangeville)	60.3
2009	1044.9 (Orangeville)	15.9
2010	1113 (Orangeville)	23.5
2011	1077.7 (Orangeville)	19.5
2012	803 (Orangeville)	-10.5
2013	1035.7 (Orangeville)	14.9
2014	954.5 (Orangeville)	5.9
2015	783.1 (Orangeville)	-13.1
2016	1032 (Shand Dam)	9.1
2017	1109.6 (Shand Dam)	17.3
2018	953.3 (Shand Dam)	0.8
2019	1053.4 (Shand Dam)	11.4
2020	1014.1 (Shand Dam)	7.2
2021	890.6 (Shand Dam)	-5.8
Average (1981-2010)	901.5 (Orangeville), 945.7 (Fergus Shand Dam)	

The monthly precipitation for 2021 and the average monthly precipitation for the period 1981-2010 are presented in the following table. Below average precipitation occurred in January and March through to May and again in August and November of 2021. Above average precipitation occurred in February and from June onward with the exception of August and November.

Table 6: Monthly Precipitation in 2021

Month	Precipitation (mm)	Average 1981-2010 (mm)	% Difference from Average
January	35.6	67.9	-47.6

Month	Precipitation (mm)	Average 1981-2010 (mm)	% Difference from Average
February	62.8	55.9	12.3
March	36.6	59.6	-38.6
April	54.5	74.1	-26.5
May	25.2	86.9	-71.0
June	105.4	83.8	25.8
July	92.7	89.2	3.9
August	54.6	96.6	-43.5
September	162.5	93.1	74.5
October	100.5	77.2	30.2
November	50.0	93.0	-46.2
December	110.2	68.6	60.6

4.0 MONITORING PROGRAM RESULTS

4.1 Water Taking for TW1-88

Water taking at the Blue Triton Erin Springs Site in 2021 is governed by PTTW 4788-C5TJTZ (formerly PTTW 3716-8UZMCU), which permits water to be taken from one well as outlined in the table below.

Table 7: Permitted Water Takings at Erin Springs

Source	Maximum Rate	Maximum Number of Hours of Water Taking per Day	Maximum Daily Water Taking	Maximum Number of Days of Water Taking per Year
TW1-88	773 L/min	24	1,113,000 L	365

The daily water takings for 2021 are tabulated in Table C1 in Appendix C. The daily water takings ranged from 0 L to 263,843 L; the latter is 24% of the permitted taking. The average daily water taking was 62,908 L. During 2021, the daily takings and instantaneous flow rates were below the limits of the PTTW (i.e., less than 1,113,000 L/day and 773 L/min).

The total volume of water taken each year from 2000 to 2021 is presented on Figure 4.1. The total volume of water taken in 2021 from TW1-88 was 22,961,540 L. In 2021, the total volume taken was approximately 6% of the permitted volume. This is the lowest volume taken since pumping began in 2000. Since 2000, the groundwater taking has ranged from approximately 6% to 70% of the permitted taking.

The monthly water takings for the past five years are presented on Figure 4.2. The monthly water takings in 2021 ranged from 1,614,969 L in June to 2,335,219 L in November. In 2021, the monthly water takings were similar from month to month.

The Grand River Low Water Response Team declared a Level 1 Low Water Condition for the entire Grand River Watershed, including Eramosa River, on June 4, 2021. The Level 1 Low Water Condition was removed on September 29, 2021. Blue Triton complied with the request by the Grand River Conservation Authority for all water-users in the Grand River watershed to voluntarily limit water takings to 90% of their monthly maximum permitted volume during the Level 1 Condition. Blue Triton's water takings were below 20% of the permitted daily amount during the low-water condition.

Condition 4.7 of the PTTW requires details of the bottling operations such as location and name of facilities where water is delivered in bulk containers, if bulk water is containerized at the receiving location, the size of the containers into which the water is transferred and total volume of water transported in bulk to each remote facility. The groundwater pumped from Erin Springs in 2021 was distributed as follows:

- 19,389,400 L (or 84.4 percent) was transported by tanker to the Blue Triton bottling facility at 101 Brock Road South in Puslinch, Ontario. The water was transferred into 500 mL plastic bottles; and
- The remaining 3,572,140 L (or 15.6 percent) was used as flush water (from the water storage silo to a pond located at the loading station) or used for CIP (clean in place) water. Flushing was completed to prevent the water from becoming stagnant during periods of low water use.

As per Conditions 4.8, 5.1 and 5.2, Blue Triton has indicated that no well interference complaints arising from the taking of water authorized under this PTTW were received in 2021.

4.2 Groundwater Monitoring Program

The groundwater levels measured manually in 2021 at the monitoring wells are tabulated in Table D1 in Appendix D. Hydrographs of the manual or transducer water level data are also included in Appendix D. In addition to the water levels, the hydrographs also include the daily pumping volumes at TW1-88 and daily precipitation as recorded at the Shand Dam meteorological station.

4.2.1 TW1-88

Water levels and average daily pumping rates for TW1-88, along with daily precipitation, from 2017 through 2021 are shown on Figure D1.

The estimated non-pumping water levels (partially recovered conditions following temporary cessation of pumping) observed in 2021 were generally between 422.6 masl to 423.2 masl. It should be noted that non-pumping water levels do not represent "true" water level conditions that would be observed if there were no pumping at TW1-88. Instead, they represent partially recovered conditions, with the amount of recovery depending on the average pumping rate before the pumping stopped, how much time has elapsed before pumping resumes and whether there is a background (seasonal) trend in the water levels. CRA (2014) indicated that, based on historical data, static water levels are in the range of 423.5 masl to 424.5 masl. In 2021, water levels in TW1-88 were relatively constant until March, rose until the beginning of April, declined until late August and then increased to the end of the year.

The University of Guelph, in partnership with Blue Triton, has drilled, installed and tested multi-level monitoring wells at two sites northwest and southwest of TW1-88 which are now part of the Blue Triton monitoring network and part of PTTW 4788-C5TJTZ. Both wells were drilled through the Guelph Formation (upper bedrock aquifer) and into the Gasport Formation (lower bedrock aquifer). During the construction, at the beginning of January and in early May, the water levels declined approximately 1 m in the bedrock aquifer around the site. The decline in water levels was due to the drilling and construction of the new monitoring wells, which created a temporary conduit between the upper and lower bedrock aquifers allowing the upper bedrock aquifer water to flow into the lower bedrock aquifer.

With the exception of the temporary declines due to the monitoring well construction, the water levels have been similar over the past five-year period. The seasonal trend has also been similar over the same period.

During 2021, water levels were generally between 417.3 masl and 418.3 masl under pumping conditions (equivalent to a drawdown of 5.7 m to 6.7 m based on a static water level of 424 masl) not including the declines due to the monitoring well construction. The drawdown during those times was similar although the static and pumping water levels were approximately 1 m lower.

The 2021 water levels, along with the historical water levels, shown on Figure D1 appear to be relatively stable under both pumping and non-pumping conditions. The groundwater taking at TW1-88 has not caused a long-term declining trend in water levels at TW1-88. The upper bound on the water level in TW1-88 (423.2 masl as shown on Figure D1) is within the range of historic static water levels, which suggests that water levels recover almost completely following temporary stoppages of pumping.

4.2.2 Bedrock Aquifer

Hydrographs for the other wells completed in the bedrock aquifer are included on Figures D2 through D12 in Appendix D. A review of the hydrographs of wells completed in the bedrock aquifer indicates the following.

- Water levels measured within this aquifer in 2021 are similar to those measured over the past five years with any subtle differences noted below. There is no long-term increasing or decreasing trend in the water levels;
- In 2021, the water levels in the bedrock aquifer were generally stable through the winter, rose through spring (peaking in April), declining through the summer (low in August), and then rising through the fall with some wells showing a decline in November and December. Compared to the previous four years, the groundwater levels did not rise as much in the spring due to the below-average precipitation. Low groundwater levels during the summer months were similar to the previous four years with the exception of D24A, D24B and D32 which were lower than normal. These changes are not attributed to pumping at TW1-88 as pumping was relatively consistent through the year;
- As shown on Figure 2.8 (from CRA, 2014), the drawdown in MW12A-08 and private well D15 on June 15, 2001, after pumping at 773 L/min for 18 hours, was less than 0.3 m. For the purpose of this study, water levels in these wells are interpreted to represent background conditions. The measurements show only small water level fluctuations over the past five years. In 2021, the water levels fluctuated just over 0.1 m in D15 and approximately 0.3 m MW12A-08, which are both less than the seasonal fluctuations observed in 2020. The water levels in MW12A-08 followed a typical seasonal trend with increases in water levels through the spring followed by decreases in water level through the summer and increases in water levels through the fall while the water levels in D15 were relatively constant during the year (see Figure D2). A decline in water levels of approximately 0.2 m was observed at MW12A-08 due to the drilling and

construction of the new monitoring wells at the beginning of January and early May, which has since recovered to pre-drilling conditions. There is no long-term increasing or decreasing trend in the water levels;

- The amount of influence that pumping TW1-88 has on water levels in other wells varies based on distance away from TW1-88 (e.g., more pronounced in MW5A-05 compared to MW12A-08). The drawdown cone from pumping TW1-88 is localized, especially with the reduced intermittent pumping that is currently occurring;
- The closest monitoring well in the same aquifer as TW1-88 is MW5A-05, located approximately 70 m southwest of TW1-88. MW5A-05 is interpreted to be downgradient of TW1-88. In 2021, the high-water levels (partially recovered condition following stoppages in pumping) ranged from approximately 423.5 masl to 423.9 masl (see Figure D3) not including the declines due to the monitoring well construction in the area. The difference between the high and low water levels (influence of pumping in the aquifer) at MW5A-05 was approximately 3.4 m in 2021. The water levels fluctuate but there is no long-term increasing or decreasing trend. The decline in water levels due to the monitoring well construction at the beginning of the year and in early May was approximately 1 m;
- The influence of pumping TW1-88 is also evident at monitoring well MW6A-05, the new monitoring wells MW13A-20-7 and MW14A-20-7, private well D3, and historically at private well D2A (D2A is no longer monitored). The difference between high and low water levels (influence of pumping in the aquifer) at MW6A-05, located approximately 450 m southeast of TW1-88, was approximately 0.7 m in 2021 (see Figure D4). The difference between high and low water levels (influence of pumping in the aquifer) at MW13A-20-7, located approximately 420 m west-northwest of TW1-88, was approximately 0.8 m in 2021 (see Figure D10). The difference between high and low water levels (influence of pumping in the aquifer) at MW14A-20-7, located approximately 380 m south of TW1-88, was approximately 0.8 m in 2021 (see Figure D10). At D3, located approximately 220 m west-northwest of TW1-88, the water levels respond to pumping at both TW1-88 and D3. The well (D3) is used as part of a heat pump system during the winter months when the combined pumping of TW1-88 and D3 results in a difference between the high and low water levels of approximately 2 m to 3.5 m (see Figure D7). During the other months, the difference between the high and low water level was approximately 1 m to 2.5 m. The water levels in the monitoring wells are stable. The decline in water levels at the beginning of the year and in early May due to the drilling and construction of the monitoring well was approximately 1.2 m at MW6A-05;
- Another on-Site monitoring well, MW11A-08, is located approximately 470 m east-northeast of TW1-88. Water levels in the monitoring well generally follow the same patterns as the water levels in the background well MW12A-08 (see Figure D5). The water levels indicate that the daily influence of pumping results in a fluctuation of less than 0.2 m at MW11A-08. Water levels have also been monitored for two years at the new bedrock monitoring wells MW1-18A and MW1-18B located approximately 750 m northeast of TW1-88 (see Figure D6). The daily water levels fluctuate less than 0.2 m at this location. The minimal response to pumping suggests that groundwater taking from TW1-88 does not affect water levels in the Hillsburgh municipal wells, located further north-northeast of TW1-88;
- Water levels in the south-east part of the Site (D32 and D36B, Figures D12 and D8, respectively), more than 900 m away from TW1-88, exhibited responses similar to the other water levels measured at the Site, with higher water levels observed in the spring and lower water levels observed in the summer. Water levels at D32 were lower than previous years; and

- Water levels in the other private wells may be influenced by pumping at TW1-88; however, fluctuations are mainly due to pumping at the private wells. The water levels are stable at the other private wells (D8, D24A, D24B, D26A and D26B).

The lowest water levels were generally observed in August. This was a time with average pumping during the year and below-average precipitation for the month. To review the groundwater flow patterns during these summer conditions, a potentiometric surface of the bedrock aquifer was prepared (Figure 4.3) based on the water levels measured during the monthly monitoring event (August 20, 2021). A review of the potentiometric surface on August 20, 2021, indicates groundwater flow is to the southeast, south and southwest with influence from pumping localized around TW1-88.

4.2.3 Overburden (Water Table) Aquifer

Hydrographs for wells completed in the overburden are included on Figures D13 through D17 in Appendix D. A review of the hydrographs completed in the overburden indicates the following.

- Water levels measured within the overburden in 2021 are within the range measured over the past five years with the exception of MW12B-08 where some of lowest water levels were observed in January;
- Water levels in the overburden show similar trends, with decreasing water levels in the winter followed by an increase in March, a decline to the end of August, and an increase through the fall. The exceptions to this trend are at well D7B (Figure D16), which has a relatively consistent water level over the years with little to no fluctuation;
- The timing of the high and low water levels can vary by a month or two from well to well. This may be due to the timing of recharge to local areas of the aquifer, which is expected to vary across the Site based on the variations in surficial geology (i.e., sand and gravel versus glacial till) and topography. In 2021, the high water levels were generally observed in March while the low water levels were observed to vary between August and September. Water levels the wells at the higher elevations (MW12B-08 and D36A) did not increase as much in the spring compared to previous years due to the below-average precipitation;
- Water levels fluctuate more in the southern part of the Site compared to the northern part of the Site. In 2021, water levels in the wells completed in the northern part of the study area fluctuated by approximately 0.4 m or less, whereas wells completed in the southern part of the study area fluctuate by approximately 0.5 m to 3.1 m. This is in response to how quickly water moves through the different aquifers following recharge and reflects their positions in the groundwater flow system, where greater variations in water levels occur at the higher topographic elevations (i.e., recharge areas) compared to the low-lying areas (i.e., discharge areas);
- A response to precipitation or melt events (i.e., increase in water levels) is evident in the wells for which levels are recorded continuously;
- The decline in water levels that was observed in the bedrock aquifer at the beginning of January and early May due to the monitoring well construction was not observed in the overburden aquifer confirming that there is not a significant connection between the overburden and bedrock aquifers; and
- Overall, the similarity in water level trends, regardless of distance from TW1-88, indicates that water level fluctuations are not due to pumping TW1-88 but due to natural seasonal changes and recharge.

4.2.4 Vertical Gradients

4.2.4.1 Between Overburden and Bedrock

Vertical gradients between the overburden and bedrock at monitoring well nests (MW5-05, MW6-05, MW11-08 and MW12-08) are plotted on Figures D18 through D21 in Appendix D. Vertical gradient graphs for MW13-20 and MW14-20 will be presented in the 2022 Annual Report after a full year of data has been collected. Note that a positive gradient is calculated when the water level in the upper aquifer exceeds the level in the lower aquifer. Under these conditions, the potential vertical groundwater flow direction is downwards, however the horizontal component of the Darcy flux might be primarily horizontal. A review of the vertical gradient graphs indicates the following.

- A positive vertical gradient between the overburden and the bedrock (potential downward flow) is present at all of the monitoring well nests;
- The vertical gradients fluctuate due to changes in the bedrock water levels that respond to pumping TW1-88 (i.e., a decrease in the bedrock water level) or changes in the overburden water levels that respond to recharge events (i.e., an increase in the overburden water level), but the overall trends remain stable;
- The vertical gradients have been similar over the past five years. The gradients at MW5-05 and MW6-05 vary in response to pumping TW1-88 and are due to the water level fluctuations in the bedrock aquifer at these sites. In response to pumping at TW1-88, there is also some influence on the gradient at MW11-08 but less than that observed at MW5-05 and MW6-05. The gradient at MW12-08 increases in the spring and then decreases through the summer due to a rise in the water levels in the overburden during the spring melt. The change in gradient at MW12-08 in 2021 was less than that observed in previous years because water levels in the overburden did not increase as much in the spring of 2021;
- There does not appear to be a measurable hydraulic response in the overburden water levels from pumping the bedrock aquifer at the current rate of water taking;
- The positive vertical gradients increased at the beginning of the year and in early May when the water levels in the bedrock aquifer lowered in response to drilling and constructing the new monitoring wells; and
- In 2021, vertical gradients at the two wells closest to TW1-88 range from approximately 0.4 m/m to 0.75 m/m at MW5-05 and approximately 0.4 m/m to 0.5 m/m at MW6-05. On average, the vertical gradients at the other two wells are about 0.14 m/m at MW11-08 and 0.25 m/m at MW12-08.

4.2.4.2 In Shallow Overburden

Vertical gradients in the shallow overburden at MW3-00 are shown on Figure D22 in Appendix D. During most of 2021 there was a negative vertical gradient (potential upward flow) in the shallow overburden at MW3-00 with potential discharge to the On-Site pond. During spring melt and/or some precipitation events, the vertical gradient is reversed to downward flow. The vertical gradients at MW3-00 are consistent with those recorded in the past and are not related to TW1-88 withdrawals.

4.3 Surface Water Monitoring Program

The surface water monitoring program includes measurement of mini-piezometer and surface water levels, and surface water flow. The surface water levels measured in 2021 are tabulated in Appendix E where hydrographs of the water levels are also presented. The surface water flow data are tabulated and graphed in Appendix F.

The hydrographs also include the daily pumping volumes at TW1-88 and daily precipitation as recorded at the Shand Dam meteorological station.

4.3.1 Mini-Piezometer Water Levels and Vertical Gradients

Hydrographs for the mini-piezometer locations are presented on Figures E1 through E7 in Appendix E with the "a" figure including data for the past 5 years (2017 to 2021) and the "b" figures including data only for 2021. The graphs also include the average daily pumping at TW1-88, precipitation at the Shand Dam station and vertical hydraulic gradients. A negative gradient indicates that groundwater may be discharging to the surface water body, while a positive gradient indicates the surface water body is recharging the groundwater. A review of the hydrographs for the mini-piezometers indicates the following.

- Water levels measured in the mini-piezometers in 2021 are within the ranges measured over the past five years;
- The water levels show a response to precipitation and melt events;
- There is no effect of pumping TW1-88 on vertical gradients in the shallow overburden near surface water features; and
- The vertical gradients in 2021 are similar to those observed over the past five years.
- Water level fluctuations and vertical gradients in the mini-piezometers are summarized as follows for 2021:
  - **P03A/B-05 (east side of On-Site pond)** – water levels in 2021 fluctuated approximately 0.2 m (similar to water levels in the pond). The water levels fluctuate in response to precipitation events and prolonged drier periods with reduced precipitation. There was generally no gradient, or weak negative gradients at the site in 2021. The negative gradient (upward flow) occurred during the late spring and late summer/early fall. Sudden changes in water levels occur sometimes due to blockages and removal of debris from the outlet of the pond;
  - **P06A/B-07 (west side of On-Site pond)** – water levels in 2021 fluctuated approximately 0.2 m (similar to water levels in the pond). The water levels fluctuate in response to precipitation events and prolonged drier periods with reduced precipitation. Over the past five years a weak positive gradient (downward flow) exists that has occasionally reversed to a weak negative gradient (upward flow). In 2021, the gradient was mainly positive with the exception of some short duration reversals. Sudden changes in water levels occur sometimes due to blockages and removal of debris from the outlet of the pond;
  - **P01A/B-07 (stream channel downstream of On-Site pond)** – water levels in 2021 fluctuated approximately 0.1 m. The water levels in the stream show less fluctuation than the water levels in the pond. A weak negative gradient (upward flow) to no gradient was observed in 2021. A reversal in gradient is occasionally observed in the historical records;
  - **P11A/B-05 (further downstream from P01-07 at 6th Line)** – water levels in 2021 fluctuated approximately 0.1 m. The water levels in the stream show less fluctuation than the water levels in the pond. A negative gradient (upward flow) was observed with the occasional positive gradient spikes during some precipitation events;
  - **P10A/B-05 (upgradient side of the wetland pond)** – water levels fluctuated approximately 0.3 m in the deep piezometer and 0.4 m in the shallow piezometer in 2021. The water levels generally follow a

    seasonal trend with an increase through the winter/spring followed by a decrease through the summer and stabilization through the fall. In 2021 the water levels were stable in the winter/spring, decreased into the summer and then increased and stabilized in the fall. The gradient varied between negative (upward flow) and positive (downward flow) during the year. The vertical gradient at P10-05 shows greater fluctuation than the other sites. The changes in water level are reflective of how the water levels change seasonally within the wetland, which is the most upgradient part of this surface water feature (i.e., reflecting the natural hydrologic regime of the wetland);

  - **P12A/B-07 (stream flowing into Roman Lake)** – water levels fluctuated approximately 0.2 m in the deep piezometer and 0.4 m in the shallow piezometer in 2021. Water levels in the shallow piezometer have been declining since 2019 following the construction of a beaver dam in 2017. The water levels were declining toward the levels observed prior to the dam construction; however, a new dam was constructed in mid-2021 which have caused the water levels to increase again. Similar trends are observed in the deep piezometer but are more subtle. A negative gradient (upward flow) exists at the site which became weaker after the construction of the beaver dam; and

  - **P13A/B-07 (Erin Branch of Credit River)** – water levels in 2021 fluctuated approximately 0.4 m at the deep piezometer and approximately 0.2 m at the shallow piezometer. Water levels in the shallow piezometer were similar during the year while the water levels in the deep piezometer increased in the spring, decreased in the summer and increased in the early fall. The vertical gradient was positive (downward flow). Water levels are likely influenced by fluctuations in the water level of the Hillsburgh reservoir, which is located approximately 125 m from P13-07 and 680 m from TW1-88; however, water level data for the reservoir are not available.

4.3.2 Surface Water Levels

Hydrographs for the surface water level monitoring locations are included on Figures E8 through E11 in Appendix E with the “a” figure including data for the last 5 years (2017 to 2021) and the “b” figures including data for 2021. A review of the hydrographs for the surface water level monitoring locations indicates the following.

- Pumping at TW1-88 does not influence the water levels in the surface water features.
- Water levels in the surface water features are summarized as follows:
  - **SW3-08 (On-Site pond)** – water levels at SW3-08 fluctuated approximately 0.2 m in 2021. The water levels fluctuate in response to precipitation events and prolonged drier periods with reduced precipitation. The current and historical changes in water levels are sometimes partially due to the outlet being partially obstructed and then cleared when the debris is removed. Monitoring at ST03-05 is no longer a requirement of the current PTTW;
  - **SW1-08 (creek downstream of On-Site pond)** – not including some short-term increases, the water levels at SW1-08 fluctuated approximately 0.1 m in 2021. The seasonal changes in the creek are minimal compared to the seasonal changes in the pond;
  - **SW7-08 (Erin Branch of Credit River)** – water levels at SW7-08 fluctuated approximately 0.1 m in 2021 not including some short-term increases. Water levels were on a decreasing trend from approximately mid-2020 to mid-2021 and then stabilized for the second half of 2021. The changing water levels over time are partially due to changing stream conditions. Some changes in water levels in the past may also be due to upstream work or changes in the Hillsburgh reservoir level, however no reservoir level data are

available for comparison. Due to the changing stream conditions at SW7-08, a new station (SW7A-16) was installed in May 2016. However, recent changes to the stream on private property have affected the flow at SW7A-16 and the station was abandoned. A new station (SW7B-20) was established approximately 100 m upstream in May 2021. Water level at SW7B-20 fluctuated less than 0.1 m in 2021; and

- **SW4-08 (stream flowing into Roman Lake)** and SW5-08 (Roman Lake) – since the beaver activity in July 2017, the changes in water level trends have been different at the two stations, showing smaller seasonal changes and levels that are generally higher compared to previous years. After the initial rise in water levels at SW4-08 in 2017 following the beaver dam construction, the water levels have been declining through 2019 and 2020 back to pre-beaver activity levels. In 2021 the water levels were stable until August when a beaver dam was constructed again. The construction of the beaver dam caused the water levels at SW4-08 to rise almost 0.4 m while the water levels at SW5-08 remained stable. The water levels at SW5-08 declined about 0.1 m in November and then stabilized.

Surface water level fluctuations are attributed to seasonal and long-term variations in precipitation and recharge and do not appear to be the result of pumping of TW1-88. There is no apparent correlation between increases in pumping and decreases in stream flow resulting from declines in groundwater discharge to streams that are sufficient to affect the ecology of the stream. The water taking does not hinder the ability of the water resource to support existing natural functions of the ecosystem. The withdrawal does not result in physical and ecological impacts to the wetlands in the Eramosa River headwaters.

4.3.3 Surface Water Flow

The monthly stream flow data collected in 2021 are summarized in Appendix F. Surface water flow is measured at four stations in accordance with the PTTW: SW1-08 (creek downgradient of On-Site pond and wetland), SW3-08 (outlet from On-Site pond) and SW7-08 and SW7B-20 (Erin Branch of Credit River). Surface water flows are also measured at SW1A-20. The surface water flows for the five stations are shown on Figure F1 through F3 in Appendix F with the “a” figure including data for the last 5 years (2017 to 2021) and the “b” figures including data for 2021.

Flow from the On-Site pond (SW3-08) is similar to previous years. The surface water flow was stable in January and February, increased in March and remained stable until May at which time flow decreased, flow increased in September and remained stable until December when it increased. The spring flows and December flows were typically between 10 L/s and 20 L/s, while the summer low flows were generally less than 10 L/s. Manual flow measurements ranged from 2.2 L/s (July) to 57.4 L/s (June).

Stage-discharge curves were updated in 2021 for SW1-08 and SW7-08 (to include the new stage discharge information), which show the relationship between surface water elevation (stage) and stream flow (discharge) based on the manual measurements taken monthly. The stage-discharge curves for both SW1-08 and SW7-08 were re-evaluated using stream characteristics (geometry, water level, flow; the same methods as in 2014 through 2020), to improve evaluation of the 2021 monitoring data. The stage-discharge curves are shown on Figures F4 and F6 in Appendix F. The curve for SW1-08 was adjusted slightly while the curve for SW7-08 remained the same as in 2020. These adjusted curves have been used to estimate the flow for 2021 at these two stations. Flow data from previous years were estimated using historic stage-discharge curves that best fit the historic monitoring data (as presented in previous reports).

Stage discharge curves were also developed using the same methods for SW1A-20 and SW7B-20 and are shown on Figures F5 and F7, respectively. The available data from 2020 and 2021 were used to develop the stage-discharge relationship for these stations. The adjusted stage-discharge curves were used to calculate the flow only in 2021.

Surface water flow at SW1-08 (combined flow from On-Site pond and wetland) has been similar over the past five years. Low flows were observed in February and May through August. These low flows are similar to those observed in the previous three years (2018 through 2020). The flows fall within the historic range observed at the station. As in the past, some of the logger recorded values are suspected to be influenced by ice conditions and are reported with a lower confidence. Stream flow during the spring was approximately 20 L/s to 30 L/s with some flows more than 100 L/s. The summer flows were generally less than 10 L/s and increasing to between approximately 10 L/s and 30 L/s during the late summer and fall. The manual flow measurements ranged from 5.4 L/s (August) to 18.7 L/s (April). There is no evidence of a decline in stream flow at SW1-08.

Stream flow at the new station (SW1A-20) has now been monitored for almost two years. The flow at SW1A-20 is similar to the flow at SW1-08 but with slightly higher flows during the summer months. The flow estimates from SW1A-20 are believed to be more representative of actual flows.

Stream flow at SW7-08 is typically less than at the other stations, with the exception of some low flows in the summer. In the past, it has been interpreted that increases in flow may be related to changes in the Hillsburgh reservoir or potential work upstream. Surface water flow at SW7-08 is similar to flow measured historically at the station with changes typically due to changing stream conditions. Manual flow measurements ranged from 2.5 L/s (June) to 12.2 L/s (February). There is no evidence of a decline in stream flow at SW7-08.

Stream flow at the new station (SW7B-20) was relatively consistent over the year ranging from approximately 20 L/s to around 50 L/s (not including some spikes in flow). During the precipitation/melt events, the flows were as high as 190 L/s. Manual flow measurements ranged from 16.9 L/s (January) to 45.4 L/s (May). The flow at SW7B-20 is greater than the flow at SW7-08 due to the fact that SW7B-20 is located in a defined channel as opposed to multiple channels at SW7-08, where only part of the total flow is measured.

Surface water flow at all the stations is influenced by precipitation and/or melt events and does not appear to be influenced by pumping at TW1-88.

5.0 CONCLUSIONS

The following conclusions are provided based on the results of the 2021 monitoring program.

1) Blue Triton has complied with all the conditions in the existing permit for the Erin well TW1-88.

2) TW1-88 operated in accordance with the pumping limits outlined in the PTTWs listed above. The daily water taking at TW1-88 in 2021 ranged from 0 L to 263,843 L. The average daily taking in 2021 was 62,908 L. The total volume of water taken in 2021 from TW1-88 was 22,961,540 L or 6% of the permitted volume.

3) The interpreted non-pumping water levels in TW1-88, which obtains water from the bedrock aquifer, ranged from approximately 422.6 to 423.2 masl in 2021. The interpreted water levels under variable pumping conditions ranged from approximately 417.3 to 418.3 masl. The drawdown at the well ranged from approximately 5.7 to 6.7 m in 2021.

4) Pumping from TW1-88 causes local declines in the bedrock aquifer groundwater levels in the immediate vicinity of the well, but there is no evidence of long-term declining trends, as water levels return to non-pumping levels when pumping temporarily ceases.

5) Water levels measured within the overburden in 2021 are within the historical range and do not appear to be influenced by pumping of TW1-88. There is no apparent interaction between the bedrock and overburden aquifers at the current rate of taking.

6) Surface water level fluctuations are attributed to seasonal and long-term variations in precipitation and recharge and not the result of pumping of TW1-88. There is no apparent correlation between increases in pumping from TW1-88 and decreases in stream flow. Consequently, there is no apparent mechanism by which pumping from TW1-88 could affect the ecology of the streams.

7) The water taking does not interfere with the ecological functions of the terrestrial, wetland and aquatic ecosystems on or adjacent to the property.

8) The water taking does not prevent other water users from continuing their established pattern of use. The groundwater withdrawal from TW1-88 does not interfere with existing municipal uses or private uses. There have been no well interference complaints at Erin due to the water taking from TW1-88.

9) No irreversible impacts have been observed due to pumping of the aquifer or deterioration of groundwater quantity on neighbouring properties.

10) Based on the monitoring data collected, the 2021 water taking at TW1-88 is sustainable.

6.0 RECOMMENDATIONS

No changes to the existing monitoring program are recommended.

Signature Page

Golder Associates Ltd.

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Hydrogeologist

Craig DeVito, P.Eng.
Water Resources Engineer

John Piersol, M.Sc., P.Geo.
Senior Hydrogeologist, Associate

GRP/JAP/KM/ll

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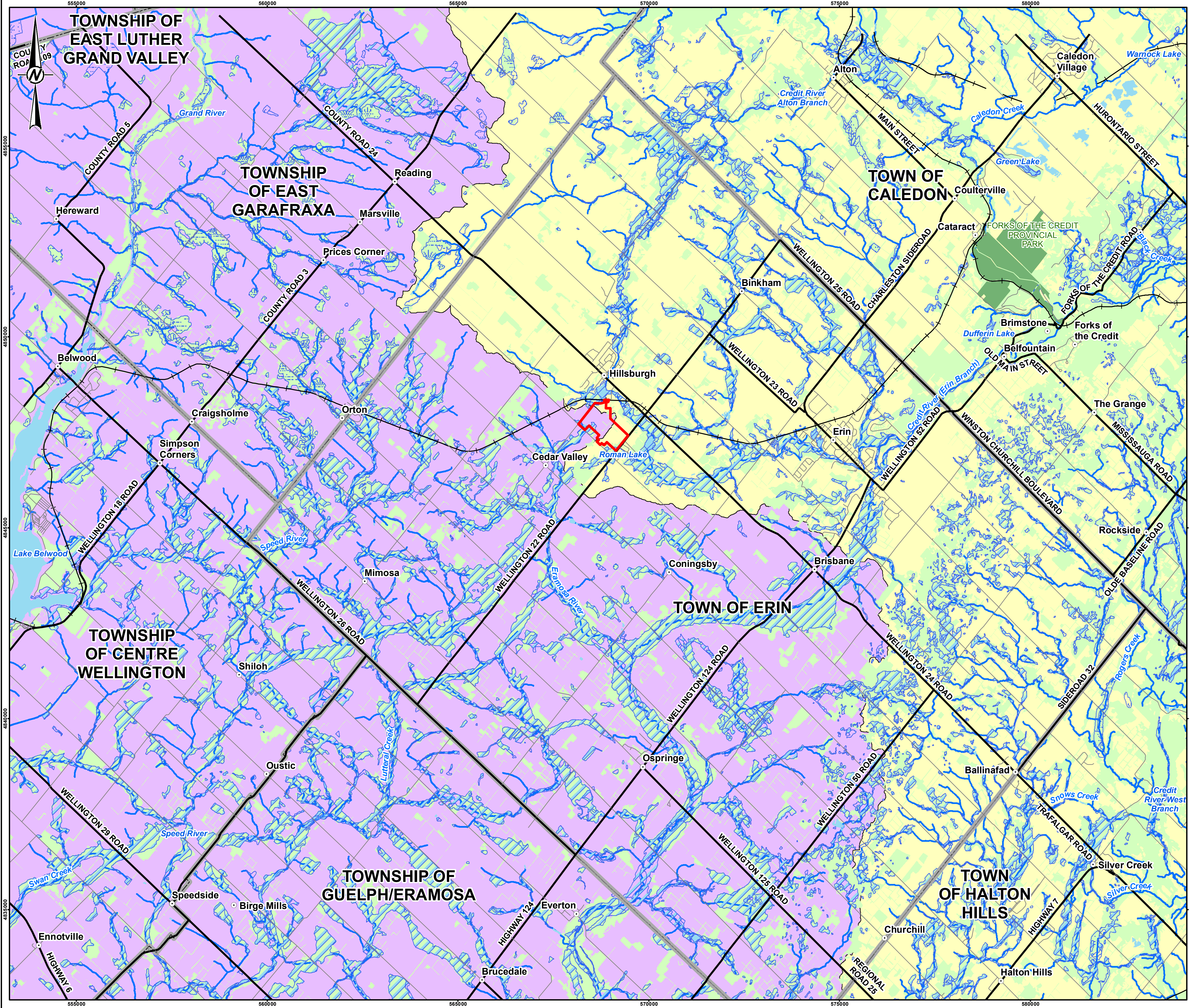
FIGURES

Figures 1.1 to 4.3



LEGEND

- ⊙ City/Town
- Main Road
- Local Road
- Railway
- Watercourse
- ▨ Wetland
- ▨ Provincially Significant Wetland
- 🟦 Waterbody
- 🟩 Wooded Area
- 🟩 Provincial Park
- ▭ Municipal Boundary
- 🟥 Property Boundary

Watersheds

- 🟨 Credit - 16 Mile
- 🟪 Upper Grand

0 2 4 6 8

1:100,000

Kilometres

REFERENCE(S)

BASE DATA - MNR LIO, OBTAINED 2015

PRODUCED BY GOLDER ASSOCIATES LTD UNDER LICENCE FROM ONTARIO MINISTRY OF NATURAL RESOURCES, © QUEENS PRINTER 2013

PROJECTION: UTM NAD83 ZONE 17

PROPERTY BOUNDARY FROM CRA FILE 13764-10(017)GN-WA002.DWG.

CLIENT

BLUE TRITON BRANDS

PROJECT

2021 ANNUAL REPORT

TITLE

SITE LOCATION

CONSULTANT

GOLDER MEMBER OF WSP

YYYY-MM-DD	2022-02-02
DESIGNED	JMC
PREPARED	ST
REVIEWED	GP
APPROVED	JAP

PROJECT NO.	CONTROL	REV.	FIGURE
20449101 (2000)	0016	1.0	1.1

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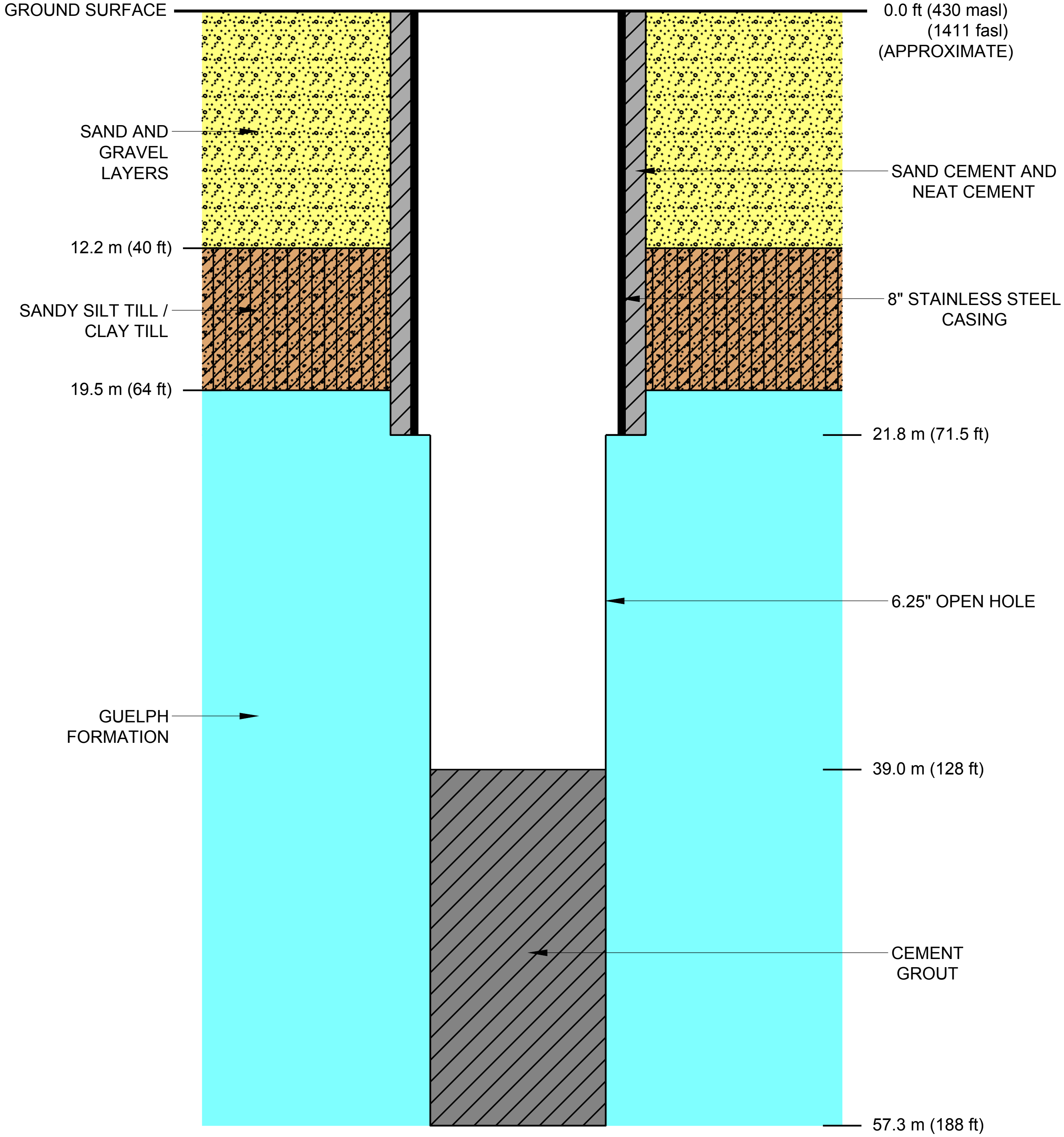

CLIENT
BLUE TRITON BRANDS

PROJECT
2021 ANNUAL REPORT

CONSULTANT
GOLDER
MEMBER OF WSP

YYYY-MM-DD	2022-01-26
PREPARED	DD
DESIGN	
REVIEW	GP
APPROVED	GP

TITLE
ERIN TW1-88

PROJECT No.	PHASE	Rev.	FIGURE
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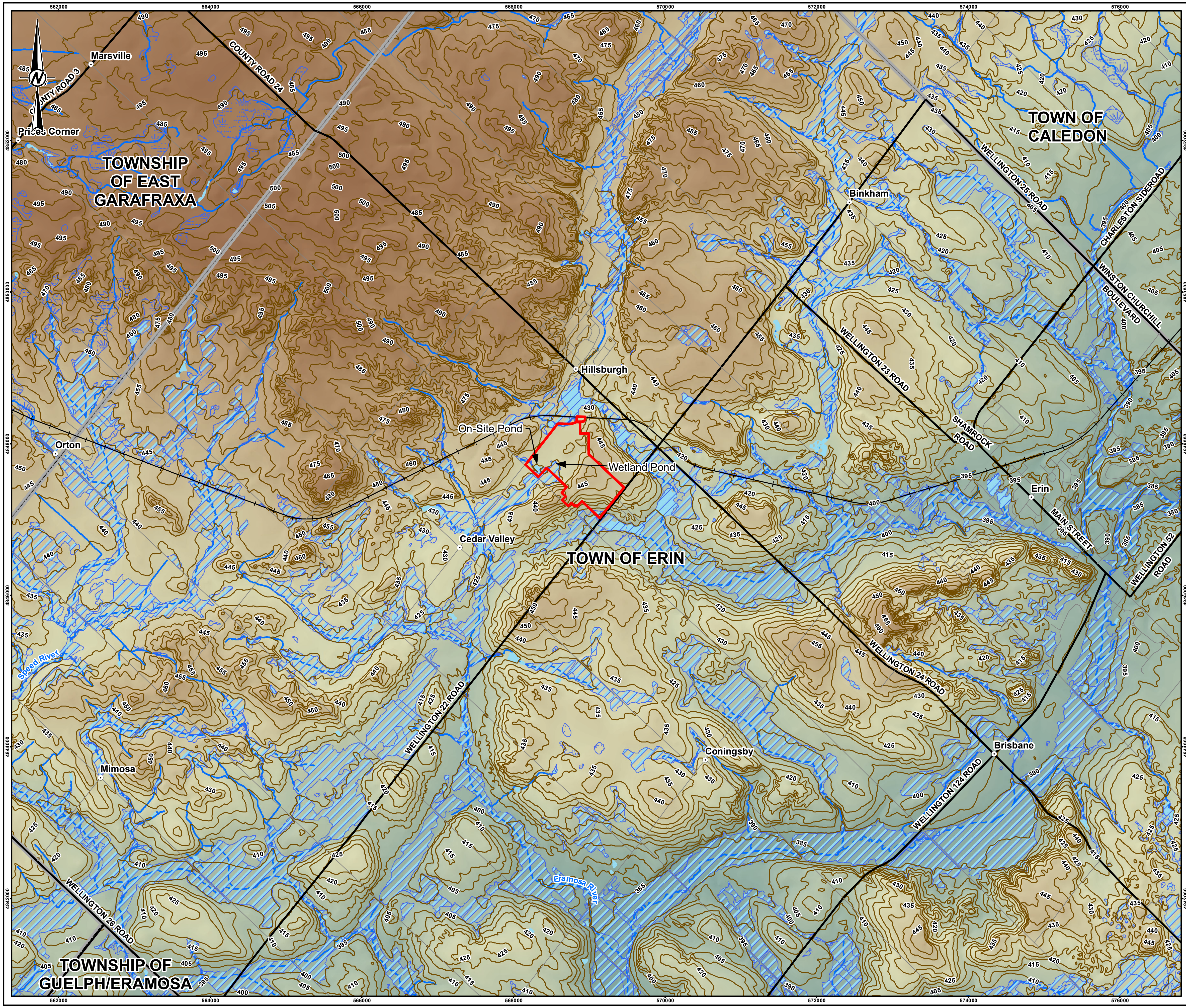

LEGEND

- ⊙ City/Town
- Main Road
- Local Road
- Railway
- Topographic Elevation Contour (masl)
- Watercourse
- ▨ Wetland
- ▨ Provincially Significant Wetland
- ■ Waterbody
- ▭ Municipal Boundary
- ▭ Property Boundary

Topographic Elevation (masl)

High : 505

Low : 307

0 1 2 3 4

1:50,000

Kilometres

REFERENCE(S)
BASE DATA - MNR LIO, OBTAINED 2015
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CLIENT
BLUE TRITON BRANDS

PROJECT
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TITLE
TOPOGRAPHY AND DRAINAGE

CONSULTANT
GOLDER
MEMBER OF WSP

YYYY-MM-DD	2022-01-26
DESIGNED	JMC
PREPARED	ST
REVIEWED	GP
APPROVED	JAP

PROJECT NO.	CONTROL	REV.	FIGURE
13-1152-0250 (2000)	0016	1.0	**2.1**

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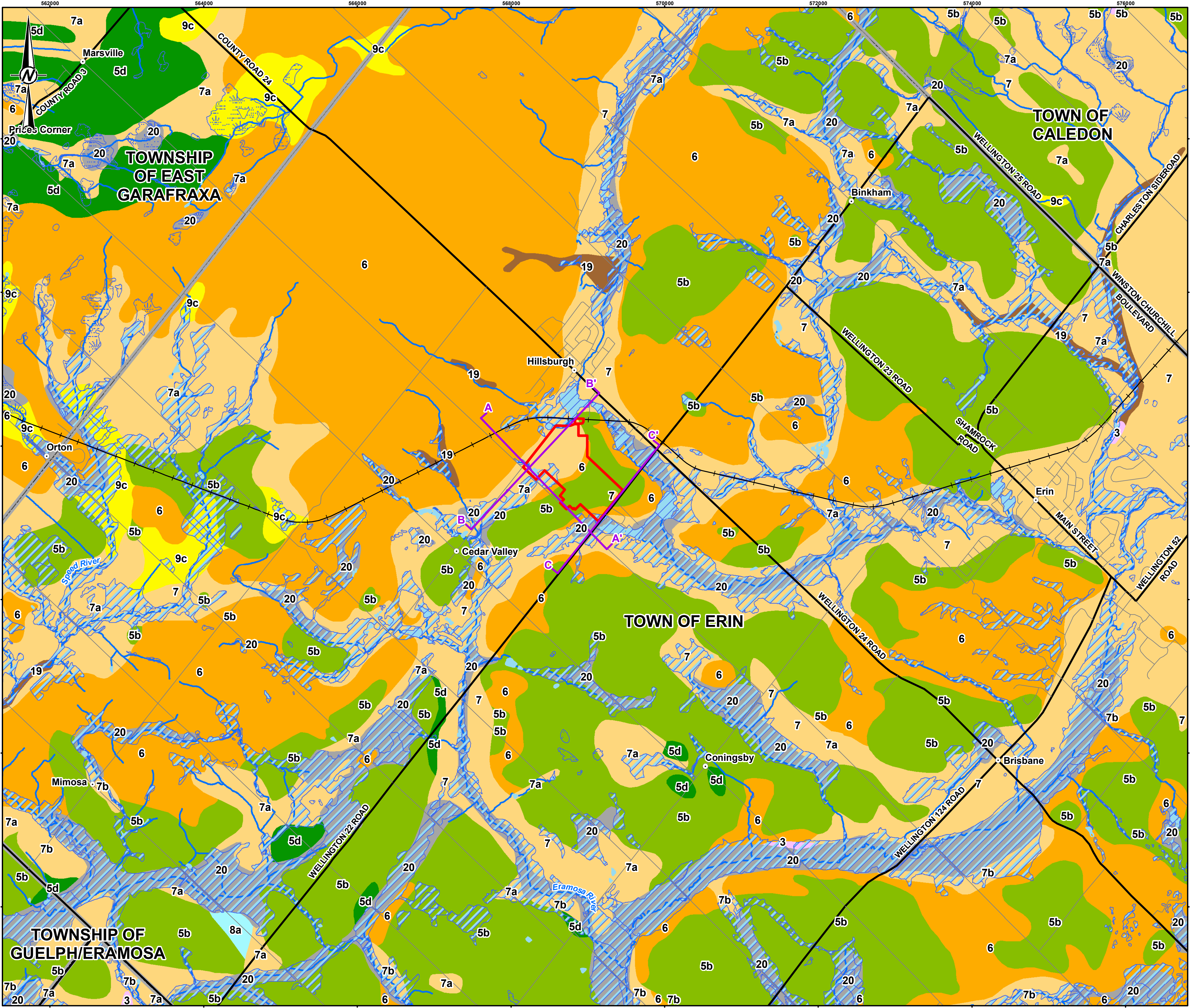

LEGEND

- City/Town
- Cross-Section Location
- Main Road
- Local Road
- Railway
- Watercourse
- Wetland
- Provincially Significant Wetland
- Waterbody
- Municipal Boundary
- Property Boundary
- 3: Paleozoic bedrock
- 5b: Stone-poor, carbonate-derived silty to sandy till
- 5d: Glaciolacustrine-derived silty to clayey till
- 6: Ice-contact stratified deposits
- 7: Glaciofluvial deposits
- 7a: Sandy deposits
- 7b: Gravelly deposits
- 8a: Massive-well laminated
- 9c: Foreshore-basinal deposits
- 19: Modern alluvial deposits
- 20: Organic deposits

0 1 2 3 4
1:50,000
Kilometres

REFERENCE(S)
BASE DATA - MNR LIO, OBTAINED 2015
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CLIENT
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PROJECT
2021 ANNUAL REPORT

