



REPORT

White Wolf Erin Spring Site

2024 Annual Monitoring Report

Submitted to:

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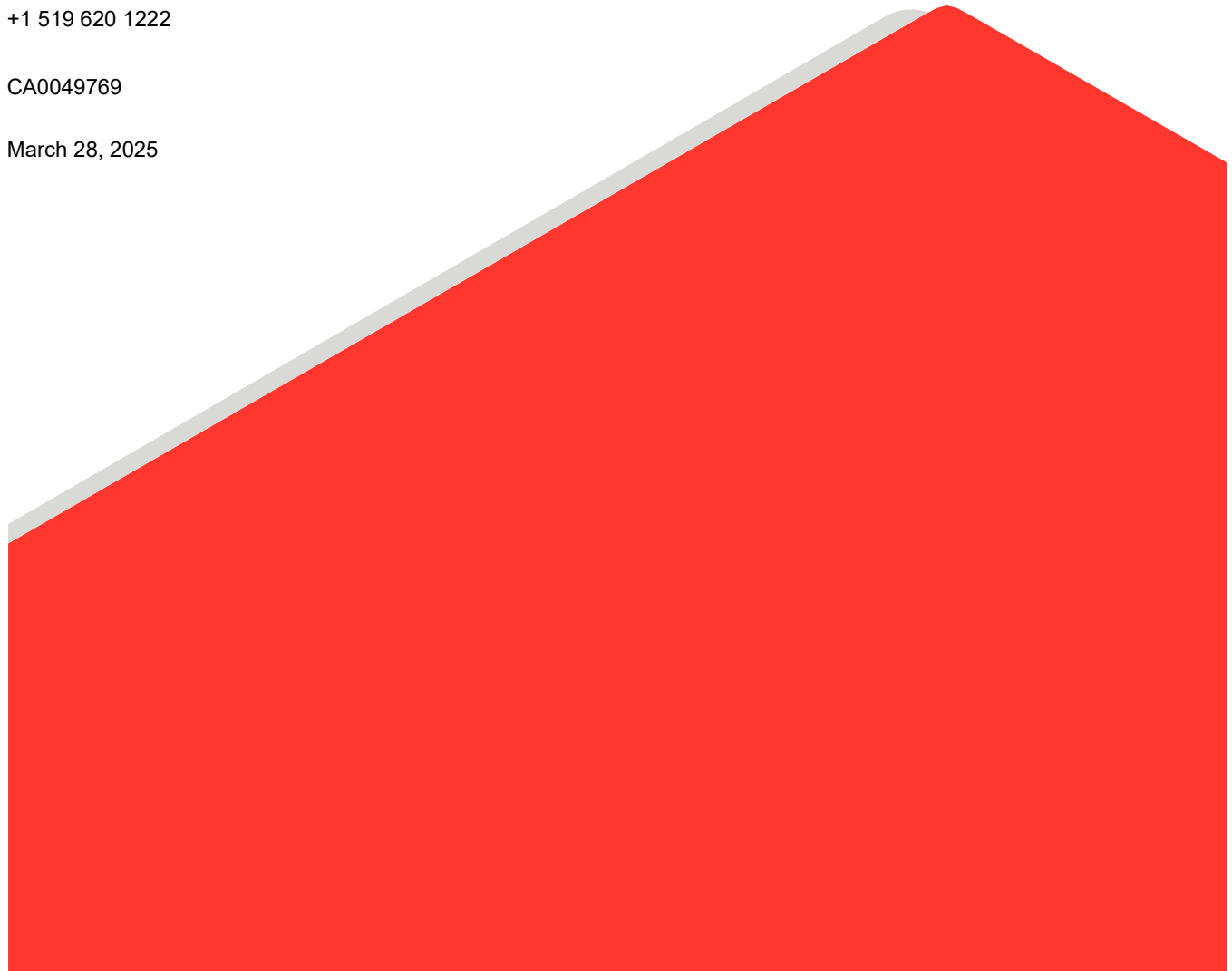
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Key Facts for 2024 Operations at Erin

Key facts for the 2024 operations at Erin are summarized below.

- 1) Blue Triton Brands (Blue Triton) continued to operate under the terms of Permit to Take Water (PTTW) 4788-C5TJTZ for well TW1-88 in 2024. The property was purchased by White Wolf Property Management Inc. (White Wolf) in January 2025.
- 2) Blue Triton has complied with all the conditions in the PTTW for the Erin well TW1-88 in 2024.
- 3) A comprehensive annual monitoring report for the Erin well (TW1-88) has been prepared under the conditions of the PTTW.
- 4) No complaints arising from the taking of water authorized under the PTTW were received in 2024.
- 5) The Grand River Low Water Response Team declared a Level 1 Low Water Condition for the entire Grand River Watershed, including the Eramosa River, on December 20, 2023 which remained in effect until it was removed on January 31, 2024. Blue Triton committed to limit water takings to 90% of their monthly maximum permitted volume during the Level 1 Condition. Blue Triton's monthly water takings in January were 7.5% of the permitted monthly amount.
- 6) TW1-88 is completed in the dolostone bedrock aquifer that is overlain by a sandy silt/clay aquitard and a surficial sand and gravel aquifer.
- 7) The total volume of water taken in 2024 from TW1-88 was 36,767,952 L, approximately 9% of the permitted annual volume assuming continuous well operation.
- 8) The daily water takings at TW1-88 ranged from 0 L to 347,538 L. The average daily water taking was 100,459 L. The maximum daily taking corresponded to 31% of the permitted maximum daily taking and at all times the instantaneous pumping rate remained a relatively small fraction of the maximum permitted rate of 773 L/min.
- 9) 96% of the water pumped from TW1-88 was transported by tanker to the Blue Triton bottling facility at 101 Brock Road South in Puslinch, Ontario. The water was transferred into 500 mL PET bottles. The remaining 4% of the pumped water was used as flush water (from the water storage silo to a pond located at the loading station) or used for CIP (clean in place) water. Flushing was completed to prevent the water from becoming stagnant during periods of low water use.
- 10) The variations in water level in TW1-88 are due mainly to short-term changes in the pumping rate. There are no long-term trends in the water level trends in TW1-88. Water levels in the bedrock aquifer have been similar over the past five years with no long-term increasing or decreasing trend.
- 11) The water levels in the bedrock monitoring wells have varied within consistent ranges over the past five-year period.
- 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 2024 are within the ranges measured over the past five years. Overall, the similarity in water level trends, regardless of distance from TW1-88, indicates that water level fluctuations in the overburden are not due to pumping TW1-88, but due to natural seasonal changes.
- 14) There is no significant interaction between the bedrock and overburden aquifers at the current rate of taking.
- 15) Water levels in the mini-piezometers fluctuate seasonally, with higher water levels observed in the winter/spring and lower water levels observed in the late summer. The water levels also show a response to precipitation and melt events. Water levels measured in the mini-piezometers in 2024 are within the ranges measured over the past five years with the exception of P06-07.
- 16) Long-term surface water levels and flows are stable and pumping at TW1-88 does not influence the water levels or flows in the surface water features. Water levels in the surface water features respond to precipitation and melt events.

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APPENDICES

APPENDIX A

Permit To Take Water Number 4788-C5TJTZ

APPENDIX B

TW1-88 Borehole Log

APPENDIX C

TW1-88 Water Taking

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Groundwater Level Monitoring

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Surface Water Level Monitoring

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Surface Water Flow Monitoring

FIGURES

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1.0 INTRODUCTION

Blue Triton Brands (Blue Triton), formerly Nestlé Waters Canada (Nestlé), retained WSP Canada Inc. (WSP) to conduct the annual monitoring program for the Erin Springs Site, as required by Permit To Take Water (PTTW) Number 4788-C5TJTZ issued by the Ministry of the Environment, Conservation and Parks (MECP) on November 15, 2021. White Wolf Property Management Inc. (White Wolf) purchased the property in January 2025. WSP has prepared this report on behalf of White Wolf to meet the reporting condition of the PTTW. The PTTW is provided Appendix A.

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

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 Aberfoyle bottling facility, where the water is transported for processing. The Erin property consists of a water silo, house, barns, paved access drives, ponds, and open fields with wooded areas and wetlands. TW1-88 is located in the northern portion of the property and the loading station is situated in the southern portion of the property.

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

Table 1: Permit To Take Water Conditions

Condition Number	Condition Description	Report Section
3.2	Identifies use, rates, time and total takings allowed.	3.1.1, 4.1, Appendix C
3.3	Low Water Response Plan	4.1
4.1, 4.2	Establish the specified groundwater and surface water monitoring programs including monitoring requirements and monitoring timing.	3.1.2, 3.1.3
4.3	Condition for plotting gradient data and assessing hydraulic connection of the groundwater with the surface water.	4.2.4, 4.3.1
4.4	Notify the Director of monitoring locations that become inaccessible or abandoned and provide a recommendation for replacement.	3.1.2.1, 3.1.3.1, 3.1.4
4.5	Maintain a daily record of all water takings including date, volume of water taken and rate at which it was taken.	Appendix C
4.6	Prepare and submit an annual monitoring report to the Director, which presents and interprets the data collected under the conditions of the PTTW.	This report
4.7	Submit details of the bottling operations to the Director.	4.1
4.8, 5.1	Notify the local District Office of any complaint arising from the taking of water and proposed action to rectify the complaint.	4.1
4.9.1, 4.9.2, 4.9.3	Establish a publicly accessible website and have select technical data available for download.	Not reported on; updated annually prior to March 31
4.10	Host an annual stakeholder meeting.	Not reported on; completed annually prior to September 30
5.2	Supply water to anyone with a water supply (in effect prior to this taking) that has been negatively impacted.	Not applicable

WSP (formerly Golder Associates Ltd.) began monitoring at the Site in May 2014 on behalf of Nestlé and continued to monitor the site on behalf of Blue Triton in 2024. Prior to that time, monitoring was performed by Conestoga Rovers and Associates (CRA) and Nestlé. The MECP has requested that the reporting follow the same outline and format as previous reports.

The report is structured as follows:

- **Section 1.0:** Introduction including site location, history, and construction details for supply well TW1-88;
- **Section 2.0:** Regional setting including a description of topography, drainage, ecology, physiography, geology and hydrogeology;
- **Section 3.0:** Summary of 2024 field program including a description of field activities conducted in 2024;
- **Section 4.0:** Monitoring program results including a summary and analysis of the data collected in 2024;
- **Section 5.0:** Conclusions from the 2024 monitoring program; and
- **Section 6.0:** Recommendations from the 2024 monitoring program.

1.1 Historical Summary

TW1-88 was constructed in August 1988. 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 (change of ownership to Blue Triton and now White Wolf). 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.

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

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

2.2 Ecological Setting

The upland portions of the property comprise agricultural fields while the low-lying areas support forest and wetlands. The wetlands on the Grand River watershed portion of the property are part of the Speed Lutteral Swan Creek Wetland Complex. The wetlands on the Credit River watershed portion of the property are part of the West Credit River Wetland Complex. Both wetland complexes are designated as Provincially Significant Wetlands. The wetlands are generally undisturbed and support a diverse range of flora and fauna, including some that are ranked as locally significant.

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

2.4.2 Bedrock Geology

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

2.4.3 Hydrogeology

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

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

The Erin property is located in a regional recharge area of a very large and robust bedrock aquifer system. The water table generally lies within the surficial sand and gravel aquifer. The direction of groundwater flow within the

water table aquifer occurs in a southerly to southwesterly direction in the vicinity of TW1-88. Water recharges regionally through the glacial overburden and into the Guelph aquifer on the Orangeville Moraine, generally north and northwest of the Erin property.

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

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

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

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

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

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

2.5 Source Water Protection

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

In addition to protecting water quality, water quantity is also a concern and is considered under Water Quantity Protection Plans. A Water Quantity Risk Assessment is completed to ensure that future water needs of a

community can be met. It identifies existing and potential water quantity threats and future activities that may limit municipal water supplies. This is important because when more water is taken from an area than can be naturally replenished, water supplies are threatened, and water shortages are possible. The Erin property falls within the upper end of a Water Quantity Intake Protection Zone (IPZ-Q) for the City of Guelph Eramosa Intake on the Eramosa River, which has been assigned a significant risk level (Matrix Solutions 2017). The IPZ-Q was assigned a significant risk level because of interconnection through the City of Guelph Arkell Water System. As a result, each of the consumptive water uses within the IPZ-Q are categorized as significant; however, the net consumptive water use within the IPZ-Q is small compared to the natural variability in flow of the Eramosa River at the intake (Matrix Solutions 2018a). Therefore, on an average basis, consumptive water taking threats are not expected to affect the municipal surface water intake's ability to obtain water. Further assessment of the threats was carried out as part of the climate changes assessment (Matrix Solutions 2018b). The municipal and non-municipal threats were ranked as follows: 1) Arkell Wells, 2) Glen Collector, 3) Non-Municipal PTTWs, and 4) Rockwood Wells. The 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. The Arkell Wells/Glen Collector are located approximately 24 km south of TW1-88.

3.0 SUMMARY OF 2024 FIELD PROGRAM

This section describes the field activities performed in 2024 associated with PTTW 4788-C5TJTZ for TW1-88.

3.1 Groundwater and Surface Water Monitoring Program

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

- Groundwater levels and water takings in the production well (TW1-88);
- Groundwater levels in 16 monitors at 8 locations;
- Shallow groundwater levels in 7 piezometer nests with a total of 14 monitors (shallow and deep pair);
- Surface water levels at 7 stations;
- Surface water flow at 4 stations; and
- Water levels at 1 private well.

3.1.1 Water Taking

Water taking from TW1-88 in 2024 was measured using an Endress+Hauser Promag magnetic flow meter connected to an Allen-Bradley industrial Programmable Logic Controller. The instantaneous flow and cumulative volume pumped are recorded every minute. The flow meter was most recently calibrated on October 24, 2024 by Endress+Hauser.

The daily volumes taken from supply well TW1-88 in 2024 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. During the 2024 monitoring period, none of the wells required as part of the monitoring program became inaccessible. All the existing monitoring locations and the decommissioned or unused wells are shown on Figure 3.4.

The monitoring locations for the 2024 groundwater monitoring program are shown on Figures 3.1 and 3.2 for the bedrock and overburden wells, respectively, and are summarized below.

Overburden Monitors

- MW3A/B-00, MW5B-05, MW6B-05, MW11B-08, MW12B-08, MW13B-20-07, MW14B-20-06.

Bedrock Monitors

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

Water levels were measured at all locations quarterly under PTTW 4788-C5TJTZ. Where required by the PTTW, dataloggers are used to record water levels at 60-minute intervals and downloaded quarterly. The groundwater levels measured in 2024 are presented in Appendix D.

3.1.2.1 Missing Data

The following table provides a list and description of missing data from the 2024 monitoring. In October, the transducer was removed from TW1-88 for one week while the well was rehabilitated. The condition is considered temporary, as the transducer was re-installed following rehabilitation. In the past there were also instances when manual water levels could not be measured due to frozen conditions, however no frozen conditions were observed during the quarterly monitoring events in 2024.

Table 2: Missing Groundwater Data from the 2024 Monitoring

Monitoring Location	Missing Data	Comment
TW1-88	Transducer data for one week in October	Transducer removed during well rehabilitation

3.1.3 Surface Water Monitoring Program

The monitoring locations for the 2024 surface water monitoring program are shown on Figure 3.3 and are summarized below.

Surface Water Levels

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

Water levels are measured at all locations once a 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 2024 are presented in Appendix E.

A new station (SW7A-16) was established in the Erin Branch of the Credit River by D7B in May 2016. The site was chosen at a location with more favourable hydraulics (i.e., single channel, stable conditions and no backwater). However, due to changes in the stream, SW7A-16 was replaced with SW7B-20 approximately 100 m

upstream. This station will eventually replace SW7-08, which is located in an area with changing stream hydraulic conditions and flooding.

Stream Flows

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

Stream flow was measured at four locations during the third week of each month. Stream flow velocities were measured using a Hach electromagnetic flow meter and the surface water flows were calculated using the cross-sectional area-velocity method. The surface water flow measurements for 2024 are presented in Appendix F.

The monthly surface water elevations (“stage”) and stream flow measurements (“discharge”) collected in 2024 were used to update the stage-discharge relationships (rating curves) at SW1-08, SW7-08 and SW7B-20. The rating curves were used to calculate stream flow from the continuous water level measurements at these stations. A stage-discharge curve was not developed for SW3-08 as flow at SW3-08, which is the outlet from the On-site Pond, is measured on a continuous basis using a Stingray Flow Meter.

Mini-Piezometers

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

In 2024, 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 once a month. The water levels measured in 2024 are presented in Appendix E.

3.1.3.1 Missing Data

The following table provides descriptions of missing data from the 2024 monitoring, which are technically not missing but rather are due to winter conditions (i.e., stations were frozen). The water levels in the mini-piezometers are close to surface and can become frozen in the winter. Slow moving water can also become frozen in the winter. The water level is not necessarily representative of the actual water level under these frozen winter conditions. The issues were temporary and have been resolved.

Table 3: Missing Surface Water Data from the 2024 Monitoring

Monitoring Location	Missing Data	Comment
SW5-08	Frozen	Frozen in January
P12A-07	Frozen	Frozen in March and December

3.1.4 Notification Regarding Locations That Become Inaccessible

None of the monitoring locations required in PTTW 4788-C5TJTZ have become inaccessible or removed from the monitoring program.

3.2 Surveying

No surveying was required in 2024.

3.3 Precipitation

A record of precipitation in 2024 was compiled from the Fergus Shand Dam meteorological station with missing data filled in from the Elora RCS meteorological station. Missing data were previously filled in from the Fergus

MOE (Ministry of Environment) meteorological station, but the data were not available after 2020. Prior to 2016, the record of precipitation was compiled from the Orangeville meteorological station, with missing data obtained from the Fergus Shand Dam Station; however, data are no longer available from the Orangeville station. The following table provides a summary of the annual precipitation. The annual average (1981-2010) precipitation at the Fergus Shand Dam Station is 945.7 mm and it is 901.5 mm at the Orangeville Station. The total precipitation measured in 2024 was 971.2 mm, which is approximately 3% above the 1981-2010 average. The total annual precipitation was close to the long-term average in 2024 and similar to the total precipitation in 2023. Annual precipitation is also shown graphically on Figure 3.5 along with the 30-year average (or normal as reported by Environment Canada).

Table 4: Annual Precipitation

Year	Precipitation (mm)	% Difference from Average
2008	1444.8 (Orangeville)	60.3
2009	1044.9 (Orangeville)	15.9
2010	1113 (Orangeville)	23.5
2011	1077.7 (Orangeville)	19.5
2012	803 (Orangeville)	-10.5
2013	1035.7 (Orangeville)	14.9
2014	954.5 (Orangeville)	5.9
2015	783.1 (Orangeville)	-13.1
2016	1032 (Shand Dam)	9.1
2017	1109.6 (Shand Dam)	17.3
2018	953.3 (Shand Dam)	0.8
2019	1053.4 (Shand Dam)	11.4
2020	1014.1 (Shand Dam)	7.2
2021	890.6 (Shand Dam)	-5.8
2022	812.9 (Shand Dam)	-14.0
2023	992.8 (Shand Dam)	5.0
2024	971.2	2.7
Average (1981-2010)	901.5 (Orangeville), 945.7 (Fergus Shand Dam)	

The monthly precipitation for 2024 and the average monthly precipitation for the period 1981-2010 are presented in the following table. Above average precipitation was recorded during seven months of the year while below average precipitation was recorded during five months of the year including four consecutive months from August through November.

