



GOLDER

REPORT

Nestlé Waters Canada Erin Spring Site
2019 Annual Monitoring Report

Submitted to:

Nestlé Waters Canada

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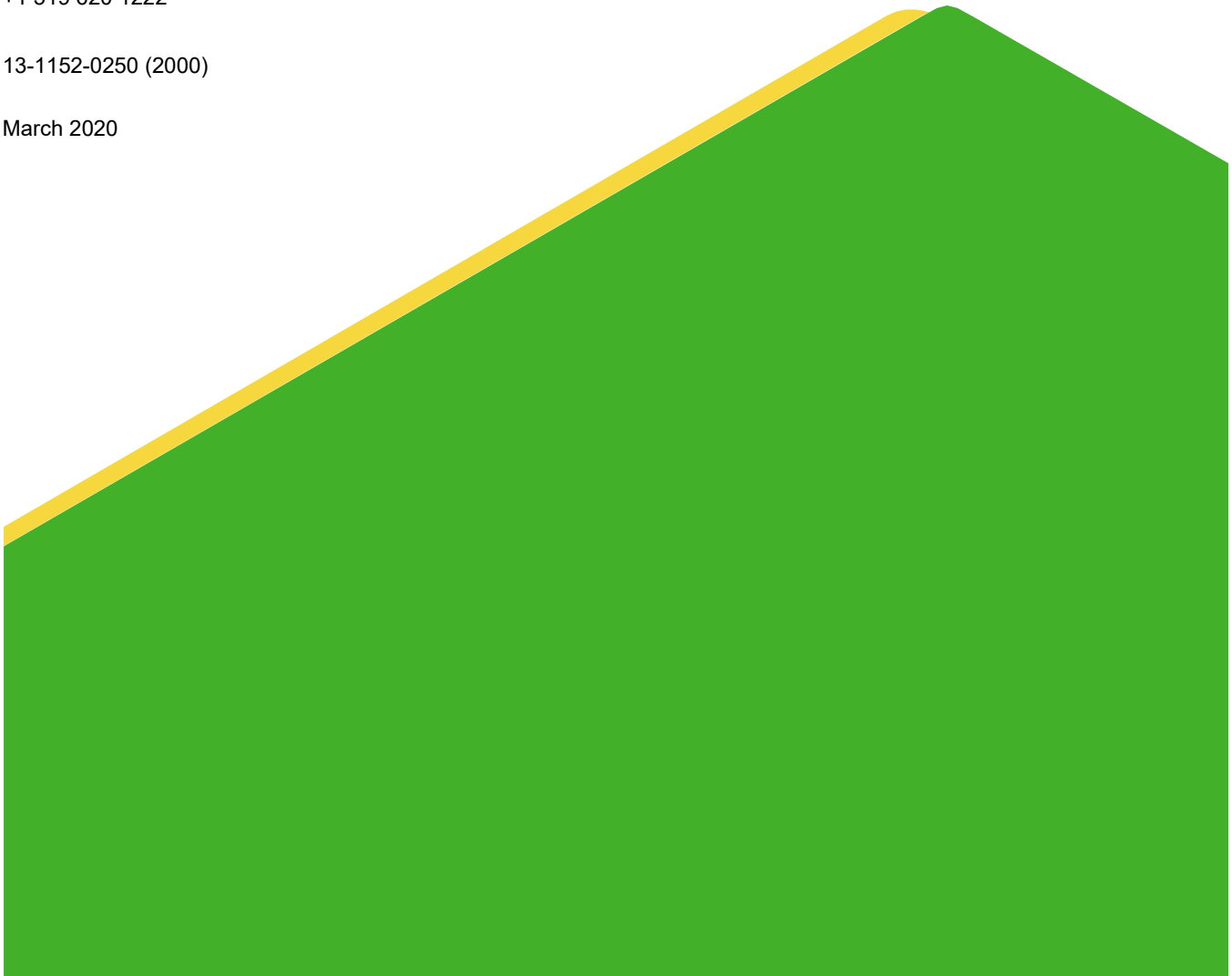
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Key Facts for 2019 Operations at Erin

Key facts for the 2019 operations at Erin include:

- 1) Well TW1-88 continued to operate under the terms of Permit to Take Water 3716-8UZMCU. Nestlé submitted an application for renewal of the permit to the Ministry of the Environment, Conservation and Parks (MECP), formerly the Ministry of the Environment and Climate Change (MOECC), in May 2017, more than 90 days prior to the expiration of the permit on August 31, 2017. In accordance with the Ontario Water Resources Act, Section 34.1 (6), Nestlé has continued to legally operate under the existing permit until a final review and decision is made regarding the renewal of the permit.
- 2) Nestlé has complied with all of the conditions in the existing permit for the Erin well TW1-88.
- 3) Comprehensive annual monitoring reports are prepared for the Erin well (TW1-88) under the conditions of the PTTW that remain in effect.
- 4) No complaints arising from the taking of water authorized under this PTTW were received in 2019.
- 5) The total precipitation in 2019 was about 11% above normal.
- 6) The Grand River Low Water Response Team did not declare a Level 1 Low Water Condition for the Eramosa River Watershed or the entire Grand River Watershed in 2019 and there were no required decreases in water taking.
- 7) 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.
- 8) The daily water takings at TW1-88 ranged from 0 L/day to 319,034 L/day. The average daily water taking was 74,345 L/day. The maximum daily taking corresponded to 29% of the permitted maximum daily taking. The total volume of water taken in 2019 from TW1-88 was 27,135,825 L, approximately 7% of the permitted volume. The “spike rates”, representing maximum rates at which TW1-88 can be pumped briefly, were not used in 2019.
- 9) The monthly water takings in 2019 from TW1-88 ranged from 1,402,040 L to 3,817,889 L, or from 4% to 11% of the permitted taking. The water supply from TW1-88 is considered a supplemental supply to the Aberfoyle TW3-80 water supply.
- 10) 83.4% of the water pumped from TW1-88 was transported by tanker to the Nestlé Waters Canada bottling facility at 101 Brock Road South in Guelph, Ontario. The water was transferred into 500 mL plastic bottles. The remaining 16.6% 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.
- 11) The variations in water levels 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.

- 12) The influence that pumping TW1-88 has on water levels in other wells decreases with distance from TW1-88.
- 13) Water levels measured within the overburden in 2019 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 are not due to pumping TW1-88, but due to natural seasonal changes and recharge. There is no significant interaction between the bedrock and overburden aquifers at the current rate of taking.
- 14) 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. In 2019, some of the highest water levels on record were observed in the on-Site pond and in the wetland in the spring and some of the lowest water levels on record were observed at P1-07 in the summer and fall.
- 15) Long-term surface water levels are stable and pumping at TW1-88 does not influence the water levels in the surface water features. Water levels in the surface water features respond to precipitation and melt events.
- 16) The flows recorded at all stations along surface water features are influenced by precipitation and/or melt events. The flows do not appear to be influenced by pumping at TW1-88.

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APPENDICES

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Permit To Take Water Number 3716-8UZMCU

APPENDIX B

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TW1-88 Water Taking

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1.0 INTRODUCTION

Nestlé Waters Canada (Nestlé) has retained Golder Associates Ltd. (Golder) to conduct the annual monitoring program and report preparation for the Nestlé Erin Springs Site, as required by Permit To Take Water (PTTW) Number 3716-8UZMCU issued by the Ministry of the Environment, Conservation and Parks (MECP), formerly the Ministry of the Environment and Climate Change (MOECC). The PTTW is included in Appendix A. The current PTTW was issued on September 28, 2012. The PTTW renewal application was submitted to the MECP in May 2017. The current PTTW expired on August 31, 2017, and in accordance with the Ontario Water Resources Act, Section 34.1 (6), Nestlé continues to operate TW1-88 under the terms of the existing PTTW until a final review and decision is made regarding the renewal.

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 on-Site. 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, 3.3, 3.4, 3.5	Identifies use, rates, time and total takings allowed.	3.1.1, 4.1, Appendix C
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.	4.3.1
4.4	Notify the Director of monitoring locations that become inaccessible or abandoned and provide a recommendation for replacement.	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 a letter to the Director and Town of Erin when the “spike rates” are used.	4.1
4.8	Submit details of the bottling operations to the Director.	4.1
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

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. 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 presentation as previous reports. Additional reporting (Golder et. al., 2019) has also been prepared separately and submitted to the MECP to satisfy the new hydrogeological study requirements (MECP, 2017) issued since the submission of the application for renewal of the PTTW.

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, physiography, geology and hydrogeology;
- Section 3.0: Summary of 2019 field investigations including a description of field activities conducted in 2019;
- Section 4.0: Monitoring program results including a summary and analysis of the data collected in 2019;
- Section 5.0: Conclusions from the 2019 monitoring program; and
- Section 6.0: Recommendations from the 2019 monitoring program.

1.1 Historical Summary

TW1-88 was constructed in August 1988 for a party other than Nestlé. 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 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 current PTTW also allows for a maximum instantaneous rate of 946 L/min and a daily withdrawal of 1,362,240 L from April 1 to September 30, provided that the average daily taking in any month does not exceed 1,113,000 L.

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 Nestlé 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.

When water withdrawals for bottling began at the property, tankers were originally 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 Nestlé Aberfoyle facility and Delta Beverages. TW1-88 is located in the northern portion of the property and the loading station is situated in the southern portion of the property.

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 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 Nestlé 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 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 creek 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.

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 Putnam (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 consist 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 a downward vertical gradient exists 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. 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 Nestlé supply 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 reflects 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 Nestlé 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 being considered under Water Quantity Protection Plans. The Water Quantity assessment is completed to ensure that future water needs of a community can be met. It identifies existing 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 Nestlé 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 m³/s; the amount represents approximately 12% of the mean annual flow (2.3 m³/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.

3.0 SUMMARY OF 2019 FIELD PROGRAM

This section describes the field activities performed in 2019 associated with PTTW Number 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 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 16 monitors at 10 locations;
- Shallow groundwater levels in 7 piezometer nests with a total of 14 monitors (shallow and deep pair);
- Surface water levels at 6 stations;
- Surface water flow at 3 stations; and
- Water levels at 13 private wells on 9 properties (3 of the 13 are no longer monitored since 2014 due to access restrictions; see Table 4 for more details).

3.1.1 Water Taking

Water taking from TW1-88 in 2019 is 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 November 4, 2019 by Endress+Hauser.

The daily volumes taken from supply well TW1-88 in 2019 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, some homeowners requested that monitoring be discontinued at their well (see Section 3.1.4). During the 2019 monitoring period, none of the wells required as part of the monitoring program became inaccessible. Previous wells that have been decommissioned or are no longer part of the monitoring program are shown on Figure 3.4. All of the existing monitoring locations and the decommissioned or unused wells are shown on Figure 3.5.

The monitoring locations for the 2019 groundwater monitoring program are shown on Figures 3.1 and 3.2 for the bedrock and overburden wells, respectively, and are summarized as follows:

Overburden Monitors

- TW1/99, MW2, MW3A/B, MW5B, MW6B, MW11B-08, MW12B-08, D2B, D26C, D36A, D27, D7B

Bedrock Monitors

- TW1-88, MW5A, MW6A, MW11A-08, MW12A-08, D2A, D3, D36B, D19, D24A, D24B, D26A, D26B, D8, D15, D32

Water levels are measured at all locations during the third week of each month. Where required by the PTTW, dataloggers are used to record water levels at 60-minute intervals and downloaded monthly. The groundwater levels measured in 2019 are presented in Appendix D.

3.1.2.1 Missing Data

The following table provides a list and description of missing data from the 2019 monitoring. There are instances when manual water levels can not be measured due to wells being buried under the snow or when water within the wells are frozen.

Table 2: Missing Groundwater Data from the 2019 Monitoring

Monitoring Location	Missing Data	Comment
D26A	Manual water level in February, March and July	Buried under snow in February and March and water level tube blocked in July.
D26B	Manual water level in January, February and March	Frozen (water level taken from transducer data)
D27	Manual water level in December	Frozen
D32	Manual water level in February and March	Frozen

3.1.3 Surface Water Monitoring Program

The monitoring locations for the 2019 surface water monitoring program are shown on Figure 3.3 and are summarized as follows:

Surface Water Levels

- ST03-05, SW1, SW3, SW4, SW5, SW7

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 2019 are presented in Appendix E.

A new station (SW7B) 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). This station will eventually replace SW7, which is located in an area with changing stream conditions and flooding.

Stream Flows

- SW1, SW3, SW7 and SW7B

Stream flow was measured at four locations during the third week of each month. The streamflow monitoring at SW7B is not mandated under the terms of the PTTW. Stream flow velocities were measured using a Valeport electromagnetic flow meter and the surface water flows were calculated using the cross-sectional area-velocity method. The surface water flow measurements for 2019 are presented in Appendix F.

In addition, the monthly surface water elevations (“stage”) and stream flow measurements (“discharge”) collected in 2019 were used to update the stage-discharge relationships (rating curves) at SW1, SW7 and SW7B. 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 as flow at SW3 is measured on a continuous basis using a Stingray Flow Meter.

Mini-Piezometers

- P1A/B-07, P3A/B-05, P6A/B-07, P10A/B-05, P11A/B-05, P12A/B-07, P13A/B-07

In 2019, 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 2019 are presented in Appendix E.

3.1.3.1 Missing Data

The following table provides descriptions of missing data from the 2019 monitoring, including an indication of when 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. Transducer dataloggers occasionally stop working and need to be replaced. When a transducer stops working, it is replaced with a new transducer. Transducer data can be missing for up to one month depending on when the failure occurs between monitoring events. The issues were temporary and have been resolved.

Table 3: Missing Surface Water Data from the 2019 Monitoring

Monitoring Location	Missing Data	Comment
P01B-07	Transducer water levels between the February and March monitoring events	Transducer issue (failure)
P03A/B-05	Not missing but frozen	Frozen in January
P06A/B-07	Not missing but frozen	Frozen in January and February (B only)
P10A/B-05	Not missing but frozen	Frozen in January, February and December
P11A/B-05	Not missing but frozen	Frozen in January and February (A only)
P11B-05	Transducer water levels between the March and April monitoring events	Transducer issue (erroneous data)
P12A/B-07	Not missing but frozen	Frozen in January and December (A only)
P13A/B-07	Not missing but frozen	Frozen in January (B only)

Monitoring Location	Missing Data	Comment
SW1	Not missing but frozen	Frozen in January
SW3	Not missing but frozen	Frozen in January and December
SW4	Not missing but frozen	Frozen in January
SW5	Not missing but frozen	Frozen in January, February, March and December
SW7	Not missing but frozen	Frozen in January
SW7	Transducer levels in January and beginning of February	Transducer issue (frozen)

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

3.2 Surveying

No surveying needed to be conducted in 2019.

3.3 Precipitation

A record of precipitation in 2019 was compiled from the Fergus Shand Dam meteorological station with missing data filled in from the Fergus MOE meteorological station. 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 from the Fergus Shand Dam Station is 945.7 mm and 901.5 mm at the Orangeville Station. The total precipitation measured in 2019 was 1053.4 mm, which is approximately 11% above the average. In the past four years (2016 – 2019), total precipitation has been average or above-average. Annual precipitation is also shown graphically on Figure 3.6 along with the 30-year average. The precipitation record is included to evaluate if there is a response in water levels that correlates to changes in precipitation.

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
Average (1981-2010)	901.5 (Orangeville), 945.7 (Fergus Shand Dam)	

The monthly precipitation for 2019 is presented in the following table. Above average precipitation was recorded in the first four months of 2019 followed by a mix of both above and below average precipitation for the remainder of the year.

Table 6: Monthly Precipitation in 2019

Month	Precipitation (mm)	Average (mm)	% Difference from Average
January	82.2	67.9	21.1
February	101.6	55.9	81.8
March	76.6	59.6	28.5
April	125.8	74.1	69.8
May	86.6	86.9	-0.3
June	61.1	83.8	-27.1
July	36.0	89.2	-59.6
August	127.2	96.6	31.7
September	75.9	93.1	-18.5
October	135.5	77.2	75.5
November	69.7	93.0	-25.1
December	75.2	68.6	9.6

4.0 MONITORING PROGRAM RESULTS

4.1 Water Taking for TW1-88

Water taking at the Nestlé Erin Springs Site in 2019 continues to be governed by 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/day	365

Condition 3.3 of the PTTW indicates that the instantaneous rate and amount of taking may increase up to a maximum of 946 L/min and 1,362,240 L/day (“spike rate”) in each month between April 1 and September 30; however, the average daily taking in any month between April 1 and September 30 shall not exceed 1,113,000 L/day.

The daily water takings for 2019 are tabulated in Table C1 in Appendix C. The daily water takings at TW1-88 ranged from 0 L/day to 319,034 L/day or 29% of the permitted taking and was less than the daily amount allowed on the PTTW. The average daily water taking was 74,345 L/day. The “spike rates” were not used in 2019.

The total volume of water taken in 2019 from TW1-88 was 27,135,825 L. The total volume of water taken each year from 2000 to 2019 is presented on Figure 4.1. In 2019, the total volume taken accounted for approximately 7% of the permitted volume. This is the lowest volume taken since pumping began in 2000. Since 2000, the groundwater taking has ranged from approximately 7% to 70% of the permitted taking.

The monthly water takings in 2019 from TW1-88 ranged from 1,402,040 L or 4% of the permitted taking in June to 3,817,889 L or 11% of the permitted taking in January. The monthly water takings for the past five years are presented on Figure 4.2. In 2019, the monthly water takings generally decreased during the first part of the year, reaching a low in June, and remained similar during the remainder of the year.

During 2019, 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 Grand River Low Water Response Team did not declare a Level 1 Low Water Condition for the Eramosa River Watershed or the entire Grand River Watershed in 2019 and there were no required decreases in water taking.

Condition 4.8 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 2019 was distributed as follows:

- 22,626,172 L (or 83.4 percent) was transported by tanker to the Nestlé Waters Canada bottling facility at 101 Brock Road South in Guelph, Ontario. The water was transferred into 500 mL plastic bottles.
- The remaining 4,509,653 L (or 16.6 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 4.9, 5.1 and 5.2, Nestlé has indicated that no well interference complaints arising from the taking of water authorized under this PTTW were received in 2019.

4.2 Groundwater Monitoring Program

The groundwater levels measured manually in 2019 at the monitoring wells are tabulated in Table D1 in Appendix D. Hydrographs with 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 Orangeville (prior to 2016) and Shand Dam (2016 – 2018) meteorological stations.

4.2.1 TW1-88

Water levels and average daily pumping rates for TW1-88, along with daily precipitation, from 2015 through 2019 are shown on Figure D1.

The estimated non-pumping water levels (partially recovered conditions following temporary cessation of pumping) observed in 2019 were generally between 422.8 masl to 423.5 masl. It should be noted that non-

pumping water levels do not represent “true” 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 2019, water levels in TW1-88 increased approximately 0.5 m from the beginning of the year to May, declined approximately 0.7 m from May through July, remained relatively constant to the end of the year. Overall, the water levels have been similar over the past five-year period. The seasonal trend has also been similar over the same period.

During 2019, water levels were generally between 417 masl and 419 masl under pumping conditions (equivalent to a drawdown of 5 m to 7 m based from a static water level of 424 masl).

The 2019 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 (423.5 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 D11 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 2019 are similar to those measured over the past five years. There is no long-term increasing or decreasing trend in the water levels.
- 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 2019, the water levels fluctuated approximately 0.6 m in D15 and approximately 0.5 m MW12A-08. The water levels generally increased until May and then decreased until August/September. The water levels in MW12A-08 were relatively constant for the remainder of the year and the water levels in D15 continued to decline for the remainder of the year (see Figure D2). The decline in water levels at D15 at the end of the year may be due to pumping in Hillsburgh. There is no long-term increasing or decreasing trend in the water levels.
- In 2019, the water levels in the bedrock aquifer generally increased in the spring and then decreased through the summer and were relatively constant for the remainder of the year. The exception to this is at D15 and D8, which are both located northeast of TW1-88 and closer to Hillsburgh.
- 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 2019, the high-water

levels (partially recovered condition following stoppages in pumping) ranged from approximately 423.5 masl to 424.1 masl (see Figure D3). The difference between the high and low water levels (influence of pumping in the aquifer) at MW5A-05 was approximately 3.4 m in 2019. The water levels fluctuate but there is no long-term increasing or decreasing trend.

- The influence of pumping TW1-88 is also evident at monitoring well MW6A-05 and private wells D3 and historically at 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 2019 (see Figure D4). At D3, located approximately 220 m northwest of TW1-88, the water levels respond to pumping at both TW1-88 and D3. The well (D3) appears to be 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 4 m (see Figure D6). During the other months, the difference between the high and low water level was approximately 2 m. The water levels in these wells are stable.
- 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 did not show any response to pumping. The lack of 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 D11 and D7, 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/fall.
- 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 highest monthly pumping volume during the summer occurred in the month of September, with below-average precipitation occurring in June, July and September. To review the groundwater flow patterns under the highest pumping conditions and below normal precipitation during the summer, a potentiometric surface of the bedrock aquifer was prepared (Figure 4.3) based on the water levels measured during the monthly monitoring event (September 16, 2019). A review of the potentiometric surface on September 16, 2019, 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 D12 through D16 in Appendix D. A review of the hydrographs completed in the overburden indicates the following:

- Water levels measured within the overburden in 2019 are within the range measured over the past five years.
- Water levels in the overburden show similar trends, with increasing water levels through the spring followed by decreasing water levels through the summer and relatively stable water levels in the fall. The exception to this trend is at well D7B (Figure D15), 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 time for recharge to the aquifer to occur, 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.
- Water levels fluctuate more in the southern part of the Site compared to the northern part of the Site. In 2019, water levels in the wells completed in the northern part of the study area fluctuated by approximately 0.7 m or less, whereas wells completed in the southern part of the study area fluctuated by approximately 0.4 m to 4.1 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.
- 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 D17 through D20 in Appendix D. 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 groundwater flow is downwards. 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. There is also some influence on the gradient in response to pumping 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.
- 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.
- In 2019, vertical gradients at the two wells closest to TW1-88 range from approximately 0.4 m/m to 0.67 m/m at MW5-05 and approximately 0.4 m/m to 0.43 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 0.27 m/m at MW12-08. The increase in the positive vertical gradient (downward flow) at MW12-08 is due to the spring recharge to the overburden groundwater system, increasing water levels in the overburden and subsequently declining into the summer months.
- There have been no systematic changes in the vertical gradients through time.

4.2.4.2 In Shallow Overburden

Vertical gradients in the shallow overburden at MW3-00 are shown on Figure D21 in Appendix D. During most of 2019 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 2019 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 Orangeville (prior to 2016) and Shand Dam (2016 – 2018) meteorological stations.

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 (2015 to 2019) and the “b” figures including data only for 2019. The graphs also include the average daily pumpage at TW1-88, precipitation as recorded at the Orangeville and Shand Dam stations 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 2019 are within the ranges measured over the past five years with the following exceptions. Some of the highest water levels were observed in the on-Site pond at P3-05 and P6-07 and in the wetland at P10-05 in the spring and some of the lowest water levels were observed at P1-07 in the summer and fall.
- 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.
- The vertical gradients in 2019 are similar to those observed over the past five years. Any slight reversals in gradients are not related to pumping at TW1-88. This is observed in the fact that there has been no change in gradient when there were changes in overall pumping in mid-2014 and the beginning of 2019 (i.e., vertical hydraulic gradients were not influenced by the lower daily pumping).
- Water level fluctuations and vertical gradients in the mini-piezometers are summarized as follows for 2019:
 - P3A/B-05 (east side of On-Site pond) – water levels in 2019 fluctuated less than 0.3 m (similar to water levels in the pond). The water levels were stable through the winter and then rose in the spring and declined into the summer and were stable through the fall. There was generally no gradient, or weak negative and positive gradients at the site in 2019. The positive gradient (downward flow) occurred during the spring while the negative gradient occurred during the summer and winter. Changes in water levels are sometimes due to blockages and removal of debris from the outlet of the pond.

- P6A/B-07 (west side of On-Site pond) – water levels in 2019 fluctuated less than 0.3 m (similar to water levels in the pond). The water levels were stable through the winter and then rose in the spring and then declined into the summer and were stable through the fall. Over the past five years a weak positive gradient (downward flow) exists that has occasionally reversed to a weak negative gradient (upward flow). In 2019, with the exception of the winter, the gradient was positive. Changes in water levels are sometimes due to blockages and removal of debris from the outlet of the pond.
- P1A/B-07 (stream channel downstream of On-Site pond) – water levels in 2019 fluctuated approximately 0.1 m with the exception of two short-term increases in February and March related to precipitation and/or melt events. The water levels in the stream show less fluctuation than the water levels in the pond. A weak negative gradient (upward flow) was observed in 2019. A reversal in gradient is occasionally observed in the historical records.
- P11A/B-05 (further downstream from P1-07 at 6th Line) – water levels in 2019 fluctuated approximately 0.1 m not including some short term increases related to precipitation and/or melt events. The water levels in the stream show less fluctuation than the water levels in the pond. A weak negative gradient (upward flow) was observed with the occasional positive gradient spikes during some precipitation events and during a short period in June.
- P10A/B-05 (upgradient side of the wetland pond) – water levels fluctuated approximately 0.6 m in 2019. 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. The gradient was mainly negative (upward flow) during the year with some reversals to a positive gradient (downward flow) in the late summer/early fall.
- P12A/B-07 (stream flowing into Roman Lake) – water levels fluctuated approximately 0.2 m in 2019 and remained higher at P12B-07 due to the construction of a beaver dam in 2017. Water levels at this site declined more in the shallow piezometer compared to the deep piezometer in July and for the remainder of the year. A weak negative gradient (upward flow) exists at the site after the construction of the beaver dam which became stronger during the second half of the year.
- P13A/B-07 (Erin Branch of Credit River) – water levels in 2019 fluctuated approximately 0.8 m mainly due to a decline in water levels in January. With the exception of the decline in January, water levels in the shallow piezometer were similar during the year while the water levels in the deep piezometer increased in March and then declined through June and July. The vertical gradient was positive (downward flow) with a reversal to negative (upward flow) in January when water levels declined. With the exception of P10-05 (wetland pond), the vertical gradient at P13-07 shows greater fluctuation than the other sites. Water levels are likely influenced by fluctuations in the water level of the Hillsburgh reservoir.

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 (2015 to 2019) and the “b” figures including data for 2019. 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 (On-Site pond) – water levels at SW3 fluctuated less than 0.3 m in 2019. The water levels were stable during the first two and half months of the year and then increased in March followed by a decrease through June and July. The water levels were relatively stable during the remainder of the year. The historical changes in water levels are sometimes partially due to the outlet being partially obstructed and then cleared when the debris is removed.
- SW1 (creek downstream of On-Site pond) – not including some short-term increases, the water levels at SW1 fluctuated approximately 0.1 m in 2019. The seasonal changes in the creek are minimal compared to the seasonal changes in the pond.
- SW7 (Erin Branch of Credit River) – water levels at SW7 fluctuated approximately 0.1 m in 2019 with some greater fluctuations in January and March. Following the decline in water levels from the winter of 2016 to the summer of 2018, the water levels were relatively stable in 2019. The previous declining trend may be 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. Due to the changing stream conditions at SW7, a new station (SW7A-16) was installed in May 2016. Water levels in the stream at SW7A-16 showed minimal fluctuation in 2019 with an increase in water levels in October.
- SW4 (stream flowing into Roman Lake) and SW5 (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 are generally higher at these two stations compared to previous years. In 2019, the water levels were stable during the first half of the year and then declined through June and July followed by relatively stable levels for the remainder of the year. The decline was greater at SW4 compared to SW5.

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 2019 are summarized in Appendix F. Surface water flow is measured at three stations in accordance with the PTTW; SW1 (creek downgradient of On-Site pond and wetland), SW3 (outlet from On-Site pond) and SW7 (Erin Branch of Credit River). Surface water flows are also measured at SW7A. The surface water flows for the four stations are shown on Figure F1 through F3 in Appendix F with the “a” figure including data for the last 5 years (2015 to 2019) and the “b” figures including data for 2019.

Flow from the On-Site pond (SW3) is similar to previous years. The surface water flow increased through the spring (until mid-May) and then decreased through June and was stable for the remainder of the year. The spring flows were typically between 10 L/s and 25 L/s, while the summer low flows were between 5 L/s and 10 L/s. Manual flow measurements ranged from 2.5 L/s (February) to 97.7 L/s (May). There were some higher flows during some precipitation events and spring melt.

Stage-discharge curves were updated in 2019 for SW1 and SW7, 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 and SW7 were re-evaluated using stream characteristics (the same

methods as in 2014 through 2018), to improve evaluation of the 2019 monitoring data. The stage-discharge curves for SW1 and SW7 remained the same as in 2018 and are shown on Figures F4 and F5 in Appendix F. These curves have been used to estimate the flow for 2019 at these stations.

Monitoring data at SW7A has been collected since May 2016. The data from 2019 was used to update the stage-discharge relationship for this station (Figure F6). Water levels at this station remain constant at most stream discharge levels and therefore development of the stage-discharge curve continues to be challenging, with portions of the record reported with a lower confidence. The revised stage-discharge curve was used to calculate the flow going back to May 2016. Due to the construction of dam in the nearby vicinity of SW7A, a new stream location may need to be established.

Surface water flow at SW1 (combined flow from On-Site pond and wetland) was similar to flow observed since 2014. Low flows were observed in February/March and again in June/July. These low flows are similar to those observed in 2015 and 2018. 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 10 L/s to 70 L/s with some flows more than 100 L/s. During the early part of summer, stream flow was 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 5.9 L/s (September) to 37.1 L/s (June). There is no evidence of a decline in stream flow at SW1.

Stream flow at SW7 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 is similar to flow measured historically at the station with changes typically due to changing stream conditions. Manual flow measurements ranged from 2.1 L/s (February) to 45.7 L/s (March). There is no evidence of a decline in stream flow at SW7.

Stream flow at the new station (SW7A) was consistent up to May ranging from 30 L/s and 60 L/s and decreased to a low of less than 10 L/s in August. After August flows increased to around 130 L/s by the end of November and then declined slightly into December. Manual flow measurements ranged from 34.4 L/s (August) to 89.7 L/s (March). The flow at SW7A is greater than the flow at SW7 due to the fact that SW7A is located in a defined channel as opposed to multiple channels at SW7, where only part of the total flow is measured.

Surface water flow at all the stations is influenced by precipitation and/or melt events with the greatest influence at SW1 and does not appear to be influenced by pumping at TW1-88. In the past, surface water flow at SW7 also appeared to be influenced by other factors that may include changes in reservoir level or upstream work.

5.0 CONCLUSIONS

The following conclusions are provided based on the results of the 2019 monitoring program:

- 1) Nestlé has complied with all of the conditions in the existing permit for the Erin well TW1-88.
- 2) TW1-88 operated in accordance with the limits outlined in the PTTW. The total volume of water taken in 2019 from TW1-88 was 27,135,825 L or 7% of the permitted volume.
- 3) The daily water taking at TW1-88 in 2019 ranged from 0 L/day to 319,034 L/day. The average daily taking in 2019 was 74,345 L/day.

- 4) The interpreted non-pumping water levels in TW1-88, which obtains water from the bedrock aquifer, ranged from approximately 422.8 to 423.5 masl in 2019. The interpreted water levels under variable pumping conditions, ranged from approximately 417 to 419 masl. The drawdown at the well ranged from approximately 5 to 7 m in 2019.
- 5) 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 ceases.
- 6) Water levels in the overburden varied within the historical range and do not appear to be influenced by pumping of TW1-88. There is no significant interaction between the bedrock and overburden aquifers at the current rate of taking.
- 7) 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.
- 8) 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.
- 9) The water taking does not prevent 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.
- 10) No irreversible impacts have been observed due to pumping of the aquifer or deterioration of groundwater quantity on neighbouring properties.
- 11) Based on the monitoring data collected, the 2019 water taking at TW1-88 is sustainable.

6.0 RECOMMENDATIONS

It is recommended that the existing monitoring program be kept in place with the following changes.

- 1) Surface Water Monitoring changes:
 - a. The current SW1 and SW7 stations should be relocated to areas with more favourable hydraulics (i.e., single channel, stable conditions and no backwater). The observed relationship between water level and stream flow at the existing SW1 and SW7 locations is variable or has deteriorated in recent years. Relocation of SW1 and SW7 will achieve a better relationship between water levels and flow (i.e., further development of a stage discharge curve). It is recommended that SW1 be relocated to the northeast side of 6th Line, upstream of the road crossing. A new station has been developed at SW7A in the stream channel by D7B that has been used for flow monitoring to replace SW7; however, recent changes to the stream on private property have affected the flow at this station and a new monitoring location should be identified. To improve the quality of water level data collected at the on-Site pond, it is also recommended that an additional logger be installed upstream of the pond outlet. This station would improve pond outlet

estimates through a stage-discharge relationship. There should be an overlap in the monitoring of the new and existing stations until the stage discharge curves are developed.

2) Mini-piezometer changes:

- a. Monitoring at P06A/B should be discontinued. P06A/B and P03A/B are both located in the on-site pond and provide similar data. In addition, P01A/B is located in the creek just outside the pond.

3) Overburden Private Well changes:

- a. The monitoring at the private wells in the overburden should be discontinued. The monitoring program has been ongoing for more than 15 years and no impacts to private wells or the surrounding aquifer have been noted. In addition, the monitoring data from these private wells are often influenced by pumping at the private well itself.
- b. Discontinue monitoring at overburden wells D2B (homeowner does not want well monitored), D7B, D26C and D27, as there are no impacts to the overburden aquifer. On-site monitoring wells (MW3A/B-00, MW5B-05, MW6B-05, MW11B-08 and MW12B-08) would still be used for monitoring water levels in the overburden including four nested wells. Two new monitoring wells will also be installed by the D24 and D26 wells that will include an overburden monitoring point.

4) Overburden Monitoring Well Changes:

- a. Discontinue monitoring at overburden wells MW2-00, TW1-99 and D36A. There are no impacts to the overburden aquifer and these wells provide similar data to other on-site monitoring wells constructed in the overburden aquifer. On-site monitoring wells (MW3A/B-00, MW5B-05, MW6B-05, MW11B-08 and MW12B-08) would still be used for monitoring water levels in the overburden including four nested wells. Two new monitoring wells will also be installed by the D24 and D26 wells that will include an overburden monitoring point.

5) Bedrock Private Well Changes:

- a. Monitoring at some of the private wells should be discontinued or replaced with dedicated monitoring wells. The monitoring program has been on-going for more than 15 years and no impacts to private wells or the surrounding aquifer have been noted. In addition, the monitoring data from these private wells are often influenced by pumping at the private well itself. The following changes to the monitoring program should be implemented:
- b. Discontinue monitoring at D19 as the homeowner does not want the well monitored. Private well D3 is located in the same direction from TW1-88 and is closer to the pumping well allowing for sufficient monitoring in that area.
- c. Discontinue monitoring at D8 and D15. A new monitoring well (MW1-18A/B) has been completed in the general area of D8 and D15 which can replace the monitoring at the private wells.
- d. Discontinue monitoring at D24A and D24B and install a new monitoring well in the same area. Note that this monitoring well will be completed with intervals in both the overburden and bedrock.

- e. Discontinue monitoring at D26A and D26B and install a new monitoring well in the same area. Note that this monitoring well will be completed with intervals in both the overburden and bedrock.
- f. Discontinue monitoring at D2A as the homeowner does not want their well monitored. The new monitoring wells to be installed by D24 and D26 would provide sufficient coverage for monitoring at D2A.

6) Bedrock Monitoring Well Changes:

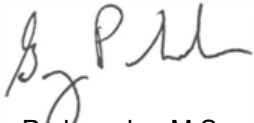
- a. Discontinue monitoring at D32 and D36B as these wells provide similar data to other wells in the area and are outside of the 1 m drawdown area. On-site monitoring wells (MW6A-05 and MW12A-08) are in the same area as these wells and would still be used for monitoring water levels in the bedrock.

7) The PTTW should be updated with the following administrative changes:

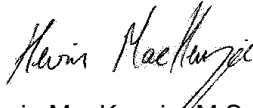
- a. MW11B-08 is listed as monthly monitoring under bedrock wells and it should be listed as monthly monitoring under overburden wells.
- b. MW12B-08 is listed as monthly monitoring under bedrock wells and it should be listed as monthly monitoring under overburden wells.
- c. D27 is listed as both continuous and monthly monitoring under overburden wells and it should only be monthly monitoring (note that this well is recommended to be removed from the monitoring conditions).

Signature Page

Golder Associates Ltd.



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Hydrogeologist



Kevin MacKenzie, M.Sc., P.Eng.
Senior Hydrologist, Principal



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

GRP/JAP/KM/II

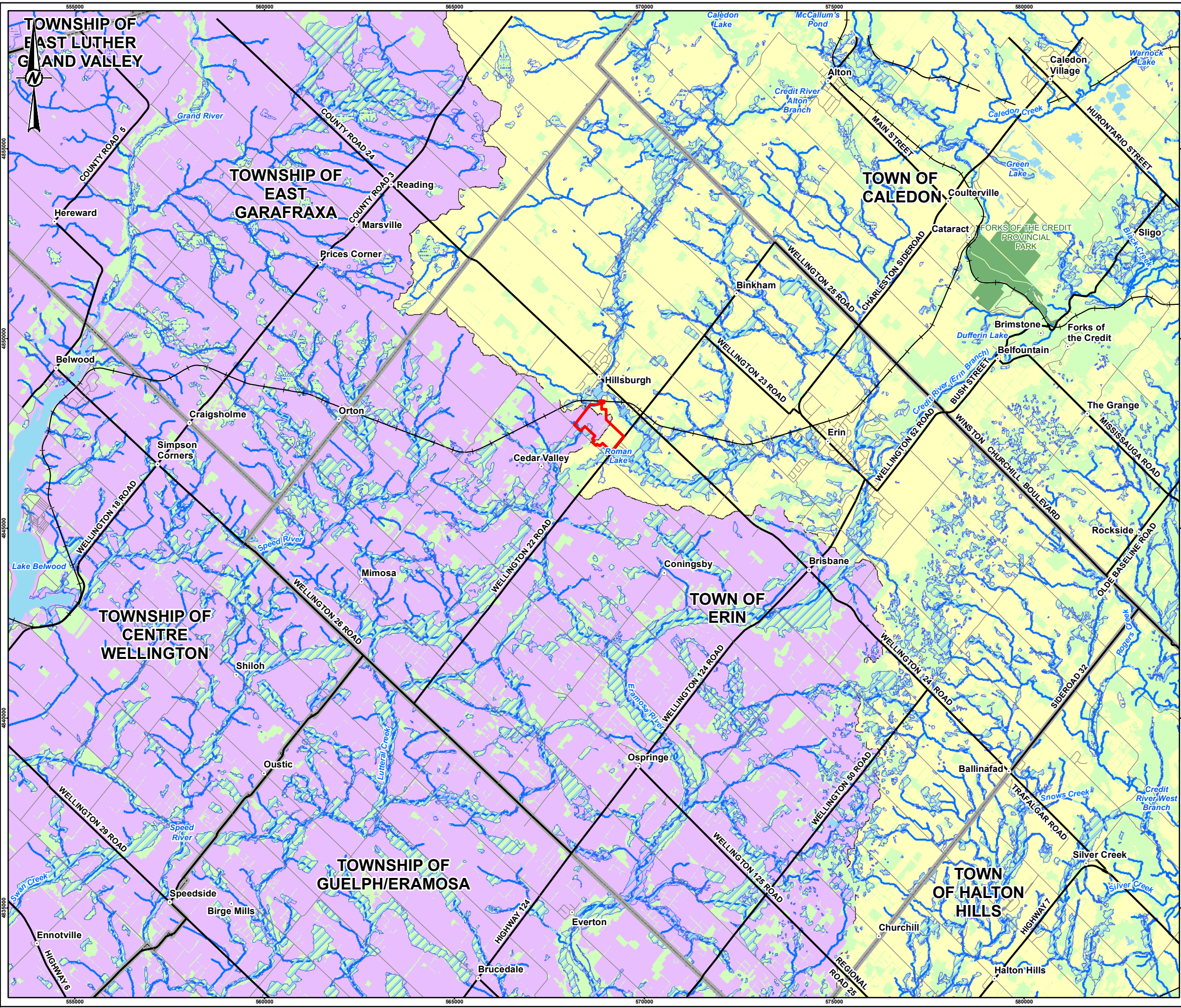
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\\golder.gds\gal\mississauga\active\2013\1152\13-1152-0250 nestle waters ws s. ontario\erin\report\2019 annual report\final report\13-1152-0250 rpt 2020mar24 2019 erin report.docx

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FIGURES



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
Kilometres

1:100,000

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

CLIENT
 NESTLE WATERS CANADA

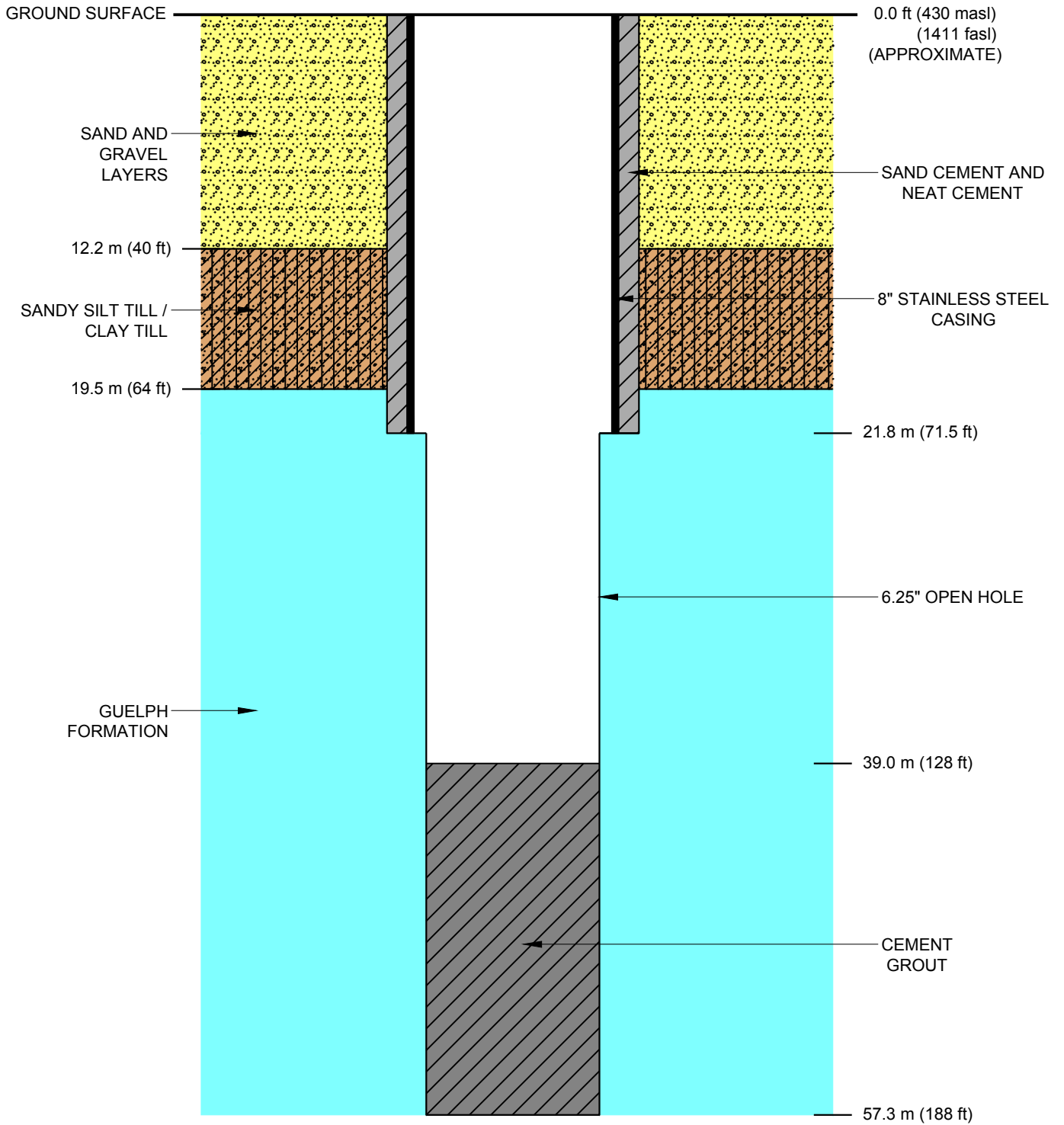
PROJECT
 2019 ANNUAL REPORT

TITLE
 SITE LOCATION

CONSULTANT	DATE
DESIGNED	2020-01-16
PREPARED	JMC
REVIEWED	PR
APPROVED	GP
	JAP

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PROJECT
2019 ANNUAL REPORT

CONSULTANT

YYYY-MM-DD 2020-01-17

PREPARED SW/SA

DESIGN MR

REVIEW GP

APPROVED GP

TITLE
ERIN TW1-88

PROJECT No.
13-1152-0250

PHASE
2000

Rev.
A

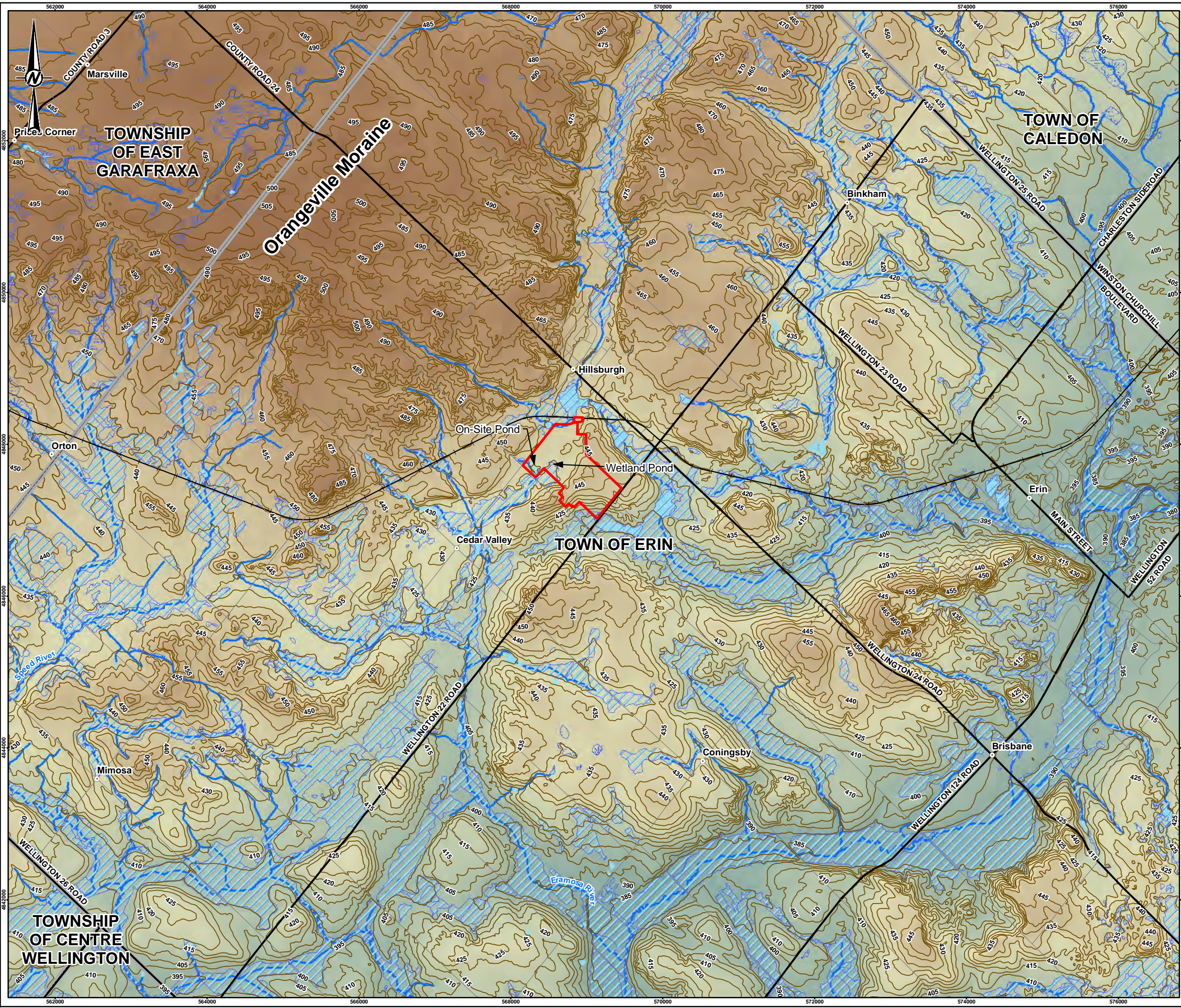
FIGURE
1.2



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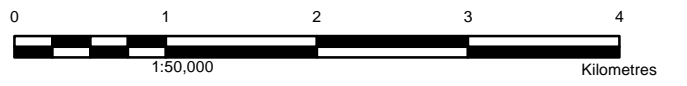
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LEGEND