TITLE
REGIONAL QUATERNARY GEOLOGY

CONSULTANT
GOLDER
MEMBER OF WSP

YYYY-MM-DD	2022-01-26
DESIGNED	JMC
PREPARED	ST
REVIEWED	GP
APPROVED	JAP

PROJECT NO.	CONTROL	REV.	FIGURE
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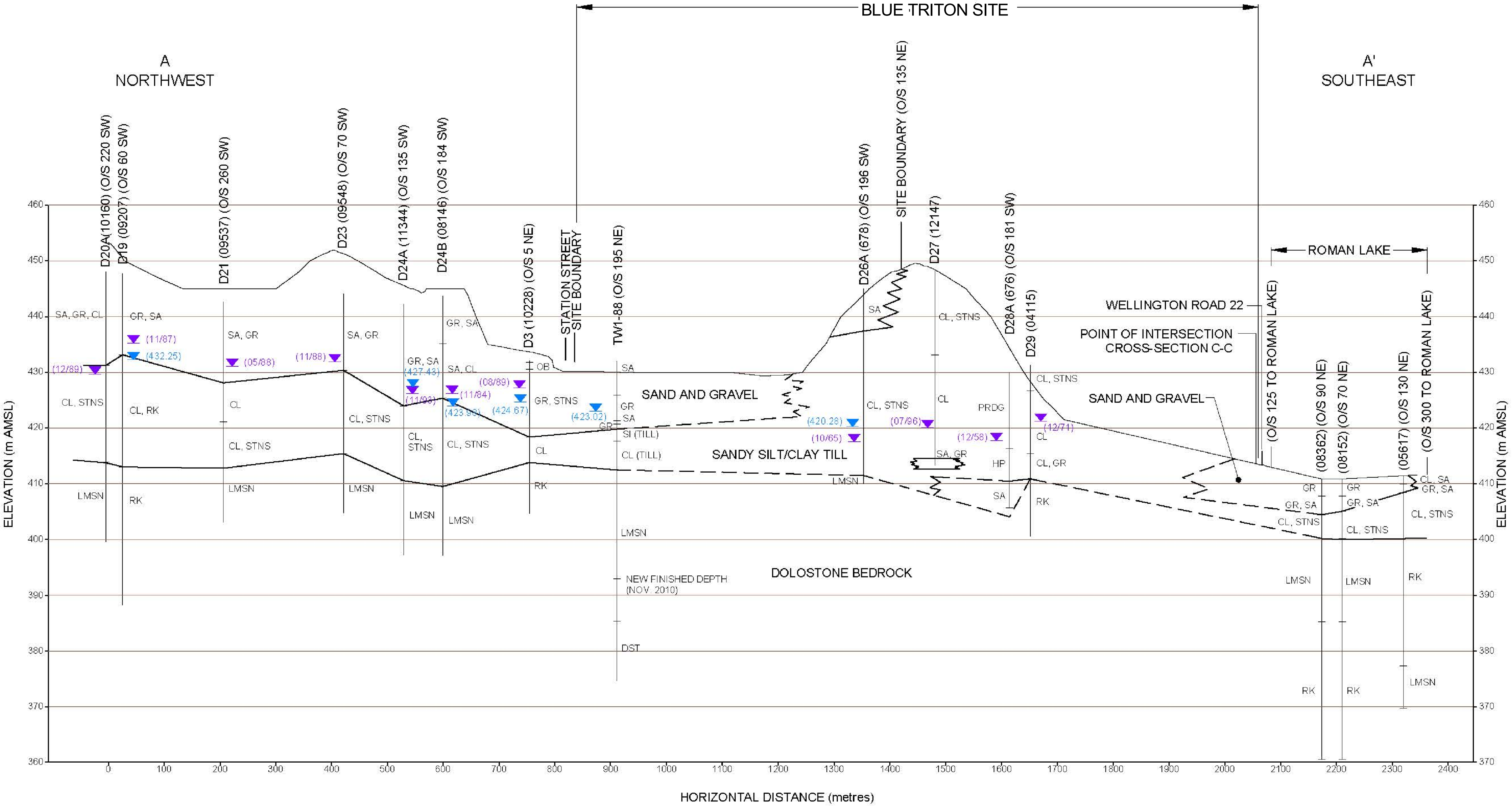
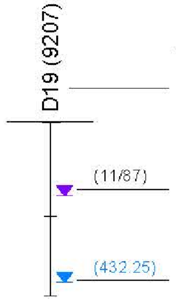


VERTICAL TO HORIZONTAL EXAGGERATION: 10:1



LEGEND

WELL DESIGNATION

GROUND SURFACE

WATER LEVEL ON WELL COMPLETION (MONTH / YEAR)

STATIC WATER LEVEL (NOV. 3/05)

PRDG	-	PRE DUG
OB	-	OVERBURDEN
CL	-	CLAY
SI	-	SILT
SA	-	SAND
GR	-	GRAVEL
STNS	-	STONES
HP	-	HARDPAN
RK	-	ROCK (BEDROCK)
LMSN	-	LIMESTONE (BEDROCK)
DST	-	DOLOSTONE
CL, SA	-	FIRST COMPONENT IS MOST COMMON MATERIAL

REFERENCE(S)
BASE DATA - MNR LIO, OBTAINED 2015
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PROJECTION: UTM NAD83 ZONE 17

CLIENT
BLUE TRITON BRANDS

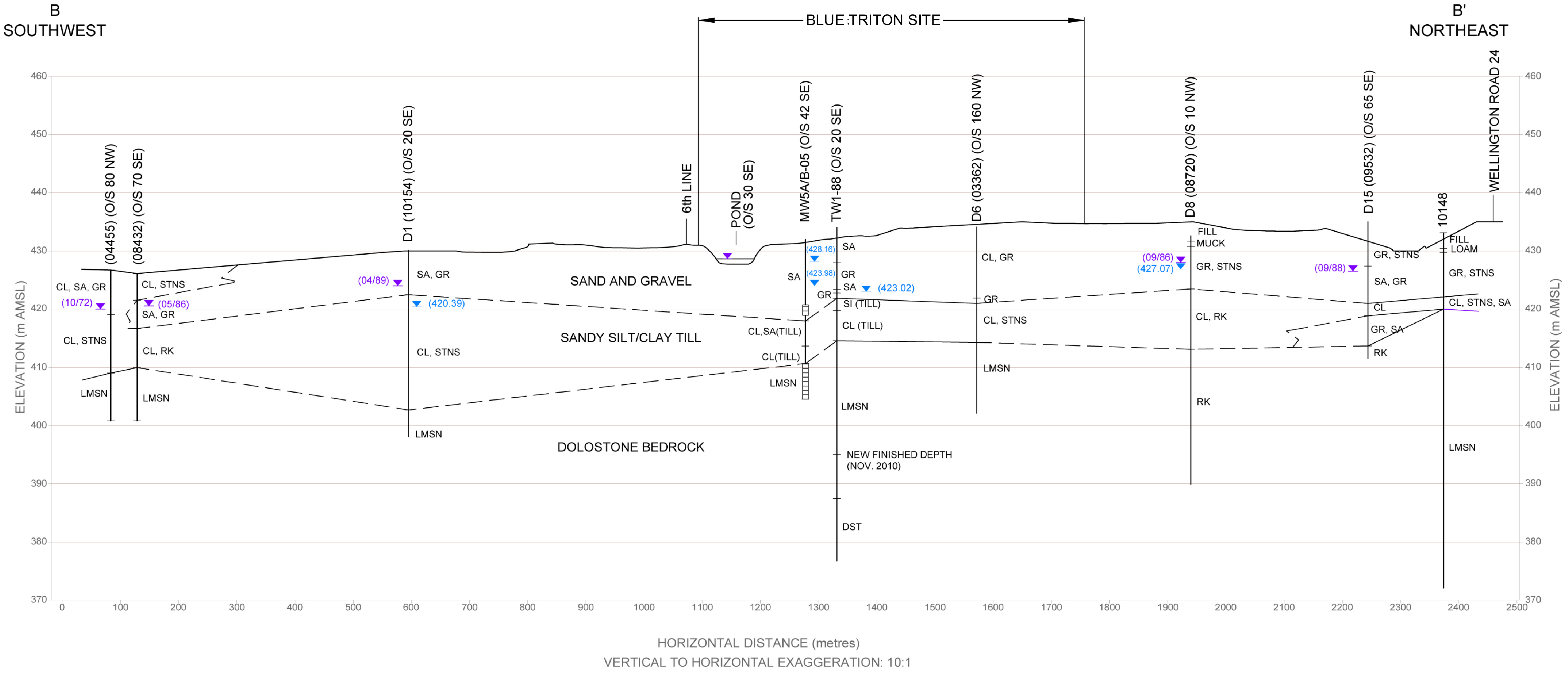
PROJECT
2021 ANNUAL REPORT

TITLE
HYDROGEOLOGIC CROSS-SECTION A-A'

CONSULTANT
GOLDER
MEMBER OF WSP

YYYY-MM-DD	2022-02-02
DESIGNED	JMC
PREPARED	ST
REVIEWED	GP
APPROVED	JAP

PROJECT NO.	CONTROL	REV.	FIGURE
20449101 (2000)	0016	1.0	2.3



LEGEND

D8 — WELL DESIGNATION

GROUND SURFACE

(09/86) ▼ WATER LEVEL (m AMSL)
ON WELL COMPLETION
(MONTH / YEAR)

(427.07) ▼ STATIC WATER LEVEL
(NOV. 3/05)

PRDG	-	PRE DUG
CL	-	CLAY
SI	-	SILT
SA	-	SAND
GR	-	GRAVEL
STNS	-	STONES
HP	-	HARDPAN
RK	-	ROCK (BEDROCK)
LMSN	-	LIMESTONE (BEDROCK)
DST	-	DOLOSTONE
CL, SA	-	FIRST COMPONENT IS MOST COMMON MATERIAL

REFERENCE(S)
BASE DATA - MNR LIO, OBTAINED 2015
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PROPERTY BOUNDARY FROM CRA FILE 13764-10(017)GN-WA002.DWG.

CLIENT
BLUE TRITON BRANDS

PROJECT
2021 ANNUAL REPORT

TITLE
HYDROGEOLOGIC CROSS-SECTION B-B'

CONSULTANT
GOLDER
MEMBER OF WSP

YYYY-MM-DD	2022-02-02
DESIGNED	JMC
PREPARED	ST
REVIEWED	GP
APPROVED	JAP

PROJECT NO.	CONTROL	REV.	FIGURE
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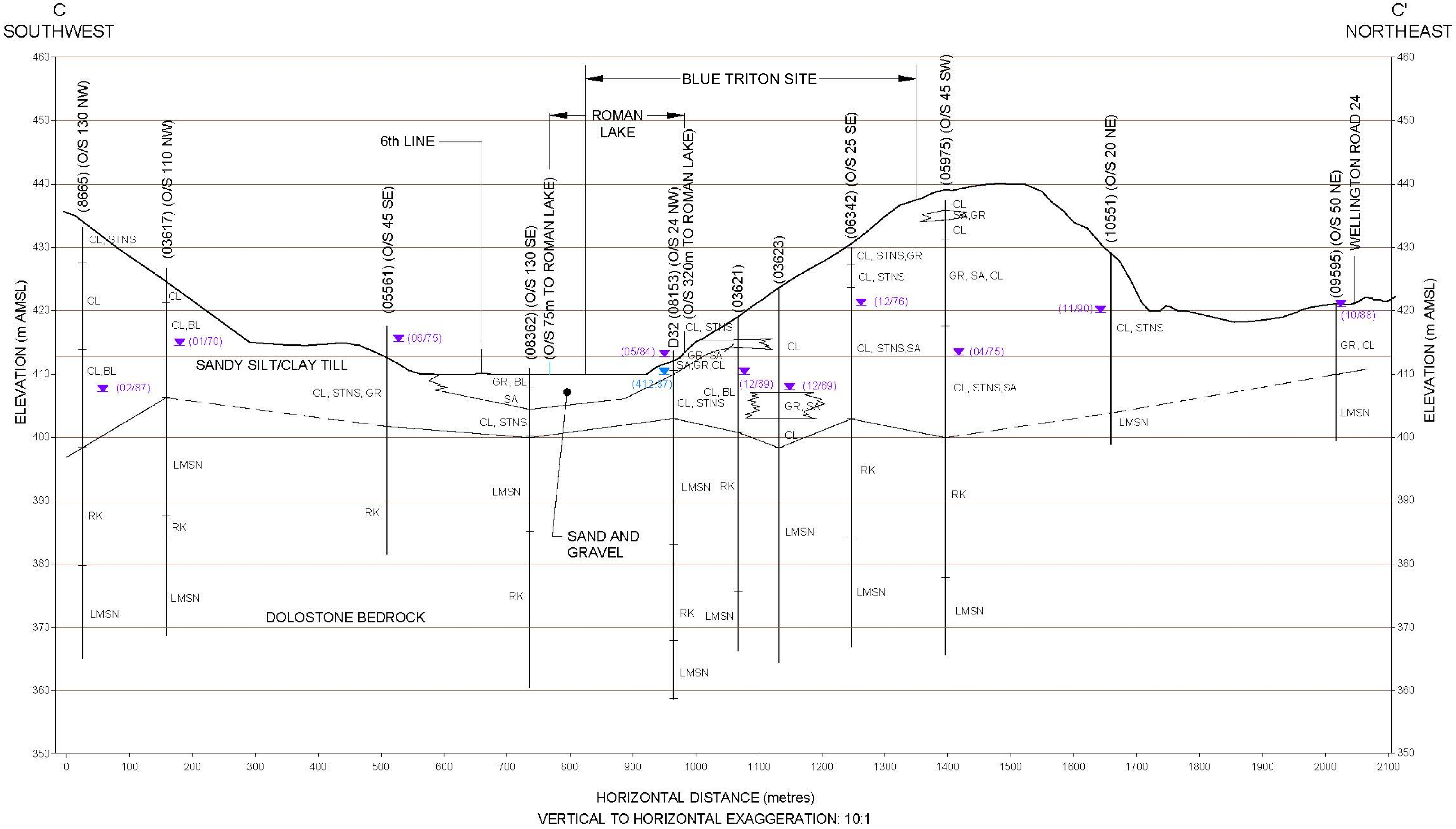

LEGEND

D32 — WELL DESIGNATION

GROUND SURFACE

(05/84) WATER LEVEL ON WELL COMPLETION (MONTH / YEAR)

(412.87) STATIC WATER LEVEL (NOV. 3/05)

PRDG - PRE DUG
OB - OVERBURDEN
CL - CLAY
SI - SILT
SA - SAND
GR - GRAVEL
BL - BOULDER
STNS - STONES
HP - HARDPAN
RK - ROCK (BEDROCK)
LMSN - LIMESTONE (BEDROCK)
DST - DOLOSTONE
CL, SA - FIRST COMPONENT IS MOST COMMON MATERIAL

CLIENT
BLUE TRITON BRANDS

PROJECT
2021 ANNUAL REPORT

TITLE
HYDROGEOLOGIC CROSS-SECTION C-C'

CONSULTANT
GOLDER
MEMBER OF WSP

YYYY-MM-DD	2022-02-18
DESIGNED	JMC
PREPARED	ST
REVIEWED	GP
APPROVED	JAP

PROJECT NO.	CONTROL	REV.	FIGURE
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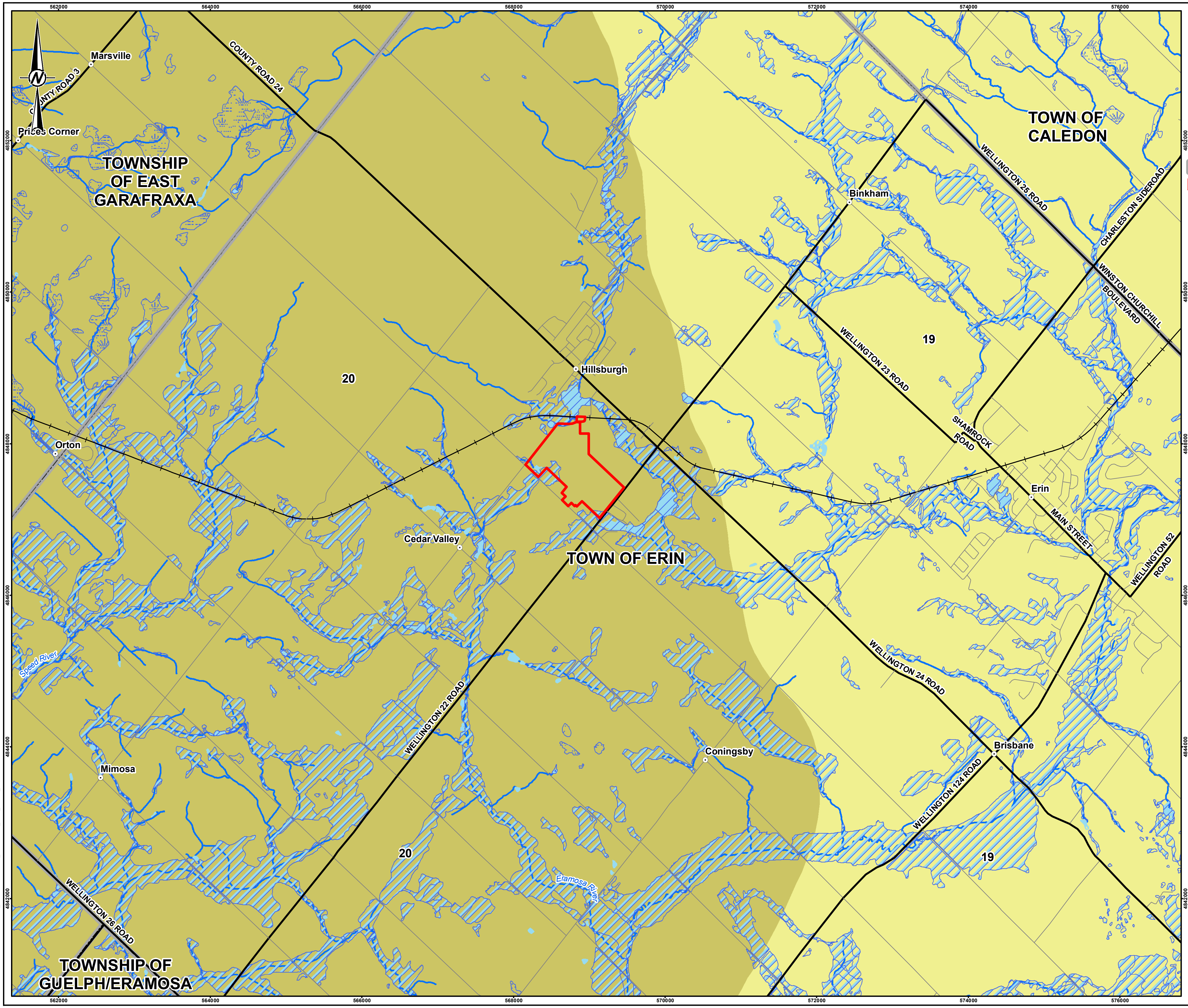

LEGEND

- ⊙ City/Town
- ━ Main Road
- ─ Local Road
- ┼ Railway
- ─ Watercourse
- ▨ Wetland
- ▨ Provincially Significant Wetland
- ▭ Waterbody
- ▭ Municipal Boundary
- ▭ Property Boundary
- ■ 20: Guelph
- ■ 19: Amabel

0 1 2 3 4

1:50,000

Kilometres

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CLIENT
BLUE TRITON BRANDS

PROJECT
2021 ANNUAL REPORT

TITLE
REGIONAL BEDROCK GEOLOGY

CONSULTANT

GOLDER
MEMBER OF WSP

YYYY-MM-DD	2022-01-26
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REVIEWED	GP
APPROVED	JAP

PROJECT NO.	CONTROL	REV.	FIGURE
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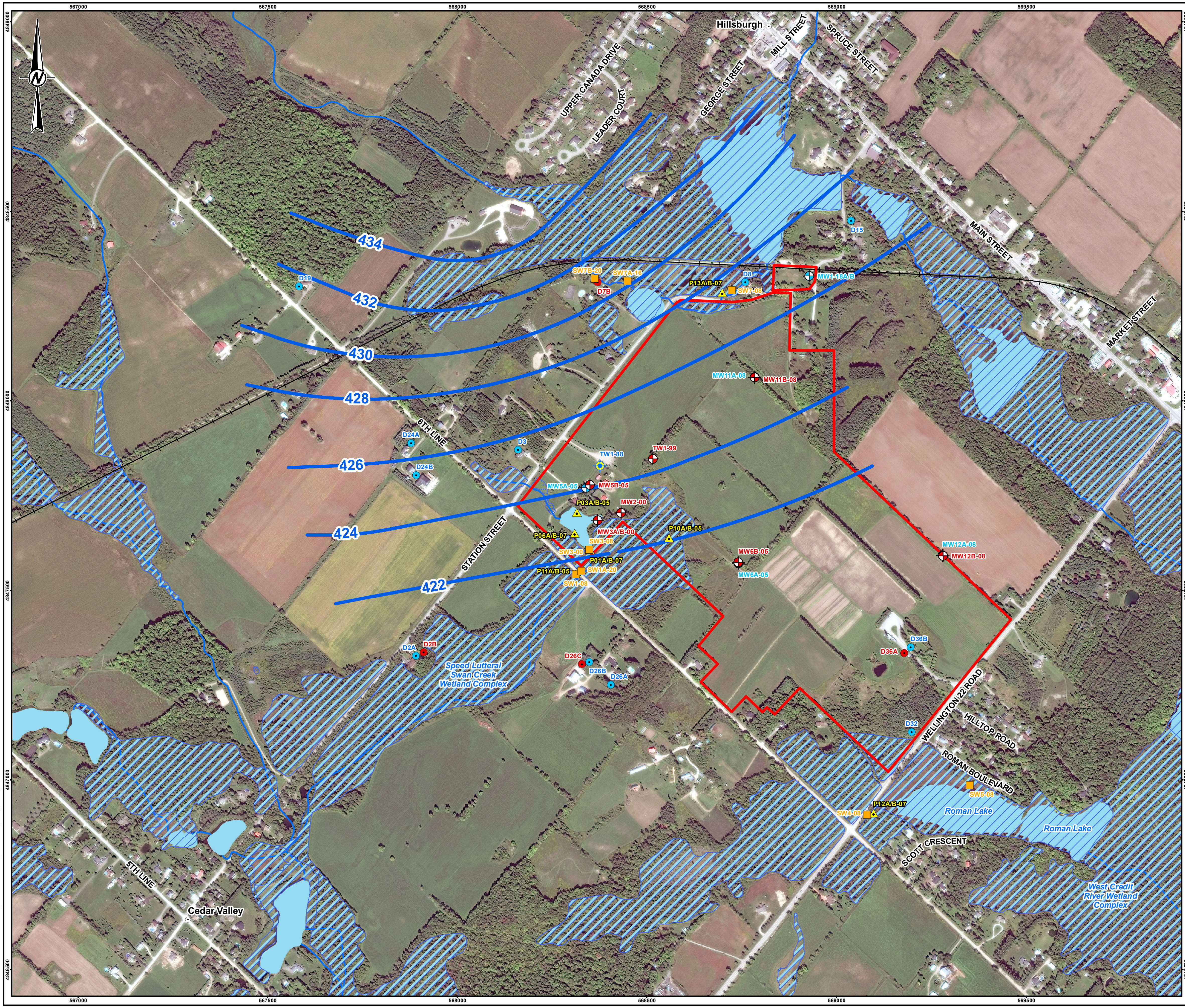

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LEGEND

- ⊙ City/Town
- ⊕ Monitoring Well (Bedrock)
- ⊕ Monitoring Well (Overburden)
- ⊕ Production Well
- ⊙ Private Well (Bedrock)
- ● Private Well (Overburden)
- ▲ Piezometer
- ■ Surface Water Station
- Water Level Elevation Contour (Jan. 24, 2000)
- Main Road
- Local Road
- Railway
- Watercourse
- ▨ Wetland
- ▨ Provincially Significant Wetland
- ■ Waterbody
- ☐ Property Boundary

0 200 400 600 800

1:10,000

Meters

REFERENCE(S)

BASE DATA - MNR LIO, OBTAINED 2015
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PROPERTY BOUNDARY FROM CRA FILE 13764-10(017)GN-WA002.DWG.

CLIENT
BLUE TRITON BRANDS

PROJECT
2021 ANNUAL REPORT

TITLE
POTENTIOMETRIC SURFACE OF GUELPH AQUIFER
(NON-PUMPING CONDITION JANUARY 2000)

CONSULTANT
GOLDER
MEMBER OF WSP

YYYY-MM-DD	2022-01-26
DESIGNED	JMC
PREPARED	ST
REVIEWED	GP
APPROVED	JAP

PROJECT NO.	CONTROL	REV.	FIGURE
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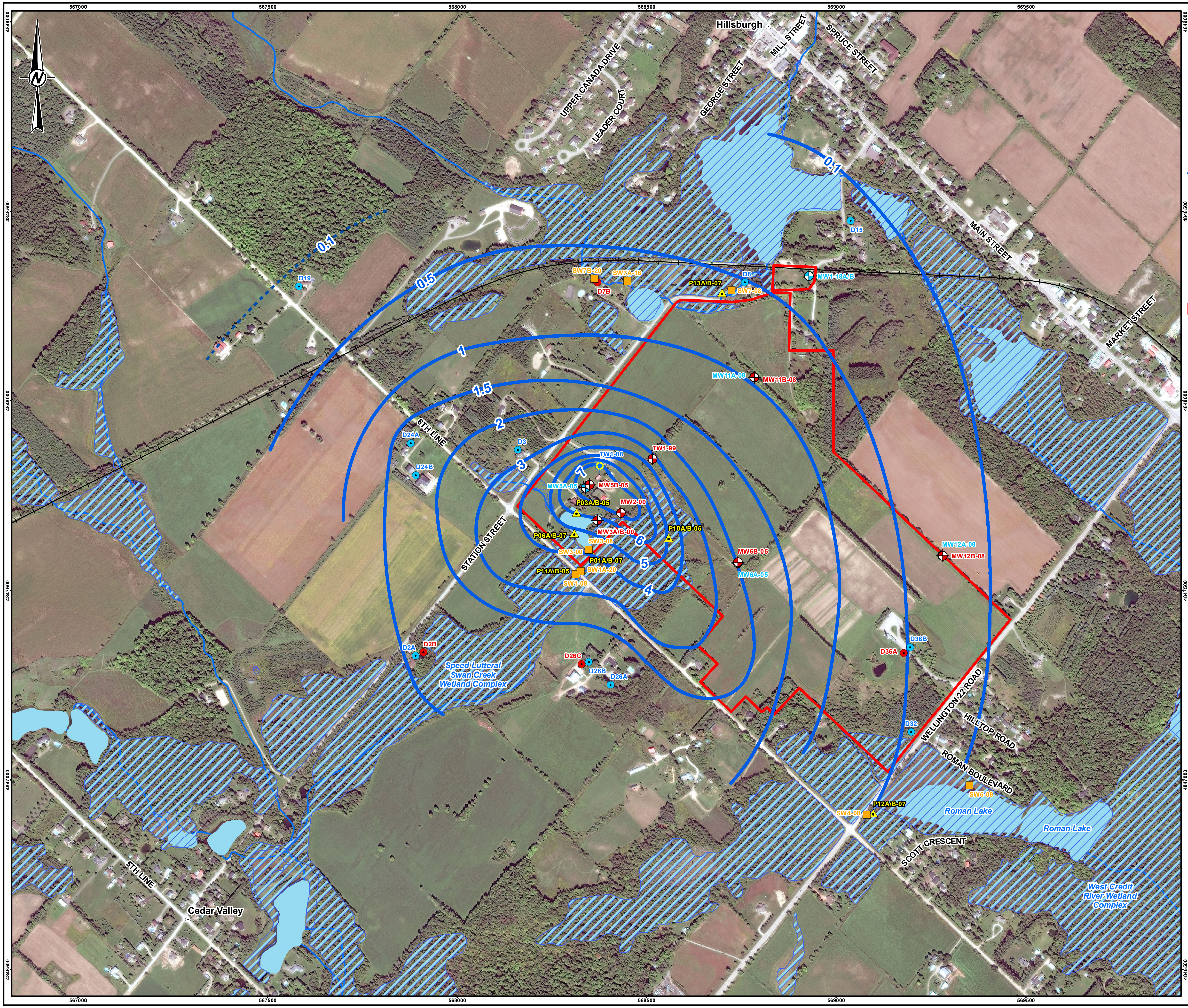

LEGEND

⊙	City/Town
⊕	Monitoring Well (Bedrock)
⊕	Monitoring Well (Overburden)
⊕	Production Well
●	Private Well (Bedrock)
●	Private Well (Overburden)
▲	Piezometer
■	Surface Water Station
—	Drawdown Contour (June 13/15, 2001)
—	Main Road
—	Local Road
┼	Railway
—	Watercourse
▨	Wetland
▨	Provincially Significant Wetland
■	Waterbody
□	Property Boundary

0 200 400 600 800

1:10,000

Meters

REFERENCE(S)

BASE DATA - MNR LIO, OBTAINED 2015
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PROPERTY BOUNDARY FROM CRA FILE 13764-10(017)GN-WA002.DWG.

CLIENT
BLUE TRITON BRANDS

PROJECT
2021 ANNUAL REPORT

TITLE
INTERPRETED DRAWDOWN IN BEDROCK AQUIFER (JUNE 2001)

CONSULTANT

GOLDER
MEMBER OF WSP

YYYY-MM-DD	2022-02-16
DESIGNED	JMC
PREPARED	ST
REVIEWED	GP
APPROVED	JAP

PROJECT NO.	CONTROL	REV.	FIGURE
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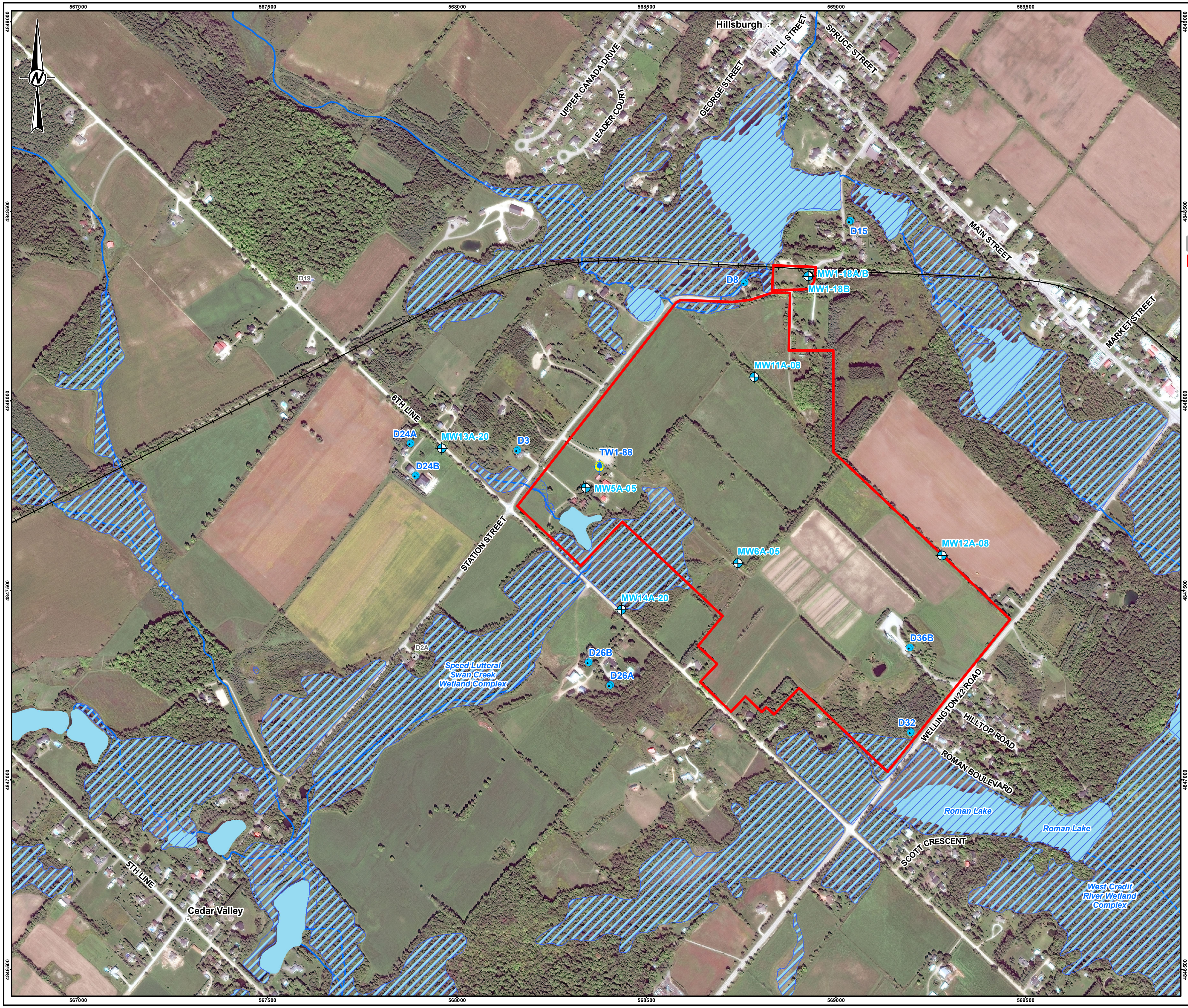

LEGEND

⊙	City/Town
⊕	Production Well
⊕	Monitoring Well (Bedrock)
●	Private Well (Bedrock)
⊙	Private Well (Bedrock - not monitored)
—	Main Road
—	Local Road
┼	Railway
—	Watercourse
▨	Wetland
▨	Provincially Significant Wetland
■	Waterbody
☐	Municipal Boundary
🟥	Property Boundary

0 200 400 600 800

1:10,000 Meters

REFERENCE(S)

BASE DATA - MNR LIO, OBTAINED 2015
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CLIENT
BLUE TRITON BRANDS

PROJECT
2021 ANNUAL REPORT

TITLE
2021 BEDROCK MONITORING LOCATIONS

CONSULTANT

GOLDER
MEMBER OF WSP

YYYY-MM-DD	2022-02-02
DESIGNED	JMC
PREPARED	ST
REVIEWED	GP
APPROVED	JAP

PROJECT NO.	CONTROL	REV.	FIGURE
20449101(2000)	0016	1.0	**3.1**

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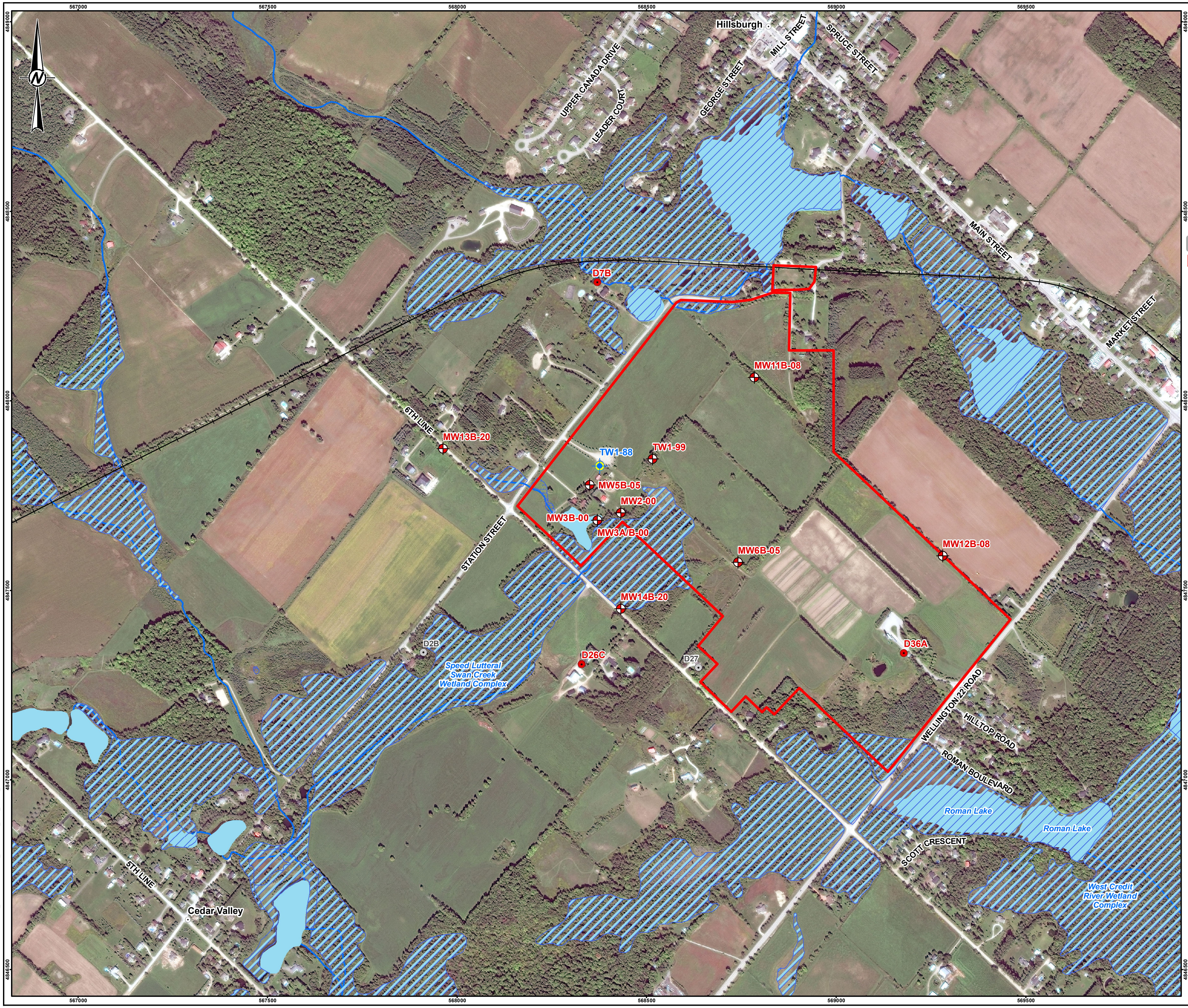

LEGEND

- ⊙ City/Town
- ⊕ Production Well
- ⊕ Monitoring Well (Overburden)
- ● Private Well (Overburden)
- ⊙ Private Well (Overburden - not monitored)
- — Main Road
- — Local Road
- ┼ Railway
- — Watercourse
- ▨ Wetland
- ▨ Provincially Significant Wetland
- 🟦 Waterbody
- ▭ Municipal Boundary
- 🟥 Property Boundary

0 200 400 600 800

1:10,000

Meters

REFERENCE(S)

BASE DATA - MNR LIO, OBTAINED 2015
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PROPERTY BOUNDARY FROM CRA FILE 13764-10(017)GN-WA002.DWG.

CLIENT
BLUE TRITON BRANDS

PROJECT
2021 ANNUAL REPORT

TITLE
2021 OVERBURDEN MONITORING LOCATIONS

CONSULTANT

GOLDER
MEMBER OF WSP

YYYY-MM-DD	2022-01-26
DESIGNED	JMC
PREPARED	ST
REVIEWED	GP
APPROVED	JAP

PROJECT NO.	CONTROL	REV.	FIGURE
20449101 (2000)	0016	1.0	3.2

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM:
25mm
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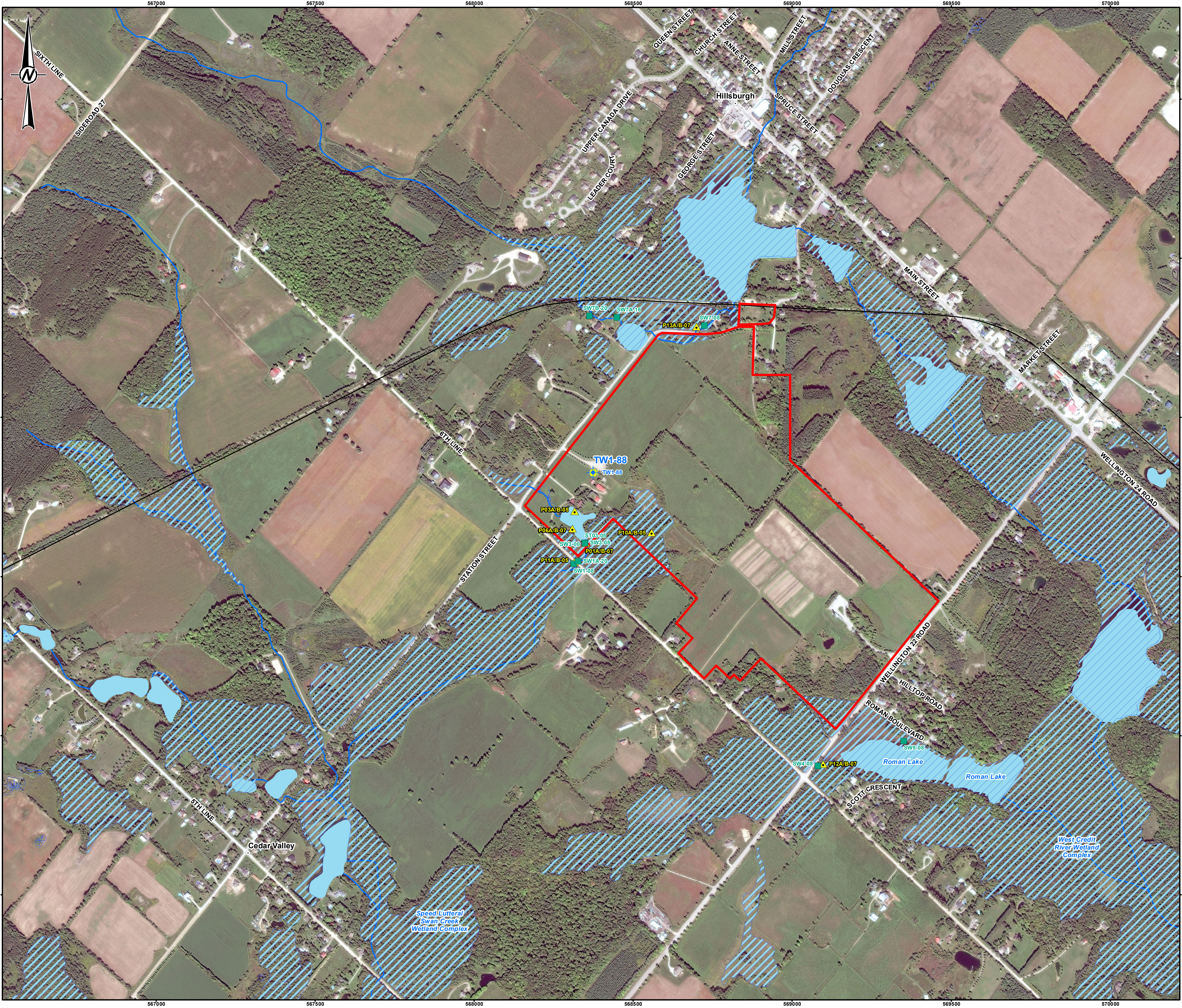

LEGEND

⊙ City/Town

⊕ Production Well

▲ Piezometer

■ Surface Water Station

— Main Road

— Local Road

┼ Railway

— Watercourse

▨ Wetland

▨ Provincially Significant Wetland

■ Waterbody

▭ Municipal Boundary

▭ Property Boundary

0 200 400 600 800

1:12,000 Meters

REFERENCE(S)

BASE DATA - MNR LIO, OBTAINED 2015
PRODUCED BY GOLDER ASSOCIATES LTD UNDER LICENCE FROM
ONTARIO MINISTRY OF NATURAL RESOURCES, © QUEENS PRINTER 2013
PROJECTION: UTM NAD83 ZONE 17
PROPERTY BOUNDARY FROM CRA FILE 13764-10(017)GN-WA002.DWG.

CLIENT
BLUE TRITON BRANDS

PROJECT
2021 ANNUAL REPORT

TITLE
2021 SURFACE WATER MONITORING LOCATIONS

CONSULTANT
GOLDER
MEMBER OF WSP

YYYY-MM-DD	2022-02-02
DESIGNED	JMC
PREPARED	ST
REVIEWED	GP
APPROVED	JAP

PROJECT NO.	CONTROL	REV.	FIGURE
20449101 (2000)	0016	1.0	**3.3**

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM:
25mm
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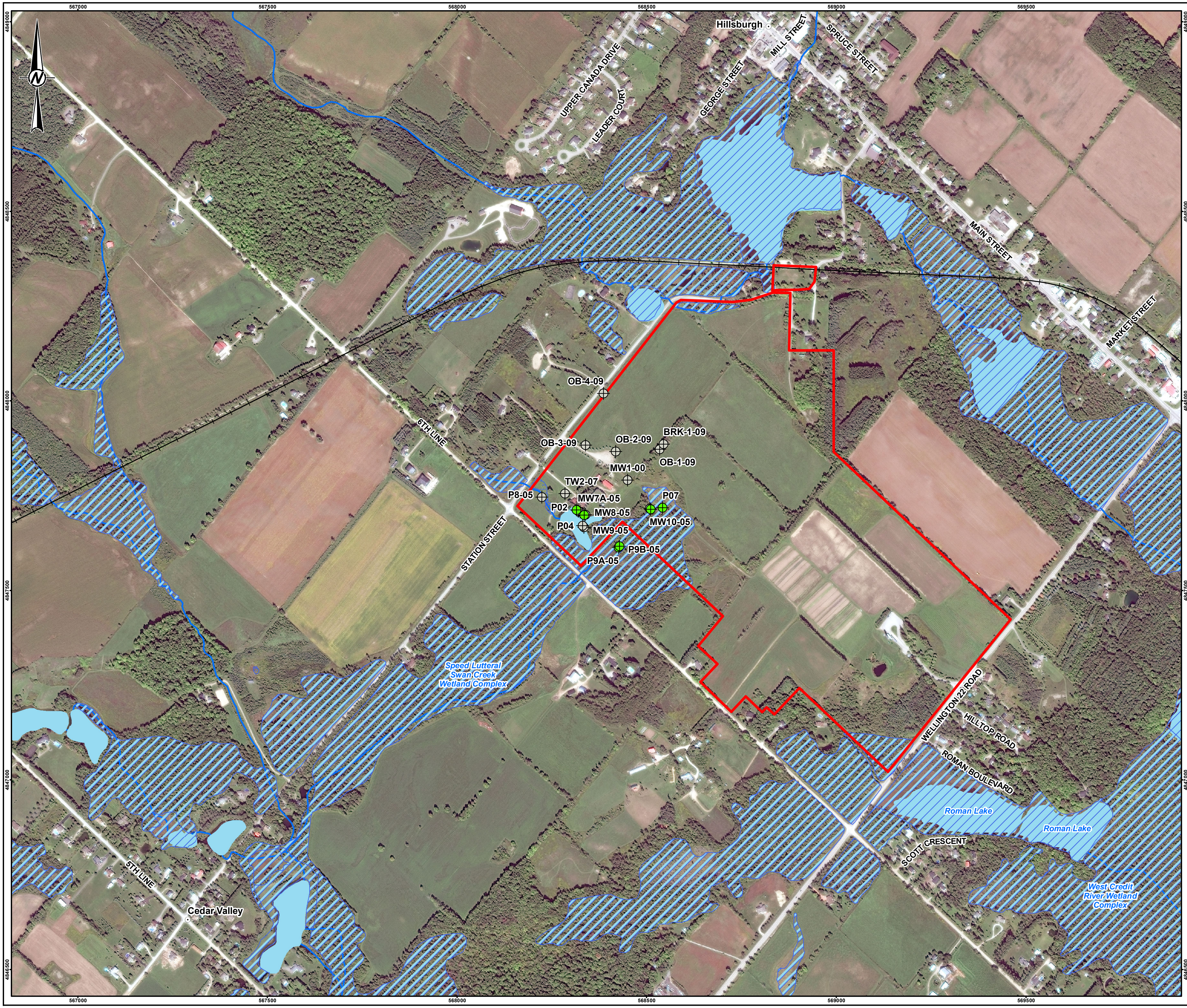

LEGEND

⊙ CITY/TOWN

WELL STATUS AS OF DECEMBER 2021

⊕ DESTROYED/REMOVED/DECOMMISSIONED

⊕ UNUSED (STATUS UNKNOWN)

— MAIN ROAD

— LOCAL ROAD

┼ RAILWAY

— WATERCOURSE

▨ WETLAND

▨ PROVINCIALLY SIGNIFICANT WETLAND

▭ WATERBODY

▭ MUNICIPAL BOUNDARY

▭ PROPERTY BOUNDARY

0 200 400 600 800

1:10,000 Meters

REFERENCE(S)

BASE DATA - MNR LIO, OBTAINED 2015
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ONTARIO MINISTRY OF NATURAL RESOURCES, © QUEENS PRINTER 2013
PROJECTION: UTM NAD83 ZONE 17
PROPERTY BOUNDARY FROM CRA FILE 13764-10(017)GN-WA002.DWG.

CLIENT
BLUE TRITON BRANDS

PROJECT
2021 ANNUAL REPORT

TITLE
UNUSED OR DECOMMISSIONED WELLS

CONSULTANT
GOLDER
MEMBER OF WSP

YYYY-MM-DD	2022-01-26
DESIGNED	JMC
PREPARED	ST
REVIEWED	GP
APPROVED	JAP

PROJECT NO.	CONTROL	REV.	FIGURE
20449101 (2000)	0016	1.0	**3.4**

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM:

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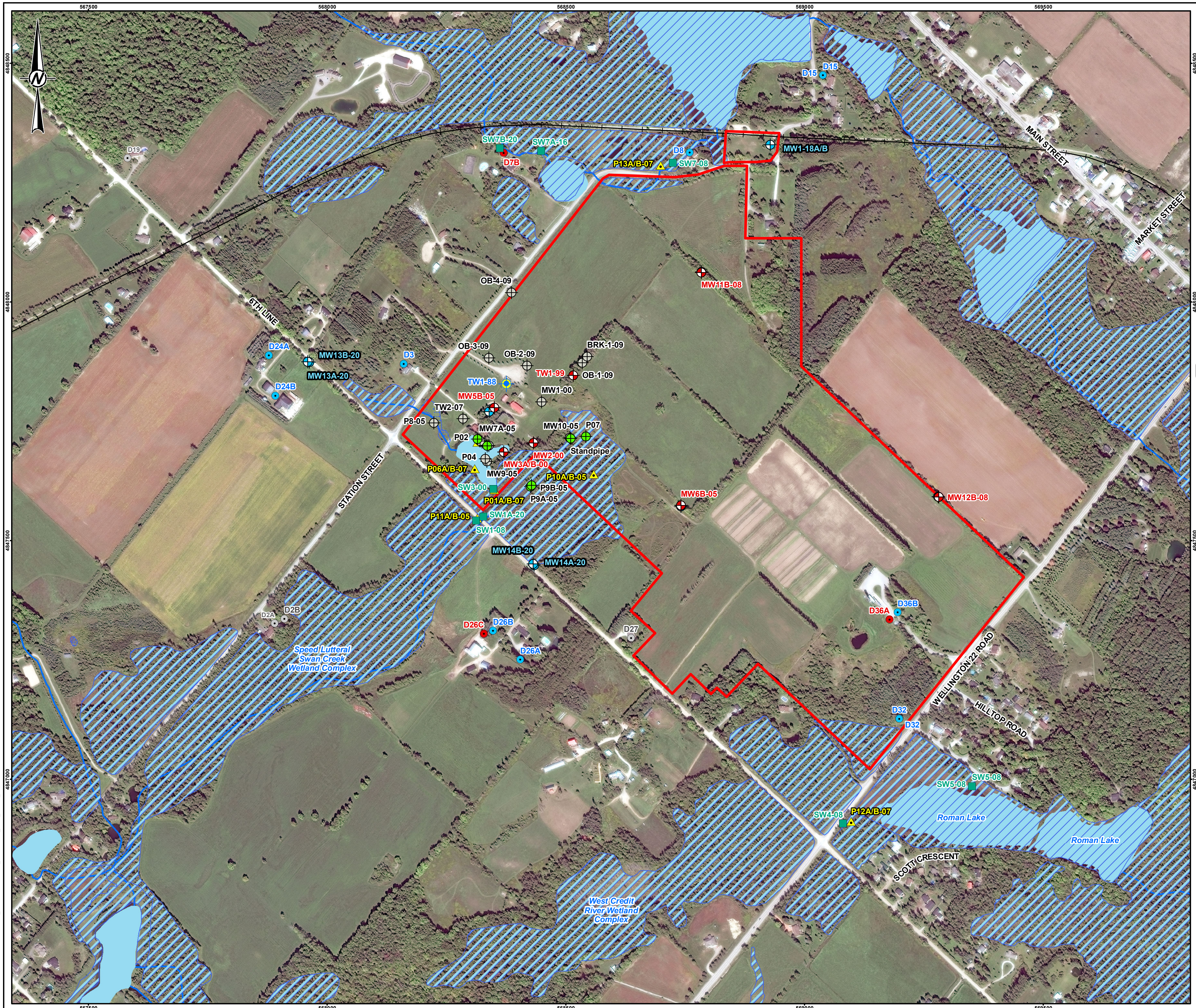


LEGEND

- ⊙ City/Town
- ⊕ Destroyed/Removed/Decommissioned
- ⊕ Unused (status unknown)
- ⊕ Production Well
- ⊕ Monitoring Well (Bedrock)
- ⊕ Monitoring Well (Overburden)
- ● Private Well (Bedrock)
- ● Private Well (Overburden)
- ▲ Piezometer
- ■ Surface Water Station
- ⊙ Private Well (Overburden - not monitored)
- ⊙ Private Well (Bedrock - not monitored)
- — Main Road
- — Local Road
- ┼ Railway
- — Watercourse
- ▨ Wetland
- ▨ Provincially Significant Wetland
- ■ Waterbody
- ▭ Municipal Boundary
- ▭ Property Boundary

0 200 400 600
1:8,000
Meters

REFERENCE(S)
BASE DATA - MNR LIO, OBTAINED 2015
PRODUCED BY GOLDER ASSOCIATES LTD UNDER LICENCE FROM
ONTARIO MINISTRY OF NATURAL RESOURCES, © QUEENS PRINTER 2013
PROJECTION: UTM NAD83 ZONE 17
PROPERTY BOUNDARY FROM CRA FILE 13764-10(017)GN-WA002.DWG.