Table 5: Monthly Precipitation in 2024

Month	Precipitation (mm)	Average 1981-2010 (mm)	% Difference from Average
January	98.9	67.9	45.7

Month	Precipitation (mm)	Average 1981-2010 (mm)	% Difference from Average
February	39.2	55.9	-29.9
March	91.8	59.6	54.0
April	121.2	74.1	63.6
May	91.2	86.9	4.9
June	111.4	83.8	32.9
July	118.8	89.2	33.2
August	61.7	96.6	-36.1
September	37.1	93.1	-60.2
October	32.9	77.2	-57.4
November	63.2	93.0	-32.0
December	103.8	68.6	51.3

4.0 MONITORING PROGRAM RESULTS

4.1 Water Taking for TW1-88

Water taking at the Erin Springs Site in 2024 is governed by PTTW 4788-C5TJTZ, which permits water to be taken from one well as outlined in the table below.

Table 6: Permitted Water Takings at Erin Springs

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

The daily water takings for 2024 are tabulated in Table C1 in Appendix C. The daily water takings ranged from 0 L to 347,538 L; the latter is 31% of the permitted taking. The average daily water taking was 100,459 L. During 2024, the daily takings and instantaneous flow rates were below the limits of the PTTW (i.e., less than 1,113,000 L/day and 773 L/min).

The total volume of water taken each year from 2000 to 2024 is presented on Figure 4.1. The total volume of water taken in 2024 from TW1-88 was 36,767,952 L. In 2024, the total volume taken was approximately 9% of the permitted volume. This is a slight decrease to the water taking in 2023. Since 2000, the groundwater taking has ranged from approximately 6% to 70% of the permitted taking.

The monthly water takings for the past five years are presented on Figure 4.2. The monthly water takings in 2024 ranged from 1,709,340 L in December to 5,625,725 L in June. In 2024, the monthly water takings generally increased from February to June and then decreased to the end of the year (with the exception of a lower water taking in August).

The Grand River Low Water Response Team declared a Level 1 Low Water Condition for the entire Grand River Watershed, including the Eramosa River, on December 20, 2023 which remained in effect until it was removed on January 31, 2024. Blue Triton committed to limit water takings to 90% of their monthly maximum permitted

volume during the Level 1 Condition. The monthly water takings in January were 7.5% of the permitted monthly amount. In addition, as per Condition 3.3, the Low Water Response Program was implemented, which included an increase in monitoring and review of data from MW5-05 from quarterly to monthly.

Condition 4.7 of the PTTW requires details of the bottling operations such as location and name of facilities where water is delivered in bulk containers, if bulk water is containerized at the receiving location, the size of the containers into which the water is transferred, and total volume of water transported in bulk to each remote facility. The groundwater pumped from Erin Springs in 2024 was distributed as follows:

- 35,198,544 L (or 95.7 percent) was transported by tanker to the bottling facility at 101 Brock Road South in Puslinch, Ontario. The water was transferred into 500 mL PET bottles; and
- The remaining 1,569,408 L (or 4.3 percent) was used as flush water (from the water storage silo to a pond located at the loading station) or used for CIP (clean in place) water. Flushing was completed to prevent the water from becoming stagnant during periods of low water use.

As per Conditions 4.8, 5.1 and 5.2, Blue Triton has indicated that no well interference complaints arising from the taking of water authorized under this PTTW were received in 2024.

4.2 Groundwater Monitoring Program

The groundwater levels measured manually in 2024 at the monitoring wells are tabulated in Table D1 in Appendix D. Hydrographs of the manual or transducer water level data are also included in Appendix D. In addition to the water levels, the hydrographs also include the daily pumping volumes at TW1-88 and daily precipitation as recorded at the Shand Dam meteorological station.

4.2.1 TW1-88

Water levels and average daily pumping rates for TW1-88, along with daily precipitation, from 2020 through 2024 are shown on Figure D1.

The estimated non-pumping water levels (partially recovered conditions following temporary cessation of pumping) observed in 2024 were generally between 422.6 masl to 423.2 masl. It should be noted that non-pumping water levels do not represent “true” water level conditions that would be observed if there were no pumping at TW1-88. Instead, they represent partially recovered conditions, with the amount of recovery depending on the average pumping rate before the pumping stopped, how much time has elapsed before pumping resumes and whether there is a background (seasonal) trend in the water levels. CRA (2014) indicated that, based on historical data, static water levels are in the range of 423.5 masl to 424.5 masl. In 2024, water levels in TW1-88 rose until mid-April, declined until mid-September and then were relatively constant until the end of the year.

The water levels have been similar over the past five-year period. The seasonal trend has also been similar over the same period.

During 2024, water levels were generally between 417.1 masl and 418.4 masl under pumping conditions (equivalent to a drawdown of 5.6 m to 6.9 m based on a static water level of 424 masl).

The 2024 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 and lower bound on the water level in TW1-88 (423.2 masl

and 422.6 masl as shown on Figure D1) is within the ranges 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 D9 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 2024 are similar to those measured over the past five years with any subtle differences noted below. There is no long-term increasing or decreasing trend in the water levels;
- In 2024, the water levels in the bedrock aquifer rose until mid-April, declined until mid-September and then were relatively constant until the end of the year. The seasonal trends are similar over the past five years with higher water levels observed in late winter/early spring and lower water levels in the summer and fall. The seasonal fluctuation in 2024 was approximately 0.3 m to 0.6 m. Low groundwater levels during the summer months were similar to the previous four years. Similar to the water levels in 2022 and 2023, the water levels in 2024 continued to be low through the summer and did not rise through the fall. These changes are not attributed to pumping at TW1-88 but to the below average precipitation from August through November;
- As shown on Figure 2.8 (from CRA, 2014), the drawdown in MW12A-08 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 this well are interpreted to represent background conditions (although minor fluctuations due to pumping are observed). The measurements show only small water level fluctuations over the past five years (Figure D6). In 2024, the water levels fluctuated less than 0.1 m when TW1-88 was in operation. The water levels in MW12A-08 followed a typical seasonal trend as noted above with a total fluctuation of approximately 0.4 m. There is no long-term increasing or decreasing trend in the water levels;
- The amount of influence that pumping TW1-88 has on water levels in other wells varies based on distance away from TW1-88 (e.g., more pronounced in MW5A-05 compared to MW12A-08). The drawdown cone from pumping TW1-88 is localized, especially with the reduced intermittent pumping that is currently occurring;
- The closest monitoring well in the same aquifer as TW1-88 is MW5A-05, located approximately 70 m southwest of TW1-88. MW5A-05 is interpreted to be downgradient of TW1-88. In 2024, the high-water levels (partially recovered condition following stoppages in pumping) ranged from approximately 423.4 masl to 424.0 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 2024. 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 wells MW6A-05 (Figure D4), MW13A-20-7 (Figure D7) and MW14A-20-7 (Figure D8). 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 0.9 m in 2024 (see Figure D4). The difference between high and low water levels (influence of pumping in the aquifer) at MW13A-20-7, located approximately 420 m west-northwest of TW1-88, was approximately 1.3 m in 2024 (see Figure D7). The difference between high and low water levels (influence of pumping in the aquifer) at MW14A-20-7, located approximately 380 m south of TW1-88, was approximately 1.2 m in 2024 (see Figure D10). The water levels fluctuate but there is no long-term increasing or decreasing trend;
- Other on-Site monitoring wells, MW11A-08 (Figure D5) and MW1-18A/B (Figure D2), are located approximately 470 m and 750 m, respectively, east-northeast of TW1-88. Water levels in the monitoring wells generally follow the same patterns as the water levels in the background well MW12A-08 (see Figure D6).

The water levels indicate that the daily influence of pumping results in a fluctuation of less than 0.2 m at the wells. The minimal response to pumping suggests that groundwater taking from TW1-88 does not affect water levels in the Hillsburgh municipal wells, located further north-northeast of TW1-88; and

- Water levels are also monitored in one private well (D3) located approximately 220 m west-northwest of TW1-88. At D3, the water levels respond to pumping at both TW1-88 and D3. The well (D3) is used as part of a heat pump system during the winter months. Due to the combination of pumping at this location, the water level response is different than that observed in the surrounding monitoring wells. Overall, the non-pumping water levels are similar to those observed over the past five years (see Figure D7).

A potentiometric surface of the bedrock aquifer is presented on Figure 4.3. This represents a time when the highest monthly pumping volumes were recorded at TW3-80 and monthly precipitation was above average. The potentiometric surface was prepared based on the water levels measured on June 29, 2024. A review of the potentiometric surface on June 29, 2024, indicates groundwater flow is to the southeast, south and southwest with influence from pumping localized around TW1-88. The results are similar to those observed in recent years.

4.2.3 Overburden (Water Table) Aquifer

Hydrographs for wells completed in the overburden are included on Figures D10 through D14 in Appendix D. A review of the hydrographs completed in the overburden indicates the following.

- Water levels measured within the overburden in 2024 are within the ranges measured over the past five years;
- Water levels in the overburden show similar trends, with water levels rising until mid-April, declining until mid-September and then relatively constant until the end of the year. The exceptions to this trend are at wells MW12B-08 (Figure D12) and MW13B-20-7 (Figure D13), which showed water levels continuing to decline at the end of the year. The trend is similar to previous years;
- The timing of the high and low water levels can vary by a month or two from well to well. This may be due to the timing of recharge to local areas of the aquifer, which is expected to vary across the Site based on the variations in surficial geology (i.e., sand and gravel versus glacial till) and topography. In 2024, the high water levels were generally observed in April with the exception of MW12B-08 (Figure D12) and MW13B-20-7 (Figure D12) that had peak water levels in May (note that these are also the wells that continued with a declining trend in water levels at the end of the year). The response to hydraulic changes at these locations may be delayed compared to the other wells;
- Water levels fluctuate more in the southeastern part of the Site (see MW12B-08 – Figure D12) compared to the northwestern part of the Site (all other monitoring wells). In 2024, water levels in the wells completed in the northwestern part of the study area fluctuated by approximately 0.6 m or less, whereas MW12B-08, completed in the southeastern part of the study area fluctuated by approximately more than 1.6 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 water levels measured at the wells, specifically the larger events in June and July;
- Historical monitoring has shown that there is not a significant connection between the overburden and bedrock aquifers; and

- Overall, the similarity in water level trends, regardless of distance from TW1-88, indicates that water level fluctuations are not due to pumping TW1-88 but due to natural seasonal changes and recharge.

4.2.4 Vertical Gradients

Note that a positive gradient is calculated when the water level in the upper aquifer exceeds the level in the lower aquifer. Under these conditions, the potential vertical groundwater flow direction is downwards, however the horizontal component of the Darcy flux might be primarily horizontal.

4.2.4.1 In Bedrock

Vertical gradients within the bedrock are monitored at MW1-18 and shown on Figure D15 in Appendix D. There is a small positive vertical gradient (potential downward flow) in the upper bedrock indicating that most of the flow within this zone is horizontal.

4.2.4.2 In Shallow Overburden

Vertical gradients in the shallow overburden at MW3-00 are shown on Figure D16 in Appendix D. During most of 2024 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.

4.2.4.3 Between Overburden and Bedrock

Vertical gradients between the overburden and bedrock at monitoring well nests (MW5-05, MW6-05, MW11-08, MW12-08, MW13-20 and MW14-20) are plotted on Figures D17 through D22 in Appendix D. 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, MW6-05, MW13-20 and MW14-20 vary in response to pumping TW1-88 and are due to the water level fluctuations in the bedrock aquifer at these sites. In response to pumping at TW1-88, there is also some influence on the gradient at MW11-08 but less than that observed at the other monitoring wells noted above. The gradient at MW12-08 and MW13-20 show a different gradient response compared to the other wells in that the downward gradient 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; and
- In 20243, vertical gradients at MW5-05 (the well closest to TW1-88) range from approximately 0.4 m/m to 0.66 m/m while the vertical gradients at MW6-05, MW13-20 and MW14-20 range from approximately 0.34 m/m to 0.48 m/m. On average, the vertical gradients at the other two wells are about 0.12 to 0.15 m/m at MW11-08 and 0.24 m/m to 0.29 m/m at MW12-08.

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 2024 are tabulated in Appendix E where hydrographs of the water levels are also presented. The surface water flow data are tabulated and graphed in Appendix F. The hydrographs also include the daily pumping volumes at TW1-88 and daily precipitation as recorded at the Shand Dam meteorological station.

4.3.1 Mini-Piezometer Water Levels and Vertical Gradients

Hydrographs for the mini-piezometer locations are presented on Figures E1 through E7 in Appendix E with the “a” figure including data for the past 5 years (2020 through 2024) and the “b” figures including data only for 2024. The graphs also include the average daily pumping at TW1-88, precipitation at the Shand Dam station and vertical hydraulic gradients. A negative gradient indicates that groundwater may be discharging to the surface water body, while a positive gradient indicates the surface water body is recharging the groundwater. A review of the hydrographs for the mini-piezometers indicates the following.

- Water levels measured in the mini-piezometers in 2024 are within the ranges measured over the past five years. The exception to this is at P06-05 where water levels were lower during the second half of the year;
- The water levels show a response to precipitation and melt events;
- There is no effect of pumping TW1-88 on vertical gradients in the shallow overburden near surface water features; and
- The vertical gradients in 2024 are similar to those observed over the past five years with the exception of P12-07 and P06-07 (as described in further detail below).
- Water level fluctuations and vertical gradients in the mini-piezometers are summarized as follows for 2024:
 - **P03A/B-05 (east side of On-Site pond)** – water levels in 2024 fluctuated approximately 0.2 m (similar to water levels in the pond). The water levels fluctuate in response to precipitation events and prolonged drier periods with reduced precipitation. The water levels were generally higher during the first six months of the year. There was no gradient at the site in 2024 (Figure E1b). In the past there has been no gradient to a weak negative gradient (potential upward flow). Sudden changes in water levels occur sometimes due to blockages and removal of debris from the outlet of the pond;
 - **P06A/B-07 (west side of On-Site pond)** – water levels in 2024 fluctuated approximately 0.2 m (similar to water levels in the pond). The water levels fluctuate in response to precipitation events and prolonged drier periods with reduced precipitation. The water levels were generally higher during the first six months of the year. The water levels in September at the deep monitor were some of the lowest observed over the past five years. Over the past five years a weak positive gradient (potential downward flow) exists that has occasionally reversed to a weak negative gradient (potential upward flow). In 2024, the gradient was mainly positive (Figure E2b). Sudden changes in water levels occur sometimes due to blockages and removal of debris from the outlet of the pond;
 - **P01A/B-07 (stream channel downstream of On-Site pond)** – water levels in 2024 fluctuated approximately 0.1 m. The water levels in the stream show less fluctuation than the water levels in the pond. The water levels were generally higher through April and May. A weak positive gradient (potential downward flow) was observed during 2024 (Figure E3b). Historically there has been no gradient to a weak negative gradient (potential upward flow) at this location;

- **P11A/B-05 (further downstream from P01-07 at 6th Line)** – water levels in 2024 fluctuated less than 0.1 m. The water levels in the stream show less fluctuation than the water levels in the pond. Water levels rose through March and were relatively constant for the remainder of the year. A negative gradient (potential upward flow) was observed with the occasional positive gradient spikes during some precipitation events (Figure E4b);
- **P10A/B-05 (upgradient side of the wetland pond)** – water levels fluctuated approximately 0.6 m in the deep piezometer and 0.4 m in the shallow piezometer in 2024. The water levels generally follow a seasonal trend with an increase through the winter followed by a decrease through the spring/summer and an increase through the fall (which can shift depending on precipitation/temperature conditions). The trend was similar in 2024, however, there was less of an increase in water levels during the winter. The gradient varied between negative (potential upward flow) and positive (potential downward flow) during the year (Figure E5b). The vertical gradient at P10-05 shows greater fluctuation than the other sites. The changes in water level are reflective of how the water levels change seasonally within the wetland, which is the most upgradient part of this surface water feature (i.e., reflecting the natural hydrologic regime of the wetland);
- **P12A/B-07 (stream flowing into Roman Lake)** – water levels in 2024 fluctuated approximately 0.2 m. Water levels in the piezometers (more so in the shallow piezometer) have been influenced by the construction and destruction of beaver dams in the area with the most recent activity occurring in mid-2021. Following the removal of the beaver dam in mid-2022, the water levels have been relatively constant. A negative gradient (potential upward flow) exists at the site (Figure E6b); and
- **P13A/B-07 (Erin Branch of Credit River)** – water levels in 2024 fluctuated approximately 0.4 m at the deep piezometer and approximately 0.2 m at the shallow piezometer. Water levels in both piezometer followed similar trends with a decrease during the last seven months of the year, however, the decrease was greater in the deep piezometer compared to the shallow piezometer. The water levels have recovered from the low water levels observed in 2022. The vertical gradient was positive (potential downward flow). Water levels are likely influenced by fluctuations in the water level of the Hillsburgh reservoir, which is located approximately 125 m from P13-07 and 680 m from TW1-88; however, water level data for the reservoir are not available.

4.3.2 Surface Water Levels

Hydrographs for the surface water level monitoring locations are included on Figures E8 through E11 in Appendix E with the “a” figure including data for the last 5 years (2020 to 2024) and the “b” figures including data for 2024. A review of the hydrographs for the surface water level monitoring locations indicates the following.

- Water levels measured at the surface water stations in 2024 are within the ranges measured over the past five years;
- The water levels show a response to precipitation and melt events; and
- Pumping at TW1-88 does not influence the water levels in the surface water features.
- Water levels in the surface water features are summarized as follows:
 - **SW3-08 (On-Site pond)** – water levels at SW3-08 fluctuated approximately 0.2 m in 2024. The water levels fluctuate in response to precipitation events and prolonged drier periods with reduced precipitation. In 2024, the water levels were higher during the first six months of the year. The current

and historical changes in water levels are sometimes partially due to the outlet being partially obstructed and then cleared when the debris is removed;

- **SW1-08 and SW1A-20 (creek downstream of On-Site pond)** – SW1A-20 is located closer to the On-Site Pond and SW1-08 is located further downstream. Not including some short-term increases, the water levels at surface water stations fluctuated approximately 0.1 m in 2024, with slightly more fluctuation observed at SW1-08 compared to SW1A-20 (Figure E8b). Water levels were generally higher during the first six months of the year. The seasonal changes in the creek are minimal compared to the seasonal changes in the pond;
- **SW4-08 (stream flowing into Roman Lake) and SW5-08 (Roman Lake)** – the water levels in the stream flowing into Roman Lake have been influenced by the beaver activity (dam construction) in mid-2017 and mid-2021 and destruction of the dam in mid-2022. The changes in water level trends at the two stations have been different during the phases of the beaver dam present. The water levels at the two stations are closer during periods when the beaver dam is not present (i.e., since mid-2022). Not including some short-term increases, the water levels at surface water stations fluctuated over 0.1 m in 2024 (Figure E9b); and
- **SW7-08 and SW7B-20 (Erin Branch of Credit River)** – SW7-08 is located in an area where multiple channels of the stream exist. As such, a new station (SW7B-20) was established further upstream where a single channel exists. Water levels at SW7-08 fluctuated approximately 0.1 m in 2024 (excluding some “noise” in the transducer readings in August and September) not including some short-term increases (Figure E10b) and slightly less than 0.1 m at SW7B-20 (Figure E11b) not including some short-term increases. At SW7-08, the water levels increased compared to the low water levels observed in 2022. The changing water levels over time are partially due to changing stream conditions at this location. Some changes in water levels in the past may also be due to changes in the Hillsburgh reservoir level, however no reservoir level data are available for comparison. As shown on the hydrograph for SW7B-20, more stable water levels exist.

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 2024 are summarized in Appendix F. Surface water flow is measured at four stations in accordance with the PTTW: SW1-08 (creek downgradient of On-Site pond and wetland), SW3-08 (outlet from On-Site pond) and SW7-08 and SW7B-20 (Erin Branch of Credit River). Surface water flows are also measured at SW1A-20. The surface water flows for the five stations are shown on Figure F1 through F3 in Appendix F with the “a” figure including data for the last 5 years (2020 to 2024) and the “b” figures including data for 2024.