- 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



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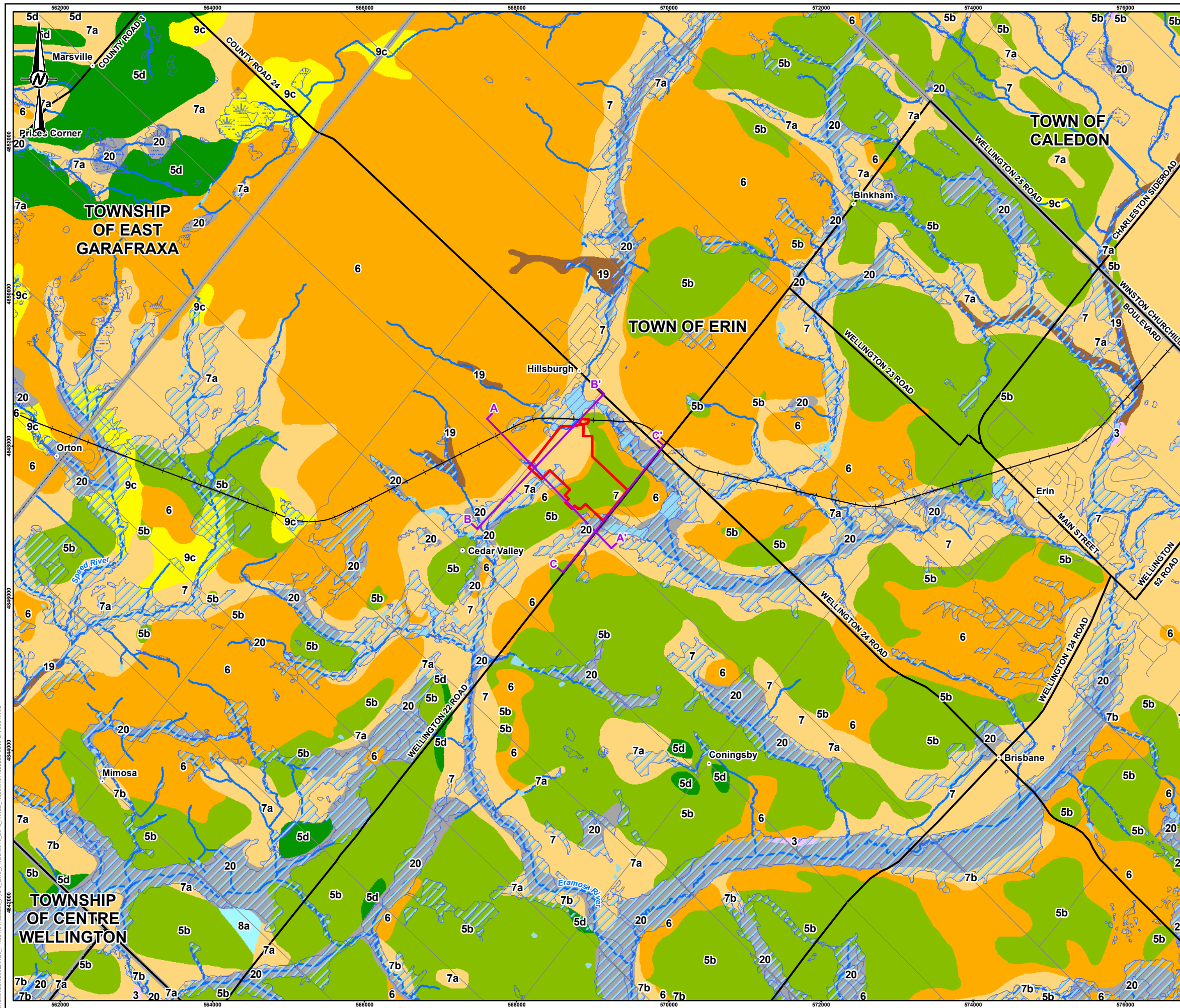
TITLE
 TOPOGRAPHY AND DRAINAGE

CONSULTANT	DATE
DESIGNED	2020-01-16
PREPARED	JMC
REVIEWED	PR
APPROVED	GP
	JAP

PROJECT NO. 13-1152-0250 (2000) CONTROL 0017 REV. 1.0 **FIGURE 2.1**

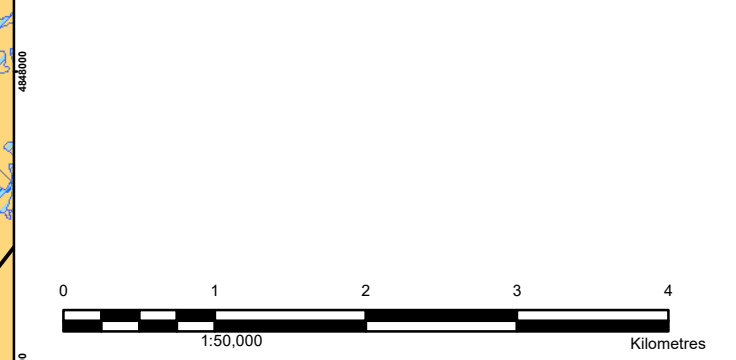
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LEGEND

- 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



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PROJECT
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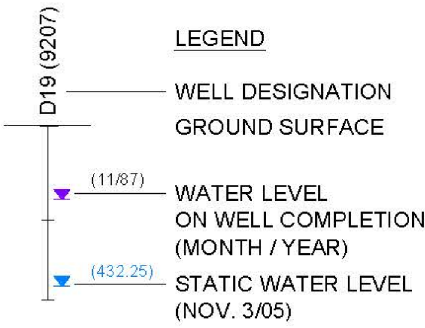
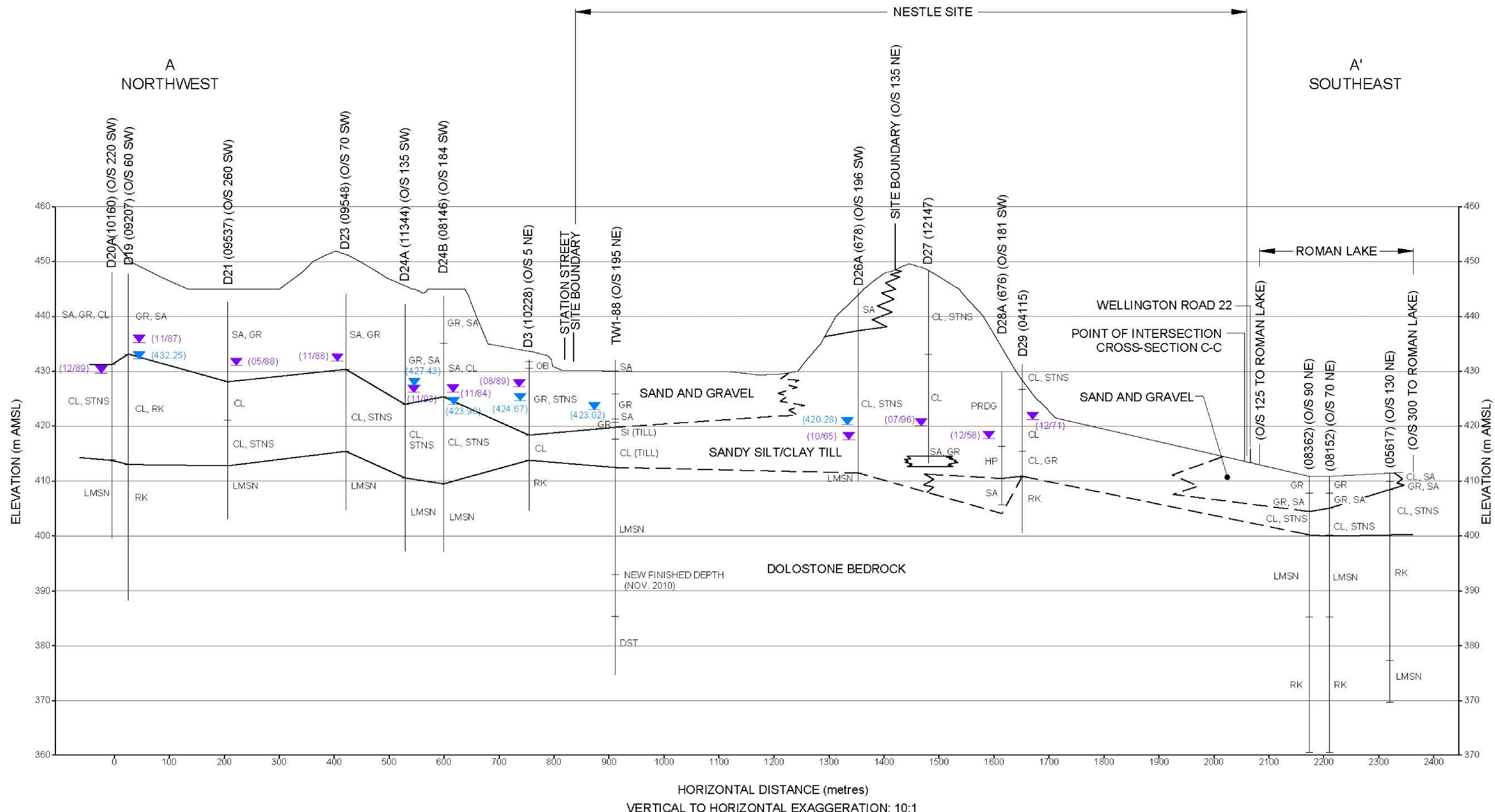
TITLE
 REGIONAL QUATERNARY GEOLOGY

CONSULTANT

YYYY-MM-DD	2020-01-16
DESIGNED	JMC
PREPARED	PR
REVIEWED	GP
APPROVED	JAP

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- 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)
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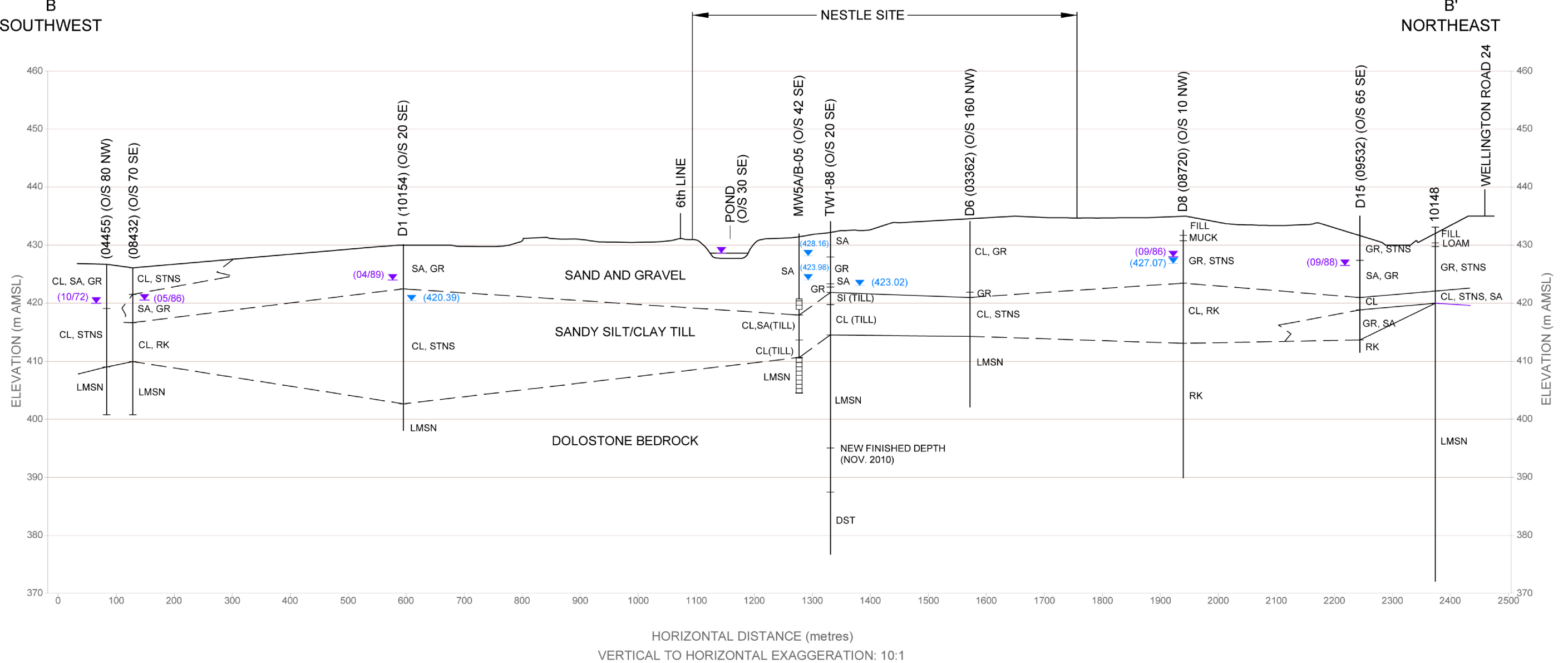
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PROJECT		2019 ANNUAL REPORT	
TITLE		HYDROGEOLOGIC CROSS-SECTION A-A'	
CONSULTANT	YYYY-MM-DD	2020-01-16	
	DESIGNED	JMC	
	PREPARED	PR	
	REVIEWED	GP	
	APPROVED	JAP	

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B
SOUTHWEST

B'
NORTHEAST



HORIZONTAL DISTANCE (metres)
VERTICAL TO HORIZONTAL EXAGGERATION: 10:1

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

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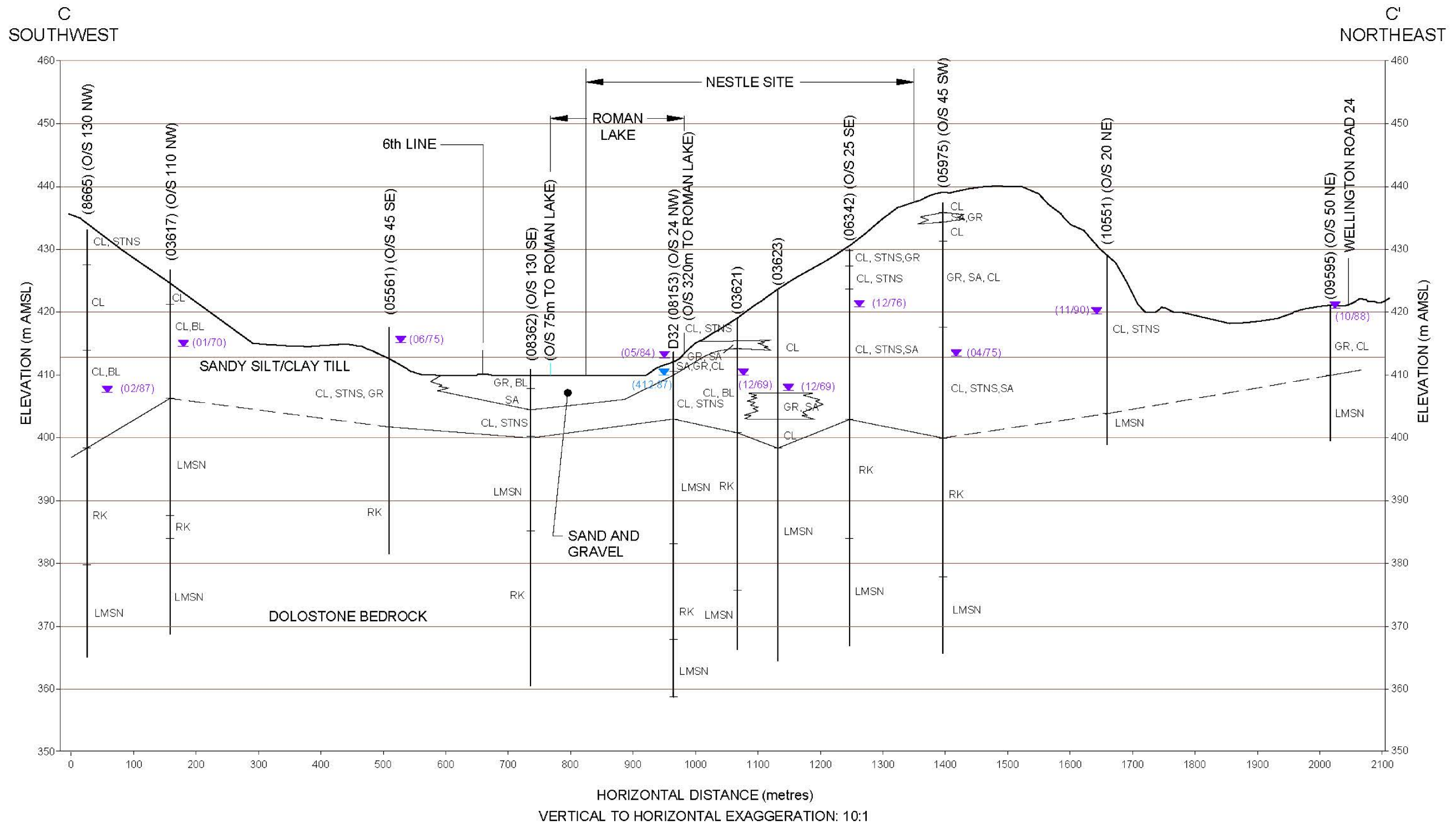
CLIENT
NESTLE WATERS CANADA

PROJECT
2019 ANNUAL REPORT

TITLE
HYDROGEOLOGIC CROSS-SECTION B-B'

CONSULTANT	DATE
YYYY-MM-DD	2020-01-16
DESIGNED	JMC
PREPARED	PR
REVIEWED	GP
APPROVED	JAP

PROJECT NO. 13-1152-0250 (2000) CONTROL 0017 REV. 1.0 FIGURE 2.4



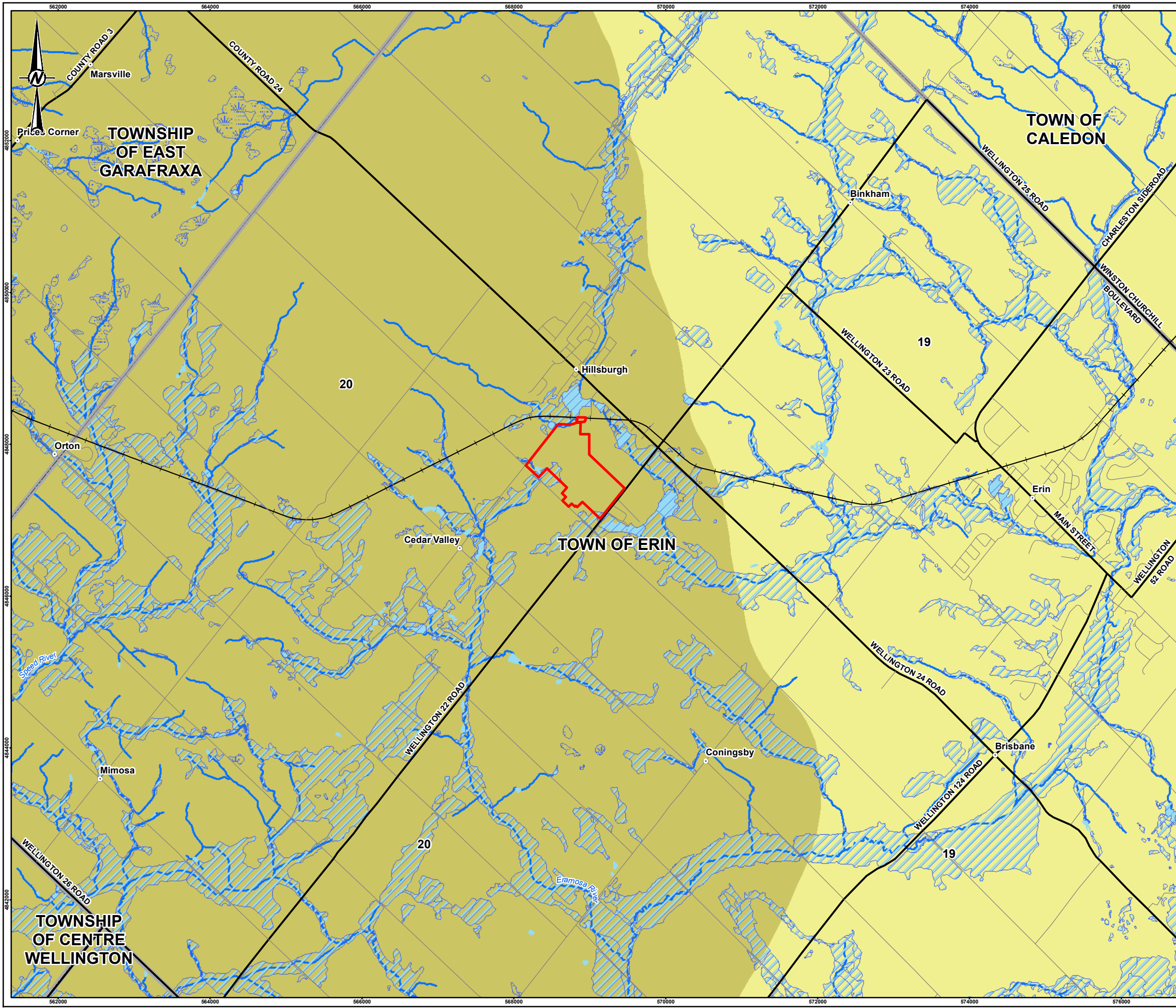
- PRDG - PRE DUG
- OB - OVERBURDEN
- CL - CLAY
- SI - SILT
- SA - SAND
- GR - GRAVEL
- BL - BOULDER
- STNS - STONES
- HP - HARDPAN
- RK - ROCK (BEDROCK)
- LMSN - LIMESTONE (BEDROCK)
- DST - DOLOSTONE
- CL, SA - FIRST COMPONENT IS MOST COMMON MATERIAL

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

CLIENT NESTLE WATERS CANADA		
PROJECT 2019 ANNUAL REPORT		
TITLE HYDROGEOLOGIC CROSS-SECTION C-C'		
CONSULTANT	YYYY-MM-DD	2020-01-16
	DESIGNED	JMC
	PREPARED	PR
	REVIEWED	GP
	APPROVED	JAP
PROJECT NO. 13-1152-0250 (2000)	CONTROL 0017	REV. 1.0
		FIGURE 2.5

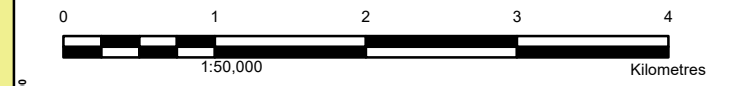
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LEGEND

- City/Town
- Main Road
- Local Road
- Railway
- Watercourse
- Wetland
- Provincially Significant Wetland
- Waterbody
- Municipal Boundary
- Property Boundary
- 20: Guelph
- 19: Amabel

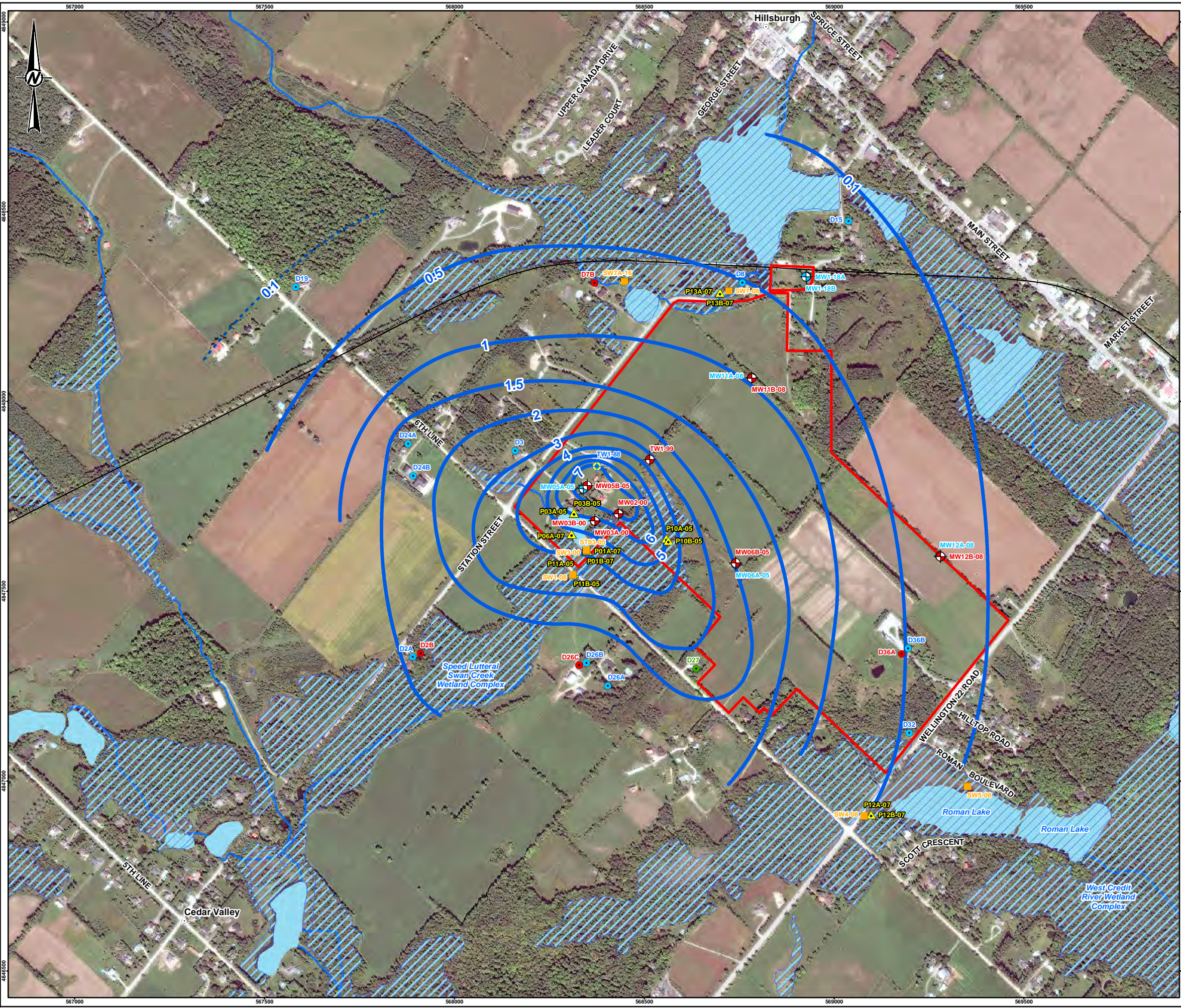


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CLIENT	
NESTLE WATERS CANADA	
PROJECT	
2019 ANNUAL REPORT	
TITLE	
REGIONAL BEDROCK GEOLOGY	
CONSULTANT	YYYY-MM-DD 2020-01-16
	DESIGNED JMC
	PREPARED PR
	REVIEWED GP
	APPROVED JAP

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- LEGEND**
- City/Town
 - Monitoring Well (Bedrock)
 - Monitoring Well (Overburden)
 - Production Well
 - Private Well (Bedrock)
 - Private Well (Overburden)
 - Private Well (Deep Overburden)
 - Piezometer
 - Surface Water Station
 - Drawdown Contour (June 13/15, 2001)
 - Main Road
 - Local Road
 - Railway
 - Watercourse
 - Wetland
 - Provincially Significant Wetland
 - Waterbody
 - Property Boundary



REFERENCE(S)
 BASE DATA - MNR LIO, OBTAINED 2015
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CLIENT
NESTLE WATERS CANADA

PROJECT
2019 ANNUAL REPORT

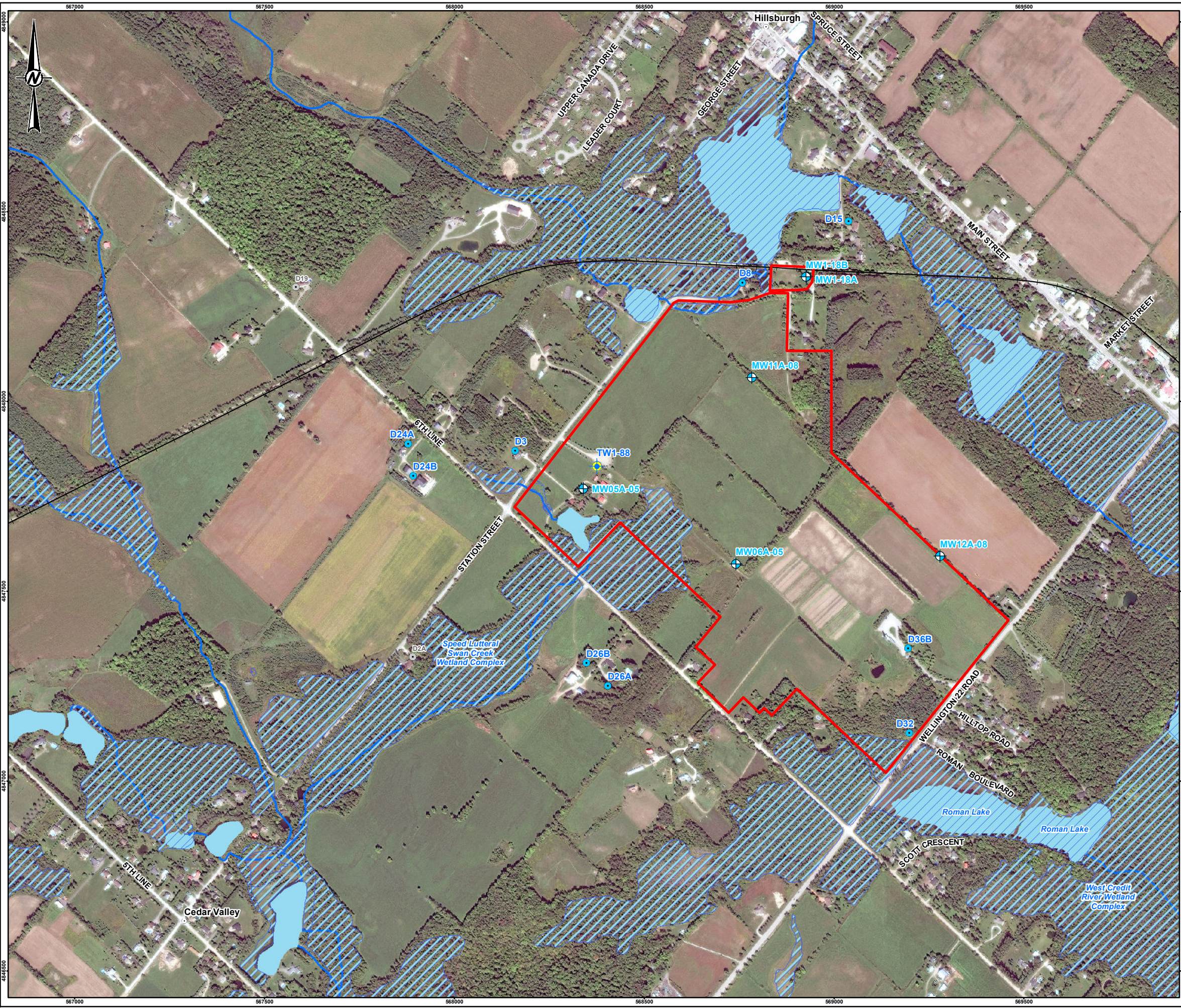
TITLE
**INTERPRETED DRAWDOWN IN BEDROCK AQUIFER
 (JUNE 2001)**

CONSULTANT	DATE
DESIGNED	2020-01-16
PREPARED	JMC
REVIEWED	PR
APPROVED	GP
	JAP

PROJECT NO. 13-1152-0250 (2000) CONTROL 0017 REV. 1.0 **FIGURE 2.8**

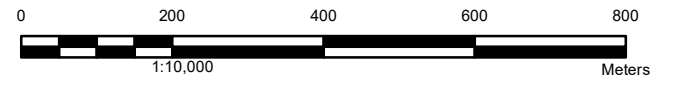
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25mm IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM:



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



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
NESTLE WATERS CANADA

PROJECT
2019 ANNUAL REPORT

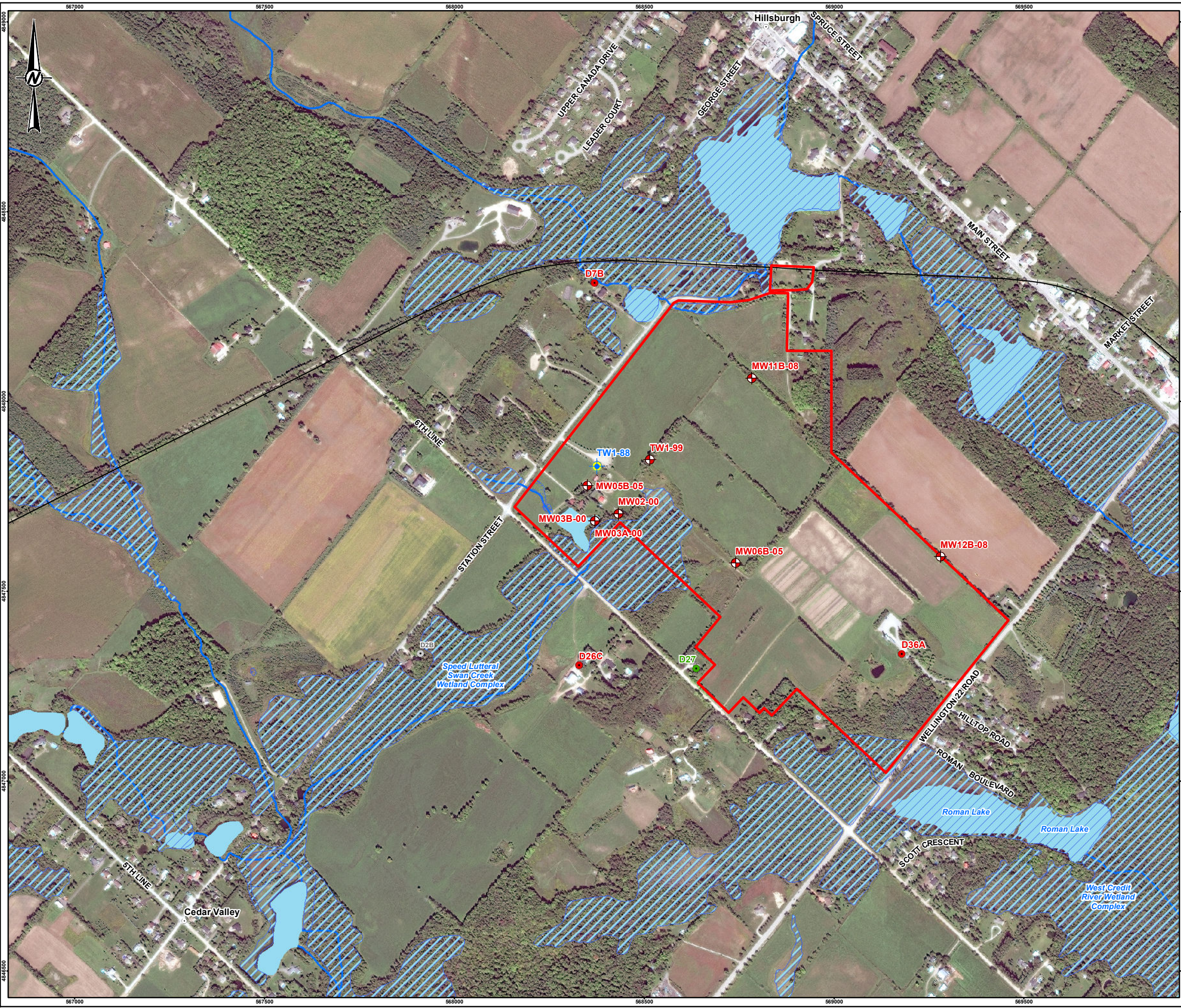
TITLE
2019 BEDROCK MONITORING LOCATIONS

CONSULTANT	DATE
DESIGNED	2020-01-16
PREPARED	JMC
REVIEWED	PR
APPROVED	GP
	JAP

PROJECT NO. 13-1152-0250 (2000) CONTROL 0017 REV. 1.0 **FIGURE 3.1**

S:\Client\Nestle\Envi\18_PRCO\1311520250_Hydro_GI\40_PROD\0016_2019_Annual_Report\1311520250-016-CH-0011.mxd

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



LEGEND

- City/Town
- Production Well
- Monitoring Well (Overburden)
- Private Well (Overburden)
- Private Well (Deep Overburden)
- Private Well (Overburden - not monitored)
- Main Road
- Local Road
- Railway
- Watercourse
- Wetland
- Provincially Significant Wetland
- Waterbody
- Municipal Boundary
- Property Boundary



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
NESTLE WATERS CANADA

PROJECT
2019 ANNUAL REPORT

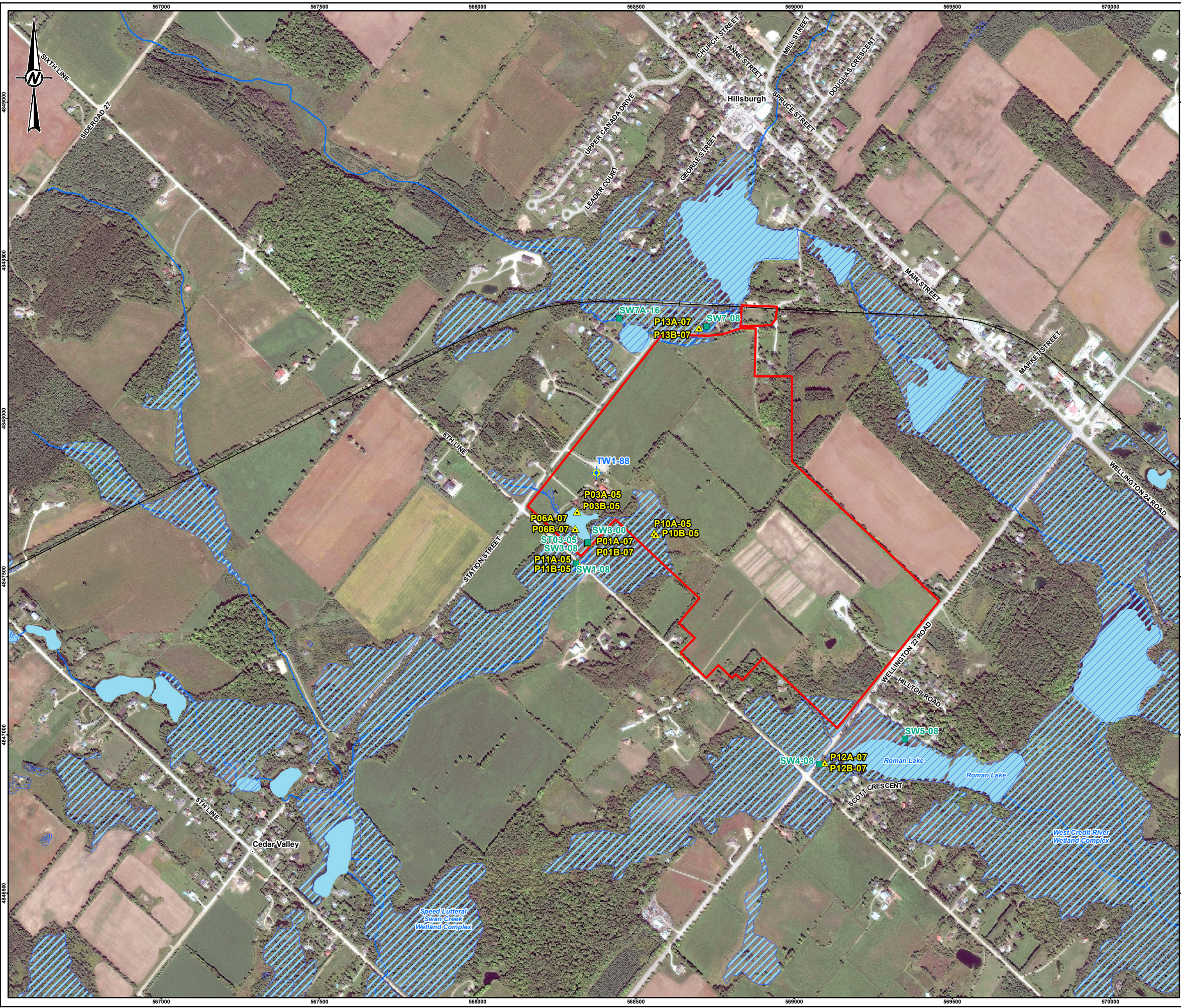
TITLE
2019 OVERBURDEN MONITORING LOCATIONS

CONSULTANT	YYYY-MM-DD	2020-01-16
	DESIGNED	JMC
	PREPARED	PR
	REVIEWED	GP
	APPROVED	JAP

PROJECT NO. 13-1152-0250 (2000) CONTROL 0017 REV. 1.0 **FIGURE 3.2**

S:\Client\Nestle\Envi\18_PRC\1311520250_Hydro_G140_PROD\0016_2018_Annual_Report\1311520250-0016-CH-0012.mxd

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



LEGEND

- City/Town
- Production Well
- Piezometer
- Surface Water Station
- Main Road
- Local Road
- Railway
- Watercourse
- Wetland
- Provincially Significant Wetland
- Waterbody
- Municipal Boundary
- Property Boundary



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
NESTLE WATERS CANADA

PROJECT
2019 ANNUAL REPORT

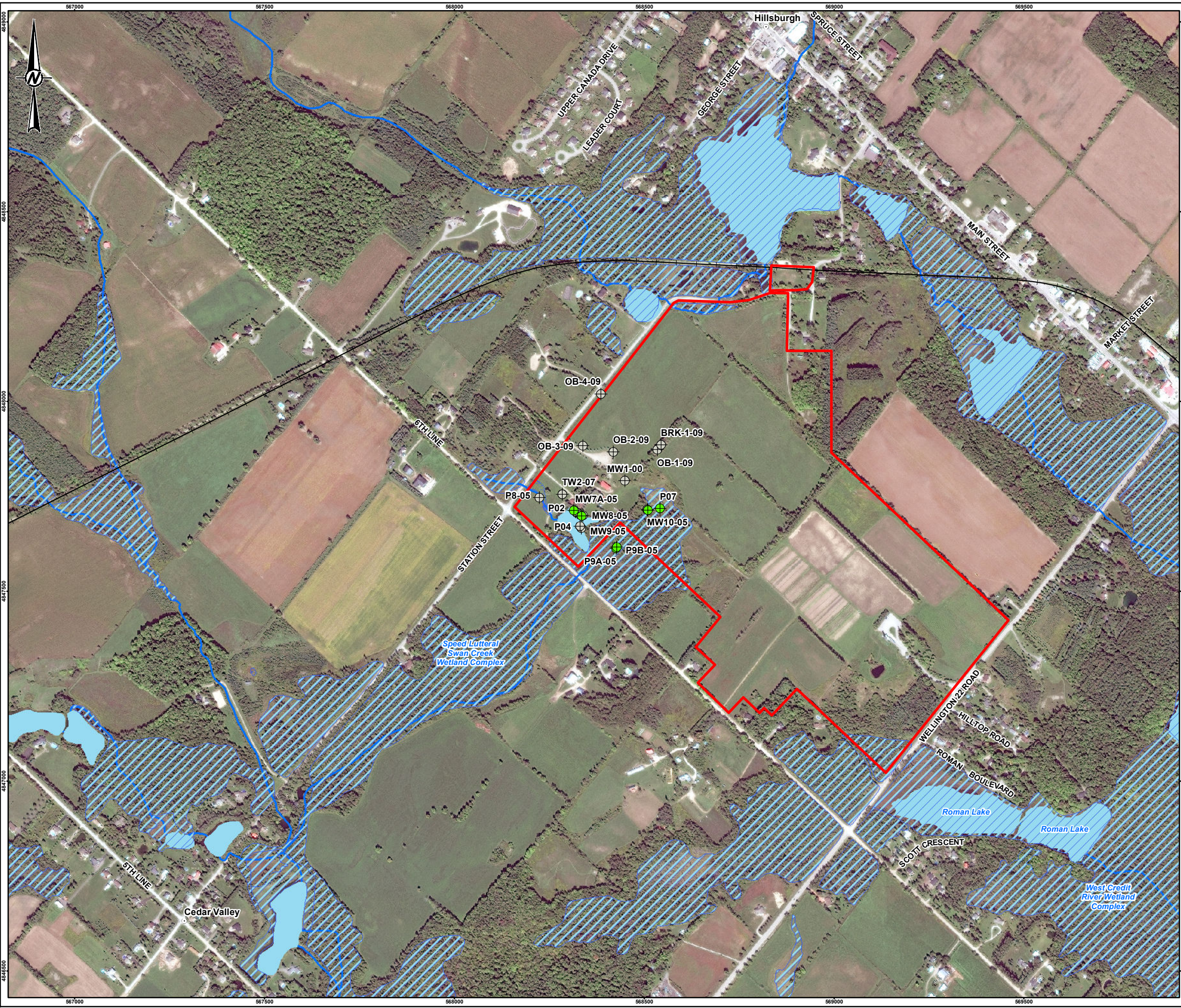
TITLE
2019 SURFACE WATER MONITORING LOCATIONS

CONSULTANT	DATE	BY
DESIGNED	2020-01-16	JMC
PREPARED		PR
REVIEWED		GP
APPROVED		JAP

PROJECT NO. 13-1152-0250 (2000) CONTROL 0017 REV. 1.0 FIGURE **3.3**

S:\Client\Nestle\Envi\18_PRC011311520250_1818_Annual_Report\1311520250-016-CU-013.mxd

20mm IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM:



LEGEND

- City/Town
- Destroyed/Removed/Decommissioned
- Unused (status unknown)
- Main Road
- Local Road
- Railway
- Watercourse
- Wetland
- Provincially Significant Wetland
- Waterbody
- Municipal Boundary
- Property Boundary