CLIENT
BLUE TRITON BRANDS

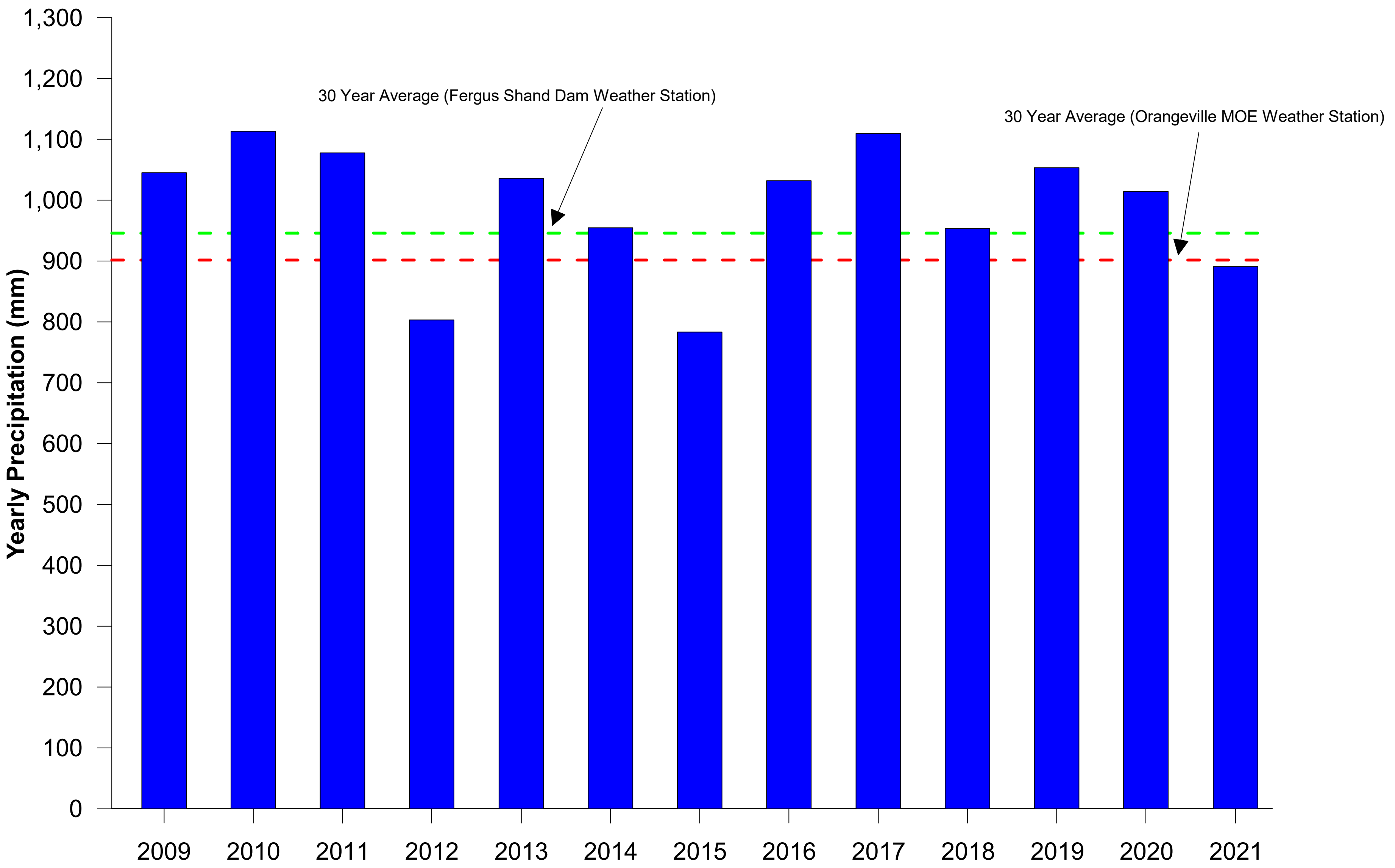
PROJECT
2021 ANNUAL REPORT

TITLE
WELL LOCATIONS

CONSULTANT
GOLDER
MEMBER OF WSP

YYYY-MM-DD	2022-01-26
DESIGNED	JMC
PREPARED	ST
REVIEWED	GP
APPROVED	JAP

PROJECT NO.	CONTROL	REV.	FIGURE
20449101 (2000)	0016	1.0	**3.5**



Data for Orangeville Station prior to 2016, and data for Shand Dam Station from 2016-2021

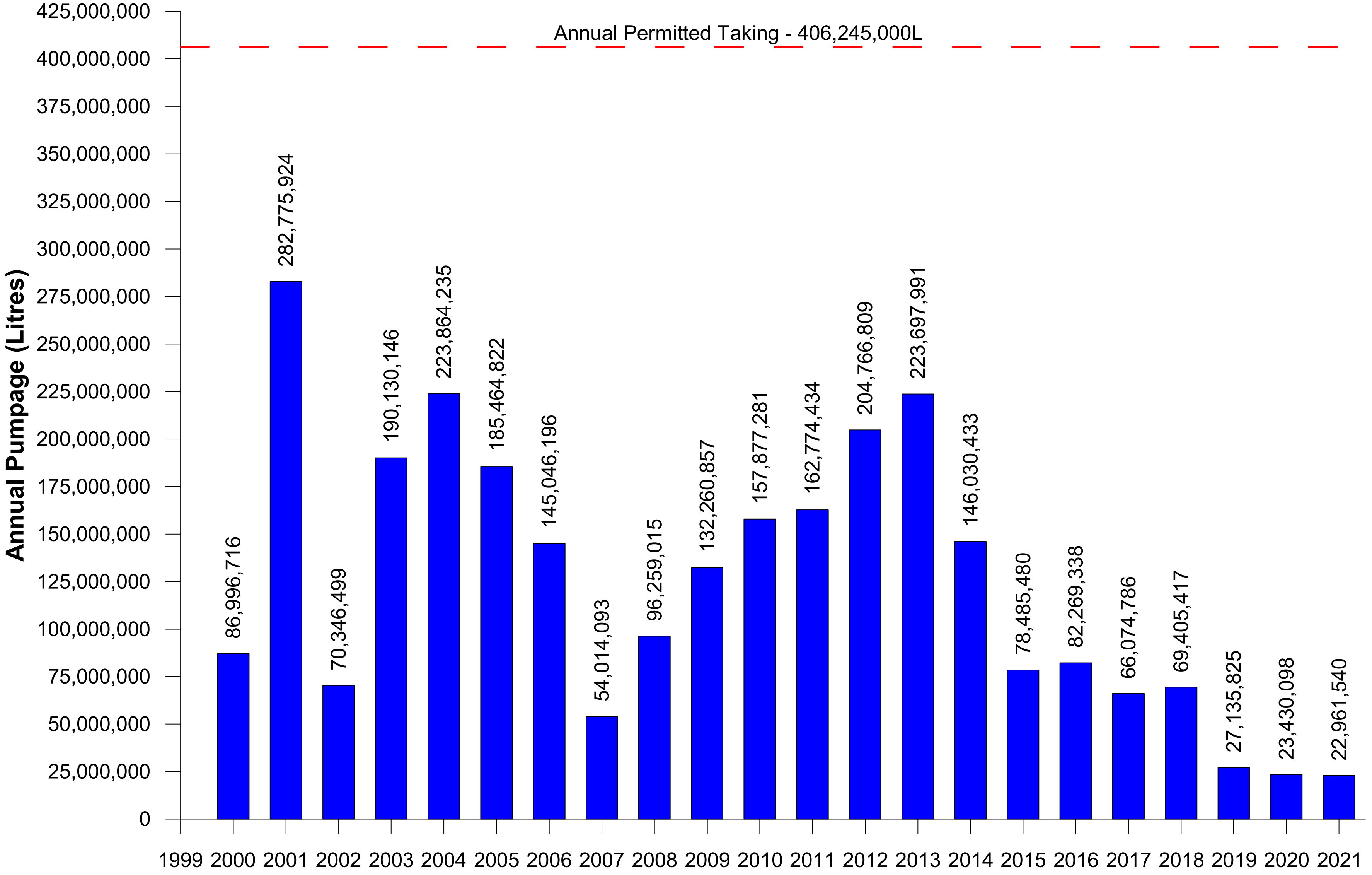
GOLDER

DATE	December 2021
DESIGN	KS
REVIEW	GP
APPROVED	GP

PROJECT
BLUE TRITON BRANDS
Erin, Ontario

TITLE
HISTORICAL ANNUAL PRECIPITATION (2009 TO 2021)
2021 ANNUAL MONITORING REPORT

PROJECT NO.	**REV**	**FIGURE**
20449101 (2000)	A	3.6



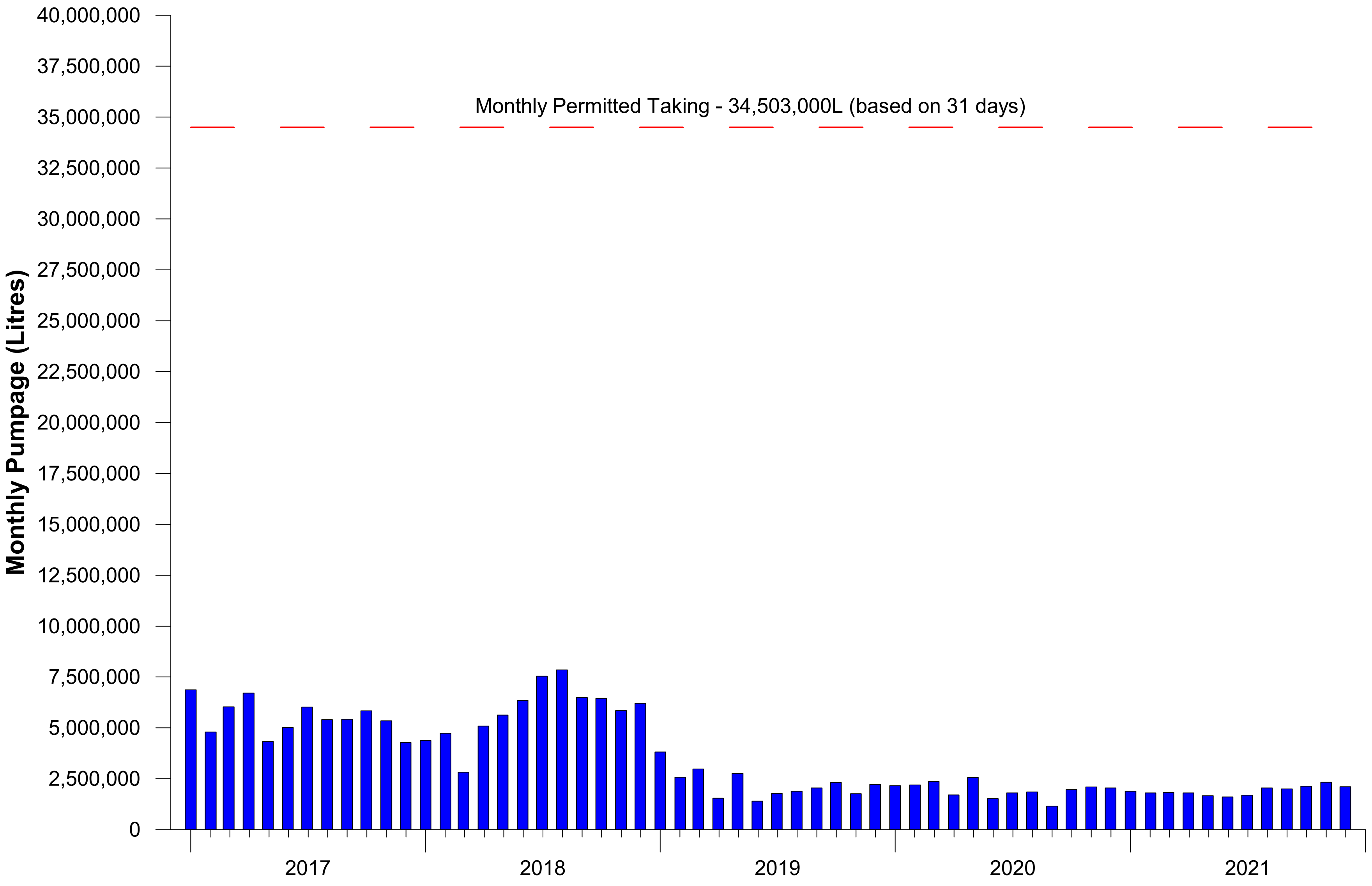
GOLDER

DATE December 2021
DESIGN KS
REVIEW GP
APPROVED GP

PROJECT
BLUE TRITON BRANDS
Erin, Ontario

TITLE
TW1-88 ANNUAL WATER TAKING (2000 TO 2021)
2021 ANNUAL MONITORING REPORT

PROJECT NO. 20449101 (2100)
REV A
FIGURE 4.1



GOLDER

DATE	December 2021
DESIGN	KS
REVIEW	GP
APPROVED	GP

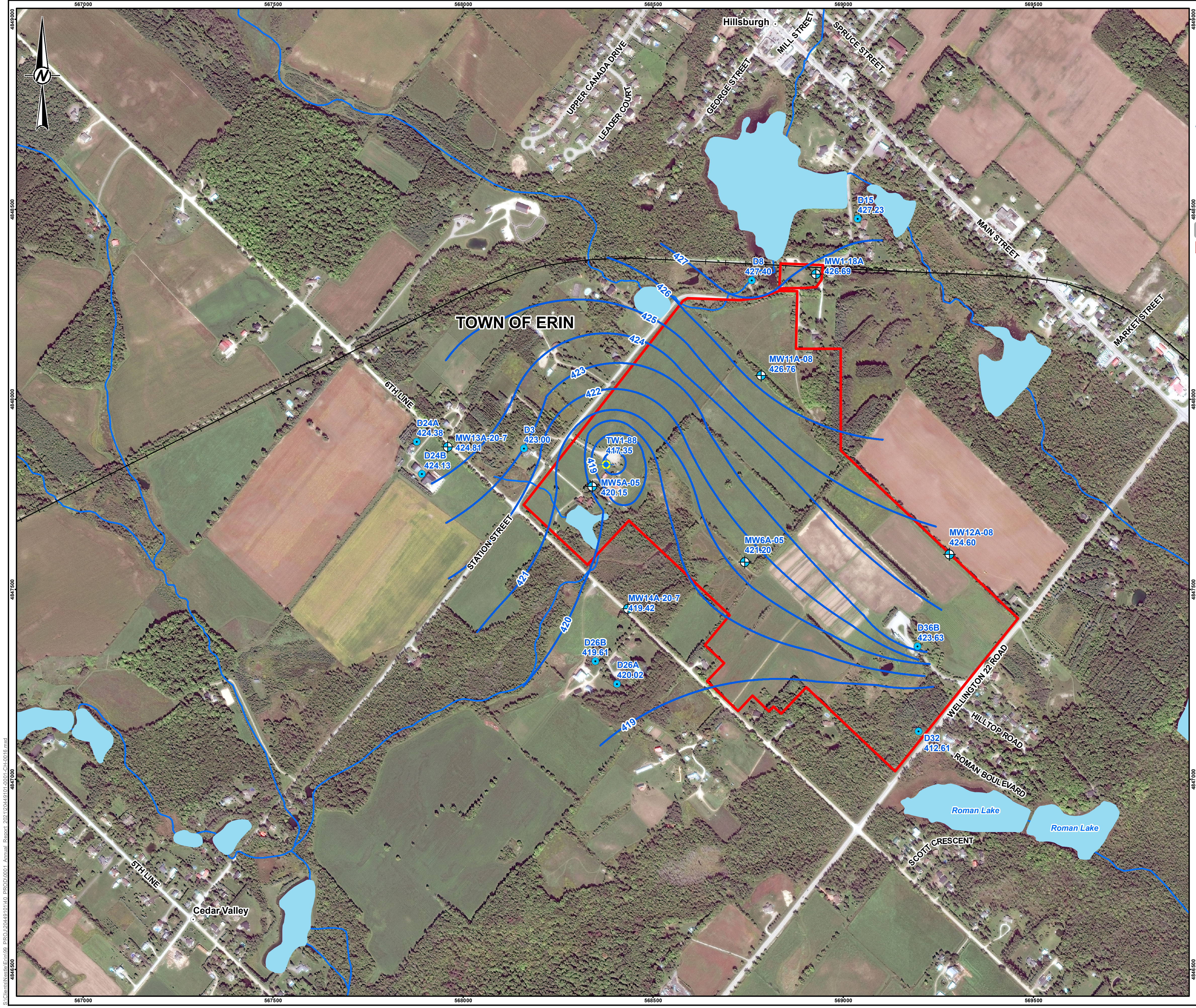
PROJECT

BLUE TRITON BRANDS
Erin, Ontario

TITLE

TW1-88 MONTHLY WATER TAKING (2017 TO 2021)
2021 ANNUAL MONITORING REPORT

PROJECT NO.	**REV**	**FIGURE**
20449101 (2000)	A	4.2



LEGEND

REFERENCE(S)
BASE DATA - MNR LIO, OBTAINED 2015
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PROJECTION: UTM NAD83 ZONE 17
PROPERTY BOUNDARY FROM CRA FILE 13764-10(017)GN-WA002.DWG.

CLIENT
BLUE TRITON BRANDS

PROJECT
2021 ANNUAL REPORT

TITLE
POTENTIOMETRIC SURFACE OF BEDROCK AQUIFER (AUGUST 2021)

CONSULTANT
GOLDER
MEMBER OF WSP

YYYY-MM-DD	2019-02-15
DESIGNED	JMC
PREPARED	ST
REVIEWED	GP
APPROVED	JAP

PROJECT NO.	CONTROL	REV.	FIGURE
20449101 (2000)	0016	1.0	**4.3**

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APPENDIX A

Permit To Take Water Number 4788-C5TJTZ

Ministry of the Environment, Conservation and Parks
Environmental Assessment and Permissions Division
Brownfields and Permit to Take Water
Permit To Take Water Unit
Floor 1, 135 St Clair Ave W
Toronto, ON
M4V 1P5
Tel: (289) 830-5867

Ministère de l'Environnement, de la Protection de la nature et des Parcs
Division des évaluations et des permissions environnementales
Réaménagement des friches contaminées et réglementation des prélèvements d'eau
Unité de la réglementation des prélèvements d'eau
1er étage, 135 av St. Clair O
Toronto, ON
M4V 1P5
Tél:(289) 830-5867

Ontario

November 15, 2021

Triton Water Canada Holdings, Inc.
101 Brock Rd S
Puslinch, Ontario, N0B 2J0
Canada

Dear Andreanne Simard:

RE: Permit To Take Water No. 4788-C5TJTZ
Lot: 24, Concession: 7, Erin, County of Wellington
Reference Number 6476-AMMS2Q

Please find attached a Permit to Take Water which authorizes the withdrawal of water in accordance with the application for this Permit to Take Water, dated May 16, 2017 and signed by Andreanne Simard.

This Permit expires on November 15, 2026. Authorized rates and amounts are indicated on Table A. This Permit cancels and replaces Permit Number 3716-8UZMCU, issued on September 28, 2012.

Section 9(3) of Ontario Regulation 387/04 (Water Taking and Transfer) requires all holders of a permit to report daily water taking amounts annually, in a manner and form approved by the Director (https://www.lrcsde.lrc.gov.on.ca/wtrs/). For the purpose of s. 9(3), such reports shall be submitted electronically to the Water Taking Reporting System (WTRS) electronic database or via hard copy, as described in the Technical Bulletin entitled "Permit to Take Water Program Monitoring and Reporting of Water Takings", dated November 2010, PIBs 6003e (https://archive.org/details/std01079790.ome/mode/2up).

If you have questions about reporting requirements, please call the WTRS Help Desk at 416-235-6322 (toll free: 1-877-344-2011) or by email, WTRSHelpdesk@ontario.ca. It is preferred that you submit your data directly and electronically to the WTRS. Where this is impracticable, please contact the WTRS Help Desk to arrange for written submission of your data.

Condition 1.4 specifically indicates that this Permit is not transferable to another party. Any queries regarding a change in owner/operator should be made to the Permit to Take Water Evaluator at the above address.

Take notice that in issuing this Permit, terms and conditions pertaining to the taking of water and to the results of the taking have been imposed. The terms and conditions have been designed to allow for the development of water resources, while providing reasonable protection to existing water uses and users.

Yours truly,

Gregory Meek
Supervisor (Acting), Permit To Take Water
Director, Section 34.1, Ontario Water Resources Act, R.S.O. 1990
Environmental Permissions Branch

File Storage Number: -

Ontario

Ministry of the Environment, Conservation and Parks
Ministère de l'Environnement, de la Protection de la nature et des Parcs

PERMIT TO TAKE WATER
Ground Water
NUMBER 4788-C5TJTZ

Pursuant to Section 34.1 of the *Ontario Water Resources Act, R.S.O. 1990 this Permit To Take Water is hereby issued to:*

Triton Water Canada Holdings, Inc.
101 Brock Rd S
Puslinch, Ontario
N0B 2J0

For the water taking from: One bedrock drilled well (TW1-88) MOE Well Tag No.: A095193

Located at: Lot 24, Concession 7, Geographic Township of Erin
Erin, County of Wellington

For the purposes of this Permit, and the terms and conditions specified below, the following definitions apply:

DEFINITIONS

(a) "Director" means any person appointed in writing as a Director pursuant to section 5 of the OWRA for the purposes of section 34.1, OWRA.

(b) "Provincial Officer" means any person designated in writing by the Minister as a Provincial Officer pursuant to section 5 of the OWRA.

(c) "Ministry" means Ontario Ministry of the Environment, Conservation and Parks.

(d) "District Office" means the Guelph District Office.

(e) "Permit" means this Permit to Take Water No. 4788-C5TJTZ including its Schedules, if any, issued in accordance with Section 34.1 of the OWRA.

(f) "Permit Holder" means Triton Water Canada Holdings, Inc..

(g) "OWRA " means the *Ontario Water Resources Act,* R.S.O. 1990, c. O. 40, as amended.

You are hereby notified that this Permit is issued subject to the terms and conditions outlined below:

TERMS AND CONDITIONS

1. Compliance with Permit

1.1 Except where modified by this Permit, the water taking shall be in accordance with the application for this Permit To Take Water, dated May 16, 2017 and signed by Andreanne Simard, and all Schedules included in this Permit.

1.2 The Permit Holder shall ensure that any person authorized by the Permit Holder to take water under this Permit is provided with a copy of this Permit and shall take all reasonable measures to ensure that any such person complies with the conditions of this Permit.

1.3 Any person authorized by the Permit Holder to take water under this Permit shall comply with the conditions of this Permit.

1.4 This Permit is not transferable to another person.

1.5 This Permit provides the Permit Holder with permission to take water in accordance with the conditions of this Permit, up to the date of the expiry of this Permit. This Permit does not constitute a legal right, vested or otherwise, to a water allocation, and the issuance of this Permit does not guarantee that, upon its expiry, it will be renewed.

1.6 The Permit Holder shall keep this Permit available at all times at or near the site of the taking, and shall produce this Permit immediately for inspection by a Provincial Officer upon his or her request.

1.7 The Permit Holder shall report any changes of address to the Director within thirty days of any such change. The Permit Holder shall report any change of ownership of the property for which this Permit is issued within thirty days of any such change. A change in ownership in the property shall cause this Permit to be cancelled.

2. General Conditions and Interpretation

2.1 Inspections

The Permit Holder must forthwith, upon presentation of credentials, permit a Provincial Officer to carry out any and all inspections authorized by the OWRA, the *Environmental Protection Act* , R.S.O. 1990, the *Pesticides Act* , R.S.O. 1990, or the *Safe Drinking Water Act,* S. O. 2002.

2.2 Other Approvals

The issuance of, and compliance with this Permit, does not:

(a) relieve the Permit Holder or any other person from any obligation to comply with any other applicable legal requirements, including the provisions of the *Ontario Water Resources Act* , and the *Environmental Protection Act* , and any regulations made thereunder; or

(b) limit in any way any authority of the Ministry, a Director, or a Provincial Officer, including the authority to require certain steps be taken or to require the Permit Holder to furnish any further information related to this Permit.

2.3 Information

The receipt of any information by the Ministry, the failure of the Ministry to take any action or require any person to take any action in relation to the information, or the failure of a Provincial Officer to prosecute any person in relation to the information, shall not be construed as:

(a) an approval, waiver or justification by the Ministry of any act or omission of any person that contravenes this Permit or other legal requirement; or

(b) acceptance by the Ministry of the information's completeness or accuracy.

2.4 Rights of Action

The issuance of, and compliance with this Permit shall not be construed as precluding or limiting any legal claims or rights of action that any person, including the Crown in right of Ontario or any agency thereof, has or may have against the Permit Holder, its officers, employees, agents, and contractors.

2.5 Severability

The requirements of this Permit are severable. If any requirements of this Permit, or the application of any requirements of this Permit to any circumstance, is held invalid or unenforceable, the application of such requirements to other circumstances and the remainder of this Permit shall not be affected thereby.

2.6 Conflicts

Where there is a conflict between a provision of any submitted document referred to in this Permit, including its Schedules, and the conditions of this Permit, the conditions in this Permit shall take precedence.

3. Water Takings Authorized by This Permit

3.1 Expiry

This Permit expires on **November 15, 2026**. No water shall be taken under authority of this Permit after the expiry date.

3.2 Amounts of Taking Permitted

The Permit Holder shall only take water from the source, during the periods and at the rates and amounts of taking specified in Table A. Water takings are authorized only for the purposes specified in Table A.

Table A

	Source Name / Description:	Source: Type:	Taking Specific Purpose:	Taking Major Category:	Max. Taken per Minute (litres):	Max. Num. of Hrs Taken per Day:	Max. Taken per Day (litres):	Max. Num. of Days Taken per Year:	Zone/ Easting/ Northing:
1	TW1-88	Well Drilled	Bottled Water	Commercial	773	24	1,113,000	365	17 568384 4847833
						Total Taking:	1,113,000		

3.3 It is the responsibility of the Permit Holder to keep advised of any Low Water Advisory within the jurisdiction of the Grand River Conservation Authority. For the purpose of this condition, Low Water Advisory means a Level 1, Level 2, or Level 3 low water condition as defined by the Ministry of Northern Development, Mines, Natural Resources and Forestry (MNDMNRF) in their Low Water Response Program, as may be amended from time to time by the MNDMNRF.

When a Low Water Advisory exists within the Grand River Conservation Authority watershed, the Permit Holder shall undertake measures outlined in the Low Water Response Plan, as described in **Item 3** of **Schedule A**.

4. Monitoring

4.1 The Permit Holder shall measure water level on a continuous basis (pressure transducers) at the following locations:

Bedrock Wells

- TW1-88
- MW5A-05
- MW6A-05
- MW1-18A/B
- D3
- MW11A-08
- MW12A-08
- MW13A-20-7
- MW14A-20-7

Overburden Wells

- MW3A/B-00
- MW5B-05
- MW6B-05
- MW11B-08
- MW12B-08

- MW13B-20-07
- MW14B-20-06

Piezometers

i) Continuous monitoring of water level and vertical hydraulic gradients at the following locations:

- P01A/B-07
- P03A/B-05
- P06A/B-07
- P10A/B-05
- P11A/B-05
- P12A/B-07
- P13A/B-07

Surface Water

(i) Continuous monitoring of surface water levels at the following locations:

- SW1-08
- SW1A-20
- SW3-08
- SW4-08
- SW5-08
- SW7-08
- SW7B-20

(ii) Monthly monitoring of flow and development of appropriate stage-discharge curves at the following locations:

- SW1-08
- SW7-08
- SW7B-20

(iii) Continuous Monitoring of stream flows at the following locations using a flow meter:

- SW3-08

4.2 Continuous monitoring shall be datalogged at 60 minute intervals and downloaded quarterly; however, daily minimum water levels may be used to evaluate the water level variation with respect to pumping to improve the data handling and presentation.

Where monthly monitoring data is datalogged, this data shall also be downloaded on a quarterly basis.

4.3 The water level data collected in piezometers or multilevel monitoring wells (two wells at one location or multiple wells in one borehole screened at different intervals) shall be plotted as gradient vs. time and interpreted to assess the potential impact of taking on vertical hydraulic gradients (upward/downward) and hydraulic connection of the ground water with the surface water, if any.

4.4 The Permit Holder shall identify to the Director in writing, within 15 days of any monthly monitoring event, any monitoring locations identified in Conditions 4.1 which become permanently inaccessible and/or abandoned along with a recommendation for replacement monitoring locations. This shall exclude wells that become temporarily inaccessible, i.e., due to frozen conditions. Upon approval of the Director the monitoring program shall be appropriately modified.

4.5 Under section 9 of O. Reg. 387/04, and as authorized by subsection 34(6) of the *Ontario Water Resources Act* , the Permit Holder shall, on each day water is taken under the authorization of this Permit, record the date, the volume of water taken on that date and the rate at which it was taken. The daily volume of water taken shall be measured by a flow meter or calculated in accordance with the method described in the application for this Permit, or as otherwise accepted by the Director. The Permit Holder shall keep all records required by this condition current and available at or near the site of the taking and shall produce the records immediately for inspection by a Provincial Officer upon his or her request. The Permit Holder, unless otherwise required by the Director, shall submit, on or before March 31st in every year, the records required by this condition to the ministry's Water Taking Reporting System.

4.6 The Permit Holder shall submit to the Director, an annual monitoring report which presents and interprets the monitoring data to be collected under the Terms and Conditions of this Permit. This report shall be prepared, signed and stamped by a licenced professional geoscientist or a licensed professional engineer specializing in hydrogeology who shall take responsibility for its accuracy. The report shall be submitted to the Director by April 30 of each calendar year or as supporting documentation to any application for renewal of this Permit, and include monitoring data for the 12 month period ending December 31 of the previous year.

4.7 The Permit Holder shall include as part of the annual monitoring report required under Condition 4.6, the following information:

- (i) Location and name of the facilities to which water is delivered in bulk containers greater than 20L from this source.
- (ii) Whether or not the bulk water transported is containerized at the receiving location.
- (iii) The size of the container(s) into which the water is transferred.
- (iv) Total volume of the water transported in bulk in each calendar year to each remote facility.

4.8 The Permit Holder shall investigate any complaints received from the public or agency with regard to this water taking in accordance with the interference complaints resolution protocol and notify the District Manager, District Office within two (2) working days of receiving the complaint. Details of any complaints and its resolution shall be outlined to the Director in the annual monitoring report required under Condition 4.6.

4.9.1 Prior to December 31, 2021, the Permit Holder shall establish a publicly accessible internet Website, with no user, access or registration fees, and shall maintain the website for the duration of this permit. Following the establishment of the Website, the Permit Holder shall notify the Director in writing, of the Website URL address.

4.9.2 By December 31, 2021, the Permit Holder shall upload and make available for download the following information:

- all technical documentation submitted to support the Permit To Take Water application, items listed in Schedule A of this Permit;
- a plain language executive summary of the water taking activity; and,
- the well interference protocol.

4.9.3 By March 31 of each calendar year (until March 31, 2027) the Permit Holder shall upload and make available for download the following information to the Website:

- the monitoring report required by Condition 4.7 for the 12-month period ending December 31 of the previous year.
- The daily water taking records collected as required by Condition 4.1, uploaded in a suitable electronic format (e.g. Microsoft Excel) for the 12-month period ending December 31 of the previous year.

4.10 By September 30 of each calendar year (until September 30, 2027), the Permit Holder shall host an annual stakeholder meeting. The meeting will provide an opportunity for the Permit Holder to inform stakeholders of the Permit and the results of the annual monitoring report (for the 12-month period ending December 31 of the previous year), to receive submissions from stakeholders and the public, and to answer questions concerning the water taking.

The Permit Holder shall also directly notify the following stakeholders:

- The Director
- The City of Guelph
- The Grand River Conservation Authority
- Credit Valley Conservation Authority
- The Town of Erin
- The Six Nations of the Grand River
- The Mississaugas of the New Credit First Nation
- The Haudenosaunee Confederacy Chiefs Council (via the Haudenosaunee Development Institute)
- The Wellington Water Watchers
- Council of Canadians

The meeting may be held virtually and/or at suitable accessible and public venue within the County of Wellington.

A copy of the meeting invitations, agenda and minutes shall be submitted to the Director within 30 days of the meeting.

5. Impacts of the Water Taking

5.1 Notification

The Permit Holder shall immediately notify the local District Office of any complaint arising from the taking of water authorized under this Permit and shall report any action which has been taken or is proposed with regard to such complaint. The Permit Holder shall immediately notify the local District Office if the taking of water is observed to have any significant impact on the surrounding waters. After hours, calls shall be directed to the Ministry's Spills Action Centre at 1-800-268-6060.

5.2 For Groundwater Takings

If the taking of water is observed to cause any negative impact to other water supplies obtained from any adequate sources that were in use prior to initial issuance of a Permit for this water taking, the Permit Holder shall take such action necessary to make available to those affected, a supply of water equivalent in quantity and quality to their normal takings, or shall compensate such persons for their reasonable costs of so doing, or shall reduce the rate and amount of taking to prevent or alleviate the observed negative impact. Pending permanent restoration of the affected supplies, the Permit Holder shall provide, to those affected, temporary water supplies adequate to meet their normal requirements, or shall compensate such persons for their reasonable costs of doing so.

If permanent interference is caused by the water taking, the Permit Holder shall restore the water supplies of those permanently affected.

6. Director May Amend Permit

The Director may amend this Permit by letter requiring the Permit Holder to suspend or reduce the taking to an amount or threshold specified by the Director in the letter. The suspension or reduction in taking shall be effective immediately and may be revoked at any time upon notification by the Director. This condition does not affect your right to appeal the suspension or reduction in taking to the Environmental Review Tribunal under the *Ontario Water Resources Act* , Section 100 (4).

6.1 Subsection 4 (4) in the Water Taking and Transfer Regulation (Ontario Regulation 387/04) (“Regulation”) sets out priorities of water use that the Director will take into account as a last resort to avoid or resolve conflict among water users in the event of a shortage of water resources in an area. The four priority of use categories set out in subsection 4 (2) of the regulation, are as follows:

- Priority 1 – Environment, drinking water, and Farm animal production;
- Priority 2 – Agricultural;
- Priority 3 – Industrial and commercial and other (<u>including water bottling</u>); and
- Priority 4 – Aesthetic

In the event of an urgent shortage of water resources in the Erin area, the Director may amend this Permit prioritize water takings in Priority categories 1 and 2.

The Director may also require the Permit Holder to investigate and resolve interferences that occur between existing water takings, working with the affected water users to identify potential solutions.

The reasons for the imposition of these terms and conditions are as follows:

1. Condition 1 is included to ensure that the conditions in this Permit are complied with and can be enforced.

2. Condition 2 is included to clarify the legal interpretation of aspects of this Permit.

3. Conditions 3 through 6 are included to protect the quality of the natural environment so as to safeguard the ecosystem and human health and foster efficient use and conservation of waters. These conditions allow for the beneficial use of waters while ensuring the fair sharing, conservation and sustainable use of the waters of Ontario. The conditions also specify the water takings that are authorized by this Permit and the scope of this Permit.

In accordance with Section 100 of the Ontario Water Resources Act*, R.S.O. 1990, you may by written notice served upon me, the Environmental Review Tribunal and the Minister of the Environment, Conservation and Parks, within 15 days after receipt of this Notice, require a hearing by the Tribunal. The Minister of the Environment, Conservation and Parks will place notice of your appeal on the Environmental Registry. Section 101 of the* Ontario Water Resources Act*, as amended provides that the Notice requiring a hearing shall state:*

1. The portions of the Permit or each term or condition in the Permit in respect of which the hearing is required, and;
2. The grounds on which you intend to rely at the hearing in relation to each portion appealed.

In addition to these legal requirements, the Notice should also include:

a. The name of the appellant;
b. The address of the appellant;
c. The Permit to Take Water number;
d. The date of the Permit to Take Water;
e. The name of the Director;
f. The municipality within which the works are located;

This notice must be served upon:

The Secretary
Environmental Review Tribunal
655 Bay Street, 15th Floor
Toronto ON
M5G 1E5
Fax: (416) 326-5370
Email:
ERTTribunalsecretary@ontario.ca

AND

The Minister of the Environment,
Conservation and Parks
777 Bay Street, 5th Floor
Toronto, Ontario
M7J 2J3

AND

The Director, Section 34.1,
Ministry of the Environment,
Conservation and Parks
Floor 1, 135 St Clair Ave W
Toronto, ON
M4V 1P5

Further information on the Environmental Review Tribunal's requirements for an appeal can be obtained directly from the Tribunal:

by Telephone at	by Fax at	by e-mail at
(416) 212-6349	(416) 326-5370	www.ert.gov.on.ca
Toll Free 1(866) 448-2248	Toll Free 1(844) 213-3474	

This instrument is subject to Section 38 of the ***Environmental Bill of Rights*** *that allows residents of Ontario to seek leave to appeal the decision on this instrument. Residents of Ontario may seek to appeal for 15 days from the date this decision is placed on the Environmental Registry. By accessing the Environmental Registry, you can determine when the leave to appeal period ends.*

This Permit cancels and replaces Permit Number 3716-8UZMCU, issued on 2012/09/28.

Dated at Toronto this 15th day of November, 2021.

G. Meek

Gregory Meek
Director, Section 34.1
Ontario Water Resources Act , R.S.O. 1990

Schedule A

This Schedule “A” forms part of Permit To Take Water 4788-C5TJTZ, dated November 15, 2021.

1. "Nestle Waters Canada - Erin, Technical Study for Permit to Take Water Renewal Application, signed by Greg Padusenko, P.Eng. P.Geo. and John Piersol, P.Geo. of Golder Associate Ltd., Christopher J. Neville, P.Eng. of S.S. Papadopulos & Associates Inc., Cam Portt, M.Sc. of C. Portt & Associates, and Ken Ursic, M.Sc., of Beacon Environment, dated June 2019.

2. "Nestle Waters of Canada Erin Spring Site, 2020 Annual Monitoring Report", signed by Greg Padusenko, P.Eng., P.Geo, and Kevin MacKenzie, P.Eng. and John Piersol, P.Geo. of Golder Associates Ltd., date March 2021.

3. Technical Memorandum "Low Water Response Plan For Erin TW1-80" prepared by Greg Padusenko and John Piersol of Golder Associates Ltd., dated October 19, 2021, Project No. 20449101 (2000).

APPENDIX B

TW1-88 Borehole Log

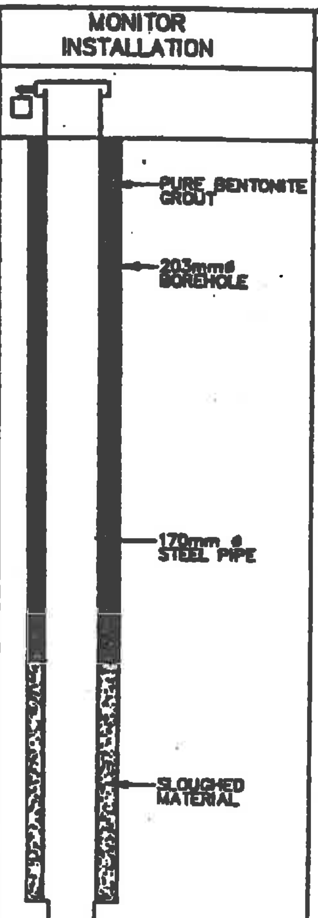
STRATIGRAPHIC AND INSTRUMENTATION LOG
(OVERBURDEN)

(L-1)

PROJECT NAME: HILLSBURGH
PROJECT NO.: 2603
CLIENT: IHOR PASHYNSKY
LOCATION: LOT 24, CONCESSION 7, ERIN TOWNSHIP

HOLE DESIGNATION: TW1-88 (Page 1 of 2)
DATE COMPLETED: AUGUST 11, 1988
DRILLING METHOD: WET/AIR ROTARY
CRA SUPERVISOR: S. CROSSMAN

DEPTH m BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEVATION m AMSL	SAMPLE NUMBER	SAMPLE STATE	SAMPLE 'N' VALUE
	GROUND SURFACE (Approximate)	430.0			
	TOPSOIL–sand, some silt, little gravel, compact, rootlets, humus material, brown, moist	429.5			
2.5	SM (SAND)–some silt, trace of fine gravel, compact, medium grained, poorly graded, brown, moist				
5.0					
	GW (GRAVEL)–some sand, little silt, very dense, well graded, fine to coarse grained, grey–brown water bearing	423.9			
7.5					
10.0					
	SP (SAND)–trace silt, loose, uniform, medium grained, wet	419.3 418.7			
12.5	GW (GRAVEL)–some sand, little silt, dense, well graded, coarse to fine grained, water bearing	417.8			
	ML (TILL) SILT– some sand, some gravel, trace clay, stiff, low to non–plastic, light brown, wet				
15.0	CL (TILL) CLAY– some silt, little sand, little gravel, stiff, low plastic, grey–brown, moist	415.7			
17.5					
20.0	LST (LIMESTONE) BEDROCK– soft, friable, fractured, light grey – becomes sound, less fractured, hard	410.5			
22.5					
25.0					
	– Fracture (152mm dia); brown water in return air with lumps of brown silty clay, fracture infilled; water becomes light grey immediately after passing fracture				
27.5	– Fracture (20mm dia.), no change in water colour				
30.0					
	– light grey, fracture				
32.5					



NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

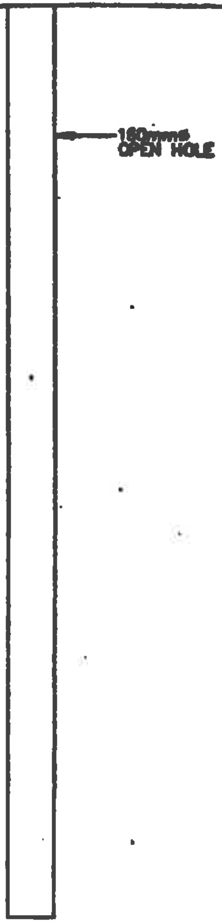
GRAIN SIZE ANALYSIS ⬭ WATER FOUND ▽ STATIC WATER LEVEL ▼

STRATIGRAPHIC AND INSTRUMENTATION LOG
(OVERBURDEN)

(L-1)

PROJECT NAME: HILLSBURCH
PROJECT NO.: 2603
CLIENT: IHOR PASHYNSKY
LOCATION: LOT 24, CONCESSION 7, ERIN TOWNSHIP

HOLE DESIGNATION: TW1-88 (Page 2 of 2)
DATE COMPLETED: AUGUST 11, 1988
DRILLING METHOD: WET/AIR ROTARY
CRA SUPERVISOR: S. CROSSMAN

DEPTH m BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEVATION m AMSL	MONITOR INSTALLATION	SAMPLE NUMBER	SAMPLE STATE	SAMPLE 'N' VALUE
	LST (LIMESTONE) BEDROCK— hard, sound, some fracturing, massive, grey					
35.0						
37.5						
40.0						
42.5						
45.0						
		383.4				
47.5	Dolostone, dark grey to black					
	— fracture, clay filled 100 to 150mm, brown					
50.0						
52.5						
	— fracture 100 to 150mm, clay filled					
55.0	— fracture 100 to 200mm, unfilled					
57.5	— sound, unfractured, crystalline, basal to concoidal fracture, grey.	372.7				
	END OF HOLE @ 57.30m BGS.					
60.0	NOTE: 1. Casing set to 20.88m BGS and grouted into bedrock using a pure bentonite grout. 2. All elevations are approximate.					
62.5						
65.0						

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

GRAIN SIZE ANALYSIS ○ WATER FOUND ▽ STATIC WATER LEVEL ▼

Ontario Ministry of the Environment

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

A095193 A095193

Well Record

Regulation 903 Ontario Water Resources Act

Measurements recorded in: ☐ Metric ☑ Imperial

Page 1 of 1

Well Owner's Information

First Name:

Last Name / Organization: NESTLE WATERS CANADA

E-mail Address:

☐ Well Constructed by Well Owner

Mailing Address (Street Number/Name): 101 BROCK ROAD

Municipality: GUELPH

Province: ON

Postal Code: N1H6H9

Telephone No. *(inc. area code)*:

Well Location

Address of Well Location (Street Number/Name): STATION STREET

Township: ERIN

Lot: 24

Concession: 7

County/District/Municipality: WELLINGTON

City/Town/Village: HILLSBURG

Province: Ontario

Postal Code:

UTM Coordinates Zone: 17 Easting: 568362 Northing: 4847825

NAD 8 3

Municipal Plan and Sublot Number:

Other:

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

General Colour	Most Common Material	Other Materials	General Description	Depth (m/ft) From	To
BROWN	SAND	SILT GRAVEL		0	31
BROWN	GRAVEL		COARSE	31	39
GREY	CLAY TILL	SAND, COBBLES		39	63
LT GREY	LIMESTONE		SOFT	63	83
BROWN	LIMESTONE		HARD	83	103
DK GREY	LIMESTONE			103	128
			ORIGINAL WELL DRILLED 08/11/68		
			ORIGINAL CASING OVERDRILLED &		
			REPLACED		

Annular Space

Depth Set at (m/ft) From	To	Type of Sealant Used *(Material and Type)*	Volume Placed *(m³/ft³)*
0	12	SAND CEMENT	
12	71 5	NEAT CEMENT PRESSURE GROUT	

Method of Construction

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

Well Use

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

Construction Record - Casing

Inside Diameter (cm/in)	Open Hole OR Material (Galvanized, Fibreglass, Concrete, Plastic, Steel)	Wall Thickness (cm/in)	Depth (m/ft) From	To
6	STAINLESS 304	.322	+3	71.5

Construction Record - Screen

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

Status of Well

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

Water Details

Water found at Depth 63 (m/ft) Kind of Water: F ☐ Fresh ☐ Untested ☐ Gas ☐ Other, specify

Water found at Depth 91 (m/ft) Kind of Water: F ☐ Fresh ☐ Untested ☐ Gas ☐ Other, specify

Water found at Depth 103 (m/ft) Kind of Water: F ☐ Fresh ☐ Untested ☐ Gas ☐ Other, specify

Hole Diameter

Depth (m/ft) From	To	Diameter (cm/in)
0	71.5	14.5
71.5	128	6.25

Well Contractor and Well Technician Information

Business Name of Well Contractor: Durl Hopper Ltd.

Well Contractor's Licence No.: 2644

Business Address (Street Number/Name): RR#7

Municipality: St Marys

Province: Ont

Postal Code: N4X1C9

Business E-mail Address: hopper@cyg.net

Bus. Telephone No. *(inc. area code)*: 5192717860

Name of Well Technician (Last Name, First Name): HOPPER, SHAWN

Well Technician's Licence No.: 2315

Signature of Technician and/or Contractor

Date Submitted: 12/8/2010

Results of Well Yield Testing

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

If pumping discontinued, give reason: AIRLIFT REDEVELOP

Pump intake set at (m/ft):

Pumping rate (l/min / GPM):

Duration of pumping: hrs + min

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

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

Recommended pump depth (m/ft):

Recommended pump rate (l/min / GPM):

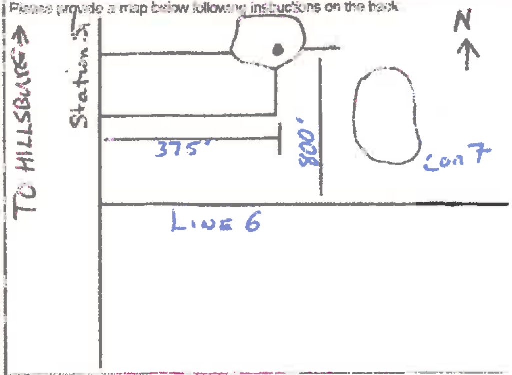
Well production (l/min / GPM): 150+

Disinfected? ☐ Yes N No

Draw Down Time (min)	Water Level (m/ft)	Recovery Time (min)	Water Level (m/ft)
Static Level	36		
1	NA	1	NA
2		2	
3		3	
4		4	
5		5	
10		10	
15		15	
20		20	
25		25	
30		30	
40		40	
50		50	
60		60	

Map of Well Location

Please provide a map below following instructions on the back.