Flow at SW3-08 is measured using a flow meter.

Stage-discharge curves were developed, 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

SW1-08, SW1A-20, SW7-08 and SW7B-20 were re-evaluated using stream characteristics (geometry, water level, flow; the same methods as in previous years), to improve evaluation of the 2024 monitoring data. The stage-discharge curves are shown on Figures F4 through F7 in Appendix F. The rating curves for SW1-08 and SW7B-20 were adjusted slightly in 2024 while the rating curve for SW1A-20 and SW7-08 remained the same as in 2023. These curves have been used to estimate the flow for 2024 at these stations. Flow data from previous years were estimated using historic stage-discharge curves that best fit the historic monitoring data (as presented in previous reports).

Flow from the On-Site pond (SW3-08) is relatively low and similar to previous years with periods of minor flow. The surface water flow increased from mid-March to the end of March and then decreased to the end of May. There were periods of minimal flow from June through September. The spring flows were typically between 10 L/s and 20 L/s, while the summer low flows were generally less than 10 L/s. Manual flow measurements ranged from 3.9 L/s (November) to 12.1 L/s (March).

Surface water flow at SW1-08 (combined flow from On-Site pond and wetland) has been similar over the past five years with the exception of the extended summer low flows in 2022. Historically, the flow at SW1A-20 is similar to the flow at SW1-08 but with slightly higher flows during the summer months. The flow between the two stations deviated from the trend from mid-October to mid-November which could be due to water backing up along the creek. In general, flows increased from mid-March to the mid-April and then declined to the end of May. As in the past, some of the logger recorded values are suspected to be influenced by ice conditions and are reported with a lower confidence. Stream flow during the spring was approximately 20 L/s to 70 L/s with some flows more than 90 L/s. The summer flows were generally less than 20 L/s at SW1-08 and SW1A-20. The manual flow measurements ranged from 7.8 L/s (October) to 26.6 L/s (April). There is no evidence of a decline in stream flow at SW1-08.

Stream flow at SW7-08 is typically less than at the other stations, with the exception of some low flows in the summer. In the past, it has been interpreted that increases in flow may be related to changes in the Hillsburgh reservoir or potential work upstream. Surface water flow at SW7-08 is similar to flow measured historically at the station with changes typically due to changing stream conditions. Manual flow measurements ranged from 4.3 L/s (July) to 20.4 L/s (April). There is no evidence of a decline in stream flow at SW7-08.

Stream station SW7B-20 was established to provide more realistic flows compared to SW7-08 where the stream conditions are often changing. Stream flow at SW7B-20 ranged from approximately 20 L/s to around 60 L/s (not including some spikes in flow). During the precipitation/melt events, the flows were as high as 180 L/s. Manual flow measurements ranged from 18.2 L/s (June) to 29.6 L/s (April). The flow at SW7B-20 is greater than the flow at SW7-08 due to the fact that SW7B-20 is located in a defined channel as opposed to multiple channels at SW7-08, where only part of the total flow is measured.

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

5.0 CONCLUSIONS

The following conclusions are provided based on the results of the 2024 monitoring program.

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

- 2) TW1-88 operated in accordance with the pumping limits outlined in the PTTW. The daily water taking at TW1-88 in 2024 ranged from 0 L to 347,538 L. The average daily water taking in 2024 was 100,459 L. The total volume of water taken in 2024 from TW1-88 was 36,767,952 L or 9% of the permitted volume.
- 3) The interpreted non-pumping water levels in TW1-88, which obtains water from the bedrock aquifer, ranged from approximately 422.6 masl to 423.2 masl in 2024. The interpreted water levels under variable pumping conditions ranged from approximately 417.1 masl to 418.4 masl. The drawdown at the well ranged from approximately 5.6 m to 6.9 m in 2024.
- 4) Pumping from TW1-88 causes declines in the bedrock aquifer groundwater levels in the immediate vicinity of the well, but there is no evidence of long-term declining trends and water levels return to non-pumping levels when pumping temporarily ceases.
- 5) Water levels measured within the overburden in 2024 are within the historical ranges and do not appear to be influenced by pumping of TW1-88. There is no apparent interaction between the bedrock and overburden aquifers at the current rates of taking.
- 6) Surface water level fluctuations are attributed to seasonal and long-term variations in precipitation and infiltration and are not the result of pumping of TW1-88. There is no apparent correlation between increases in pumping from TW1-88 and decreases in stream flow. Consequently, there is no apparent mechanism by which pumping from TW1-88 could affect the ecology of the streams.
- 7) Long-term monitoring of terrestrial, wetland and aquatic ecosystems previously showed no evidence of the effects of water takings. Since the biological and aquatic monitoring is not part of the TW1-88 PTTW, it was discontinued at the end of 2022.
- 8) The water taking does not prevent other water users from continuing their established pattern of use. The groundwater withdrawal from TW1-88 does not interfere with existing municipal uses or private uses. There have been no well interference complaints at Erin due to the water taking from TW1-88.
- 9) There were no complaints from neighbouring properties in 2024 regarding either groundwater quantity or quality. This suggests that no irreversible impacts have been observed due to pumping of the aquifer or deterioration of groundwater quantity or quality on neighbouring properties.
- 10) Based on the monitoring data collected, the 2024 water taking at TW1-88 is sustainable.

6.0 RECOMMENDATIONS

No changes to the existing monitoring program are recommended.

Signature Page

WSP Canada Inc.



Greg Padusenko, M.Sc., P.Eng., P.Geo.
Senior Hydrogeologist

Craig DeVito, M.Sc., P.Eng.
Senior Hydrologist

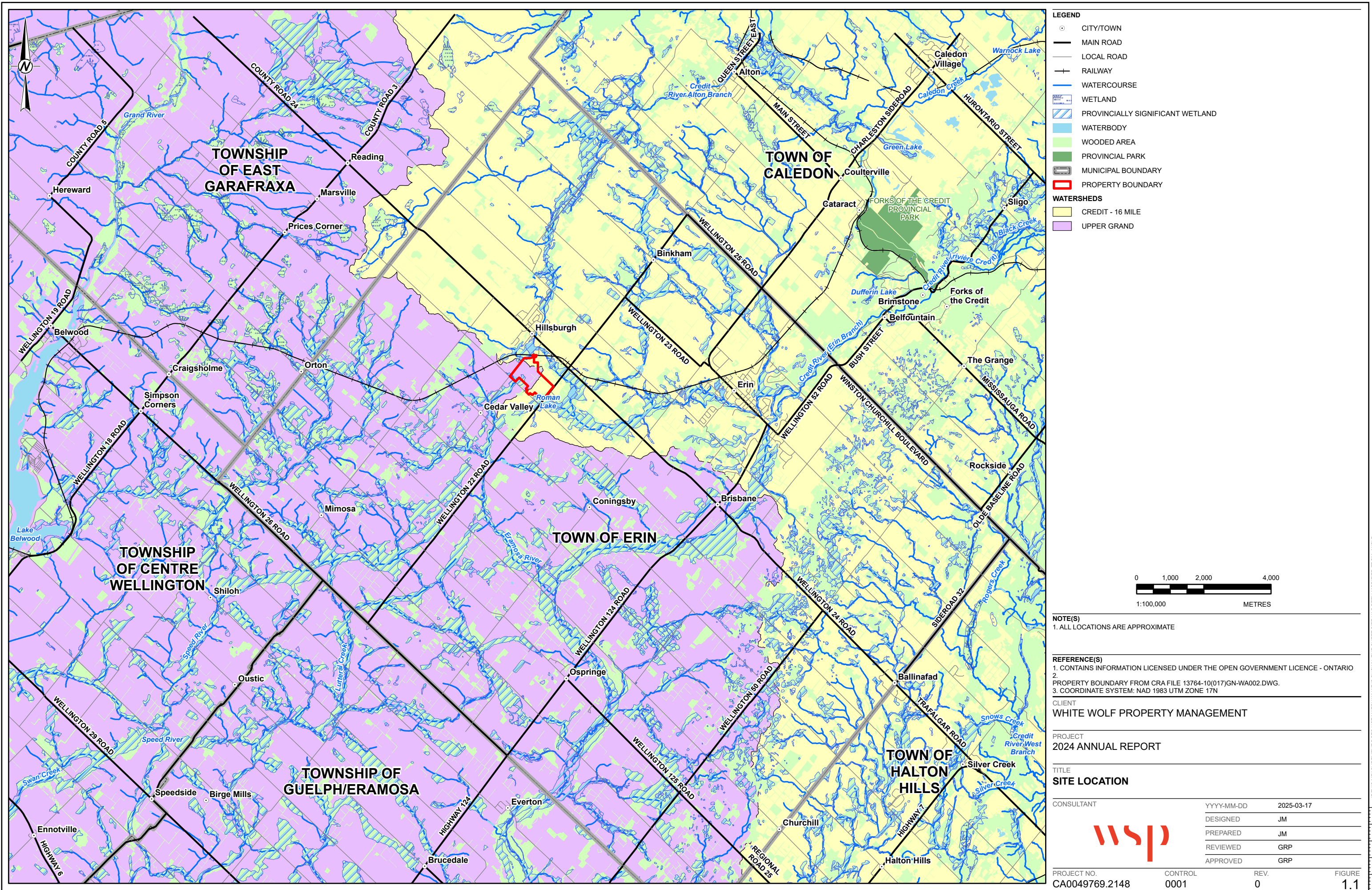


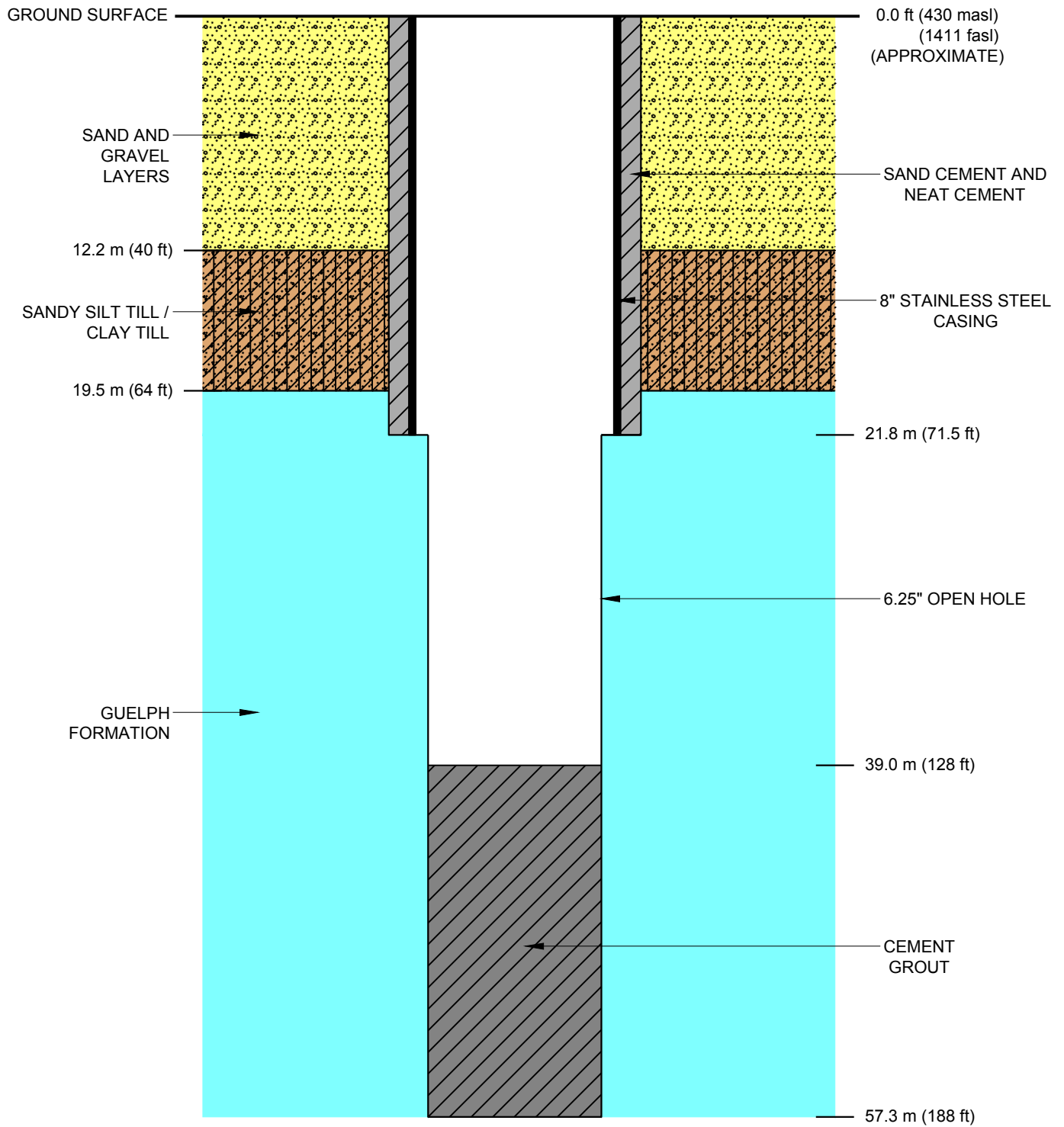
John Piersol, M.Sc., P.Geo.
Senior Hydrogeologist

GRP/CDV/JAP/rk

FIGURES

Figures 1.1 to 4.3





CLIENT
WHITE WOLF PROPERTY MANAGEMENT

PROJECT
2024 ANNUAL REPORT

CONSULTANT



YYYY-MM-DD 2025-03-04

DESIGNED

PREPARED

REVIEWED

APPROVED

DD

GP

GP

TITLE
ERIN TW1-88

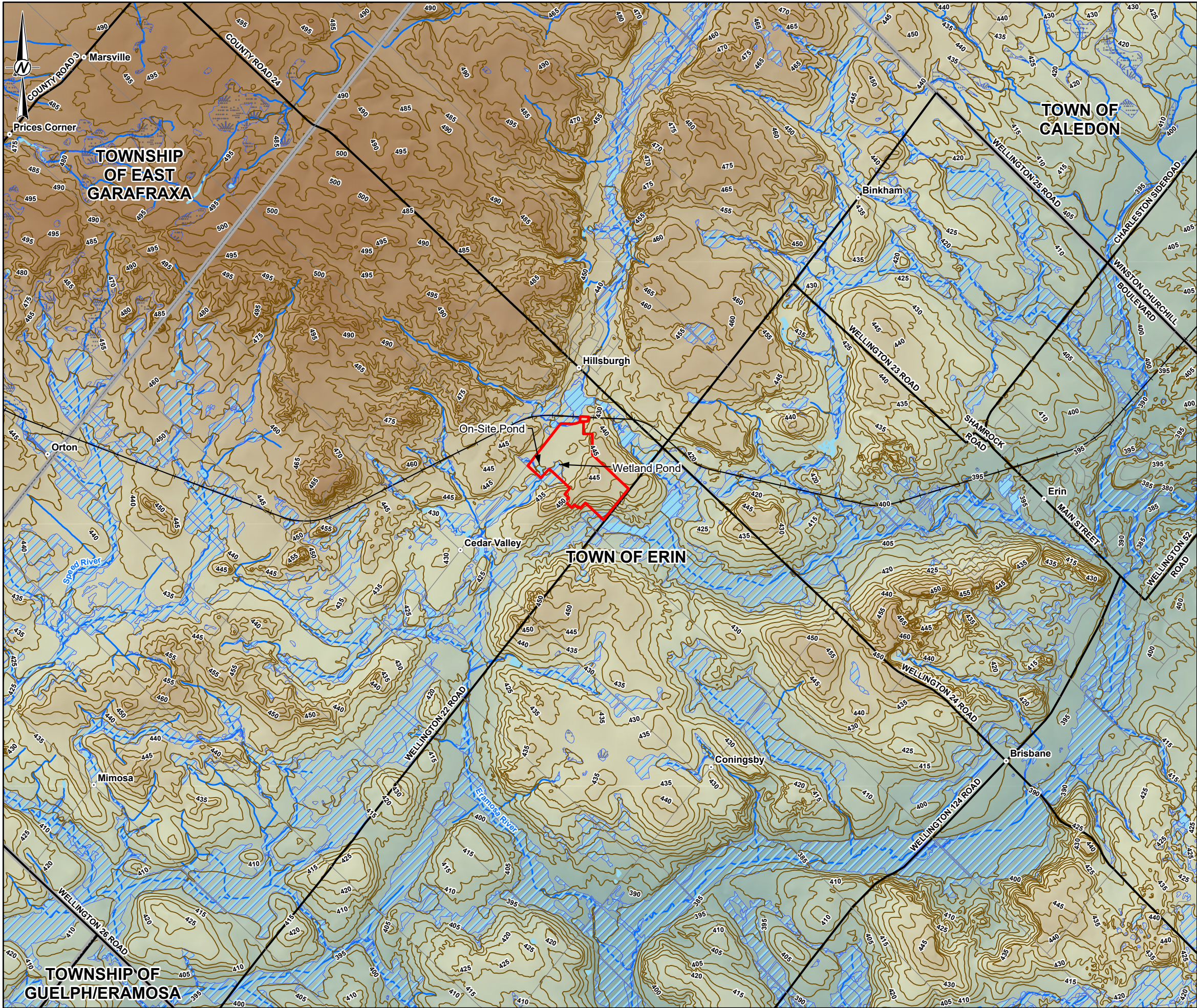
PROJECT NO.
CA0049769.2148 (1000)

TASK

(1000)

REV.
A

FIGURE
1.2



LEGEND

- CITY/TOWN
- MAIN ROAD
- LOCAL ROAD
- RAILWAY
- TOPOGRAPHIC ELEVATION CONTOUR (MASL)
- WATERCOURSE
- WETLAND
- PROvincially SIGNIFICANT WETLAND
- WATERBODY
- MUNICIPAL BOUNDARY
- PROPERTY BOUNDARY

TOPOGRAPHIC ELEVATION (MASL)

HIGH : 505

LOW : 307

0 500 1,000 2,000

1:50,000 METRES

NOTE(S)

1. ALL LOCATIONS ARE APPROXIMATE

REFERENCE(S)

1. CONTAINS INFORMATION LICENSED UNDER THE OPEN GOVERNMENT LICENCE - ONTARIO
2. PROPERTY BOUNDARY FROM CRA FILE 13764-10(017)GN-WA002.DWG.
3. COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N