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
NESTLE WATERS CANADA

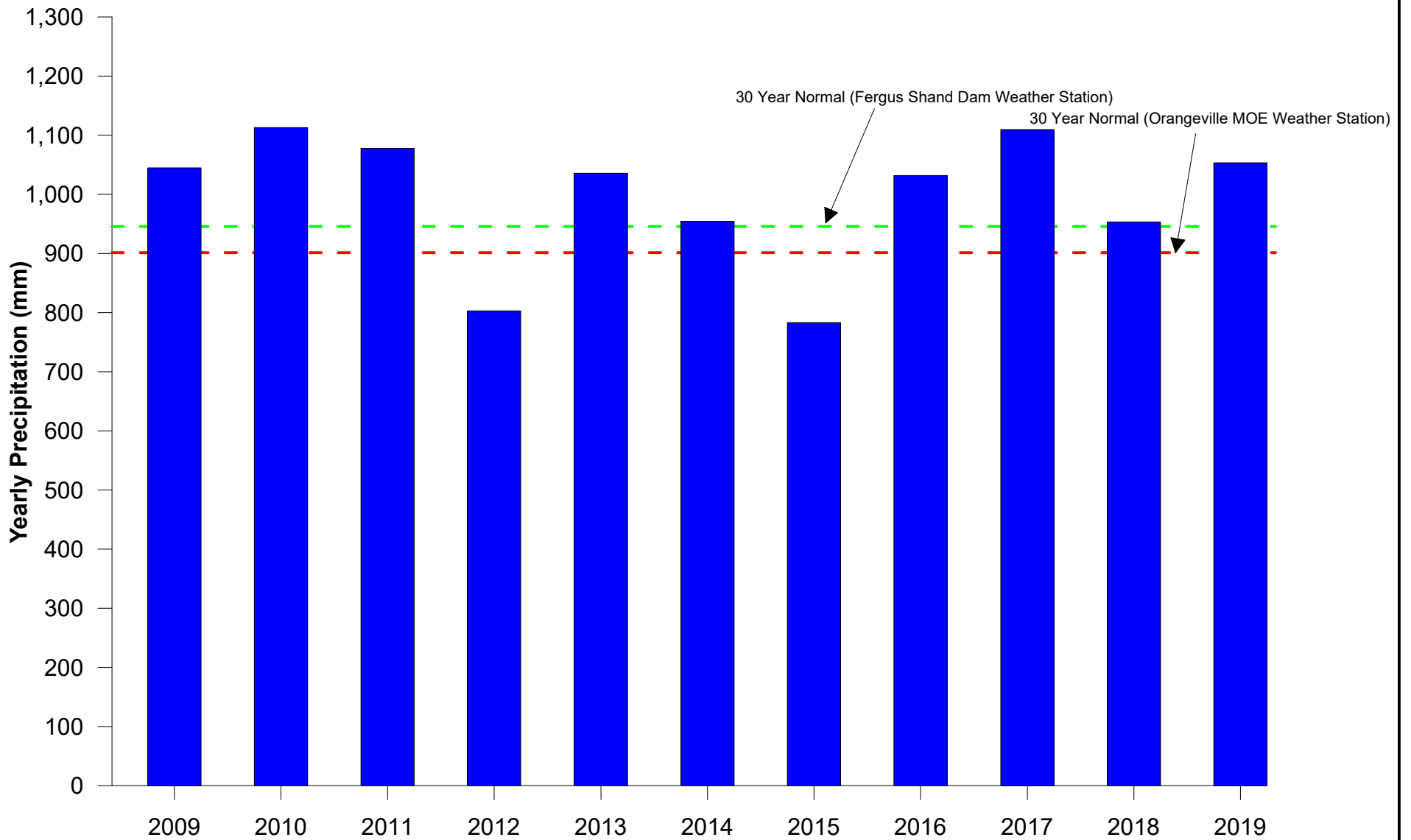
PROJECT
2019 ANNUAL REPORT

TITLE
UNUSED OR DECOMMISSIONED WELLS

CONSULTANT	YYYY-MM-DD	2020-01-16
	DESIGNED	JMC
	PREPARED	PR
	REVIEWED	GP
	APPROVED	JAP

S:\Client\Nestle\Envi\18_PRC\1311520250_Hydro_G140_PROD\0016_2019_Annual_Report\1311520250-0016-CH-0014.mxd

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



Data for Orangeville Station prior to 2016, and data for Shand Dam Station from 2016-2019

PROJECT **NESTLE WATERS CANADA**
Erin, Ontario



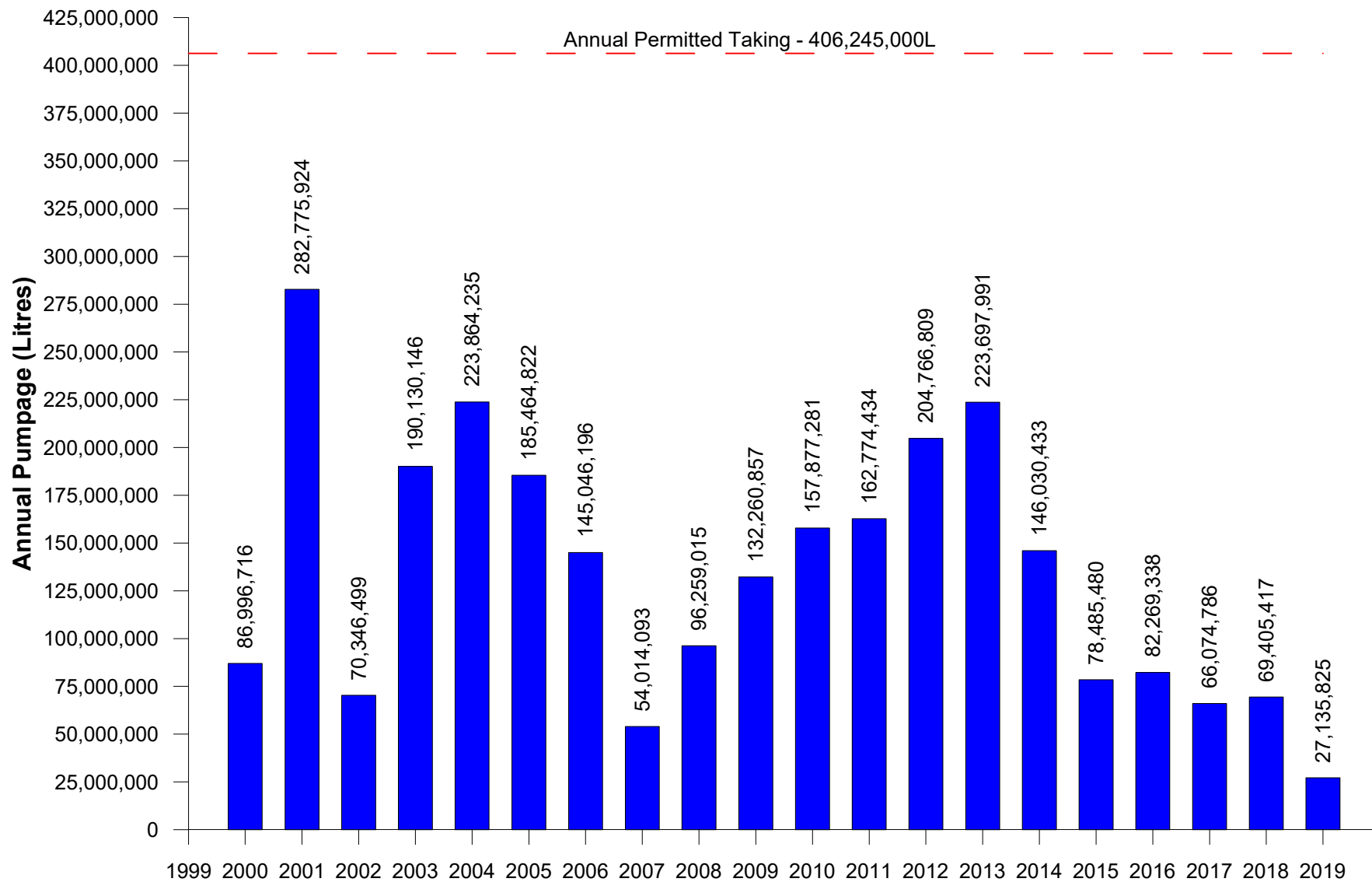
DATE	December 2019
DESIGN	KS
REVIEW	GP
APPROVED	GP

TITLE
**HISTORICAL ANNUAL PRECIPITATION (2009 TO 2019)
2019 ANNUAL MONITORING REPORT**

PROJECT NO.
13-1152-0250 (2000)

REV
A

FIGURE
3.6



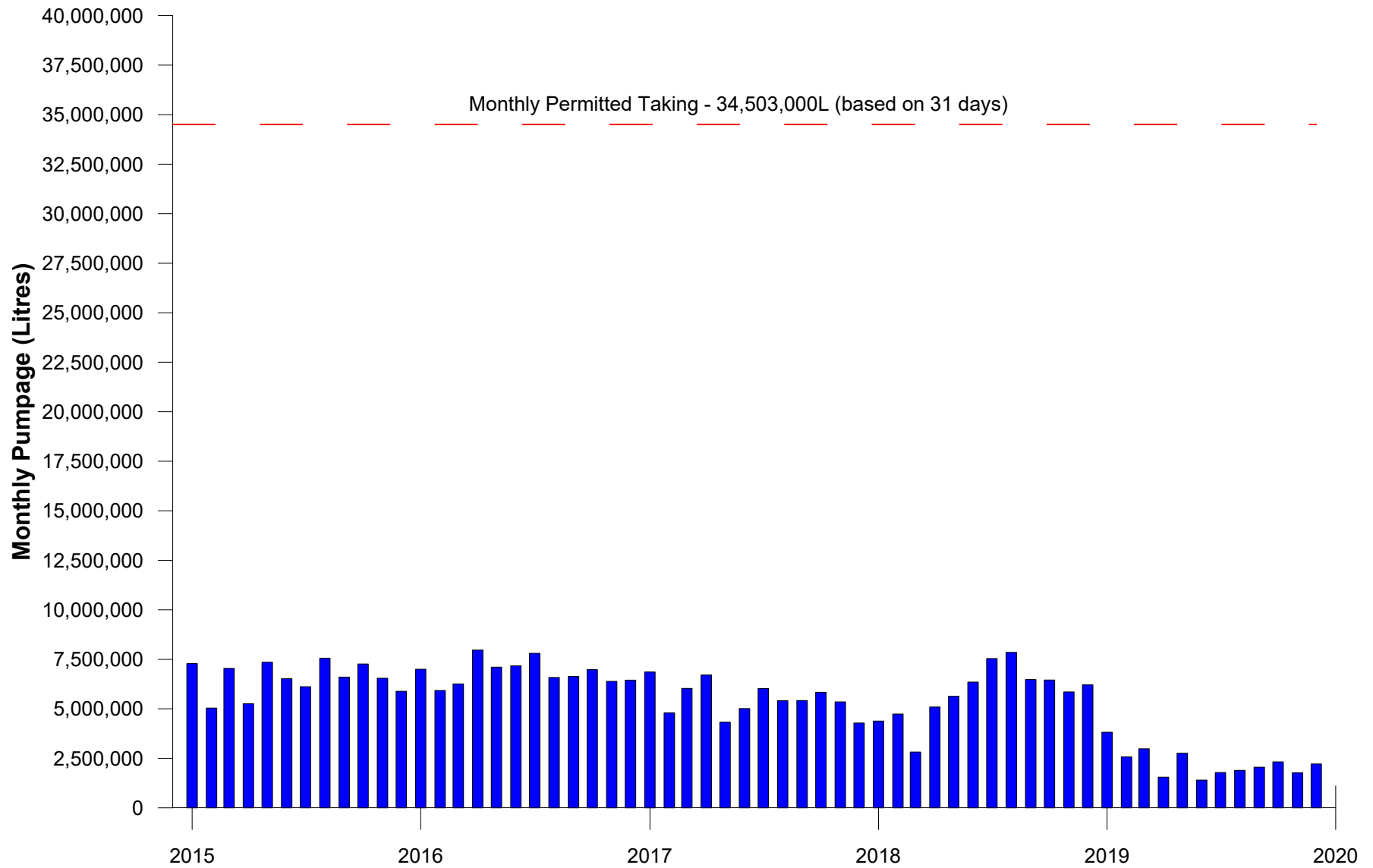
PROJECT **NESTLE WATERS CANADA**
Erin, Ontario

TITLE
**TW1-88 ANNUAL WATER TAKING (2000 TO 2019)
2019 ANNUAL MONITORING REPORT**

PROJECT NO. 13-1152-0250 (2000) REV A FIGURE 4.1



DATE	December 2019
DESIGN	KS
REVIEW	GP
APPROVED	GP



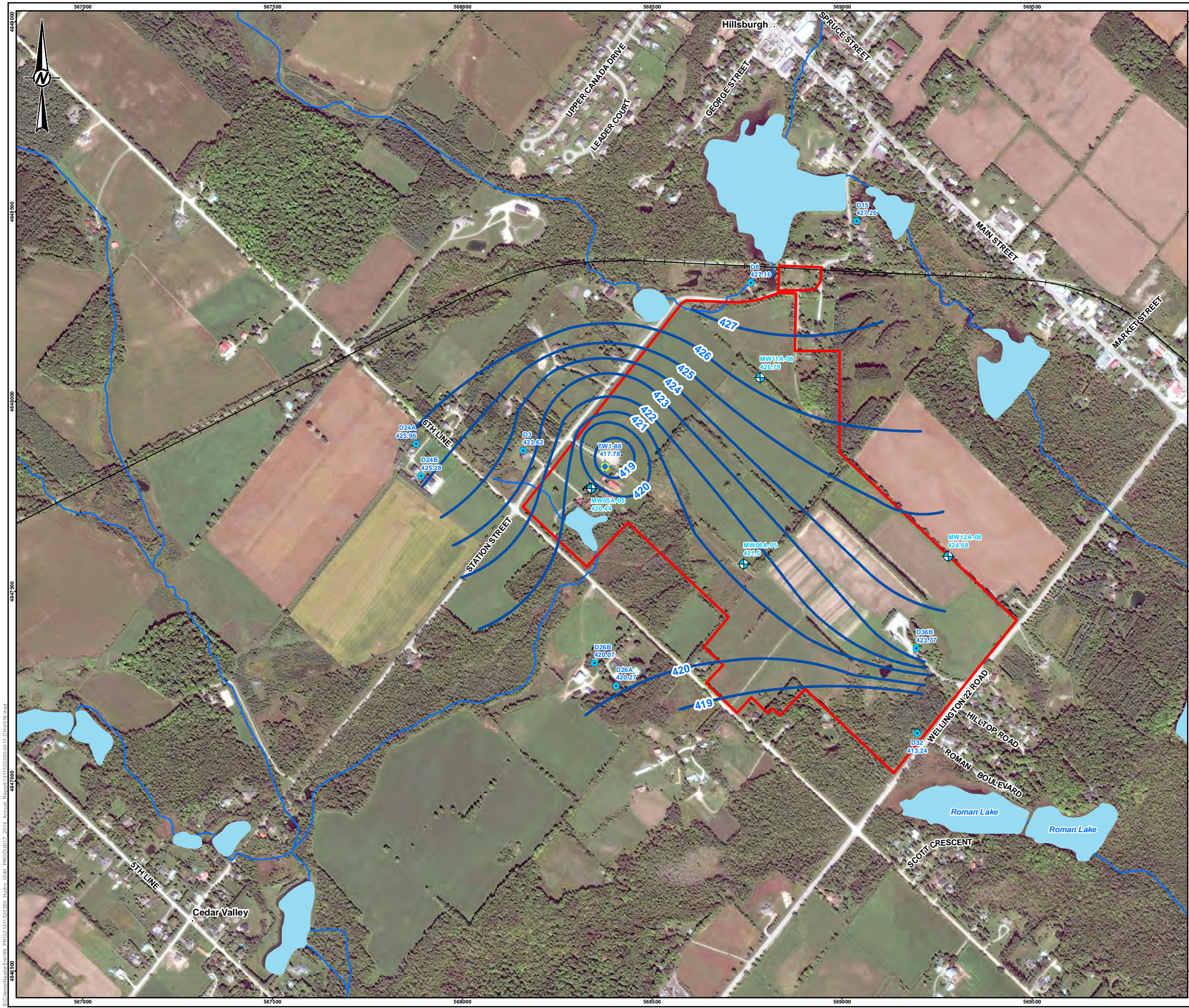
PROJECT **NESTLE WATERS CANADA**
Erin, Ontario

TITLE **TW1-88 MONTHLY WATER TAKING (2015 TO 2019)**
2019 ANNUAL MONITORING REPORT



DATE December 2019
DESIGN KS
REVIEW GP
APPROVED GP

PROJECT NO. 13-1152-0250 (2000) REV A FIGURE 4.2



LEGEND

- City/Town
- Production Well
- Monitoring Well (Bedrock)
- Private Well (Bedrock)
- 427.26 Water Elevation (September 16, 2019)
- Water Elevation Contour (masl)
- Railway
- Watercourse
- Wetland
- Provincially Significant Wetland
- Waterbody
- Municipal Boundary
- Property Boundary



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
NESTLE WATERS CANADA

PROJECT
2019 ANNUAL REPORT

TITLE
**POTENTIOMETRIC SURFACE OF BEDROCK AQUIFER
 (SEPTEMBER 2019)**

CONSULTANT	YYYY-MM-DD	2020-01-29
GOLDER	DESIGNED	PR
	PREPARED	PR
	REVIEWED	GP
	APPROVED	JAP

PROJECT NO. 13-1152-0250 (2000) CONTROL 0017 REV. 1.0 **FIGURE 4.3**

S:\Clients\Nestle\Emis\PRDA\1311520250_Hydro_GW6_PROD\0117_2019_Annual_Report\1311520250_GW617_CH451016.mxd

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM 28mm

APPENDIX A

**Permit To Take Water Number
3716-8UZMCU**

Ministry of the Environment

West-Central Region
Technical Support Section
12th Floor
119 King St W
Hamilton ON L8P 4Y7
Fax: (905)521-7820
Tel: (905) 521-7720

Ministère de l'Environnement

Direction régionale du Centre-Ouest
Secteur du Soutien Technique
12e étage
119 rue King W
Hamilton ON L8P 4Y7
Télécopieur: (905)521-7820
Tél:(905) 521-7720



February 25, 2014

Nestle Canada Inc.
101 Brock Road S.
Puslinch, Ontario N1H 6H9

Attention: Ms. Andreanne Simard

Dear Ms. Simard:

RE: Amendments to monitoring program
Permit to Take Water 3716-8UZMCU
Reference Number 8420-8TAMGM

NOTICE

Pursuant to s. 100, Ontario Water Resources Act, R.S.O. 1990, c. O.40 as amended, I am issuing notice that, as Director of Section 34 of the Ontario Water Resources Act, I am exercising my discretion to amend Permit to Take Water 3716-8UZMCU part of condition 4.1. All other terms and conditions of Permit to Take Water 3716-8UZMCU shall continue in force.

Per condition 4.4, the Permit Holder notified the Director on July 25, 2013 of inaccuracies in condition 4.1 and certain monitoring locations becoming inaccessible or requiring replacement. The notification included suggested replacements. Further reasoning was provided by the Permit Holder on January 31, 2014. The delay in approving the amendment was due to other processes regarding the Permit. On February 24, 2014 Ms. Simard clarified the monitoring locations of condition 4.1(ii).

This Notice supersedes the Notice issued February 3, 2014. Condition 4.1 is hereby revoked and replaced as follows:

4.1 The Permit Holder shall establish the following monitoring program for the duration of the Permit:

Bedrock Wells

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

- TW1-88
- D2A
- D3 (MOE #6710228)
- MW5A
- MW6A
- D36B (MOE Tag#A001807)

(ii) Monthly monitoring of ground water levels at the following locations:

- D19 (MOE #6709207)
- MW11A/B-08
- D24B (MOE #6708146) and D24A (MOE #6711344)
- D26A (MOE #6700678) and D26B
- MW12A/B-08
- D8 (MOE#6708720)
- D15 (MOE#6709532)
- D32 (MOE#6708153)

Overburden Wells

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

- MW3A/B
- D2B
- MW5B
- MW6B
- D26C
- D36A
- D27

(ii) Monthly monitoring of ground water levels at the following locations:

- TW1-99 (MOE #6712960)
- D27 (MOE #6712147)
- D7B
- MW2

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:

- ST03-05
- SW1
- SW3
- SW4
- SW5
- SW7

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

- SW1
- SW3
- SW7

This Notice now forms part of the current permit and must be attached to the original Permit to Take Water, if available. If the original is no longer available, this letter must be kept attached to a certified copy of the Permit to Take Water.

Any change in circumstances related to this permit should be reported promptly to a Director.

It is your responsibility to ensure that any person taking water under the authority of this permit is familiar with and complies with the terms and conditions.

*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 Environmental Commissioner, **Environmental Bill of Rights**, R.S.O. 1993, Chapter 28, within 15 days after receipt of this Notice, require a hearing by the Tribunal. The Environmental Commissioner 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:

3. The name of the appellant;
4. The address of the appellant;
5. The Permit to Take Water number;
6. The date of the Permit to Take Water;
7. The name of the Director;
8. The municipality within which the works are located;

This notice must be served upon:

<i>The Secretary Environmental Review Tribunal 2300 Yonge Street, Suite 1700 Toronto, Ontario M4P 1E4</i>	<u>AND</u>	<i>The Director, Section 34 Ministry of the Environment 12th Floor 119 King St W Hamilton ON L8P 4Y7 Fax: (905)521-7820</i>
---	------------	---

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

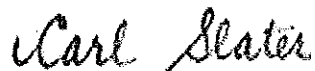
by telephone at (416) 314-4600

by fax at (416) 314-4506

by e-mail at

www.ert.gov.on.ca

Yours truly,



Carl Slater
Director, Section 34, Ontario Water Resources Act
West Central Region

File Storage Number: AP28 ERNE

PERMIT TO TAKE WATER
Ground Water
NUMBER 3716-8UZMCU

Pursuant to Section 34 of the Ontario Water Resources Act, R.S.O. 1990 this Permit To Take Water is hereby issued to:

Nestle Canada Inc.
101 Brock Road S.
Puslinch, Ontario N1H 6H9

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, 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.
- (d) "District Office" means the Guelph District Office.
- (e) "Permit" means this Permit to Take Water No. 3716-8UZMCU including its Schedules, if any, issued in accordance with Section 34 of the OWRA.
- (f) "Permit Holder" means Nestle Canada 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 March 22, 2012 and signed by Don DeMarco, 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 **August 31, 2017**. 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 Notwithstanding the Maximum Taken per Minute and Maximum Taken per Day specified in the Table A of Condition 3.2, the instantaneous rate and amount of taking may increase up to a maximum of 946 litres per minute (LPM) and 1,362,240 liters per day (LPD) in each month between April 1 and September 30 for the duration of the Permit in order to provide operational flexibility. However, the average daily taking in any month between April 1 and September 30 shall not exceed 1,113,000 (LPD).
- 3.4 Notwithstanding Conditions 3.2 and 3.3 the maximum daily water taking shall be reduced should the Grand River Low Water Response Team declare a Level 1 or Level 2 drought condition in the watershed in which the taking is located. The reductions shall be in accordance with the Ontario Low Water Response Protocol and ensure that the reduction is based on the maximum taken per day permitted in Table A.
- 3.5 Notwithstanding Conditions 3.2, 3.3, and 3.4 should the Ontario Water Directors Committee declare a Level 3 drought condition in the watershed in which the taking is located, the maximum daily water taking shall be reduced in accordance with the Level 3 declaration.

4. Monitoring

- 4.1 The Permit Holder shall establish the following monitoring program for the duration of the Permit:

Bedrock Wells

- (i) Continuous monitoring of ground water levels at the following locations:
- TW1-88
 - D2A
 - D3 (MOE #6710228)
 - MW5A
 - MW6A
 - D36B (MOE Tag#A001807)
- (ii) Monthly monitoring of ground water levels at the following locations:
- D19 (MOE #6709207)
 - D24A (MOE #6711344)
 - D24B (MOE #6708146)

- D26A (MOE #6700678)
- D26D
- D27
- MOE #6714441
- MOE # 6705153
- D7 (MOE#6708388)
- D8 (MOE#6708720)
- D12
- D32 (MOE#6708153)

Overburden Wells

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

- MW3A/B
- D2B
- MW5B
- MW6B
- D26C
- D36A

(ii) Monthly monitoring of ground water levels at the following locations:

- TW1-99 (MOE #6712960)
- D27 (MOE #6712147)
- new overburden well replacing D5
- MW2

Piezometers

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

- P01A/B-05
- P03A/B-07
- 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:

- ST03-05
- SW1
- SW3
- SW4
- SW5
- SW7

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

- SW1
- SW3

- SW7

- 4.2 Continuous ground water monitoring shall be datalogged at 60 minute intervals and downloaded monthly; 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. Monthly monitoring shall be conducted in the same week each calendar month for the duration of the Permit.
- 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 for his or her approval, within 15 days of any monthly monitoring event, any monitoring locations identified in Condition 4.1 which become inaccessible and/or abandoned along with a recommendation for replacement of these monitoring locations. 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 In addition to the requirement of Condition 4.6, the Permit Holder shall provide a letter report to the Director and Town of Erin which includes pumped volumes and water level information within 30 days of the end of each month where the water taking is in accordance with Condition 3.3.
- 4.8 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.

4.9 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.

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).

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 Environmental Commissioner, **Environmental Bill of Rights**, R.S.O. 1993, Chapter 28, within 15 days after receipt of this Notice, require a hearing by the Tribunal. The Environmental Commissioner 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:

3. The name of the appellant;
4. The address of the appellant;
5. The Permit to Take Water number;
6. The date of the Permit to Take Water;
7. The name of the Director;
8. 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) 314-4506
Email:
ERTTribunalsecretary@ontario.ca*

AND

*The Environmental Commissioner
1075 Bay Street
6th Floor, Suite 605
Toronto, Ontario M5S 2W5*

AND

*The Director, Section 34
Ministry of the Environment
12th Floor
119 King St W
Hamilton ON L8P 4Y7
Fax: (905)521-7820*

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

by telephone at (416) 314-4600

by fax at (416) 314-4506

by e-mail at www.ert.gov.on.ca

*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 6480-74BKR4, issued on 2007/08/24.

Dated at Hamilton this 28th day of September, 2012.



Carl Slater
Director, Section 34
Ontario Water Resources Act , R.S.O. 1990

Schedule A

This Schedule "A" forms part of Permit To Take Water 3716-8UZMCU, dated September 28, 2012.

Ministry of the Environment
West Central Region

119 King Street West
12th Floor
Hamilton, Ontario L8P 4Y7
Tel.: 905 521-7640
Fax: 905 521-7820

Ministère de l'Environnement
Direction régionale du Centre-Ouest

119 rue King ouest
12e étage
Hamilton (Ontario) L8P 4Y7
Tél. : 905 521-7640
Télééc. : 905 521-7820



April 28, 2014

Ms. Andreeanne Simard
Natural Resource Manager
Nestlé Waters Canada
101 Brock Road South
Guelph, Ontario.
N1H 6H9

Dear Ms. Simard:

Re: Clarification of reporting requirements
Condition 4.7, Permit to Take Water 3716-8UZMCU

This is to clarify ministry expectations with respect the reporting requirements of Condition 4.7 of Permit to Take Water 3716-8UZMCU.

Condition 4.7 states:

"In addition to the requirement of Condition 4.6, the Permit Holder shall provide a letter report to the Director and Town of Erin which includes pumped volumes and water level information within 30 days of the end of each month where the water taking is in accordance with Condition 3.3."

For greater certainty the Letter Report is expected to include the following:

1. Pumped volumes are the total daily volume for each day in the month from the production well TW1-88.
2. Water Level information is the level data for the following locations:
 - a. P01A/B-07 pond
 - b. P12A/B-07 Roman Lake
 - c. P13A/B-07 Erin Branch of the Credit
 - d. P10A/B-05
3. No interpretation of the data is expected for the monthly report.
4. Data interpretation is expected in the annual report required by Condition 4.6.

I trust that you find this satisfactory. If you require further information or clarification, please contact Ms. Belinda Koblik at (905)521-7615 or at Belinda.Koblik@ontario.ca.

Yours truly,

Carl Slater
Technical Support Manager, West Central Region
Director, Section 34, Ontario Water Resources Act.

C: Ms. B. Koblik/Mr. A. Quyum

Ministry of the Environment
and Climate Change
West Central Region

119 King Street West
12th Floor
Hamilton, Ontario L8P 4Y7
Tel.: 905 521-7640
Fax: 905 521-7820

Ministère de l'Environnement
et de l'Action en matière de changement climatique
Direction régionale du Centre-Ouest

119 rue King Ouest
12^e étage
Hamilton (Ontario) L8P 4Y7
Tél. : 905 521-7640
Télec. : 905 521-7820



February 5, 2015

Nestle Canada Inc.
101 Brock Road S.
Puslinch, Ontario
N1H 6H9

Attention: Ms. Andreeanne Simard

Dear Ms. Simard:

**RE: Amendments to monitoring program and well sanitization conditions
Permit to Take Water 3716-8UZMCU**

NOTICE

Pursuant to s. 100, Ontario Water Resources Act, R.S.O. 1990, c. O.40 as amended, I am issuing notice that, as Director of Section 34 of the Ontario Water Resources Act, I am exercising my discretion to amend Permit to Take Water 3716-8UZMCU condition 3.6 and part of condition 4.1. All other terms and conditions of Permit to Take Water 3716-8UZMCU shall continue in force.

An inaccuracy in the monitoring program listed in condition 4.1(ii) of a Notice issued February 25, 2014 was brought to the attention of the ministry in an email from Ms. Andreeanne Simard, Natural Resources Manager dated May 29, 2014. In an email dated November 27, 2014, Ms. Simard, requested the sanitation Notice issued on January 20, 2014 be applicable for all years remaining on the permit.

This Notice supersedes the Notices issued on January 20, 2014 and February 25, 2014.

Condition 3.6 is hereby revoked and replaced as follows:

3.6 Notwithstanding Table A, the maximum pumping of water extracted from Source TW1-88 may be increased to 1040 litres per minute (275 U.S. gallons per minute) annually, or as needed, for the sole purpose of sanitization of the well. The maximum amount of water taken shall not exceed 1,113,000 litres/day.

Condition 4.1 is hereby revoked and replaced as follows:

4.1 The Permit Holder shall establish the following monitoring program for the duration of the Permit:

a. Bedrock Wells

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

- TW1-88
- D2A
- D3 (MOE #6710228)
- MW5A
- MW6A
- D36B (MOE Tag#A001807)

(ii) Monthly monitoring of ground water levels at the following locations:

- D19 (MOE #6709207)
- MW11A/B-08
- D24B (MOE #6708146) and D24A (MOE #6711344)
- D26A (MOE #6700678) and D26B
- MW12A/B-08
- D8 (MOE#6708720)
- D15 (MOE#6709532)
- D32 (MOE#6708153)

b. Overburden Wells

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

- MW3A/B
- D2B
- MW5B
- MW6B
- D26C
- D36A

(ii) Monthly monitoring of ground water levels at the following locations:

- TW1-99 (MOE #6712960)
- D27 (MOE #6712147)
- D7B
- MW2

c. 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

d. Surface Water

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

- ST03-05
- SW1
- SW3
- SW4
- SW5
- SW7

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

- SW1
- SW3
- SW7

This Notice now forms part of the current permit and must be attached to the original Permit to Take Water, if available. If the original is no longer available, this letter must be kept attached to a certified copy of the Permit to Take Water.

Any change in circumstances related to this permit should be reported promptly to a Director.

It is your responsibility to ensure that any person taking water under the authority of this permit is familiar with and complies with the terms and conditions.

*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 Environmental Commissioner, **Environmental Bill of Rights**, R.S.O. 1993, Chapter 28, within 15 days after receipt of this Notice, require a hearing by the Tribunal. The Environmental Commissioner 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:

3. The name of the appellant;
4. The address of the appellant;
5. The Permit to Take Water number;
6. The date of the Permit to Take Water;
7. The name of the Director;
8. The municipality within which the works are located;

This notice must be served upon:

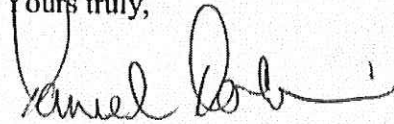
<i>The Secretary Environmental Review Tribunal 2300 Yonge Street, Suite 1700 Toronto, Ontario M4P 1E4</i>	<i>AND</i>	<i>The Director, Section 34 Ministry of the Environment 12th Floor 119 King St W Hamilton ON L8P 4Y7 Fax: (905)521-7820</i>
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Further information on the Environmental Review Tribunal's requirements for an appeal can be obtained directly from the Tribunal:

by telephone at (416) 314-4600 by fax at (416) 314-4506

by e-mail at www.ert.gov.on.ca

Yours truly,



Dan Dobrin
Director, Section 34, Ontario Water Resources Act
West Central Region

File Storage Number: AP28 ERNE

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

DATE COMPLETED: AUGUST 11, 1988
(Page 1 of 2)

DRILLING METHOD: WET/AIR ROTARY

CRA SUPERVISOR: S. CROSSMAN

DEPTH m BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEVATION m AMSL	MONITOR INSTALLATION	SAMPLE		
				NUMBER	STATE	VALUE
	GROUND SURFACE (Approximate)	430.0				
2.5	TOPSOIL—sand, some silt, little gravel, compact rootlets, humus material, brown, moist SM (SAND)—some silt, trace of fine gravel, compact, medium grained, poorly graded, brown, moist	429.5				
5.0						
7.5	GW (GRAVEL)—some sand, little silt, very dense, well graded, fine to coarse grained, grey-brown water bearing	423.9				
10.0						
12.5	SP (SAND)—trace silt, loose, uniform, medium grained, wet GW (GRAVEL)—some sand, little silt, dense, well graded, coarse to fine grained, water bearing	419.3 418.7				
15.0	ML (TILL) SILT—some sand, some gravel, trace clay, stiff, low to non-plastic, light brown, wet CL (TILL) CLAY—some silt, little sand, little gravel, stiff, low plastic, grey-brown, moist	417.8 415.7				
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

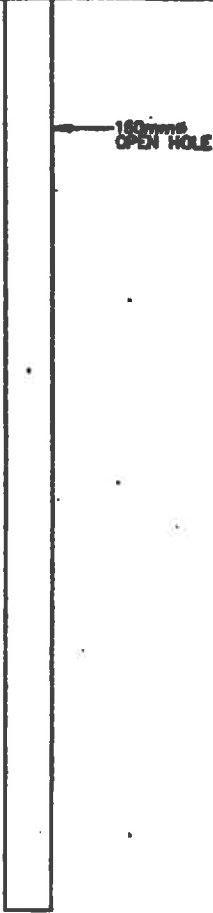
GRAIN SIZE ANALYSIS ○ WATER FOUND ∇ STATIC WATER LEVEL ▼

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

(L-1)

PROJECT NAME: HILLSBURGH
 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	SUBSTRATE	VALUE
35.0 37.5 40.0 42.5 45.0	LST (LIMESTONE) BEDROCK— hard, sound, some fracturing, massive, grey					
47.5 50.0 52.5 55.0 57.5	Dolostone, dark grey to black - fracture, clay filled 100 to 150mm, brown - fracture 100 to 150mm, clay filled - fracture 100 to 200mm, unfilled - sound, unfractured, crystalline, basal to concoidal fracture, grey.	383.4 372.7				
60.0 62.5 65.0	END OF HOLE @ 57.30m BGS. NOTE: 1. Casing set to 20.88m BGS and grouted into bedrock using a pure bentonite grout. 2. All elevations are approximate.					

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
 GRAIN SIZE ANALYSIS ○ WATER FOUND ∇ STATIC WATER LEVEL ▼



Ministry of the Environment

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

A095193

Well Record

Regulation 933 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:
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: ERN
Lot: 24
Concession: 7
County/District/Municipality: WELLINGTON
City/Town/Village: HILLSBURG
Province: Ontario
Postal Code:
UTM Coordinates Zone: NAD 83
Easting: 588362
Northing: 4847825

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

Table with columns: General Colour, Most Common Material, Other Materials, General Description, Depth (m) From, To. Rows include SAND, SILT GRAVEL, GRAVEL, CLAY TILL, LIMESTONE, etc.

Annular Space table with columns: Depth Set (m) From, To, Type of Sealant Used, Volume Placed (m³).

Method of Construction and Well Use checkboxes including Rotary, Drilling, and various well types like Water Supply or Recharge Well.

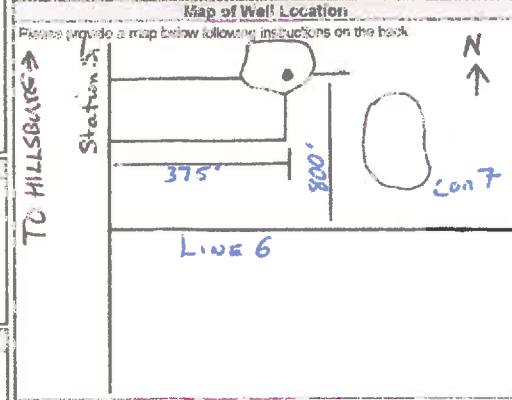
Construction Record - Casing table with columns: Inside Diameter (mm), Depth Hole (m), Material, Size No., Depth (m) From, To.

Construction Record - Screen table with columns: Outside Diameter (mm), Material, Size No., Depth (m) From, To.

Water Data table with columns: Water found at Depth (m), Kind of Water, Fresh, Untested, Hole Diameter (mm) Depth (m) From, To.

Well Contractor and Well Technician Information section including Business Name (Dirt Hopper Ltd), Address, and Technician Signature/Date.

Results of Well Yield Testing table with columns: After test of well yield, Time, Water Level (m), Recovery, etc. Includes data for AIRLIFT REDEVELOP.



Comments section and Ministry Use Only section with Audit No. 2115126 and Date Work Completed 11/22/2010.

APPENDIX C

TW1-88 Water Taking

**TABLE C1
 TW1-88 DAILY WATER TAKING
 NESTLE WATERS CANADA
 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-19	19,850	14	75,140	53
2-Jan-19	42,220	29	159,820	112
3-Jan-19	21,080	15	79,796	58
4-Jan-19	21,080	15	79,796	56
5-Jan-19	0	0	0	0
6-Jan-19	20,020	14	75,784	53
7-Jan-19	0	0	0	0
8-Jan-19	19,870	14	75,216	53
9-Jan-19	9,970	7	37,741	26
10-Jan-19	19,850	14	75,140	53
11-Jan-19	0	0	0	0
12-Jan-19	19,870	14	75,216	53
13-Jan-19	0	0	0	0
14-Jan-19	72,650	51	275,010	193
15-Jan-19	63,260	44	239,465	167
16-Jan-19	42,190	30	159,706	112
17-Jan-19	63,260	44	239,465	168
18-Jan-19	78,130	55	295,754	210
19-Jan-19	58,880	40	222,885	153
20-Jan-19	52,680	37	199,415	140
21-Jan-19	45,550	33	172,425	124
22-Jan-19	36,430	25	137,902	96
23-Jan-19	54,950	38	208,008	143
24-Jan-19	21,070	15	79,759	56
25-Jan-19	31,610	22	119,657	83
26-Jan-19	31,630	22	119,733	84
27-Jan-19	31,600	22	119,619	84
28-Jan-19	21,080	15	79,796	56
29-Jan-19	31,650	22	119,808	83
30-Jan-19	44,980	32	170,268	123
31-Jan-19	33,170	22	125,562	84

**TABLE C1
 TW1-88 DAILY WATER TAKING
 NESTLE WATERS CANADA
 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-19	31,640	22	119,770	83
2-Feb-19	29,550	21	111,859	78
3-Feb-19	46,770	33	177,044	127
4-Feb-19	33,990	23	128,666	87
5-Feb-19	38,730	28	146,609	106
6-Feb-19	3,310	2	12,530	6
7-Feb-19	31,620	22	119,695	84
8-Feb-19	31,610	22	119,657	84
9-Feb-19	31,630	22	119,733	84
10-Feb-19	21,090	15	79,834	56
11-Feb-19	29,810	21	112,843	79
12-Feb-19	0	0	0	0
13-Feb-19	0	0	0	0
14-Feb-19	19,850	14	75,140	53
15-Feb-19	0	0	0	0
16-Feb-19	19,860	14	75,178	53
17-Feb-19	0	0	0	0
18-Feb-19	19,840	14	75,103	53
19-Feb-19	41,580	29	157,397	110
20-Feb-19	30,230	22	114,433	84
21-Feb-19	32,970	22	124,805	84
22-Feb-19	31,620	22	119,695	83
23-Feb-19	30,630	22	115,947	84
24-Feb-19	22,000	15	83,279	56
25-Feb-19	10,940	8	41,412	31
26-Feb-19	31,070	21	117,613	81
27-Feb-19	28,540	21	108,036	79
28-Feb-19	31,660	22	119,846	84

**TABLE C1
 TW1-88 DAILY WATER TAKING
 NESTLE WATERS CANADA
 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-19	25,390	18	96,112	68
2-Mar-19	39,270	28	148,653	104
3-Mar-19	28,080	20	106,294	75
4-Mar-19	30,720	21	116,288	78
5-Mar-19	30,300	22	114,698	83
6-Mar-19	25,790	18	97,626	69
7-Mar-19	30,430	21	115,190	80
8-Mar-19	29,280	20	110,837	75
9-Mar-19	31,630	23	119,733	87
10-Mar-19	63,210	22	239,276	85
11-Mar-19	84,280	15	319,034	56
12-Mar-19	25,310	18	95,809	67
13-Mar-19	10,010	7	37,892	26
14-Mar-19	19,880	14	75,254	53
15-Mar-19	0	0	0	0
16-Mar-19	19,760	14	74,800	52
17-Mar-19	10,500	7	39,747	28
18-Mar-19	24,900	18	94,257	69
19-Mar-19	17,060	11	64,579	42
20-Mar-19	31,520	22	119,316	83
21-Mar-19	10,510	7	39,785	28
22-Mar-19	31,490	22	119,203	83
23-Mar-19	21,000	15	79,494	56
24-Mar-19	11,130	9	42,132	33
25-Mar-19	30,760	21	116,439	79
26-Mar-19	43,340	30	164,060	114
27-Mar-19	10,530	7	39,860	28
28-Mar-19	21,020	15	79,569	56
29-Mar-19	10,500	7	39,747	28
30-Mar-19	3,240	3	12,265	12
31-Mar-19	17,700	12	67,002	44

**TABLE C1
TW1-88 DAILY WATER TAKING
NESTLE WATERS CANADA
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-19	11,880	8	44,971	32
2-Apr-19	19,780	14	74,875	52
3-Apr-19	10,890	8	41,223	29
4-Apr-19	0	0	0	0
5-Apr-19	19,750	14	74,762	52
6-Apr-19	0	0	0	0
7-Apr-19	30,180	21	114,244	80
8-Apr-19	20,530	14	77,714	54
9-Apr-19	18,650	14	70,598	53
10-Apr-19	22,780	15	86,232	57
11-Apr-19	20,990	15	79,456	56
12-Apr-19	10,500	7	39,747	28
13-Apr-19	31,480	22	119,165	83
14-Apr-19	10,490	7	39,709	28
15-Apr-19	0	0	0	0
16-Apr-19	19,780	14	74,875	53
17-Apr-19	0	0	0	0
18-Apr-19	19,780	14	74,875	52
19-Apr-19	0	0	0	0
20-Apr-19	19,770	14	74,838	53
21-Apr-19	0	0	0	0
22-Apr-19	19,760	14	74,800	52
23-Apr-19	0	0	0	0
24-Apr-19	19,800	14	74,951	52
25-Apr-19	0	0	0	0
26-Apr-19	19,810	14	74,989	53
27-Apr-19	0	0	0	0
28-Apr-19	10,690	7	40,466	28
29-Apr-19	31,520	22	119,316	84
30-Apr-19	21,000	15	79,494	56

TABLE C1
TW1-88 DAILY WATER TAKING
NESTLE WATERS CANADA
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-19	41,350	29	156,527	109
2-May-19	21,060	15	79,721	56
3-May-19	21,000	15	79,494	56
4-May-19	31,490	22	119,203	83
5-May-19	21,000	15	79,494	56
6-May-19	20,980	15	79,418	56
7-May-19	18,120	14	68,592	51
8-May-19	33,720	23	127,644	86
9-May-19	27,880	20	105,537	77
10-May-19	24,440	16	92,515	62
11-May-19	31,490	22	119,203	84
12-May-19	20,980	15	79,418	56
13-May-19	20,990	15	79,456	56
14-May-19	10,490	7	39,709	28
15-May-19	20,400	14	77,222	54
16-May-19	10,500	7	39,747	28
17-May-19	9,980	7	37,778	27
18-May-19	21,000	15	79,494	56
19-May-19	9,910	7	37,513	26
20-May-19	10,000	7	37,854	27
21-May-19	10,500	7	39,747	28
22-May-19	51,420	37	194,646	139
23-May-19	32,250	22	122,079	83
24-May-19	36,420	26	137,865	99
25-May-19	25,190	18	95,354	68
26-May-19	21,680	15	82,068	56
27-May-19	10,780	7	40,807	28
28-May-19	30,890	22	116,931	83
29-May-19	20,980	15	79,418	56
30-May-19	20,990	15	79,456	56
31-May-19	41,560	29	157,322	111

**TABLE C1
 TW1-88 DAILY WATER TAKING
 NESTLE WATERS CANADA
 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-19	20,980	15	79,418	56
2-Jun-19	10,500	8	39,747	29
3-Jun-19	20,400	14	77,222	54
4-Jun-19	0	0	0	0
5-Jun-19	19,790	14	74,913	53
6-Jun-19	0	0	0	0
7-Jun-19	19,780	14	74,875	53
8-Jun-19	0	0	0	0
9-Jun-19	19,780	14	74,875	53
10-Jun-19	21,010	15	79,531	56
11-Jun-19	11,310	9	42,813	34
12-Jun-19	27,860	20	105,462	75
13-Jun-19	12,610	8	47,734	31
14-Jun-19	13,980	11	52,920	40
15-Jun-19	16,880	11	63,898	42
16-Jun-19	9,590	7	36,302	28
17-Jun-19	11,360	7	43,002	28
18-Jun-19	0	0	0	0
19-Jun-19	31,480	22	119,165	84
20-Jun-19	1,740	2	6,587	8
21-Jun-19	8,740	6	33,084	21
22-Jun-19	0	0	0	0
23-Jun-19	0	0	0	0
24-Jun-19	19,780	14	74,875	53
25-Jun-19	0	0	0	0
26-Jun-19	9,940	7	37,627	27
27-Jun-19	20,990	15	79,456	57
28-Jun-19	20,970	15	79,380	56
29-Jun-19	5,790	5	21,918	19
30-Jun-19	15,120	10	57,235	37

**TABLE C1
TW1-88 DAILY WATER TAKING
NESTLE WATERS CANADA
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-19	10,510	8	39,785	29
2-Jul-19	15,480	11	58,598	41
3-Jul-19	5,380	5	20,366	18
4-Jul-19	15,580	10	58,977	39
5-Jul-19	30,240	21	114,471	81
6-Jul-19	3,220	3	12,189	12
7-Jul-19	26,920	18	101,903	69
8-Jul-19	20,430	15	77,336	55
9-Jul-19	25,020	18	94,711	67
10-Jul-19	10,510	8	39,785	29
11-Jul-19	10,480	7	39,671	28
12-Jul-19	10,490	8	39,709	29
13-Jul-19	20,990	15	79,456	57
14-Jul-19	0	0	0	0
15-Jul-19	17,290	13	65,450	49
16-Jul-19	14,050	9	53,185	35
17-Jul-19	10,690	8	40,466	32
18-Jul-19	9,560	6	36,189	23
19-Jul-19	7,080	6	26,801	22
20-Jul-19	13,740	9	52,012	34
21-Jul-19	10,490	8	39,709	28
22-Jul-19	10,480	7	39,671	28
23-Jul-19	10,500	8	39,747	29
24-Jul-19	25,600	19	96,906	72
25-Jul-19	24,620	17	93,197	63
26-Jul-19	31,460	22	119,089	84
27-Jul-19	10,490	8	39,709	29
28-Jul-19	20,980	15	79,418	56
29-Jul-19	10,520	7	39,823	28
30-Jul-19	10,480	7	39,671	28
31-Jul-19	28,060	21	106,219	78