Comments:

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

Date Package Delivered: NA

Date Work Completed: 11/22/2010

Ministry Use Only

Audit No. Z115126

Received:

Ministry's Copy

APPENDIX C

TW1-88 Water Taking

TABLE C1
TW1-88 DAILY WATER TAKING
BLUE TRITON BRANDS
ERIN, ONTARIO

Day	Volume (US gpd)	Average Flow Rate Over Time Taken (US gpm)	Volume (L/day)	Average Flow Rate Over Time Taken (L/min)
1-Jan-21	19,760	14	74,800	52
2-Jan-21	0	0	0	0
3-Jan-21	0	0	0	0
4-Jan-21	38,150	28	144,413	104
5-Jan-21	14,910	10	56,440	40
6-Jan-21	29,640	20	112,200	76
7-Jan-21	31,540	22	119,392	84
8-Jan-21	10,530	7	39,860	28
9-Jan-21	19,800	14	74,951	53
10-Jan-21	0	0	0	0
11-Jan-21	21,030	15	79,607	56
12-Jan-21	3,830	4	14,498	13
13-Jan-21	27,580	9	104,402	33
14-Jan-21	10,530	7	39,860	27
15-Jan-21	19,900	14	75,330	53
16-Jan-21	11,530	8	43,646	29
17-Jan-21	10,510	7	39,785	28
18-Jan-21	10,590	7	40,087	28
19-Jan-21	0	0	0	0
20-Jan-21	31,620	22	119,695	84
21-Jan-21	20,750	15	78,547	56
22-Jan-21	19,870	14	75,216	54
23-Jan-21	22,400	15	84,793	58
24-Jan-21	10,510	7	39,785	28
25-Jan-21	41,430	28	156,830	107
26-Jan-21	21,040	15	79,645	56
27-Jan-21	21,030	15	79,607	55
28-Jan-21	10,510	7	39,785	28
29-Jan-21	0	0	0	0
30-Jan-21	19,710	12	74,610	45
31-Jan-21	0	0	0	0

TABLE C1
TW1-88 DAILY WATER TAKING
BLUE TRITON BRANDS
ERIN, ONTARIO

Day	Volume (US gpd)	Average Flow Rate Over Time Taken (US gpm)	Volume (L/day)	Average Flow Rate Over Time Taken (L/min)
1-Feb-21	10,510	7	39,785	27
2-Feb-21	28,400	20	107,506	77
3-Feb-21	21,760	15	82,371	57
4-Feb-21	22,540	15	85,323	57
5-Feb-21	21,030	14	79,607	54
6-Feb-21	21,020	15	79,569	56
7-Feb-21	10,490	7	39,709	27
8-Feb-21	21,040	15	79,645	55
9-Feb-21	0	0	0	0
10-Feb-21	19,780	10	74,875	38
11-Feb-21	10,530	7	39,860	27
12-Feb-21	0	0	0	0
13-Feb-21	19,740	11	74,724	43
14-Feb-21	10,520	7	39,823	28
15-Feb-21	19,840	10	75,103	40
16-Feb-21	0	0	0	0
17-Feb-21	40,300	28	152,552	107
18-Feb-21	8,100	6	30,662	21
19-Feb-21	3,440	2	13,022	8
20-Feb-21	0	0	0	0
21-Feb-21	20,460	12	77,449	46
22-Feb-21	0	0	0	0
23-Feb-21	42,040	29	159,139	110
24-Feb-21	26,700	19	101,070	72
25-Feb-21	36,220	25	137,108	94
26-Feb-21	21,040	15	79,645	55
27-Feb-21	30,740	22	116,364	83
28-Feb-21	11,350	7	42,964	28

TABLE C1
TW1-88 DAILY WATER TAKING
BLUE TRITON BRANDS
ERIN, ONTARIO

Day	Volume (US gpd)	Average Flow Rate Over Time Taken (US gpm)	Volume (L/day)	Average Flow Rate Over Time Taken (L/min)
1-Mar-21	51,740	37	195,857	139
2-Mar-21	10,740	7	40,655	28
3-Mar-21	0	0	0	0
4-Mar-21	19,830	11	75,065	40
5-Mar-21	0	0	0	0
6-Mar-21	19,840	10	75,103	39
7-Mar-21	0	0	0	0
8-Mar-21	19,900	11	75,330	41
9-Mar-21	10,510	7	39,785	27
10-Mar-21	31,550	22	119,430	83
11-Mar-21	21,020	14	79,569	54
12-Mar-21	21,020	14	79,569	54
13-Mar-21	10,520	7	39,823	26
14-Mar-21	0	0	0	0
15-Mar-21	19,870	10	75,216	38
16-Mar-21	9,950	7	37,665	27
17-Mar-21	19,820	10	75,027	38
18-Mar-21	0	0	0	0
19-Mar-21	19,920	11	75,405	40
20-Mar-21	0	0	0	0
21-Mar-21	19,860	11	75,178	42
22-Mar-21	9,980	7	37,778	27
23-Mar-21	9,960	5	37,703	21
24-Mar-21	0	0	0	0
25-Mar-21	21,050	14	79,683	54
26-Mar-21	19,550	14	74,005	54
27-Mar-21	21,730	15	82,257	56
28-Mar-21	21,820	15	82,598	55
29-Mar-21	21,050	15	79,683	55
30-Mar-21	31,280	22	118,408	83
31-Mar-21	21,270	15	80,516	55

TABLE C1
TW1-88 DAILY WATER TAKING
BLUE TRITON BRANDS
ERIN, ONTARIO

Day	Volume (US gpd)	Average Flow Rate Over Time Taken (US gpm)	Volume (L/day)	Average Flow Rate Over Time Taken (L/min)
1-Apr-21	21,040	15	79,645	55
2-Apr-21	9,220	7	34,901	26
3-Apr-21	22,330	15	84,528	57
4-Apr-21	31,560	22	119,468	82
5-Apr-21	20,350	15	77,033	55
6-Apr-21	21,920	15	82,976	55
7-Apr-21	0	0	0	0
8-Apr-21	19,800	9	74,951	34
9-Apr-21	0	0	0	0
10-Apr-21	19,830	12	75,065	47
11-Apr-21	0	0	0	0
12-Apr-21	0	0	0	0
13-Apr-21	19,960	14	75,557	53
14-Apr-21	19,880	11	75,254	43
15-Apr-21	20,370	15	77,109	55
16-Apr-21	570	0	2,158	0
17-Apr-21	21,050	15	79,683	56
18-Apr-21	21,030	14	79,607	55
19-Apr-21	40,970	29	155,088	110
20-Apr-21	22,020	15	83,355	55
21-Apr-21	21,000	14	79,494	53
22-Apr-21	20,820	15	78,812	56
23-Apr-21	10,660	7	40,352	28
24-Apr-21	0	0	0	0
25-Apr-21	0	0	0	0
26-Apr-21	19,800	11	74,951	43
27-Apr-21	0	0	0	0
28-Apr-21	39,310	28	148,804	106
29-Apr-21	26,560	18	100,540	68
30-Apr-21	7,000	6	26,498	21

TABLE C1
TW1-88 DAILY WATER TAKING
BLUE TRITON BRANDS
ERIN, ONTARIO

Day	Volume (US gpd)	Average Flow Rate Over Time Taken (US gpm)	Volume (L/day)	Average Flow Rate Over Time Taken (L/min)
1-May-21	16,830	12	63,708	45
2-May-21	18,040	12	68,289	46
3-May-21	30,960	22	117,196	82
4-May-21	10,510	7	39,785	27
5-May-21	21,040	14	79,645	55
6-May-21	8,250	6	31,230	24
7-May-21	12,630	8	47,810	32
8-May-21	1,910	2	7,230	7
9-May-21	18,960	13	71,771	49
10-May-21	0	0	0	0
11-May-21	30,990	22	117,310	82
12-May-21	700	1	2,650	3
13-May-21	20,700	14	78,358	53
14-May-21	10,530	7	39,860	28
15-May-21	21,030	15	79,607	56
16-May-21	0	0	0	0
17-May-21	29,070	21	110,042	80
18-May-21	4,320	3	16,353	10
19-May-21	12,960	10	49,059	36
20-May-21	8,030	5	30,397	19
21-May-21	9,250	7	35,015	27
22-May-21	7,270	5	27,520	19
23-May-21	14,920	10	56,478	39
24-May-21	570	1	2,158	3
25-May-21	23,450	16	88,768	62
26-May-21	27,960	19	105,840	73
27-May-21	10,530	7	39,860	28
28-May-21	19,010	14	71,961	52
29-May-21	12,470	8	47,204	31
30-May-21	27,340	20	103,493	75
31-May-21	12,430	9	47,053	33

TABLE C1
TW1-88 DAILY WATER TAKING
BLUE TRITON BRANDS
ERIN, ONTARIO

Day	Volume (US gpd)	Average Flow Rate Over Time Taken (US gpm)	Volume (L/day)	Average Flow Rate Over Time Taken (L/min)
1-Jun-21	3,740	2	14,157	8
2-Jun-21	19,390	14	73,399	52
3-Jun-21	19,840	14	75,103	53
4-Jun-21	0	0	0	0
5-Jun-21	19,780	14	74,875	53
6-Jun-21	0	0	0	0
7-Jun-21	0	0	0	0
8-Jun-21	9,960	7	37,703	26
9-Jun-21	9,920	7	37,551	27
10-Jun-21	21,020	15	79,569	56
11-Jun-21	12,360	9	46,788	35
12-Jun-21	19,080	13	72,226	49
13-Jun-21	10,510	7	39,785	28
14-Jun-21	21,020	15	79,569	56
15-Jun-21	27,440	20	103,872	75
16-Jun-21	13,880	9	52,541	35
17-Jun-21	10,520	7	39,823	28
18-Jun-21	21,030	15	79,607	56
19-Jun-21	10,500	7	39,747	28
20-Jun-21	21,040	15	79,645	56
21-Jun-21	21,010	15	79,531	56
22-Jun-21	10,510	7	39,785	28
23-Jun-21	21,030	15	79,607	56
24-Jun-21	17,490	13	66,207	48
25-Jun-21	13,930	9	52,731	36
26-Jun-21	10,550	7	39,936	28
27-Jun-21	31,530	22	119,354	84
28-Jun-21	10,500	7	39,747	28
29-Jun-21	10,520	8	39,823	29
30-Jun-21	8,530	6	32,290	24

TABLE C1
TW1-88 DAILY WATER TAKING
BLUE TRITON BRANDS
ERIN, ONTARIO

Day	Volume (US gpd)	Average Flow Rate Over Time Taken (US gpm)	Volume (L/day)	Average Flow Rate Over Time Taken (L/min)
1-Jul-21	18,180	12	68,819	47
2-Jul-21	10,510	7	39,785	28
3-Jul-21	11,290	8	42,737	32
4-Jul-21	30,640	21	115,985	80
5-Jul-21	0	0	0	0
6-Jul-21	0	0	0	0
7-Jul-21	19,820	14	75,027	53
8-Jul-21	19,790	14	74,913	52
9-Jul-21	0	0	0	0
10-Jul-21	19,820	14	75,027	52
11-Jul-21	0	0	0	0
12-Jul-21	0	0	0	0
13-Jul-21	30,960	22	117,196	82
14-Jul-21	6,430	5	24,340	19
15-Jul-21	25,080	17	94,938	64
16-Jul-21	10,520	7	39,823	28
17-Jul-21	10,510	7	39,785	28
18-Jul-21	31,550	22	119,430	84
19-Jul-21	0	0	0	0
20-Jul-21	42,010	29	159,025	112
21-Jul-21	9,110	7	34,485	26
22-Jul-21	32,250	22	122,079	84
23-Jul-21	10,050	7	38,043	28
24-Jul-21	10,840	7	41,034	28
25-Jul-21	31,550	22	119,430	83
26-Jul-21	10,520	7	39,823	28
27-Jul-21	19,810	14	74,989	52
28-Jul-21	10,510	7	39,785	28
29-Jul-21	9,400	7	35,583	27
30-Jul-21	980	0	3,710	1
31-Jul-21	17,180	13	65,033	48

TABLE C1
TW1-88 DAILY WATER TAKING
BLUE TRITON BRANDS
ERIN, ONTARIO

Day	Volume (US gpd)	Average Flow Rate Over Time Taken (US gpm)	Volume (L/day)	Average Flow Rate Over Time Taken (L/min)
1-Aug-21	23,980	17	90,774	64
2-Aug-21	6,160	4	23,318	16
3-Aug-21	4,890	3	18,511	11
4-Aug-21	30,350	21	114,887	81
5-Aug-21	6,950	5	26,309	20
6-Aug-21	12,720	9	48,150	34
7-Aug-21	22,150	15	83,847	57
8-Aug-21	10,510	7	39,785	28
9-Aug-21	21,010	15	79,531	56
10-Aug-21	21,000	15	79,494	56
11-Aug-21	14,810	11	56,062	40
12-Aug-21	30,860	22	116,818	84
13-Aug-21	3,940	3	14,915	11
14-Aug-21	28,070	19	106,256	73
15-Aug-21	10,570	8	40,012	31
16-Aug-21	10,370	7	39,255	25
17-Aug-21	31,520	22	119,316	84
18-Aug-21	9,980	7	37,778	28
19-Aug-21	19,210	14	72,718	52
20-Aug-21	12,710	8	48,113	32
21-Aug-21	21,020	15	79,569	56
22-Aug-21	9,430	7	35,696	27
23-Aug-21	31,920	22	120,830	82
24-Aug-21	0	0	0	0
25-Aug-21	27,760	20	105,083	76
26-Aug-21	24,230	16	91,720	62
27-Aug-21	10,510	7	39,785	28
28-Aug-21	21,030	15	79,607	56
29-Aug-21	10,500	7	39,747	28
30-Aug-21	28,960	21	109,625	80
31-Aug-21	23,000	16	87,064	59

TABLE C1
TW1-88 DAILY WATER TAKING
BLUE TRITON BRANDS
ERIN, ONTARIO

Day	Volume (US gpd)	Average Flow Rate Over Time Taken (US gpm)	Volume (L/day)	Average Flow Rate Over Time Taken (L/min)
1-Sep-21	10,500	7	39,747	28
2-Sep-21	30,300	22	114,698	83
3-Sep-21	1,230	0	4,656	1
4-Sep-21	19,810	14	74,989	52
5-Sep-21	10,500	8	39,747	29
6-Sep-21	21,010	15	79,531	56
7-Sep-21	37,160	27	140,666	101
8-Sep-21	3,690	2	13,968	8
9-Sep-21	19,800	14	74,951	53
10-Sep-21	21,020	15	79,569	56
11-Sep-21	0	0	0	0
12-Sep-21	19,820	14	75,027	53
13-Sep-21	10,510	7	39,785	28
14-Sep-21	31,510	22	119,278	84
15-Sep-21	18,220	13	68,970	51
16-Sep-21	17,560	12	66,472	46
17-Sep-21	16,730	11	63,330	42
18-Sep-21	31,510	22	119,278	83
19-Sep-21	10,510	7	39,785	28
20-Sep-21	30,920	22	117,045	82
21-Sep-21	10,510	7	39,785	28
22-Sep-21	6,480	5	24,529	19
23-Sep-21	24,220	17	91,683	64
24-Sep-21	11,270	7	42,662	28
25-Sep-21	21,000	15	79,494	56
26-Sep-21	21,020	15	79,569	56
27-Sep-21	21,010	15	79,531	56
28-Sep-21	6,490	5	24,567	19
29-Sep-21	25,000	17	94,635	65
30-Sep-21	21,000	15	79,494	55

TABLE C1
TW1-88 DAILY WATER TAKING
BLUE TRITON BRANDS
ERIN, ONTARIO

Day	Volume (US gpd)	Average Flow Rate Over Time Taken (US gpm)	Volume (L/day)	Average Flow Rate Over Time Taken (L/min)
1-Oct-21	16,080	12	60,869	45
2-Oct-21	15,410	10	58,333	39
3-Oct-21	10,520	7	39,823	28
4-Oct-21	5,760	4	21,804	17
5-Oct-21	35,990	25	136,237	93
6-Oct-21	7,960	6	30,132	23
7-Oct-21	25,590	17	96,869	66
8-Oct-21	5,890	5	22,296	18
9-Oct-21	15,090	10	57,122	39
10-Oct-21	21,000	15	79,494	55
11-Oct-21	20,420	14	77,298	54
12-Oct-21	9,130	7	34,561	26
13-Oct-21	10,910	8	41,299	29
14-Oct-21	13,170	9	49,854	35
15-Oct-21	14,530	10	55,002	39
16-Oct-21	25,460	17	96,377	65
17-Oct-21	31,530	22	119,354	83
18-Oct-21	10,750	8	40,693	31
19-Oct-21	10,110	7	38,270	27
20-Oct-21	10,030	6	37,968	24
21-Oct-21	2,460	2	9,312	9
22-Oct-21	8,000	5	30,283	19
23-Oct-21	19,810	14	74,989	53
24-Oct-21	16,190	12	61,286	45
25-Oct-21	25,790	18	97,626	67
26-Oct-21	21,010	15	79,531	56
27-Oct-21	50,000	36	189,271	135
28-Oct-21	33,390	23	126,395	86
29-Oct-21	10,510	7	39,785	28
30-Oct-21	31,520	22	119,316	84
31-Oct-21	31,510	22	119,278	83

TABLE C1
TW1-88 DAILY WATER TAKING
BLUE TRITON BRANDS
ERIN, ONTARIO

Day	Volume (US gpd)	Average Flow Rate Over Time Taken (US gpm)	Volume (L/day)	Average Flow Rate Over Time Taken (L/min)
1-Nov-21	25,570	19	96,793	70
2-Nov-21	25,910	18	98,080	68
3-Nov-21	24,180	16	91,531	62
4-Nov-21	21,020	15	79,569	56
5-Nov-21	31,540	22	119,392	84
6-Nov-21	25,040	18	94,787	69
7-Nov-21	36,810	26	139,341	97
8-Nov-21	18,650	12	70,598	47
9-Nov-21	34,890	25	132,073	93
10-Nov-21	10,510	7	39,785	28
11-Nov-21	31,530	22	119,354	83
12-Nov-21	10,500	7	39,747	28
13-Nov-21	17,300	12	65,488	44
14-Nov-21	0	0	0	0
15-Nov-21	0	0	0	0
16-Nov-21	2,570	2	9,729	7
17-Nov-21	69,700	48	263,843	184
18-Nov-21	18,980	14	71,847	52
19-Nov-21	13,110	9	49,627	33
20-Nov-21	21,010	15	79,531	56
21-Nov-21	31,520	22	119,316	84
22-Nov-21	21,010	15	79,531	56
23-Nov-21	10,510	7	39,785	28
24-Nov-21	10,510	7	39,785	28
25-Nov-21	0	0	0	0
26-Nov-21	30,930	22	117,083	82
27-Nov-21	21,020	15	79,569	56
28-Nov-21	10,550	7	39,936	28
29-Nov-21	0	0	0	0
30-Nov-21	42,030	30	159,101	112

TABLE C1
TW1-88 DAILY WATER TAKING
BLUE TRITON BRANDS
ERIN, ONTARIO

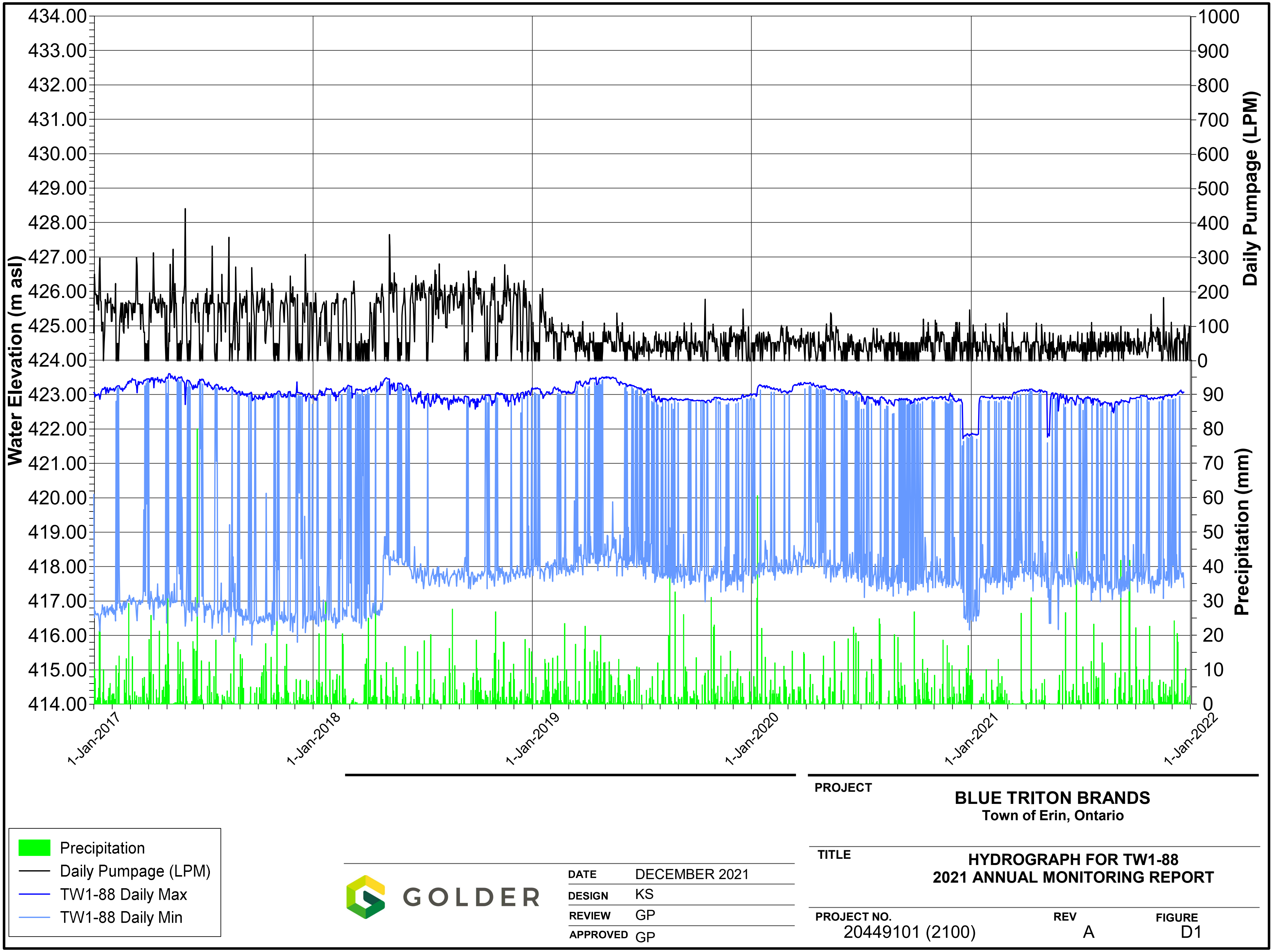
Day	Volume (US gpd)	Average Flow Rate Over Time Taken (US gpm)	Volume (L/day)	Average Flow Rate Over Time Taken (L/min)
1-Dec-21	20,740	15	78,509	55
2-Dec-21	10,470	7	39,633	28
3-Dec-21	0	0	0	0
4-Dec-21	10,530	7	39,860	28
5-Dec-21	20,080	14	76,011	55
6-Dec-21	24,610	17	93,159	63
7-Dec-21	0	0	0	0
8-Dec-21	25,360	18	95,998	67
9-Dec-21	160	0	606	1
10-Dec-21	35,020	25	132,565	94
11-Dec-21	20,490	17	77,563	66
12-Dec-21	28,410	17	107,543	63
13-Dec-21	30,910	22	117,007	82
14-Dec-21	0	0	0	0
15-Dec-21	19,480	14	73,740	54
16-Dec-21	22,470	15	85,058	58
17-Dec-21	19,860	14	75,178	54
18-Dec-21	18,300	13	69,273	49
19-Dec-21	24,780	17	93,802	64
20-Dec-21	0	0	0	0
21-Dec-21	36,500	26	138,167	97
22-Dec-21	38,470	28	145,625	104
23-Dec-21	35,020	24	132,565	91
24-Dec-21	0	0	0	0
25-Dec-21	0	0	0	0
26-Dec-21	20,430	14	77,336	54
27-Dec-21	700	0	2,650	2
28-Dec-21	29,300	21	110,913	79
29-Dec-21	26,410	18	99,973	70
30-Dec-21	38,730	27	146,609	100
31-Dec-21	0	0	0	0

Notes:

1. All volumes measured with a flow meter and recorded on a datalogger.

APPENDIX D

Groundwater Level Monitoring



GOLDER

DATE	DECEMBER 2021
DESIGN	KS
REVIEW	GP
APPROVED	GP

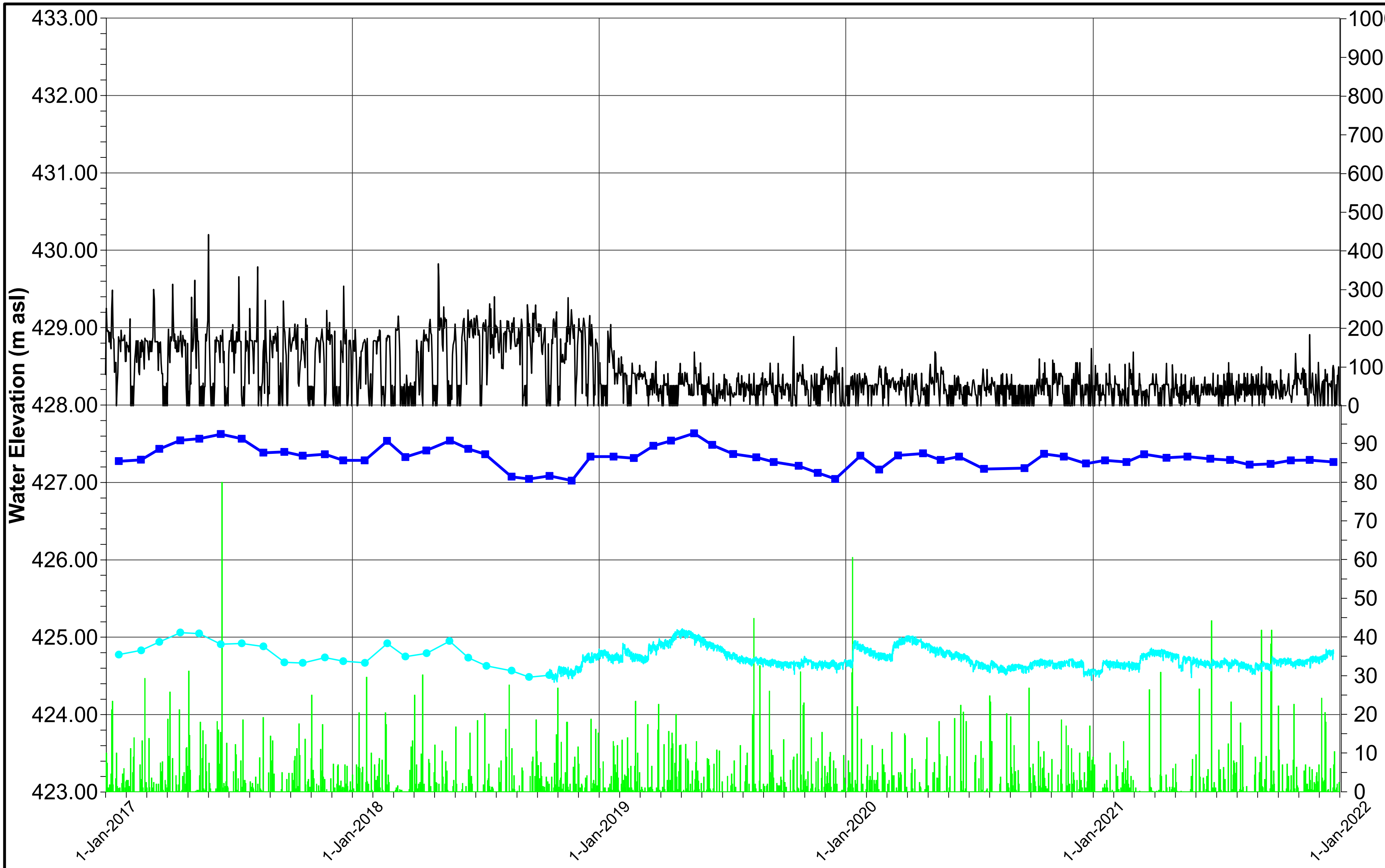
PROJECT

BLUE TRITON BRANDS
Town of Erin, Ontario

TITLE

HYDROGRAPH FOR TW1-88
2021 ANNUAL MONITORING REPORT

PROJECT NO.	REV	FIGURE
20449101 (2100)	A	D1



GOLDER

DATE	December 2021
DESIGN	KS
REVIEW	GP
APPROVED	GP

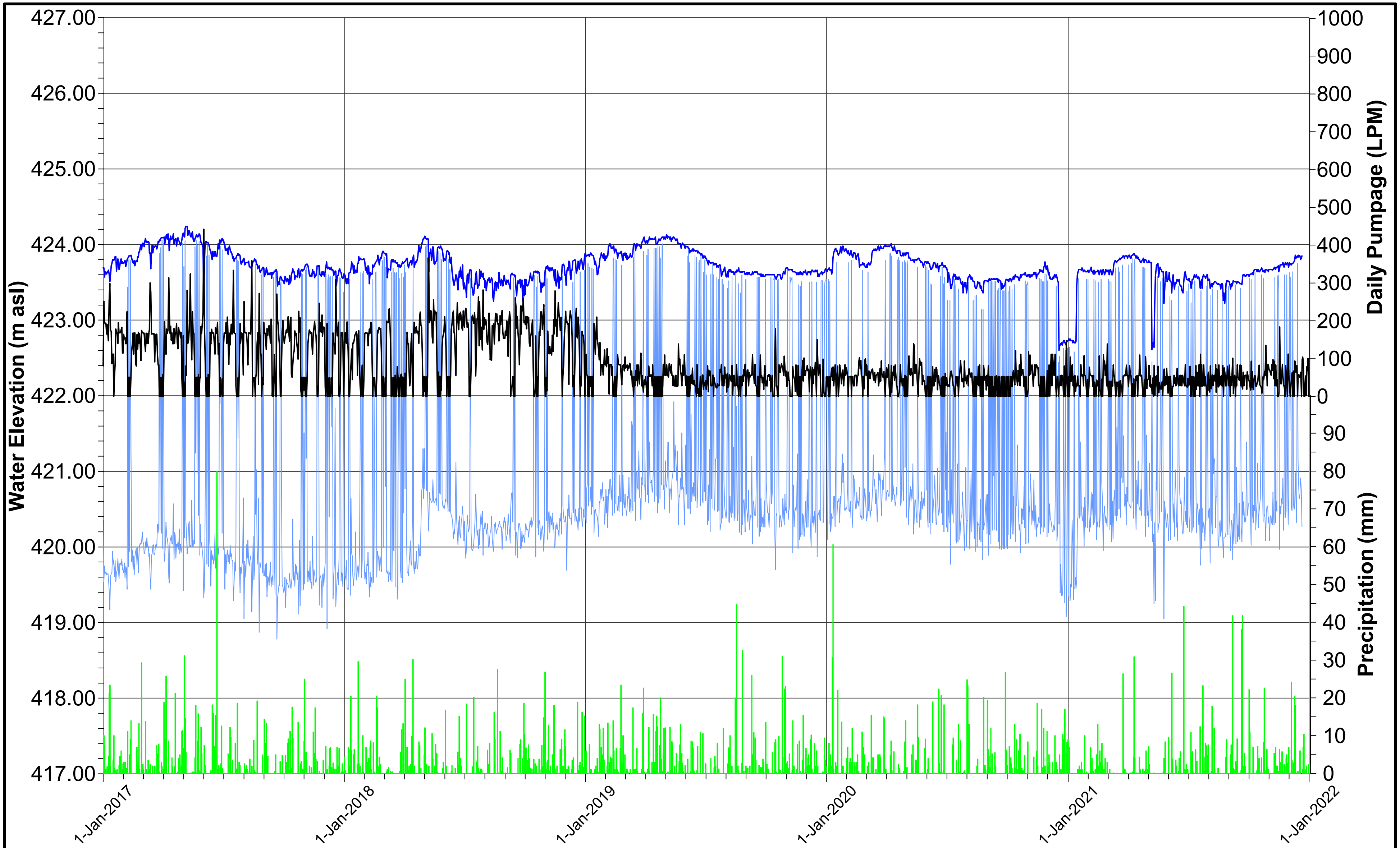
PROJECT

BLUE TRITON BRANDS
Town of Erin, Ontario

TITLE

HYDROGRAPHS FOR BACKGROUND
BEDROCK WELLS
2021 ANNUAL MONITORING REPORT

PROJECT NO.	REV	FIGURE
20449101 (2100)	A	D2



TW1-88 Daily Pumpage
🟩 Precipitation
MW5A-05 Daily Max
MW5A-05 Daily Min

GOLDER

DATE	December 2021
DESIGN	KS
REVIEW	GP
APPROVED	GP

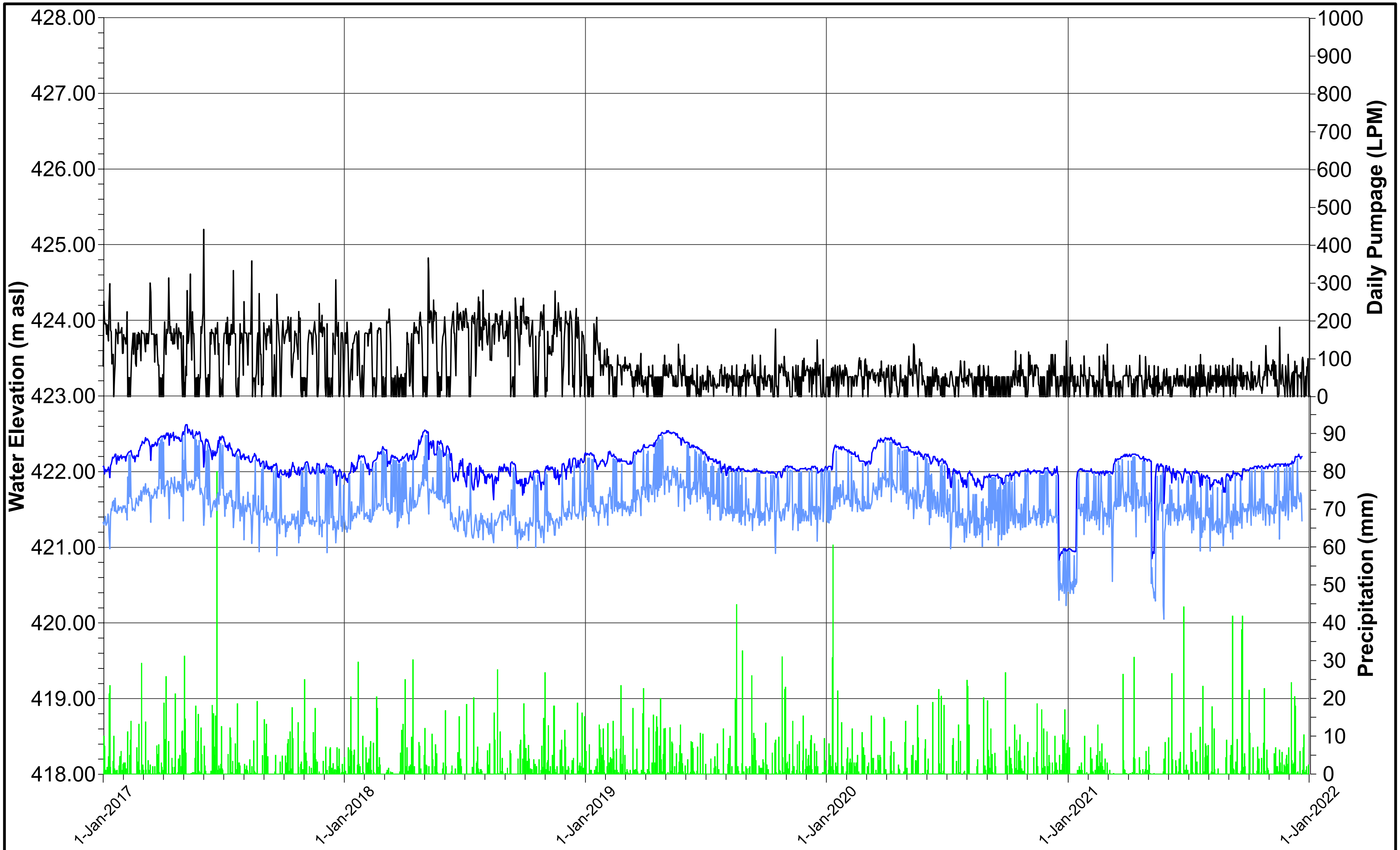
PROJECT

BLUE TRITON BRANDS
Town of Erin, Ontario

TITLE

HYDROGRAPH FOR MW5A-05
2021 ANNUAL MONITORING REPORT

PROJECT NO.	**REV**	**FIGURE**
20449101 (2100)	A	D3



GOLDER

DATE December 2021
DESIGN KS
REVIEW GP
APPROVED GP

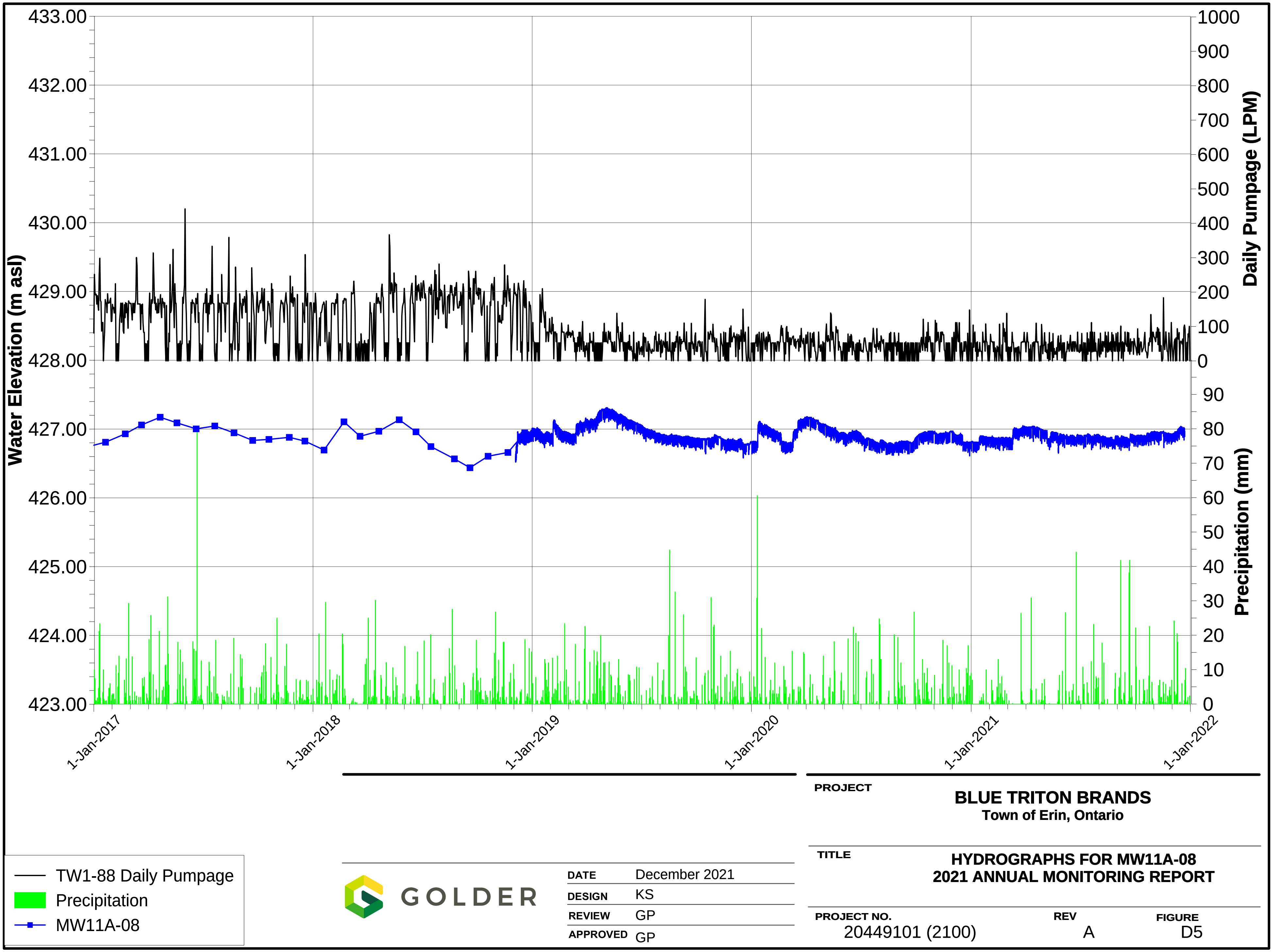
PROJECT

BLUE TRITON BRANDS
Town of Erin, Ontario

TITLE

HYDROGRAPH FOR MW6A-05
2021 ANNUAL MONITORING REPORT

PROJECT NO.	**REV**	**FIGURE**
20449101 (2100)	A	D4



GOLDER

DATE	December 2021
DESIGN	KS
REVIEW	GP
APPROVED	GP

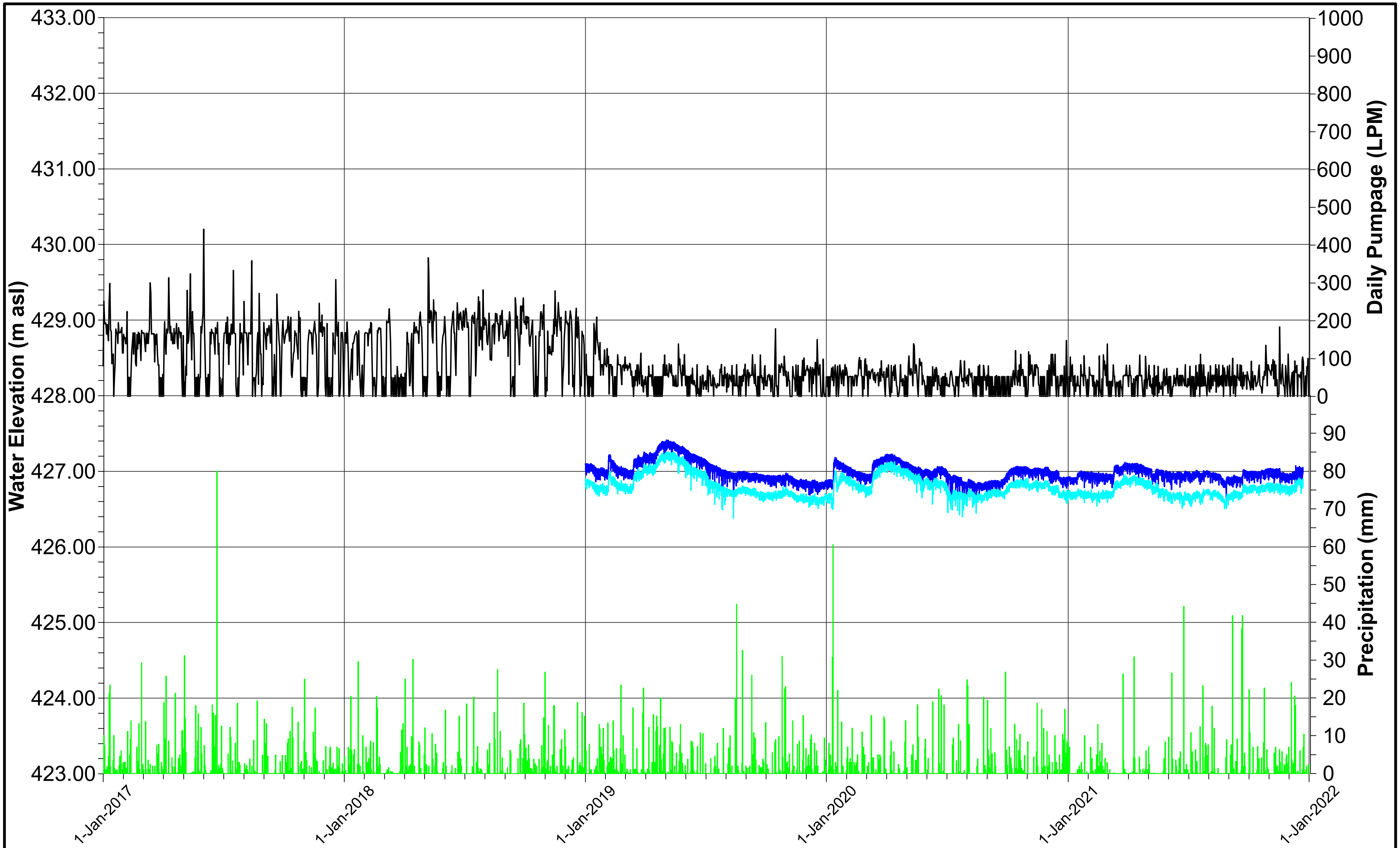
PROJECT

BLUE TRITON BRANDS
Town of Erin, Ontario

TITLE

HYDROGRAPHS FOR MW11A-08
2021 ANNUAL MONITORING REPORT

PROJECT NO.	**REV**	**FIGURE**
20449101 (2100)	A	D5



PROJECT

BLUE TRITON BRANDS
Town of Erin, Ontario

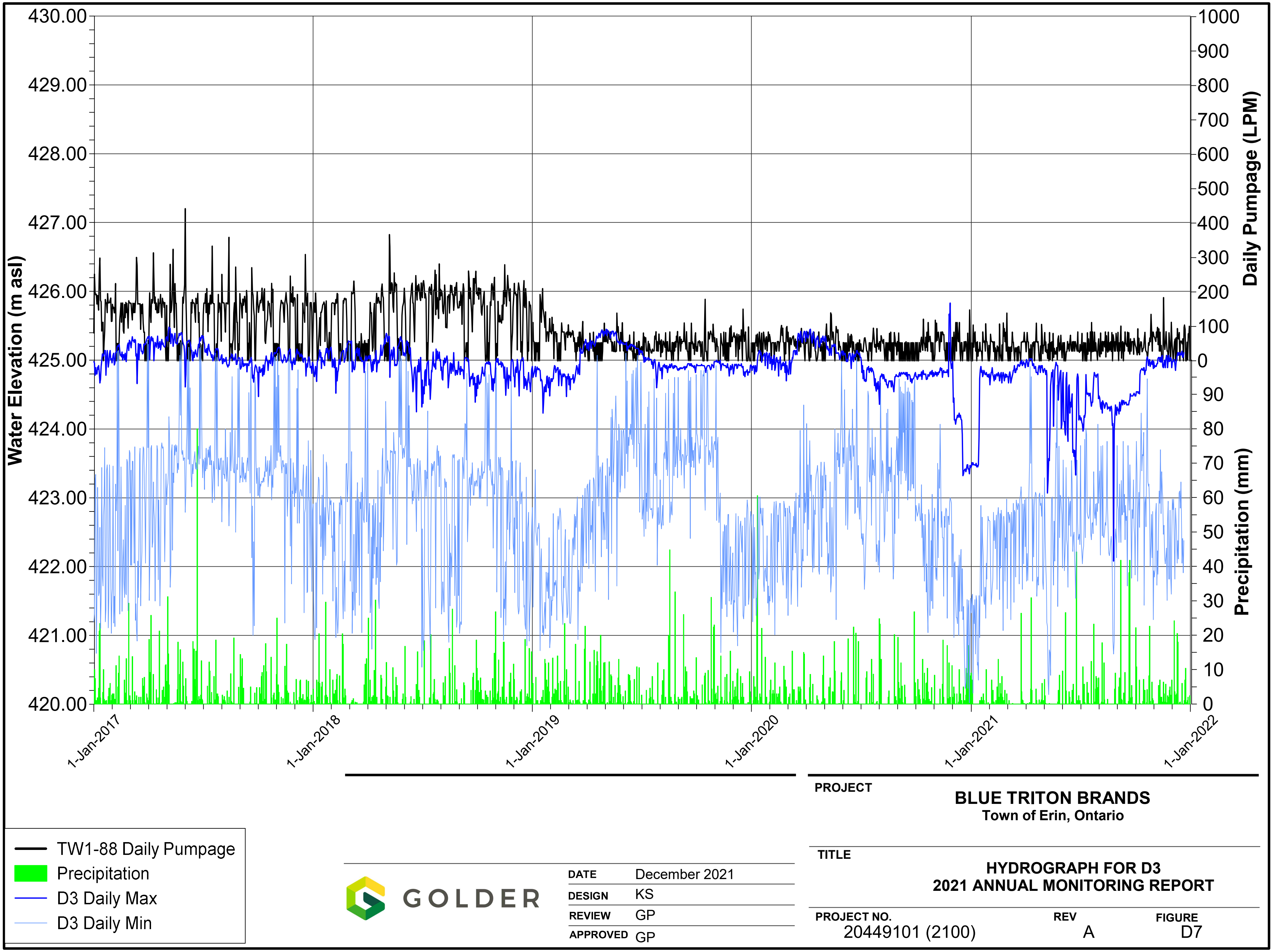
TITLE

HYDROGRAPHS FOR MW1-18
2021 ANNUAL MONITORING REPORT

GOLDER

DATE	December 2021
DESIGN	KS
REVIEW	GP
APPROVED	GP

PROJECT NO.	**REV**	**FIGURE**
20449101 (2100)	A	D6



GOLDER

DATE	December 2021
DESIGN	KS
REVIEW	GP
APPROVED	GP

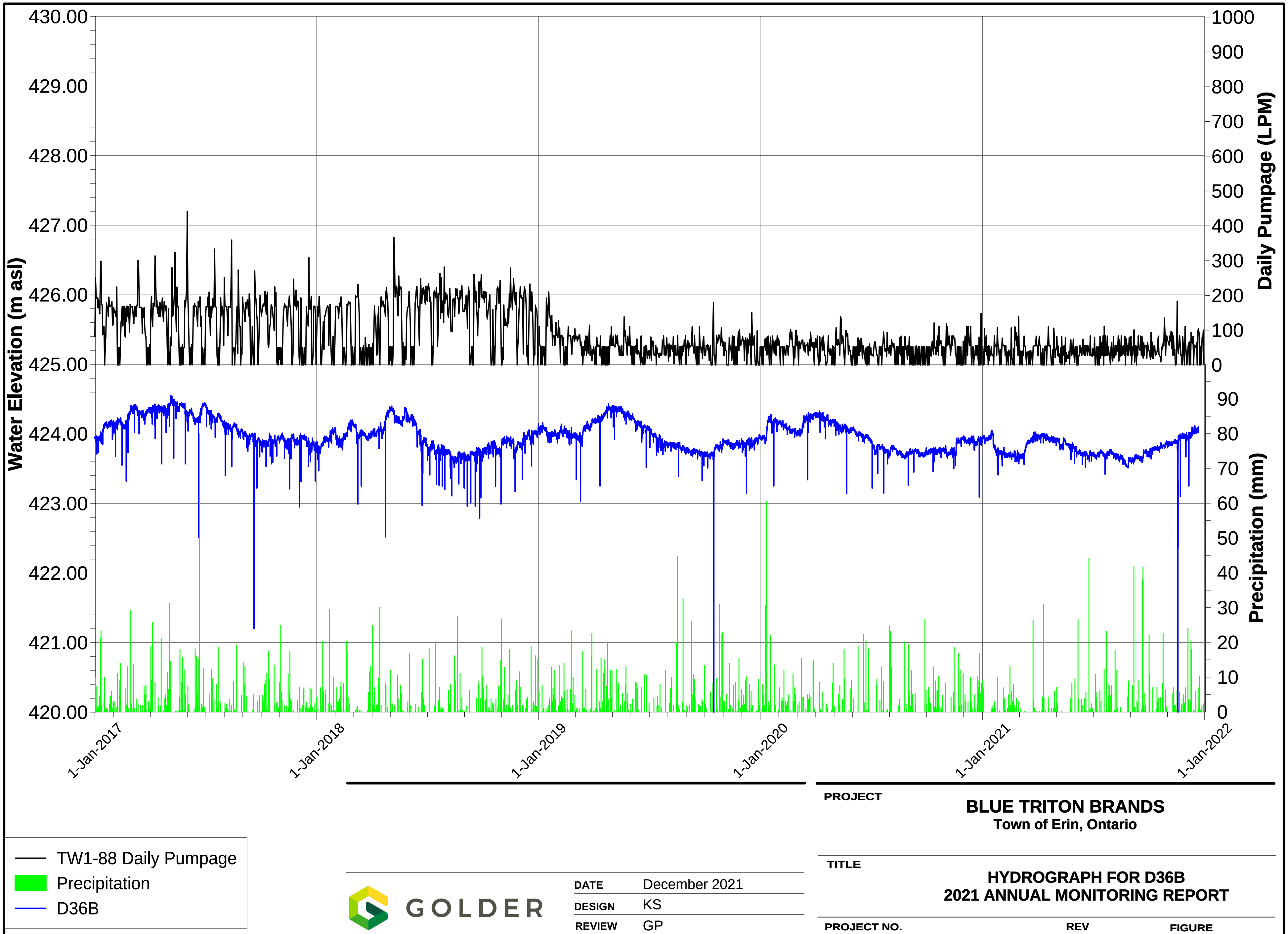
PROJECT

BLUE TRITON BRANDS
Town of Erin, Ontario

TITLE

HYDROGRAPH FOR D3
2021 ANNUAL MONITORING REPORT

PROJECT NO.	**REV**	**FIGURE**
20449101 (2100)	A	D7



GOLDER

DATE	December 2021
DESIGN	KS
REVIEW	GP
APPROVED	GP

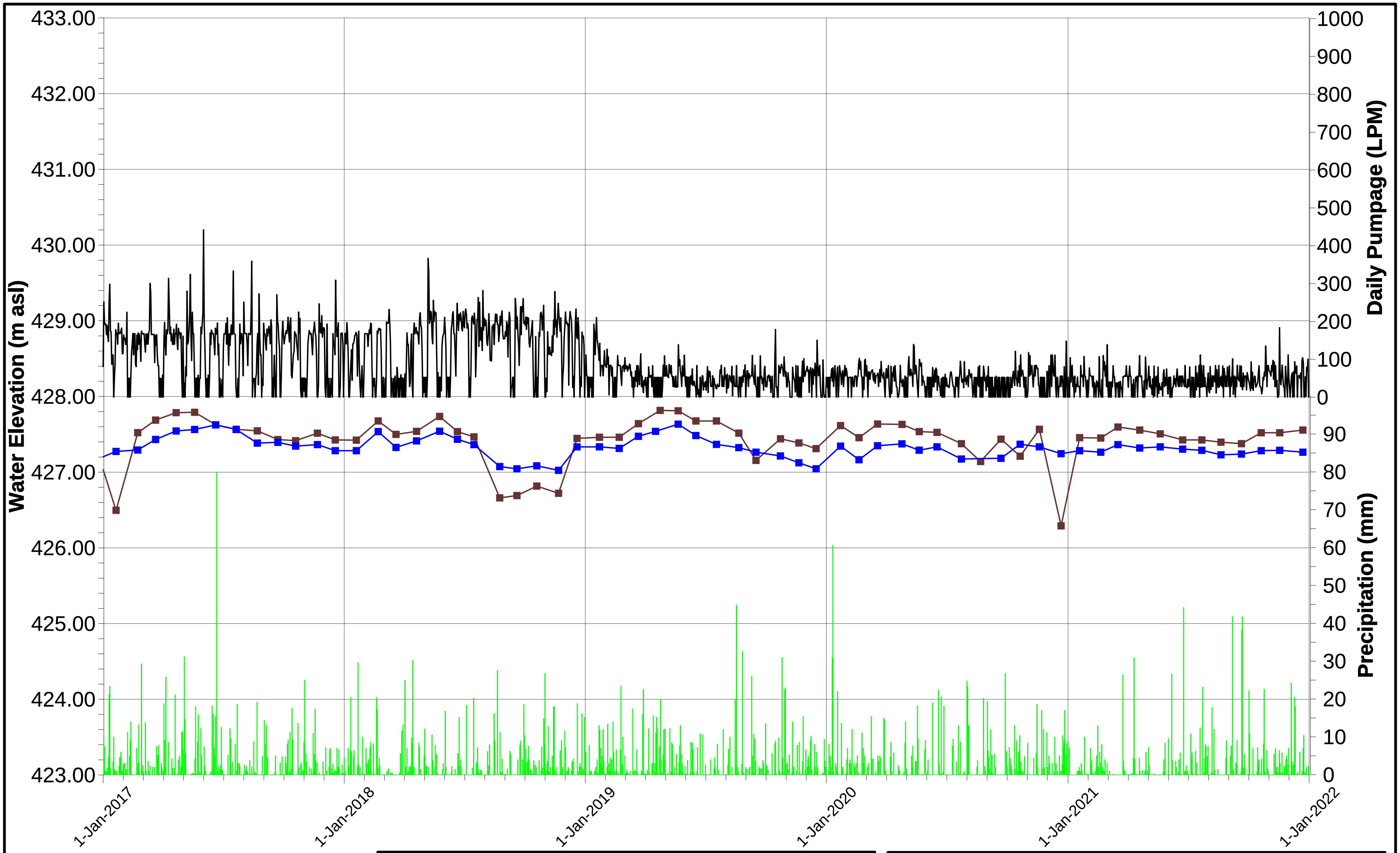
PROJECT

BLUE TRITON BRANDS
Town of Erin, Ontario

TITLE

HYDROGRAPH FOR D36B
2021 ANNUAL MONITORING REPORT

PROJECT NO.	REV	FIGURE
20449101 (2100)	A	D8



NOTE:
A heat pump is installed in the domestic well at D8.