CLIENT

WHITE WOLF PROPERTY MANAGEMENT

PROJECT

2024 ANNUAL REPORT

TITLE

TOPOGRAPHY AND DRAINAGE

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DESIGNED	JM	
PREPARED	JM	
REVIEWED	GRP	
APPROVED	GRP	

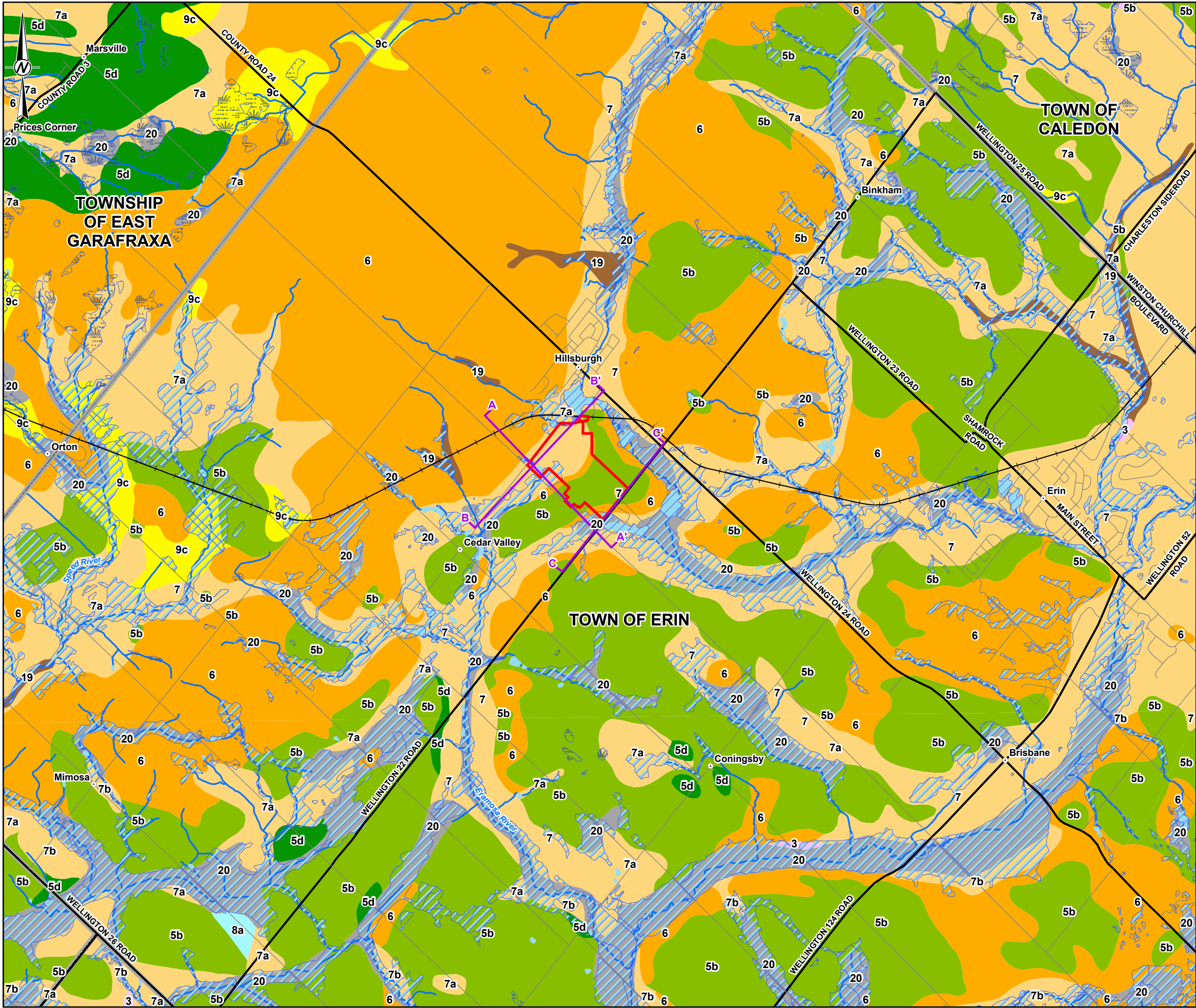


PROJECT NO.
CA0049769.2148

CONTROL
0001

REV.
0

FIGURE
2.1



LEGEND

- CITY/TOWN
- CROSS-SECTION LOCATION
- MAIN ROAD
- LOCAL ROAD
- RAILWAY
- WATERCOURSE
- WETLAND
- PROVINCIALY 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

NOTE(S)

1. ALL LOCATIONS ARE APPROXIMATE

REFERENCE(S)

1. CONTAINS INFORMATION LICENSED UNDER THE OPEN GOVERNMENT LICENCE - ONTARIO
2. PROPERTY BOUNDARY FROM CRA FILE 13764-10(017)GN-WA002.DWG.
3. COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N

CLIENT

WHITE WOLF PROPERTY MANAGEMENT

PROJECT

2024 ANNUAL REPORT

TITLE

REGIONAL QUATERNARY GEOLOGY

CONSULTANT	YYYY-MM-DD	2025-03-17
DESIGNED	JM	
PREPARED	JM	
REVIEWED	GRP	
APPROVED	GRP	

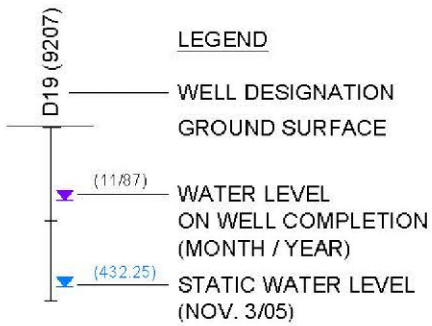
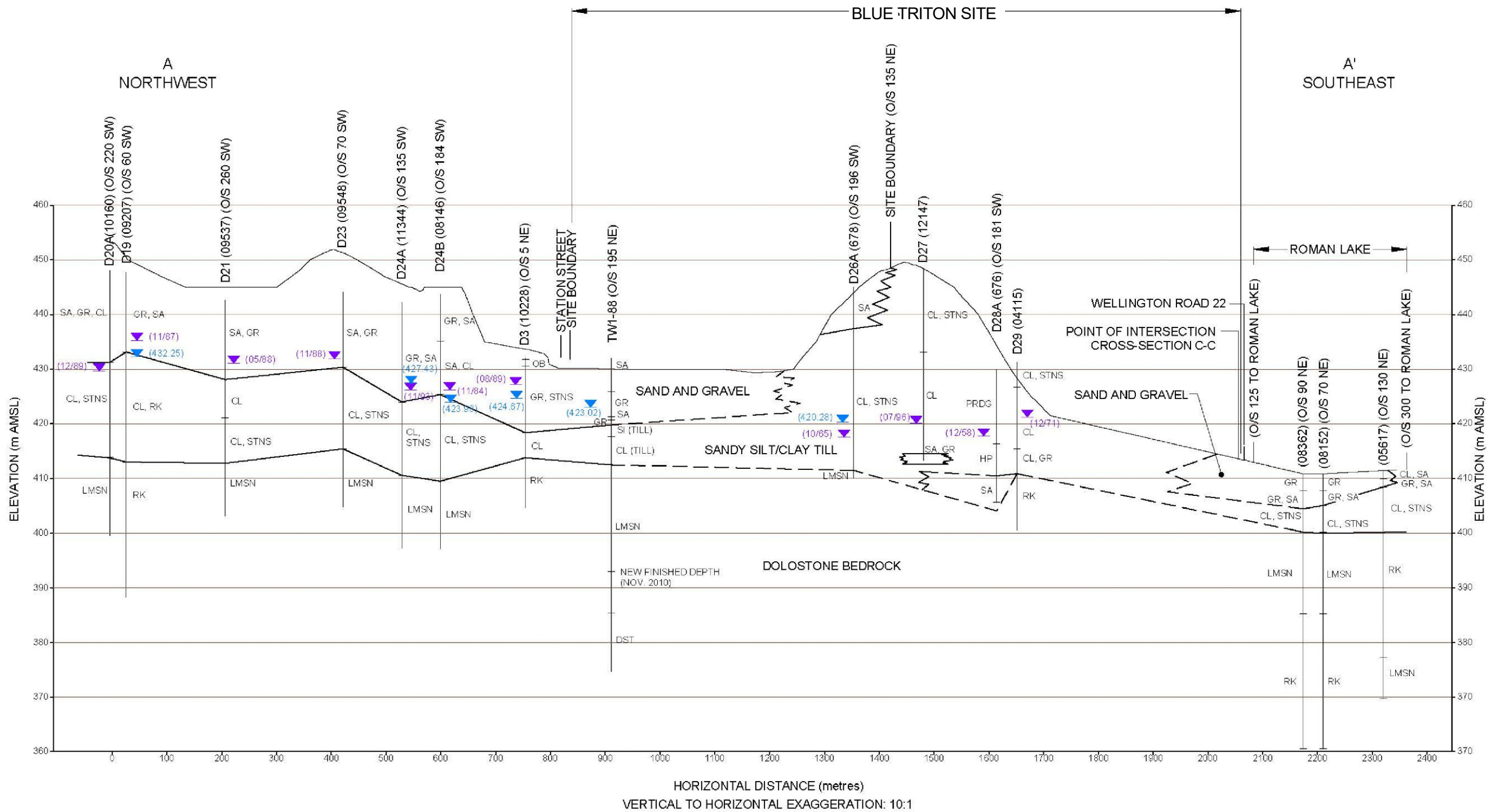
PROJECT NO.
CA0049769.2148

CONTROL
0001

REV.
A

FIGURE
2.2

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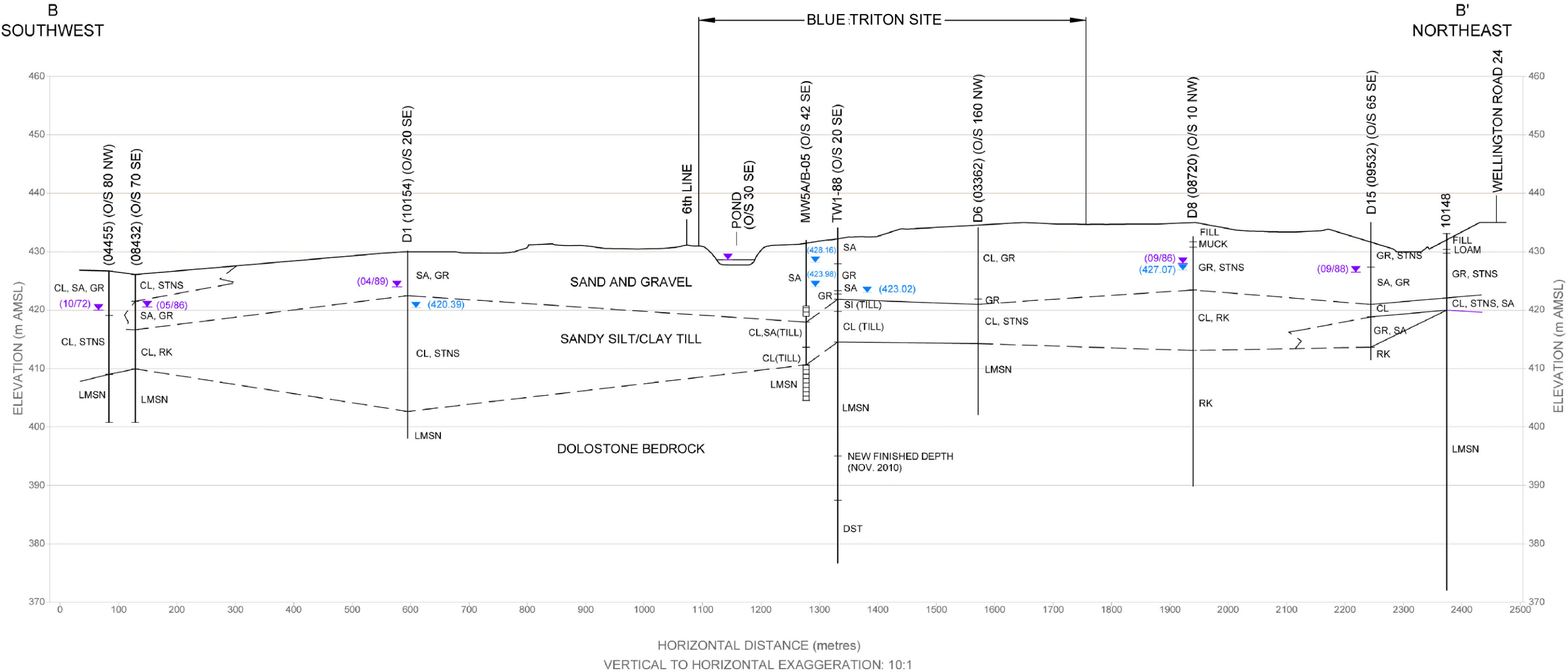
- PRDG - PRE DUG
- OB - OVERBURDEN
- CL - CLAY
- SI - SILT
- SA - SAND
- GR - GRAVEL
- STNS - STONES
- HP - HARDPAN
- RK - ROCK (BEDROCK)
- LMSN - LIMESTONE (BEDROCK)
- DST - DOLOSTONE
- CL, SA - FIRST COMPONENT IS MOST COMMON MATERIAL

REFERENCE(S)
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

CLIENT		
WHITE WOLF PROPERTY MANAGEMENT		
PROJECT		
2024 ANNUAL REPORT		
TITLE		
HYDROGEOLOGIC CROSS-SECTION A-A'		
CONSULTANT		
YYYY-MM-DD	2025-03-05	
DESIGNED	JMC	
PREPARED	AR	
REVIEWED	GP	
APPROVED	JAP	

PROJECT NO.	CONTROL	REV.	FIGURE
CA0049769.2148	0001	1.0	2.3

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



LEGEND

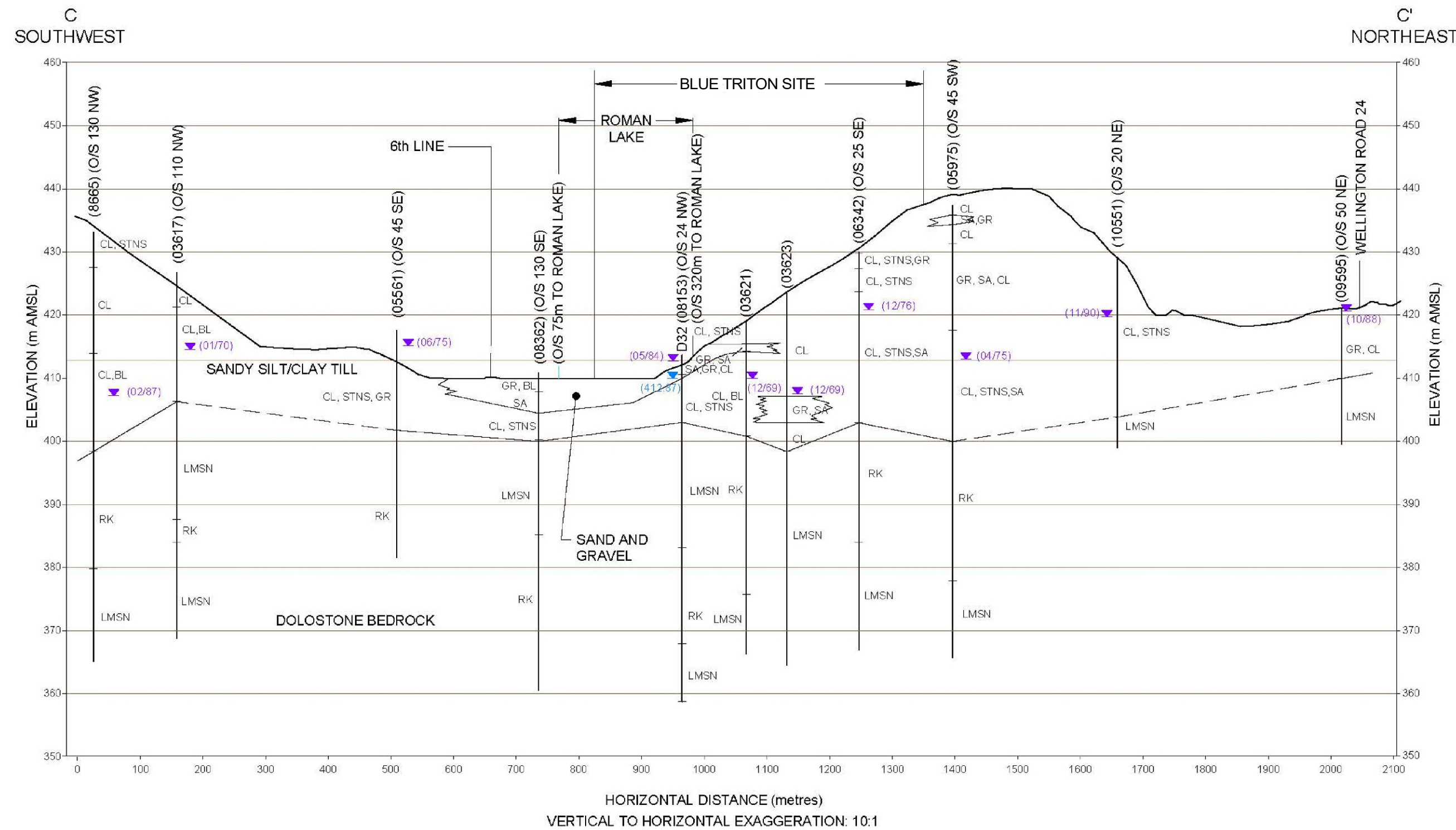
D8	WELL DESIGNATION
	GROUND SURFACE
(09/86)	WATER LEVEL (m AMSL) ON WELL COMPLETION (MONTH / YEAR)
(427.07)	STATIC WATER LEVEL (NOV. 3/05)

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

REFERENCE(S)
BASE DATA - MNR LIO, OBTAINED 2015
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	WHITE WOLF PROPERTY MANAGEMENT
PROJECT	2024 ANNUAL REPORT
TITLE	HYDROGEOLOGIC CROSS-SECTION B-B'
CONSULTANT	YYYY-MM-DD 2025-03-05
DESIGNED	JMC
PREPARED	AR
REVIEWED	GP
APPROVED	JAP

PROJECT NO. CA0049769.2148	CONTROL 0001	REV. 1.0	FIGURE 2.4
-------------------------------	-----------------	-------------	---------------



LEGEND

WELL DESIGNATION

GROUND SURFACE

WATER LEVEL

ON WELL COMPLETION

(MONTH / YEAR)

STATIC WATER LEVEL

(NOV. 3/05)

PRDG - PRE DUG

OB - OVERBURDEN

CL - CLAY

SI - SILT

SA - SAND

GR - GRAVEL

BL - BOULDER

STNS - STONES

HP - HARDPAN

RK - ROCK (BEDROCK)

LMSN - LIMESTONE (BEDROCK)

DST - DOLOSTONE

CL, SA - FIRST COMPONENT IS MOST COMMON MATERIAL

CLIENT

WHITE WOLF PROPERTY MANAGEMENT

PROJECT

2024 ANNUAL REPORT

TITLE

HYDROGEOLOGIC CROSS-SECTION C-C'

CONSULTANT	YYYY-MM-DD	2025-03-05
DESIGNED	JMC	
PREPARED	AR	
REVIEWED	GP	
APPROVED	JAP	

PROJECT NO.

CA0049769.2148

CONTROL

0001

REV.