**TABLE C1
TW1-88 DAILY WATER TAKING
NESTLE WATERS CANADA
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-19	18,050	13	68,327	49
2-Aug-19	21,380	15	80,932	57
3-Aug-19	5,230	3	19,798	11
4-Aug-19	21,670	16	82,030	61
5-Aug-19	9,750	6	36,908	23
6-Aug-19	9,880	7	37,400	27
7-Aug-19	21,580	15	81,689	57
8-Aug-19	20,250	14	76,655	55
9-Aug-19	15,810	12	59,847	46
10-Aug-19	15,730	10	59,544	39
11-Aug-19	29,240	21	110,685	81
12-Aug-19	2,110	1	7,987	3
13-Aug-19	20,390	14	77,185	55
14-Aug-19	20,990	15	79,456	56
15-Aug-19	10,480	7	39,671	28
16-Aug-19	10,500	7	39,747	28
17-Aug-19	10,490	8	39,709	29
18-Aug-19	31,450	22	119,051	84
19-Aug-19	9,910	7	37,513	27
20-Aug-19	10,490	8	39,709	29
21-Aug-19	0	0	0	0
22-Aug-19	19,770	14	74,838	53
23-Aug-19	19,740	14	74,724	53
24-Aug-19	0	0	0	0
25-Aug-19	19,760	14	74,800	53
26-Aug-19	10,490	7	39,709	28
27-Aug-19	20,970	15	79,380	56
28-Aug-19	13,540	10	51,254	40
29-Aug-19	27,740	19	105,007	72
30-Aug-19	19,310	15	73,096	55
31-Aug-19	33,060	23	125,146	85

**TABLE C1
 TW1-88 DAILY WATER TAKING
 NESTLE WATERS CANADA
 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-19	0	0	0	0
2-Sep-19	14,280	11	54,056	42
3-Sep-19	26,960	18	102,055	69
4-Sep-19	25,940	18	98,194	70
5-Sep-19	10,490	7	39,709	28
6-Sep-19	22,080	17	83,582	63
7-Sep-19	19,780	13	74,875	50
8-Sep-19	20,980	15	79,418	56
9-Sep-19	20,990	15	79,456	56
10-Sep-19	21,000	15	79,494	56
11-Sep-19	41,380	29	156,640	110
12-Sep-19	20,960	15	79,342	56
13-Sep-19	17,510	13	66,283	50
14-Sep-19	13,900	9	52,617	34
15-Sep-19	31,450	22	119,051	84
16-Sep-19	10,480	8	39,671	29
17-Sep-19	9,910	7	37,513	27
18-Sep-19	0	0	0	0
19-Sep-19	19,770	14	74,838	53
20-Sep-19	0	0	0	0
21-Sep-19	19,770	14	74,838	53
22-Sep-19	0	0	0	0
23-Sep-19	40,750	29	154,255	109
24-Sep-19	17,460	13	66,093	50
25-Sep-19	20,190	15	76,427	55
26-Sep-19	13,100	9	49,589	36
27-Sep-19	18,440	13	69,803	49
28-Sep-19	6,720	5	25,438	19
29-Sep-19	27,930	19	105,727	72
30-Sep-19	31,060	22	117,575	81

**TABLE C1
 TW1-88 DAILY WATER TAKING
 NESTLE WATERS CANADA
 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-19	10,490	7	39,709	28
2-Oct-19	14,200	11	53,753	41
3-Oct-19	10,250	7	38,800	27
4-Oct-19	20,960	15	79,342	56
5-Oct-19	20,040	14	75,860	53
6-Oct-19	21,970	15	83,165	58
7-Oct-19	17,230	11	65,223	43
8-Oct-19	20,980	15	79,418	55
9-Oct-19	3,460	3	13,098	12
10-Oct-19	17,430	11	65,980	43
11-Oct-19	20,980	15	79,418	56
12-Oct-19	0	0	0	0
13-Oct-19	0	0	0	0
14-Oct-19	0	0	0	0
15-Oct-19	35,590	25	134,723	95
16-Oct-19	67,510	47	255,553	179
17-Oct-19	9,950	7	37,665	27
18-Oct-19	10,480	7	39,671	28
19-Oct-19	0	0	0	0
20-Oct-19	0	0	0	0
21-Oct-19	31,510	22	119,278	84
22-Oct-19	27,890	20	105,575	77
23-Oct-19	23,680	17	89,639	63
24-Oct-19	28,640	20	108,414	76
25-Oct-19	32,650	23	123,594	87
26-Oct-19	29,660	21	112,275	79
27-Oct-19	29,720	20	112,502	76
28-Oct-19	20,980	15	79,418	55
29-Oct-19	41,380	28	156,640	107
30-Oct-19	26,500	19	100,313	74
31-Oct-19	20,300	14	76,844	54

**TABLE C1
TW1-88 DAILY WATER TAKING
NESTLE WATERS CANADA
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-19	26,400	18	99,935	67
2-Nov-19	10,480	7	39,671	27
3-Nov-19	10,490	7	39,709	28
4-Nov-19	24,430	17	92,478	65
5-Nov-19	14,780	11	55,948	43
6-Nov-19	16,570	11	62,724	41
7-Nov-19	0	0	0	0
8-Nov-19	0	0	0	0
9-Nov-19	0	0	0	0
10-Nov-19	0	0	0	0
11-Nov-19	28,470	21	107,771	79
12-Nov-19	21,230	15	80,364	56
13-Nov-19	23,840	13	90,244	49
14-Nov-19	14,790	11	55,986	42
15-Nov-19	6,180	4	23,394	14
16-Nov-19	31,530	22	119,354	84
17-Nov-19	8,430	7	31,911	26
18-Nov-19	1,920	1	7,268	3
19-Nov-19	31,020	22	117,423	82
20-Nov-19	0	0	0	0
21-Nov-19	19,810	14	74,989	53
22-Nov-19	0	0	0	0
23-Nov-19	19,800	14	74,951	53
24-Nov-19	0	0	0	0
25-Nov-19	22,870	17	86,572	64
26-Nov-19	36,030	25	136,388	95
27-Nov-19	15,240	11	57,690	41
28-Nov-19	39,120	27	148,085	102
29-Nov-19	21,260	15	80,478	56
30-Nov-19	21,030	15	79,607	56

**TABLE C1
TW1-88 DAILY WATER TAKING
NESTLE WATERS CANADA
ERIN, ONTARIO**

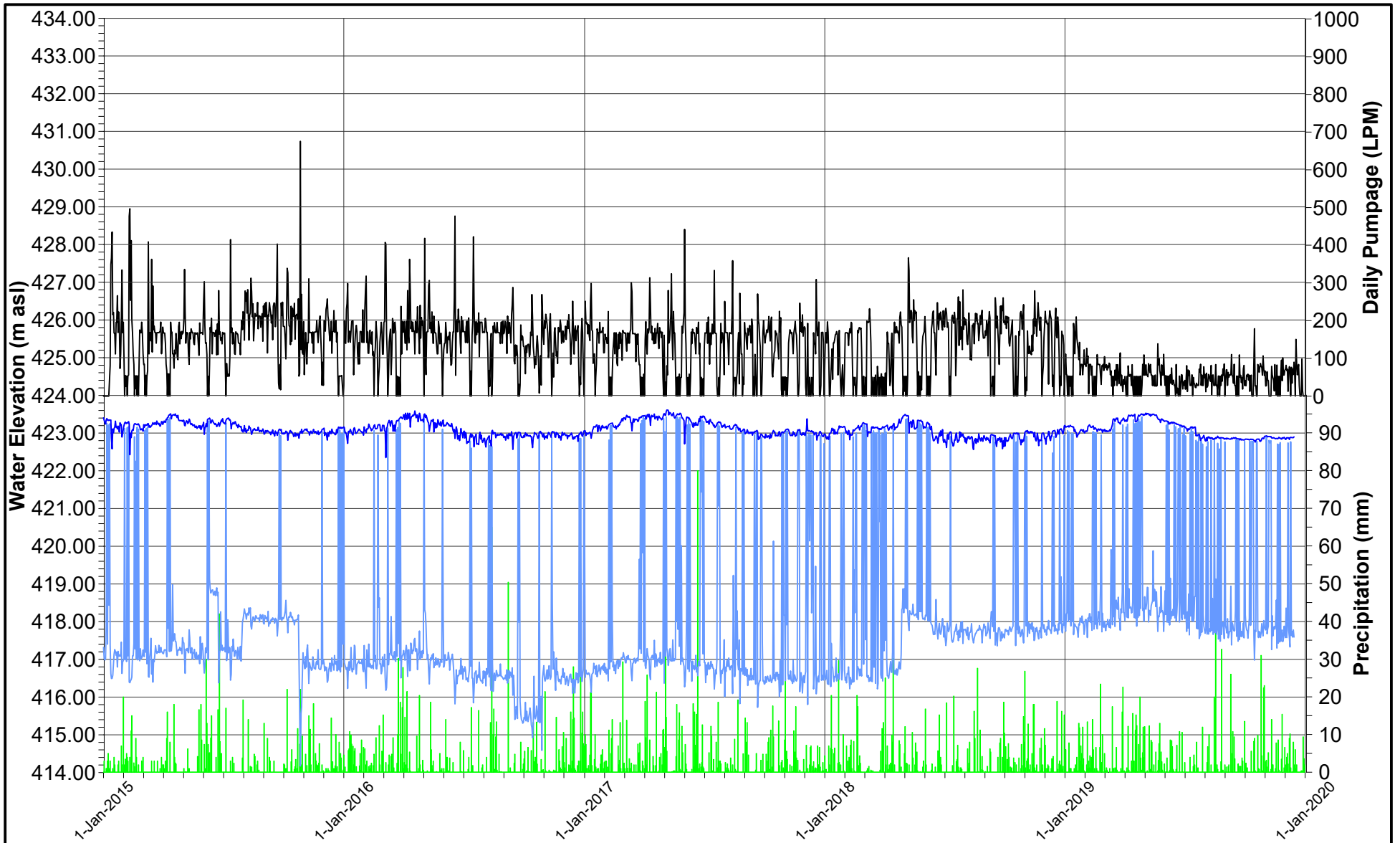
Day	Volume (US gpd)	Average Flow Rate Over Time Taken (US gpm)	Volume (L/day)	Average Flow Rate Over Time Taken (L/min)
1-Dec-19	24,760	18	93,727	69
2-Dec-19	27,690	19	104,818	71
3-Dec-19	30,960	22	117,196	82
4-Dec-19	24,270	18	91,872	67
5-Dec-19	28,270	19	107,014	72
6-Dec-19	3,470	3	13,135	12
7-Dec-19	24,730	17	93,613	66
8-Dec-19	29,390	21	111,253	78
9-Dec-19	25,810	17	97,701	65
10-Dec-19	0	0	0	0
11-Dec-19	27,430	20	103,834	76
12-Dec-19	12,870	9	48,718	34
13-Dec-19	27,280	19	103,266	72
14-Dec-19	21,410	15	81,046	57
15-Dec-19	34,070	24	128,969	90
16-Dec-19	23,740	16	89,866	60
17-Dec-19	0	0	0	0
18-Dec-19	55,690	40	210,809	151
19-Dec-19	32,920	23	124,616	88
20-Dec-19	21,130	15	79,986	56
21-Dec-19	26,790	18	101,411	68
22-Dec-19	31,550	22	119,430	84
23-Dec-19	10,520	7	39,823	28
24-Dec-19	0	0	0	0
25-Dec-19	0	0	0	0
26-Dec-19	0	0	0	0
27-Dec-19	35,770	26	135,404	98
28-Dec-19	6,190	4	23,432	14
29-Dec-19	0	0	0	0
30-Dec-19	0	0	0	0
31-Dec-19	0	0	0	0

Notes:

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

APPENDIX D

Groundwater Level Monitoring



- █ Precipitation
- Daily Pumpage (LPM)
- TW1-88 Daily Max
- TW1-88 Daily Min

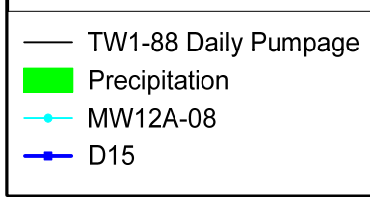
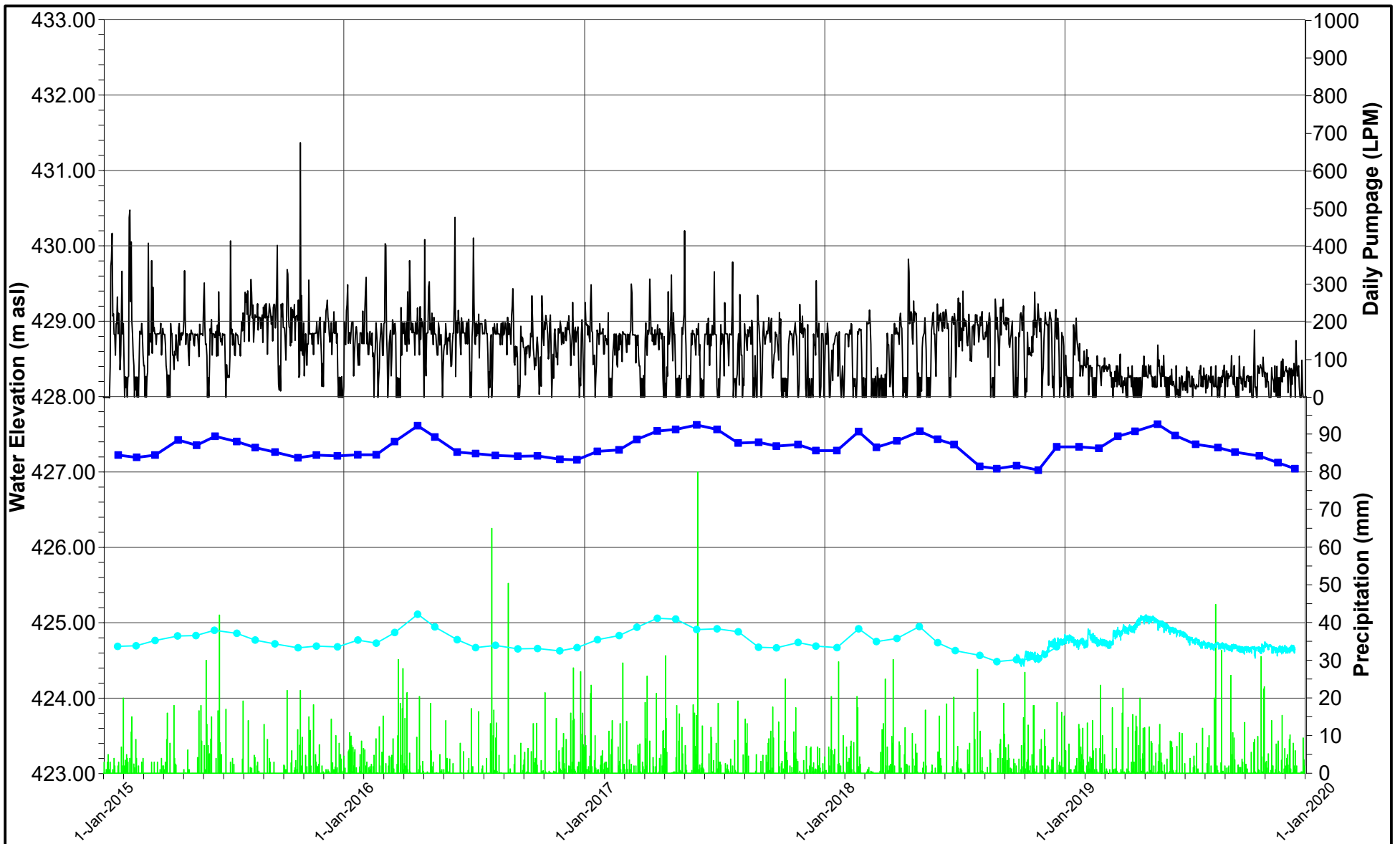


DATE	DECEMBER 2019
DESIGN	KS
REVIEW	GP
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PROJECT **NESTLE WATERS CANADA**
Town of Erin, Ontario

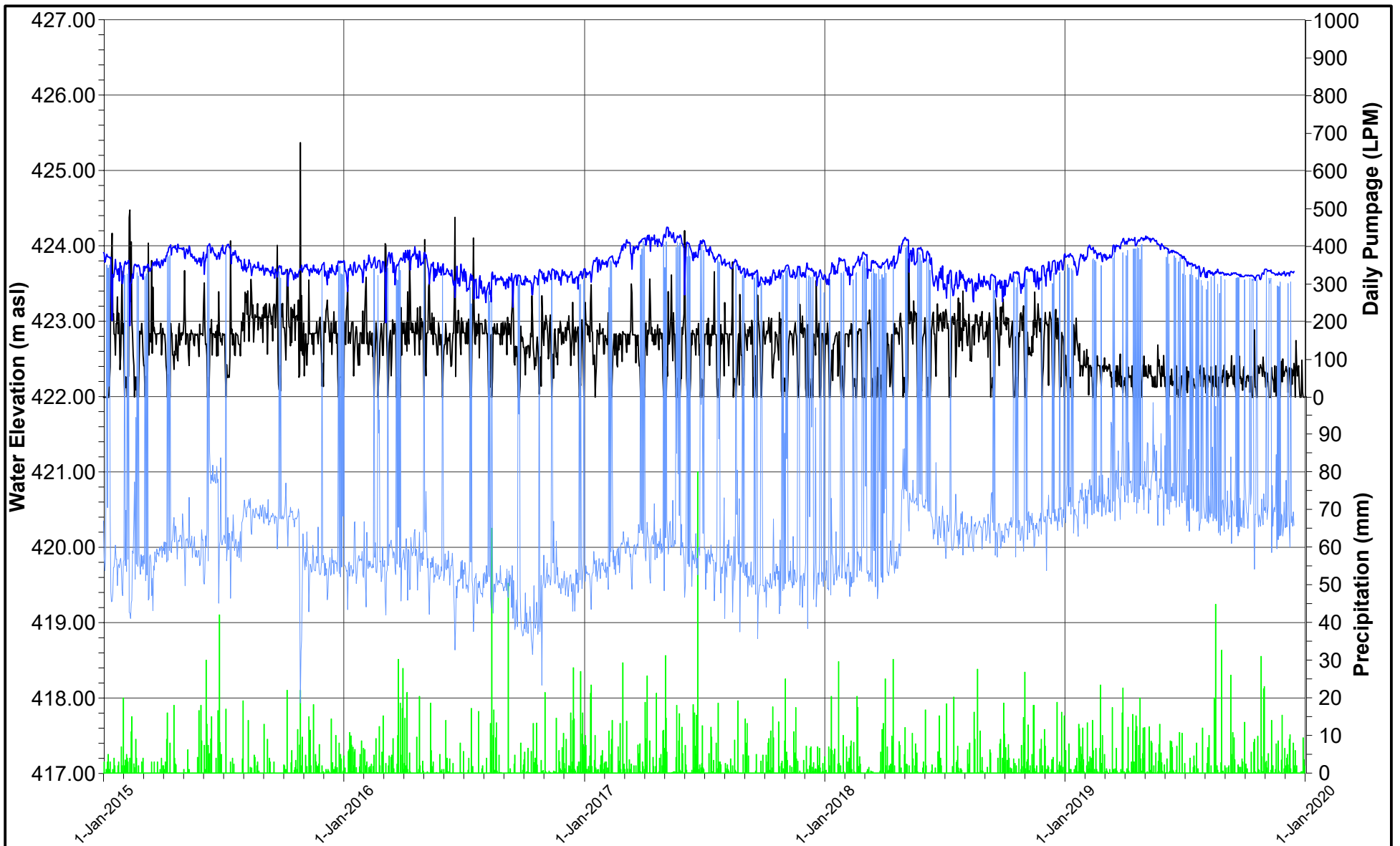
TITLE **HYDROGRAPH FOR TW1-88**
2019 ANNUAL MONITORING REPORT

PROJECT NO.	REV	FIGURE
13-1152-0250 (2000)	A	D1



DATE	December 2019
DESIGN	KS
REVIEW	GP
APPROVED	GP

PROJECT	NESTLE WATERS CANADA Town of Erin, Ontario		
TITLE	HYDROGRAPHS FOR BACKGROUND BEDROCK WELLS 2019 ANNUAL MONITORING REPORT		
PROJECT NO.	13-1152-0250 (2000)	REV	A
		FIGURE	D2



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



DATE	December 2019
DESIGN	KS
REVIEW	GP
APPROVED	GP

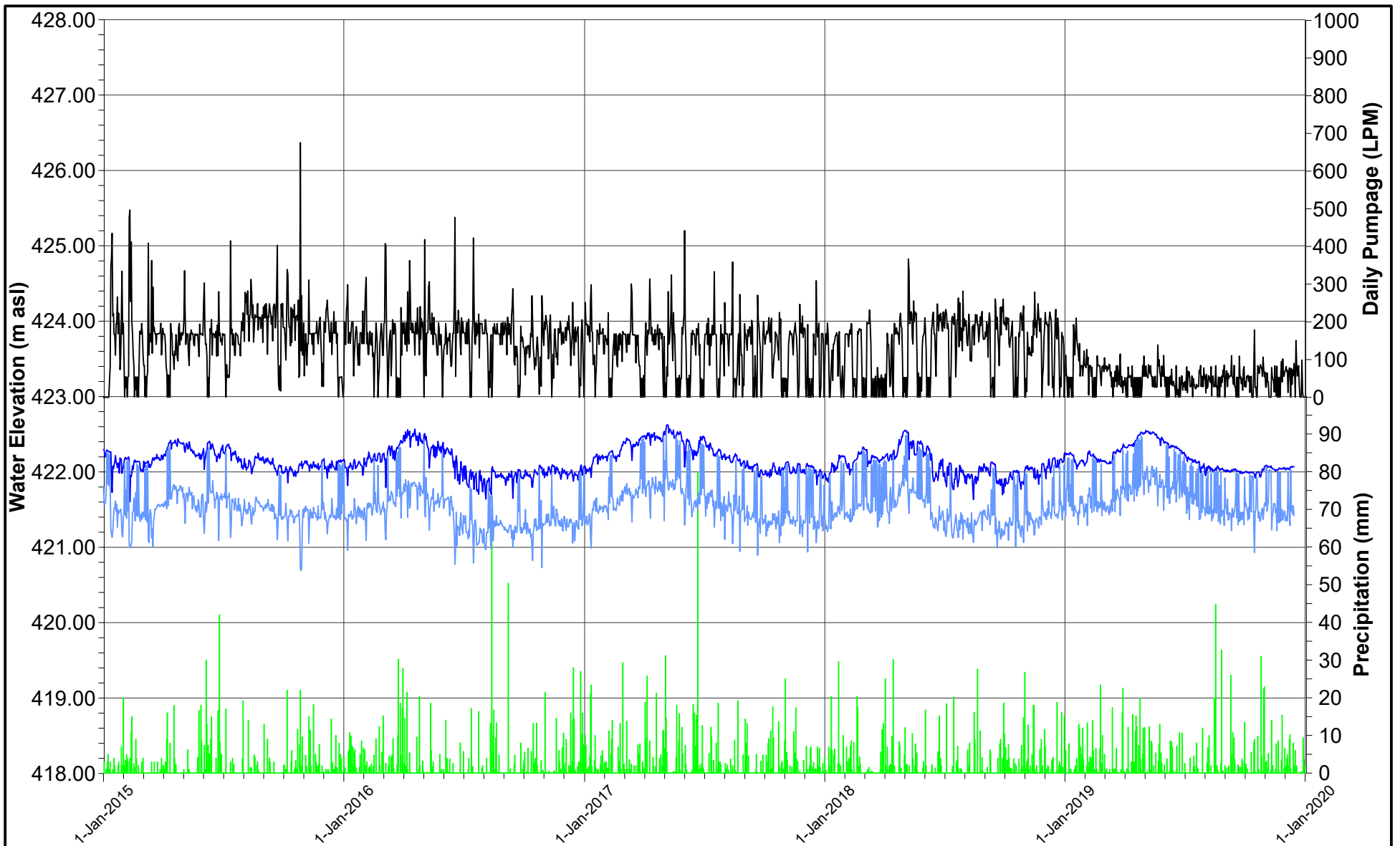
PROJECT
NESTLE WATERS CANADA
 Town of Erin, Ontario

TITLE
HYDROGRAPH FOR MW5A-05
2019 ANNUAL MONITORING REPORT

PROJECT NO.
 13-1152-0250 (2000)

REV
 A

FIGURE
 D3



- TW1-88 Daily Pumpage
- █ Precipitation
- MW6A-05 Daily Max
- MW6A-05 Daily Min

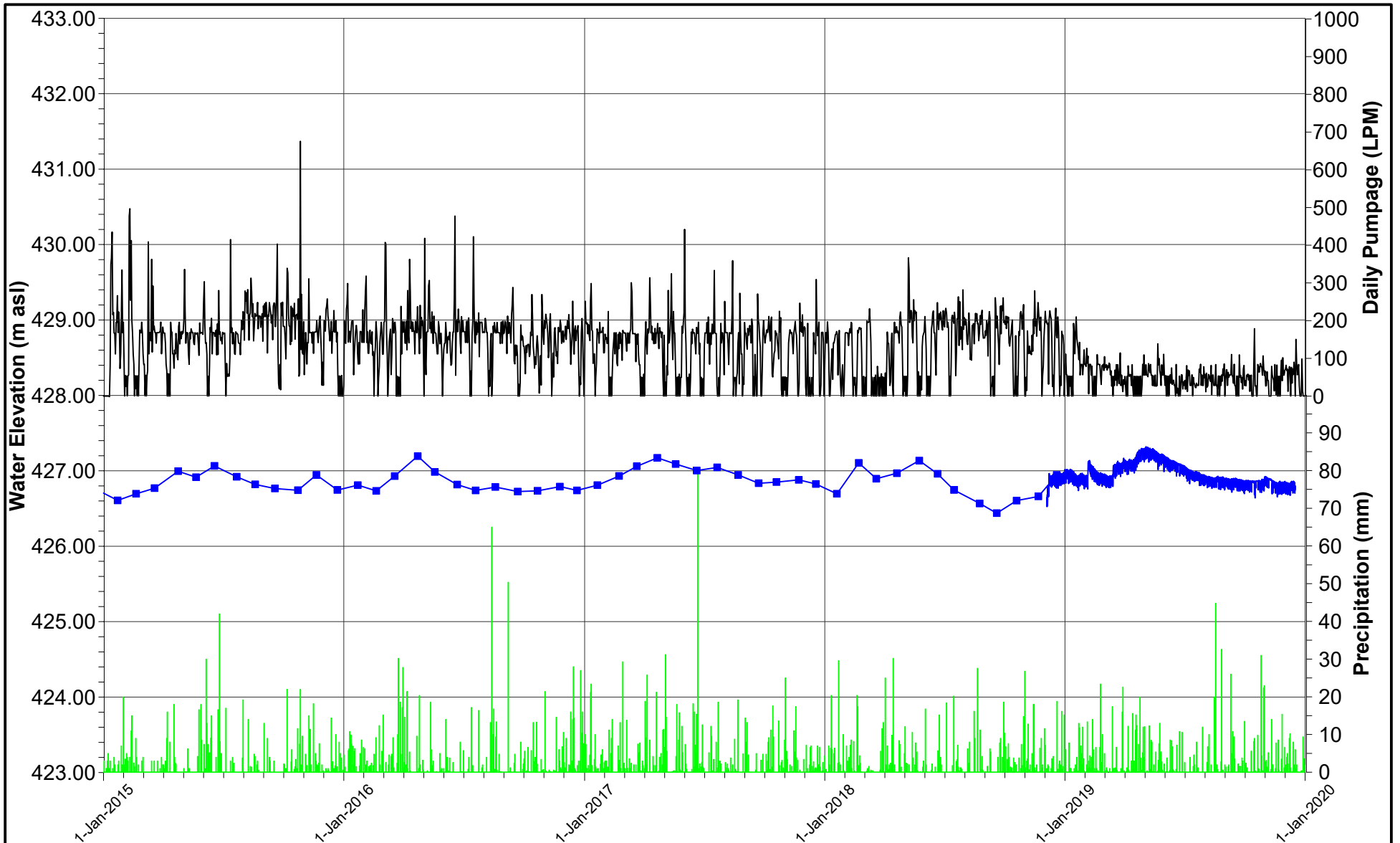




DATE	December 2019
DESIGN	KS
REVIEW	GP
APPROVED	GP

PROJECT **NESTLE WATERS CANADA**
Town of Erin, Ontario

TITLE **HYDROGRAPH FOR MW6A-05**
2019 ANNUAL MONITORING REPORT

PROJECT NO.	REV	FIGURE
13-1152-0250 (2000)	A	D4



— TW1-88 Daily Pumpage
 Precipitation
 MW11A-08

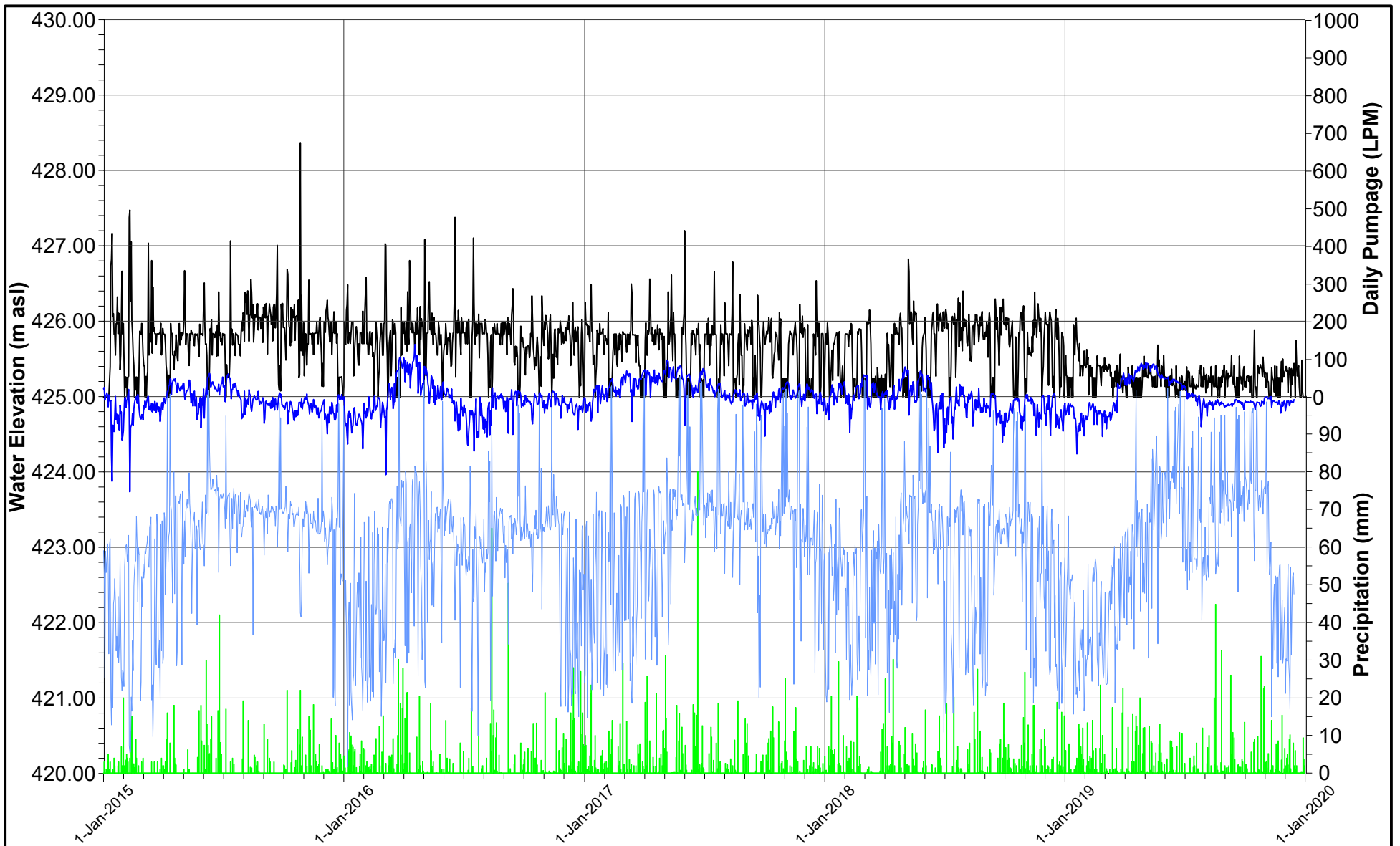


DATE	December 2019
DESIGN	KS
REVIEW	GP
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PROJECT **NESTLE WATERS CANADA**
 Town of Erin, Ontario

TITLE **HYDROGRAPHS FOR MW11A-08**
2019 ANNUAL MONITORING REPORT

PROJECT NO.	REV	FIGURE
13-1152-0250 (2000)	A	D5



- TW1-88 Daily Pumpage
- █ Precipitation
- D3 Daily Max
- D3 Daily Min

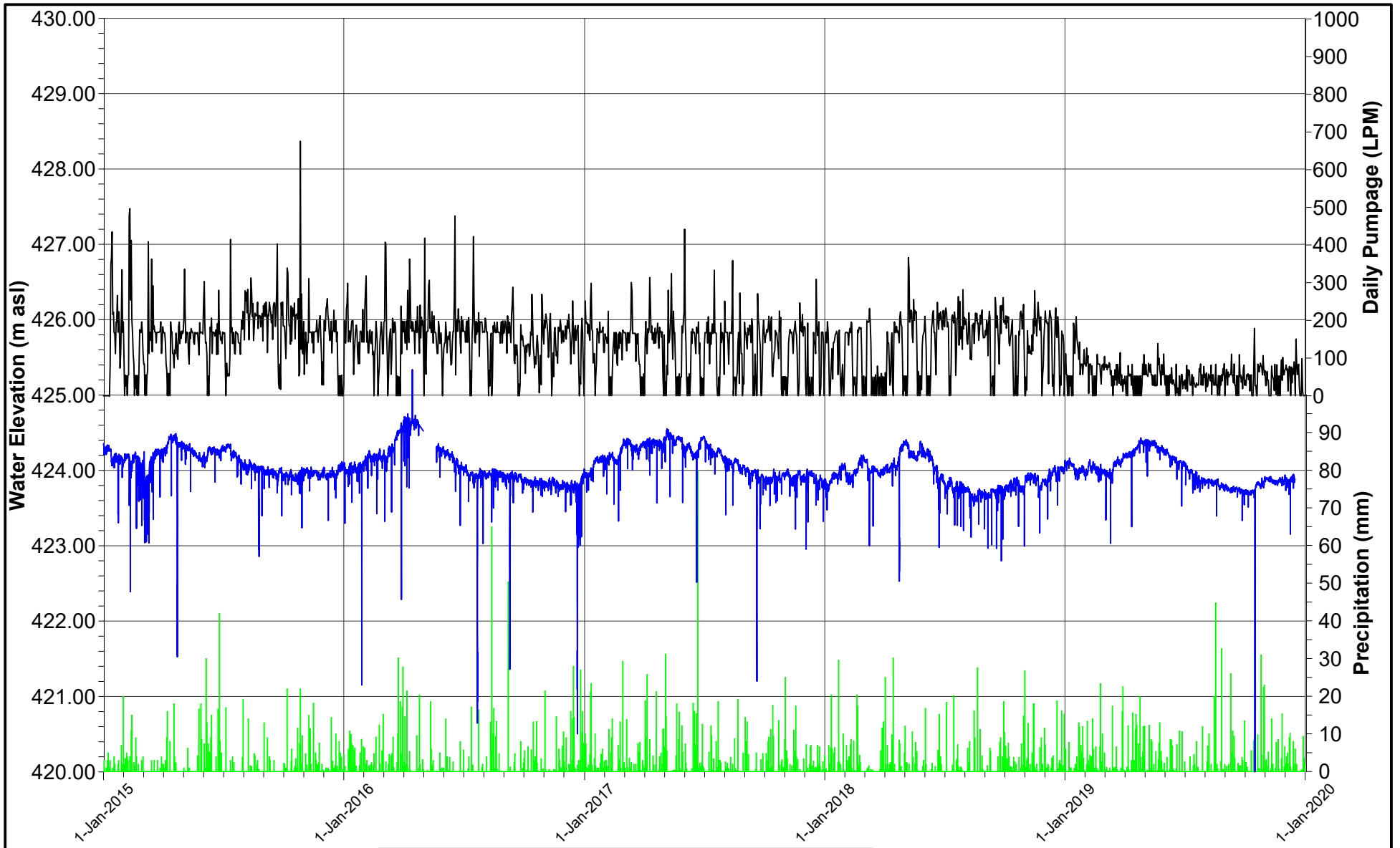



DATE	December 2019
DESIGN	KS
REVIEW	GP
APPROVED	GP

PROJECT **NESTLE WATERS CANADA**
Town of Erin, Ontario

TITLE **HYDROGRAPH FOR D3**
2019 ANNUAL MONITORING REPORT

PROJECT NO.	REV	FIGURE
13-1152-0250 (2000)	A	D6



— TW1-88 Daily Pumpage
 Precipitation
 — D36B

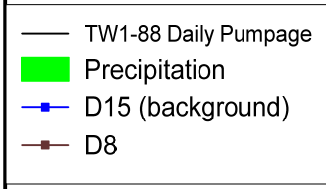
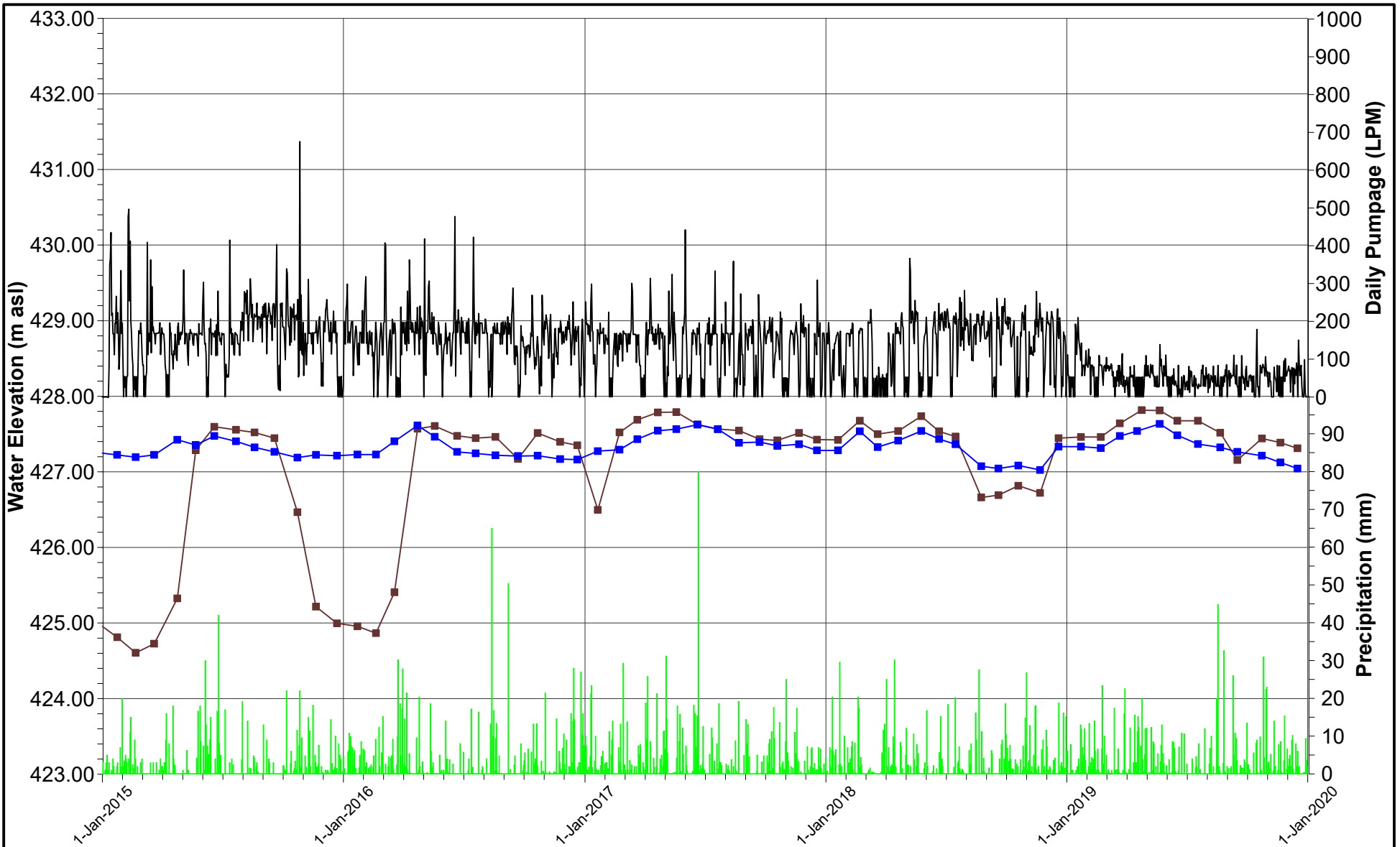


DATE	December 2019
DESIGN	KS
REVIEW	GP
APPROVED	GP

PROJECT **NESTLE WATERS CANADA**
 Town of Erin, Ontario

TITLE **HYDROGRAPH FOR D36B**
2019 ANNUAL MONITORING REPORT

PROJECT NO.	REV	FIGURE
13-1152-0250 (2000)	A	D7



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

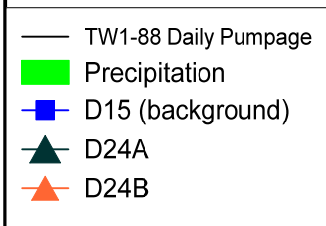
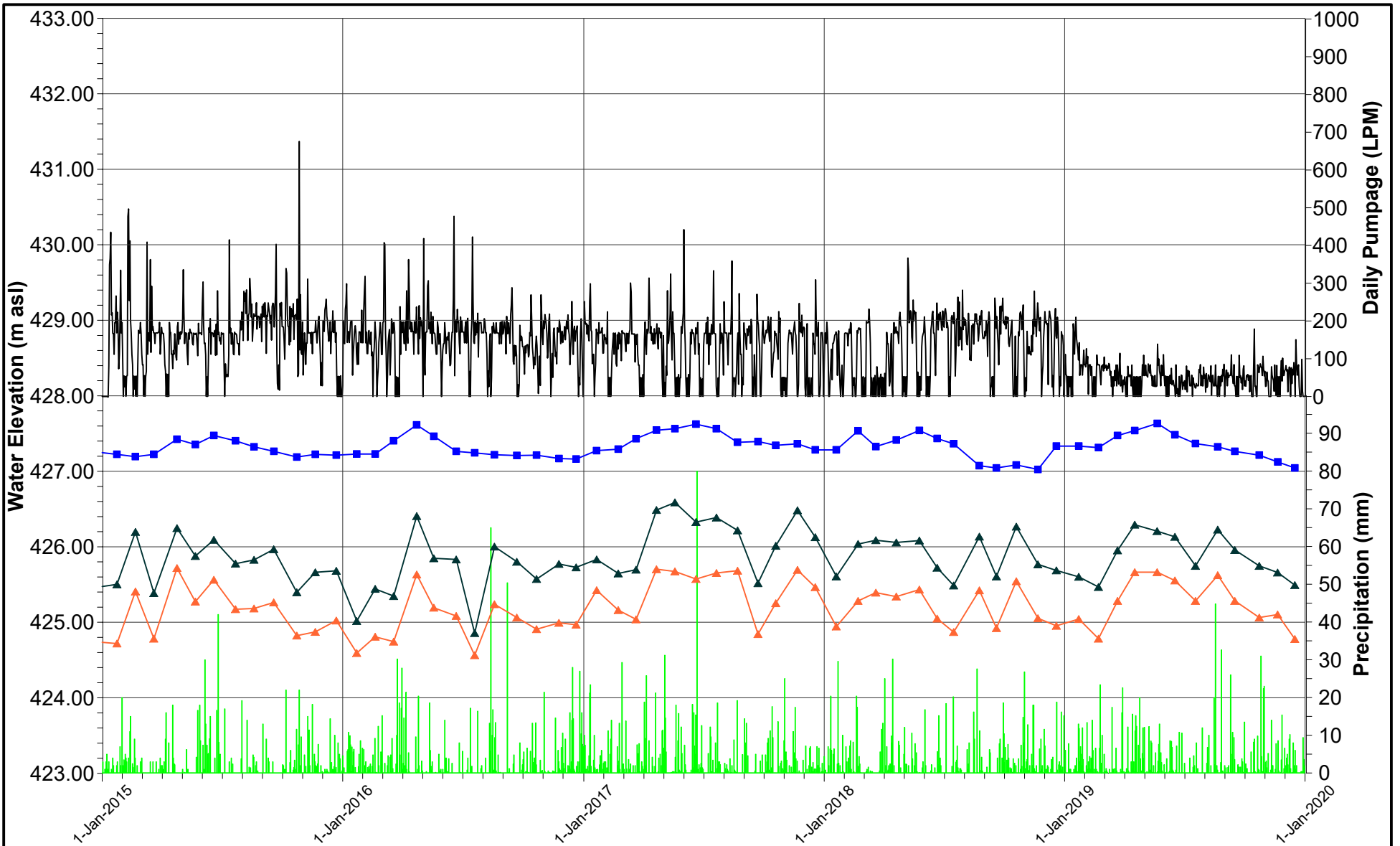
PROJECT
NESTLE WATERS CANADA
Town of Erin, Ontario

TITLE
HYDROGRAPHS FOR D8
2019 ANNUAL MONITORING REPORT



DATE	December 2019
DESIGN	KS
REVIEW	GP
APPROVED	GP

PROJECT NO.	REV	FIGURE
13-1152-0250 (2000)	A	D8

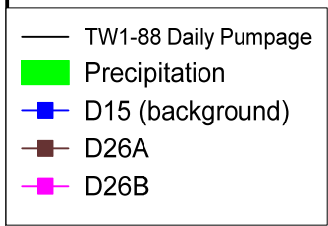
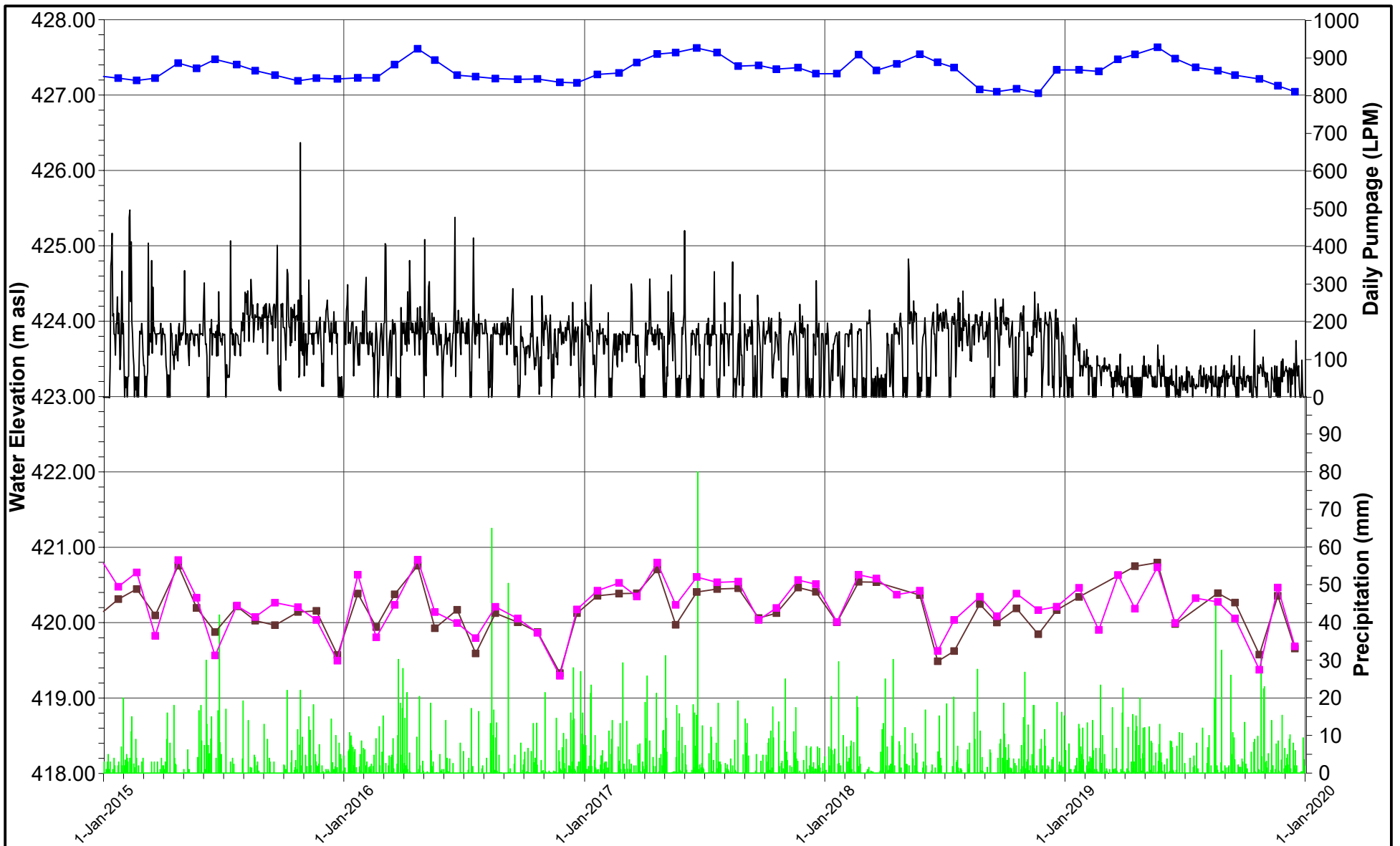