GOLDER

DATE	December 2021
DESIGN	KS
REVIEW	GP
APPROVED	GP

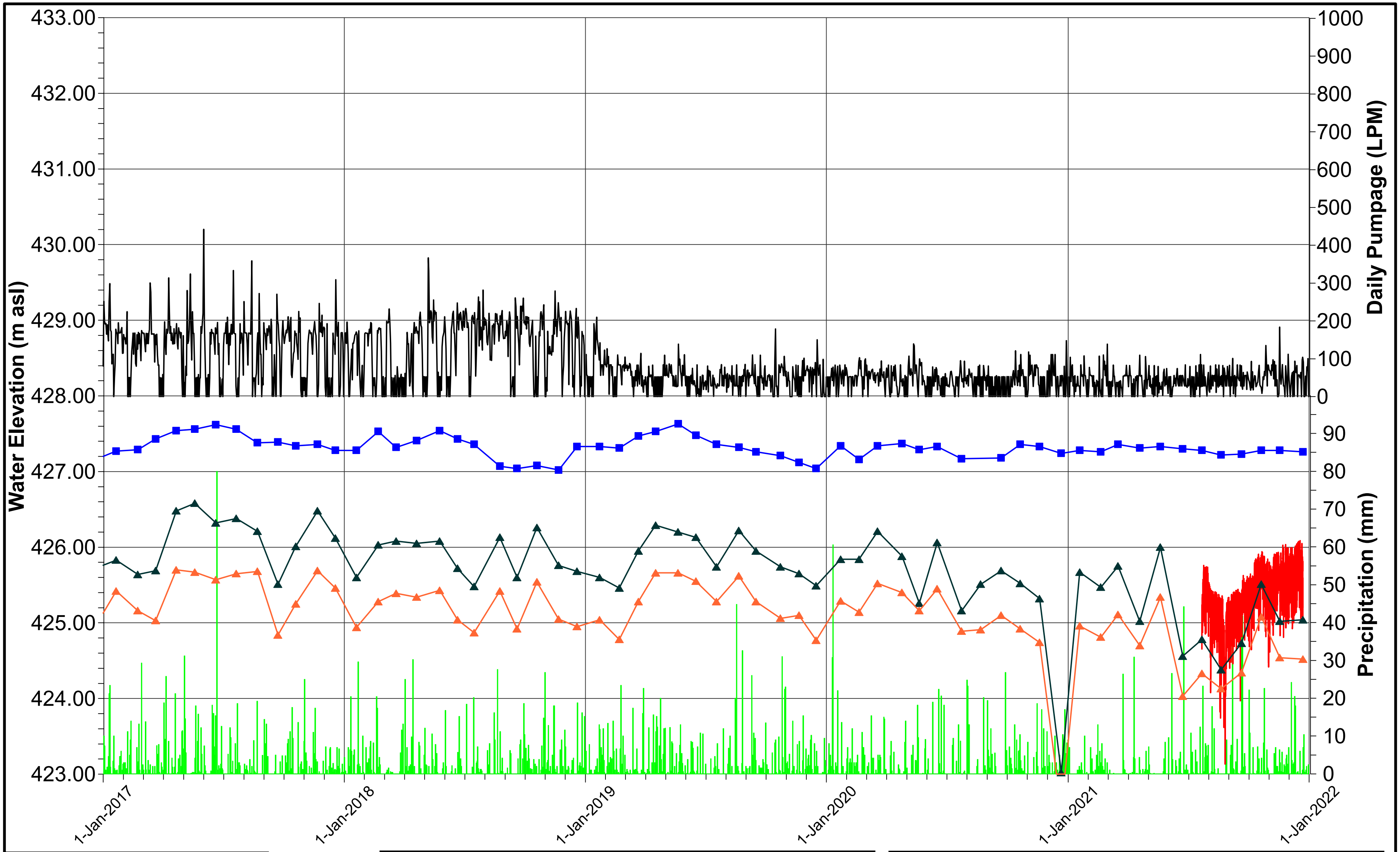
PROJECT

BLUE TRITON BRANDS
Town of Erin, Ontario

TITLE

HYDROGRAPHS FOR D8
2021 ANNUAL MONITORING REPORT

PROJECT NO.	**REV**	**FIGURE**
20449101 (2100)	A	D9



— TW1-88 Daily Pumpage
🟩 Precipitation
■ D15 (background)
▲ D24A
▲ D24B
— MW13A-20-7

GOLDER

DATE	December 2021
DESIGN	KS
REVIEW	GP
APPROVED	GP

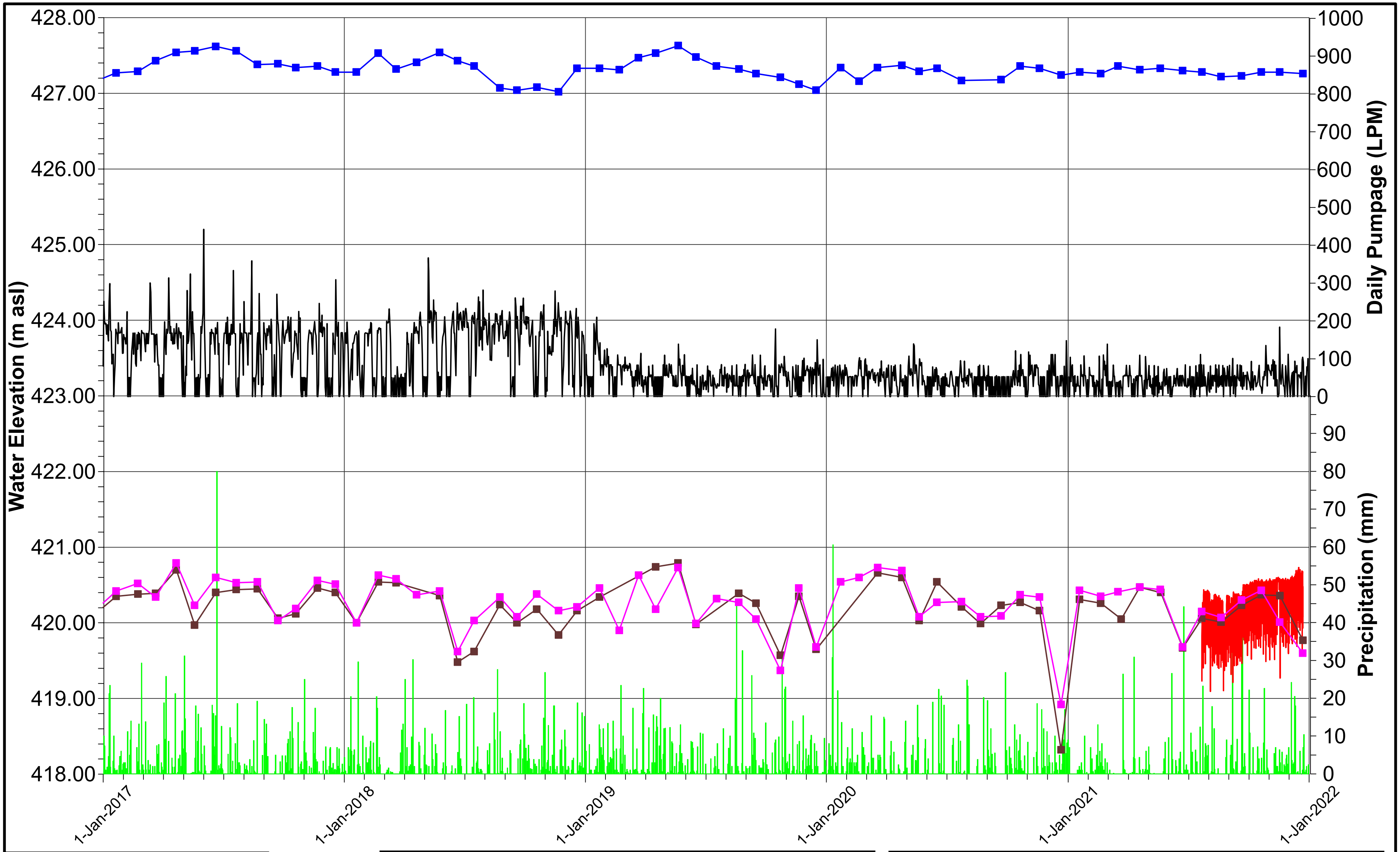
PROJECT

BLUE TRITON BRANDS
Town of Erin, Ontario

TITLE

HYDROGRAPHS FOR D24 AND MW13A-20
2021 ANNUAL MONITORING REPORT

PROJECT NO.	REV	FIGURE
20449101 (2100)	A	D10



GOLDER

DATE	December 2021
DESIGN	KS
REVIEW	GP
APPROVED	GP

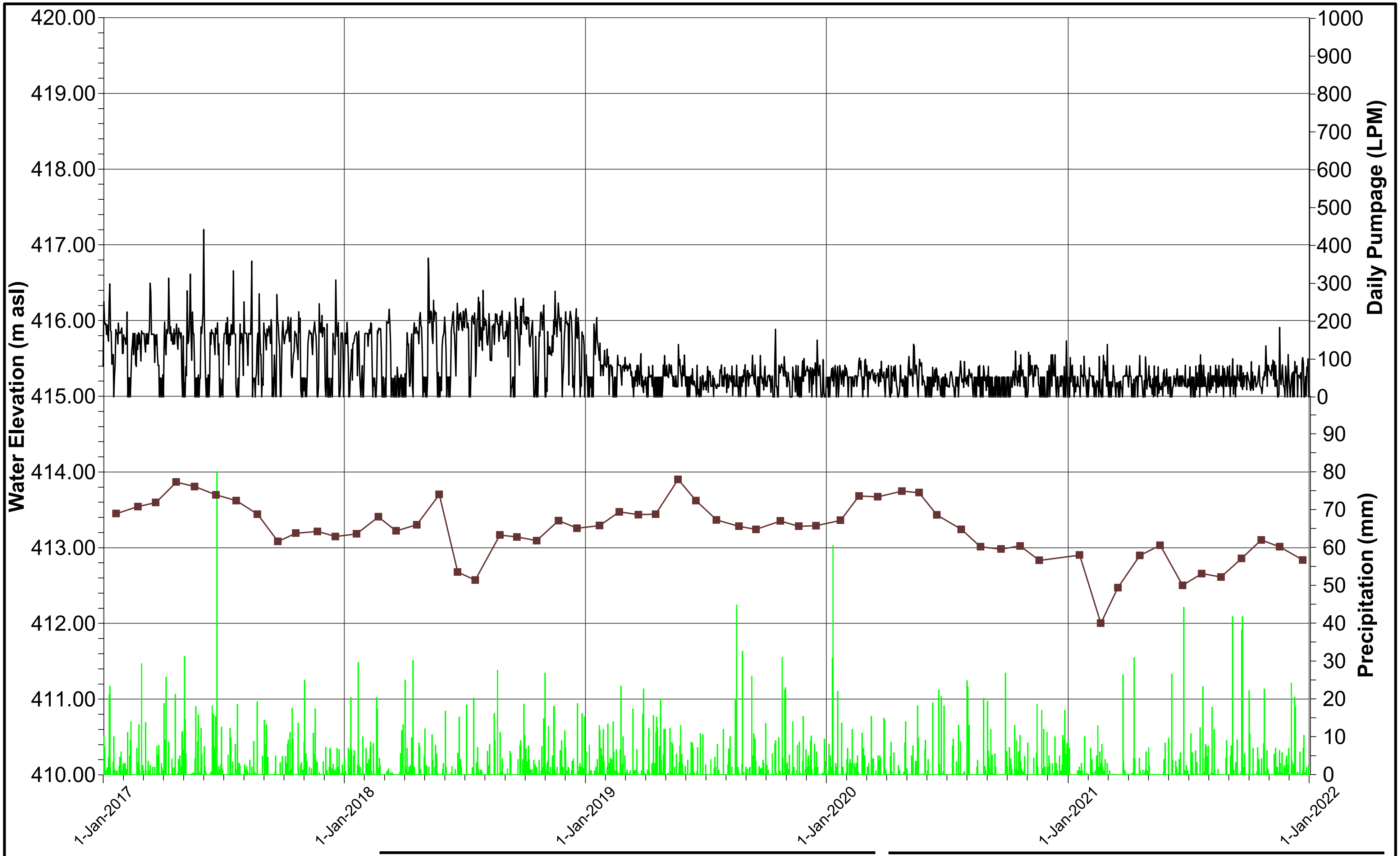
PROJECT

BLUE TRITON BRANDS
Town of Erin, Ontario

TITLE

HYDROGRAPHS FOR D26 AND MW14A-20
2021 ANNUAL MONITORING REPORT

PROJECT NO.	**REV**	**FIGURE**
20449101 (2100)	A	D11



GOLDER

DATE	December 2021
DESIGN	KS
REVIEW	GP
APPROVED	GP

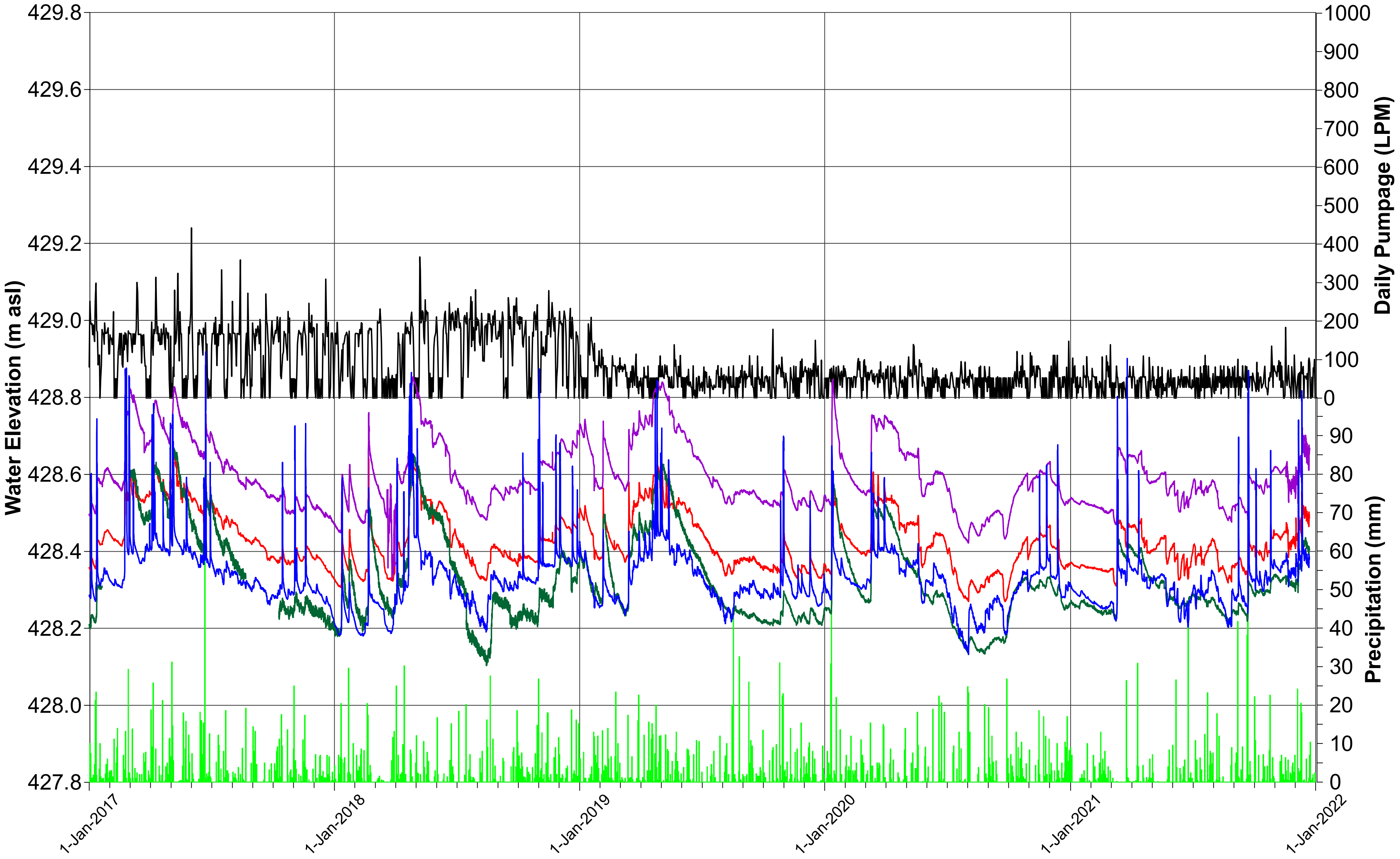
PROJECT

BLUE TRITON BRANDS
Town of Erin, Ontario

TITLE

HYDROGRAPHS FOR D32
2021 ANNUAL MONITORING REPORT

PROJECT NO.	REV	FIGURE
20449101 (2100)	A	D12



GOLDER

DATE	December 2021
DESIGN	KS
REVIEW	GP
APPROVED	GP

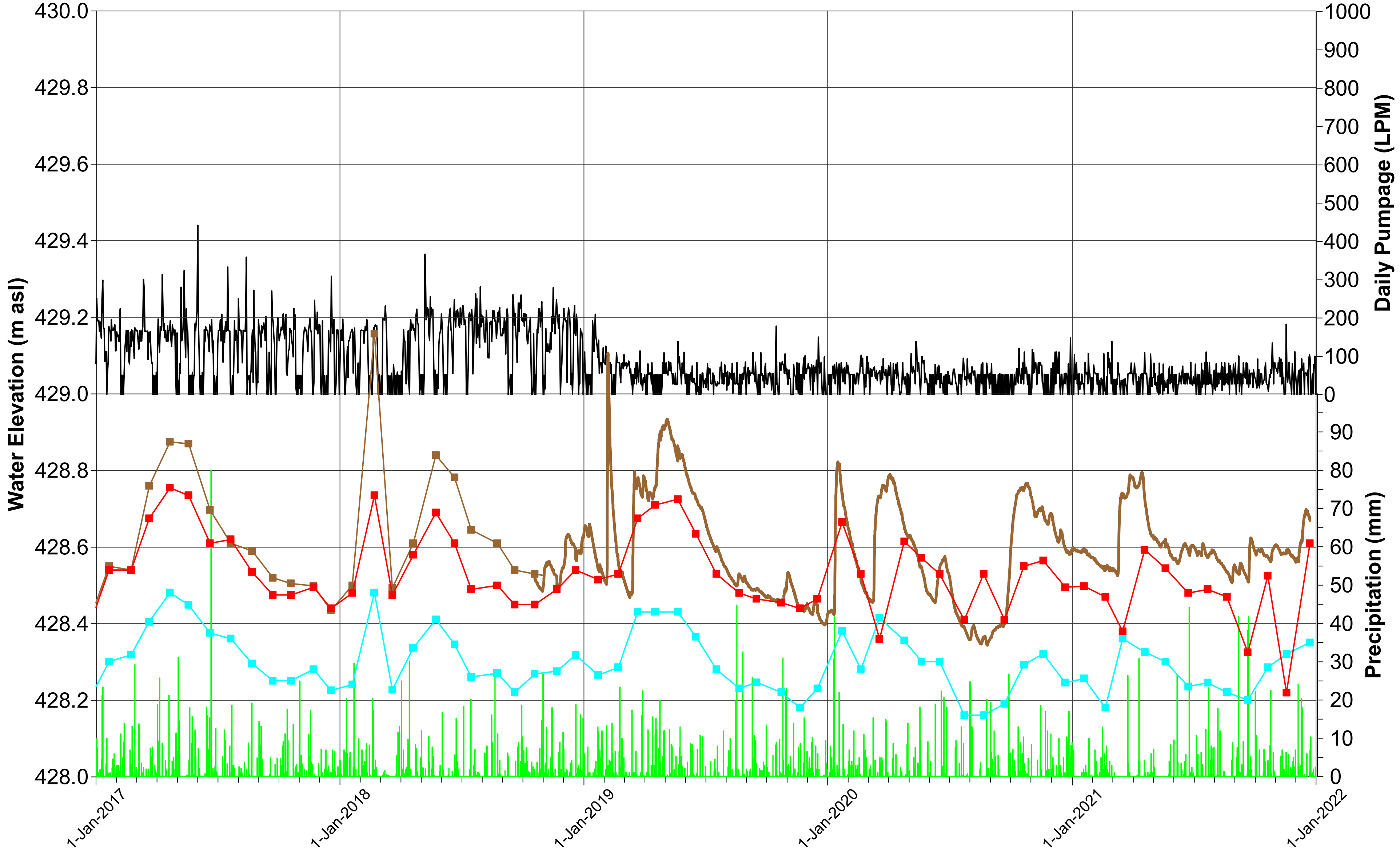
PROJECT

BLUE TRITON BRANDS
Town of Erin, Ontario

TITLE

HYDROGRAPHS FOR
OVERBURDEN MONITORING LOCATIONS
2021 ANNUAL MONITORING REPORT

PROJECT NO.	**REV**	**FIGURE**
20449101 (2100)	A	D13



GOLDER

DATE	December 2021
DESIGN	KS
REVIEW	GP
APPROVED	GP

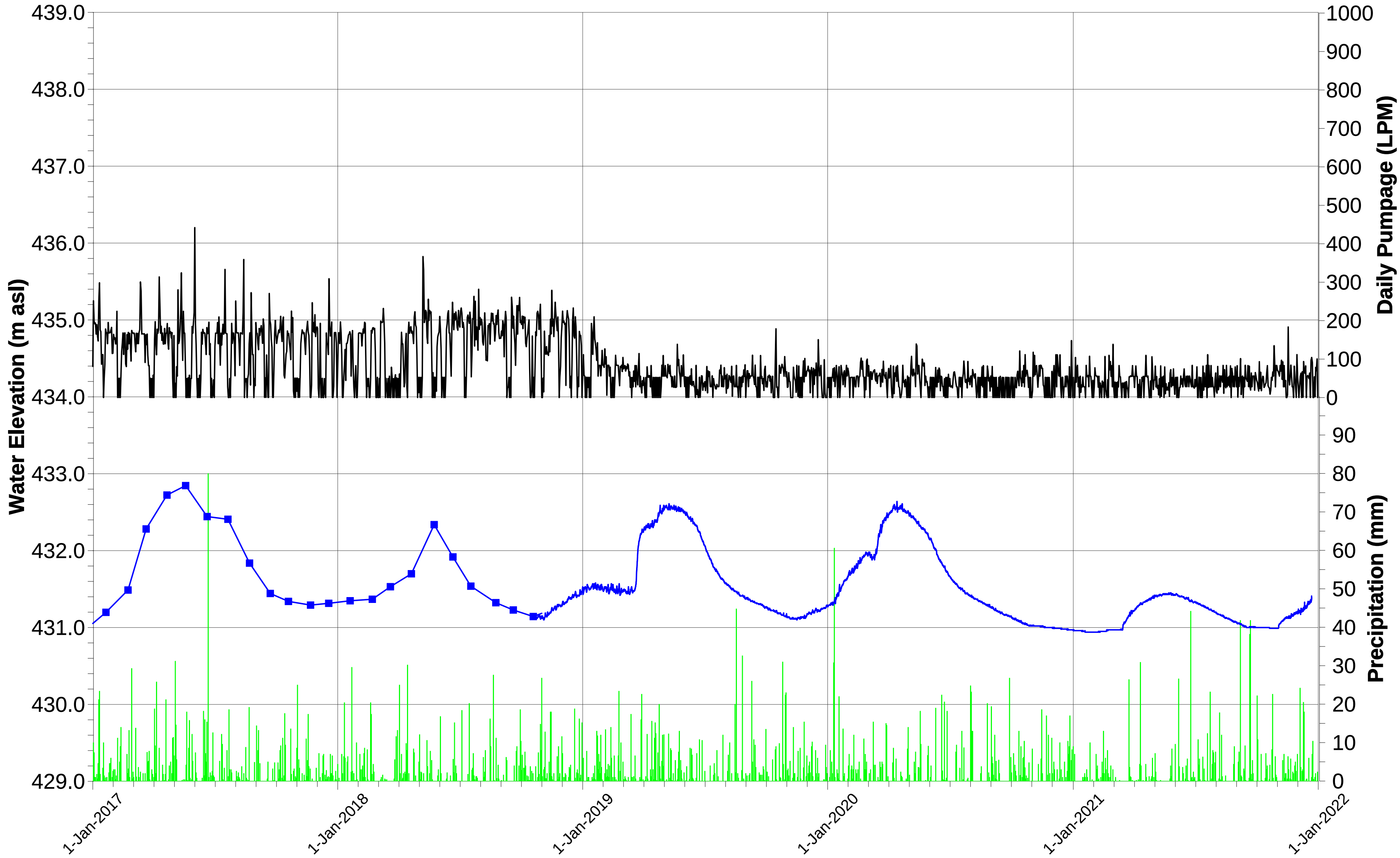
PROJECT

BLUE TRITON BRANDS
Town of Erin, Ontario

TITLE

HYDROGRAPHS FOR OVERBURDEN
MONITORING LOCATIONS
2021 ANNUAL MONITORING REPORT

PROJECT NO.	REV	FIGURE
20449101 (2100)	A	D14



GOLDER

DATE	December 2021
DESIGN	KS
REVIEW	GP
APPROVED	GP

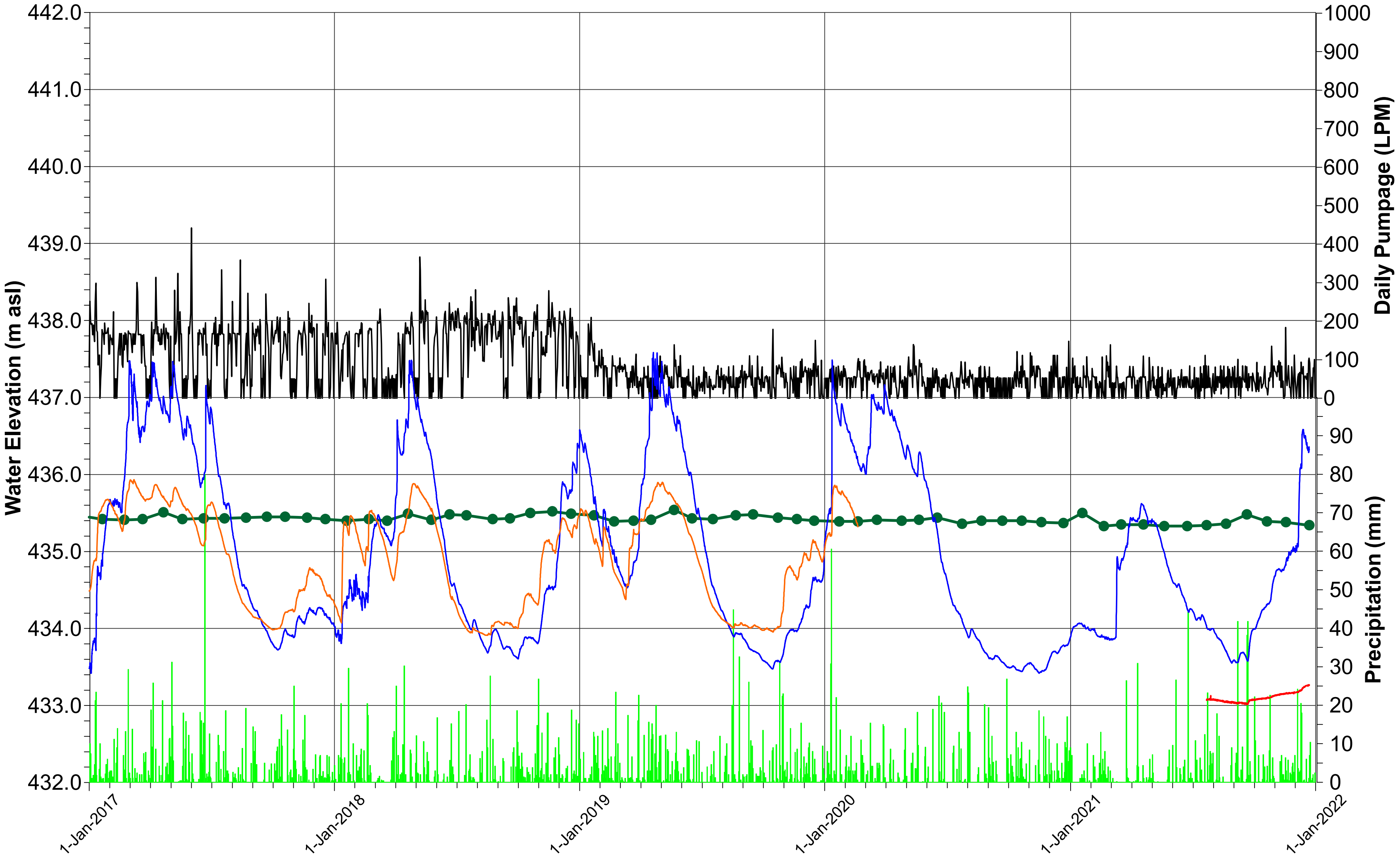
PROJECT

BLUE TRITON BRANDS
Town of Erin, Ontario

TITLE

HYDROGRAPH FOR MW12B-08
2021 ANNUAL MONITORING REPORT

PROJECT NO.	REV	FIGURE
20449101 (2100)	A	D15



Water level not monitored at D26C after February 2020 due to pandemic restrictions

GOLDER

DATE	December 2021
DESIGN	KS
REVIEW	GP
APPROVED	GP

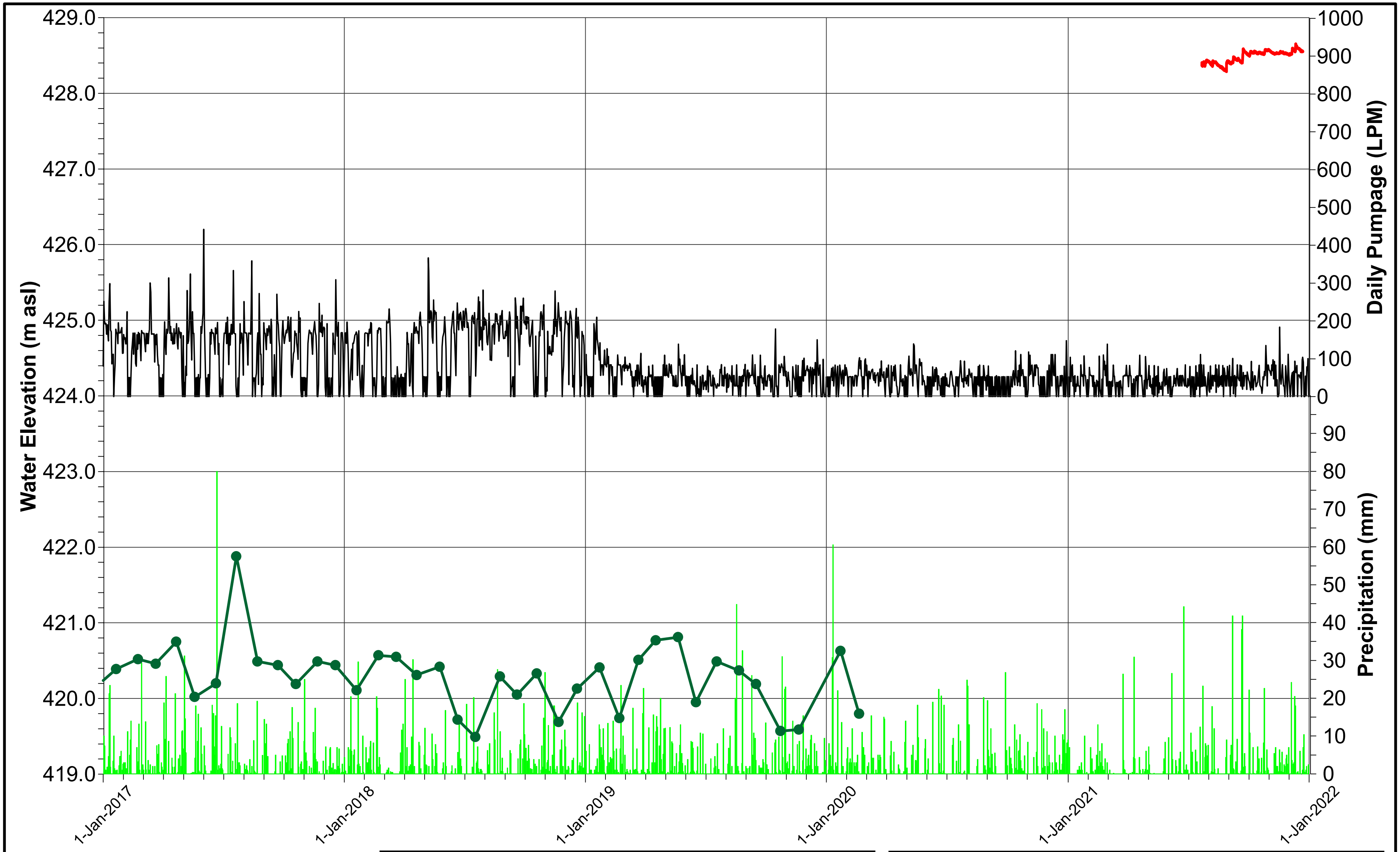
PROJECT

BLUE TRITON BRANDS
Town of Erin, Ontario

TITLE

HYDROGRAPHS FOR OVERBURDEN MONITORING LOCATIONS
2021 ANNUAL MONITORING REPORT

PROJECT NO.	REV	FIGURE
20449101 (2100)	A	D16



Note: Beginning March 2020, the property owner at D27 no longer wanted their well included in the Blue Triton long term monitoring.

GOLDER

DATE	December 2021
DESIGN	KS
REVIEW	GP
APPROVED	GP

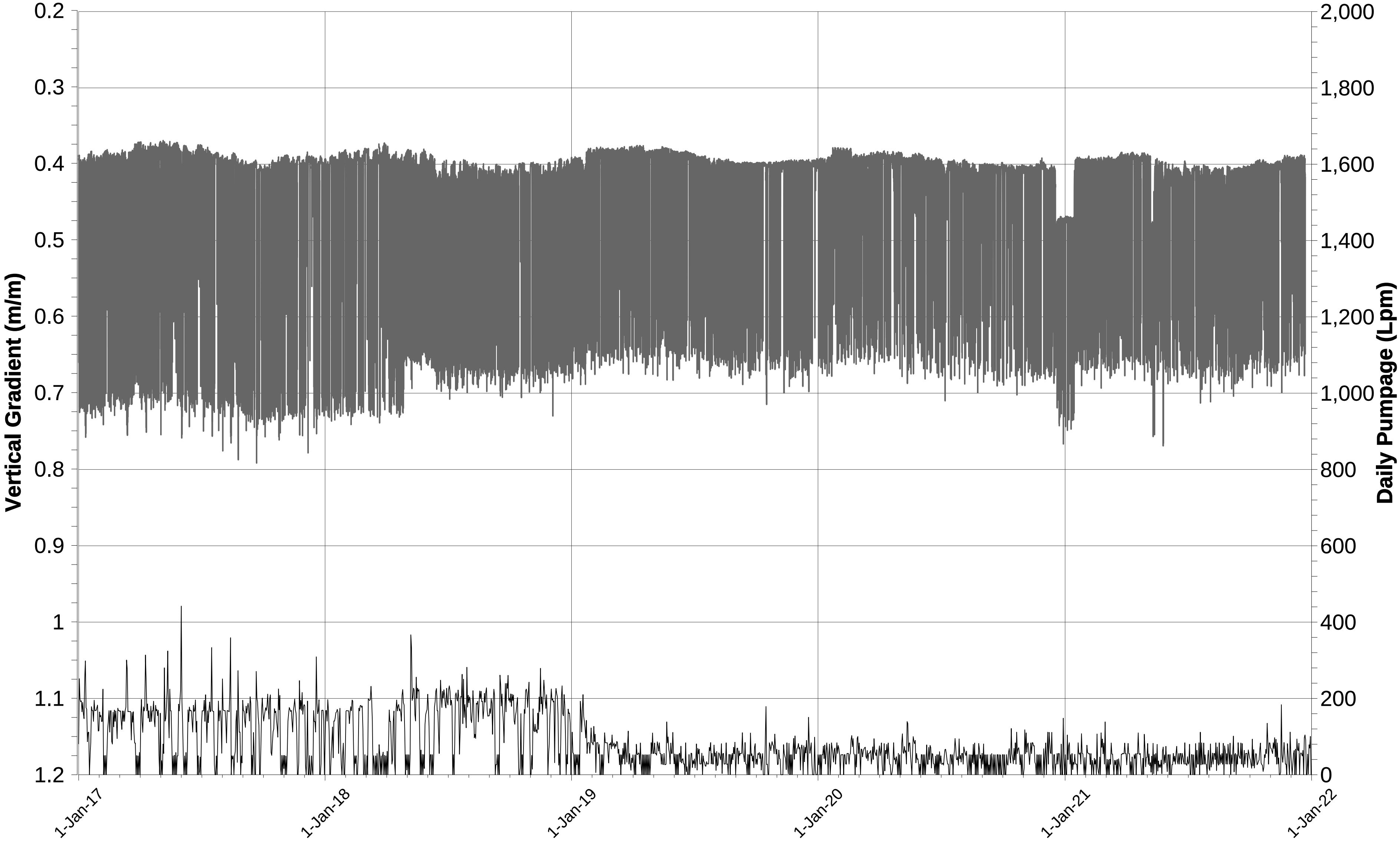
PROJECT

BLUE TRITON BRANDS
Town of Erin, Ontario

TITLE

HYDROGRAPHS FOR OVERBURDEN MONITORING LOCATIONS
2021 ANNUAL MONITORING REPORT

PROJECT NO.	REV	FIGURE
20449101 (2100)	A	D17



TW1-88 Daily Pumpage
Vertical Gradient OB/BR

GOLDER

DATE	December 2021
DESIGN	KS
REVIEW	GP
APPROVED	GP

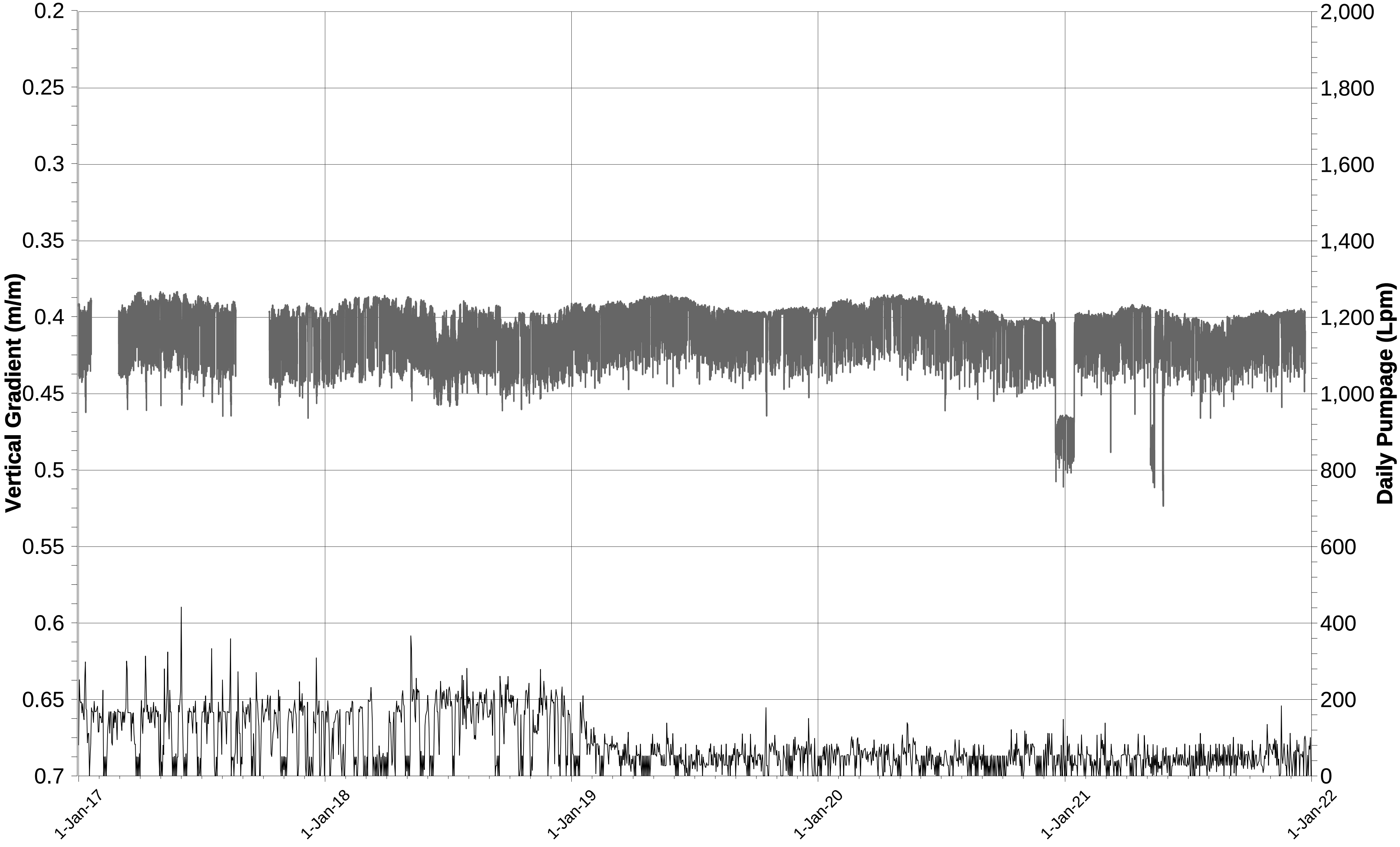
PROJECT

BLUE TRITON BRANDS
Town of Erin, Ontario

TITLE

MW5-05 VERTICAL GRADIENT
2021 ANNUAL MONITORING REPORT

PROJECT NO.	REV	FIGURE
20449101 (2100)	A	D18



TW1-88 Daily Pumpage
Vertical Gradient OB/BR

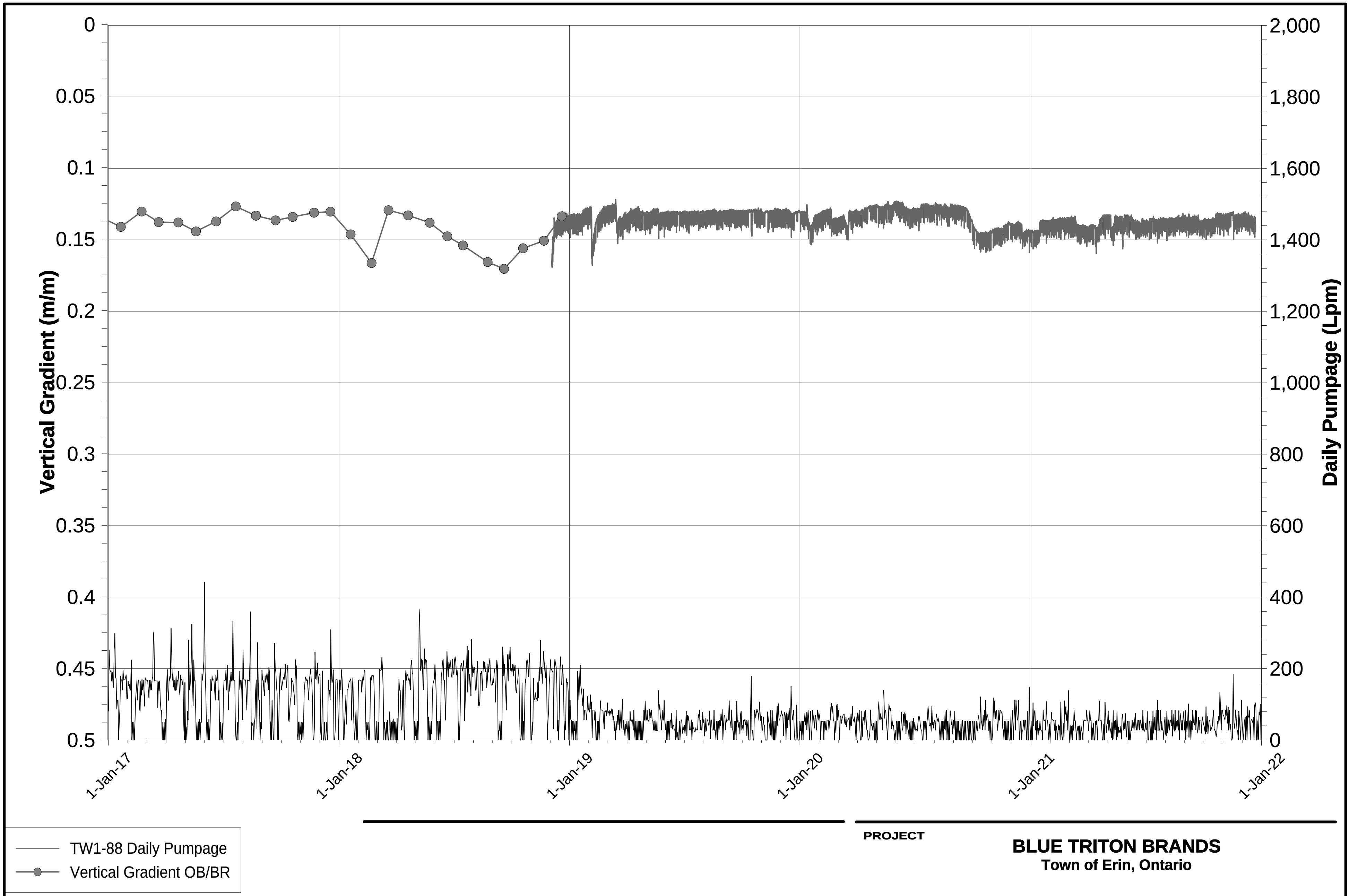
GOLDER

DATE December 2021
DESIGN KS
REVIEW GP
APPROVED GP

PROJECT
BLUE TRITON BRANDS
Town of Erin, Ontario

TITLE
MW6-05 VERTICAL GRADIENT
2021 ANNUAL MONITORING REPORT

PROJECT NO.	**REV**	**FIGURE**
20449101 (2100)	A	D19



GOLDER

DATE	December 2021
DESIGN	KS
REVIEW	GP
APPROVED	GP

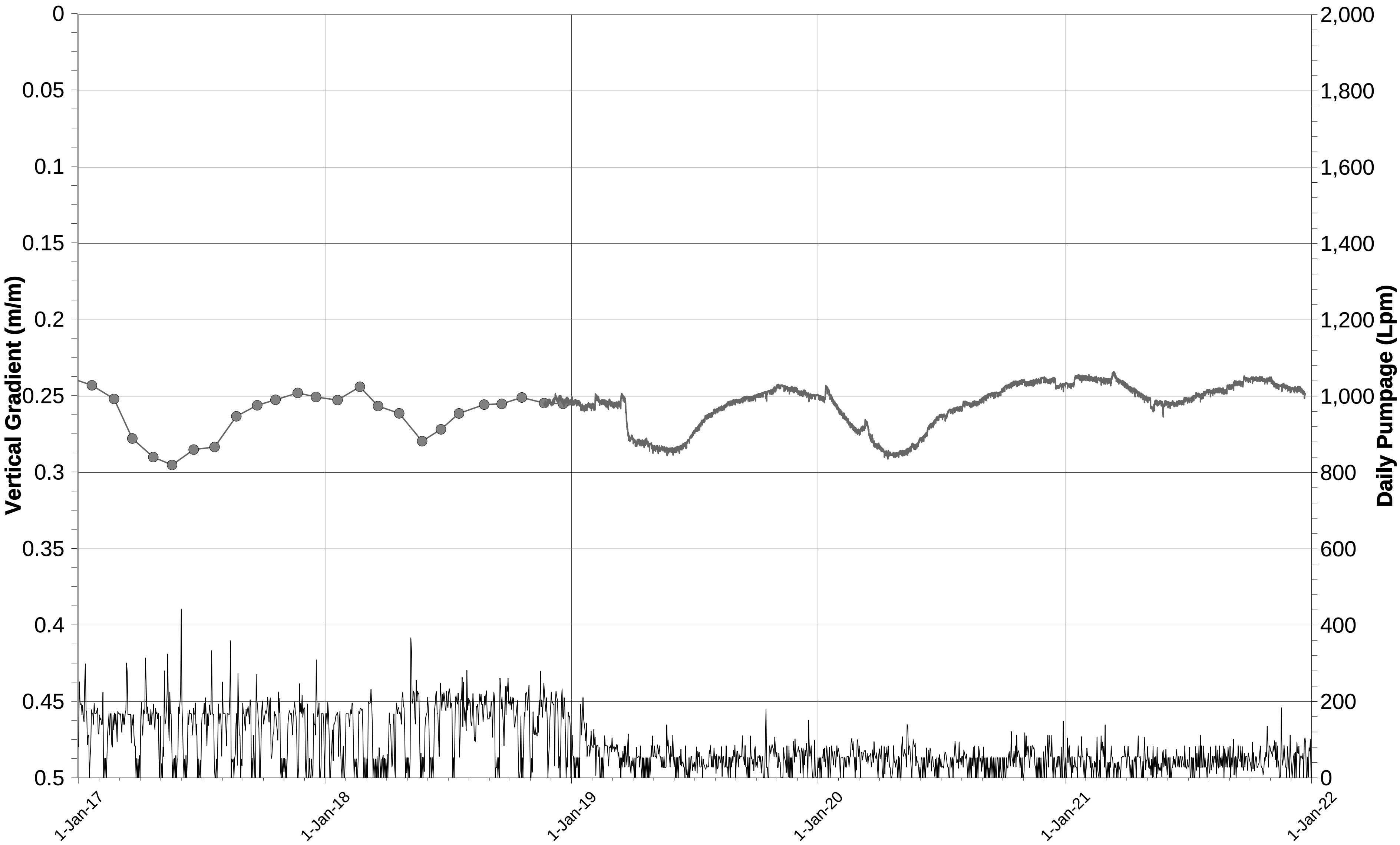
PROJECT

BLUE TRITON BRANDS
Town of Erin, Ontario

TITLE

MW11-08 VERTICAL GRADIENT
2021 ANNUAL MONITORING REPORT

PROJECT NO.	**REV**	**FIGURE**
20449101 (2100)	A	D20



TW1-88 Daily Pumpage
Vertical Gradient OB/BR

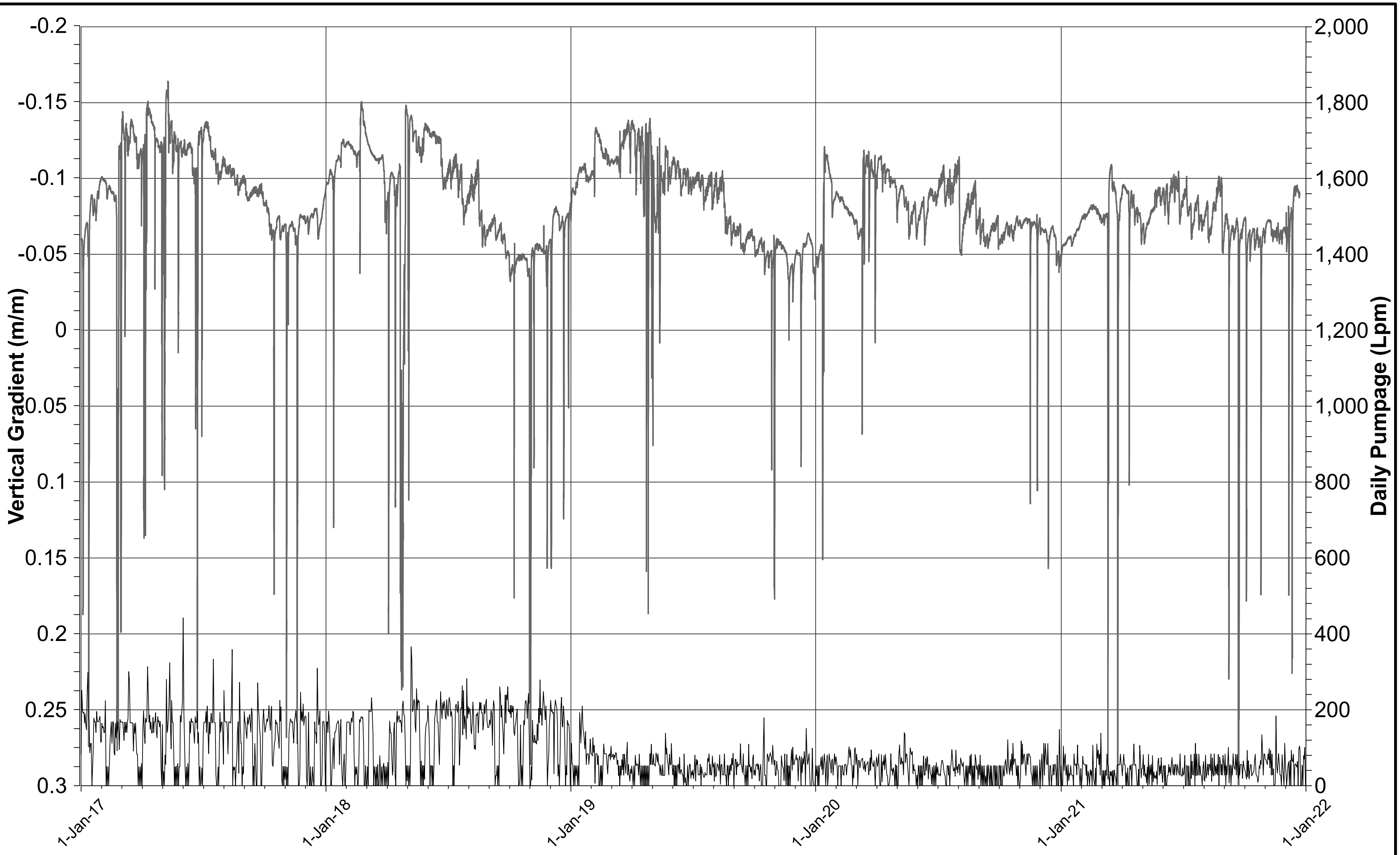
DATE	December 2021
DESIGN	KS
REVIEW	GP
APPROVED	GP