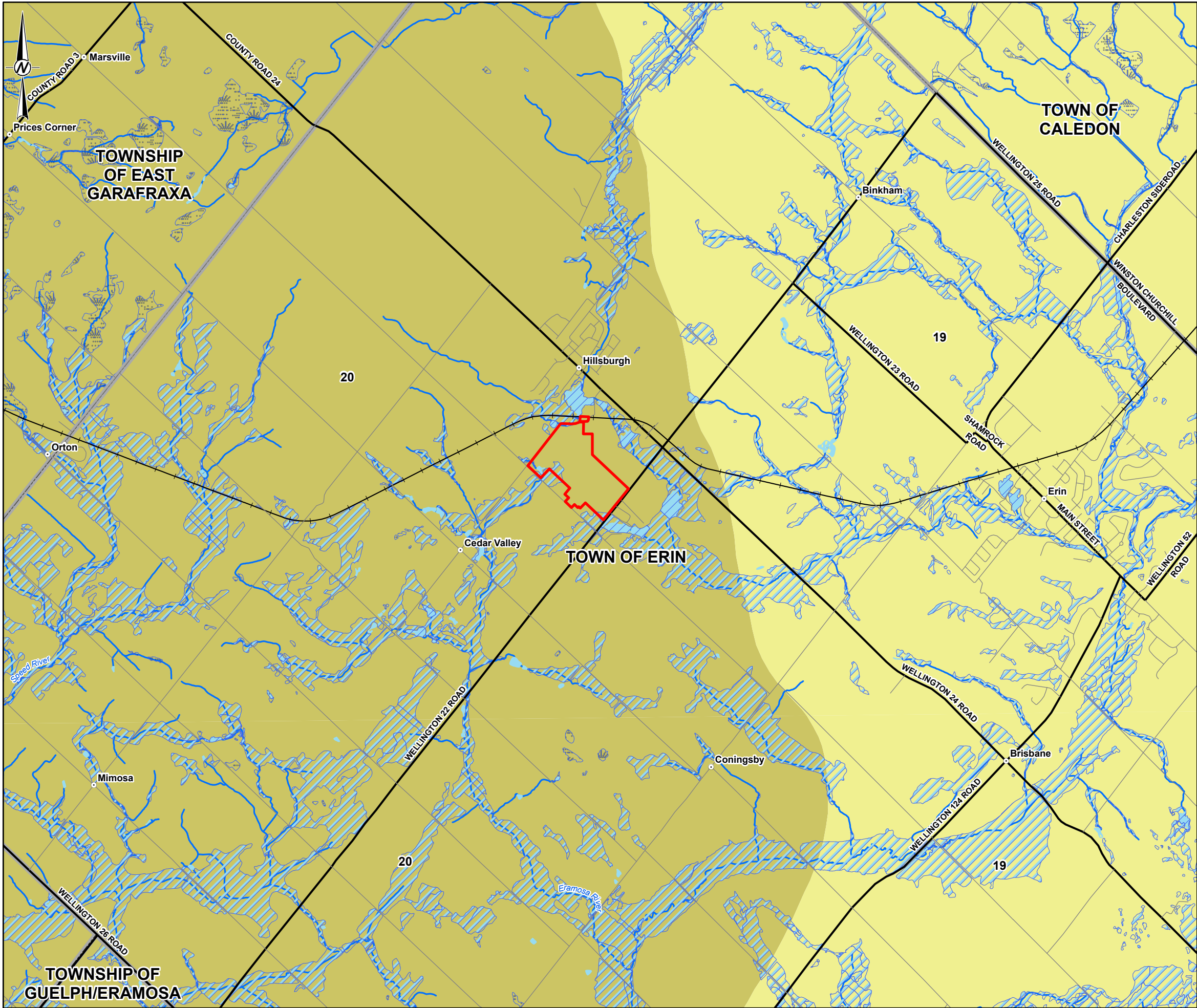
1.0

FIGURE

2.5

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



LEGEND

- CITY/TOWN
- MAIN ROAD
- LOCAL ROAD
- RAILWAY
- WATERCOURSE
- WETLAND
- PROvincially SIGNIFICANT WETLAND
- WATERBODY
- MUNICIPAL BOUNDARY
- PROPERTY BOUNDARY
- 20: GUELPH
- 19: AMABEL

NOTE(S)

1. ALL LOCATIONS ARE APPROXIMATE

REFERENCE(S)

1. CONTAINS INFORMATION LICENSED UNDER THE OPEN GOVERNMENT LICENCE - ONTARIO
2. PROPERTY BOUNDARY FROM CRA FILE 13764-10(017)GN-WA002.DWG.
3. COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N

CLIENT

WHITE WOLF PROPERTY MANAGEMENT

PROJECT

2024 ANNUAL REPORT

TITLE

REGIONAL BEDROCK GEOLOGY

CONSULTANT	YYYY-MM-DD	2025-03-17
DESIGNED	JM	
PREPARED	JM	
REVIEWED	GRP	
APPROVED	GRP	

PROJECT NO.
CA0049769.2148

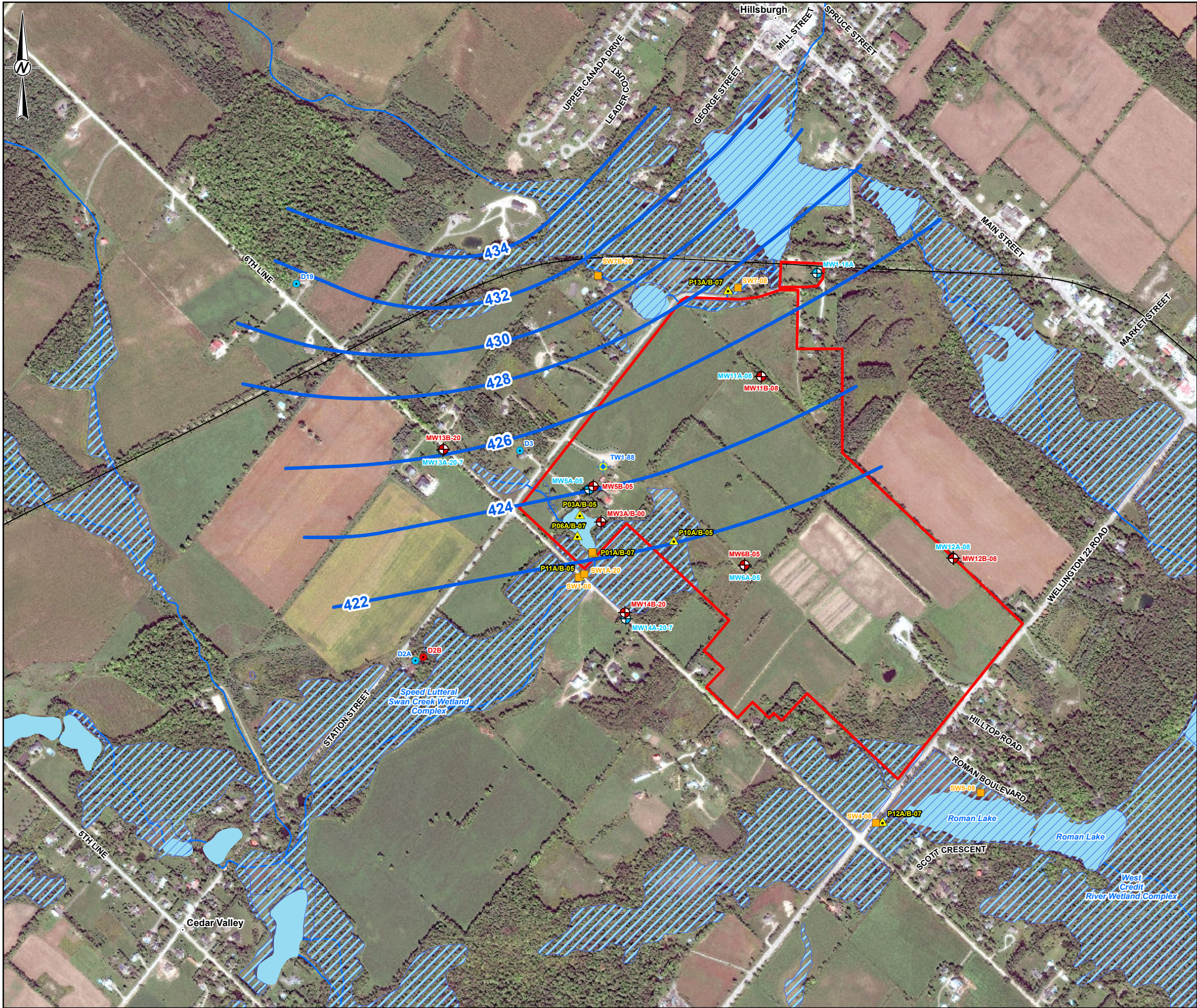
CONTROL
0001

REV.
0

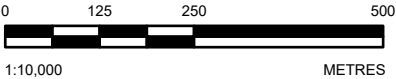
FIGURE
2.6

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IF THIS MEASURE/MENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B 25mm



- LEGEND**
- CITY/TOWN
 - MONITORING WELL (BEDROCK)
 - MONITORING WELL (OVERBURDEN)
 - PRODUCTION WELL
 - PRIVATE WELL (BEDROCK)
 - PRIVATE WELL (OVERBURDEN)
 - PIEZOMETER
 - SURFACE WATER STATION
 - WATER LEVEL ELEVATION CONTOUR (JAN. 24, 2000)
 - MAIN ROAD
 - LOCAL ROAD
 - RAILWAY
 - WATERCOURSE
 - WETLAND
 - PROvincially SIGNIFICANT WETLAND
 - WATERBODY
 - PROPERTY BOUNDARY



NOTE(S)
1. ALL LOCATIONS ARE APPROXIMATE

REFERENCE(S)
1. CONTAINS INFORMATION LICENSED UNDER THE OPEN GOVERNMENT LICENCE - ONTARIO
2. PROPERTY BOUNDARY FROM CRA FILE 13764-10(017)GN-WA002.DWG.
3. COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N

CLIENT
WHITE WOLF PROPERTY MANAGEMENT

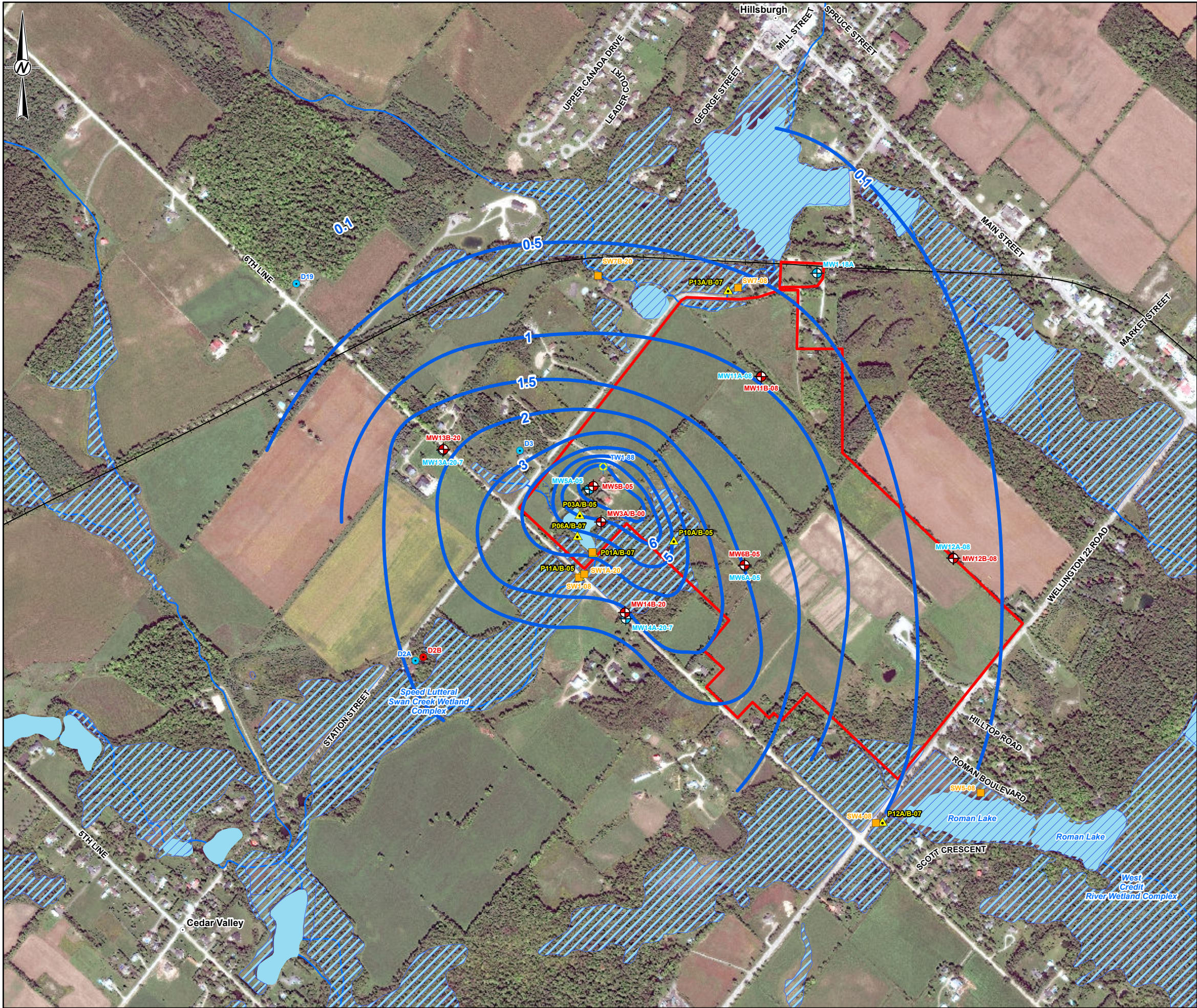
PROJECT
2024 ANNUAL REPORT

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

CONSULTANT	YYYY-MM-DD	2025-03-17
DESIGNED	----	
PREPARED	JM	
REVIEWED	----	
APPROVED	----	



PROJECT NO. CA0049769.2148	CONTROL 0001	REV. A	FIGURE 2.7
-------------------------------	-----------------	-----------	---------------



LEGEND

- CITY/TOWN
- MONITORING WELL (BEDROCK)
- MONITORING WELL (OVERBURDEN)
- PRODUCTION WELL
- PRIVATE WELL (BEDROCK)
- PRIVATE WELL (OVERBURDEN)
- PIEZOMETER
- SURFACE WATER STATION
- DRAWDOWN CONTOUR (JUNE 13/15, 2001)
- MAIN ROAD
- LOCAL ROAD
- RAILWAY
- WATERCOURSE
- WETLAND
- PROVINCIALY SIGNIFICANT WETLAND
- WATERBODY
- PROPERTY BOUNDARY

NOTE(S)

1. ALL LOCATIONS ARE APPROXIMATE

REFERENCE(S)

1. CONTAINS INFORMATION LICENSED UNDER THE OPEN GOVERNMENT LICENCE - ONTARIO
2. PROPERTY BOUNDARY FROM CRA FILE 13764-10(017)GN-WA002.DWG.
3. COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N

CLIENT

WHITE WOLF PROPERTY MANAGEMENT

PROJECT

2024 ANNUAL REPORT

TITLE

INTERPRETED DRAWDOWN IN BEDROCK AQUIFER (JUNE 2001)

CONSULTANT	YYYY-MM-DD	2025-03-17
DESIGNED	JM	
PREPARED	JM	
REVIEWED	GRP	
APPROVED	GRP	

PROJECT NO.

CA0049769.2148

CONTROL

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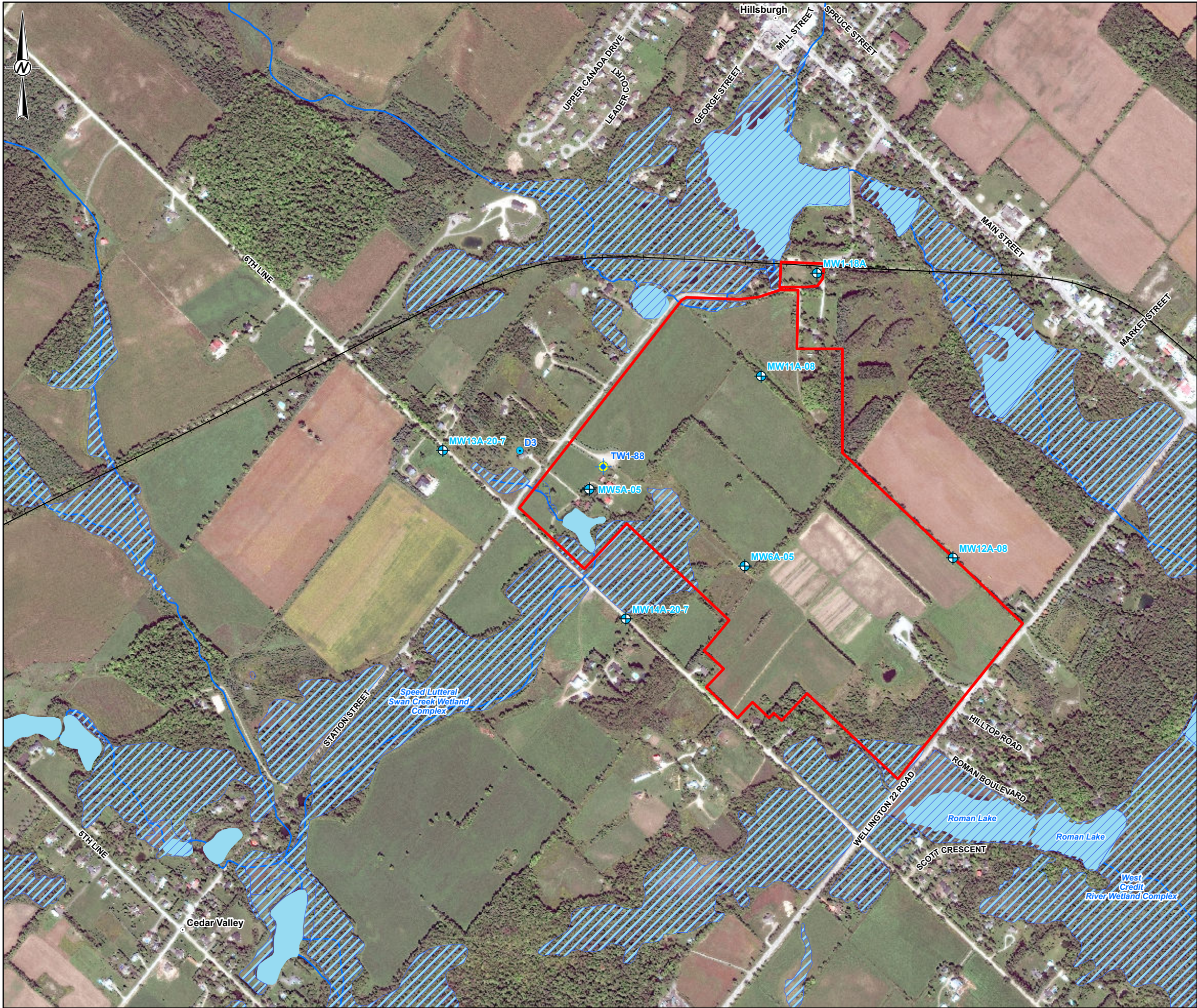
REV.