DATE	December 2019
DESIGN	KS
REVIEW	GP
APPROVED	GP

PROJECT **NESTLE WATERS CANADA**
Town of Erin, Ontario

TITLE **HYDROGRAPHS FOR D24**
2019 ANNUAL MONITORING REPORT

PROJECT NO.	REV	FIGURE
13-1152-0250 (2000)	A	D9

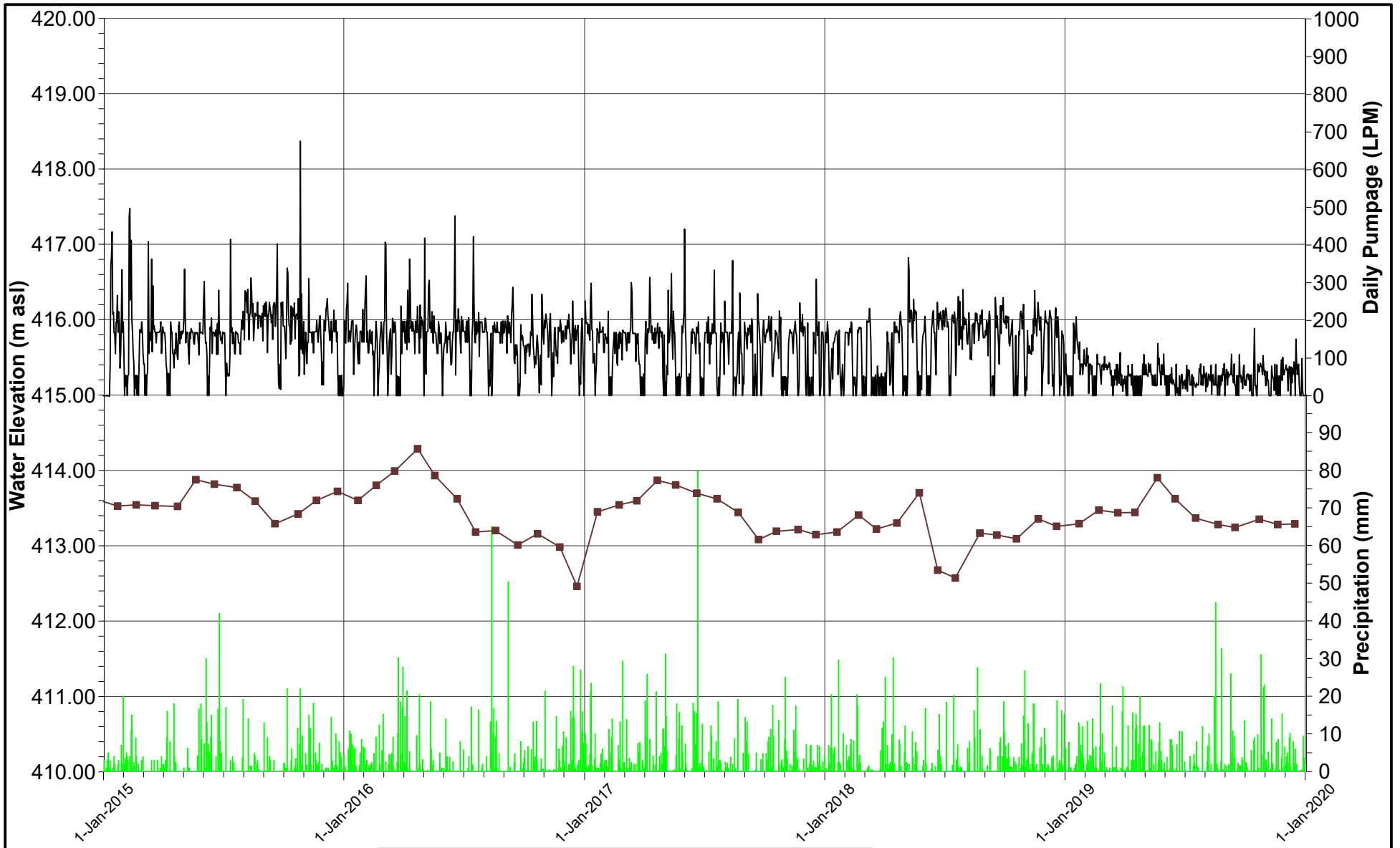




DATE	December 2019
DESIGN	KS
REVIEW	GP
APPROVED	GP

PROJECT **NESTLE WATERS CANADA**
Town of Erin, Ontario

TITLE **HYDROGRAPHS FOR D26**
2019 ANNUAL MONITORING REPORT

PROJECT NO.	REV	FIGURE
13-1152-0250 (2000)	A	D10



— TW1-88 Daily Pumpage
 Precipitation
 D32

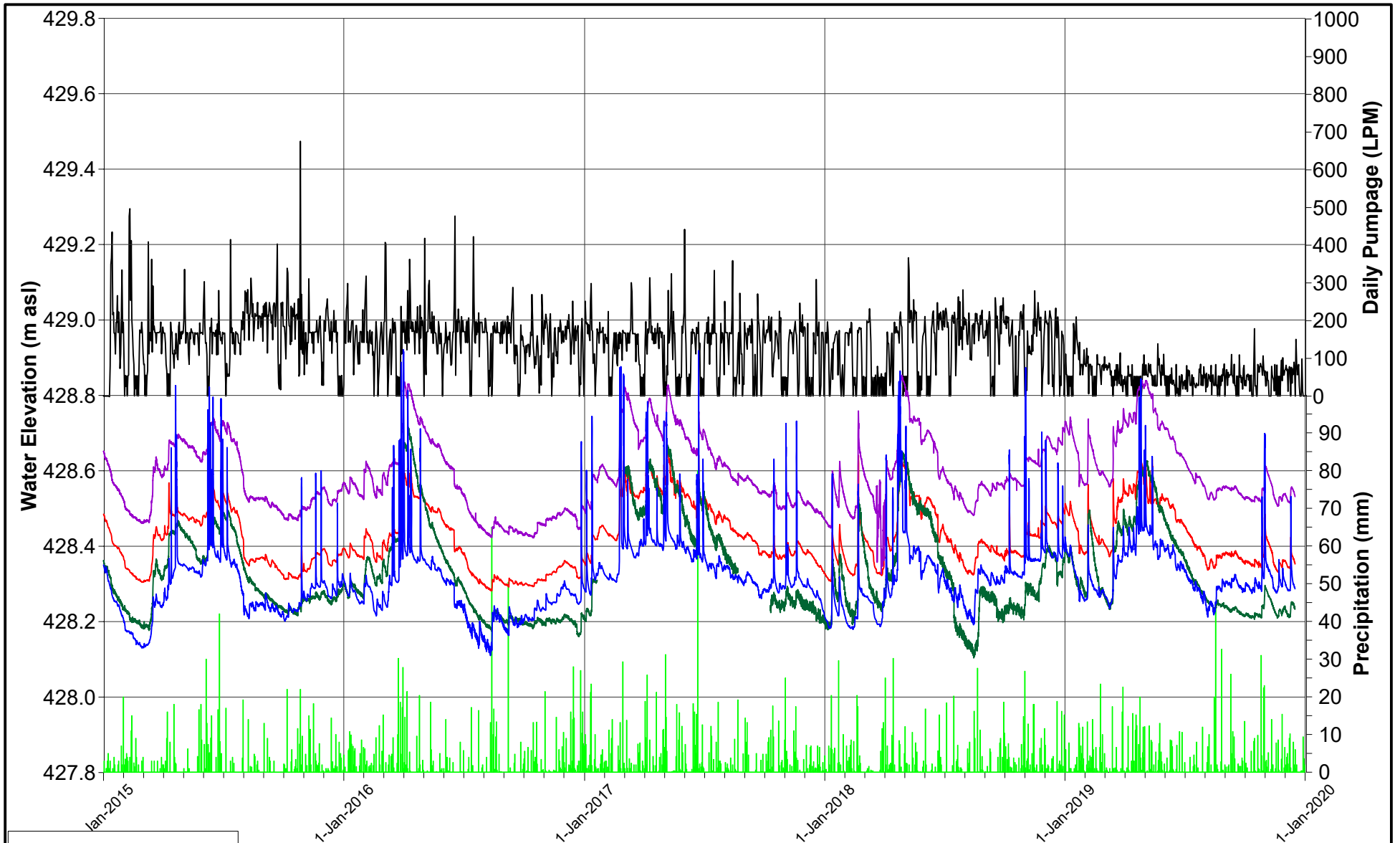


DATE	December 2019
DESIGN	KS
REVIEW	GP
APPROVED	GP

PROJECT **NESTLE WATERS CANADA**
 Town of Erin, Ontario

TITLE **HYDROGRAPHS FOR D32**
2019 ANNUAL MONITORING REPORT

PROJECT NO.	REV	FIGURE
13-1152-0250 (2000)	A	D11

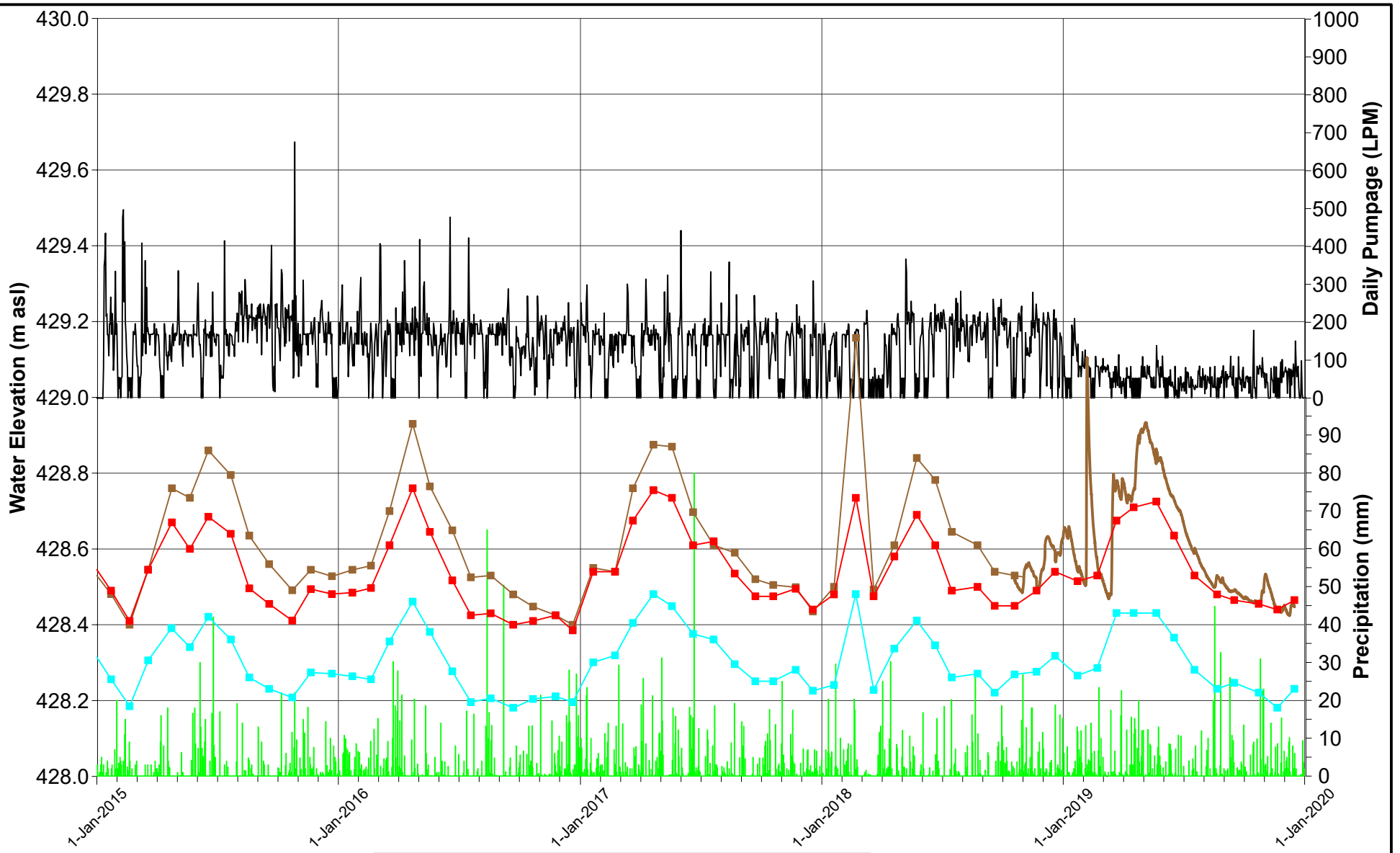


- TW1-88 Daily Pumpage
- █ Precipitation
- MW3A-00
- MW3B-00
- MW05B-05
- MW06B-05



DATE	December 2019
DESIGN	KS
REVIEW	GP
APPROVED	GP

PROJECT	NESTLE WATERS CANADA Town of Erin, Ontario		
TITLE	HYDROGRAPHS FOR OVERBURDEN MONITORING LOCATIONS 2019 ANNUAL MONITORING REPORT		
PROJECT NO.	13-1152-0250 (2000)	REV	A
		FIGURE	D12

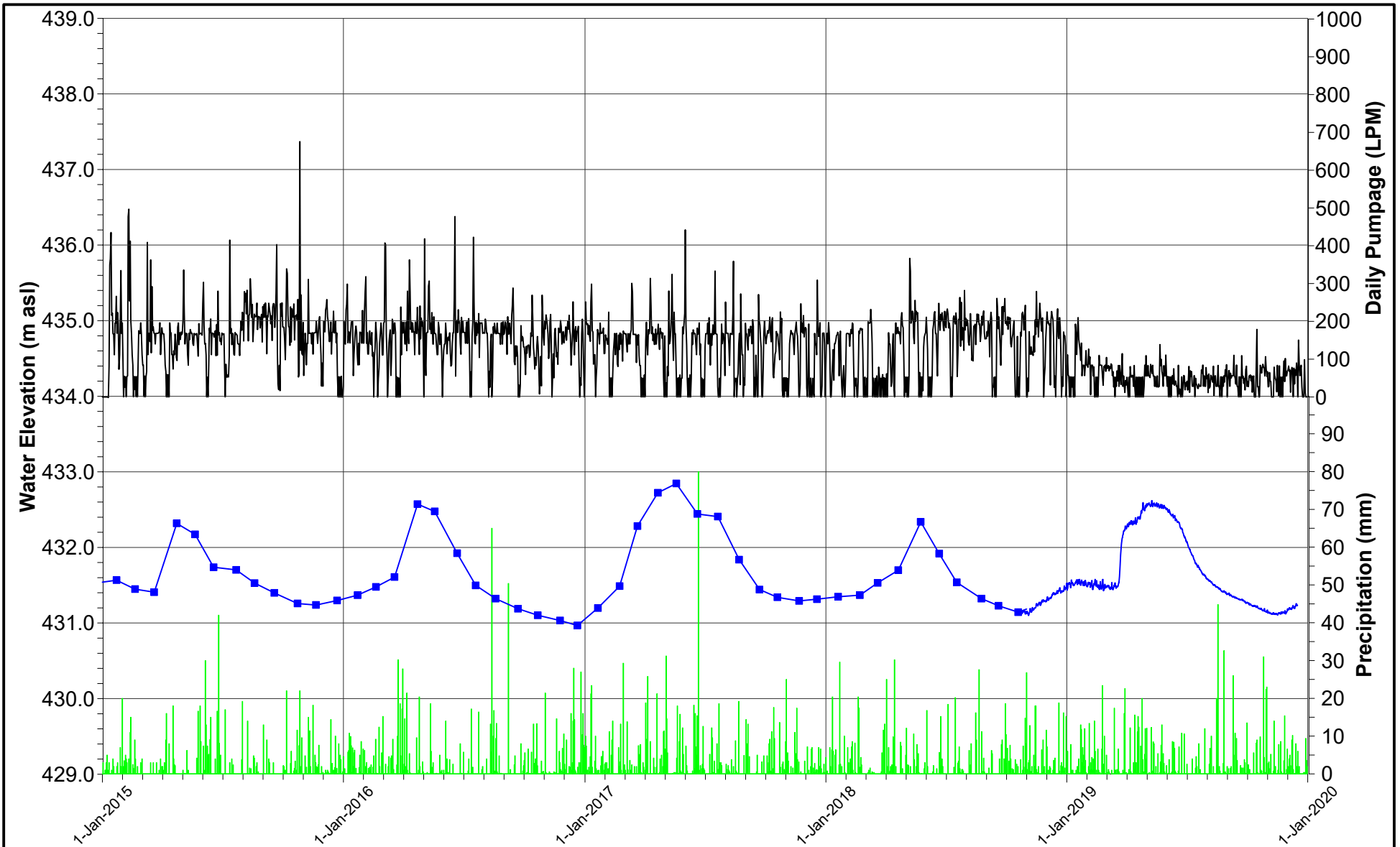




- TW1-88 Daily Pumpage
- █ Precipitation
- MW2-00
- MW11B-08
- TW1-99



DATE	December 2019
DESIGN	KS
REVIEW	GP
APPROVED	GP

PROJECT	NESTLE WATERS CANADA Town of Erin, Ontario	
TITLE	HYDROGRAPHS FOR OVERBURDEN MONITORING LOCATIONS 2019 ANNUAL MONITORING REPORT	
PROJECT NO.	13-1152-0250 (2000)	REV A
		FIGURE D13



— TW1-88 Daily Pumpage
 Precipitation
 MW12B-08

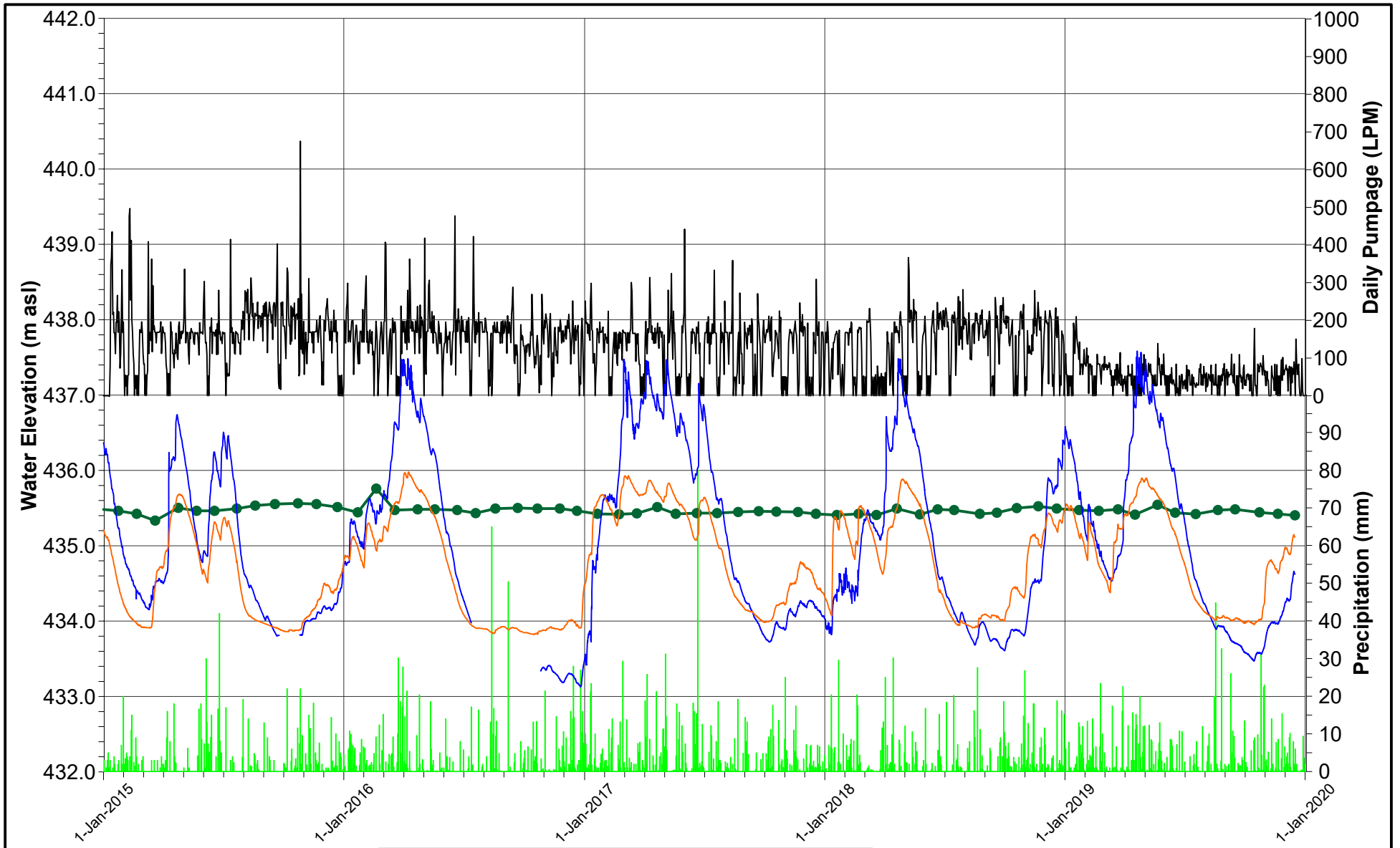
PROJECT **NESTLE WATERS CANADA**
 Town of Erin, Ontario

TITLE **HYDROGRAPH FOR MW12B-08**
2019 ANNUAL MONITORING REPORT



DATE December 2019
 DESIGN KS
 REVIEW GP
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PROJECT NO. 13-1152-0250 (2000) REV A FIGURE D14

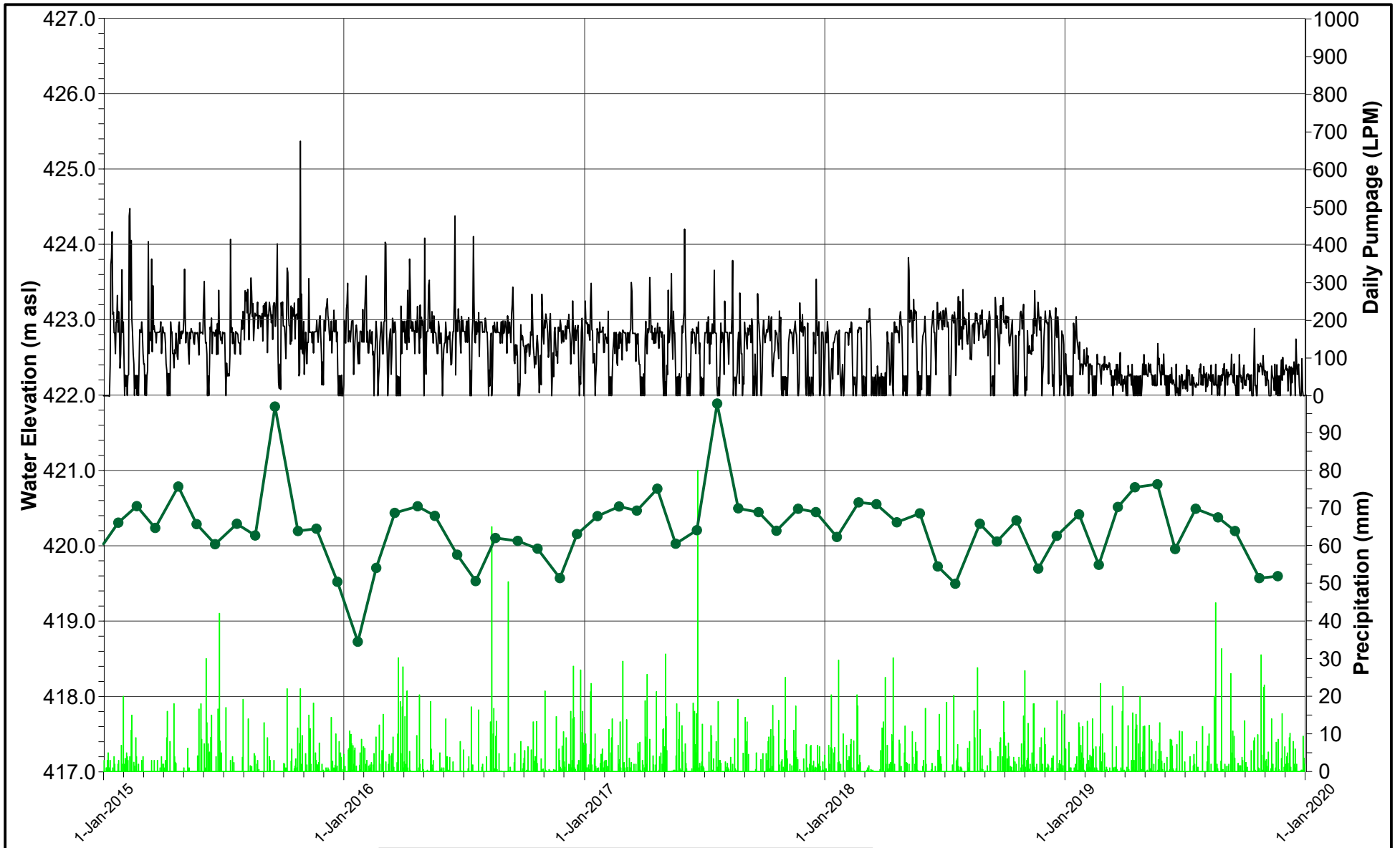




- TW1-88 Daily Pumpage
- █ Precipitation
- D7B
- D26C
- D36A



DATE	December 2019
DESIGN	KS
REVIEW	GP
APPROVED	GP

PROJECT	NESTLE WATERS CANADA Town of Erin, Ontario		
TITLE	HYDROGRAPHS FOR OVERBURDEN MONITORING LOCATIONS 2019 ANNUAL MONITORING REPORT		
PROJECT NO.	13-1152-0250 (2000)	REV	A
		FIGURE	D15

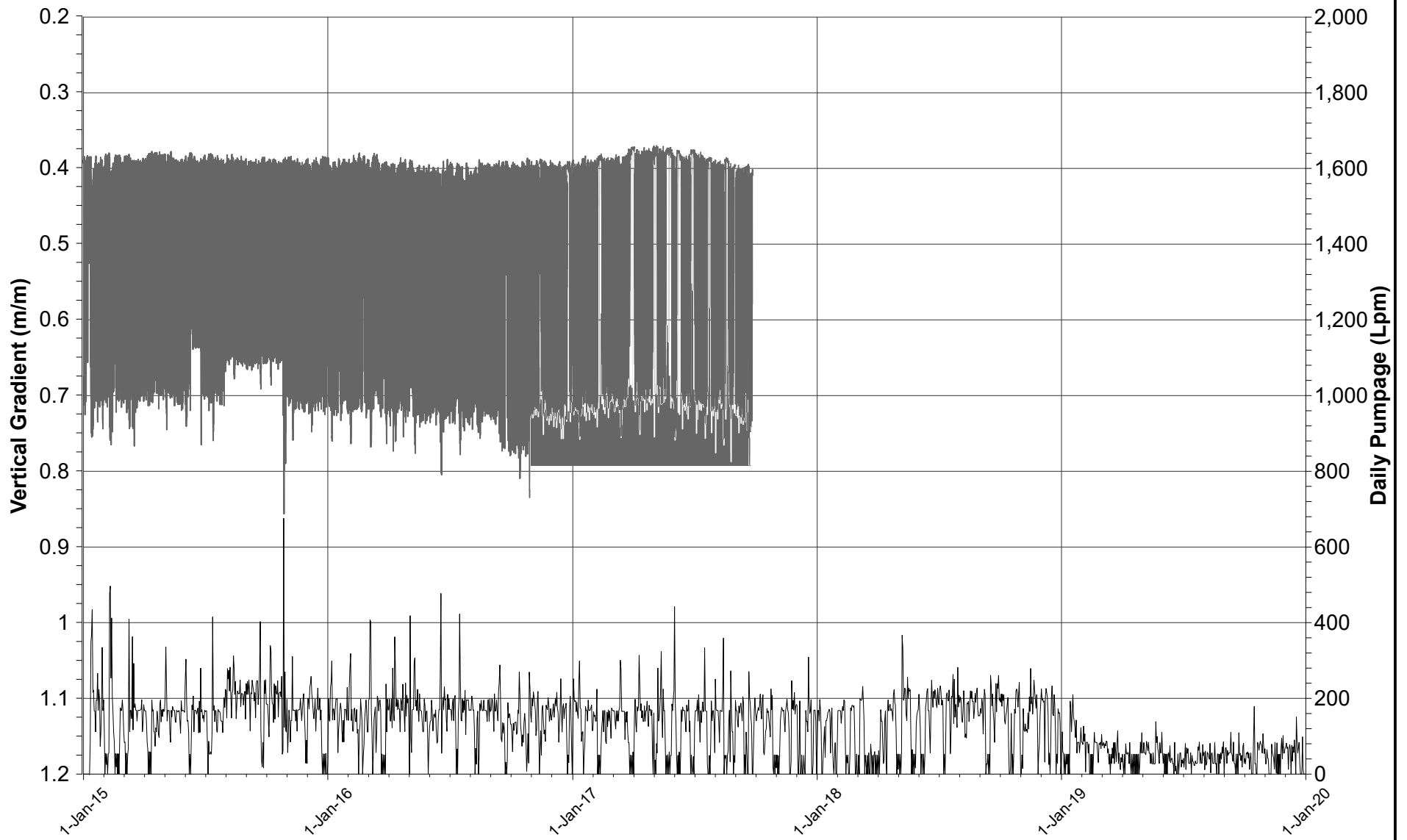


— TW1-88 Daily Pumpage
 Precipitation
 D27



DATE December 2019
 DESIGN KS
 REVIEW GP
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PROJECT **NESTLE WATERS CANADA**
 Town of Erin, Ontario
 TITLE **HYDROGRAPHS FOR OVERBURDEN MONITORING LOCATIONS 2019 ANNUAL MONITORING REPORT**
 PROJECT NO. 13-1152-0250 (2000) REV A FIGURE D16



— TW1-88 Daily Pumpage
 — Vertical Gradient OB/BR

PROJECT **NESTLE WATERS CANADA**
 Town of Erin, Ontario

TITLE **MW5-05 VERTICAL GRADIENT**
2019 ANNUAL MONITORING REPORT

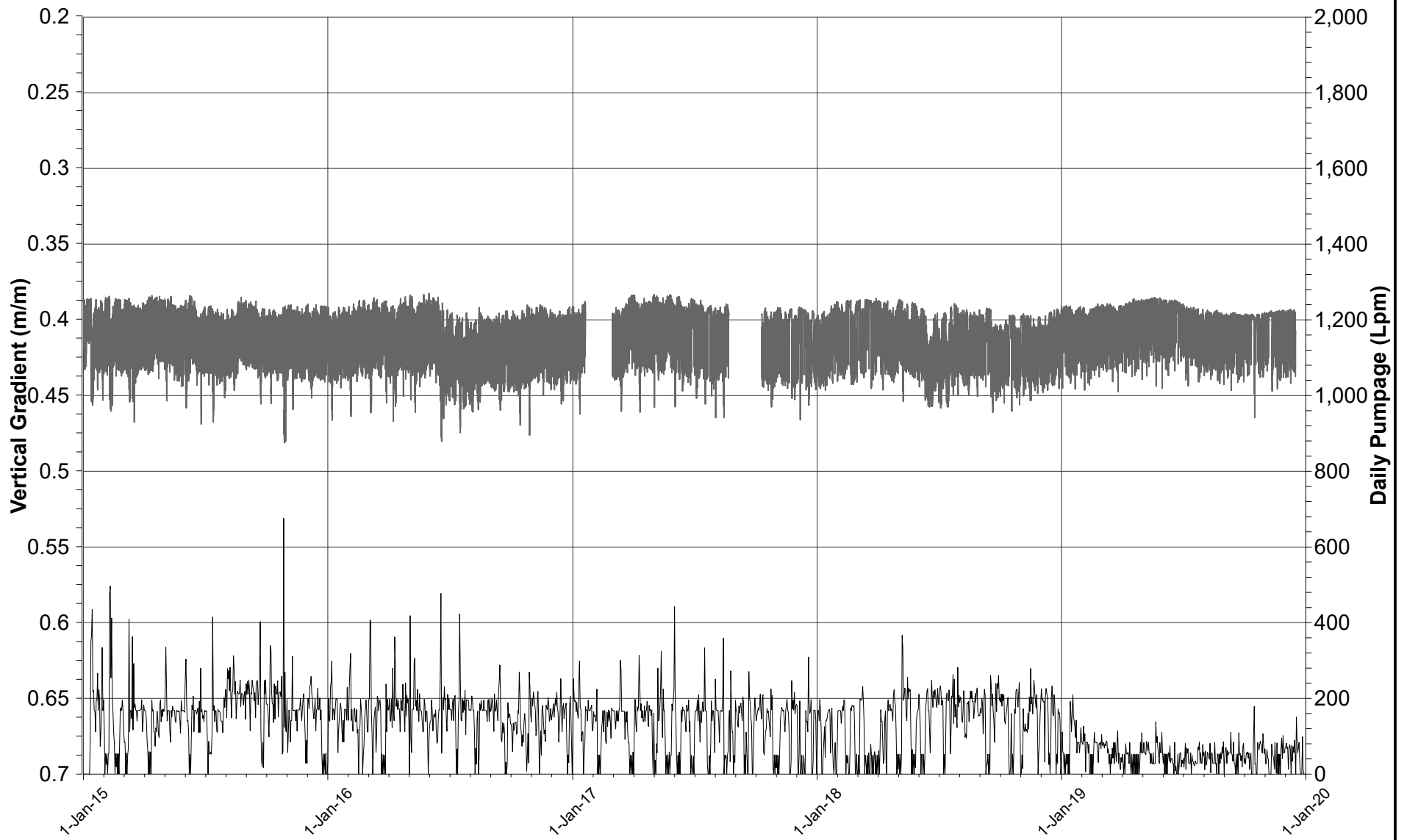


DATE December 2019
 DESIGN KS
 REVIEW GP
 APPROVED GP

PROJECT NO. 13-1152-0250 (2000)

REV A

FIGURE D17



— TW1-88 Daily Pumpage
 — Vertical Gradient OB/BR

PROJECT **NESTLE WATERS CANADA**
 Town of Erin, Ontario

TITLE **MW6-05 VERTICAL GRADIENT**
2019 ANNUAL MONITORING REPORT

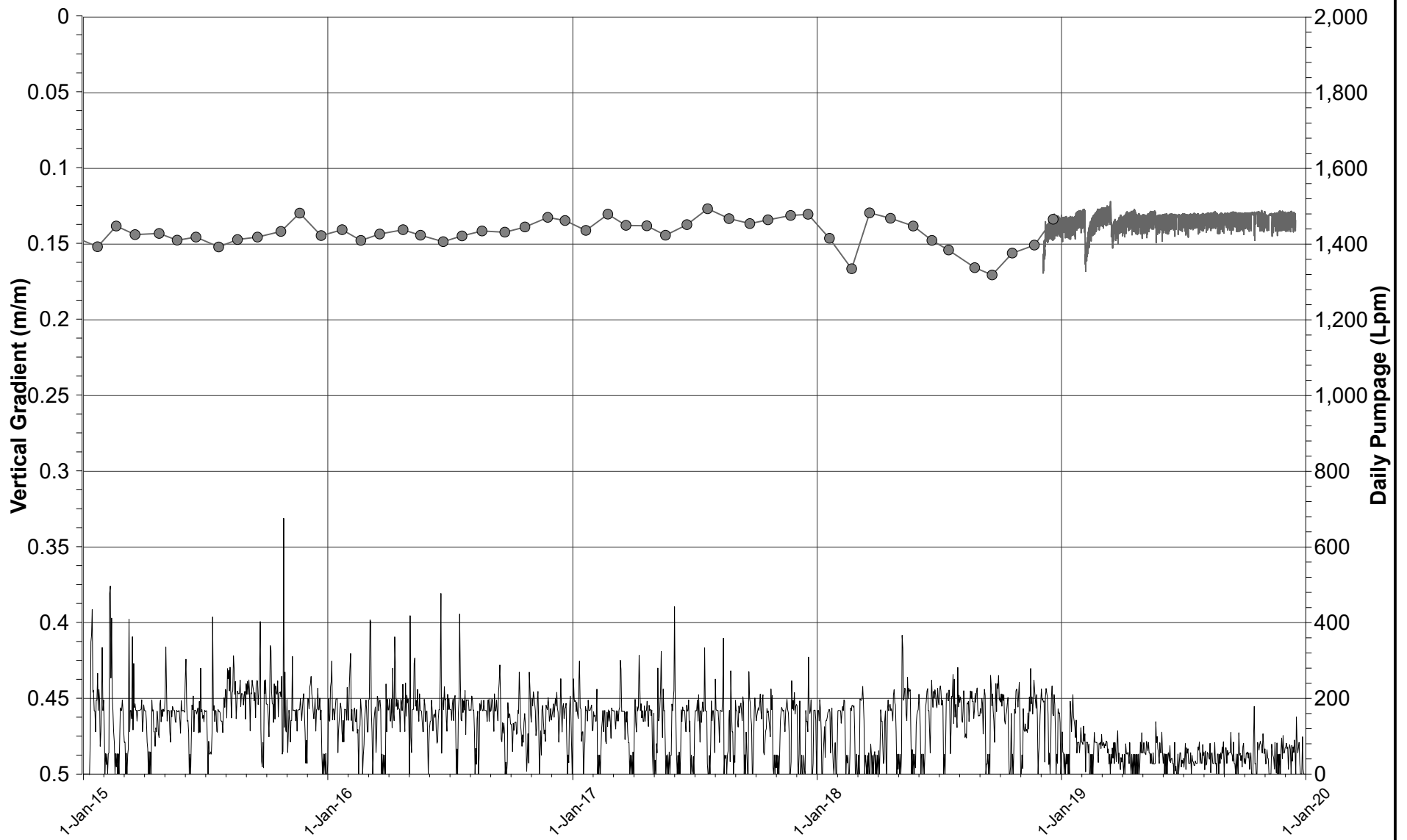


DATE December 2019
 DESIGN KS
 REVIEW GP
 APPROVED GP

PROJECT NO. 13-1152-0250 (2000)

REV A

FIGURE D18



— TW1-88 Daily Pumpage
 ● Vertical Gradient OB/BR

PROJECT **NESTLE WATERS CANADA**
 Town of Erin, Ontario

TITLE **MW11-08 VERTICAL GRADIENT**
2019 ANNUAL MONITORING REPORT

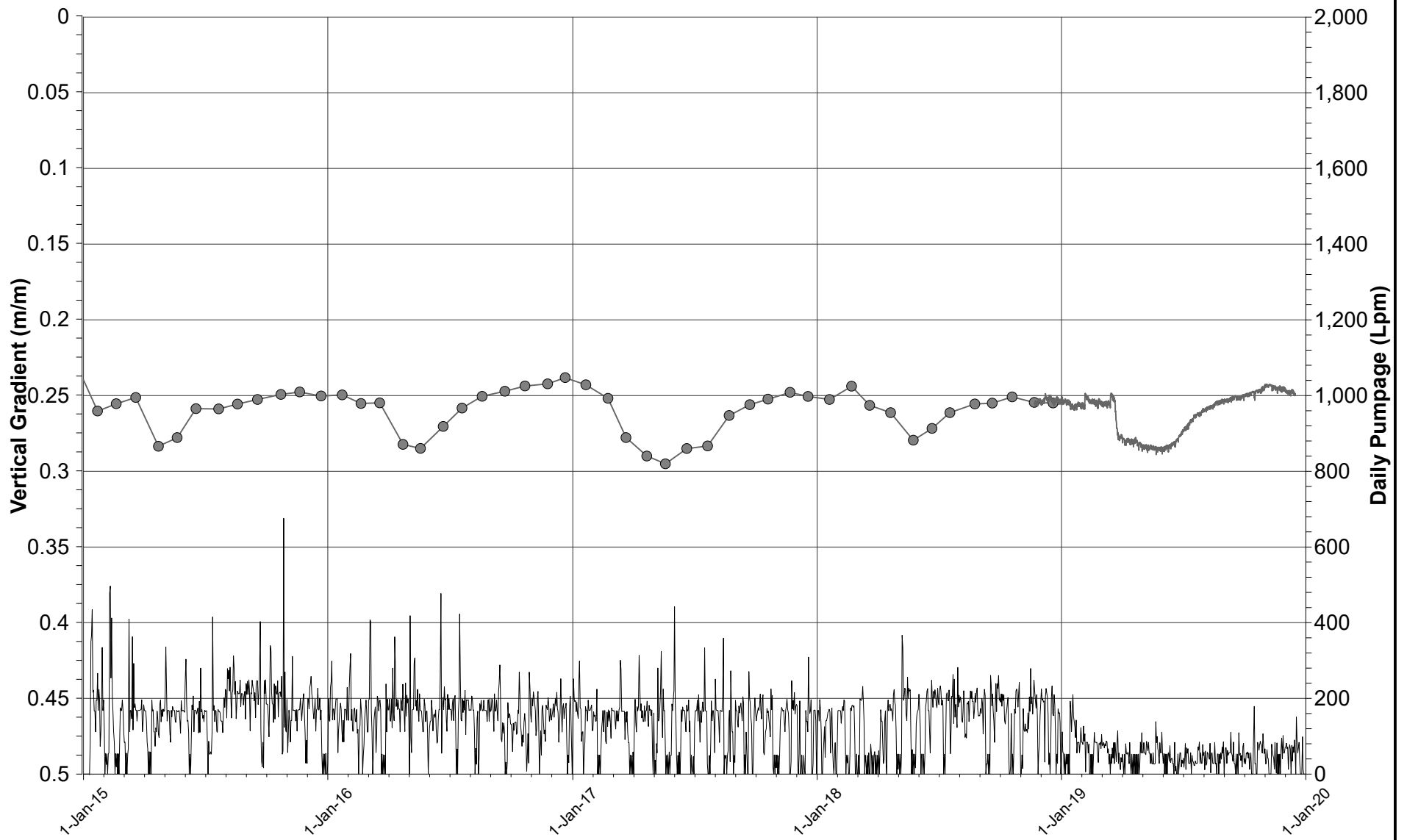


DATE December 2019
 DESIGN KS
 REVIEW GP
 APPROVED GP

PROJECT NO. 13-1152-0250 (2000)

REV A

FIGURE D19



— TW1-88 Daily Pumpage
 — Vertical Gradient OB/BR

PROJECT
NESTLE WATERS CANADA
 Town of Erin, Ontario

TITLE
MW12-08 VERTICAL GRADIENT
2019 ANNUAL MONITORING REPORT

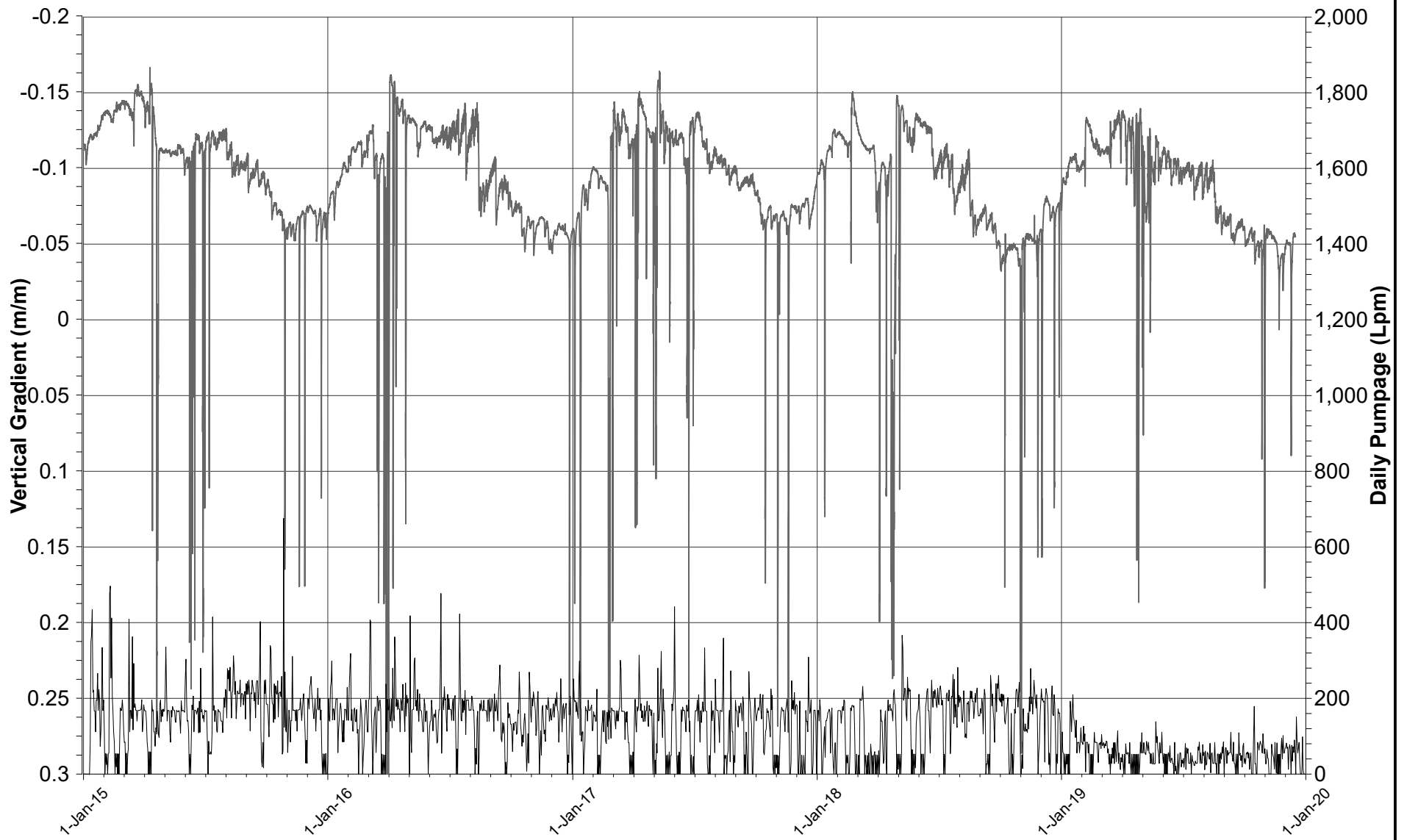


DATE December 2019
 DESIGN KS
 REVIEW GP
 APPROVED GP

PROJECT NO.
 13-1152-0250 (2000)