GOLDER

PROJECT
BLUE TRITON BRANDS
Town of Erin, Ontario

TITLE
MW12-08 VERTICAL GRADIENT
2021 ANNUAL MONITORING REPORT

PROJECT NO.	REV	FIGURE
20449101 (2100)	A	D21



TW1-88 Daily Pumpage
Vertical Gradient OB/OB

GOLDER

DATE	December 2021
DESIGN	KS
REVIEW	GP
APPROVED	GP

PROJECT

BLUE TRITON BRANDS
Town of Erin, Ontario

TITLE

MW3-00 VERTICAL GRADIENT
2021 ANNUAL MONITORING REPORT

PROJECT NO.	**REV**	**FIGURE**
20449101 (2100)	A	D22

TABLE D1

Manual Groundwater Elevations (masl)

2021 Annual Report

DATE	Water Level Elevation (masl)						
	MW2-00	MW3A-00	MW3B-00	MW5A-05	MW5B-05	MW6A-05	MW6B-05
18-Jan-21	428.25	428.36	428.29	423.54	428.53	422.00	428.27
19-Feb-21	428.18	428.34	428.25	423.55	428.50	421.96	428.23
17-Mar-21	428.36	428.46	428.33	423.52	428.38	422.13	428.41
19-Apr-21	428.32	428.43	428.32	423.52	428.61	421.78	428.37
20-May-21	428.30	428.43	428.33	423.59	428.61	422.03	428.32
23-Jun-21	428.23	428.36	428.25	423.32	428.52	421.78	428.25
22-Jul-21	428.24	428.39	428.29	423.28	428.56	421.55	428.26
20-Aug-21	428.22	428.33	428.23	423.21	428.49	421.72	428.22
20-Sep-21	428.20	428.34	428.25	423.40	428.51	421.79	428.23
20-Oct-21	428.28	428.39	428.31	423.65	428.56	422.04	428.29
17-Nov-21	428.32	428.45	428.37	423.07	428.35	422.21	428.33
22-Dec-21	428.35	428.47	428.36	423.56	428.66	421.99	428.40

TABLE D1

Manual Groundwater Elevations (masl)

2021 Annual Report

DATE	Water Level Elevation (masl)					
	MW11A-08	**MW11B-08**	**MW12A-08**	**MW12B-08**	**MW13A-20-7**	**MW13B-20-07**
18-Jan-21	427.89	428.58	424.67	DRY	-	-
19-Feb-21	426.86	428.54	424.63	430.95	-	-
17-Mar-21	427.01	428.74	424.78	DRY	-	-
19-Apr-21	426.90	428.73	424.78	431.35	-	-
20-May-21	426.93	428.62	424.72	431.43	-	-
23-Jun-21	426.86	428.59	424.63	431.34	-	-
22-Jul-21	426.82	428.59	424.64	431.24	425.11	433.09
20-Aug-21	426.84	428.53	424.58	431.11	424.56	433.04
20-Sep-21	426.82	428.51	424.62	431.00	426.90	433.01
20-Oct-21	426.90	428.57	424.68	430.98	425.74	433.10
17-Nov-21	426.93	428.55	424.71	431.14	425.33	433.15
22-Dec-21	426.95	428.67	424.79	431.38	425.02	433.26

TABLE D1

Manual Groundwater Elevations (masl)

2021 Annual Report

DATE	**Water Level Elevation (masl**			
	MW14A-20-7	**MW14B-20-06**	**TW1-88**	**TW1-99**
18-Jan-21	-	-	422.92	428.49
19-Feb-21	-	-	422.86	428.47
17-Mar-21	-	-	423.01	428.38
19-Apr-21	-	-	418.31	428.59
20-May-21	-	-	422.89	428.54
23-Jun-21	-	-	422.49	428.48
22-Jul-21	420.02	419.79	422.52	428.49
20-Aug-21	420.27	420.18	422.49	428.47
20-Sep-21	420.29	420.42	422.70	428.32
20-Oct-21	420.58	420.52	422.95	428.52
17-Nov-21	420.35	420.65	422.88	428.22
22-Dec-21	420.27	420.32	422.86	428.61

TABLE D1

Manual Groundwater Elevations (masl)

2021 Annual Report

DATE	Water Level Elevation (masl)					
	D3	D7B	D8	D15	D24A	D24B
18-Jan-21	424.69	435.50	427.45	427.28	425.67	424.96
19-Feb-21	424.59	435.33	427.45	427.26	425.47	424.81
17-Mar-21	424.87	435.35	427.59	427.36	425.75	425.11
19-Apr-21	424.61	435.35	427.55	427.31	425.02	424.70
20-May-21	424.86	435.33	427.50	427.33	426.00	425.34
23-Jun-21	423.49	435.33	427.42	427.30	424.56	424.03
22-Jul-21	423.66	435.34	427.42	427.28	424.78	424.33
20-Aug-21	423.58	435.36	427.39	427.22	424.38	424.13
20-Sep-21	423.91	435.48	427.37	427.23	424.73	424.34
20-Oct-21	424.82	435.39	427.52	427.28	425.51	425.08
17-Nov-21	422.77	435.38	427.52	427.28	425.02	424.54
22-Dec-21	423.48	435.34	427.55	427.26	425.04	424.52

TABLE D1

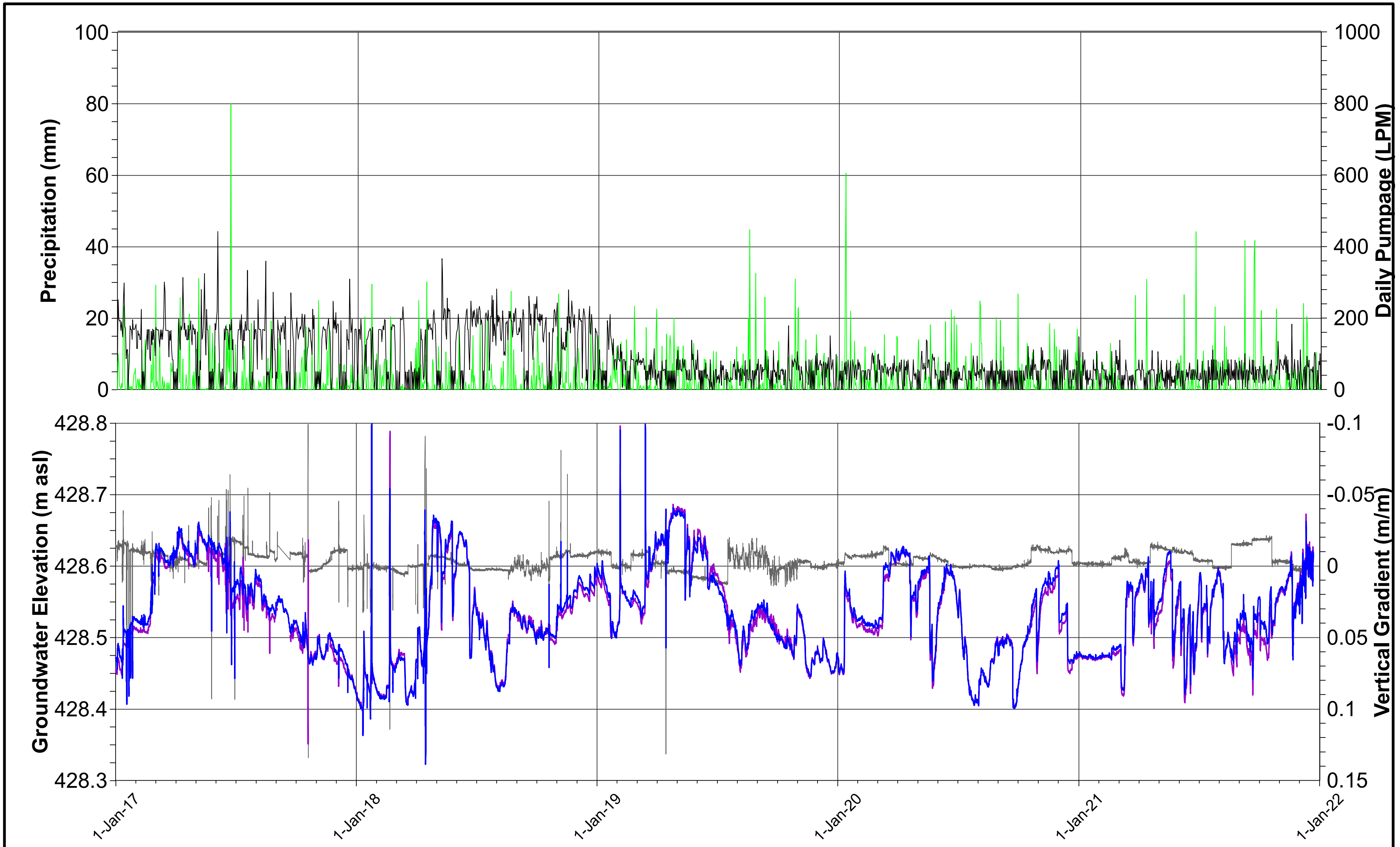
Manual Groundwater Elevations (masl)

2021 Annual Report

DATE	Water Level Elevation (masl)					
	D26A	**D26B**	**D26C**	**D32**	**D36A**	**D36B**
18-Jan-21	420.31	420.44	NO ACCESS	FROZEN	434.05	423.83
19-Feb-21	420.26	420.36	NO ACCESS	412.00	433.89	423.71
17-Mar-21	420.05	420.41	NO ACCESS	412.47	434.85	423.90
19-Apr-21	420.47	420.47	NO ACCESS	412.89	435.59	423.95
20-May-21	420.40	420.44	NO ACCESS	413.03	435.19	423.85
23-Jun-21	419.67	419.68	NO ACCESS	412.50	434.25	423.67
22-Jul-21	420.06	420.15	NO ACCESS	412.65	434.03	423.67
20-Aug-21	420.01	420.07	NO ACCESS	412.61	433.70	423.61
20-Sep-21	420.23	420.30	NO ACCESS	412.85	433.59	423.64
20-Oct-21	420.37	420.43	NO ACCESS	413.10	434.31	423.81
17-Nov-21	420.36	420.01	NO ACCESS	413.01	434.83	423.91
22-Dec-21	419.77	419.60	NO ACCESS	412.83	436.31	424.08

APPENDIX E

Surface Water Level Monitoring



GOLDER

DATE December 2021
DESIGN KS
REVIEW GP
APPROVED GP

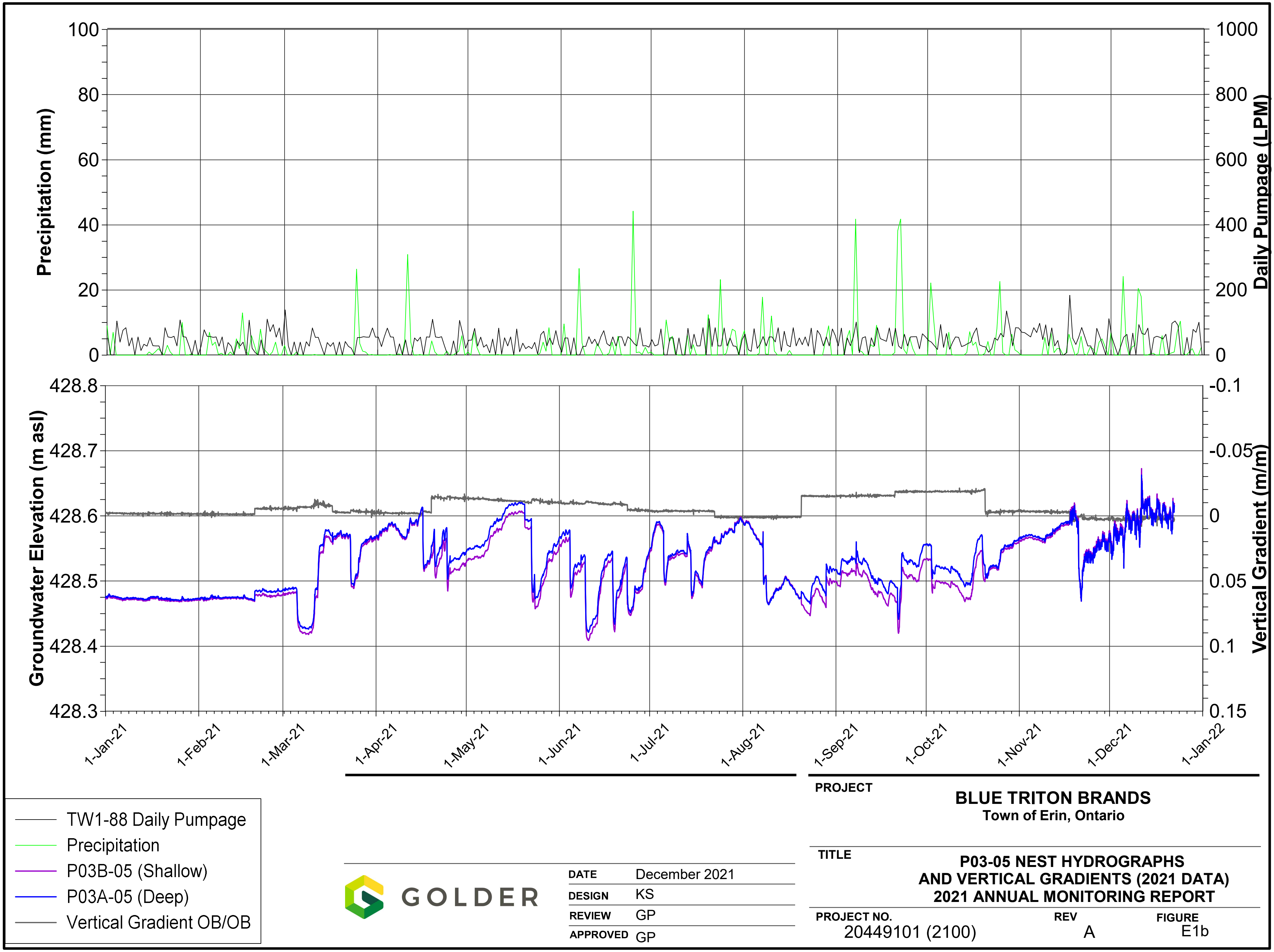
PROJECT

BLUE TRITON BRANDS
Town of Erin, Ontario

TITLE

P03-05 NEST HYDROGRAPHS
AND VERTICAL GRADIENTS
2021 ANNUAL MONITORING REPORT

PROJECT NO.	**REV**	**FIGURE**
20449101 (2100)	A	E1a



GOLDER

DATE	December 2021
DESIGN	KS
REVIEW	GP
APPROVED	GP

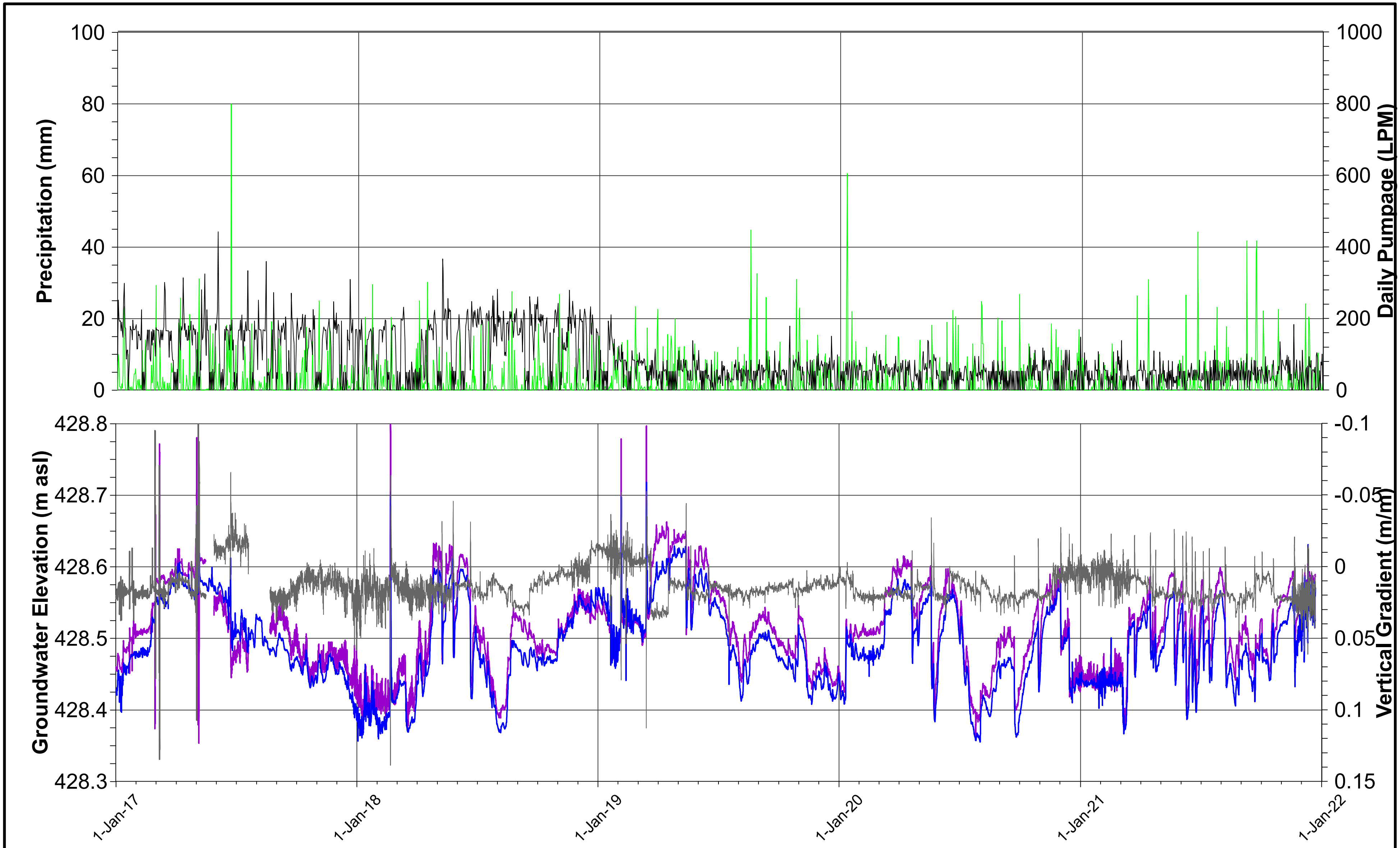
PROJECT

BLUE TRITON BRANDS
Town of Erin, Ontario

TITLE

P03-05 NEST HYDROGRAPHS AND VERTICAL GRADIENTS (2021 DATA) 2021 ANNUAL MONITORING REPORT

PROJECT NO.	REV	FIGURE
20449101 (2100)	A	E1b



GOLDER

DATE	December 2021
DESIGN	KS
REVIEW	GP
APPROVED	GP

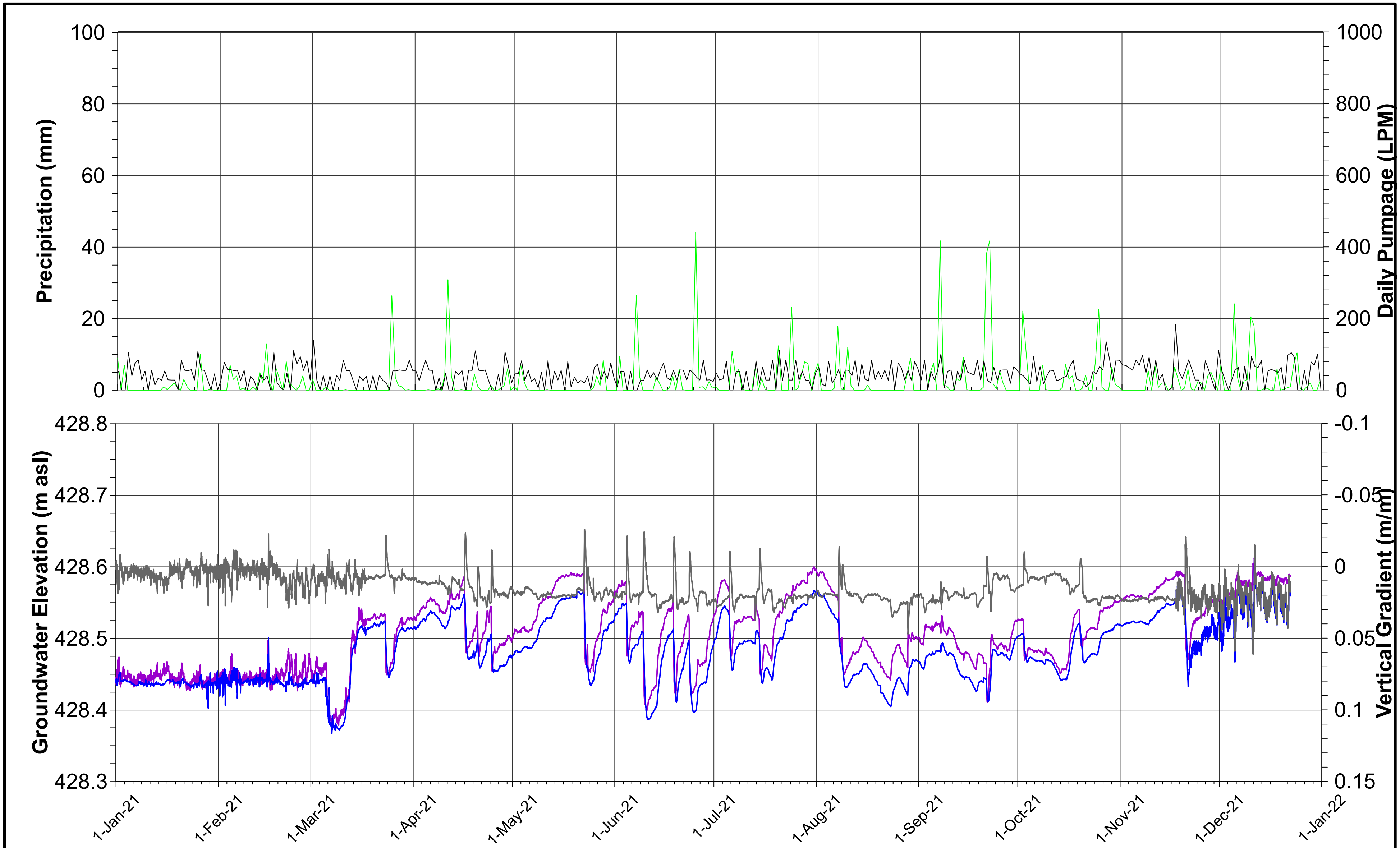
PROJECT

BLUE TRITON BRANDS
Town of Erin, Ontario

TITLE

P06-07 NEST HYDROGRAPHS
AND VERTICAL GRADIENTS
2021 ANNUAL MONITORING REPORT

PROJECT NO.	**REV**	**FIGURE**
20449101 (2100)	A	E2a



GOLDER

DATE	December 2021
DESIGN	KS
REVIEW	GP
APPROVED	GP

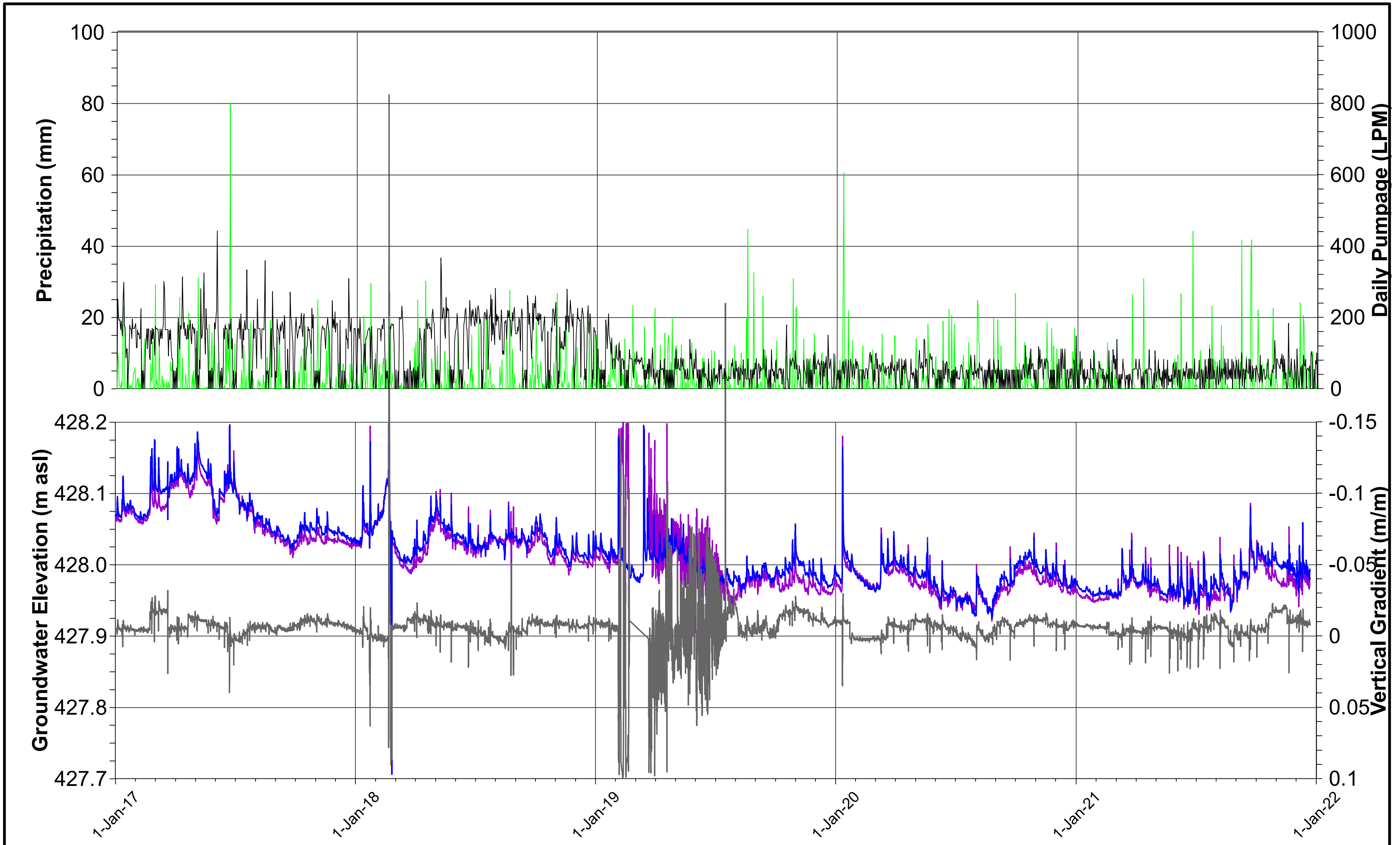
PROJECT

BLUE TRITON BRANDS
Town of Erin, Ontario

TITLE

P06-07 NEST HYDROGRAPHS
AND VERTICAL GRADIENTS (2021 DATA)
2021 ANNUAL MONITORING REPORT

PROJECT NO.	**REV**	**FIGURE**
20449101 (2100)	A	E2b



—	TW1-88 Daily Pumping
—	Precipitation
—	P01B-07 (Shallow)
—	P01A-07 (Deep)
—	Vertical Gradient OB/OB