0

FIGURE

2.8

wsp



LEGEND

- CITY/TOWN
- MONITORING WELL (BEDROCK)
- MONITORING WELL (OVERBURDEN)
- PRIVATE WELL (BEDROCK)
- PRIVATE WELL (OVERBURDEN)
- PRIVATE WELL (BEDROCK - NOT MONITORED)
- PRODUCTION WELL
- MONITORING WELL (BEDROCK)
- PRIVATE WELL (BEDROCK)
- MAIN ROAD
- LOCAL ROAD
- RAILWAY
- WATERCOURSE
- WETLAND
- PROVINCIALY SIGNIFICANT WETLAND
- WATERBODY
- MUNICIPAL BOUNDARY
- PROPERTY BOUNDARY

NOTE(S)

1. ALL LOCATIONS ARE APPROXIMATE

REFERENCE(S)

1. CONTAINS INFORMATION LICENSED UNDER THE OPEN GOVERNMENT LICENCE - ONTARIO
2. PROPERTY BOUNDARY FROM CRA FILE 13764-10(017)GN-WA002.DWG.
3. COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N

CLIENT

WHITE WOLF PROPERTY MANAGEMENT

PROJECT

2024 ANNUAL REPORT

TITLE

2024 BEDROCK MONITORING LOCATIONS

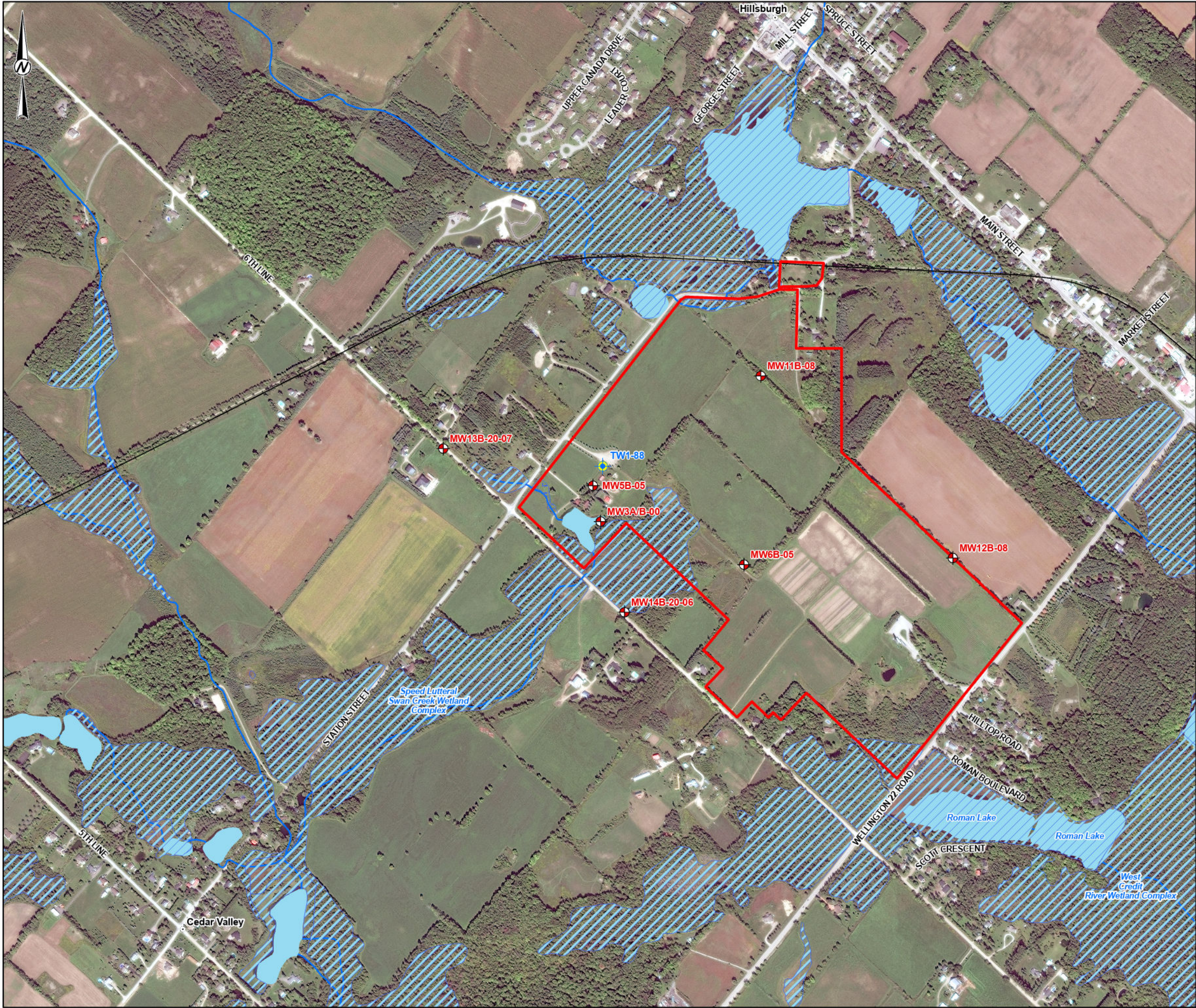
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DESIGNED	JM	
PREPARED	JM	
REVIEWED	GRP	
APPROVED	GRP	

PROJECT NO.
CA0049769.2148

CONTROL
0001

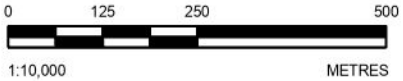
REV.
0

FIGURE
3.1



LEGEND

- CITY/TOWN
- PRODUCTION WELL
- MONITORING WELL (OVERBURDEN)
- MAIN ROAD
- LOCAL ROAD
- RAILWAY
- WATERCOURSE
- MUNICIPAL BOUNDARY
- WETLAND
- PROVINCIALY SIGNIFICANT WETLAND
- WATERBODY
- PROPERTY BOUNDARY



NOTE(S)
1. ALL LOCATIONS ARE APPROXIMATE

REFERENCE(S)
1. CONTAINS INFORMATION LICENSED UNDER THE OPEN GOVERNMENT LICENCE - ONTARIO
2. PROPERTY BOUNDARY FROM CRA FILE 13764-10(017)GN-WA002.DWG.
3. COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N

CLIENT
WHITE WOLF PROPERTY MANAGEMENT

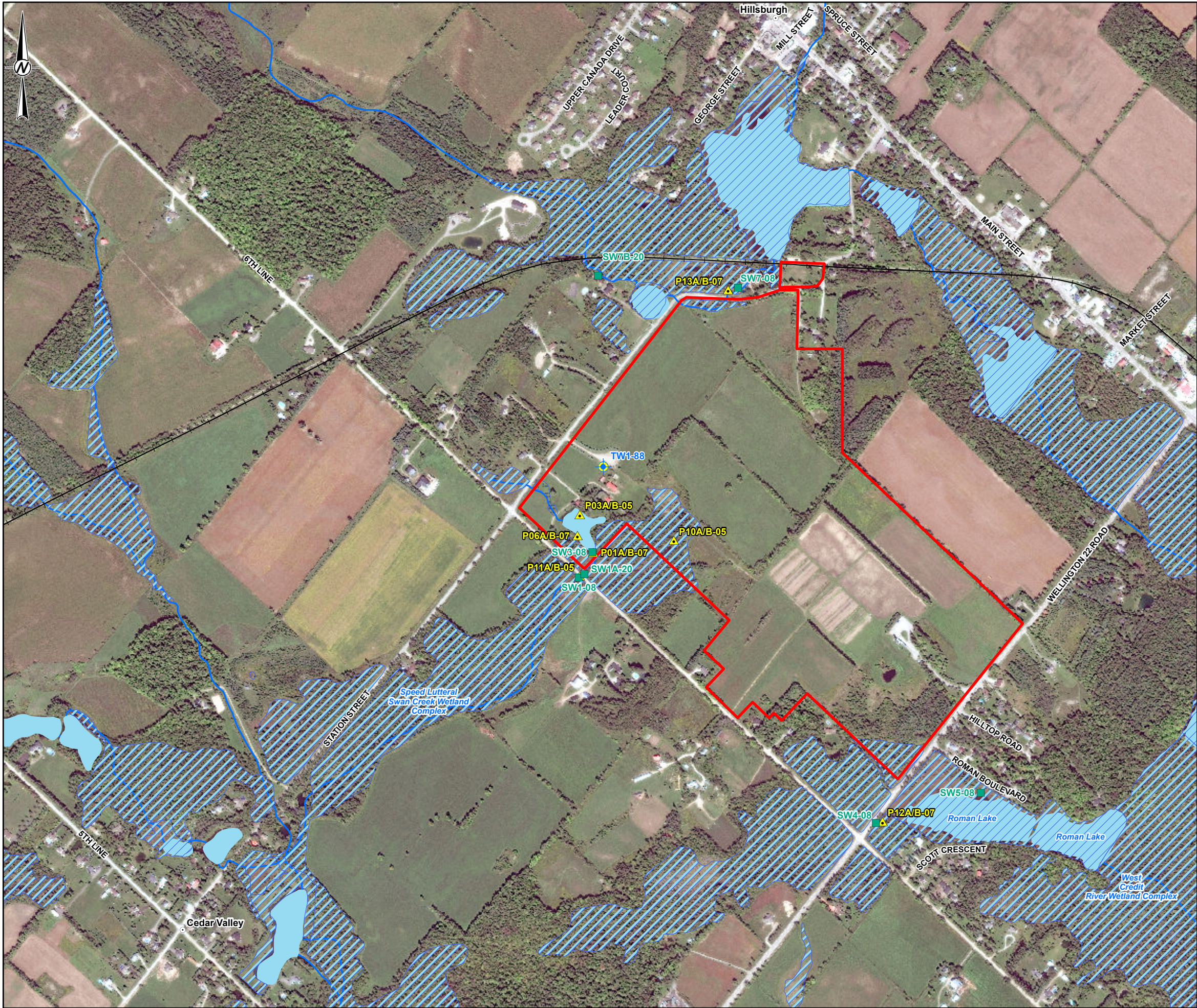
PROJECT
2024 ANNUAL REPORT

TITLE
2024 OVERBURDEN MONITORING LOCATIONS

CONSULTANT	YYYY-MM-DD	2025-03-17
	DESIGNED	JM
	PREPARED	JM
	REVIEWED	GRP
	APPROVED	GRP



PROJECT NO. CA0049769.2148	CONTROL 0001	REV. 0	FIGURE 3.2
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LEGEND

CITY/TOWN

PRODUCTION WELL

PIEZOMETER

SURFACE WATER STATION

MAIN ROAD

LOCAL ROAD

RAILWAY

WATERCOURSE

WETLAND

PROVINCIALY SIGNIFICANT WETLAND

WATERBODY

MUNICIPAL BOUNDARY

PROPERTY BOUNDARY

NOTE(S)
1. ALL LOCATIONS ARE APPROXIMATE

REFERENCE(S)
1. CONTAINS INFORMATION LICENSED UNDER THE OPEN GOVERNMENT LICENCE - ONTARIO
2. PROPERTY BOUNDARY FROM CRA FILE 13764-10(017)GN-WA002.DWG.
3. COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N

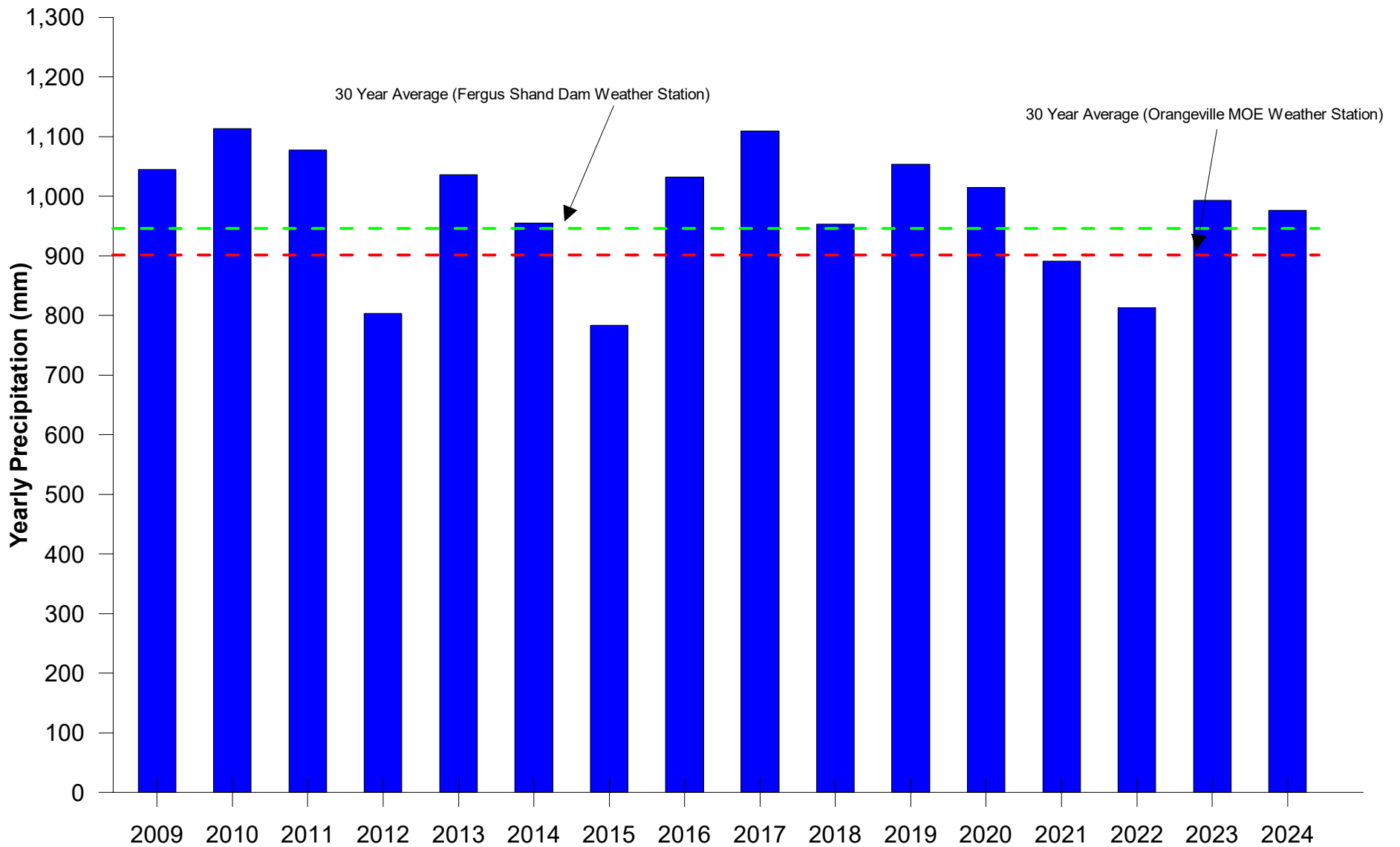
CLIENT
WHITE WOLF PROPERTY MANAGEMENT

PROJECT
2024 ANNUAL REPORT

TITLE
2024 SURFACE WATER MONITORING LOCATIONS

CONSULTANT	YYYY-MM-DD	2025-03-17
	DESIGNED	JM
	PREPARED	JM
	REVIEWED	GRP
	APPROVED	GRP

PROJECT NO. CA0049769.2148	CONTROL 0001	REV. 0	FIGURE 3.3
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Data for Orangeville Station prior to 2016, and
data for Shand Dam Station from 2016-2024



DATE	MARCH 2025
DESIGN	KS
REVIEW	GP
APPROVED	GP

PROJECT

WHITE WOLF PROPERTY MANAGEMENT
Town of Erin, Ontario

TITLE

HISTORICAL ANNUAL PRECIPITATION (2009 TO 2024)
2024 ANNUAL MONITORING REPORT

PROJECT NO.

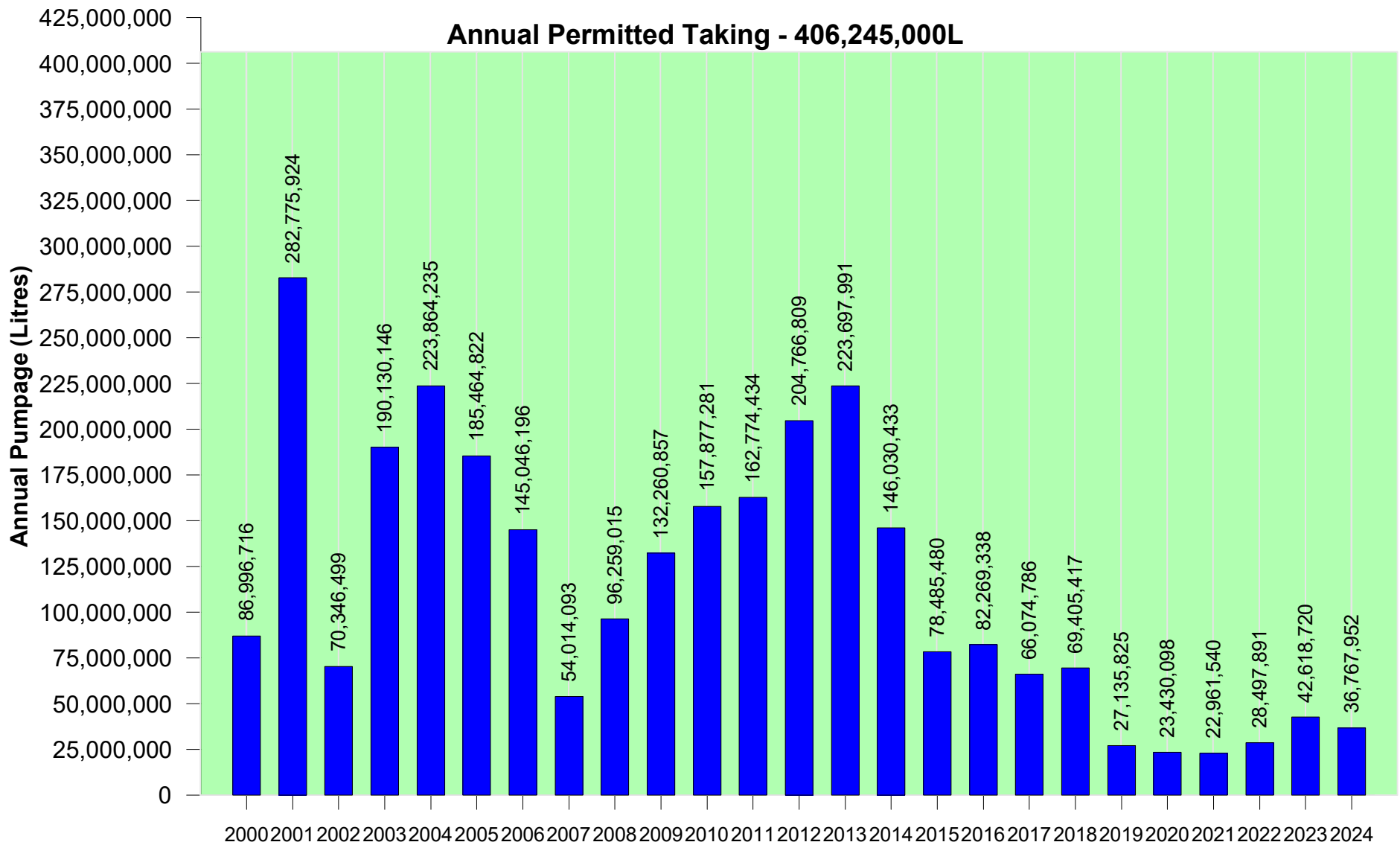
CA0049769.2148

REV

A

FIGURE

3.5



DATE	MARCH 2025
DESIGN	AB
REVIEW	GP
APPROVED	GP

PROJECT

WHITE WOLF PROPERTY MANAGEMENT
Town of Erin, Ontario

TITLE

TW1-88 ANNUAL WATER TAKING (2000 TO 2024)
2024 ANNUAL MONITORING REPORT

PROJECT NO.