REV
 A

FIGURE
 D20



— TW1-88 Daily Pumpage
 — Vertical Gradient OB/OB

PROJECT **NESTLE WATERS CANADA**
 Town of Erin, Ontario

TITLE **MW3-00 VERTICAL GRADIENT**
2019 ANNUAL MONITORING REPORT



DATE December 2019
 DESIGN KS
 REVIEW GP
 APPROVED GP

PROJECT NO. 13-1152-0250 (2000)

REV A

FIGURE D21

TABLE D1
Manual Groundwater Elevations (masl)
2019 Annual Report

DATE	Water Level Elevation (masl)						
	MW2-00	MW3A-00	MW3B-00	MW05A-05	MW05B-05	MW06A-05	MW06B-05
22-Jan-19	428.27	428.41	428.28	423.56	428.56	422.08	428.28
21-Feb-19	428.29	428.43	428.29	422.78	428.59	421.75	428.30
22-Mar-19	428.43	428.52	428.38	423.70	428.70	422.09	428.44
17/24-Apr-19	428.43	428.56	428.40	423.94	428.75	422.37	428.47
21-May-19	428.43	428.52	428.40	423.84	428.74	422.33	428.52
17-Jun-19	428.37	428.49	428.38	423.80	428.70	422.24	428.41
18-Jul-19	428.28	428.40	428.30	423.66	428.59	422.06	428.31
21-Aug-19	428.23	428.37	428.29	423.52	428.55	422.03	428.26
16-Sep-19	428.25	428.38	428.32	423.59	428.56	421.96	428.24
23-Oct-19	428.22	428.35	428.30	423.49	428.50	421.88	428.20
20-Nov-19	428.18	428.33	428.28	423.59	428.48	422.01	428.21
16-Dec-19	428.23	428.35	428.29	423.41	428.51	421.69	428.22

TABLE D1
Manual Groundwater Elevations (masl)
2019 Annual Report

DATE	Water Level Elevation (masl)					
	MW11A-08	MW11B-08	MW12A-08	MW12B-08	TW1-88	TW1-99
22-Jan-19	426.92	428.55	424.74	431.52	422.90	428.52
21-Feb-19	426.81	428.56	424.75	431.50	417.85	428.53
22-Mar-19	427.04	428.78	424.90	431.74	422.85	428.68
17/24-Apr-19	427.15	428.76	424.96	432.35	423.30	428.71
21-May-19	427.19	428.86	425.03	432.53	423.23	428.73
17-Jun-19	427.09	428.73	424.88	432.34	423.13	428.64
18-Jul-19	426.96	428.59	424.75	431.74	422.99	428.53
21-Aug-19	426.93	428.53	424.74	431.45	422.97	428.48
16-Sep-19	426.88	428.49	424.65	431.32	422.87	428.47
23-Oct-19	426.82	428.44	424.63	431.15	422.59	428.46
20-Nov-19	426.83	428.44	424.64	431.10	422.92	428.44
16-Dec-19	426.72	428.42	424.62	431.21	422.23	428.47

TABLE D1
Manual Groundwater Elevations (masl)
2019 Annual Report

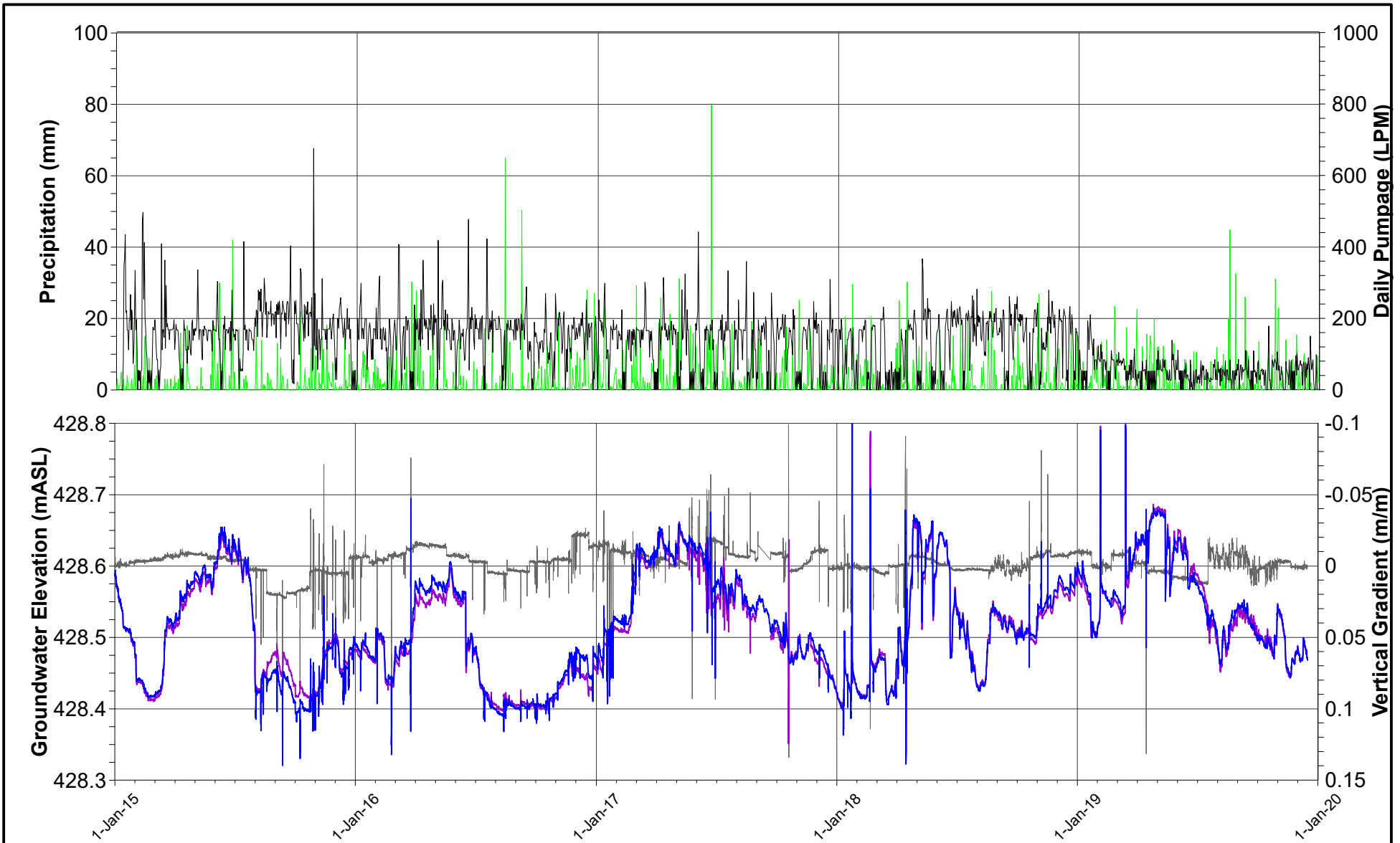
DATE	Water Level Elevation (masl)					
	D3	D7B	D8	D15	D24A	D24B
22-Jan-19	422.75	435.47	427.46	427.33	425.60	425.04
21-Feb-19	423.48	435.39	427.46	427.31	425.47	424.78
22-Mar-19	423.95	435.40	427.64	427.47	425.95	425.28
17/24-Apr-19	425.20	435.41	427.82	427.54	426.29	425.66
21-May-19	425.21	435.54	427.81	427.63	426.21	425.66
17-Jun-19	424.97	435.44	427.68	427.48	426.13	425.55
18-Jul-19	422.95	435.42	427.68	427.37	425.75	425.28
21-Aug-19	424.95	435.47	427.52	427.32	426.23	425.62
16-Sep-19	424.69	435.48	427.16	427.26	425.96	425.28
23-Oct-19	424.70	435.44	427.44	427.21	425.75	425.06
20-Nov-19	422.59	435.42	427.39	427.12	425.66	425.10
16-Dec-19	423.25	435.40	427.31	427.04	425.49	424.78

TABLE D1
Manual Groundwater Elevations (masl)
2019 Annual Report

DATE	Water Level Elevation (masl)						
	D26A	D26B	D26C	D27	D32	D36A	D36B
22-Jan-19	420.34	420.46	435.13	420.42	413.29	435.62	423.98
21-Feb-19	Buried Snow	419.90	434.70	419.75	413.47	434.99	423.99
22-Mar-19	Buried Snow	420.63	435.25	420.51	413.44	434.85	424.15
17/24-Apr-19	420.75	420.19	435.64	420.78	413.44	436.85	424.36
21-May-19	420.80	420.74	435.59	420.82	413.90	436.73	424.29
17-Jun-19	419.98	420.00	435.16	419.96	413.62	435.92	424.14
18-Jul-19	Access Blocked	420.33	434.29	420.49	413.37	434.55	423.94
21-Aug-19	420.39	420.28	434.06	420.38	413.28	433.94	423.88
16-Sep-19	420.27	420.06	434.03	420.20	413.24	433.71	423.76
23-Oct-19	419.58	419.38	434.03	419.57	413.35	433.58	423.83
20-Nov-19	420.36	420.47	434.64	419.60	413.28	434.16	423.98
16-Dec-19	419.66	419.69	435.12	Frozen	413.29	434.62	423.90

APPENDIX E

Surface Water Level Monitoring

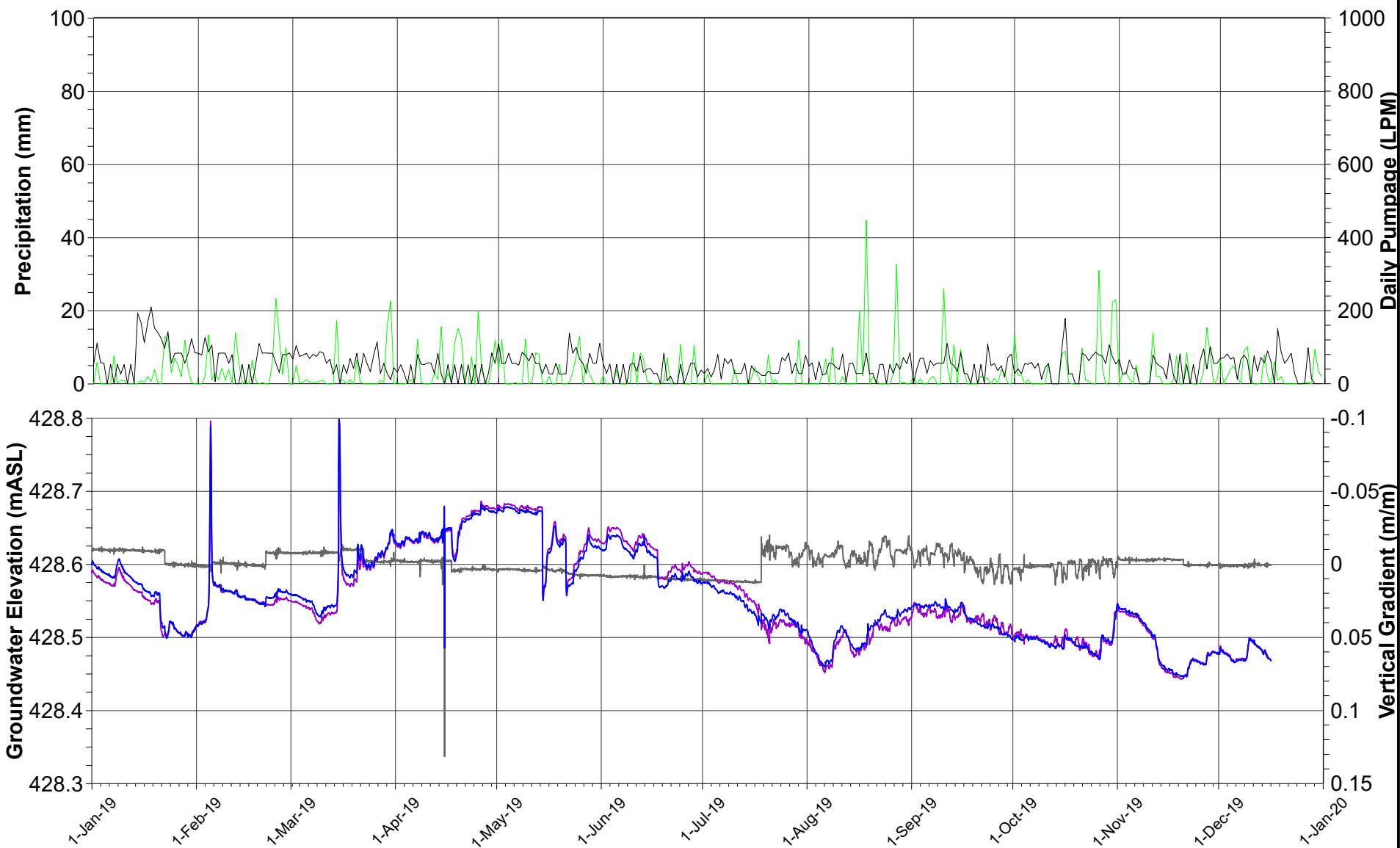


- TW1-88 Daily Pumpage
- Precipitation
- P3B-05 (Shallow)
- P3A-05 (Deep)
- Vertical Gradient OB/OB



DATE	December 2019
DESIGN	KS
REVIEW	GP
APPROVED	GP

PROJECT	NESTLE WATERS CANADA Town of Erin, Ontario	
TITLE	P3-05 NEST HYDROGRAPHS AND VERTICAL GRADIENTS 2019 ANNUAL MONITORING REPORT	
PROJECT NO.	REV	FIGURE
13-1152-0250 (2000)	A	E1a

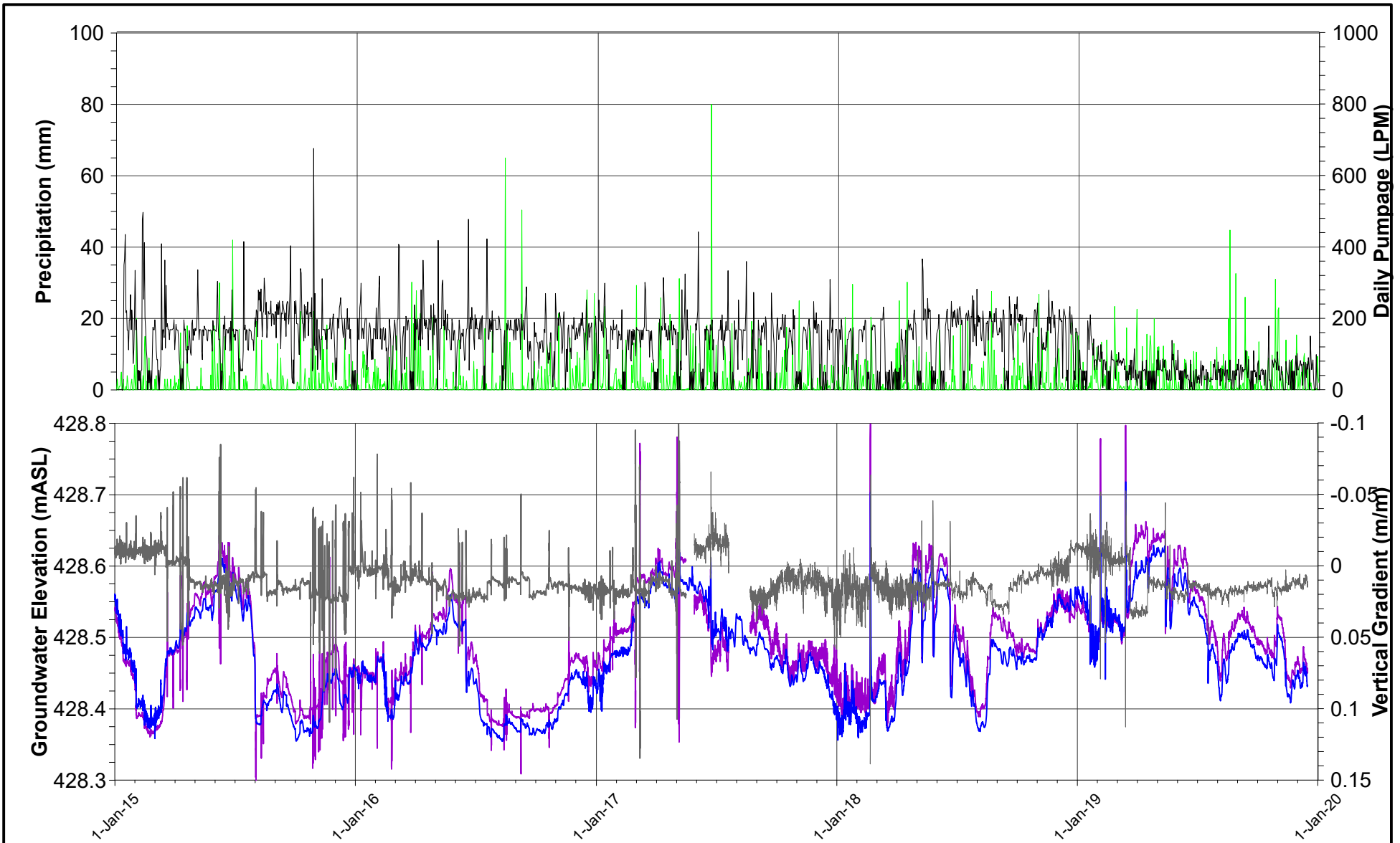


- TW1-88 Daily Pumpage
- Precipitation
- P3B-05 (Shallow)
- P3A-05 (Deep)
- Vertical Gradient OB/OB



DATE	December 2019
DESIGN	KS
REVIEW	GP
APPROVED	GP

PROJECT	NESTLE WATERS CANADA Town of Erin, Ontario	
TITLE	P3-05 NEST HYDROGRAPHS AND VERTICAL GRADIENTS (2019 DATA) 2019 ANNUAL MONITORING REPORT	
PROJECT NO.	REV	FIGURE
13-1152-0250 (2000)	A	E1b

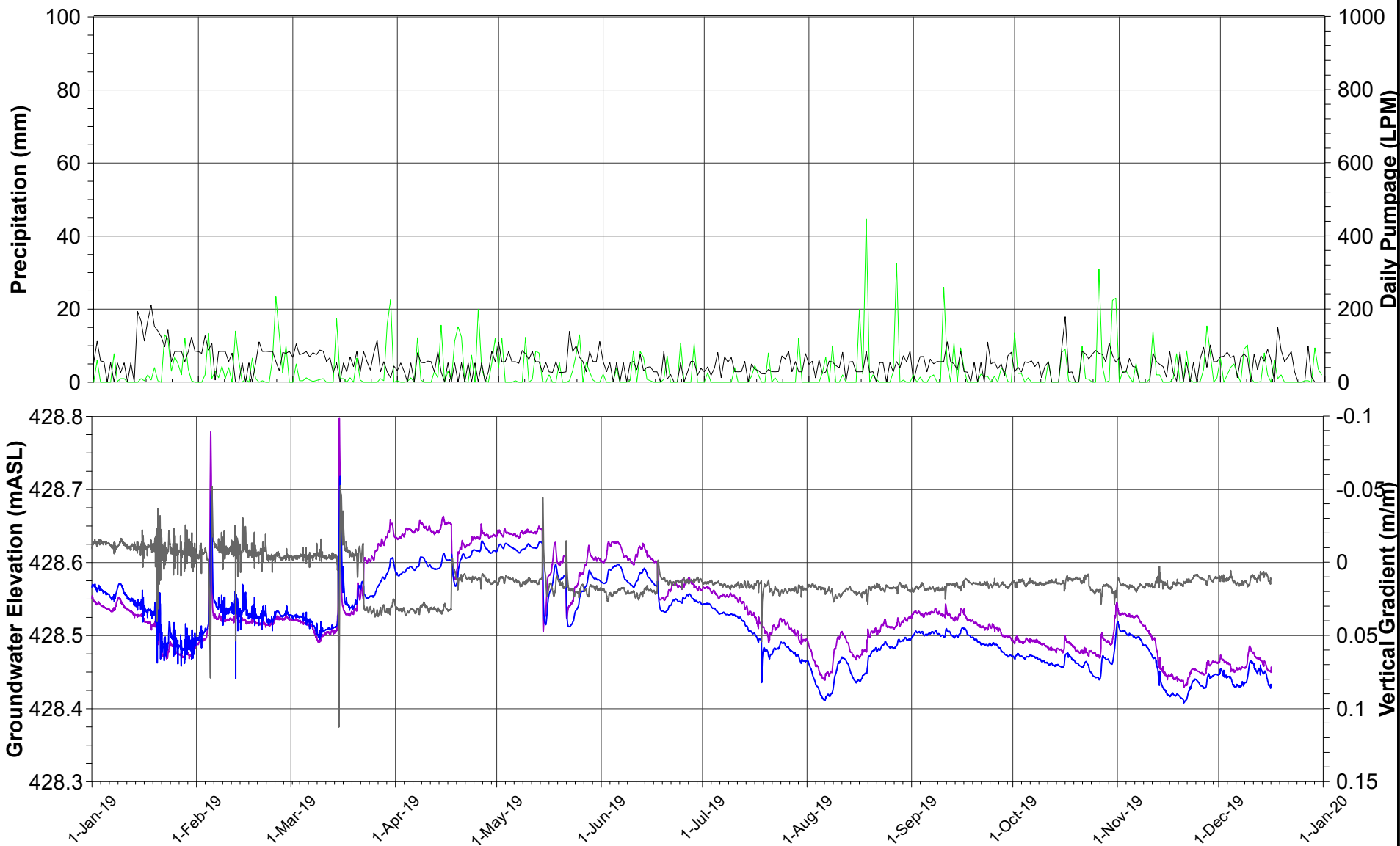


- TW1-88 Daily Pumpage
- Precipitation
- P6B-07 (Shallow)
- P6A-07 (Deep)
- Vertical Gradient OB/OB



DATE	December 2019
DESIGN	KS
REVIEW	GP
APPROVED	GP

PROJECT	NESTLE WATERS CANADA Town of Erin, Ontario		
TITLE	P6-07 NEST HYDROGRAPHS AND VERTICAL GRADIENTS 2019 ANNUAL MONITORING REPORT		
PROJECT NO.	13-1152-0250 (2000)	REV	A
		FIGURE	E2a

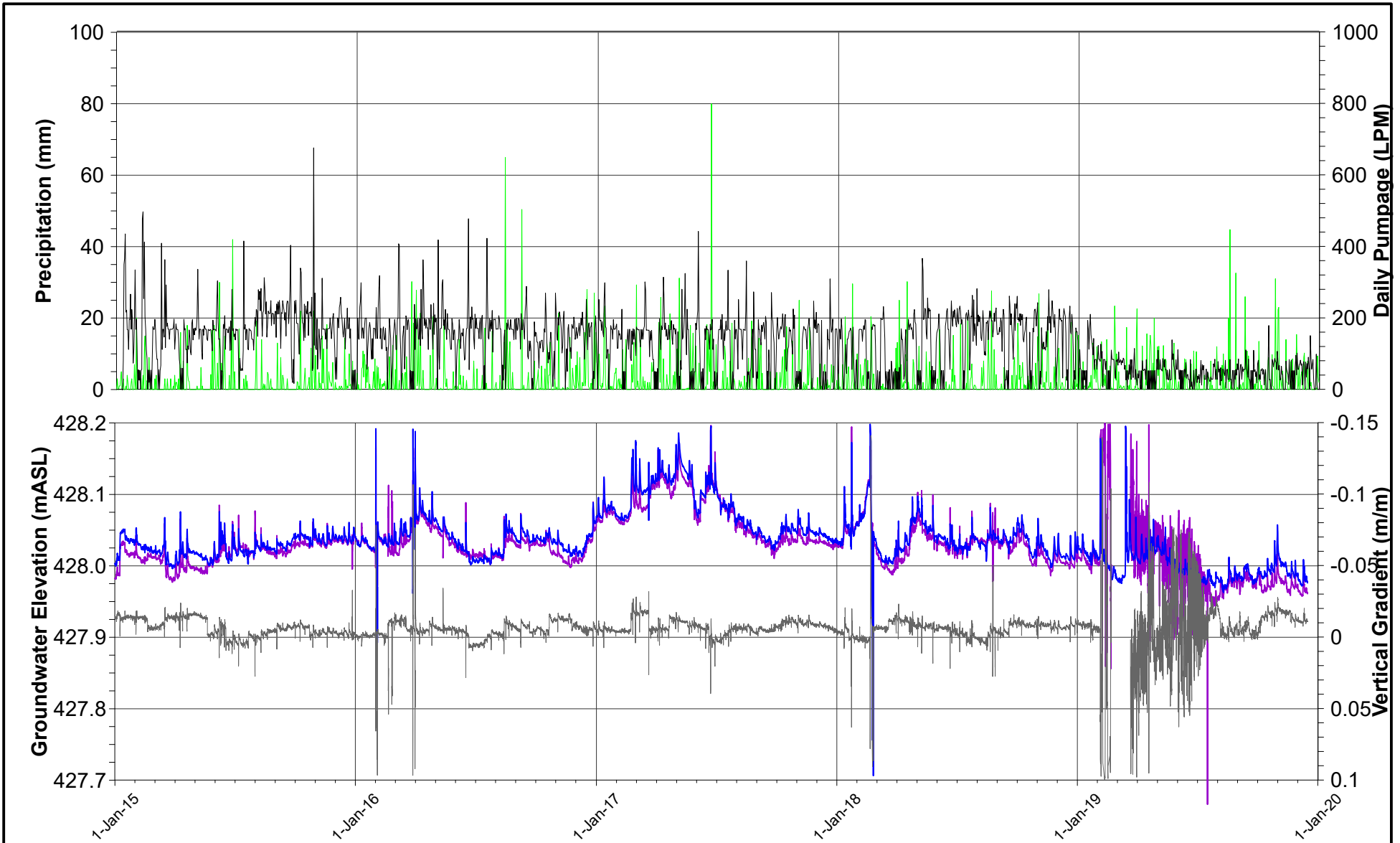


- TW1-88 Daily Pumping
- Precipitation
- P6B-07 (Shallow)
- P6A-07 (Deep)
- Vertical Gradient OB/OB



DATE	December 2019
DESIGN	KS
REVIEW	GP
APPROVED	GP

PROJECT	NESTLE WATERS CANADA Town of Erin, Ontario	
TITLE	P6-07 NEST HYDROGRAPHS AND VERTICAL GRADIENTS (2019 DATA) 2019 ANNUAL MONITORING REPORT	
PROJECT NO.	REV	FIGURE
13-1152-0250 (2000)	A	E2b

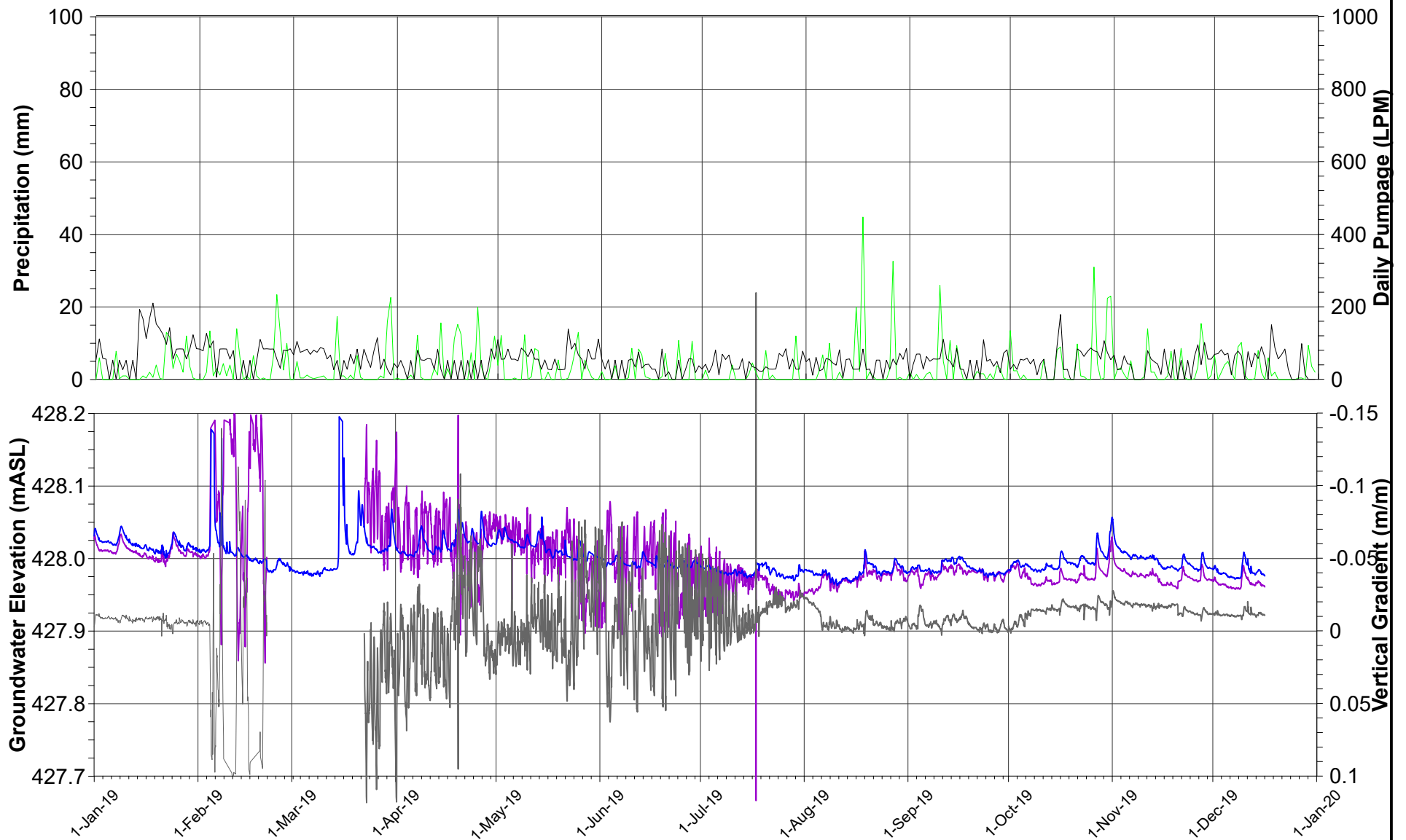


- TW1-88 Daily Pumping
- Precipitation
- P1B-07 (Shallow)
- P1A-07 (Deep)
- Vertical Gradient OB/OB



DATE	December 2019
DESIGN	KS
REVIEW	GP
APPROVED	GP

PROJECT	NESTLE WATERS CANADA Town of Erin, Ontario	
TITLE	P1-07 NEST HYDROGRAPHS AND VERTICAL GRADIENTS 2019 ANNUAL MONITORING REPORT	
PROJECT NO.	REV	FIGURE
13-1152-0250 (2000)	A	E3a

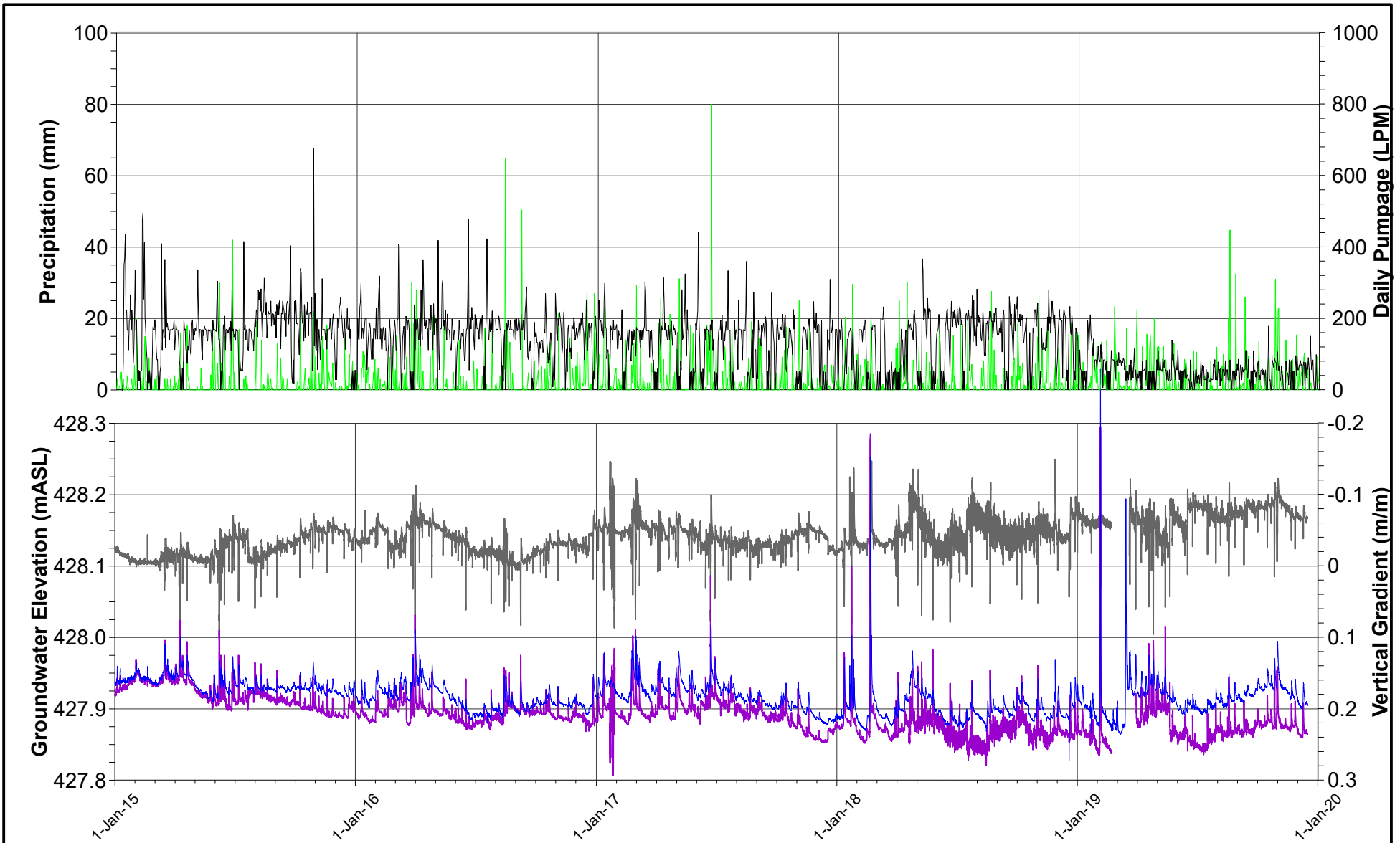


- TW1-88 Daily Pumping
- Precipitation
- P1B-07 (Shallow)
- P1A-07 (Deep)
- Vertical Gradient OB/OB



DATE	December 2019
DESIGN	KS
REVIEW	GP
APPROVED	GP

PROJECT	NESTLE WATERS CANADA Town of Erin, Ontario		
TITLE	P1-07 NEST HYDROGRAPHS AND VERTICAL GRADIENTS (2019 DATA) 2019 ANNUAL MONITORING REPORT		
PROJECT NO.	REV	FIGURE	
13-1152-0250 (2000)	A	E3b	

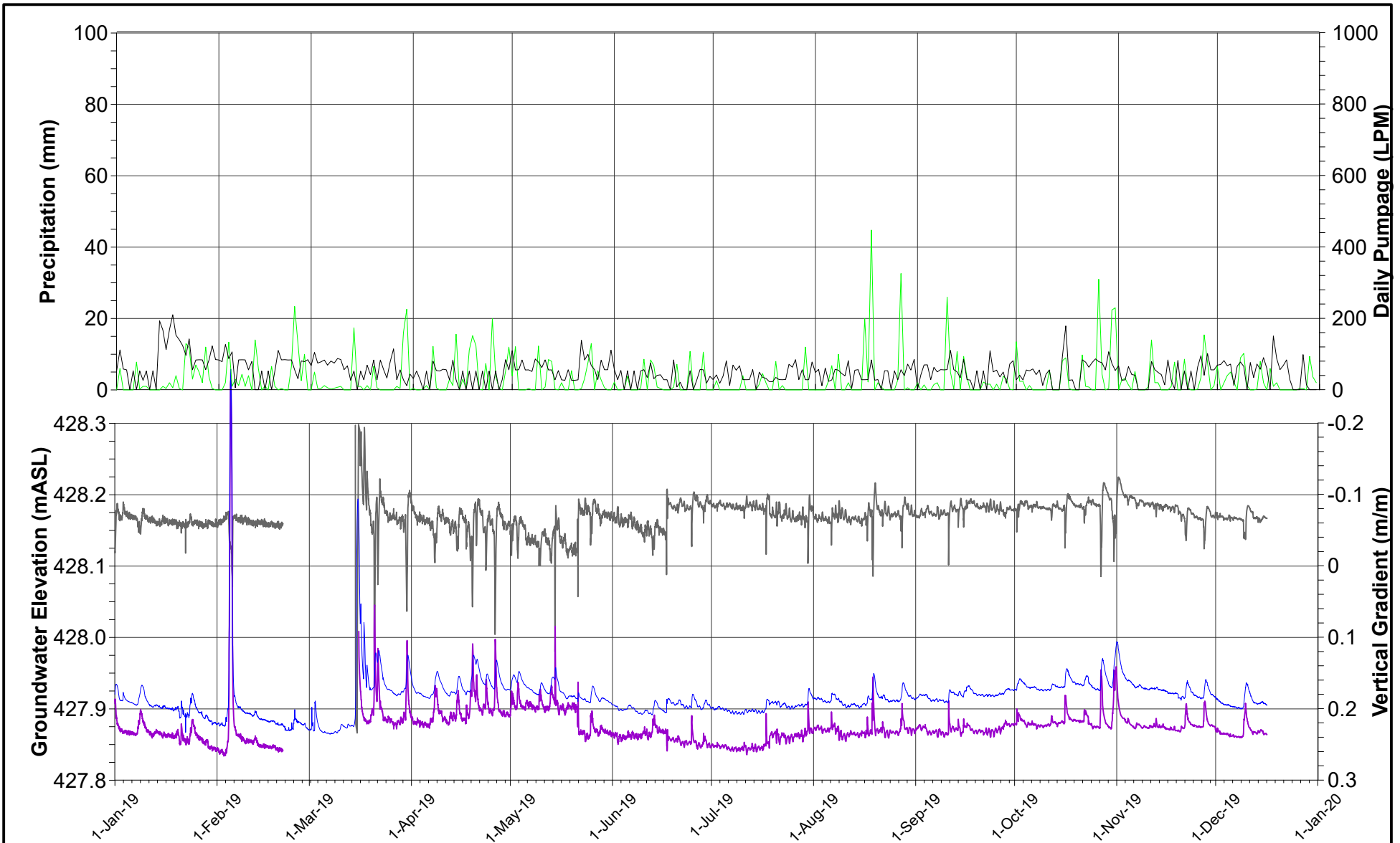


- TW1-88 Daily Pumpage
- Precipitation
- P11B-05 (Shallow)
- P11A-05 (Deep)
- Vertical Gradient OB/OB



DATE	December 2019
DESIGN	KS
REVIEW	GP
APPROVED	GP

PROJECT	NESTLE WATERS CANADA Town of Erin, Ontario		
TITLE	P11-05 NEST HYDROGRAPHS AND VERTICAL GRADIENTS 2019 ANNUAL MONITORING REPORT		
PROJECT NO.	13-1152-0250 (2000)	REV	A
		FIGURE	E4a

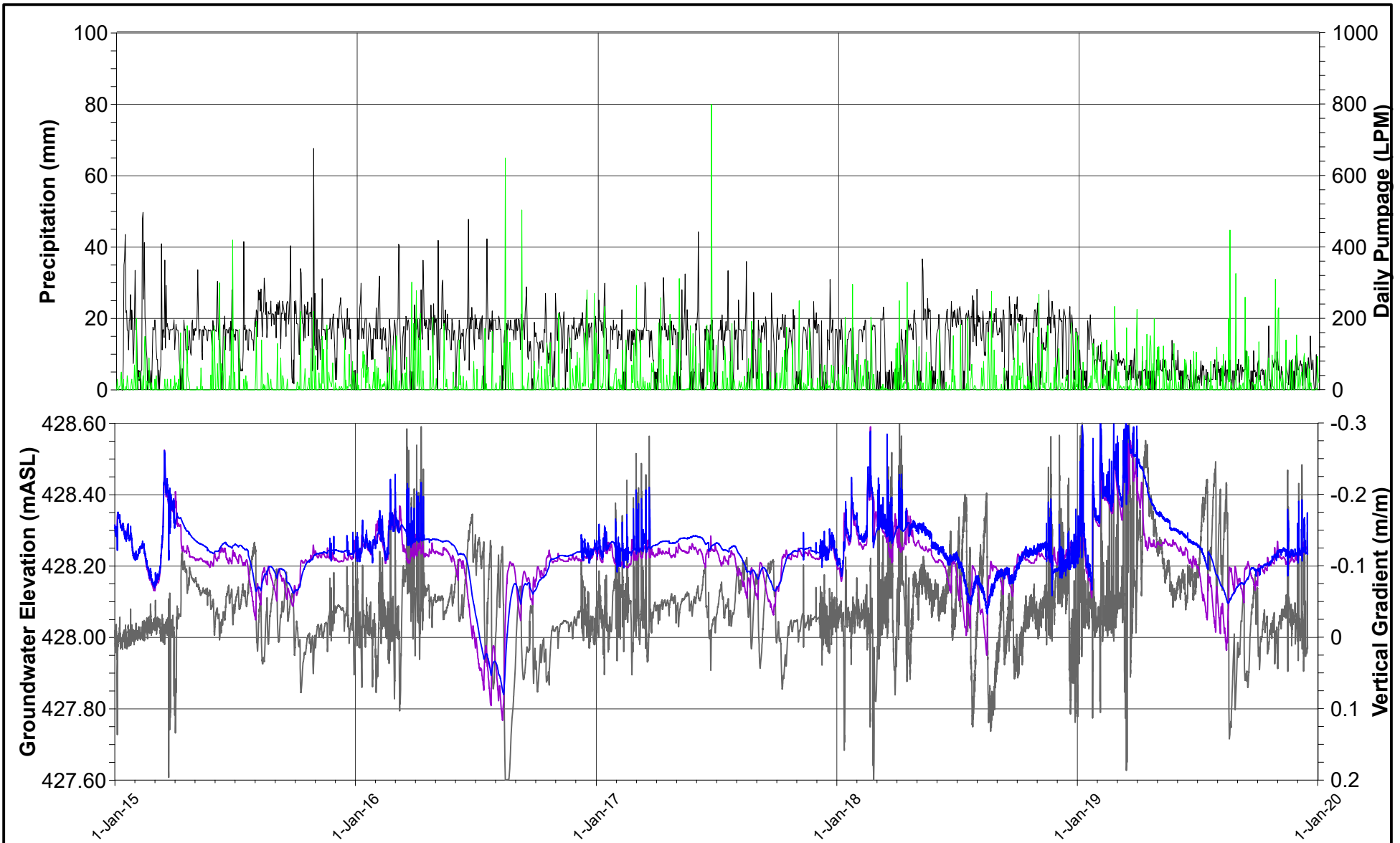


- TW1-88 Daily Pumpage
- Precipitation
- P11B-05 (Shallow)
- P11A-05 (Deep)
- Vertical Gradient OB/OB



DATE	December 2019
DESIGN	KS
REVIEW	GP
APPROVED	GP

PROJECT	NESTLE WATERS CANADA Town of Erin, Ontario		
TITLE	P11-05 NEST HYDROGRAPHS AND VERTICAL GRADIENTS (2019 DATA) 2019 ANNUAL MONITORING REPORT		
PROJECT NO.	13-1152-0250 (2000)	REV	A
		FIGURE	E4b

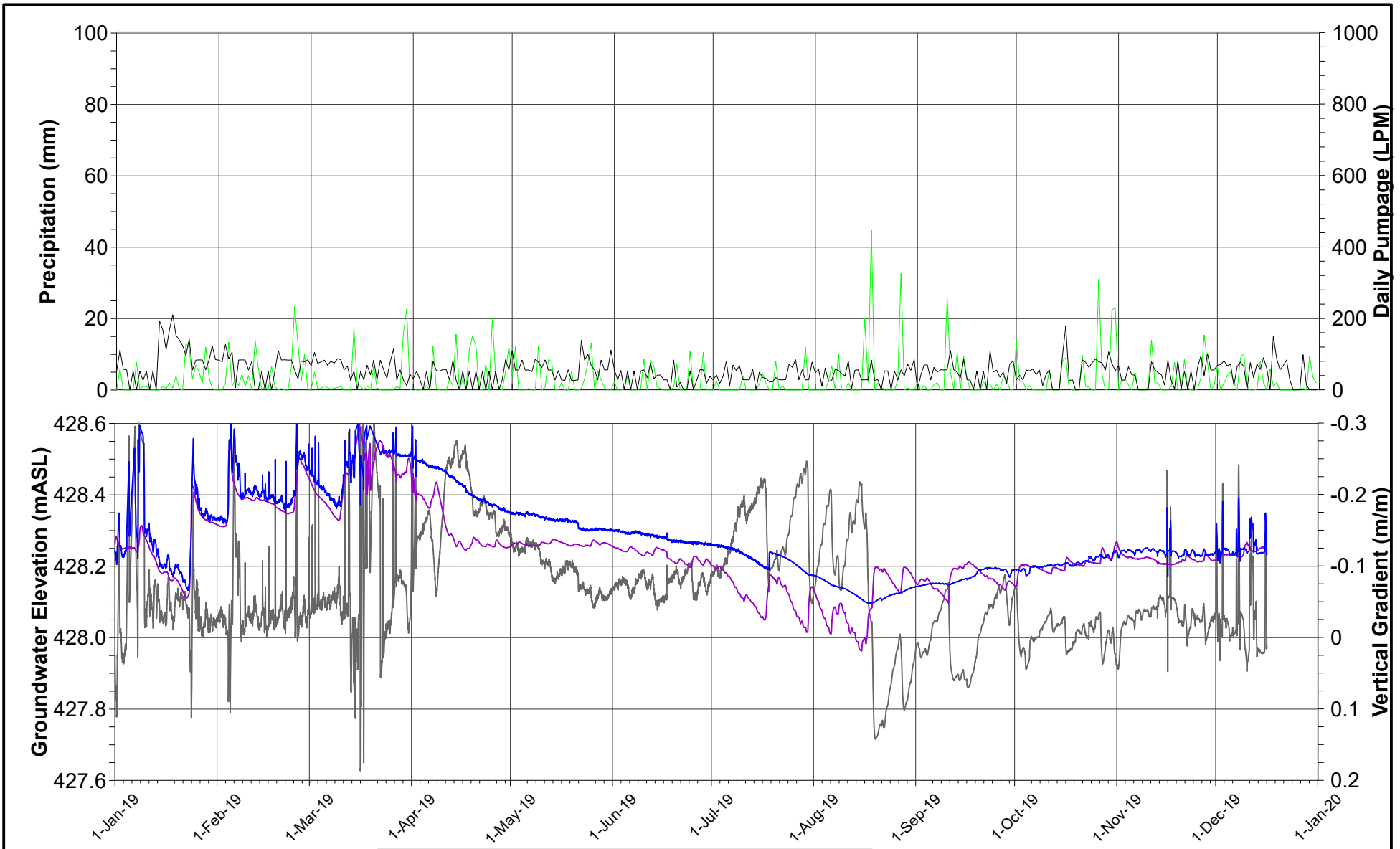


- TW1-88 Daily Pumpage
- Precipitation
- P10B-05 (Shallow)
- P10A-05 (Deep)
- Vertical Gradient OB/OB