GOLDER

DATE	December 2021
DESIGN	KS
REVIEW	GP
APPROVED	GP

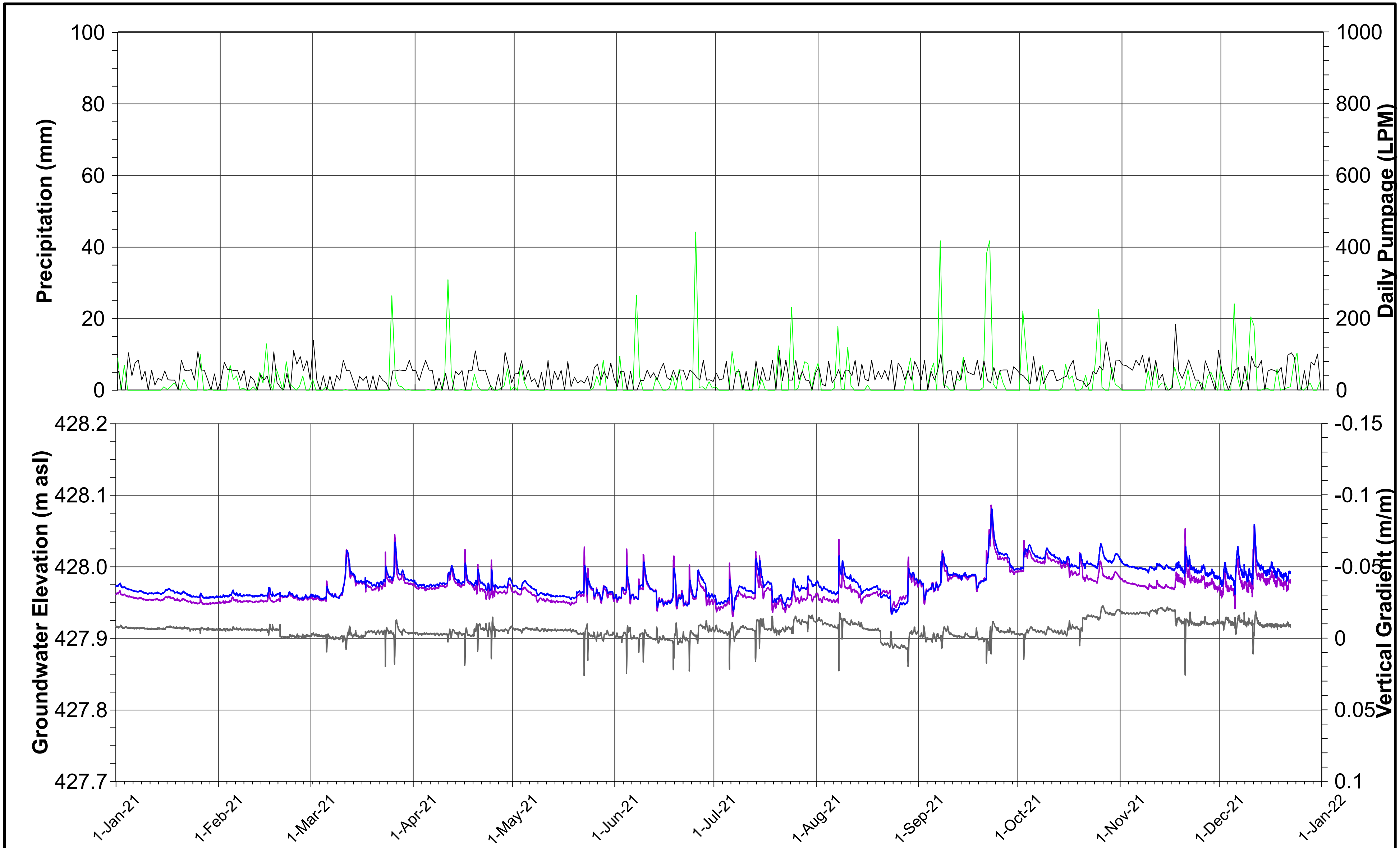
PROJECT

BLUE TRITON BRANDS
Town of Erin, Ontario

TITLE

P01-07 NEST HYDROGRAPHS
AND VERTICAL GRADIENTS
2021 ANNUAL MONITORING REPORT

PROJECT NO.	REV	FIGURE
20449101 (2100)	A	E3a



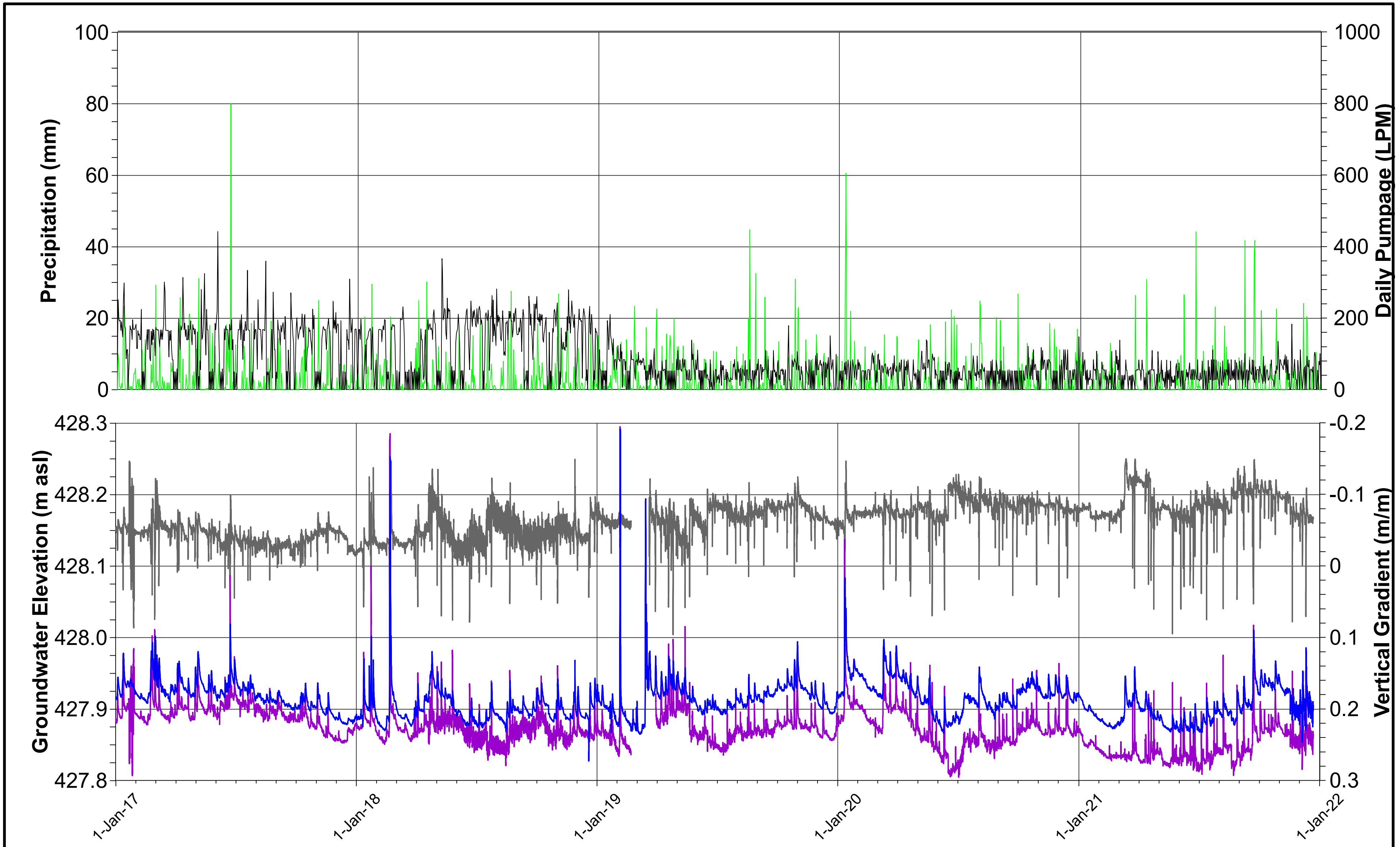
GOLDER

DATE December 2021
DESIGN KS
REVIEW GP
APPROVED GP

PROJECT
BLUE TRITON BRANDS
Town of Erin, Ontario

TITLE
P01-07 NEST HYDROGRAPHS
AND VERTICAL GRADIENTS (2021 DATA)
2021 ANNUAL MONITORING REPORT

PROJECT NO.	**REV**	**FIGURE**
20449101 (2100)	A	E3b



GOLDER

DATE	December 2021
DESIGN	KS
REVIEW	GP
APPROVED	GP

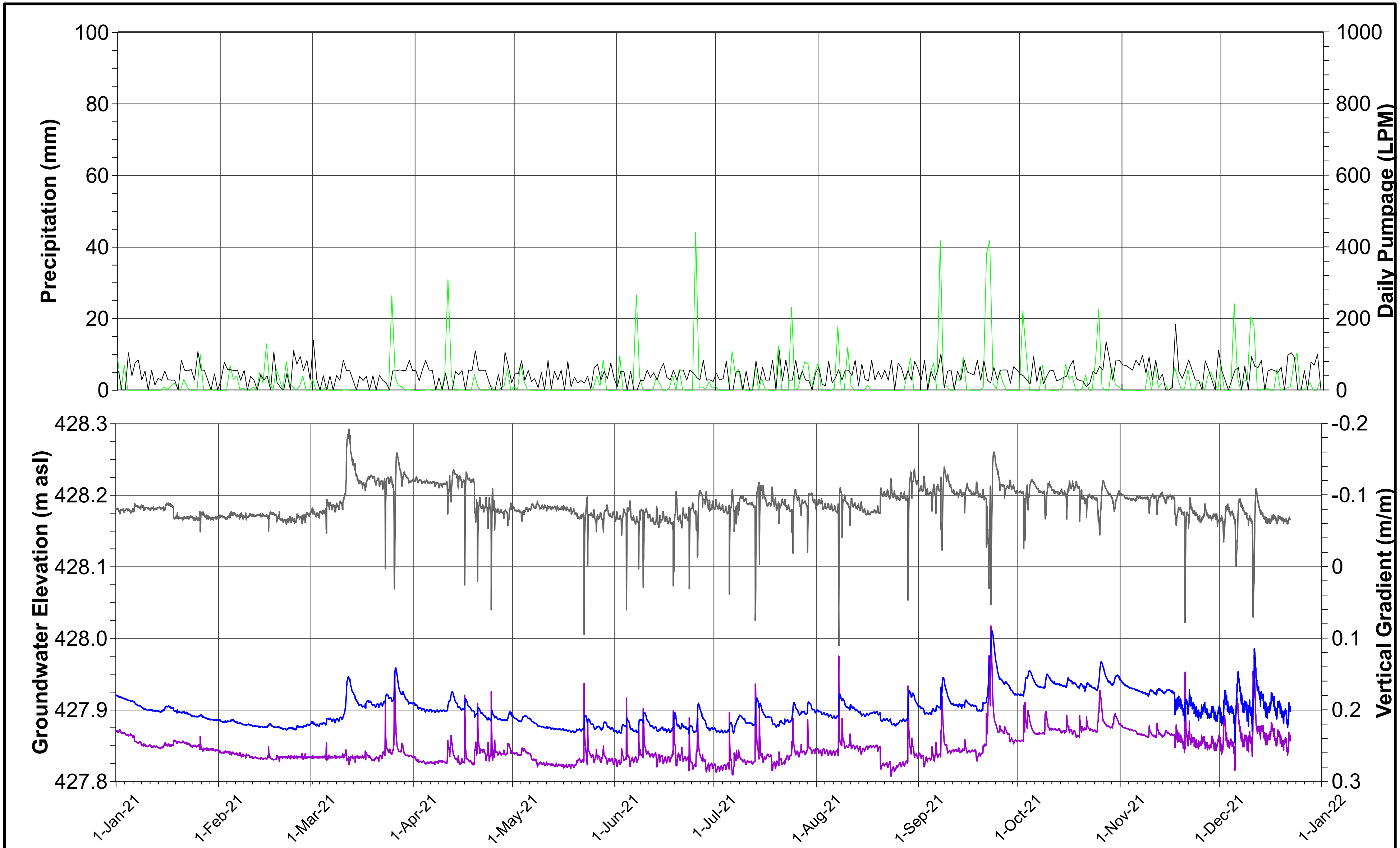
PROJECT

BLUE TRITON BRANDS
Town of Erin, Ontario

TITLE

P11-05 NEST HYDROGRAPHS
AND VERTICAL GRADIENTS
2021 ANNUAL MONITORING REPORT

PROJECT NO.	**REV**	**FIGURE**
20449101 (2100)	A	E4a



PROJECT

BLUE TRITON BRANDS
Town of Erin, Ontario

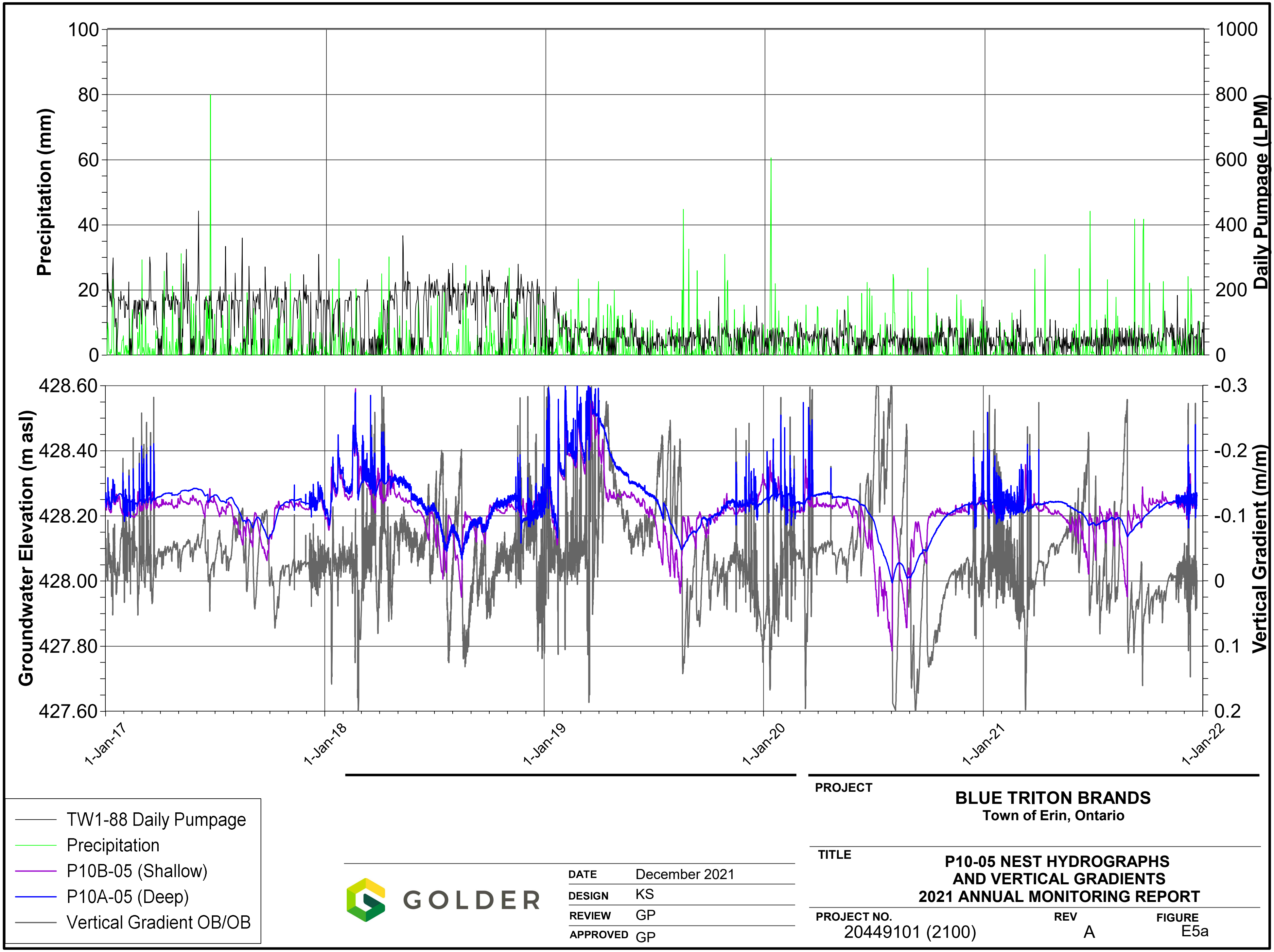
TITLE

P11-05 NEST HYDROGRAPHS
AND VERTICAL GRADIENTS (2021 DATA)
2021 ANNUAL MONITORING REPORT

GOLDER

DATE	December 2021
DESIGN	KS
REVIEW	GP
APPROVED	GP

PROJECT NO.	**REV**	**FIGURE**
20449101 (2100)	A	E4b



GOLDER

DATE	December 2021
DESIGN	KS
REVIEW	GP
APPROVED	GP

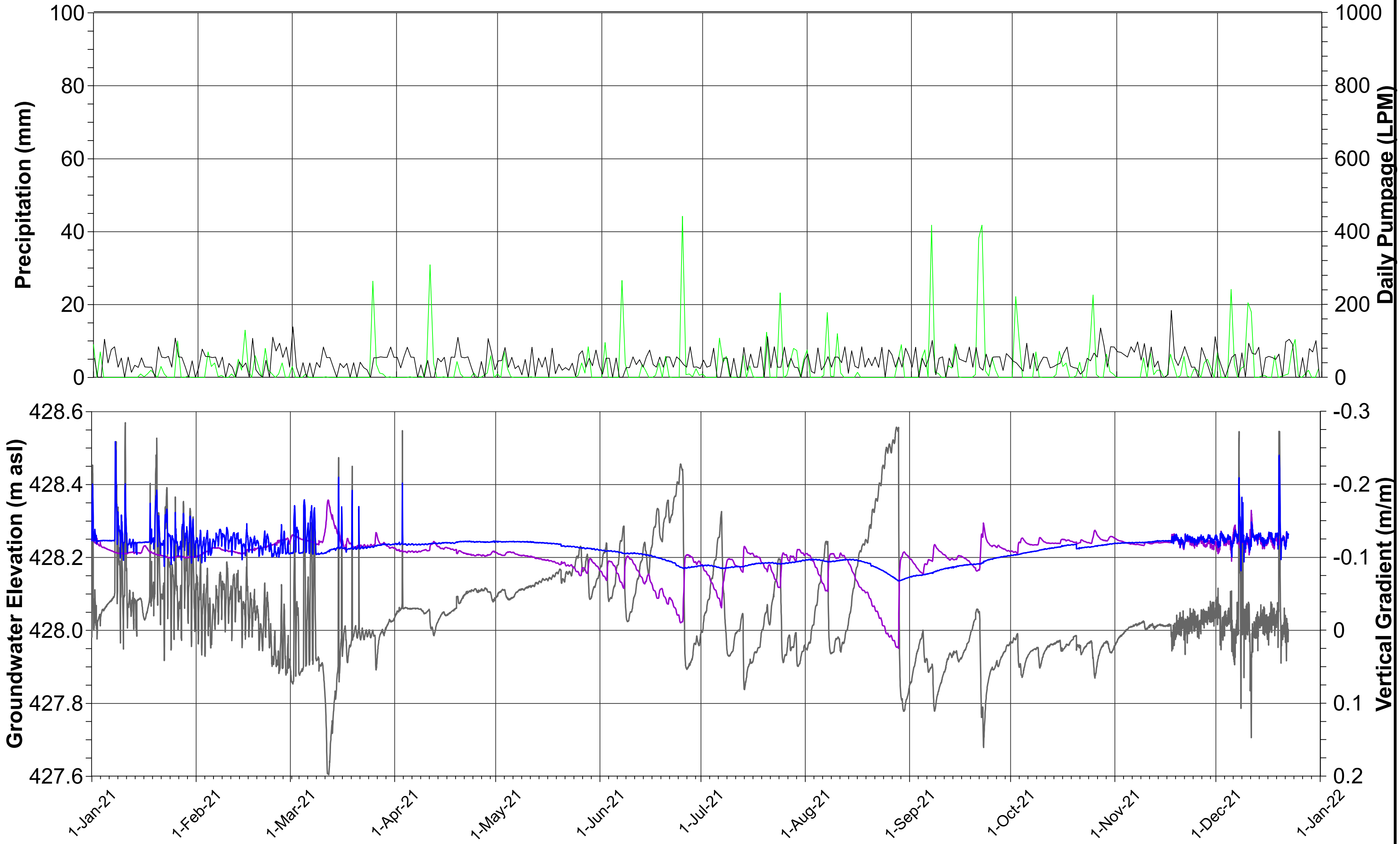
PROJECT

BLUE TRITON BRANDS
Town of Erin, Ontario

TITLE

P10-05 NEST HYDROGRAPHS AND VERTICAL GRADIENTS 2021 ANNUAL MONITORING REPORT

PROJECT NO.	REV	FIGURE
20449101 (2100)	A	E5a



GOLDER

DATE	December 2021
DESIGN	KS
REVIEW	GP
APPROVED	GP

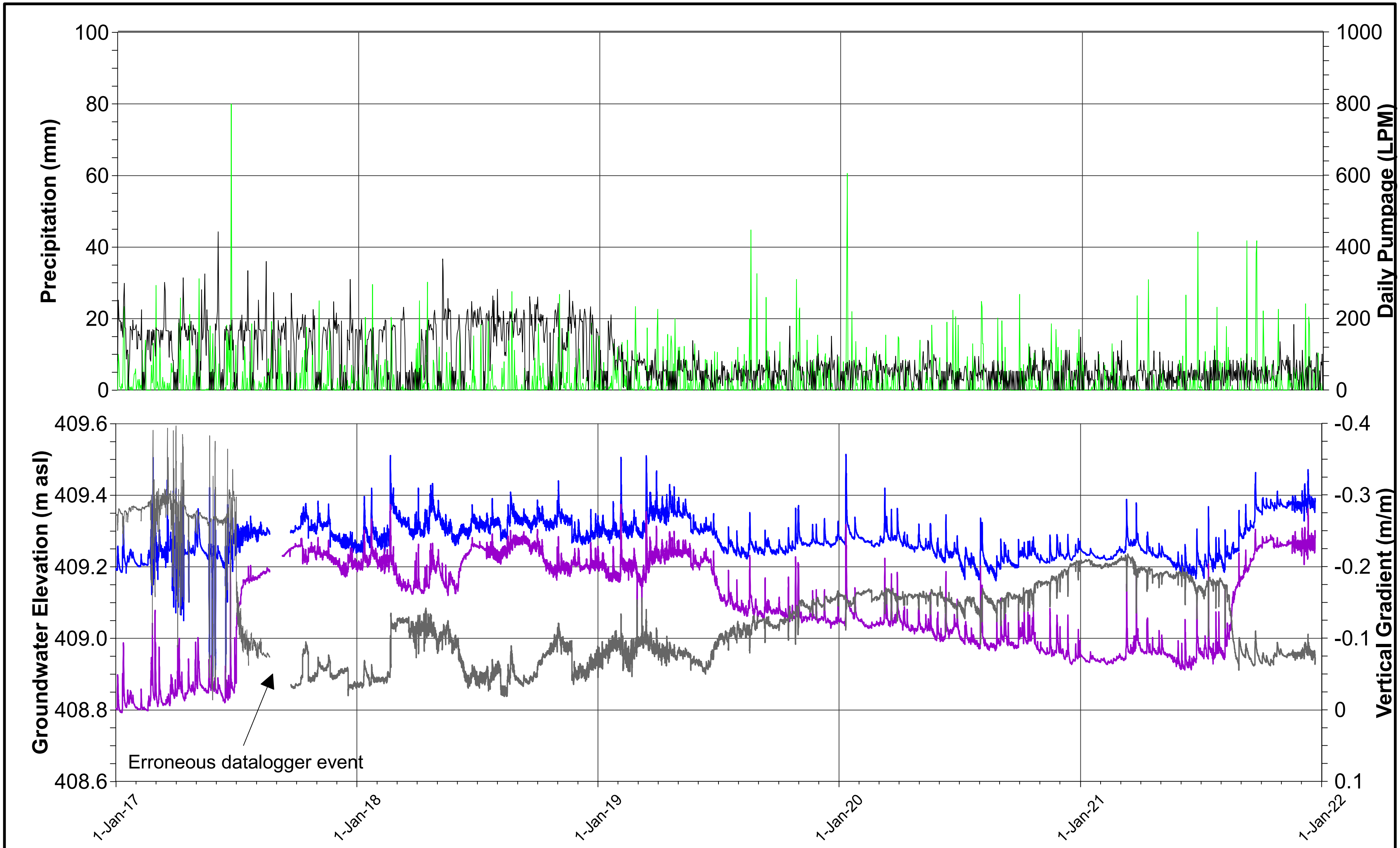
PROJECT

BLUE TRITON BRANDS
Town of Erin, Ontario

TITLE

P10-05 NEST HYDROGRAPHS
AND VERTICAL GRADIENTS (2021 DATA)
2021 ANNUAL MONITORING REPORT

PROJECT NO.	**REV**	**FIGURE**
20449101 (2100)	A	E5b



NOTE:
Beaver activity caused the high water level in stream at P12A/B

GOLDER

DATE	December 2021
DESIGN	KS
REVIEW	GP
APPROVED	GP

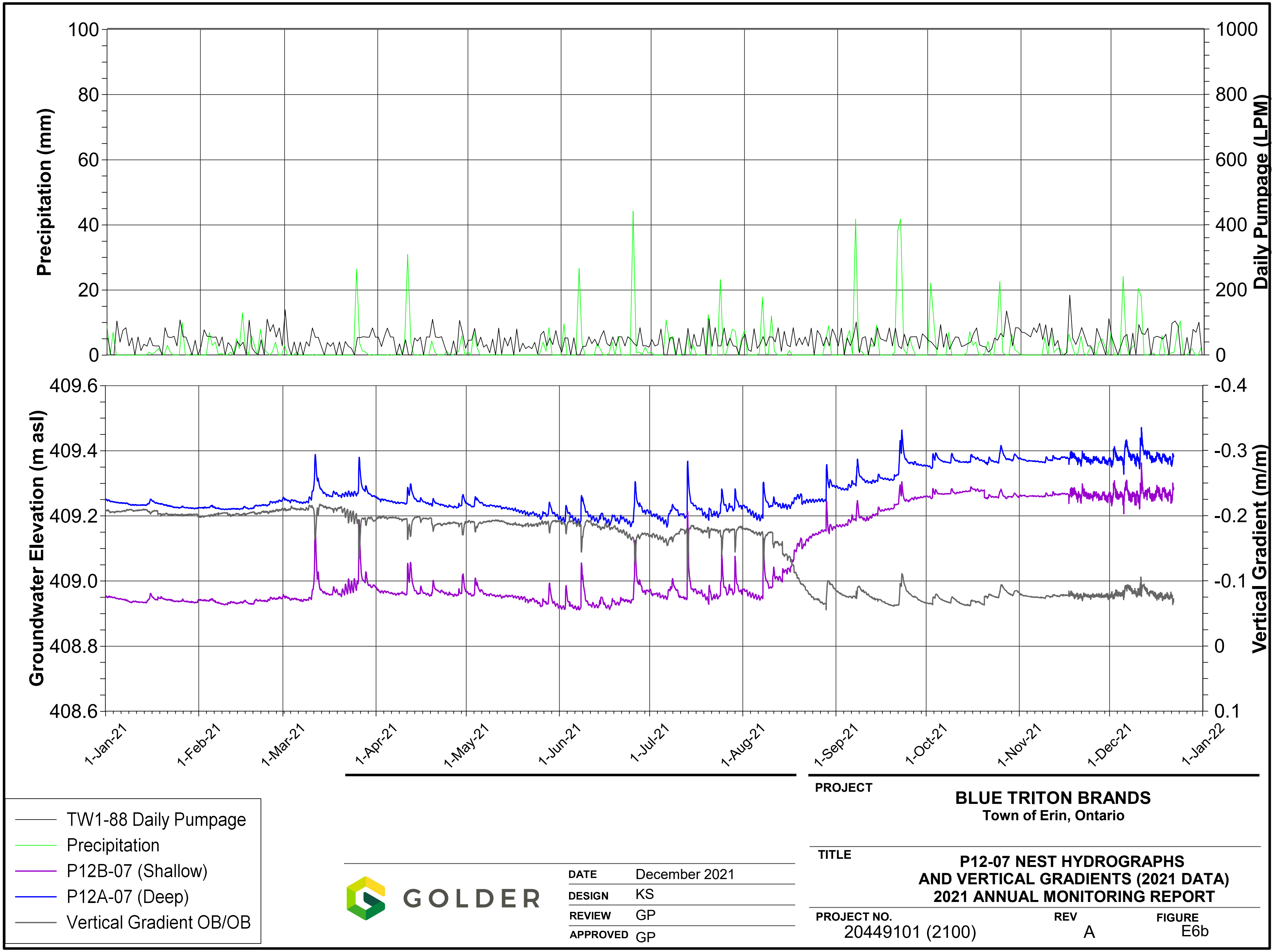
PROJECT

BLUE TRITON BRANDS
Town of Erin, Ontario

TITLE

P12-07 NEST HYDROGRAPHS
AND VERTICAL GRADIENTS
2021 ANNUAL MONITORING REPORT

PROJECT NO.	**REV**	**FIGURE**
20449101 (2100)	A	E6a



GOLDER

DATE	December 2021
DESIGN	KS
REVIEW	GP
APPROVED	GP

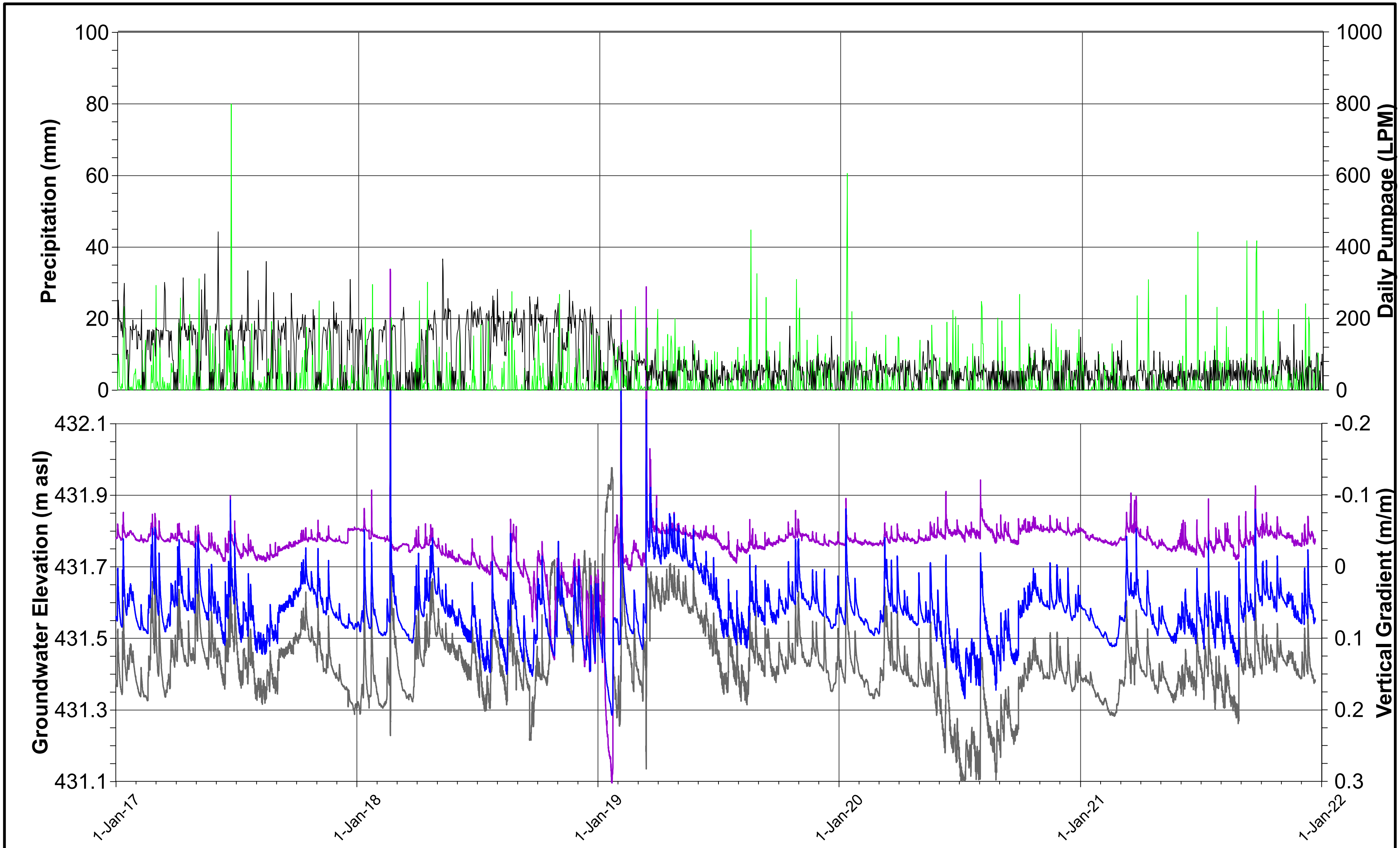
PROJECT

BLUE TRITON BRANDS
Town of Erin, Ontario

TITLE

P12-07 NEST HYDROGRAPHS AND VERTICAL GRADIENTS (2021 DATA) 2021 ANNUAL MONITORING REPORT

PROJECT NO.	REV	FIGURE
20449101 (2100)	A	E6b



—	TW1-88 Daily Pumpage
—	Precipitation
—	P13B-07 (Shallow)
—	P13A-07 (Deep)
—	Vertical Gradient OB/OB

GOLDER

DATE	December 2021
DESIGN	KS
REVIEW	GP
APPROVED	GP

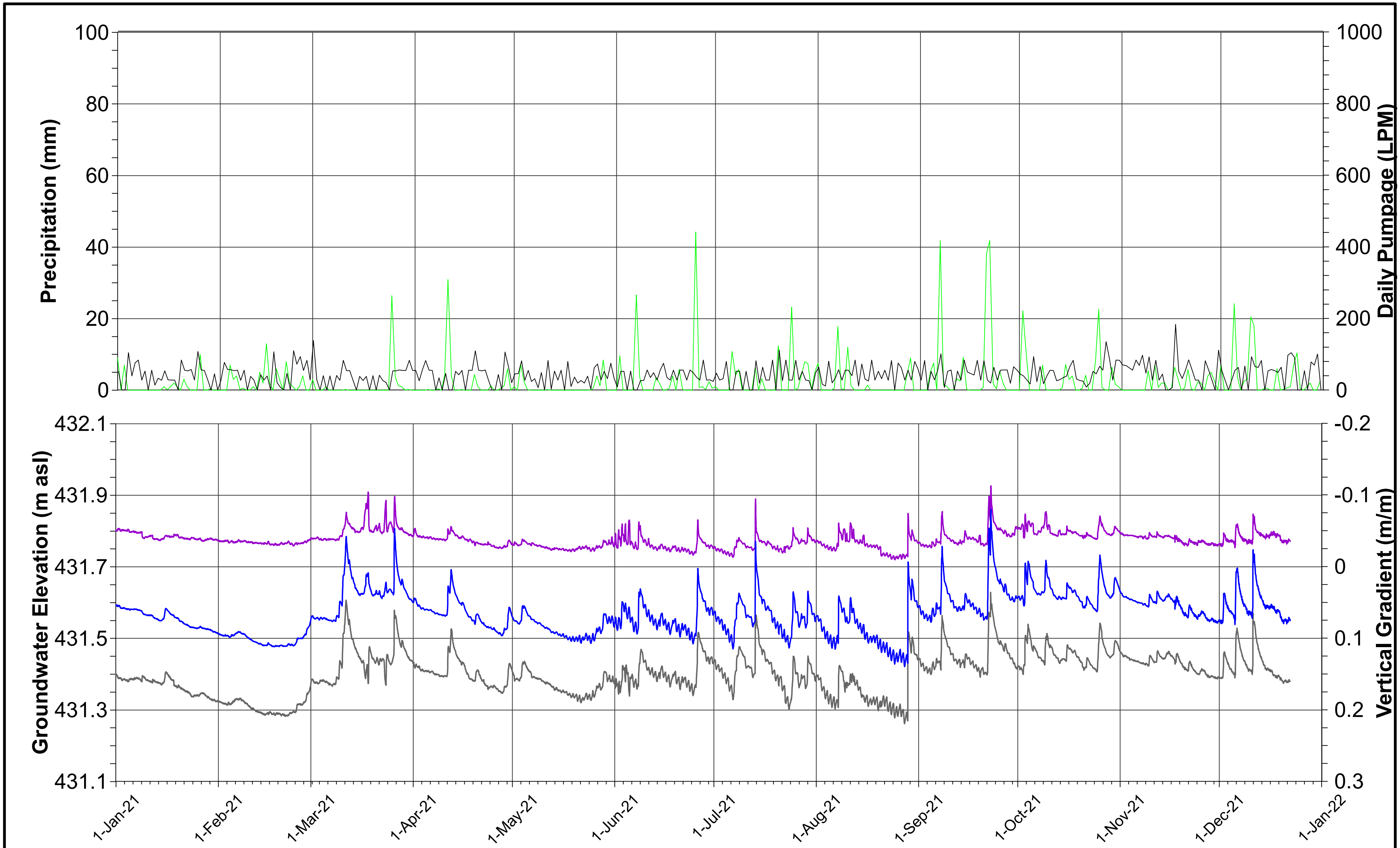
PROJECT

BLUE TRITON BRANDS
Town of Erin, Ontario

TITLE

P13-07 NEST HYDROGRAPHS
AND VERTICAL GRADIENTS
2021 ANNUAL MONITORING REPORT

PROJECT NO.	REV	FIGURE
20449101 (2100)	A	E7a



TW1-88 Daily Pumpage
Precipitation
P13B-07 (Shallow)
P13A-07 (Deep)
Vertical Gradient OB/OB

GOLDER

DATE	December 2021
DESIGN	KS
REVIEW	GP
APPROVED	GP

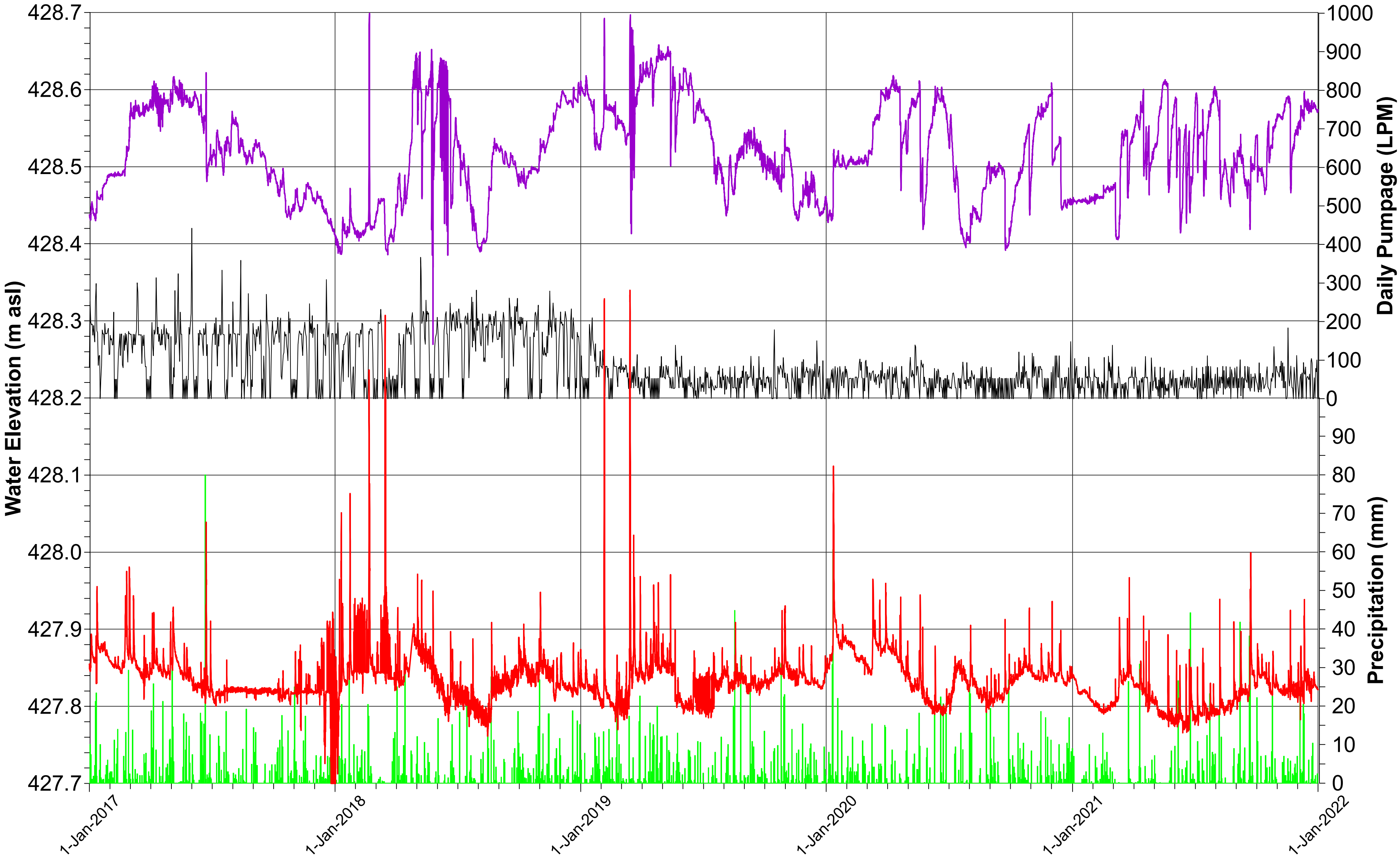
PROJECT

BLUE TRITON BRANDS
Town of Erin, Ontario

TITLE

P13-07 NEST HYDROGRAPHS
AND VERTICAL GRADIENTS (2021 DATA)
2021 ANNUAL MONITORING REPORT

PROJECT NO.	REV	FIGURE
20449101 (2100)	A	E7b



PROJECT

BLUE TRITON BRANDS
Town of Erin, Ontario

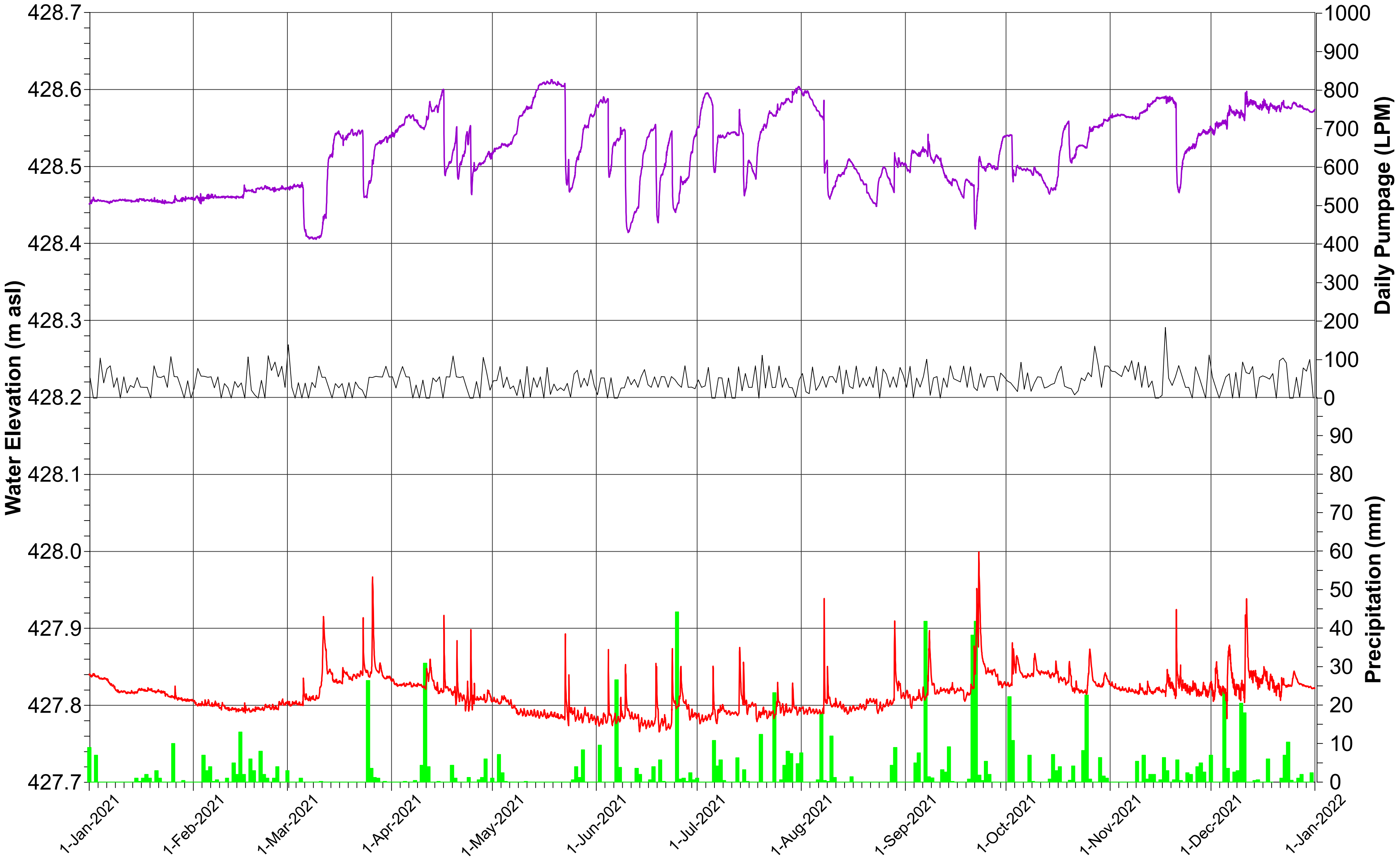
TITLE

HYDROGRAPHS FOR SURFACE WATER LEVELS IN VICINITY OF ON-SITE POND 2021 ANNUAL MONITORING REPORT

GOLDER

DATE	December 2021
DESIGN	KS
REVIEW	GP
APPROVED	GP

PROJECT NO.	**REV**	**FIGURE**
20449101 (2100)	A	E8a



GOLDER

DATE	December 2021
DESIGN	KS
REVIEW	GP
APPROVED	GP

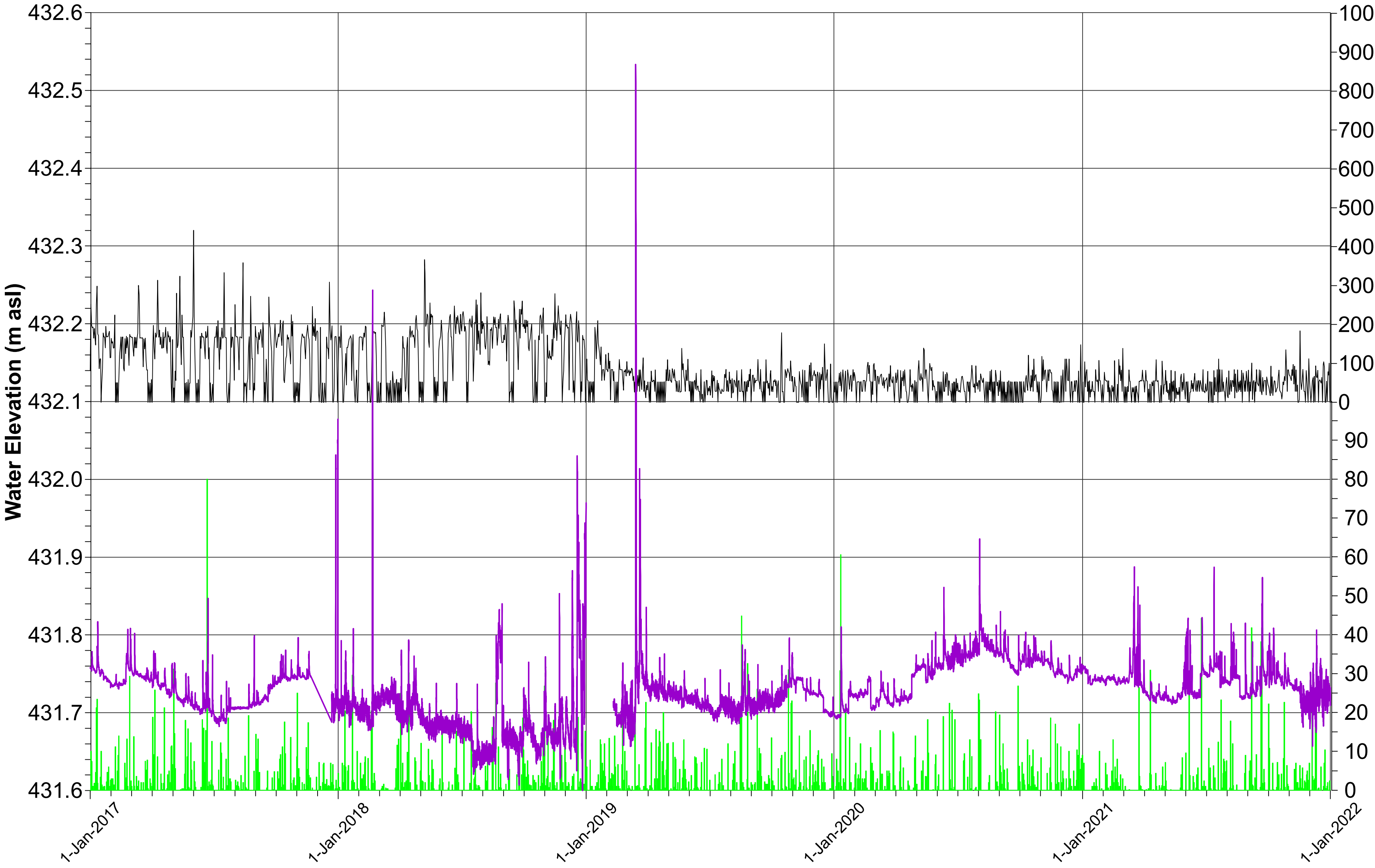
PROJECT

BLUE TRITON BRANDS
Town of Erin, Ontario

TITLE

HYDROGRAPHS FOR SURFACE WATER LEVELS IN VICINITY OF ON-SITE POND (2021 DATA)
2021 ANNUAL MONITORING REPORT

PROJECT NO.	**REV**	**FIGURE**
20449101 (2100)	A	E8b



TW1-88 Daily Pumpage
🟩 Precipitation
SW7-08 (Erin Branch of the Credit River)

GOLDER

DATE	December 2021
DESIGN	KS
REVIEW	GP
APPROVED	GP

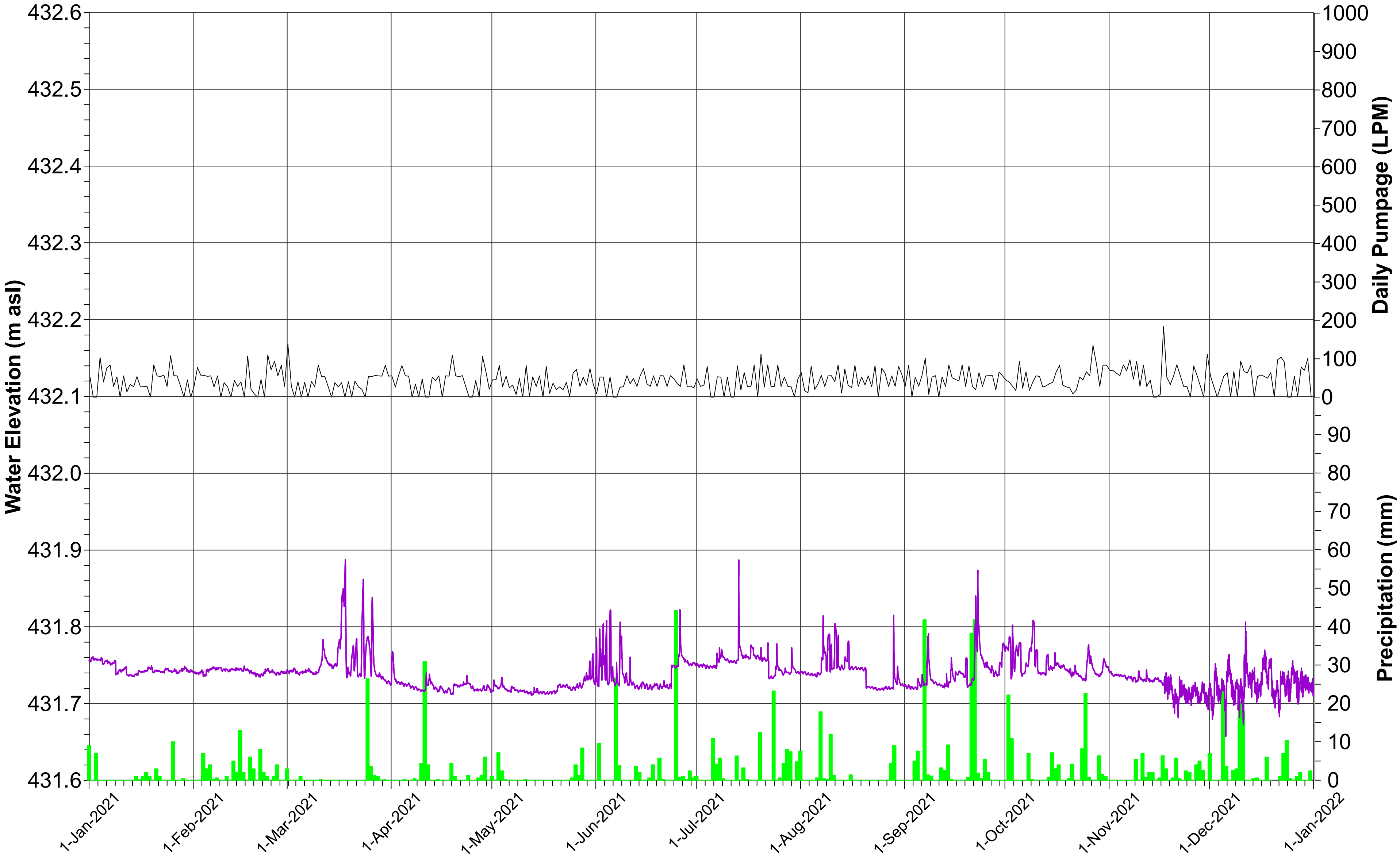
PROJECT

BLUE TRITON BRANDS
Town of Erin, Ontario

TITLE

HYDROGRAPHS FOR SURFACE WATER LEVELS
IN ERIN BRANCH OF CREDIT RIVER
2021 ANNUAL MONITORING REPORT

PROJECT NO.	REV	FIGURE
20449101 (2100)	A	E9a



— TW1-88 Daily Pumpage
🟩 Precipitation
— SW7-08 (Erin Branch of the Credit River)

GOLDER

DATE	December 2021
DESIGN	KS
REVIEW	GP
APPROVED	GP

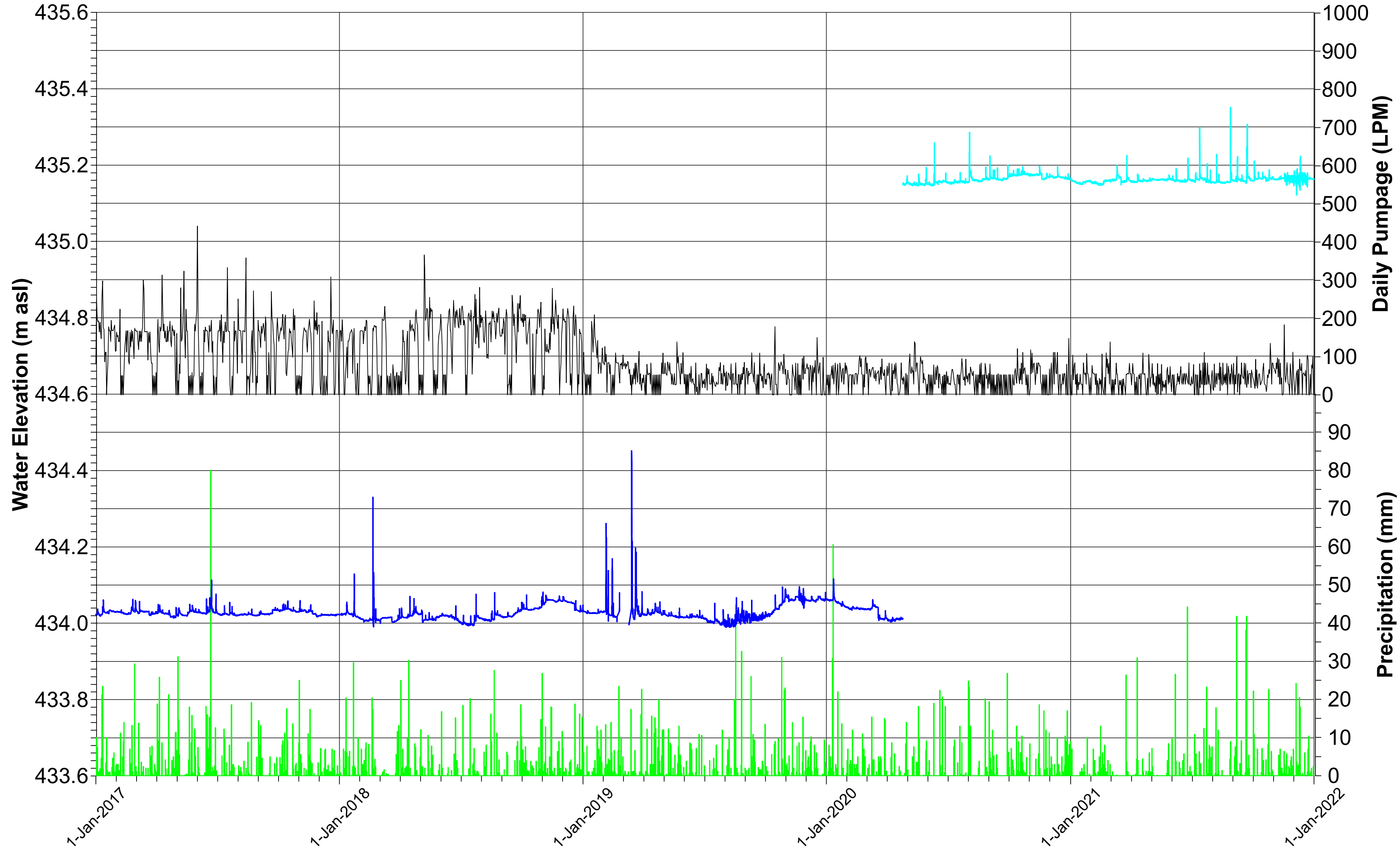
PROJECT

BLUE TRITON BRANDS
Town of Erin, Ontario

TITLE

HYDROGRAPHS FOR SURFACE WATER LEVELS IN ERIN BRANCH OF CREDIT RIVER (2021 DATA)
2021 ANNUAL MONITORING REPORT

PROJECT NO.	REV	FIGURE
20449101 (2100)	A	E9b



GOLDER

DATE	December 2021
DESIGN	KS
REVIEW	GP
APPROVED	GP

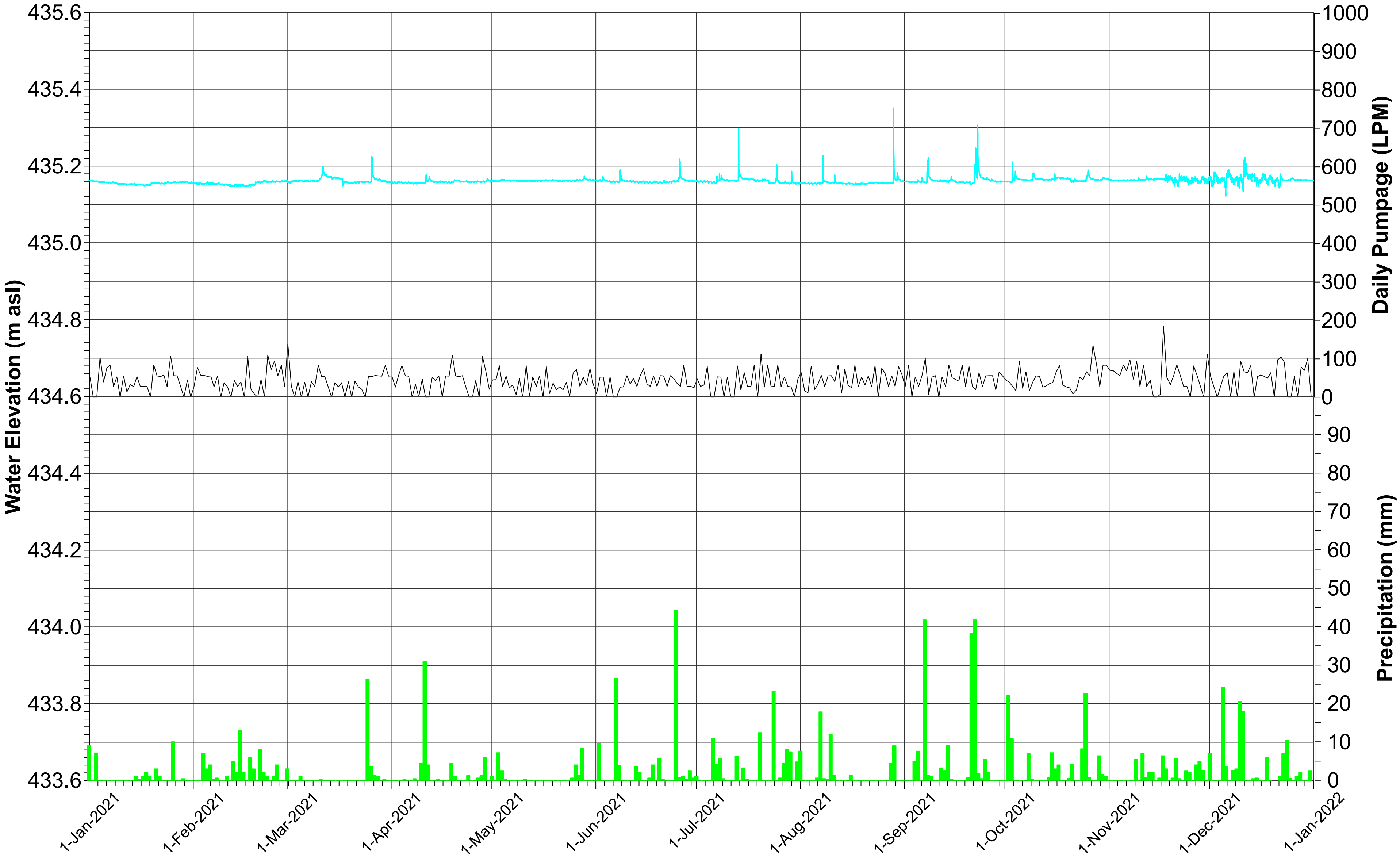
PROJECT

BLUE TRITON BRANDS
Town of Erin, Ontario

TITLE

HYDROGRAPHS FOR SURFACE WATER LEVELS
IN ERIN BRANCH OF CREDIT RIVER
2021 ANNUAL MONITORING REPORT

PROJECT NO.	**REV**	**FIGURE**
20449101 (2100)	A	E10a



— TW1-88 Daily Pumpage
🟩 Precipitation
— SW7B-20

GOLDER

DATE	December 2021
DESIGN	KS
REVIEW	GP
APPROVED	GP

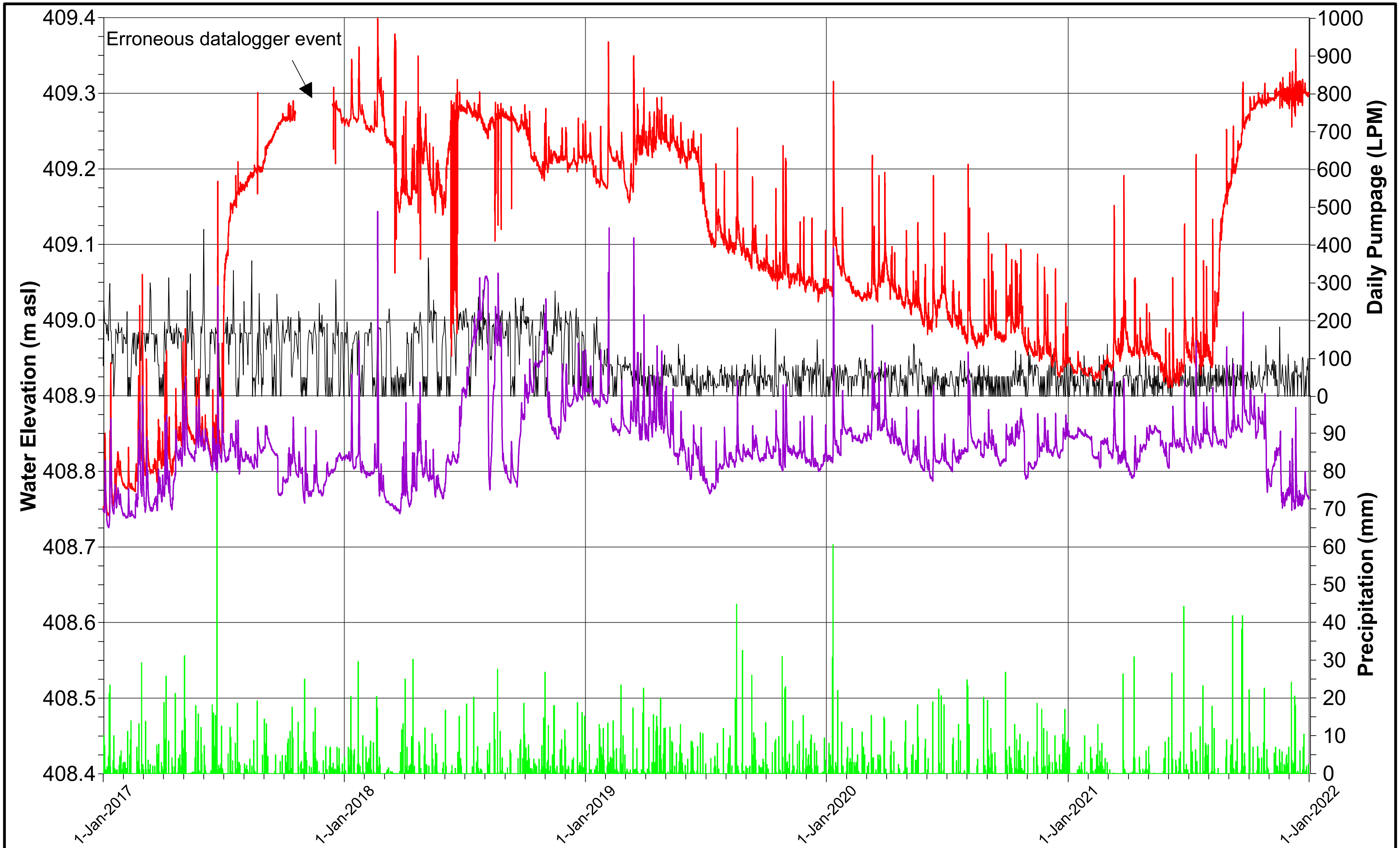
PROJECT

BLUE TRITON BRANDS
Town of Erin, Ontario

TITLE

HYDROGRAPHS FOR SURFACE WATER LEVELS IN ERIN BRANCH OF CREDIT RIVER (2021 DATA)
2021 ANNUAL MONITORING REPORT

PROJECT NO.	REV	FIGURE
20449101 (2100)	A	E10b



—	TW1-88 Daily Pumpage
🟩	Precipitation
—	SW4-08 (Stream into Roman Lake)
—	SW5-08 (Roman Lake)