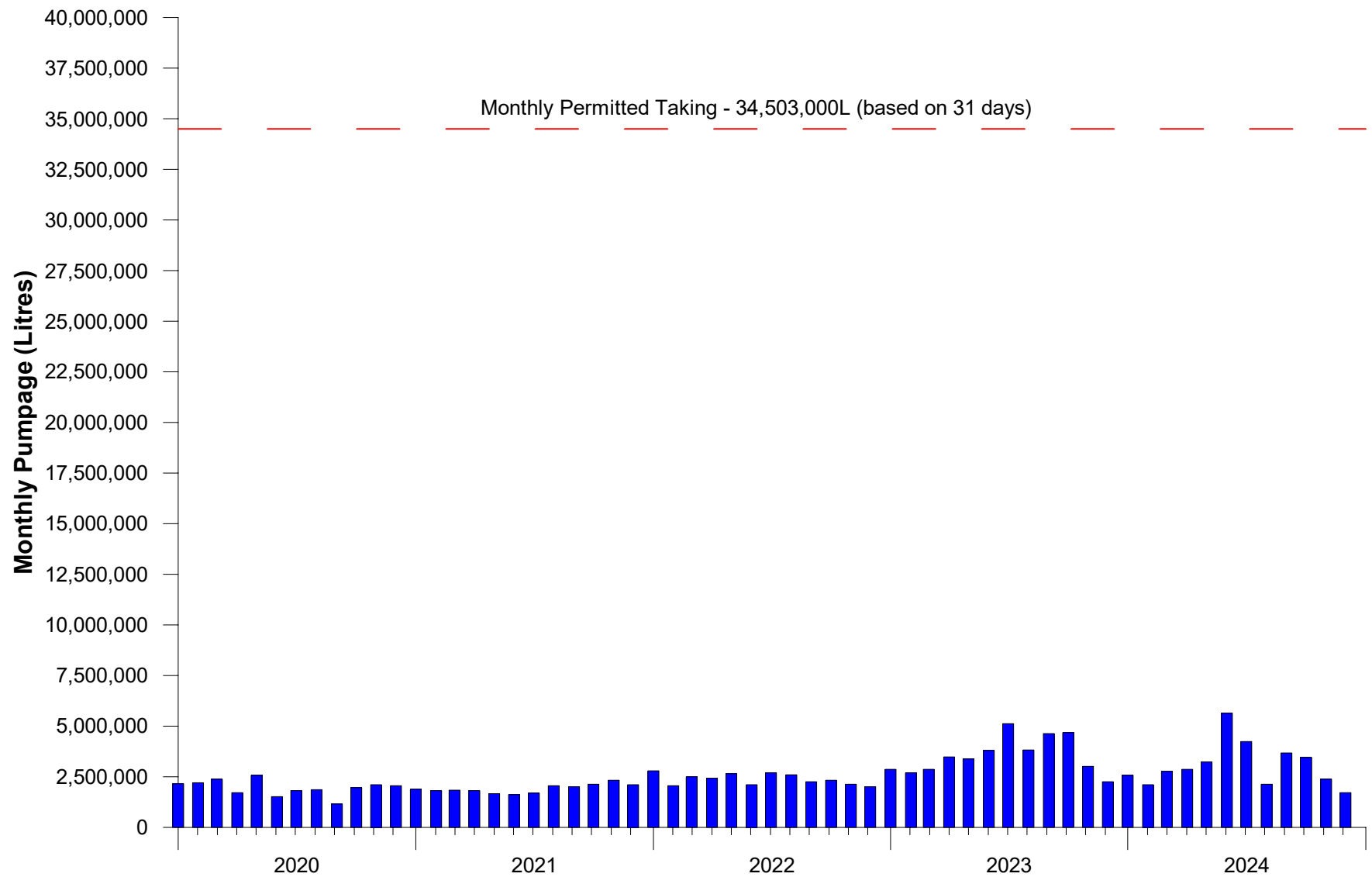
CA0049769.2148

REV

A

FIGURE

4.1



DATE MARCH 2025
 DESIGN AB
 REVIEW GP
 APPROVED GP

PROJECT
WHITE WOLF PROPERTY MANAGEMENT
 Town of Erin, Ontario

TITLE
TW1-88 MONTHLY WATER TAKING (2020 TO 2024)
2024 ANNUAL MONITORING REPORT

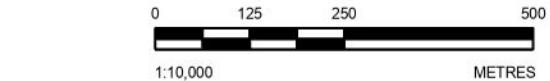
PROJECT NO.
 CA0049769.2148

REV
 A

FIGURE
 4.2



- LEGEND
- CITY/TOWN
 - PRODUCTION WELL
 - MONITORING WELL (BEDROCK)
 - PRIVATE WELL (BEDROCK)
 - WATER ELEVATION CONTOUR (MASL)
 - RAILWAY
 - WATERCOURSE
 - WATERBODY
 - MUNICIPAL BOUNDARY
 - PROPERTY BOUNDARY
 - 420.10 WATER ELEVATION (JUNE 29, 2024)



NOTE(S)
1. ALL LOCATIONS ARE APPROXIMATE

REFERENCE(S)
1. CONTAINS INFORMATION LICENSED UNDER THE OPEN GOVERNMENT LICENCE - ONTARIO
2. PROPERTY BOUNDARY FROM CRA FILE 13764-10(017)GN-WA002.DWG.
3. COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N

CLIENT
WHITE WOLF PROPERTY MANAGEMENT

PROJECT
2024 ANNUAL REPORT

TITLE
**POTENTIOMETRIC SURFACE OF BEDROCK AQUIFER
(JUNE 2024)**

CONSULTANT	YYYY-MM-DD	2025-03-17
DESIGNED	JM	
PREPARED	JM	
REVIEWED	GRP	
APPROVED	GRP	

PROJECT NO. CA0049769.2148 CONTROL 0001 REV. 0 FIGURE 4.3

APPENDIX A

Permit To Take Water Number
4788-C5TJTZ

**Ministry of the Environment,
Conservation and Parks**

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

**Ministère de l'Environnement, de la
Protection de la nature et des
Parcs**

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



November 15, 2021

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

Dear Andreanne Simard:

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

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

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

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

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

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

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

Yours truly,

A handwritten signature in blue ink, appearing to read 'G. Meek', is written above a horizontal line.

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

File Storage Number: -

PERMIT TO TAKE WATER

Ground Water
NUMBER 4788-C5TJTZ

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

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

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

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

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

DEFINITIONS

- (a) "Director" means any person appointed in writing as a Director pursuant to section 5 of the OWRA for the purposes of section 34.1, OWRA.
- (b) "Provincial Officer" means any person designated in writing by the Minister as a Provincial Officer pursuant to section 5 of the OWRA.
- (c) "Ministry" means Ontario Ministry of the Environment, Conservation and Parks.
- (d) "District Office" means the Guelph District Office.
- (e) "Permit" means this Permit to Take Water No. 4788-C5TJTZ including its Schedules, if any, issued in accordance with Section 34.1 of the OWRA.
- (f) "Permit Holder" means Triton Water Canada Holdings, Inc..
- (g) "OWRA " means the *Ontario Water Resources Act*, R.S.O. 1990, c. O. 40, as amended.

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

TERMS AND CONDITIONS

1. Compliance with Permit

- 1.1 Except where modified by this Permit, the water taking shall be in accordance with the application for this Permit To Take Water, dated May 16, 2017 and signed by Andreanne Simard, and all Schedules included in this Permit.
- 1.2 The Permit Holder shall ensure that any person authorized by the Permit Holder to take water under this Permit is provided with a copy of this Permit and shall take all reasonable measures to ensure that any such person complies with the conditions of this Permit.
- 1.3 Any person authorized by the Permit Holder to take water under this Permit shall comply with the conditions of this Permit.
- 1.4 This Permit is not transferable to another person.
- 1.5 This Permit provides the Permit Holder with permission to take water in accordance with the conditions of this Permit, up to the date of the expiry of this Permit. This Permit does not constitute a legal right, vested or otherwise, to a water allocation, and the issuance of this Permit does not guarantee that, upon its expiry, it will be renewed.
- 1.6 The Permit Holder shall keep this Permit available at all times at or near the site of the taking, and shall produce this Permit immediately for inspection by a Provincial Officer upon his or her request.
- 1.7 The Permit Holder shall report any changes of address to the Director within thirty days of any such change. The Permit Holder shall report any change of ownership of the property for which this Permit is issued within thirty days of any such change. A change in ownership in the property shall cause this Permit to be cancelled.

2. General Conditions and Interpretation

- 2.1 Inspections
The Permit Holder must forthwith, upon presentation of credentials, permit a Provincial Officer to carry out any and all inspections authorized by the OWRA, the *Environmental Protection Act* , R.S.O. 1990, the *Pesticides Act* , R.S.O. 1990, or the *Safe Drinking Water Act*, S. O. 2002.
- 2.2 Other Approvals
The issuance of, and compliance with this Permit, does not:
 - (a) relieve the Permit Holder or any other person from any obligation to comply with any other applicable legal requirements, including the provisions of the *Ontario Water Resources Act* , and

the *Environmental Protection Act* , and any regulations made thereunder; or

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

2.3 Information

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

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

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

2.4 Rights of Action

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

2.5 Severability

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

2.6 Conflicts

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

3. Water Takings Authorized by This Permit

3.1 Expiry

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

3.2 Amounts of Taking Permitted

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

Table A

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

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

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

4. Monitoring

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

Bedrock Wells

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

Overburden Wells

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

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

Piezometers

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

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

Surface Water

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

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

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

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

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

- SW3-08

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

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

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

4.4 The Permit Holder shall identify to the Director in writing, within 15 days of any monthly

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

- 4.5 Under section 9 of O. Reg. 387/04, and as authorized by subsection 34(6) of the *Ontario Water Resources Act*, the Permit Holder shall, on each day water is taken under the authorization of this Permit, record the date, the volume of water taken on that date and the rate at which it was taken. The daily volume of water taken shall be measured by a flow meter or calculated in accordance with the method described in the application for this Permit, or as otherwise accepted by the Director. The Permit Holder shall keep all records required by this condition current and available at or near the site of the taking and shall produce the records immediately for inspection by a Provincial Officer upon his or her request. The Permit Holder, unless otherwise required by the Director, shall submit, on or before March 31st in every year, the records required by this condition to the ministry's Water Taking Reporting System.
- 4.6 The Permit Holder shall submit to the Director, an annual monitoring report which presents and interprets the monitoring data to be collected under the Terms and Conditions of this Permit. This report shall be prepared, signed and stamped by a licenced professional geoscientist or a licensed professional engineer specializing in hydrogeology who shall take responsibility for its accuracy. The report shall be submitted to the Director by April 30 of each calendar year or as supporting documentation to any application for renewal of this Permit, and include monitoring data for the 12 month period ending December 31 of the previous year.
- 4.7 The Permit Holder shall include as part of the annual monitoring report required under Condition 4.6, the following information:
- (i) Location and name of the facilities to which water is delivered in bulk containers greater than 20L from this source.
 - (ii) Whether or not the bulk water transported is containerized at the receiving location.
 - (iii) The size of the container(s) into which the water is transferred.
 - (iv) Total volume of the water transported in bulk in each calendar year to each remote facility.
- 4.8 The Permit Holder shall investigate any complaints received from the public or agency with regard to this water taking in accordance with the interference complaints resolution protocol and notify the District Manager, District Office within two (2) working days of receiving the complaint. Details of any complaints and its resolution shall be outlined to the Director in the annual monitoring report required under Condition 4.6.
- 4.9.1 Prior to December 31, 2021, the Permit Holder shall establish a publicly accessible internet Website, with no user, access or registration fees, and shall maintain the website for the duration of this permit. Following the establishment of the Website, the Permit Holder shall notify the Director in writing, of the Website URL address.

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

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

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

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

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

The Permit Holder shall also directly notify the following stakeholders:

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

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

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

5. Impacts of the Water Taking

5.1 Notification

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

5.2 For Groundwater Takings

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

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

6. Director May Amend Permit

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

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

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

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

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

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

1. Condition 1 is included to ensure that the conditions in this Permit are complied with and can be enforced.
2. Condition 2 is included to clarify the legal interpretation of aspects of this Permit.
3. Conditions 3 through 6 are included to protect the quality of the natural environment so as to safeguard the ecosystem and human health and foster efficient use and conservation of waters. These conditions allow for the beneficial use of waters while ensuring the fair sharing, conservation and sustainable use of the waters of Ontario. The conditions also specify the water takings that are authorized by this Permit and the scope of this Permit.

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

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

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

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

This notice must be served upon:

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

AND

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

AND

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

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

by Telephone at

(416) 212-6349

Toll Free 1(866) 448-2248

by Fax at

(416) 326-5370

Toll Free 1(844) 213-3474

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 3716-8UZMCU, issued on 2012/09/28.

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

A handwritten signature in blue ink, appearing to read 'G. Meek', with a stylized, flowing script.

Gregory Meek

Director, Section 34.1

Ontario Water Resources Act , R.S.O. 1990

Schedule A

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

1. "Nestle Waters Canada - Erin, Technical Study for Permit to Take Water Renewal Application, signed by Greg Padusenko, P.Eng. P.Geo. and John Piersol, P.Geo. of Golder Associate Ltd., Christopher J. Neville, P.Eng. of S.S. Papadopoulos & Associates Inc., Cam Portt, M.Sc. of C. Portt & Associates, and Ken Ursic, M.Sc., of Beacon Environment, dated June 2019.
2. "Nestle Waters of Canada Erin Spring Site, 2020 Annual Monitoring Report", signed by Greg Padusenko, P.Eng., P.Geo, and Kevin MacKenzie, P.Eng. and John Piersol, P.Geo. of Golder Associates Ltd., date March 2021.
3. Technical Memorandum "Low Water Response Plan For Erin TW1-80" prepared by Greg Padusenko and John Piersol of Golder Associates Ltd., dated October 19, 2021, Project No. 20449101 (2000).

APPENDIX B

TW1-88 Borehole Log

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

(L-1)

PROJECT NAME: HILLSBURGH

PROJECT NO.: 2603

CLIENT: IHOR PASHYNSKY

LOCATION: LOT 24, CONCESSION 7, ERIN TOWNSHIP

HOLE DESIGNATION: TW1-88

(Page 1 of 2)

DATE COMPLETED: AUGUST 11, 1988

DRILLING METHOD: WET/AIR ROTARY

CRA SUPERVISOR: S. CROSSMAN

DEPTH m BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEVATION m AMSL	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	PURE BENTONITE GROUT 203mm BOREHOLE			
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 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	419.3 418.7 417.8	170mm Ø STEEL PIPE			
15.0		415.7				
17.5			SLOUGHED MATERIAL			
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		160mm Ø OPEN HOLE			
27.5	— Fracture (20mm dia.), no change in water colour					
30.0						
32.5	— light grey, fracture					

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

DATE COMPLETED: AUGUST 11, 1988
(Page 2 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
35.0	LST (LIMESTONE) BEDROCK— hard, sound, some fracturing, massive, grey		100mm OPEN HOLE			
37.5						
40.0						
42.5						
45.0						
47.5	Dolostone, dark grey to black	383.4				
50.0	— fracture, clay filled 100 to 150mm, brown					
52.5	— fracture 100 to 150mm, clay filled					
55.0	— fracture 100 to 200mm, unfilled					
57.5	— sound, unfractured, crystalline, basal to concolidal fracture, grey.	372.7				
60.0	END OF HOLE @ 57.30m BGS.					
62.5	NOTE: 1. Casing set to 20.88m BGS and grouted into bedrock using a pure bentonite grout.					
65.0	2. All elevations are approximate.					

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

GRAIN SIZE ANALYSIS



WATER FOUND



STATIC WATER LEVEL





Ontario

Ministry of
the Environment

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

A095193

A095193

Well Record

Regulation 993 Ontario Water Resources Act

Measurements recorded in: ☐ Metric ☒ Imperial

Page 1 of 1

Well Owner's Information

First Name: Last Name / Organization: E-mail Address: ☐ Well Constructed by Well Owner

NESTLE WATERS CANADA

Mailing Address (Street Number/Name): Municipality: Province: Postal Code: Telephone No. (inc. area code):
101 BROCK ROAD GUELPH ON N1H6H9

Well Location

Address of Well Location (Street Number/Name): Township: Lot: Concession:
STATION STREET ERIN 24 7County/District/Municipality: City/Town/Village: Province: Postal Code:
WELLINGTON HILLSBURG OntarioUTM Coordinates: Zone: Easting: Northing:
NAD 83 17 58362 4847825

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

General Colour	Moist Consistency Material	Other Materials	General Description	Depth (m/ft) From To
BROWN	SAND	SILT GRAVEL		0 31
BROWN	GRAVEL		COARSE	31 39
GREY	CLAY TILL	SAND, COBBLES		39 63
LT GREY	LIMESTONE		SOFT	63 83
BROWN	LIMESTONE		HARD	83 103
DK GREY	LIMESTONE			103 128

ORIGINAL WELL DRILLED 08/11/68

ORIGINAL CASING OVERDRILLED &

REPLACED

Annular Space			Results of Well Yield Testing				
Depth Set at (m/ft) From To	Type of Sealing Used (Material and Type)	Volume Placed (m ³ /ft ³)	After test of well yield water was: <input checked="" type="checkbox"/> Clear and sand free <input type="checkbox"/> Other, specify:	Draw Down Time (min)	Water Level (m/ft)	Recovery Time (min)	Water Level (m/ft)
0 12	SAND CEMENT		If pumping discontinued, give reason: AIRLIFT REDEVELOP		36		
12 71.5	NEAT CEMENT PRESSURE GROUT		Pump intake set at (m/ft)	1	NA	1	NA
				2		2	

Method of Construction		Well Use	
<input type="checkbox"/> Casing Tool	<input type="checkbox"/> Diamond	<input type="checkbox"/> Public	<input type="checkbox"/> Commercial
<input type="checkbox"/> Rotary (Conventional)	<input type="checkbox"/> Jetting	<input type="checkbox"/> Domestic	<input type="checkbox"/> Municipal
<input type="checkbox"/> Rotary (Reverse)	<input type="checkbox"/> Drilling	<input type="checkbox"/> Livestock	<input type="checkbox"/> Test Hole
<input type="checkbox"/> Drilling	<input type="checkbox"/> Rigging	<input type="checkbox"/> Irrigation	<input type="checkbox"/> Cooling & Air Conditioning
<input type="checkbox"/> All purposes		<input type="checkbox"/> Industrial	
<input type="checkbox"/> Other, specify:		<input type="checkbox"/> Other, specify:	

Construction Record - Casing				Status of Well	
Inside Diameter (mm/in)	Open Hole (m/ft) Material (Galvanized, Fiberglass, Concrete, Plastic, Steel)	Wall Thickness (mm/in)	Depth (m/ft) From To	<input checked="" type="checkbox"/> Water Supply	<input type="checkbox"/> Recharge Well
3	STAINLESS 304	.322	+3 71.5	<input type="checkbox"/> Replacement Well	<input type="checkbox"/> Dewatering Well
				<input type="checkbox"/> Test Hole	<input type="checkbox"/> Observation and/or Monitoring Hole
				<input type="checkbox"/> Abandonment (Construction)	<input type="checkbox"/> Abandonment (Supply)
				<input type="checkbox"/> Abandonment (Floor)	<input type="checkbox"/> Abandonment (Water Quality)
				<input type="checkbox"/> Abandonment (Other)	<input type="checkbox"/> Other, specify:

Construction Record - Screen			
Outside Diameter (mm/in)	Material (Plastic, Galvanized Steel)	Slot No.	Depth (m/ft) From To

Water Data				Hole Diameter			
Water found at Depth	Kind of Water	g	Fresh	Untested	Depth (m/ft)	Diameter (mm/in)	
63	(m/ft)	Gas	Other, specify		From: To		
Water found at Depth	Kind of Water	g	Fresh	Untested	0	71.5	14.5
81	(m/ft)	Gas	Other, specify		71.5	126	6.25
Water found at Depth	Kind of Water	g	Fresh	Untested			
103	(m/ft)	Gas	Other, specify				

Well Contractor and Well Technician Information
Business Name of Well Contractor: Well Contractors' License No:
Dart Hopper Ltd. 2844Business Address (Street Number/Name): Municipality:
RR#7 St MarysProvince: Postal Code: Business E-mail Address:
Ont N4X1C9 hopper@cyg.netBusiness Telephone No. (inc. area code): Name of Well Technician (Last Name, First Name):
519-231-1780 HOPPER, JAVANWell Tag No.: Signature of Well Technician: Date of Completion: Submitter:
2315 12/8/2010

Map of Well Location			
Please provide a map below following instructions on the back.			