DATE	December 2019
DESIGN	KS
REVIEW	GP
APPROVED	GP

PROJECT	NESTLE WATERS CANADA Town of Erin, Ontario		
TITLE	P10-05 NEST HYDROGRAPHS AND VERTICAL GRADIENTS 2019 ANNUAL MONITORING REPORT		
PROJECT NO.	REV	FIGURE	
13-1152-0250 (2000)	A	E5a	



- TW1-88 Daily Pumpage
- Precipitation
- P10B-05 (Shallow)
- P10A-05 (Deep)
- Vertical Gradient OB/OB

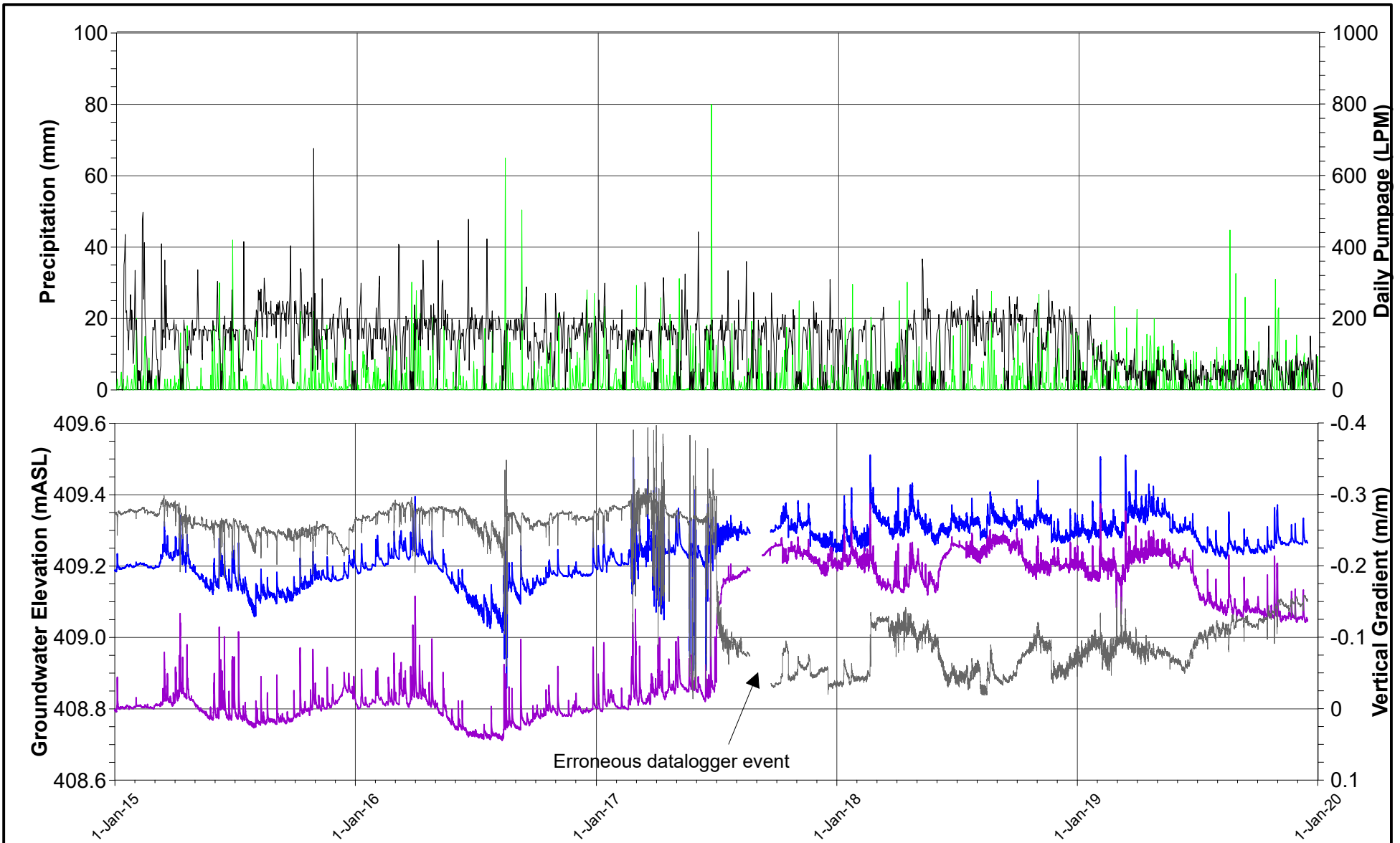


DATE	December 2019
DESIGN	KS
REVIEW	GP
APPROVED	GP

PROJECT **NESTLE WATERS CANADA**
Town of Erin, Ontario

TITLE **P10-05 NEST HYDROGRAPHS AND VERTICAL GRADIENTS (2019 DATA) 2019 ANNUAL MONITORING REPORT**

PROJECT NO.	REV	FIGURE
13-1152-0250 (2000)	A	E5b



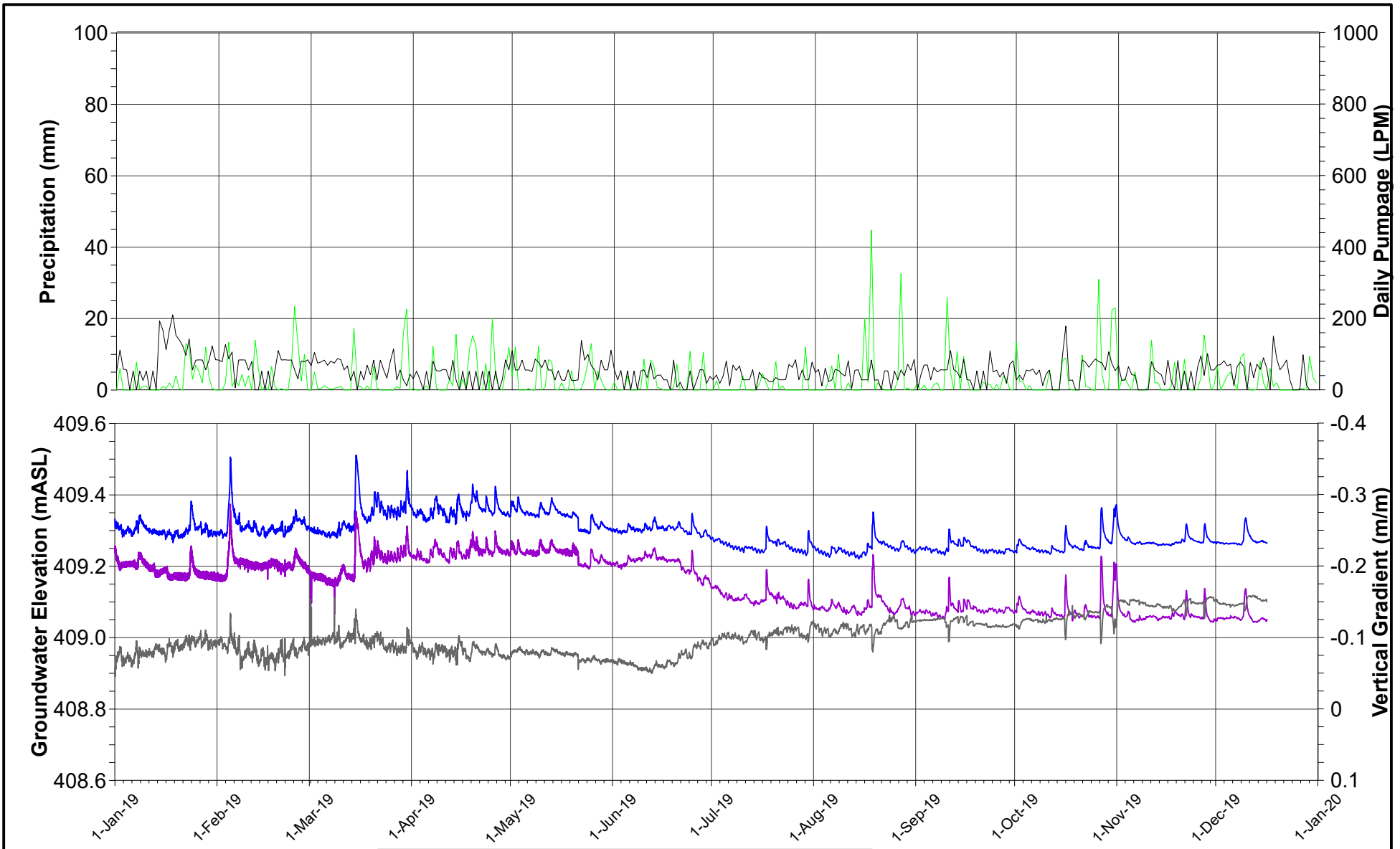
- TW1-88 Daily Pumpage
- Precipitation
- P12B-07 (Shallow)
- P12A-07 (Deep)
- Vertical Gradient OB/OB

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



DATE	December 2019
DESIGN	JH
REVIEW	GP
APPROVED	GP

PROJECT	NESTLE WATERS CANADA Town of Erin, Ontario		
TITLE	P12-07 NEST HYDROGRAPHS AND VERTICAL GRADIENTS 2019 ANNUAL MONITORING REPORT		
PROJECT NO.	13-1152-0250 (2000)	REV	A
		FIGURE	E6a

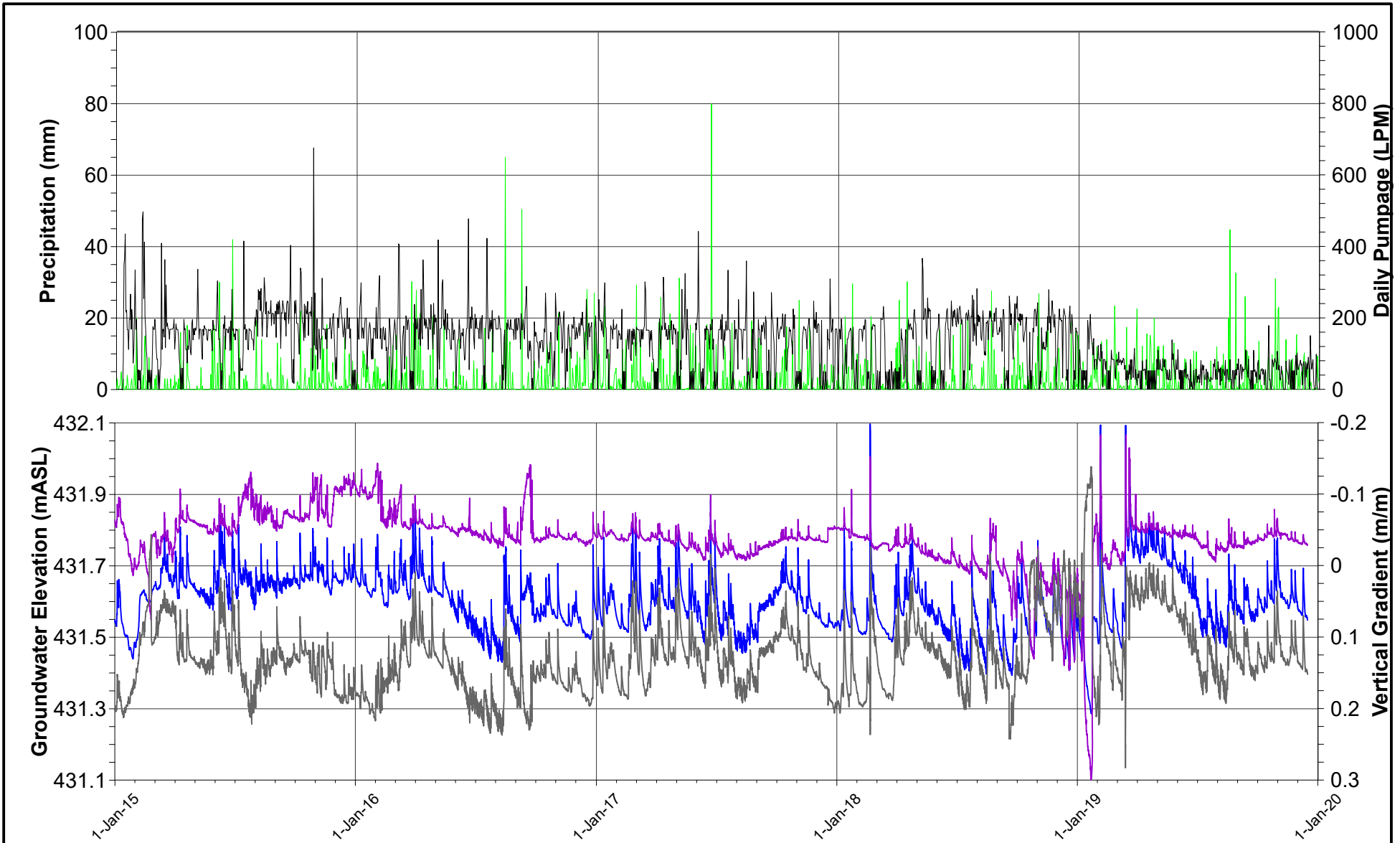


- TW1-88 Daily Pumpage
- Precipitation
- P12B-07 (Shallow)
- P12A-07 (Deep)
- Vertical Gradient OB/OB



DATE	December 2019
DESIGN	KS
REVIEW	GP
APPROVED	GP

PROJECT	NESTLE WATERS CANADA Town of Erin, Ontario	
TITLE	P12-07 NEST HYDROGRAPHS AND VERTICAL GRADIENTS (2019 DATA) 2019 ANNUAL MONITORING REPORT	
PROJECT NO.	REV	FIGURE
13-1152-0250 (2000)	A	E6b

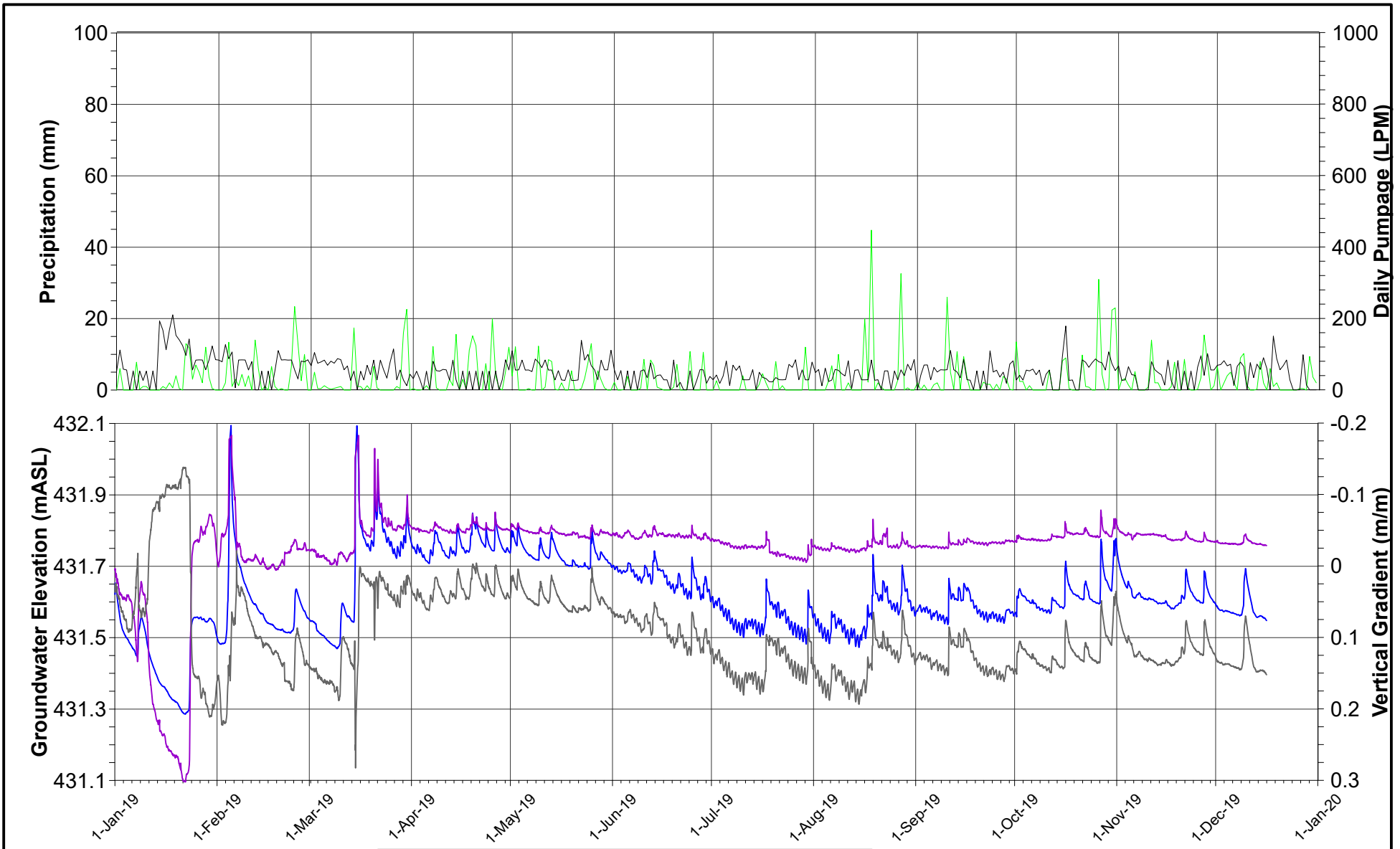


- TW1-88 Daily Pumpage
- Precipitation
- P13B-07 (Shallow)
- P13A-07 (Deep)
- Vertical Gradient OB/OB



DATE	December 2019
DESIGN	KS
REVIEW	GP
APPROVED	GP

PROJECT	NESTLE WATERS CANADA Town of Erin, Ontario	
TITLE	P13-07 NEST HYDROGRAPHS AND VERTICAL GRADIENTS 2019 ANNUAL MONITORING REPORT	
PROJECT NO.	REV	FIGURE
13-1152-0250 (2000)	A	E7a

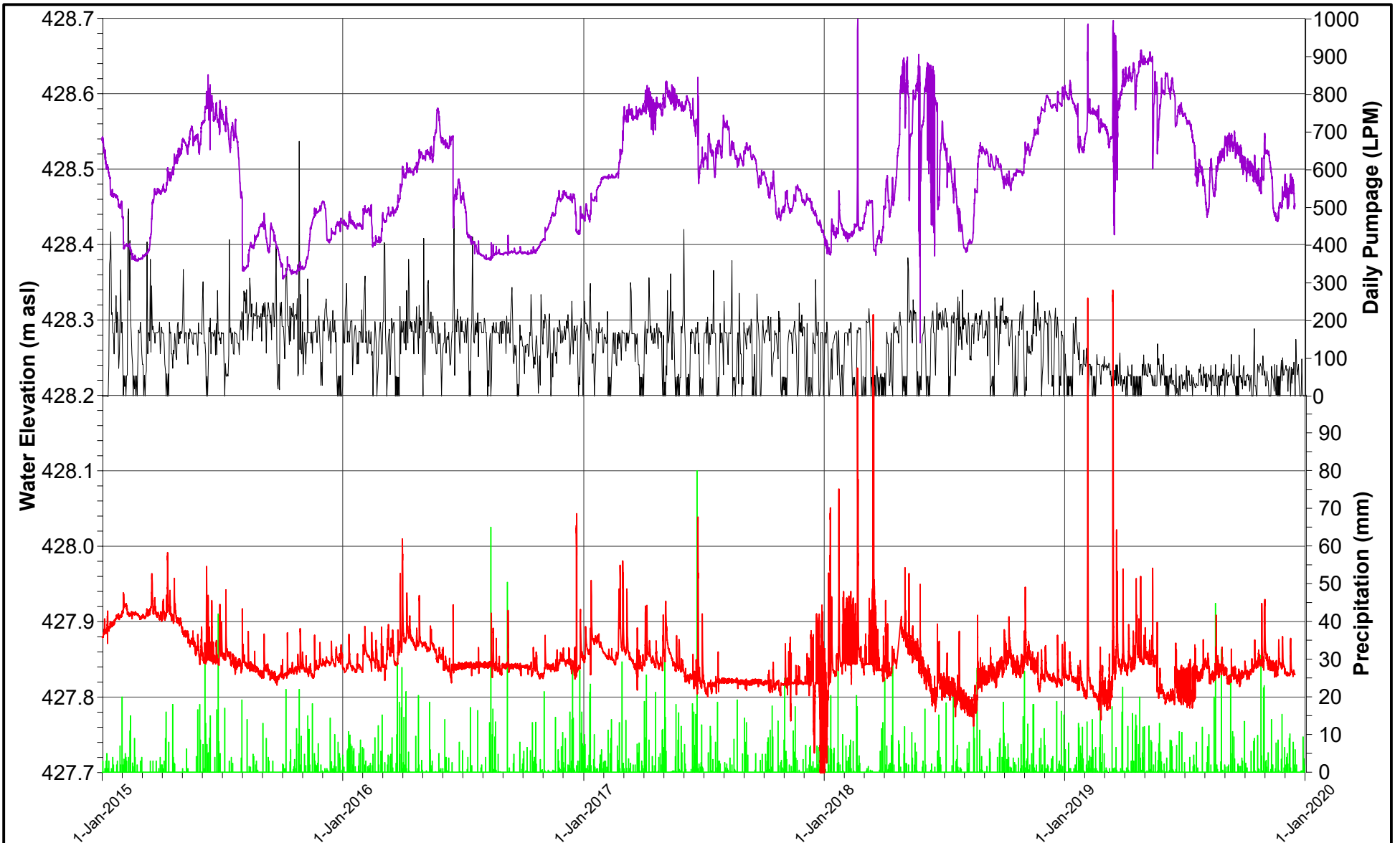





- TW1-88 Daily Pumpage
- Precipitation
- P13B-07 (Shallow)
- P13A-07 (Deep)
- Vertical Gradient OB/OB



DATE	December 2019
DESIGN	JH
REVIEW	GP
APPROVED	GP

PROJECT	NESTLE WATERS CANADA Town of Erin, Ontario		
TITLE	P13-07 NEST HYDROGRAPHS AND VERTICAL GRADIENTS (2019 DATA) 2019 ANNUAL MONITORING REPORT		
PROJECT NO.	13-1152-0250 (2000)	REV	A
		FIGURE	E7b

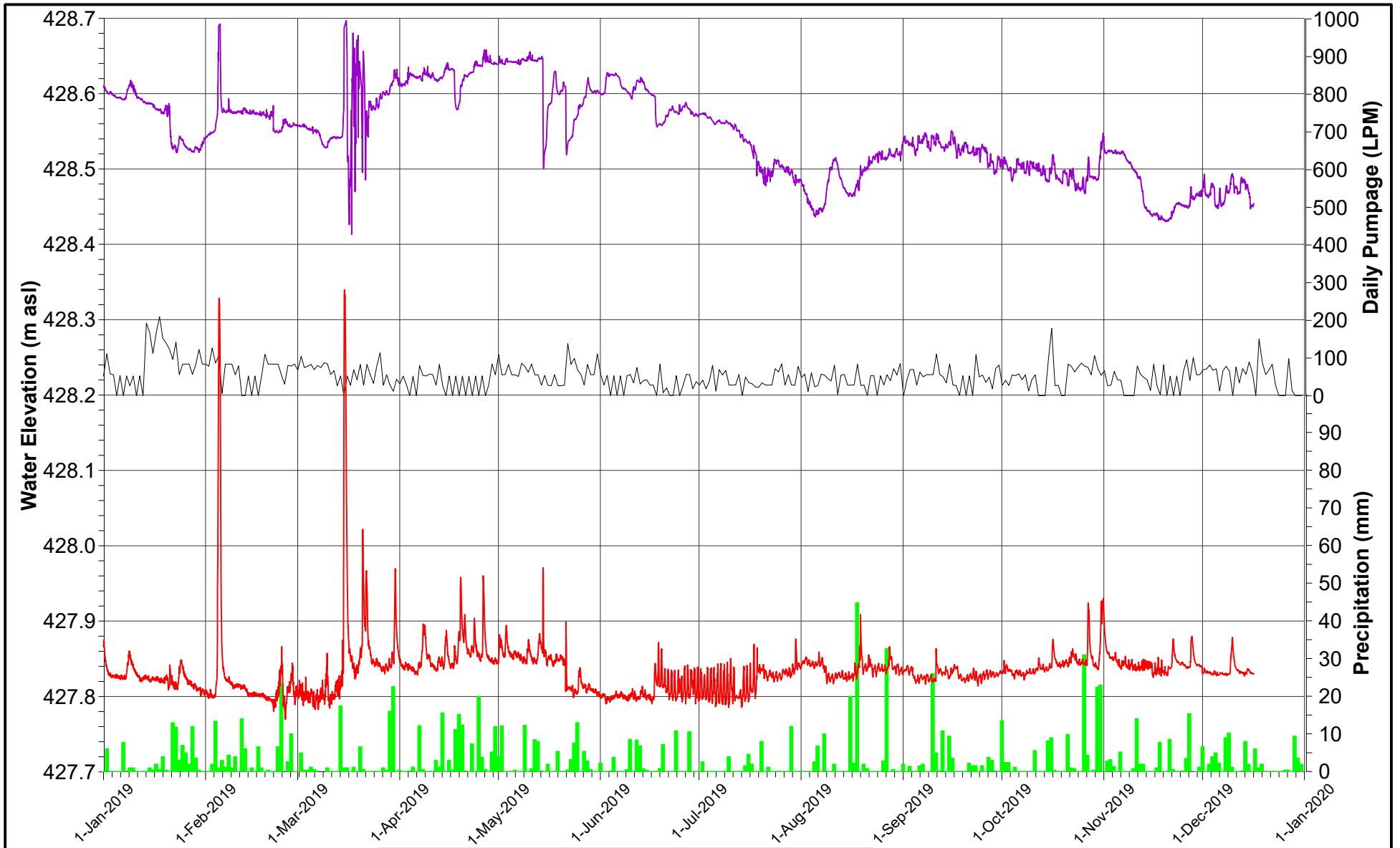


— TW1-88 Daily Pumpage
 Precipitation
 SW1-08 (Creek d/s of on-Site Pond)
 SW3-08 (on-Site Pond)



DATE	December 2019
DESIGN	KS
REVIEW	GP
APPROVED	GP

PROJECT	NESTLE WATERS CANADA Town of Erin, Ontario		
TITLE	HYDROGRAPHS FOR SURFACE WATER LEVELS IN VICINITY OF ON-SITE POND 2019 ANNUAL MONITORING REPORT		
PROJECT NO.	13-1152-0250 (2000)	REV	A
		FIGURE	E8a



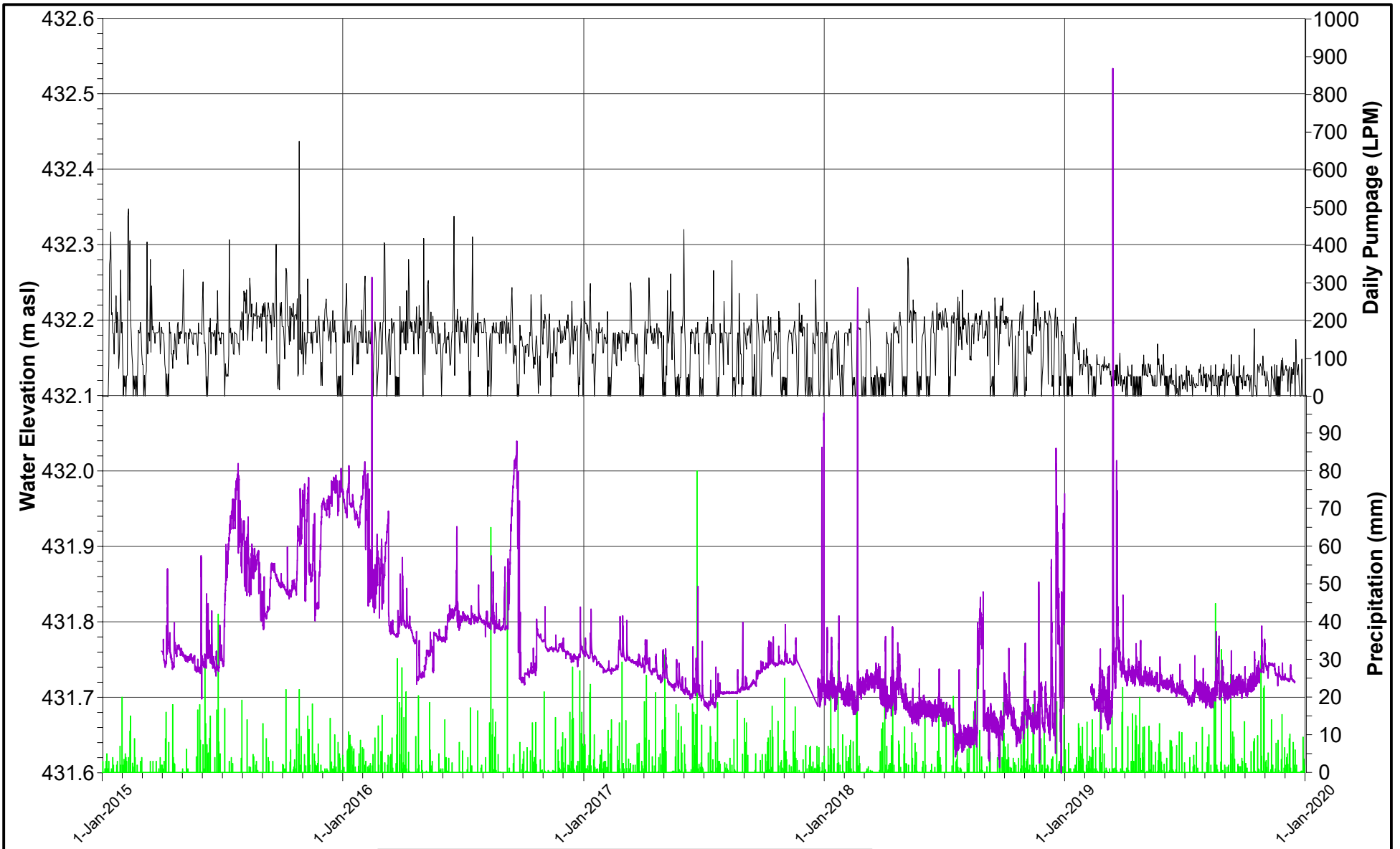
■ Precipitation
— SW1-08 (Creek d/s pf on-Site Pond)
— SW3-08 (on-Site Pond)




DATE	December 2019
DESIGN	KS
REVIEW	GP
APPROVED	GP

PROJECT **NESTLE WATERS CANADA**
 Town of Erin, Ontario

TITLE	HYDROGRAPHS FOR SURFACE WATER LEVELS IN VICINITY OF ON-SITE POND (2019 DATA) 2019 ANNUAL MONITORING REPORT	
PROJECT NO.	13-1152-0250 (2000)	REV A
		FIGURE E8b



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

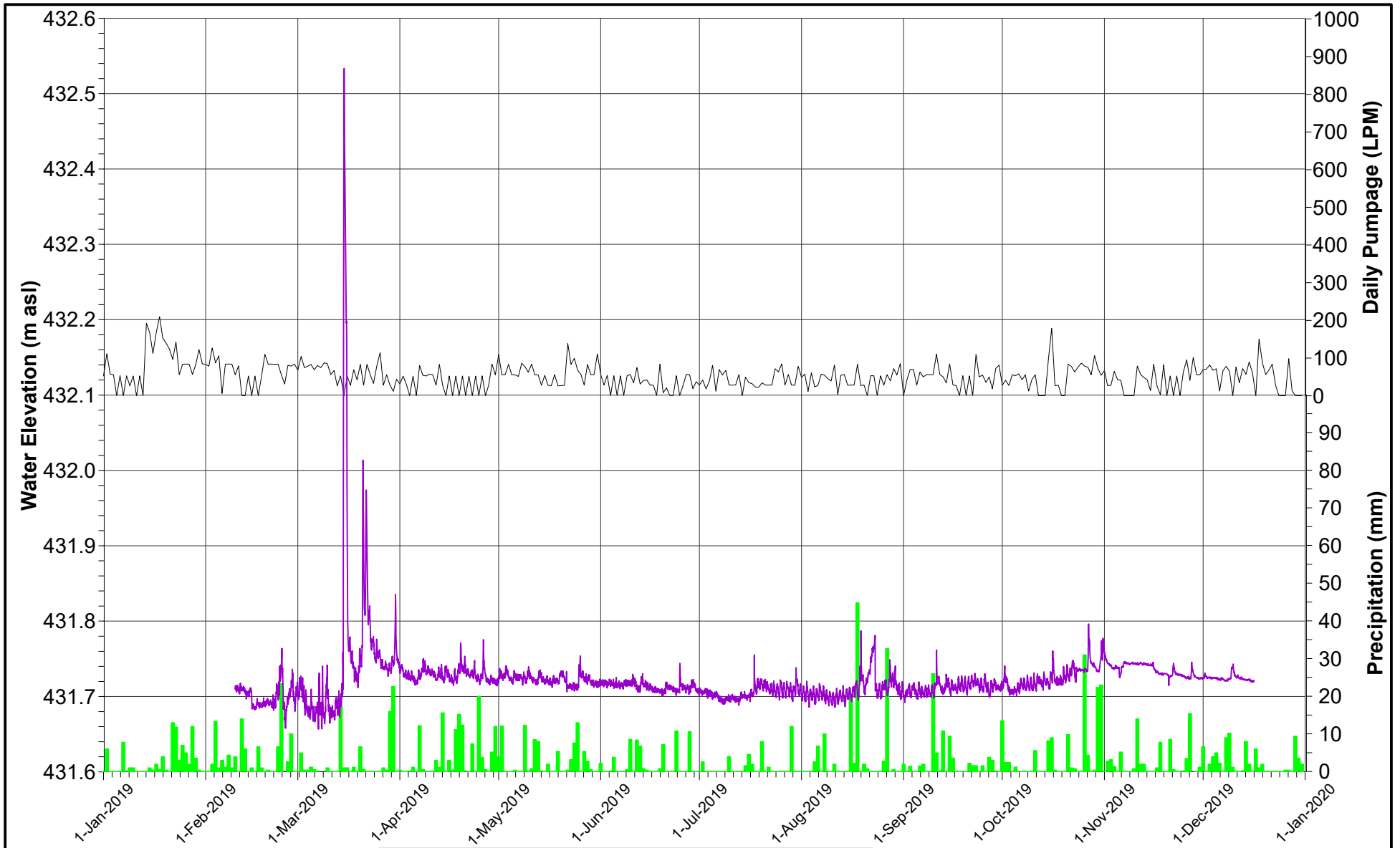
PROJECT NESTLE WATERS CANADA
 Town of Erin, Ontario

TITLE HYDROGRAPHS FOR SURFACE WATER LEVELS
 IN ERIN BRANCH OF CREDIT RIVER
 2019 ANNUAL MONITORING REPORT



DATE December 2019
 DESIGN KS
 REVIEW GP
 APPROVED GP

PROJECT NO. 13-1152-0250 (2000) **REV** A **FIGURE** E9a



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

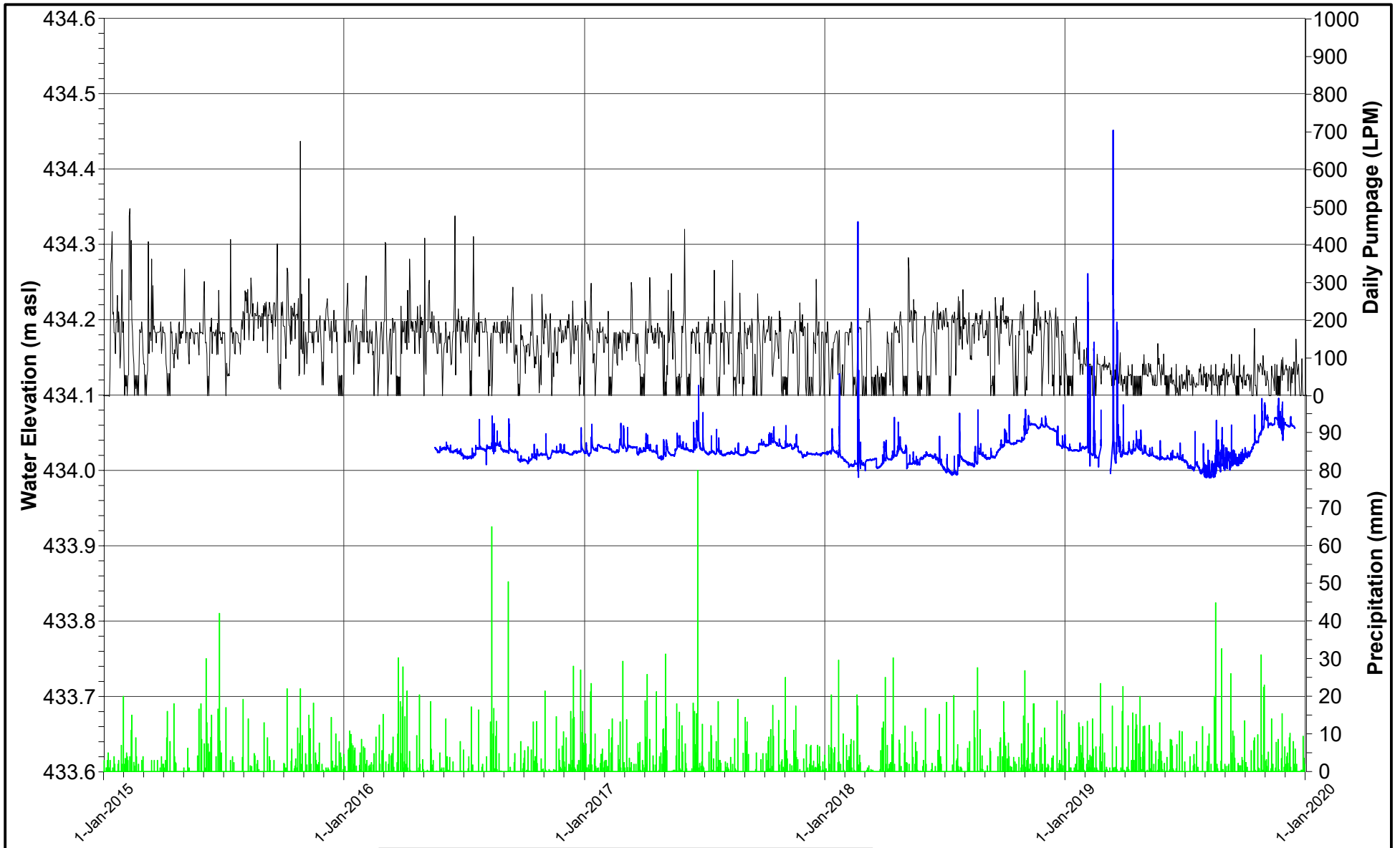


DATE December 2019
 DESIGN KS
 REVIEW GP
 APPROVED GP

PROJECT
NESTLE WATERS CANADA
 Town of Erin, Ontario

TITLE
HYDROGRAPHS FOR SURFACE WATER LEVELS
IN ERIN BRANCH OF CREDIT RIVER (2019 DATA)
2019 ANNUAL MONITORING REPORT

PROJECT NO. 13-1152-0250 (2000) **REV** A **FIGURE** E9b

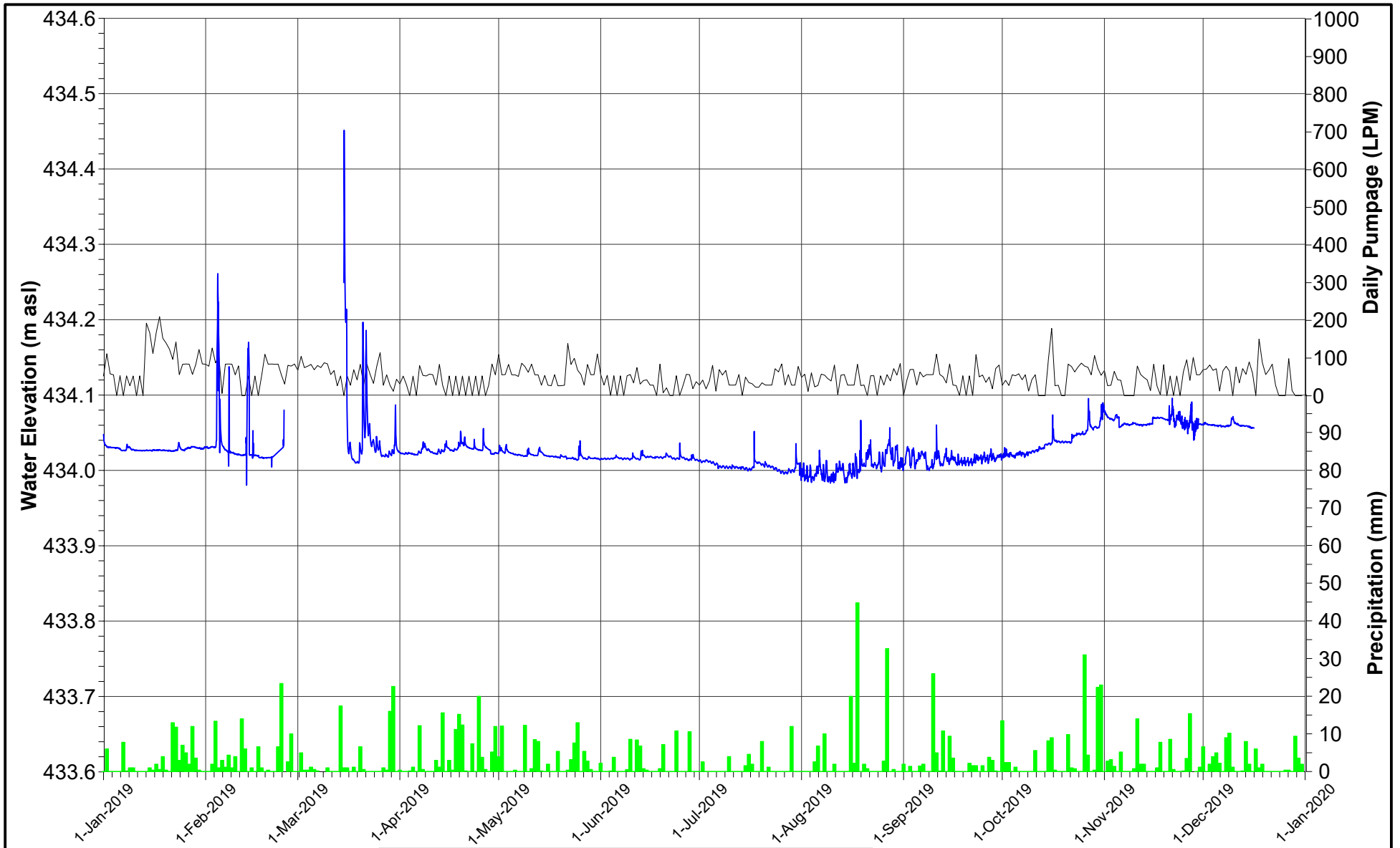


— TW1-88 Daily Pumpage
 ■ Precipitation
 — SW7A-16



DATE December 2019
 DESIGN KS
 REVIEW GP
 APPROVED GP

PROJECT **NESTLE WATERS CANADA**
 Town of Erin, Ontario
 TITLE **HYDROGRAPHS FOR SURFACE WATER LEVELS
 IN ERIN BRANCH OF CREDIT RIVER
 2019 ANNUAL MONITORING REPORT**
 PROJECT NO. 13-1152-0250 (2000) REV A FIGURE E10a



— TW1-88 Daily Pumpage
 █ Precipitation
 — SW7A-16

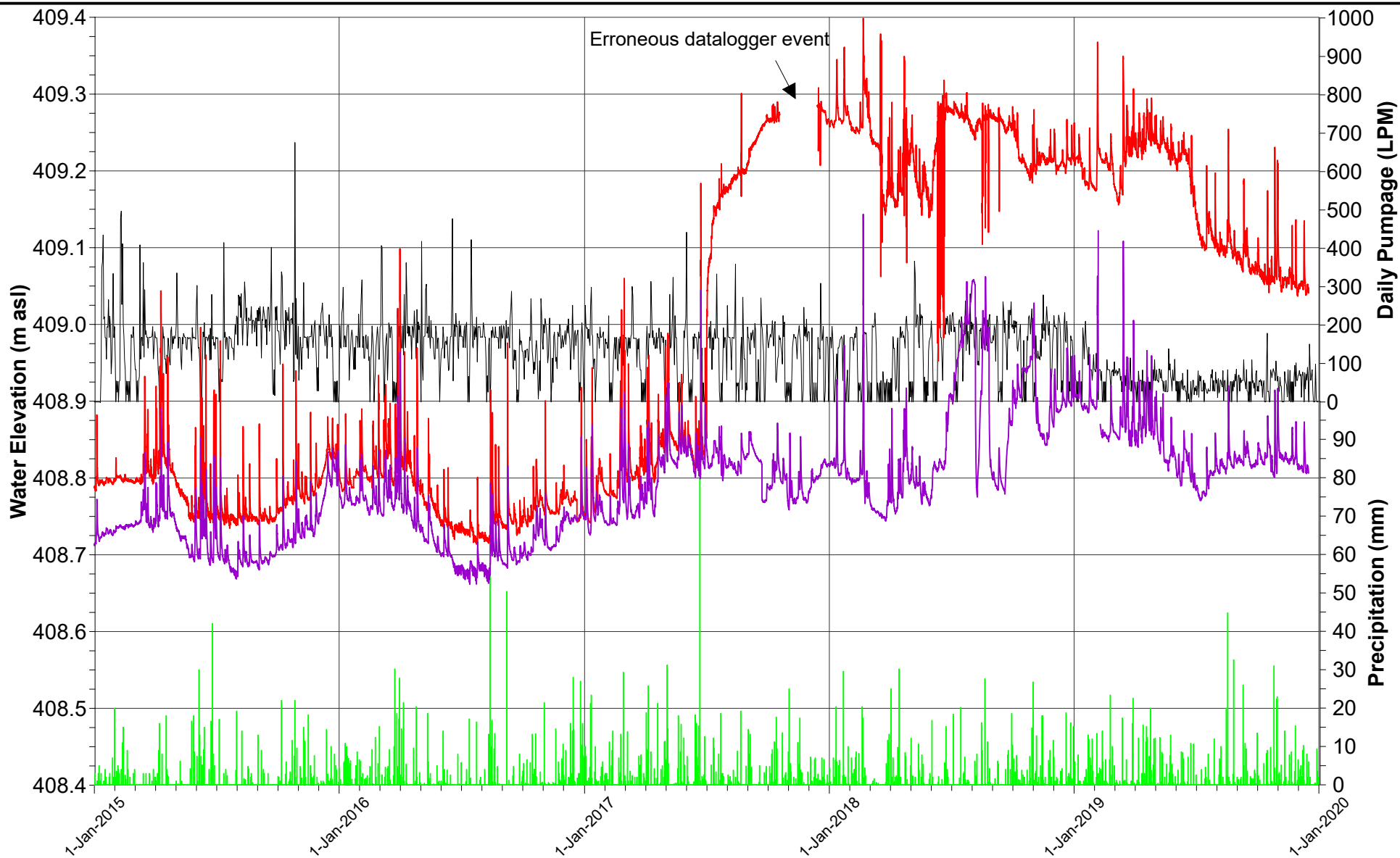


DATE December 2019
 DESIGN KS
 REVIEW GP
 APPROVED GP

PROJECT **NESTLE WATERS CANADA**
 Town of Erin, Ontario

TITLE **HYDROGRAPHS FOR SURFACE WATER LEVELS
 IN ERIN BRANCH OF CREDIT RIVER (2019 DATA)
 2019 ANNUAL MONITORING REPORT**