NOTE:
Beaver activity caused higher stream water levels at SW4-08

GOLDER

DATE	December 2021
DESIGN	KS
REVIEW	GP
APPROVED	GP

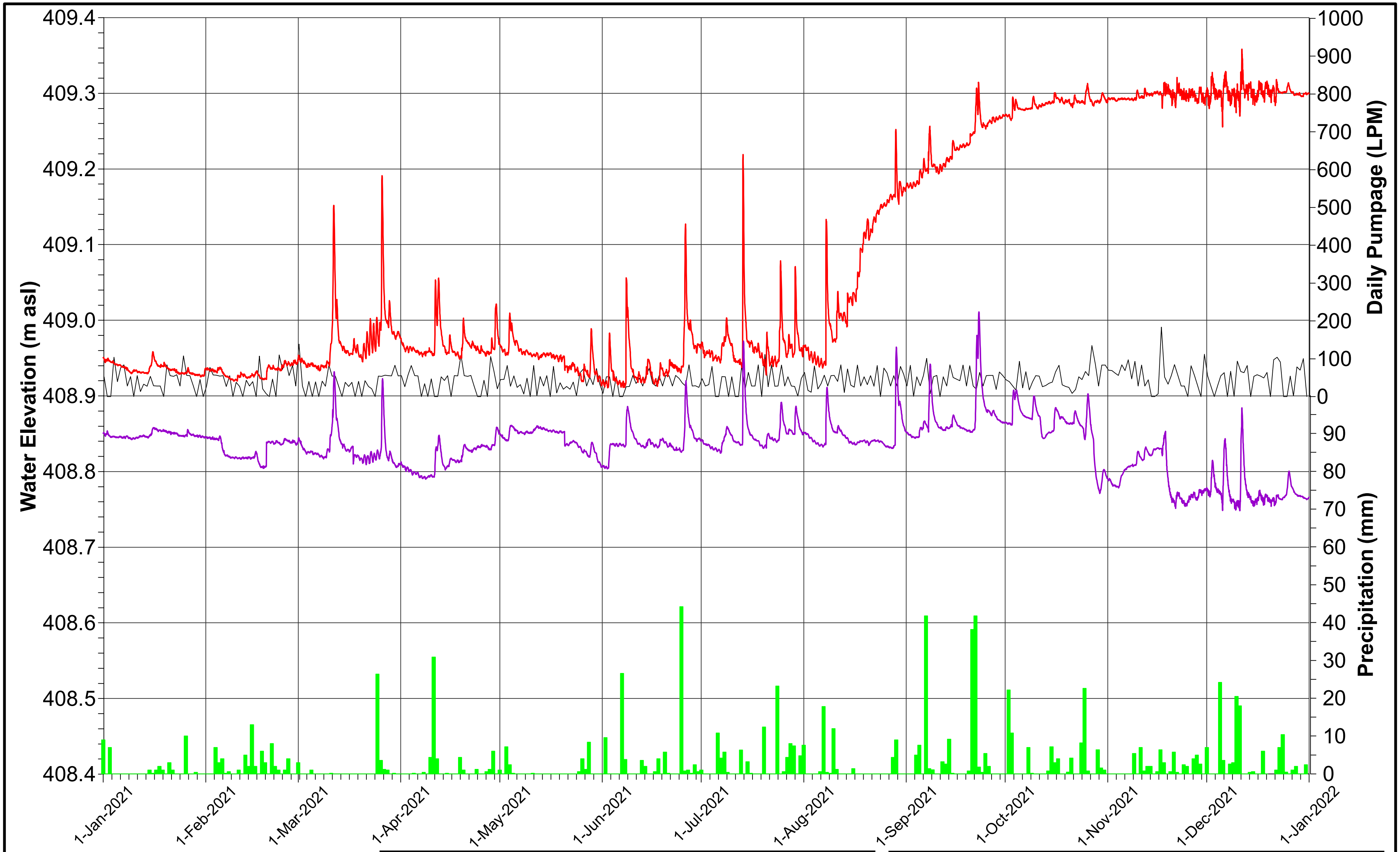
PROJECT

BLUE TRITON BRANDS
Town of Erin, Ontario

TITLE

HYDROGRAPHS FOR SURFACE WATER LEVELS
IN VICINITY OF ROMAN LAKE
2021 ANNUAL MONITORING REPORT

PROJECT NO.	REV	FIGURE
20449101 (2100)	A	E11a



GOLDER

DATE	December 2021
DESIGN	KS
REVIEW	GP
APPROVED	GP

PROJECT

BLUE TRITON BRANDS
Town of Erin, Ontario

TITLE

HYDROGRAPHS FOR SURFACE WATER LEVELS IN VICINITY OF ROMAN LAKE (2021 DATA)
2021 ANNUAL MONITORING REPORT

PROJECT NO.	**REV**	**FIGURE**
20449101 (2100)	A	E11b

TABLE E1

Manual Surface Water Elevations (Mini Piezometers)

2021 Annual Report

DATE	Water Level Elevation (masl)							
	P01A-07	**P01B-07**	**P03A-05**	**P03B-05**	**P06A-07**	**P06B-07**	**P10A-05**	**P10B-05**
18-Jan-21	427.96	427.95	428.47	428.46	428.43	428.46	428.23	428.21
19-Feb-21	427.96	427.96	FROZEN	FROZEN	FROZEN	FROZEN	FROZEN	FROZEN
17-Mar-21	427.97	427.97	428.56	428.55	428.50	428.52	428.22	428.22
19-Apr-21	427.97	427.97	428.53	428.52	428.48	428.51	428.24	428.22
20-May-21	427.95	427.95	428.61	428.60	428.55	428.58	428.23	428.18
23-Jun-21	427.94	427.95	428.47	428.46	428.49	428.53	428.18	428.05
22-Jul-21	427.94	427.93	428.56	428.56	428.51	428.55	428.18	428.15
20-Aug-21	427.96	427.96	428.47	428.47	428.43	428.46	428.18	428.08
20-Sep-21	427.98	427.98	428.49	428.47	428.43	428.47	428.18	428.17
20-Oct-21	428.00	428.00	428.52	428.49	428.48	428.48	428.23	428.24
17-Nov-21	427.99	427.97	428.59	428.58	428.55	428.58	428.24	428.24
22-Dec-21	427.97	427.98	428.59	428.58	428.55	428.57	428.26	FROZEN

TABLE E1

Manual Surface Water Elevations (Mini Piezometers)

2021 Annual Report

DATE	Water Level Elevation (masl)					
	P11A-05	P11B-05	P12A-07	P12B-07	P13A-07	P13B-07
18-Jan-21	427.90	FROZEN	FROZEN	408.94	431.56	431.78
19-Feb-21	427.88	427.83	FROZEN	408.93	431.46	431.76
17-Mar-21	427.89	427.83	409.00	408.96	431.64	431.85
19-Apr-21	427.89	427.84	409.23	408.95	431.54	431.76
20-May-21	427.87	427.82	409.21	408.94	431.49	431.74
23-Jun-21	427.87	427.83	409.19	408.94	431.51	431.74
22-Jul-21	427.88	427.82	409.20	408.95	431.49	431.73
20-Aug-21	427.89	427.84	409.26	409.12	431.48	431.75
20-Sep-21	427.90	427.83	409.31	409.22	431.56	431.76
20-Oct-21	427.93	427.86	409.37	409.28	431.60	431.78
17-Nov-21	427.90	427.86	409.37	409.26	431.60	431.78
22-Dec-21	427.90	427.86	FROZEN	409.28	431.55	431.77

TABLE E2

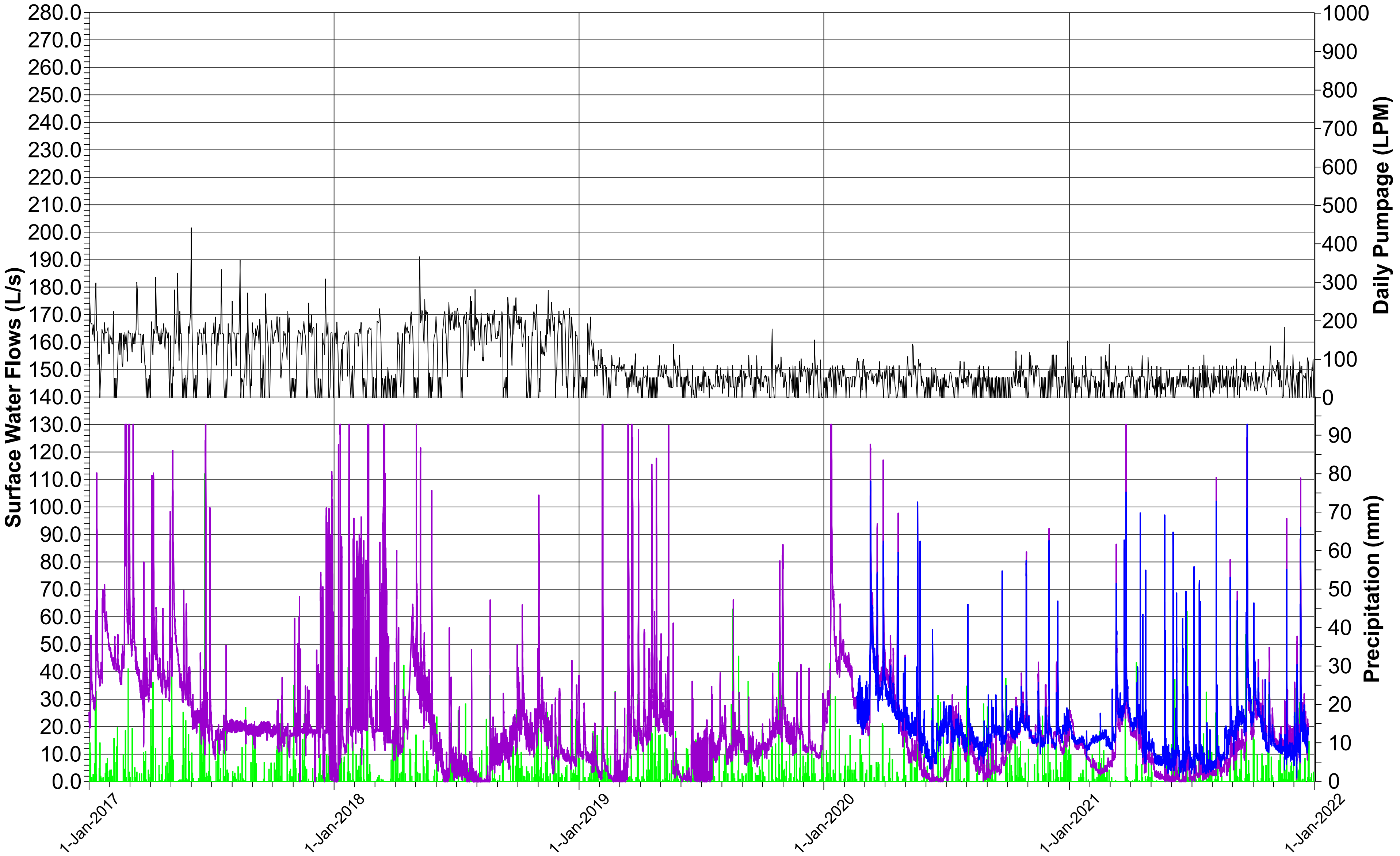
Manual Surface Water Elevations (Surface Water Stations)

2021 Annual Report

DATE	Water Level Elevation (masl)						
	SW1-08	SW3-00 (d/s)	SW3-08	SW4-08	SW5-08	SW7-08	SW7B-20
18-Jan-21	427.82	427.84	428.45	408.94	FROZEN	431.74	435.13
19-Feb-21	427.80	427.83	428.47	408.92	FROZEN	431.74	435.15
17-Mar-21	427.82	427.85	428.53	408.96	FROZEN	431.85	435.16
19-Apr-21	427.81	427.84	428.52	408.95	408.81	431.71	435.15
20-May-21	427.78	427.83	428.60	408.94	408.85	431.72	435.16
23-Jun-21	427.77	427.93	428.54	408.93	408.82	431.72	435.15
22-Jul-21	427.78	427.82	428.57	408.94	408.84	431.75	435.16
20-Aug-21	427.79	427.83	428.47	409.12	408.83	431.74	435.15
20-Sep-21	427.81	427.85	428.47	409.23	408.85	431.72	435.15
20-Oct-21	427.83	427.84	428.50	409.29	408.86	431.74	435.16
17-Nov-21	427.81	427.84	428.59	409.29	408.82	431.73	435.16
22-Dec-21	427.83	427.85	428.58	409.29	408.76	431.72	435.16

APPENDIX F

Surface Water Flow Monitoring



GOLDER

DATE	December 2021
DESIGN	KS
REVIEW	GP
APPROVED	GP

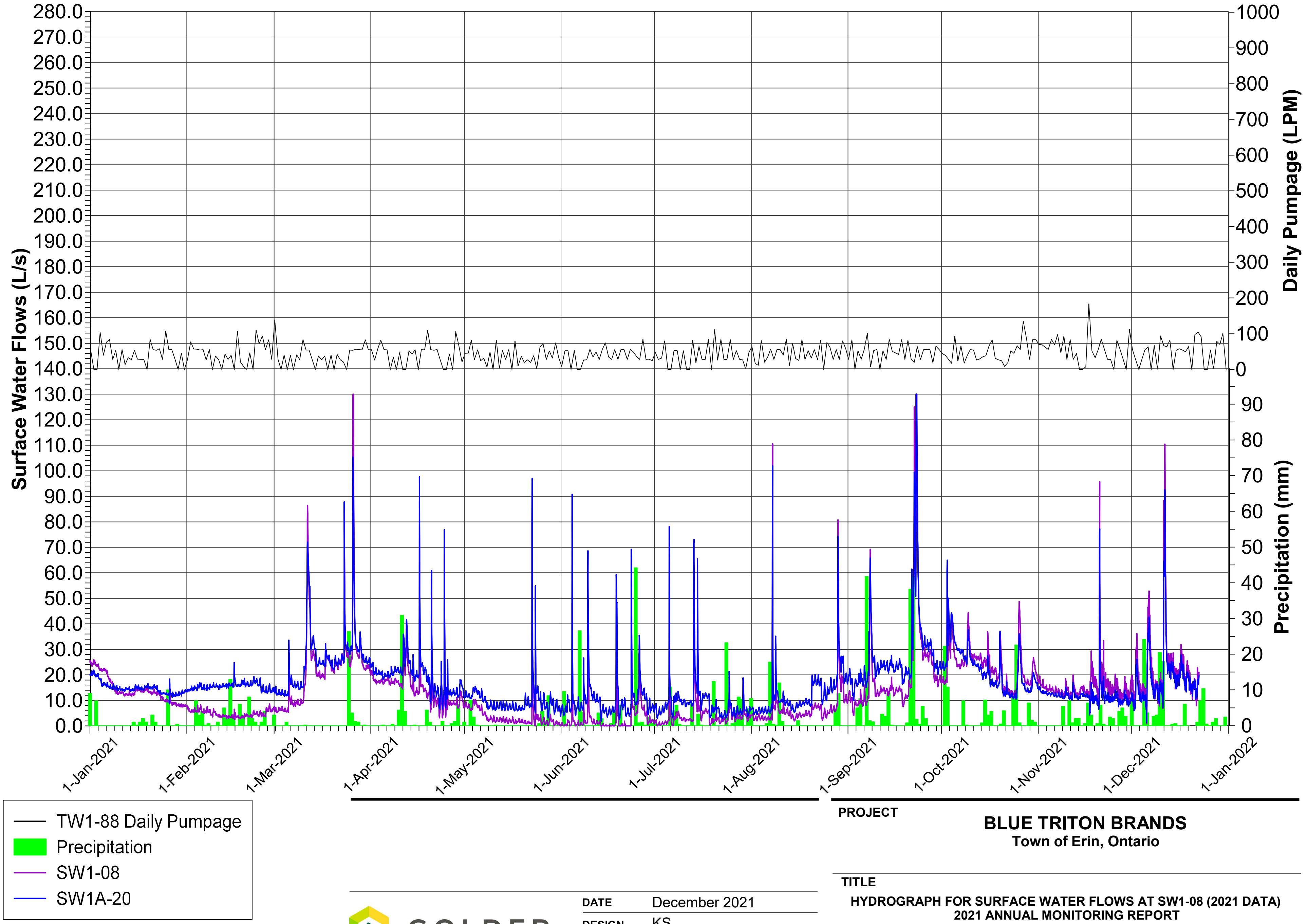
PROJECT

BLUE TRITON BRANDS
Town of Erin, Ontario

TITLE

HYDROGRAPH FOR SURFACE WATER FLOW AT SW1-08
2021 ANNUAL MONITORING REPORT

PROJECT NO.	**REV**	**FIGURE**
20449101 (2000)	A	F1a



PROJECT

BLUE TRITON BRANDS
Town of Erin, Ontario

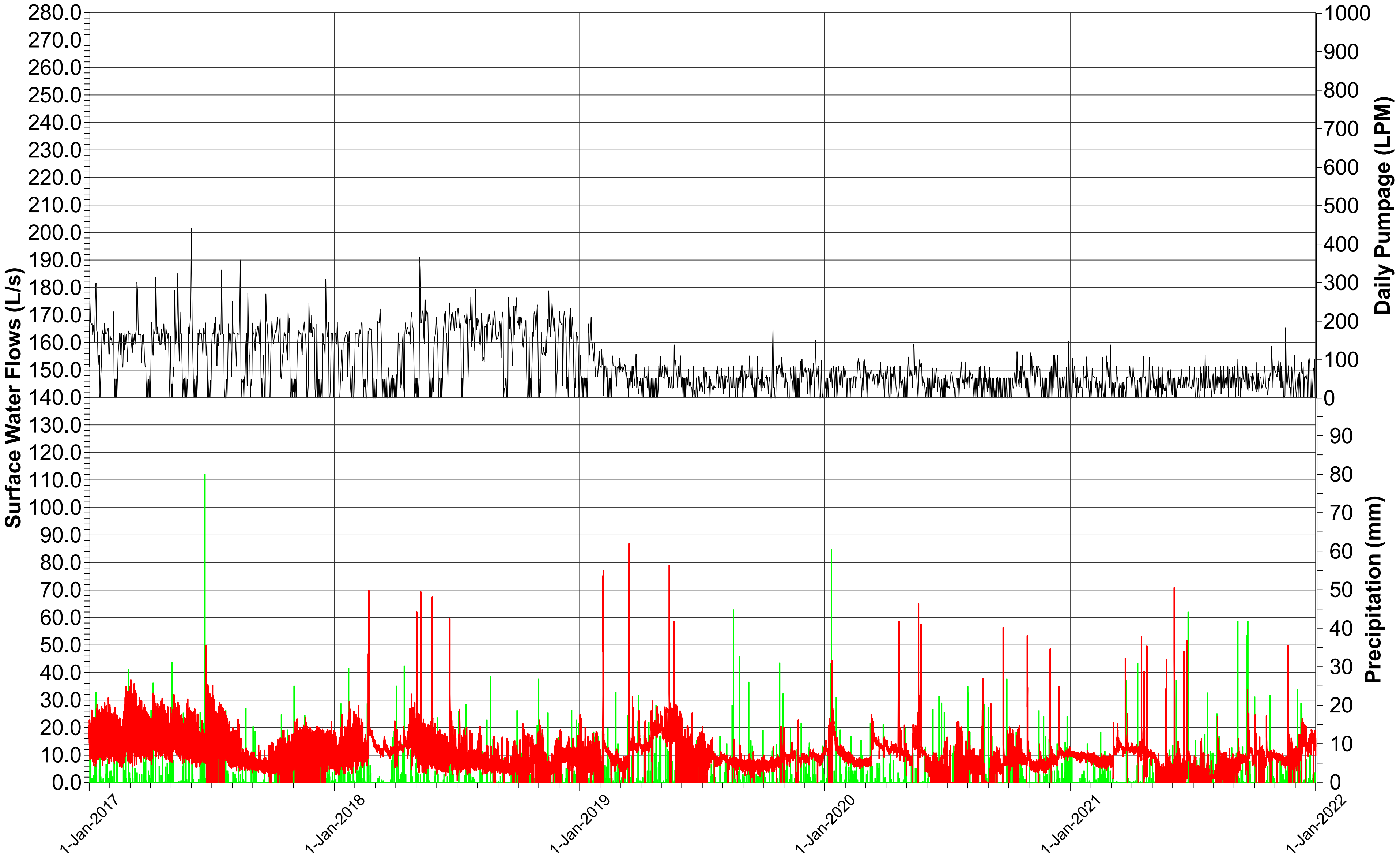
TITLE

HYDROGRAPH FOR SURFACE WATER FLOWS AT SW1-08 (2021 DATA)
2021 ANNUAL MONITORING REPORT

GOLDER

DATE	December 2021
DESIGN	KS
REVIEW	GP
APPROVED	GP

PROJECT NO.	**REV**	**FIGURE**
20449101 (2000)	A	F1b



—	TW1-88 Daily Pumpage
🟩	Precipitation
—	SW3-08 (from on-Site Pond)

GOLDER

DATE December 2020
DESIGN KS
REVIEW GP
APPROVED GP

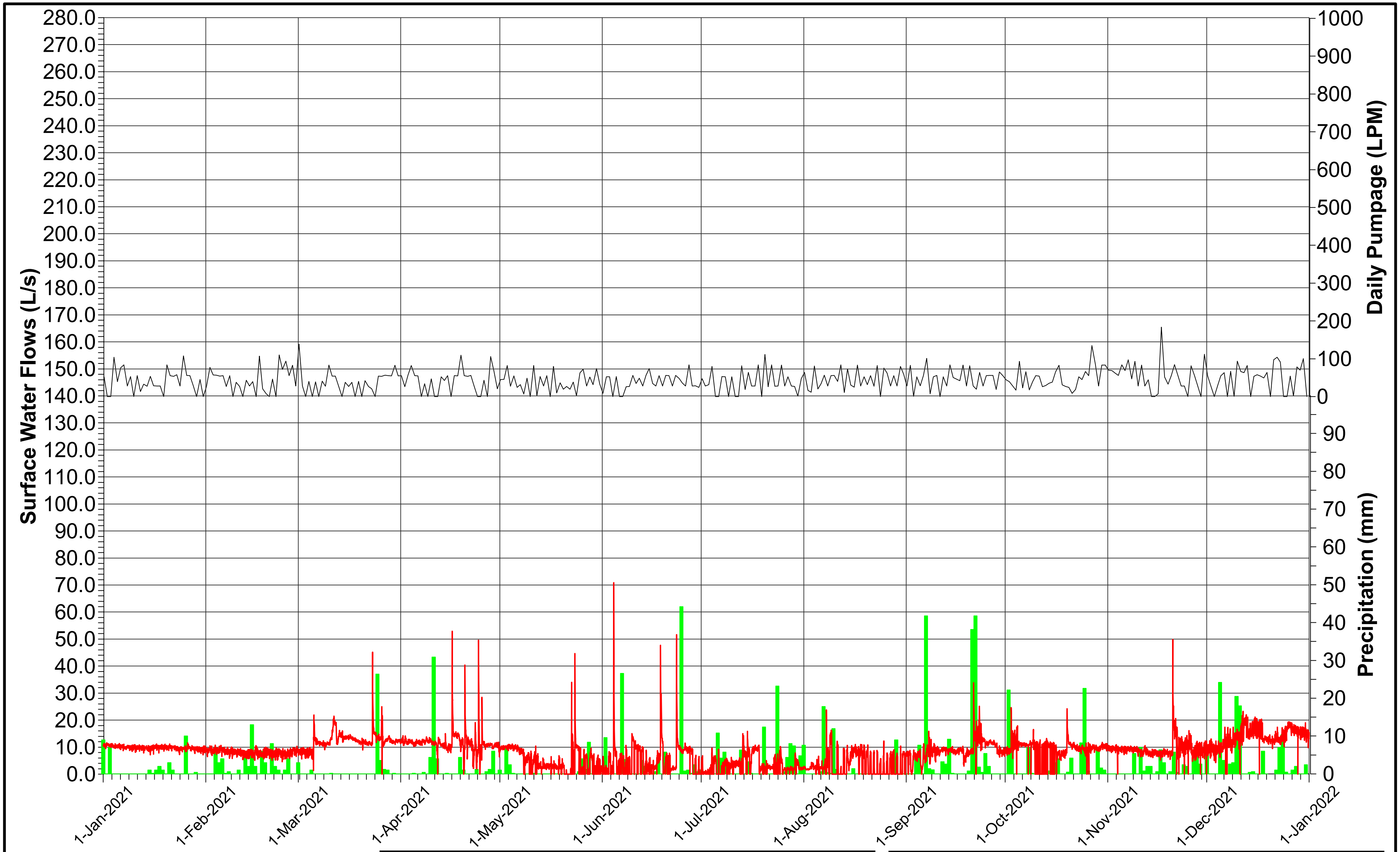
PROJECT

BLUE TRITON BRANDS
Town of Erin, Ontario

TITLE

HYDROGRAPH FOR SURFACE WATER FLOW AT SW3-08
2021 ANNUAL MONITORING REPORT

PROJECT NO. 20449101 (2000)
REV A
FIGURE F2a



GOLDER

DATE December 2021
DESIGN KS
REVIEW GP
APPROVED GP

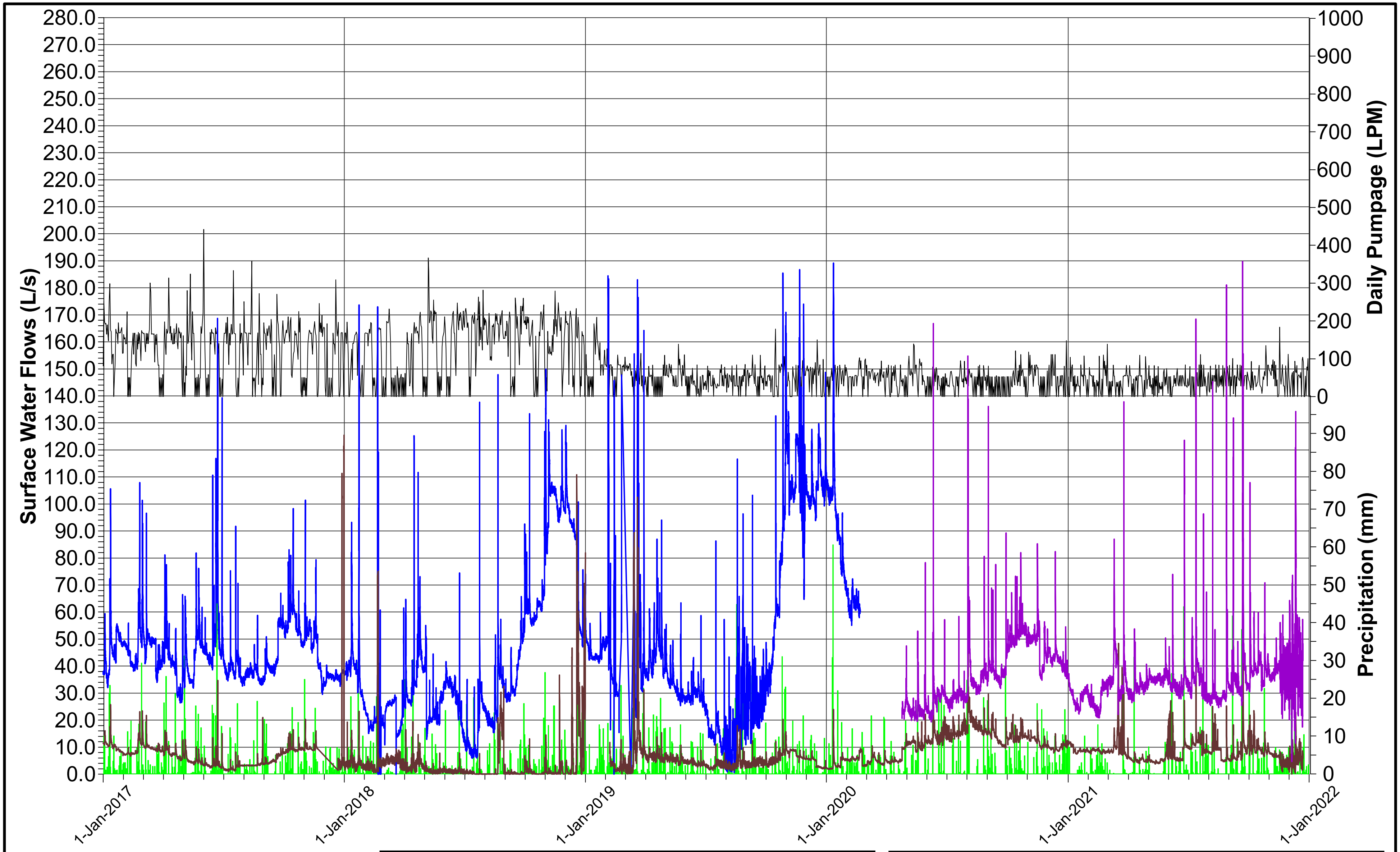
PROJECT

BLUE TRITON BRANDS
Town of Erin, Ontario

TITLE

HYDROGRAPH FOR SURFACE WATER FLOWS AT SW3-08 (2021 DATA)
2021 ANNUAL MONITORING REPORT

PROJECT NO.	**REV**	**FIGURE**
20449101 (2000)	A	F2b



—	TW1-88 Daily Pumpage
🟩	Precipitation
—	SW7-08
—	SW7A-16
—	SW7B-20

Water level measurements recorded during winter months is influenced by frozen conditions. Data is reported with lower confidence.

GOLDER

DATE	December 2021
DESIGN	KS
REVIEW	GP
APPROVED	GP

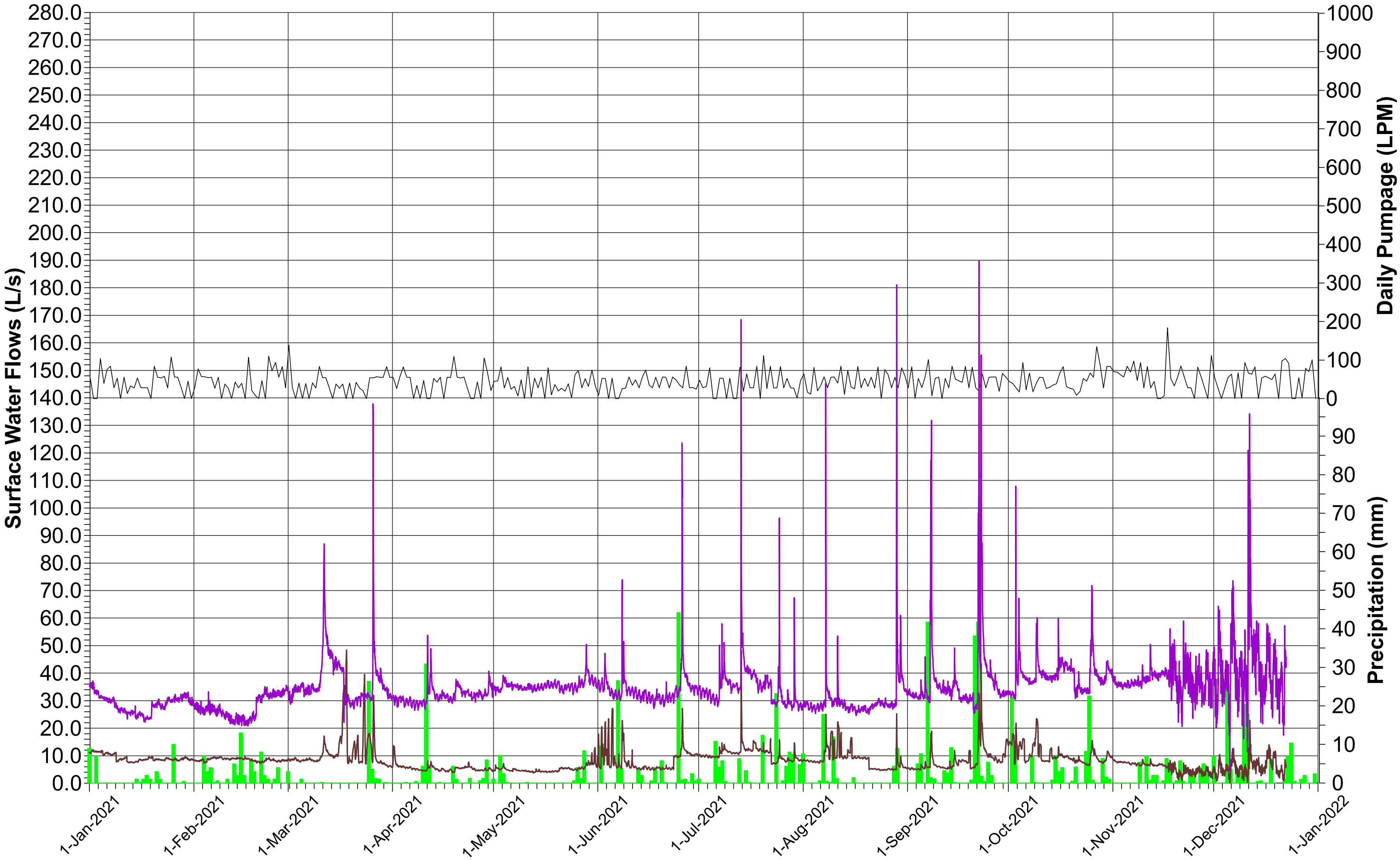
PROJECT

BLUE TRITON BRANDS
Town of Erin, Ontario

TITLE

HYDROGRAPH FOR SURFACE WATER FLOW
AT SW7-08, SW7A-16 AND SW7B-20
2021 ANNUAL MONITORING REPORT

PROJECT NO.	REV	FIGURE
13-1152-0250 (2000)	A	F3a



—	TW1-88 Daily Pumpage
🟩	Precipitation
—	SW7-08
—	SW7B-20

Water level measurements recorded during winter months is influenced by frozen conditions. Data is reported with lower confidence.

GOLDER

DATE	December 2021
DESIGN	KS
REVIEW	GP
APPROVED	GP

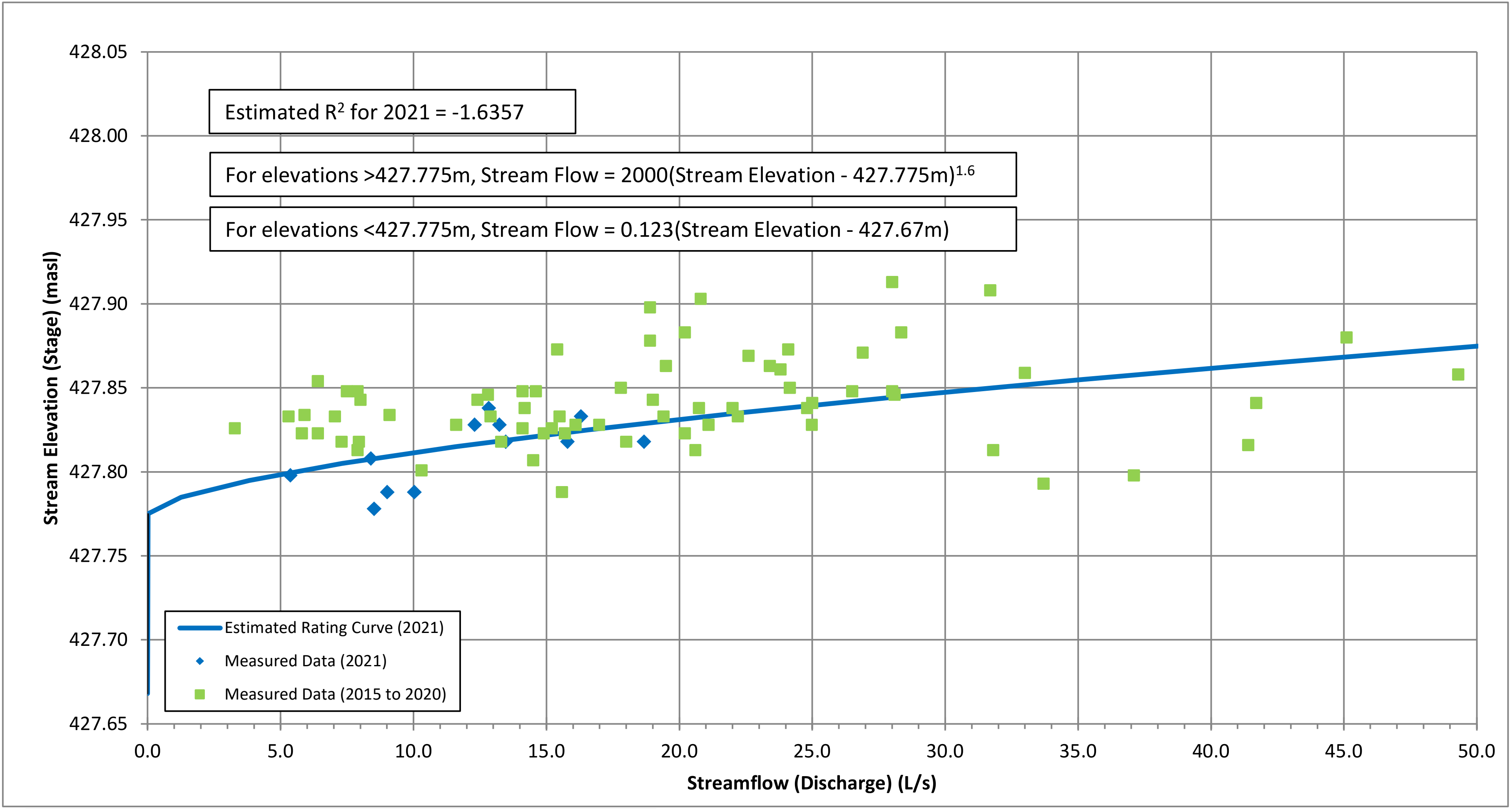
PROJECT

BLUE TRITON BRANDS
Town of Erin, Ontario

TITLE

HYDROGRAPH FOR SURFACE WATER FLOWS AT
SW7-08 and SW7B-20 (2021 DATA)
2021 ANNUAL MONITORING REPORT

PROJECT NO.	**REV**	**FIGURE**
20449101 (2000)	A	F3b



2021 Data Notes:
In 2021, the range of water levels recording during manual flow measurements= 427.838 to 427.788 masl. The full range of water levels recorded in 2021 = ~427.99 to ~427.76 masl.

Figure F4

STAGE-DISCHARGE MEASUREMENTS FOR SW1-08 (2021)
2021 ANNUAL MONITORING REPORT
BLUE TRITON BRANDS
Town of Erin, Ontario

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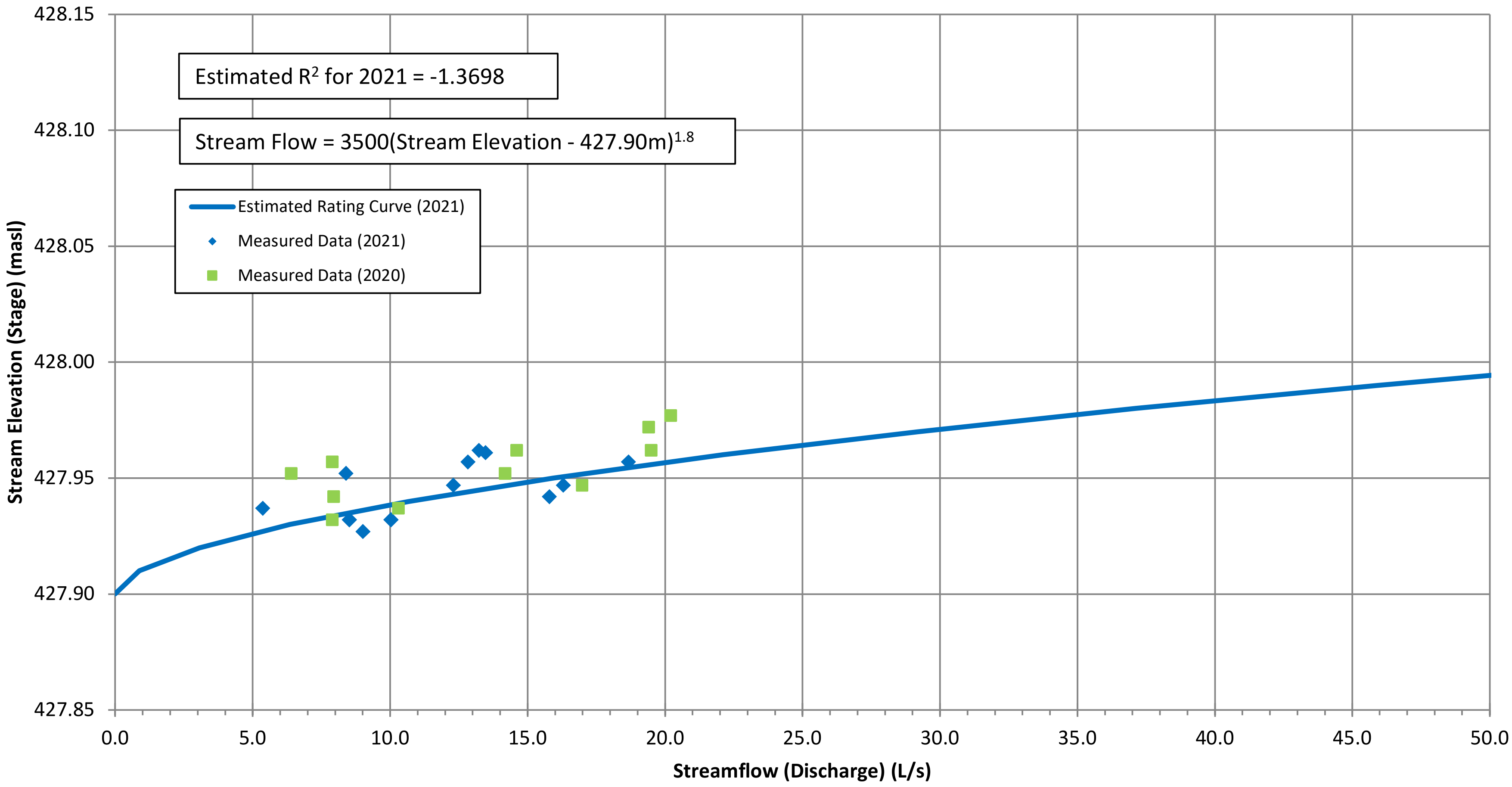

2021 Data Notes:
In 2021, the range of water levels recording during manual flow measurements= 427.96 to 427.93 masl. The full range of water levels recorded in 2021 = ~427.91to ~428.07 masl.

Figure F5

STAGE-DISCHARGE MEASUREMENTS FOR SW1A-20 (2021)
2021 ANNUAL MONITORING REPORT
BLUE TRITON BRANDS
Town of Erin, Ontario

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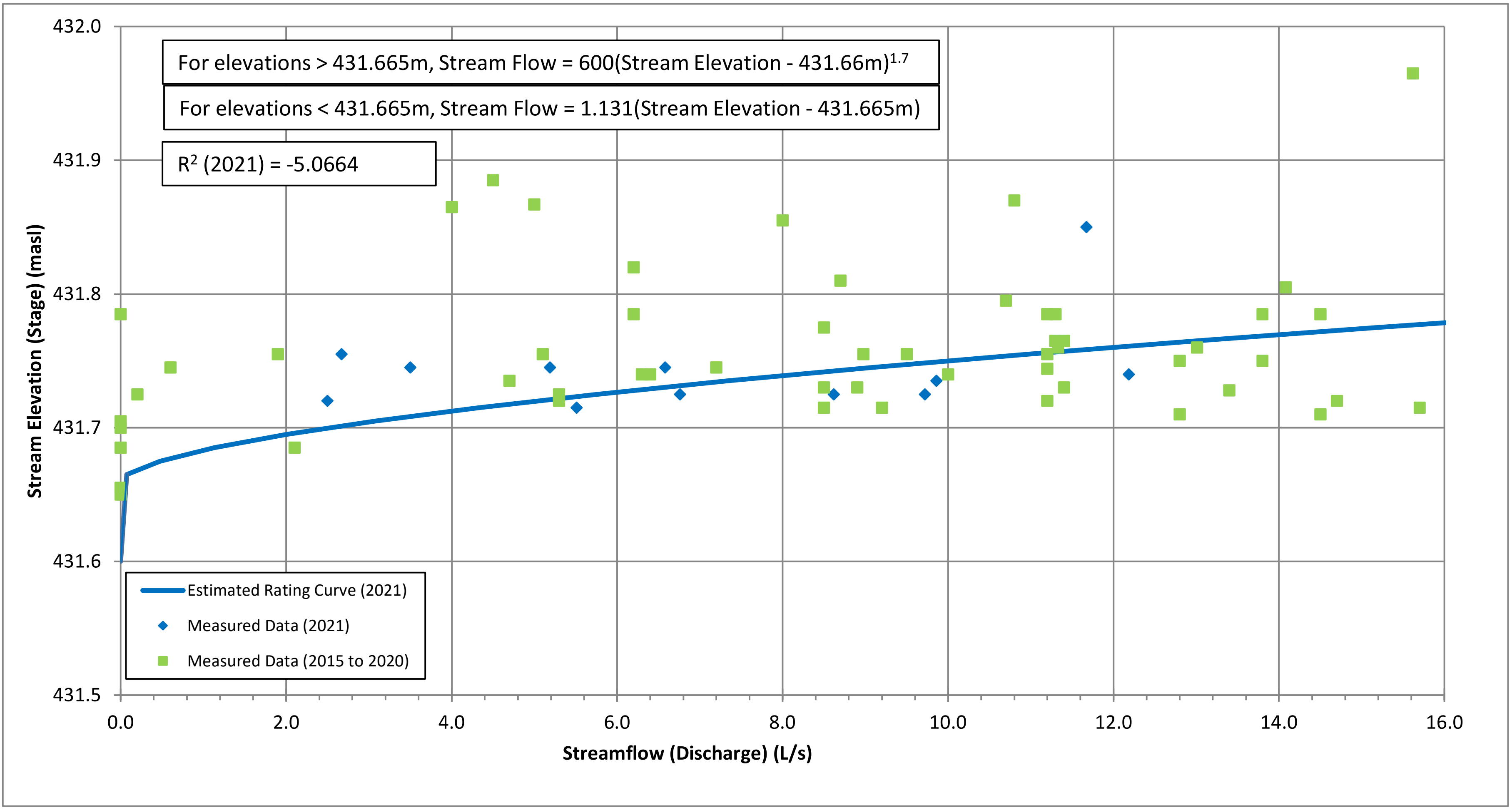

2021 Data Notes:
In 2021, the range of water levels recorded during manual flow measurements= 431.71 to 431.85 masl. The full range of water levels recorded in 2021 = ~431.66 to ~431.89 masl.

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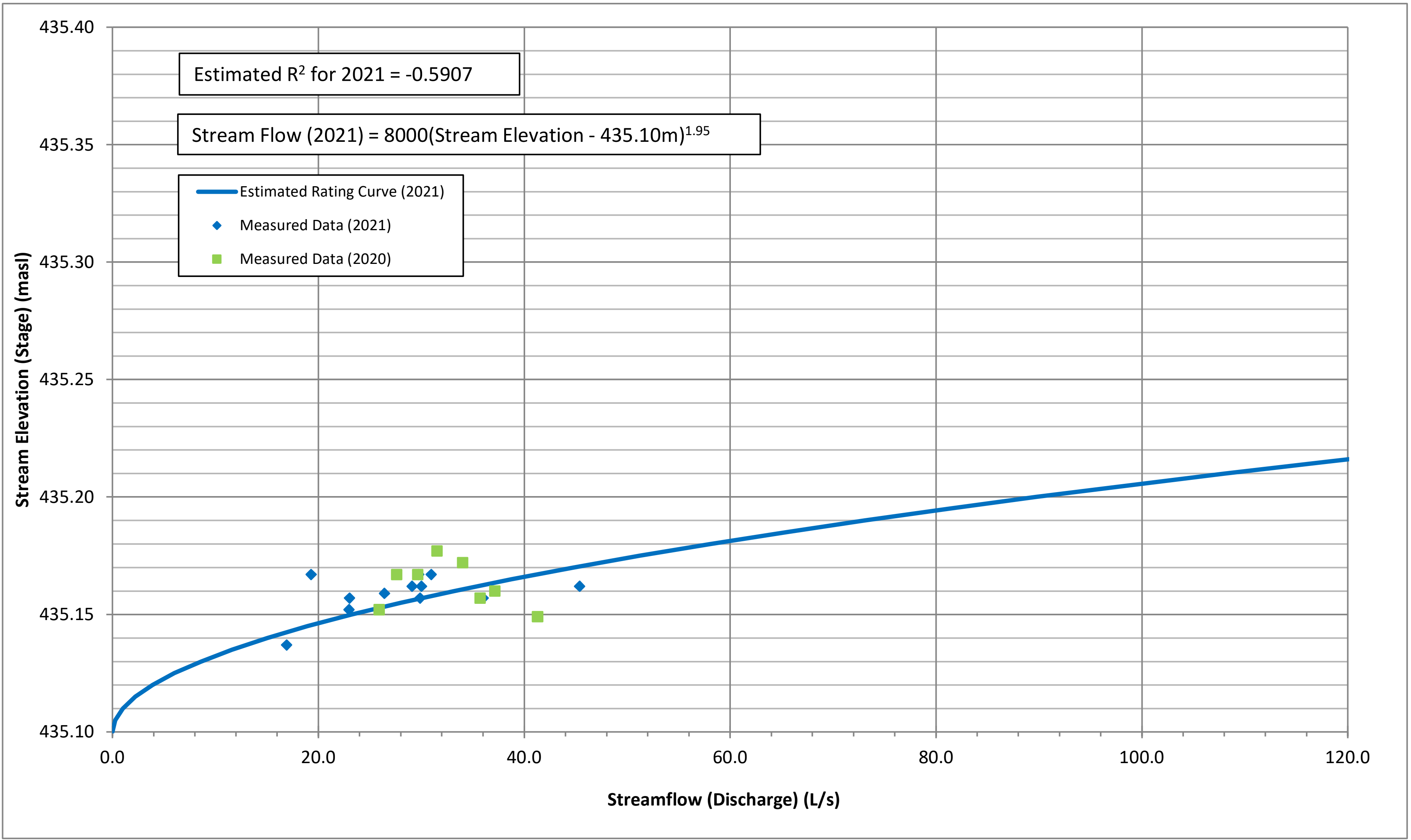
Figure F6

STAGE-DISCHARGE MEASUREMENTS FOR SW7-08 (2021)
2021 ANNUAL MONITORING REPORT
BLUE TRITON BRANDS
Town of Erin, Ontario



2021 Data Notes:
In 2021, the range of water levels recorded during manual flow measurements= 435.167 to 435.137 masl. The full range of water levels recorded in 2021 = ~435.12 to ~435.35 masl.

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Figure F7

STAGE-DISCHARGE MEASUREMENTS FOR SW7B-20 (2021)

2021 ANNUAL MONITORING REPORT

BLUE TRITON BRANDS

Town of Erin, Ontario

TABLE F1

Surface Water Flow

2021 Annual Report

DATE	SW1-08 FLOW (L/sec)	SW3-08 FLOW (L/sec)	SW7-08 FLOW (L/sec)	SW7B-20 FLOW (L/sec)
2021/01/18	12.3	5.5	6.6	16.9
2021/02/19	8.4	3.9	12.2	29.9
2021/03/17	13.2	11.2	11.7	29.8
2021/04/19	18.7	9.2	5.5	36.0
2021/05/20	10.0	29.8	6.8	45.4
2021/06/23	8.5	57.4	2.5	23.0
2021/07/22	9.0	2.2	2.7	29.1
2021/08/20	5.4	9.4	5.2	23.0
2021/09/20	13.5	6.0	8.6	26.4
2021/10/20	12.8	4.8	3.5	19.3
2021/11/17	15.8	3.2	9.9	31.0
2021/12/22	16.3	5.3	9.7	30.0

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