PROJECT NO. 13-1152-0250 (2000) REV A FIGURE E10b



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

PROJECT
NESTLE WATERS CANADA
Town of Erin, Ontario

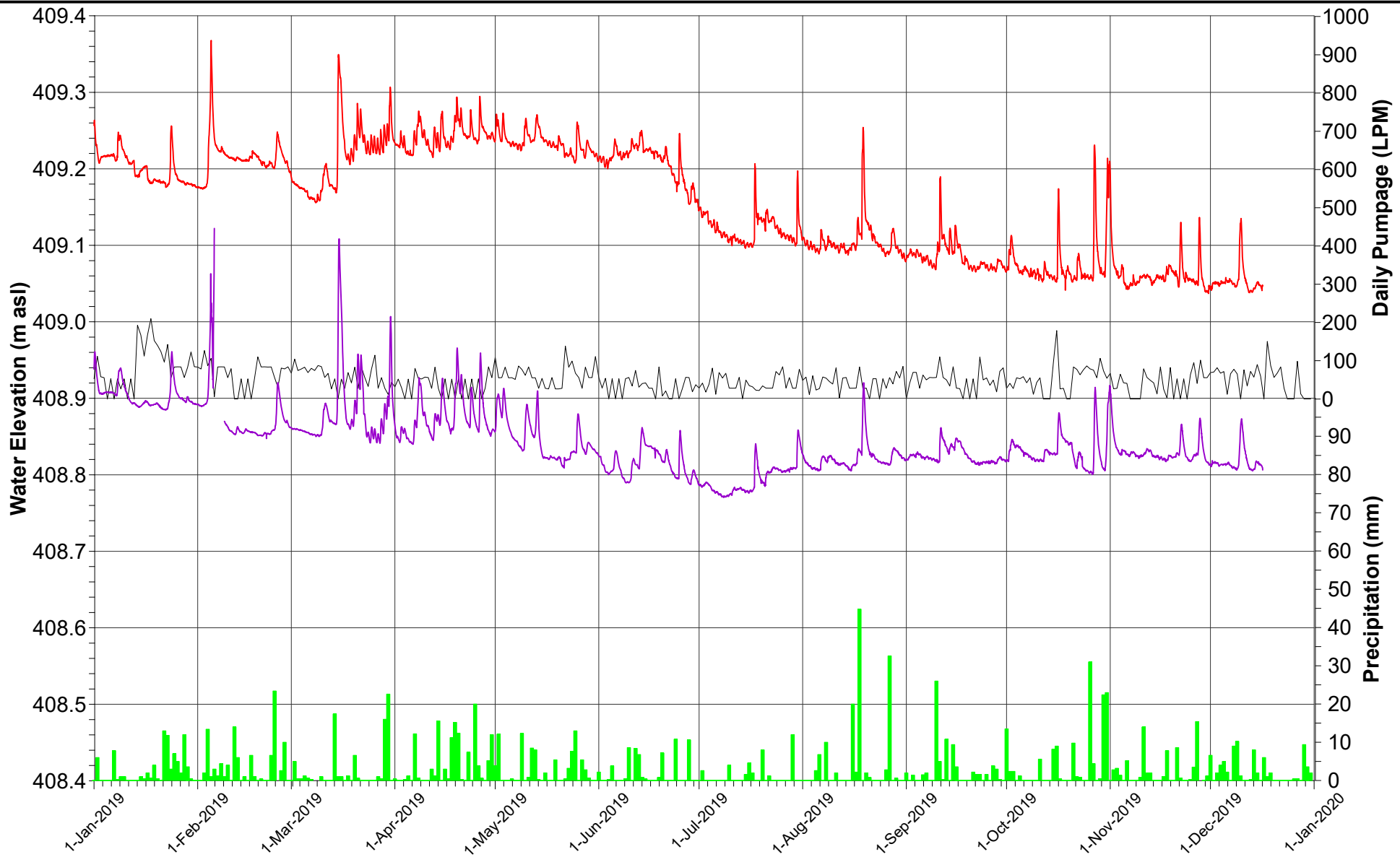
- TW1-88 Daily Pumpage
- █ Precipitation
- SW4-08 (Stream into Roman Lake)
- SW5-08 (Roman Lake)






DATE	December 2019
DESIGN	KS
REVIEW	GP
APPROVED	GP

TITLE
**HYDROGRAPHS FOR SURFACE WATER LEVELS
IN VICINITY OF ROMAN LAKE
2019 ANNUAL MONITORING REPORT**

PROJECT NO. 13-1152-0250 (2000)	REV A	FIGURE E11a
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— TW1-88 Daily Pumpage
 Precipitation
 SW4-08 (Stream into Roman Lake)
 SW5-08 (Roman Lake)



DATE	December 2019
DESIGN	KS
REVIEW	GP
APPROVED	GP

PROJECT **NESTLE WATERS CANADA**
 Town of Erin, Ontario

TITLE **HYDROGRAPHS FOR SURFACE WATER LEVELS
 IN VICINITY OF ROMAN LAKE (2019 DATA)
 2019 ANNUAL MONITORING REPORT**

PROJECT NO. 13-1152-0250 (2000)	REV A	FIGURE E11b
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TABLE E1
Manual Surface Water Elevations (Mini Piezometers)
2019 Annual Report

DATE	Water Level Elevation (masl)							
	P01A-07	P01B-07	P03A-05	P03B-05	P06A-07	P06B-07	P10A-05	P10B-05
22-Jan-19	428.01	428.00	Frozen	Frozen	Frozen	Frozen	Frozen	Frozen
21-Feb-19	428.01	427.98	428.54	428.54	428.54	Frozen	Frozen	Frozen
22-Mar-19	428.04	428.02	428.61	428.60	428.57	428.58	428.68	428.56
17-Apr-19	428.01	428.00	428.65	428.64	428.60	428.63	428.42	428.26
21-May-19	428.01	428.02	428.59	428.59	428.58	428.61	428.32	428.26
17-Jun-19	427.99	427.99	428.61	428.60	428.57	428.60	428.28	428.24
18-Jul-19	427.99	427.99	428.54	428.53	428.49	428.51	428.19	428.15
21-Aug-19	427.99	427.98	428.52	428.52	428.48	428.51	428.11	428.19
16-Sep-19	428.00	427.99	428.54	428.54	428.51	428.53	428.17	428.21
23-Oct-19	428.00	427.99	428.48	428.48	428.46	428.47	428.21	428.21
20-Nov-19	427.98	427.98	428.46	428.44	428.41	428.44	428.23	428.24
16-Dec-19	427.98	427.96	428.47	428.47	428.43	428.46	Frozen	Frozen

TABLE E1
Manual Surface Water Elevations (Mini Piezometers)
2019 Annual Report

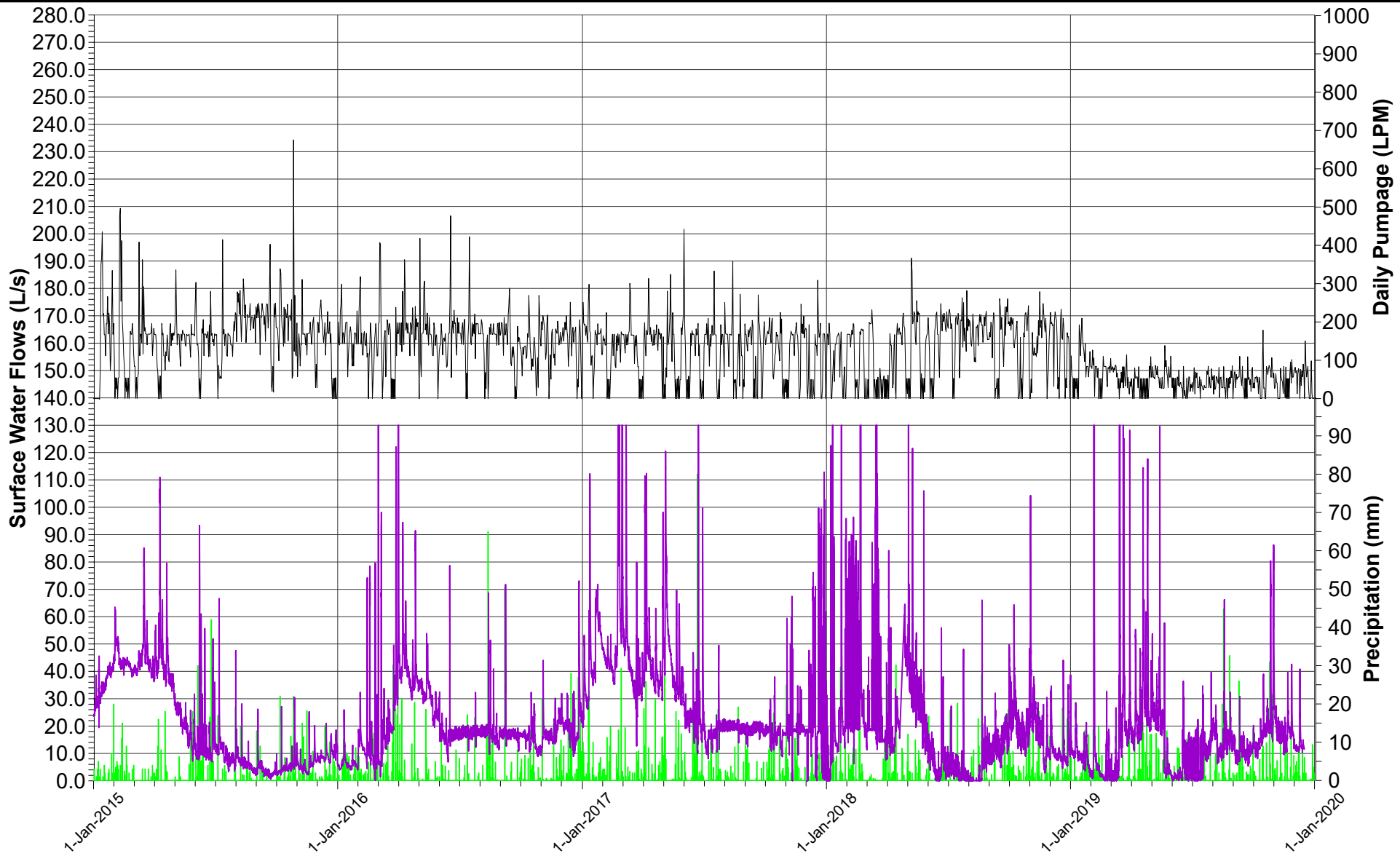
DATE	Water Level Elevation (masl)					
	P11A-05	P11B-05	P12A-07	P12B-07	P13A-07	P13B-07
22-Jan-19	Frozen	Frozen	Frozen	Frozen	431.29	Frozen
21-Feb-19	Frozen	427.84	409.29	409.19	431.51	431.70
22-Mar-19	427.98	427.91	409.36	409.23	431.85	431.87
17-Apr-19	427.92	427.88	409.34	409.23	431.74	431.79
21-May-19	427.92	427.88	409.32	409.23	431.70	431.79
17-Jun-19	427.90	427.87	409.31	409.22	431.67	431.78
18-Jul-19	427.91	427.85	409.27	409.13	431.61	431.72
21-Aug-19	427.92	427.87	409.27	409.11	431.61	431.77
16-Sep-19	427.93	427.87	409.27	409.10	431.63	431.77
23-Oct-19	427.94	427.89	409.26	409.06	431.63	431.79
20-Nov-19	427.92	427.87	409.27	409.07	431.60	431.77
16-Dec-19	427.90	427.86	Frozen	409.05	431.56	431.76


TABLE E2
Manual Surface Water Elevations (Surface Water Stations)
2019 Annual Report

DATE	Water Level Elevation (masl)						
	SW1-08	SW3-00 (d/s)	SW3-08	SW4-08	SW5-08	SW7-08	SW7A-16
22-Jan-19	Frozen	427.85	Frozen	Frozen	Frozen	Frozen	434.03
21-Feb-19	427.79	427.85	428.54	409.20	Frozen	431.69	434.02
22-Mar-19	427.88	427.87	428.57	409.24	Frozen	431.80	434.05
17-Apr-19	427.84	427.87	428.63	409.23	408.86	431.72	434.03
21-May-19	427.83	428.07	428.60	409.26	408.83	431.73	434.04
17-Jun-19	427.80	427.85	428.60	409.22	408.83	431.71	434.02
18-Jul-19	427.83	427.85	428.52	409.13	408.81	431.71	434.02
21-Aug-19	427.84	427.84	428.51	409.12	408.82	431.73	434.02
16-Sep-19	427.83	427.85	428.54	409.10	408.84	431.71	434.02
23-Oct-19	427.85	427.84	428.47	409.06	408.81	431.74	434.05
20-Nov-19	427.85	427.85	428.43	409.07	408.82	431.72	434.07
16-Dec-19	427.84	427.83	Frozen	409.05	Frozen	431.72	434.06

APPENDIX F

Surface Water Flow Monitoring



— TW1-88 Daily Pumpage
 Precipitation
 — SW1-08

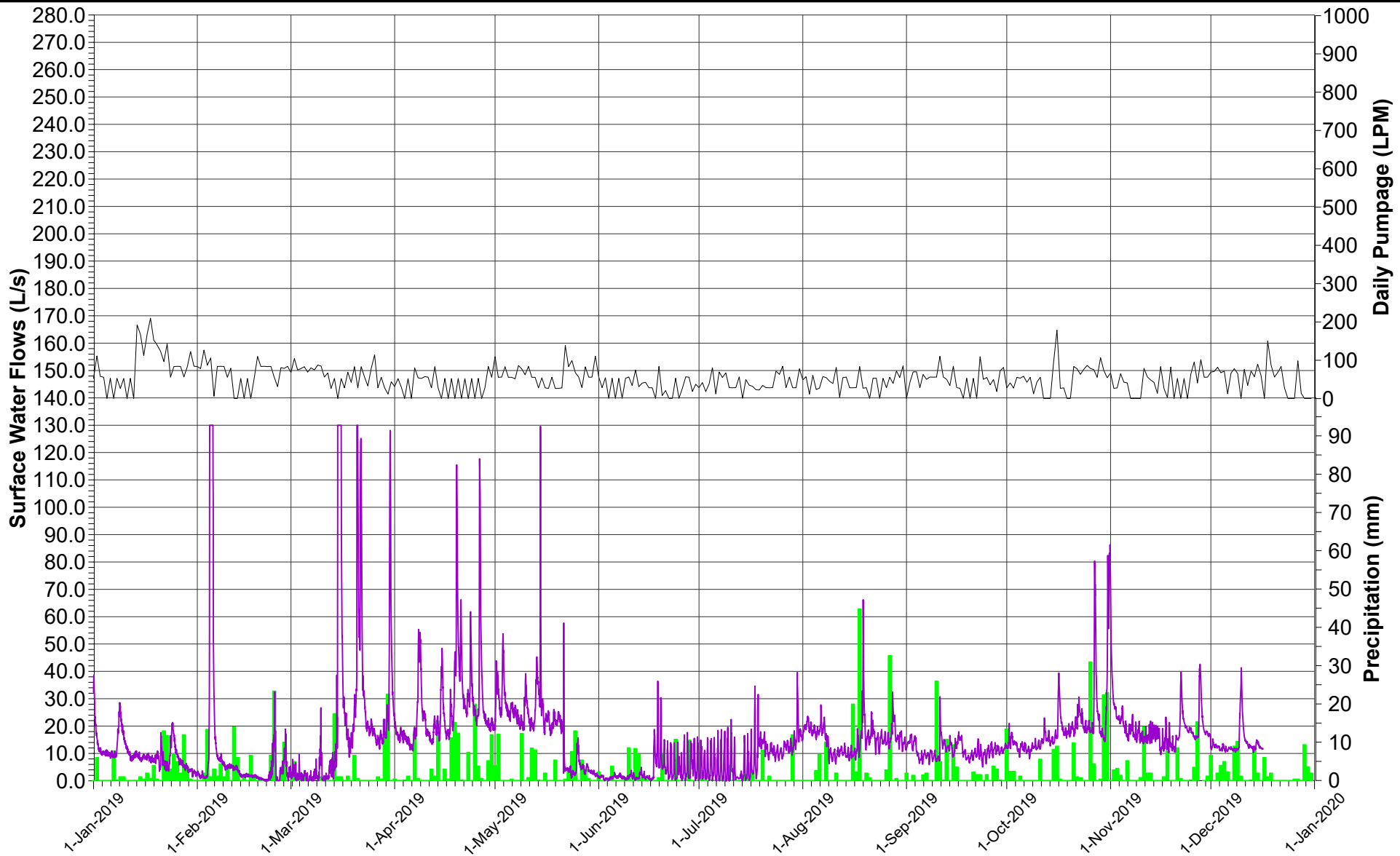
PROJECT **NESTLE WATERS CANADA**
 Town of Erin, Ontario

TITLE **HYDROGRAPH FOR SURFACE WATER FLOW AT SW1-08**
2019 ANNUAL MONITORING REPORT

PROJECT NO. 13-1152-0250 (2000) REV A FIGURE F1a



DATE December 2019
 DESIGN KS
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— TW1-88 Daily Pumpage
 ■ Precipitation
 — SW1-08

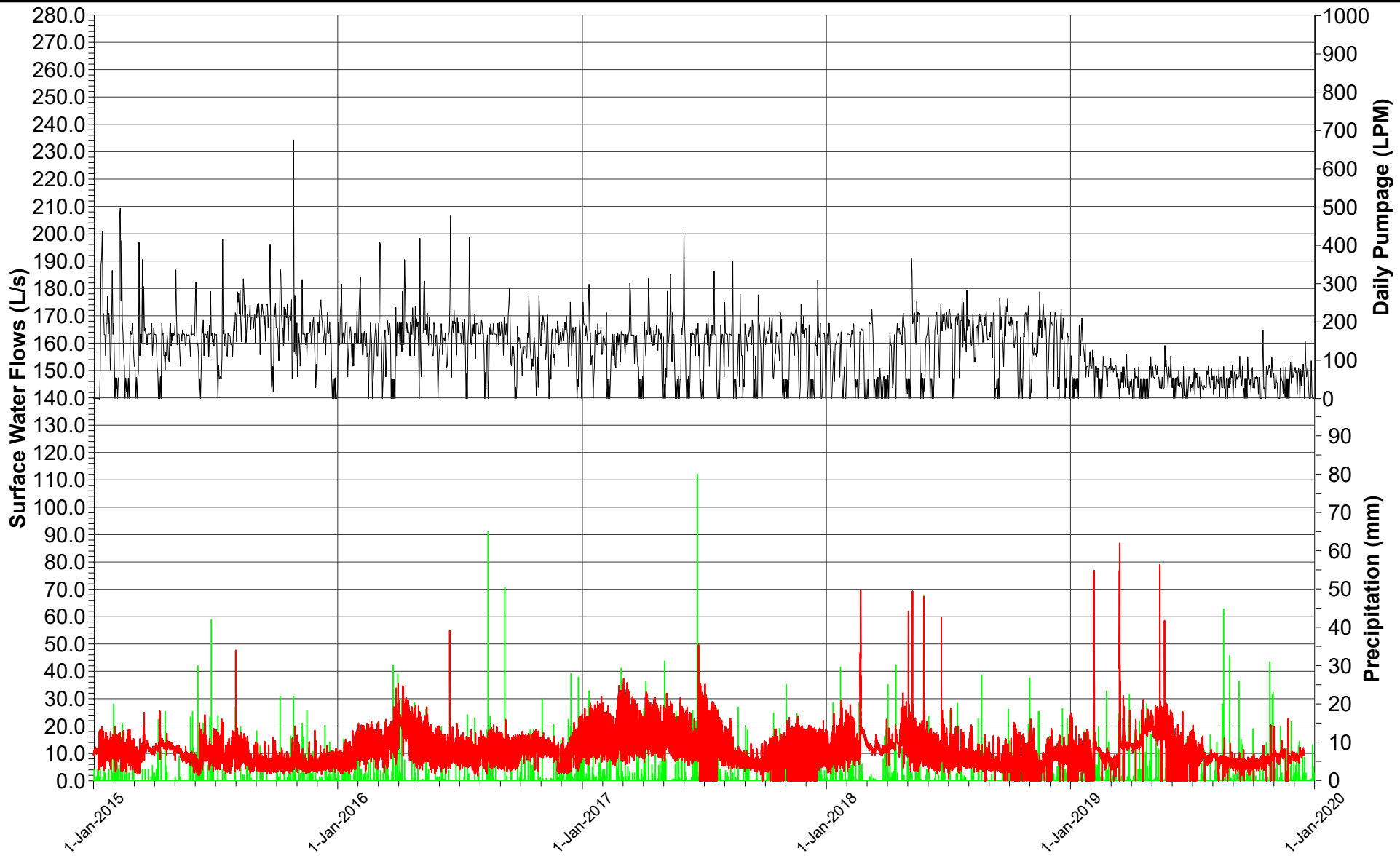
PROJECT **NESTLE WATERS CANADA**
 Town of Erin, Ontario

TITLE **HYDROGRAPH FOR SURFACE WATER FLOWS AT SW1-08 (2019 DATA)**
 2019 ANNUAL MONITORING REPORT



DATE December 2019
 DESIGN KS
 REVIEW GP
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PROJECT NO. 13-1152-0250 (2000) REV A FIGURE F1b



— TW1-88 Daily Pumpage
 ■ Precipitation
 — SW3-00 (from on-Site Pond)

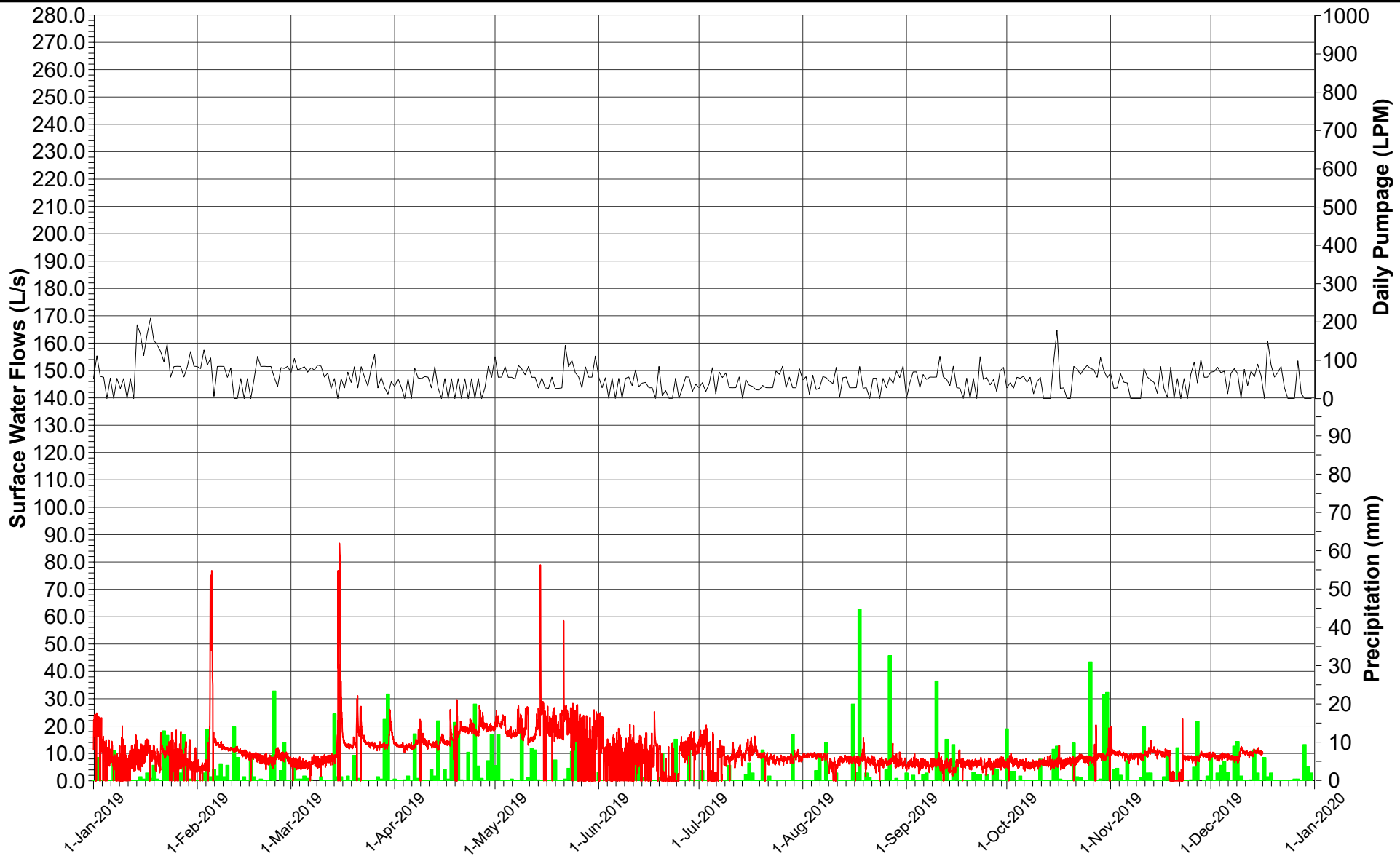
PROJECT **NESTLE WATERS CANADA**
 Town of Erin, Ontario

TITLE **HYDROGRAPH FOR SURFACE WATER FLOW AT SW3-00**
2019 ANNUAL MONITORING REPORT

PROJECT NO. 13-1152-0250 (2000) REV A FIGURE F2a



DATE December 2019
 DESIGN KS
 REVIEW GP
 APPROVED GP



— TW1-88 Daily Pumpage
 ■ Precipitation
 — SW3-00 (from on-site Pond)

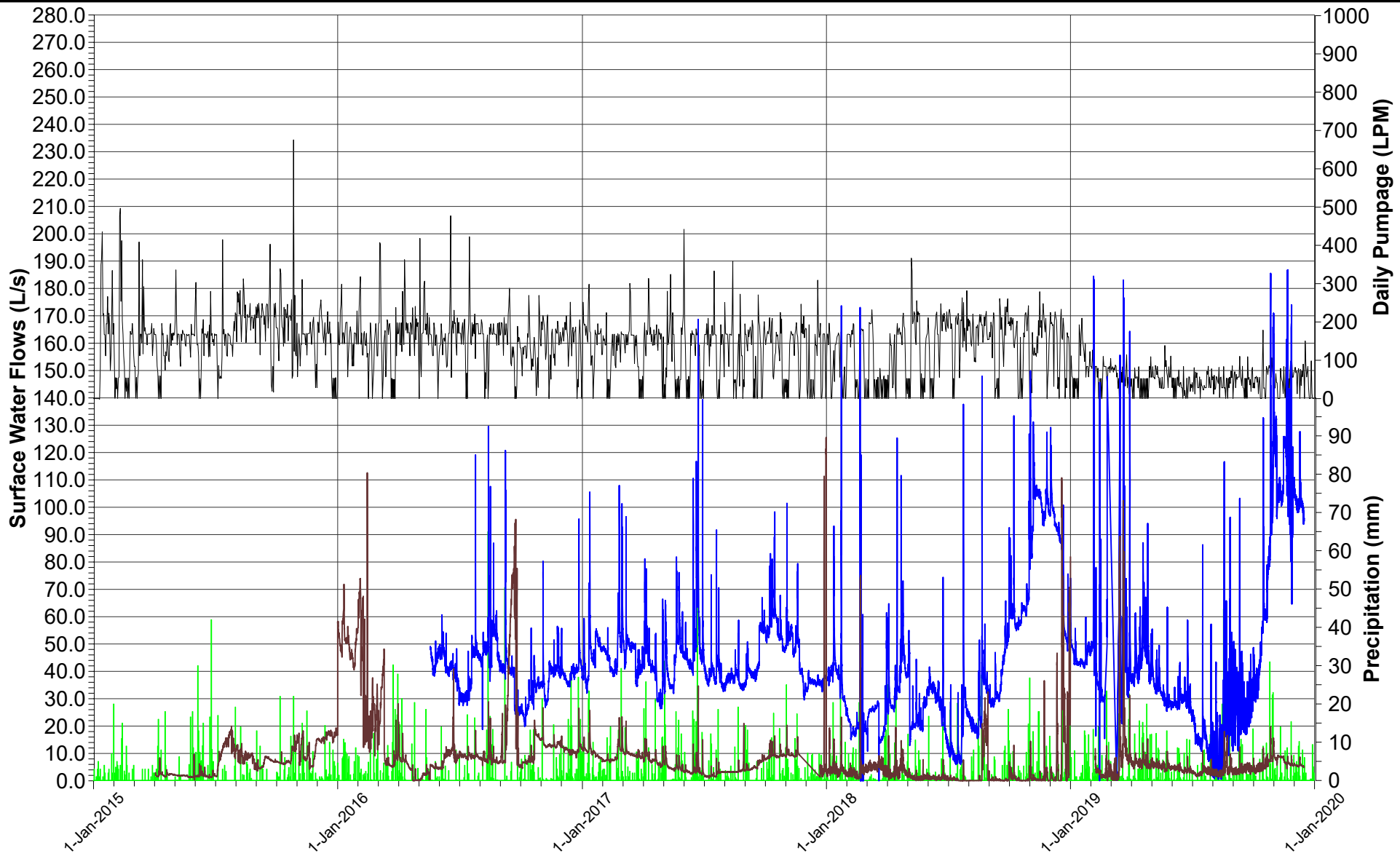
PROJECT **NESTLE WATERS CANADA**
 Town of Erin, Ontario

TITLE **HYDROGRAPH FOR SURFACE WATER FLOWS AT SW3-00 (2019 DATA)**
 2019 ANNUAL MONITORING REPORT

PROJECT NO. 13-1152-0250 (2000) REV A FIGURE F2b



DATE December 2019
 DESIGN KS
 REVIEW GP
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- TW1-88 Daily Pumpage
- █ Precipitation
- SW7-08
- SW7A-16

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

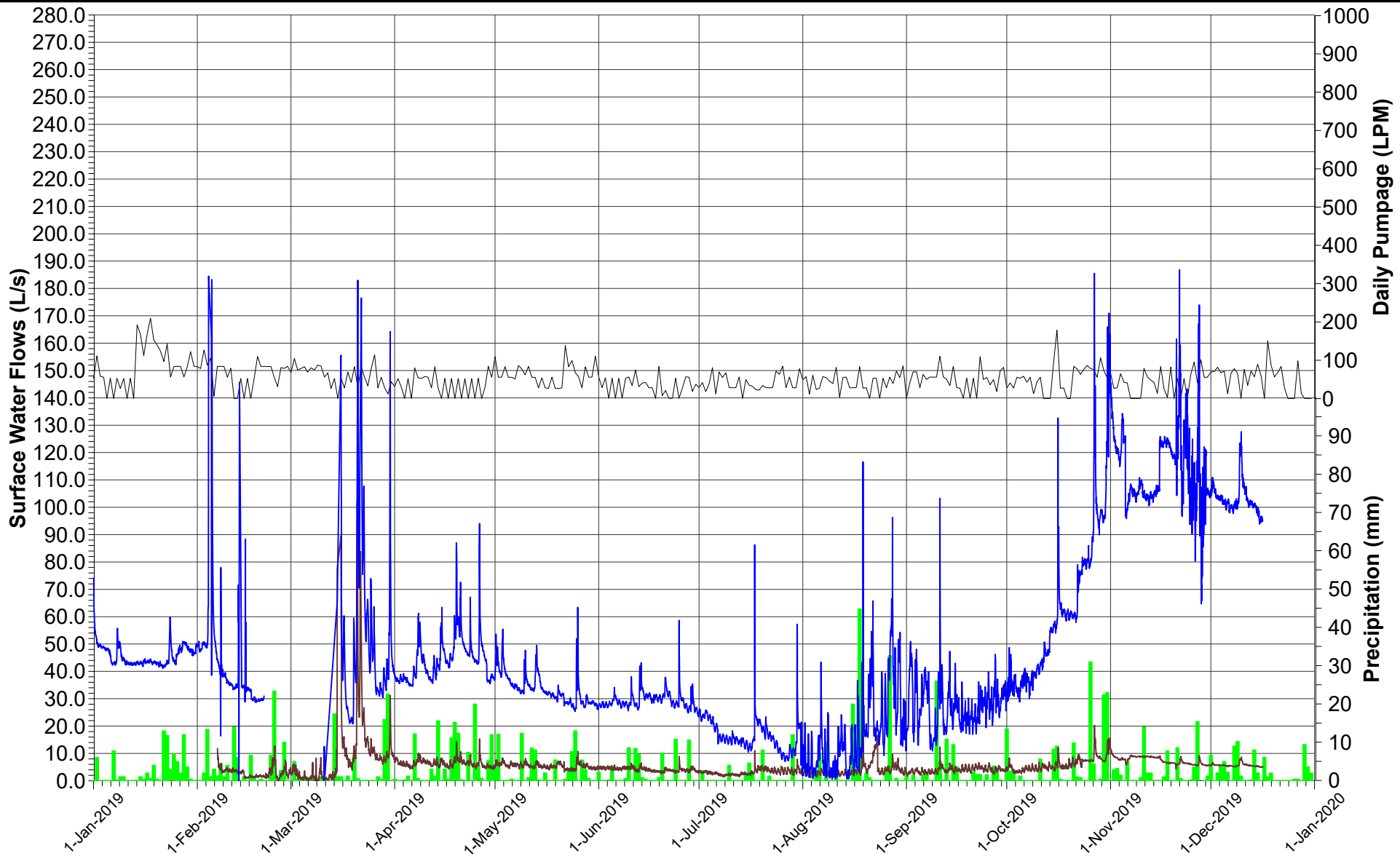


DATE	December 2019
DESIGN	KS
REVIEW	GP
APPROVED	GP

PROJECT
NESTLE WATERS CANADA
 Town of Erin, Ontario

TITLE
 HYDROGRAPH FOR SURFACE WATER FLOW AT SW7-08 AND SW7A-16
 2019 ANNUAL MONITORING REPORT

PROJECT NO. 13-1152-0250 (2000)	REV A	FIGURE F3a
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- TW1-88 Daily Pumpage
- █ Precipitation
- SW7-08
- SW7A-16

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

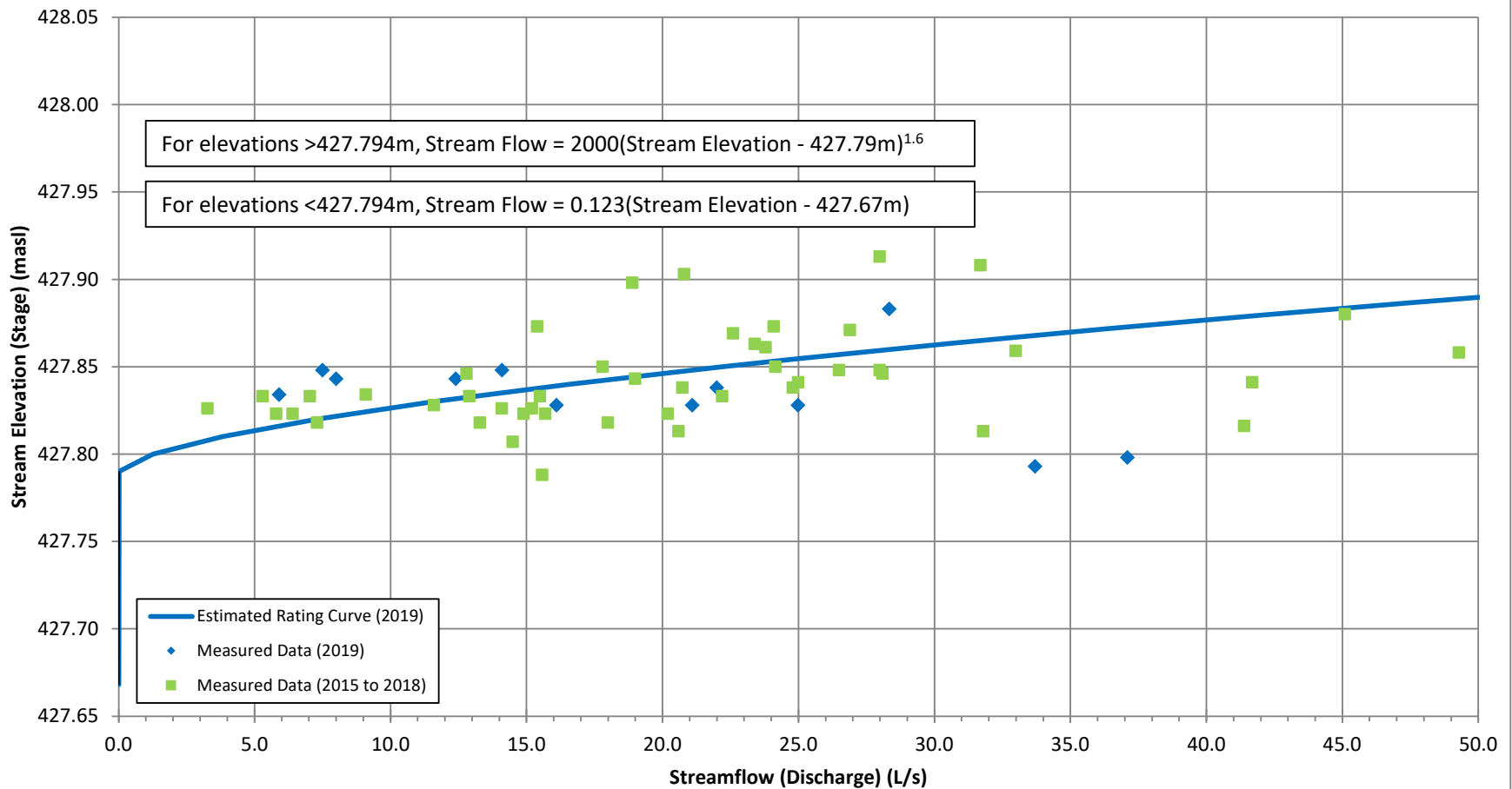


DATE	December 2019
DESIGN	KS
REVIEW	GP
APPROVED	GP

PROJECT **NESTLE WATERS CANADA**
Town of Erin, Ontario

TITLE **HYDROGRAPH FOR SURFACE WATER FLOWS AT SW7-08 AND SW7A-16 (2019 DATA)**
2019 ANNUAL MONITORING REPORT

PROJECT NO. 13-1152-0250 (2000) REV A FIGURE F3b

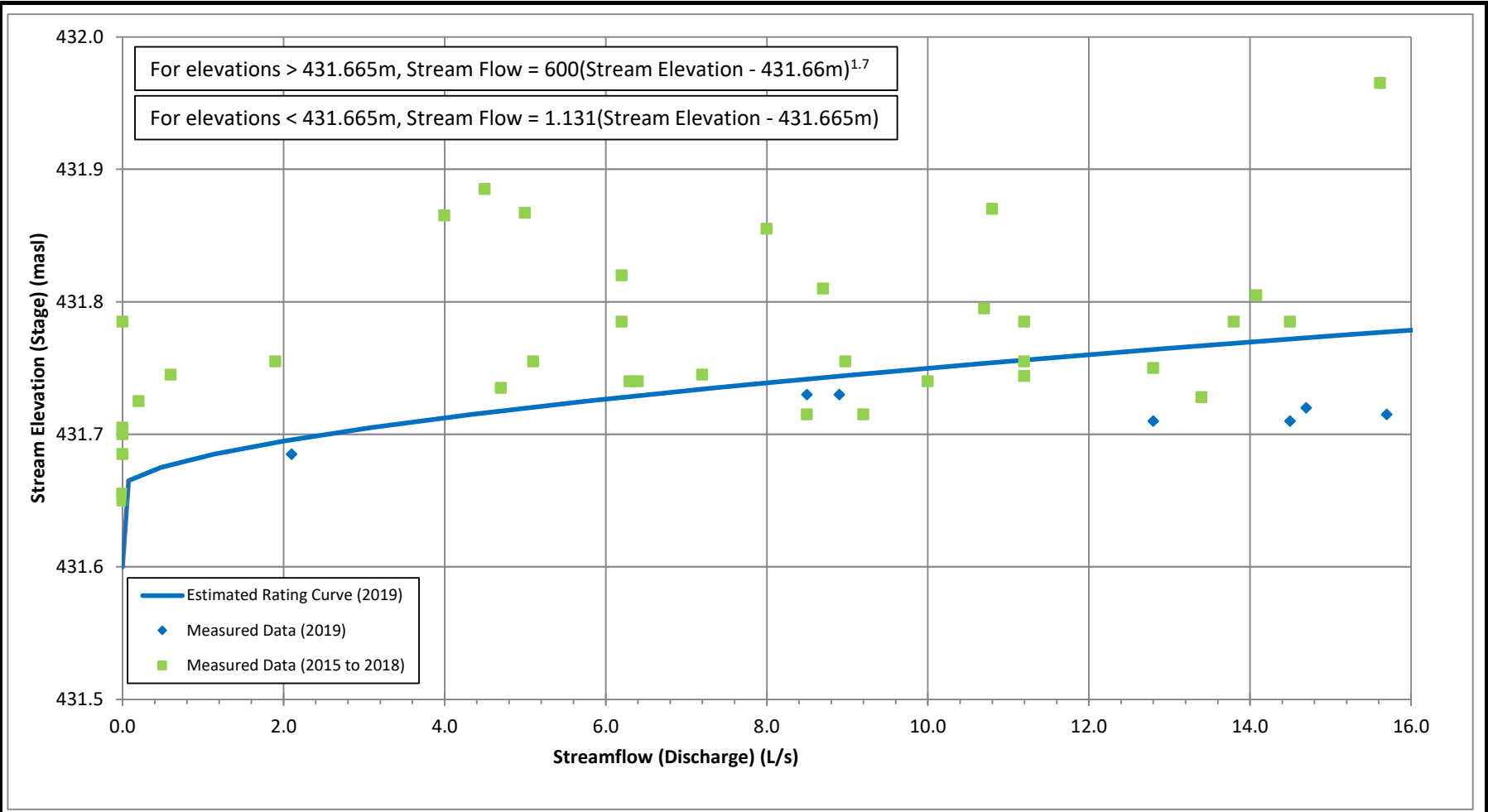


2019 Data Notes:
 In 2019, the range of water levels recording during manual flow measurements= 427.79 to 427.88 masl. The full range of water levels recorded in 2019 = ~427.77 to ~428.34 masl.

Figure F4

STAGE-DISCHARGE MEASUREMENTS FOR SW1 (2019)
 2019 ANNUAL MONITORING REPORT
 NESTLE WATERS CANADA
 Town of Erin, Ontario



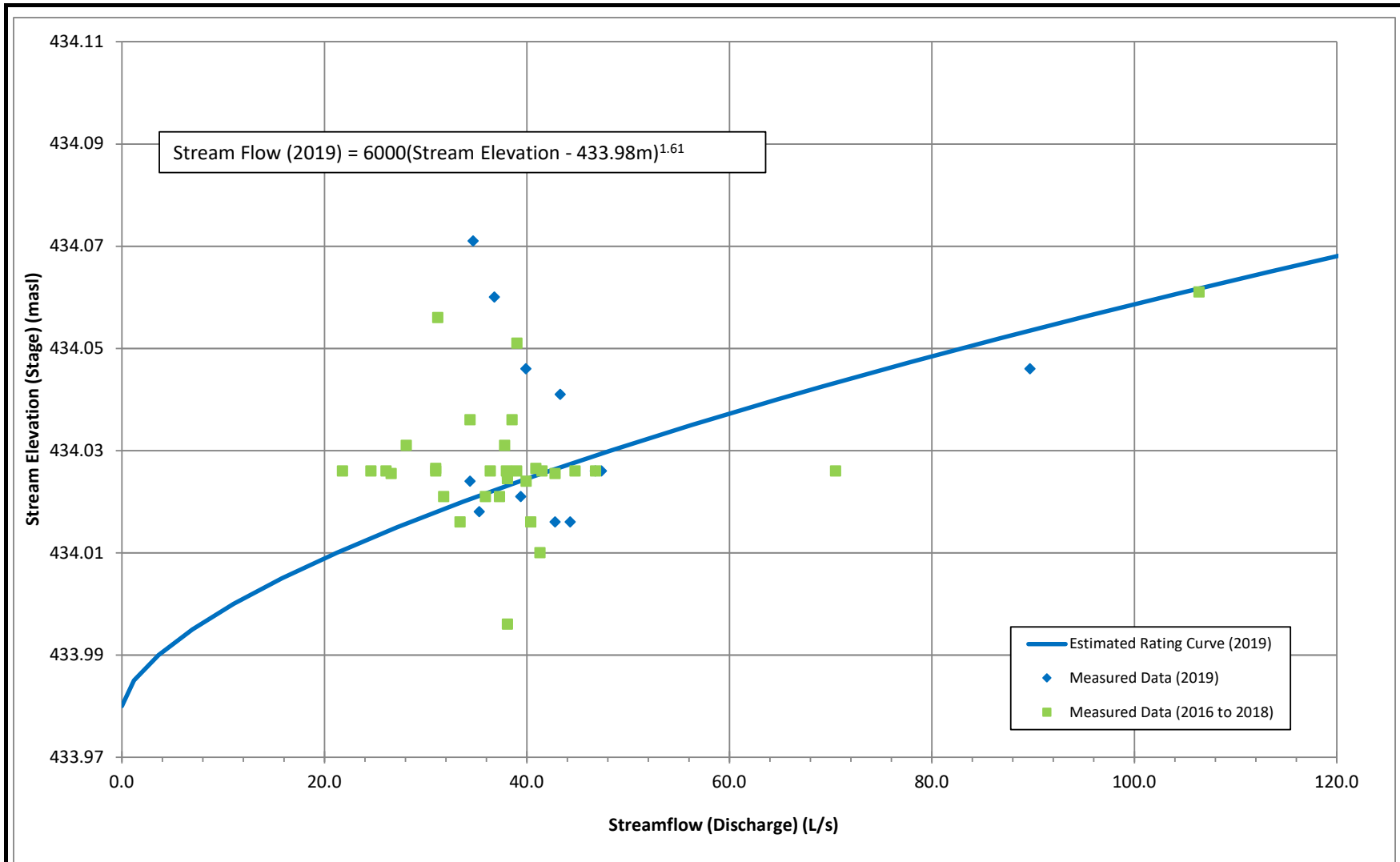


2019 Data Notes:
 In 2019, the range of water levels recorded during manual flow measurements= 431.65 to 431.78 masl. The full range of water levels recorded in 2019 = ~431.60 to ~432.24 masl.

Figure F5

STAGE-DISCHARGE MEASUREMENTS FOR SW7 (2019)
 2019 ANNUAL MONITORING REPORT
 NESTLE WATERS CANADA
 Town of Erin, Ontario





2019 Data Notes:
 In 2019, the range of water levels recorded during manual flow measurements= 434.02 to 434.07 masl. The full range of water levels recorded in 2019 = ~433.98 to ~434.45 masl.

Figure F6
 STAGE-DISCHARGE MEASUREMENTS FOR SW7A (2019)

2019 ANNUAL MONITORING REPORT

NESTLE WATERS CANADA

Town of Erin, Ontario



TABLE F1
Surface Water Flow
2019 Annual Report

DATE	SW1-99 FLOW (L/sec)	SW3-00 FLOW (L/sec)	SW7-08 FLOW (L/sec)	SW7A-16 FLOW (L/sec)
22-Jan-19	25.0	3.2	Frozen	46.8
21-Feb-19	33.7	2.5	2.1	35.3
22-Mar-19	28.3	12.3	45.7	89.7
17-Apr-19	22.0	23.9	21.5	47.4
21-May-19	16.1	97.7	8.5	43.3
17-Jun-19	37.1	8.1	12.8	44.3
18-Jul-19	21.1	5.8	18.7	39.4
21-Aug-19	8.0	3.7	8.9	34.4
16-Sep-19	5.9	4.9	14.5	42.8
23-Oct-19	14.1	3.8	20.5	39.9
20-Nov-19	7.5	4.3	15.7	34.7
16-Dec-19	12.4	3.4	14.7	36.8



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