Comments:

Well owner's information package delivered		Date Package Delivered		Ministry Use Only	
<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	NA	11/22/2010	Audit No.	2115126
		Date Work Completed			
		11/22/2010			

Ministry's Copy

APPENDIX C

TW1-88 Water Taking

TABLE C1
TW1-88 DAILY WATER TAKING
WHITE WOLF PROPERTY MANAGEMENT
ERIN, ONTARIO

Date	Volume (US gpd)	Average Flow Rate Over Time Taken (US gpm)	Volume (L/day)	Average Flow Rate Over Time Taken (L/min)
01-Jan-24	31,480	22	119,165	82.8
02-Jan-24	20,980	15	79,418	55.2
03-Jan-24	28,540	20	108,036	75.0
04-Jan-24	29,180	20	110,458	76.7
05-Jan-24	25,960	18	98,269	68.2
06-Jan-24	31,470	22	119,127	82.7
07-Jan-24	29,090	20	110,118	76.5
08-Jan-24	2,250	2	8,517	5.9
09-Jan-24	20,970	15	79,380	55.1
10-Jan-24	10,490	7	39,709	27.6
11-Jan-24	20,980	15	79,418	55.2
12-Jan-24	20,980	15	79,418	55.2
13-Jan-24	20,970	15	79,380	55.1
14-Jan-24	20,980	15	79,418	55.2
15-Jan-24	20,980	15	79,418	55.2
16-Jan-24	29,040	20	109,928	76.3
17-Jan-24	26,200	18	99,178	68.9
18-Jan-24	18,110	13	68,554	47.6
19-Jan-24	10,500	7	39,747	27.6
20-Jan-24	0	0	0	0.0
21-Jan-24	31,400	22	118,862	82.5
22-Jan-24	10,490	7	39,709	27.6
23-Jan-24	21,000	15	79,494	55.2
24-Jan-24	21,510	15	81,424	56.5
25-Jan-24	21,800	15	82,522	57.3
26-Jan-24	10,270	7	38,876	27.0
27-Jan-24	10,640	7	40,277	28.0
28-Jan-24	2,490	2	9,426	6.5
29-Jan-24	40,530	28	153,423	106.5
30-Jan-24	67,040	47	253,774	176.2
31-Jan-24	24,440	17	92,515	64.2

TABLE C1
TW1-88 DAILY WATER TAKING
WHITE WOLF PROPERTY MANAGEMENT
ERIN, ONTARIO

Date	Volume (US gpd)	Average Flow Rate Over Time Taken (US gpm)	Volume (L/day)	Average Flow Rate Over Time Taken (L/min)
01-Feb-24	21,550	15	81,576	56.6
02-Feb-24	21,300	15	80,629	56.0
03-Feb-24	21,060	15	79,721	55.4
04-Feb-24	10,470	7	39,633	27.5
05-Feb-24	21,030	15	79,607	55.3
06-Feb-24	3,700	3	14,006	9.7
07-Feb-24	20,960	15	79,342	55.1
08-Feb-24	20,920	15	79,191	55.0
09-Feb-24	21,010	15	79,531	55.2
10-Feb-24	20,830	14	78,850	54.8
11-Feb-24	21,010	15	79,531	55.2
12-Feb-24	20,950	15	79,304	55.1
13-Feb-24	10,370	7	39,255	27.3
14-Feb-24	20,770	14	78,623	54.6
15-Feb-24	10,400	7	39,368	27.3
16-Feb-24	20,790	14	78,699	54.7
17-Feb-24	20,790	14	78,699	54.7
18-Feb-24	20,780	14	78,661	54.6
19-Feb-24	20,790	14	78,699	54.7
20-Feb-24	20,810	14	78,774	54.7
21-Feb-24	20,780	14	78,661	54.6
22-Feb-24	20,790	14	78,699	54.7
23-Feb-24	20,780	14	78,661	54.6
24-Feb-24	20,700	14	78,358	54.4
25-Feb-24	20,790	14	78,699	54.7
26-Feb-24	31,210	22	118,143	82.0
27-Feb-24	20,780	14	78,661	54.6
28-Feb-24	20,790	14	78,699	54.7
29-Feb-24	10,350	7	39,179	27.2

TABLE C1
TW1-88 DAILY WATER TAKING
WHITE WOLF PROPERTY MANAGEMENT
ERIN, ONTARIO

Date	Volume (US gpd)	Average Flow Rate Over Time Taken (US gpm)	Volume (L/day)	Average Flow Rate Over Time Taken (L/min)
01-Mar-24	25,210	18	95,430	66.3
02-Mar-24	16,280	11	61,626	42.8
03-Mar-24	25,570	18	96,793	67.2
04-Mar-24	16,450	11	62,270	43.2
05-Mar-24	20,750	14	78,547	54.5
06-Mar-24	23,740	16	89,866	62.4
07-Mar-24	17,830	12	67,494	46.9
08-Mar-24	31,180	22	118,029	82.0
09-Mar-24	20,780	14	78,661	54.6
10-Mar-24	31,160	22	117,953	81.9
11-Mar-24	10,400	7	39,368	27.3
12-Mar-24	0	0	0	0.0
13-Mar-24	77,360	54	292,839	203.4
14-Mar-24	20,790	14	78,699	54.7
15-Mar-24	11,750	8	44,479	30.9
16-Mar-24	29,780	21	112,730	78.3
17-Mar-24	41,560	29	157,322	109.3
18-Mar-24	10,400	7	39,368	27.3
19-Mar-24	31,170	22	117,991	81.9
20-Mar-24	10,390	7	39,330	27.3
21-Mar-24	10,400	7	39,368	27.3
22-Mar-24	10,390	7	39,330	27.3
23-Mar-24	31,200	22	118,105	82.0
24-Mar-24	31,180	22	118,029	82.0
25-Mar-24	41,580	29	157,397	109.3
26-Mar-24	13,460	9	50,952	35.4
27-Mar-24	28,020	19	106,067	73.7
28-Mar-24	20,790	14	78,699	54.7
29-Mar-24	17,060	12	64,579	44.8
30-Mar-24	24,480	17	92,667	64.4
31-Mar-24	30,290	21	114,660	79.6

TABLE C1
TW1-88 DAILY WATER TAKING
WHITE WOLF PROPERTY MANAGEMENT
ERIN, ONTARIO

Date	Volume (US gpd)	Average Flow Rate Over Time Taken (US gpm)	Volume (L/day)	Average Flow Rate Over Time Taken (L/min)
01-Apr-24	27,620	19	104,553	72.6
02-Apr-24	15,330	11	58,030	40.3
03-Apr-24	31,190	22	118,067	82.0
04-Apr-24	20,780	14	78,661	54.6
05-Apr-24	10,410	7	39,406	27.4
06-Apr-24	24,290	17	91,948	63.9
07-Apr-24	27,560	19	104,326	72.4
08-Apr-24	41,590	29	157,435	109.3
09-Apr-24	10,400	7	39,368	27.3
10-Apr-24	31,270	22	118,370	82.2
11-Apr-24	31,870	22	120,641	83.8
12-Apr-24	10,560	7	39,974	27.8
13-Apr-24	31,690	22	119,960	83.3
14-Apr-24	31,730	22	120,111	83.4
15-Apr-24	21,110	15	79,910	55.5
16-Apr-24	0	0	0	0.0
17-Apr-24	33,890	24	128,288	89.1
18-Apr-24	39,770	28	150,546	104.5
19-Apr-24	30,590	21	115,796	80.4
20-Apr-24	23,380	16	88,503	61.5
21-Apr-24	39,660	28	150,129	104.3
22-Apr-24	21,040	15	79,645	55.3
23-Apr-24	21,010	15	79,531	55.2
24-Apr-24	29,020	20	109,853	76.3
25-Apr-24	33,980	24	128,628	89.3
26-Apr-24	30,180	21	114,244	79.3
27-Apr-24	22,330	16	84,528	58.7
28-Apr-24	35,100	24	132,868	92.3
29-Apr-24	27,920	19	105,689	73.4
30-Apr-24	0	0	0	0.0

TABLE C1
TW1-88 DAILY WATER TAKING
WHITE WOLF PROPERTY MANAGEMENT
ERIN, ONTARIO

Date	Volume (US gpd)	Average Flow Rate Over Time Taken (US gpm)	Volume (L/day)	Average Flow Rate Over Time Taken (L/min)
01-May-24	21,050	15	79,683	55.3
02-May-24	31,550	22	119,430	82.9
03-May-24	38,450	27	145,549	101.1
04-May-24	37,120	26	140,514	97.6
05-May-24	40,010	28	151,454	105.2
06-May-24	21,030	15	79,607	55.3
07-May-24	27,970	19	105,878	73.5
08-May-24	24,460	17	92,591	64.3
09-May-24	31,550	22	119,430	82.9
10-May-24	42,050	29	159,176	110.5
11-May-24	28,210	20	106,786	74.2
12-May-24	34,790	24	131,694	91.5
13-May-24	21,030	15	79,607	55.3
14-May-24	10,520	7	39,823	27.7
15-May-24	34,550	24	130,786	90.8
16-May-24	31,530	22	119,354	82.9
17-May-24	21,020	15	79,569	55.3
18-May-24	10,520	7	39,823	27.7
19-May-24	33,640	23	127,341	88.4
20-May-24	39,930	28	151,151	105.0
21-May-24	16,650	12	63,027	43.8
22-May-24	28,810	20	109,058	75.7
23-May-24	13,110	9	49,627	34.5
24-May-24	14,310	10	54,169	37.6
25-May-24	34,020	24	128,780	89.4
26-May-24	33,070	23	125,184	86.9
27-May-24	33,470	23	126,698	88.0
28-May-24	26,670	19	100,957	70.1
29-May-24	34,390	24	130,180	90.4
30-May-24	21,030	15	79,607	55.3
31-May-24	16,590	12	62,800	43.6

TABLE C1
TW1-88 DAILY WATER TAKING
WHITE WOLF PROPERTY MANAGEMENT
ERIN, ONTARIO

Date	Volume (US gpd)	Average Flow Rate Over Time Taken (US gpm)	Volume (L/day)	Average Flow Rate Over Time Taken (L/min)
01-Jun-24	25,480	18	96,452	67.0
02-Jun-24	31,520	22	119,316	82.9
03-Jun-24	21,030	15	79,607	55.3
04-Jun-24	21,030	15	79,607	55.3
05-Jun-24	83,680	58	316,763	220.0
06-Jun-24	31,530	22	119,354	82.9
07-Jun-24	36,330	25	137,524	95.5
08-Jun-24	16,110	11	60,983	42.3
09-Jun-24	42,040	29	159,139	110.5
10-Jun-24	58,700	41	222,204	154.3
11-Jun-24	46,390	32	175,605	121.9
12-Jun-24	59,540	41	225,383	156.5
13-Jun-24	48,430	34	183,327	127.3
14-Jun-24	45,770	32	173,258	120.3
15-Jun-24	56,140	39	212,513	147.6
16-Jun-24	52,550	36	198,923	138.1
17-Jun-24	42,770	30	161,902	112.4
18-Jun-24	82,990	58	314,151	218.2
19-Jun-24	50,390	35	190,747	132.5
20-Jun-24	64,990	45	246,014	170.8
21-Jun-24	42,030	29	159,101	110.5
22-Jun-24	35,190	24	133,209	92.5
23-Jun-24	48,710	34	184,387	128.0
24-Jun-24	42,050	29	159,176	110.5
25-Jun-24	31,540	22	119,392	82.9
26-Jun-24	82,220	57	311,236	216.1
27-Jun-24	64,690	45	244,878	170.1
28-Jun-24	55,130	38	208,690	144.9
29-Jun-24	91,810	64	347,538	241.3
30-Jun-24	75,380	52	285,344	198.2

TABLE C1
TW1-88 DAILY WATER TAKING
WHITE WOLF PROPERTY MANAGEMENT
ERIN, ONTARIO

Date	Volume (US gpd)	Average Flow Rate Over Time Taken (US gpm)	Volume (L/day)	Average Flow Rate Over Time Taken (L/min)
01-Jul-24	71,530	50	270,770	188.0
02-Jul-24	51,170	36	193,699	134.5
03-Jul-24	48,300	34	182,835	127.0
04-Jul-24	37,050	26	140,249	97.4
05-Jul-24	42,030	29	159,101	110.5
06-Jul-24	42,040	29	159,139	110.5
07-Jul-24	73,500	51	278,228	193.2
08-Jul-24	52,830	37	199,983	138.9
09-Jul-24	53,420	37	202,217	140.4
10-Jul-24	380	0	1,438	1.0
11-Jul-24	73,390	51	277,811	192.9
12-Jul-24	43,240	30	163,681	113.7
13-Jul-24	44,270	31	167,580	116.4
14-Jul-24	50,970	35	192,942	134.0
15-Jul-24	29,410	20	111,329	77.3
16-Jul-24	51,900	36	196,463	136.4
17-Jul-24	21,440	15	81,159	56.4
18-Jul-24	41,760	29	158,079	109.8
19-Jul-24	10,650	7	40,315	28.0
20-Jul-24	0	0	0	0.0
21-Jul-24	18,690	13	70,749	49.1
22-Jul-24	65,210	45	246,847	171.4
23-Jul-24	21,010	15	79,531	55.2
24-Jul-24	13,090	9	49,551	34.4
25-Jul-24	39,370	27	149,032	103.5
26-Jul-24	10,500	7	39,747	27.6
27-Jul-24	21,020	15	79,569	55.3
28-Jul-24	31,520	22	119,316	82.9
29-Jul-24	21,530	15	81,500	56.6
30-Jul-24	20,330	14	76,957	53.4
31-Jul-24	21,000	15	79,494	55.2

TABLE C1
TW1-88 DAILY WATER TAKING
WHITE WOLF PROPERTY MANAGEMENT
ERIN, ONTARIO

Date	Volume (US gpd)	Average Flow Rate Over Time Taken (US gpm)	Volume (L/day)	Average Flow Rate Over Time Taken (L/min)
01-Aug-24	10,490	7	39,709	27.6
02-Aug-24	5,920	4	22,410	15.6
03-Aug-24	15,000	10	56,781	39.4
04-Aug-24	10,510	7	39,785	27.6
05-Aug-24	21,000	15	79,494	55.2
06-Aug-24	0	0	0	0.0
07-Aug-24	11,990	8	45,387	31.5
08-Aug-24	29,920	21	113,259	78.7
09-Aug-24	21,000	15	79,494	55.2
10-Aug-24	21,000	15	79,494	55.2
11-Aug-24	20,990	15	79,456	55.2
12-Aug-24	0	0	0	0.0
13-Aug-24	730	1	2,763	1.9
14-Aug-24	15,230	11	57,652	40.0
15-Aug-24	10,500	7	39,747	27.6
16-Aug-24	4,260	3	16,126	11.2
17-Aug-24	6,210	4	23,507	16.3
18-Aug-24	10,510	7	39,785	27.6
19-Aug-24	19,850	14	75,140	52.2
20-Aug-24	0	0	0	0.0
21-Aug-24	14,400	10	54,510	37.9
22-Aug-24	38,010	26	143,883	99.9
23-Aug-24	14,940	10	56,554	39.3
24-Aug-24	37,410	26	141,612	98.3
25-Aug-24	31,510	22	119,278	82.8
26-Aug-24	20,990	15	79,456	55.2
27-Aug-24	23,210	16	87,859	61.0
28-Aug-24	60,630	42	229,509	159.4
29-Aug-24	21,000	15	79,494	55.2
30-Aug-24	31,520	22	119,316	82.9
31-Aug-24	31,510	22	119,278	82.8

TABLE C1
TW1-88 DAILY WATER TAKING
WHITE WOLF PROPERTY MANAGEMENT
ERIN, ONTARIO

Date	Volume (US gpd)	Average Flow Rate Over Time Taken (US gpm)	Volume (L/day)	Average Flow Rate Over Time Taken (L/min)
01-Sep-24	31,500	22	119,240	82.8
02-Sep-24	34,440	24	130,370	90.5
03-Sep-24	25,880	18	97,966	68.0
04-Sep-24	13,000	9	49,210	34.2
05-Sep-24	42,010	29	159,025	110.4
06-Sep-24	31,500	22	119,240	82.8
07-Sep-24	21,010	15	79,531	55.2
08-Sep-24	52,510	36	198,772	138.0
09-Sep-24	21,140	15	80,024	55.6
10-Sep-24	31,300	22	118,483	82.3
11-Sep-24	31,530	22	119,354	82.9
12-Sep-24	52,510	36	198,772	138.0
13-Sep-24	43,530	30	164,779	114.4
14-Sep-24	40,420	28	153,006	106.3
15-Sep-24	42,000	29	158,987	110.4
16-Sep-24	31,520	22	119,316	82.9
17-Sep-24	7,010	5	26,536	18.4
18-Sep-24	24,380	17	92,288	64.1
19-Sep-24	31,500	22	119,240	82.8
20-Sep-24	41,940	29	158,760	110.3
21-Sep-24	0	0	0	0.0
22-Sep-24	0	0	0	0.0
23-Sep-24	41,960	29	158,836	110.3
24-Sep-24	31,710	22	120,035	83.4
25-Sep-24	41,480	29	157,019	109.0
26-Sep-24	27,110	19	102,622	71.3
27-Sep-24	35,890	25	135,858	94.3
28-Sep-24	38,570	27	146,003	101.4
29-Sep-24	48,710	34	184,387	128.0
30-Sep-24	53,940	37	204,185	141.8

TABLE C1
TW1-88 DAILY WATER TAKING
WHITE WOLF PROPERTY MANAGEMENT
ERIN, ONTARIO

Date	Volume (US gpd)	Average Flow Rate Over Time Taken (US gpm)	Volume (L/day)	Average Flow Rate Over Time Taken (L/min)
01-Oct-24	58,200	40	220,311	153.0
02-Oct-24	31,520	22	119,316	82.9
03-Oct-24	42,010	29	159,025	110.4
04-Oct-24	62,970	44	238,367	165.5
05-Oct-24	73,480	51	278,152	193.2
06-Oct-24	42,370	29	160,388	111.4
07-Oct-24	44,430	31	168,186	116.8
08-Oct-24	49,410	34	187,037	129.9
09-Oct-24	31,550	22	119,430	82.9
10-Oct-24	53,880	37	203,958	141.6
11-Oct-24	51,060	35	193,283	134.2
12-Oct-24	23,290	16	88,162	61.2
13-Oct-24	29,160	20	110,383	76.7
14-Oct-24	10,490	7	39,709	27.6
15-Oct-24	42,000	29	158,987	110.4
16-Oct-24	28,790	20	108,982	75.7
17-Oct-24	55,260	38	209,182	145.3
18-Oct-24	10,500	7	39,747	27.6
19-Oct-24	0	0	0	0.0
20-Oct-24	0	0	0	0.0
21-Oct-24	0	0	0	0.0
22-Oct-24	0	0	0	0.0
23-Oct-24	51,750	36	195,895	136.0
24-Oct-24	61,700	43	233,560	162.2
25-Oct-24	0	0	0	0.0
26-Oct-24	9,970	7	37,741	26.2
27-Oct-24	9,980	7	37,778	26.2
28-Oct-24	0	0	0	0.0
29-Oct-24	19,910	14	75,368	52.3
30-Oct-24	20,390	14	77,185	53.6
31-Oct-24	670	0	2,536	1.8

TABLE C1
TW1-88 DAILY WATER TAKING
WHITE WOLF PROPERTY MANAGEMENT
ERIN, ONTARIO

Date	Volume (US gpd)	Average Flow Rate Over Time Taken (US gpm)	Volume (L/day)	Average Flow Rate Over Time Taken (L/min)
01-Nov-24	10,580	7	40,050	27.8
02-Nov-24	31,590	22	119,581	83.0
03-Nov-24	52,620	37	199,188	138.3
04-Nov-24	42,100	29	159,366	110.7
05-Nov-24	51,580	36	195,251	135.6
06-Nov-24	43,280	30	163,833	113.8
07-Nov-24	31,580	22	119,543	83.0
08-Nov-24	31,580	22	119,543	83.0
09-Nov-24	31,590	22	119,581	83.0
10-Nov-24	41,920	29	158,684	110.2
11-Nov-24	21,100	15	79,872	55.5
12-Nov-24	28,890	20	109,360	75.9
13-Nov-24	34,300	24	129,840	90.2
14-Nov-24	0	0	0	0.0
15-Nov-24	21,060	15	79,721	55.4
16-Nov-24	0	0	0	0.0
17-Nov-24	4,130	3	15,634	10.9
18-Nov-24	16,830	12	63,708	44.2
19-Nov-24	10,560	7	39,974	27.8
20-Nov-24	8,300	6	31,419	21.8
21-Nov-24	21,720	15	82,219	57.1
22-Nov-24	19,830	14	75,065	52.1
23-Nov-24	1,450	1	5,489	3.8
24-Nov-24	9,630	7	36,453	25.3
25-Nov-24	11,480	8	43,457	30.2
26-Nov-24	10,630	7	40,239	27.9
27-Nov-24	10,550	7	39,936	27.7
28-Nov-24	0	0	0	0.0
29-Nov-24	21,080	15	79,796	55.4
30-Nov-24	10,070	7	38,119	26.5

TABLE C1
TW1-88 DAILY WATER TAKING
WHITE WOLF PROPERTY MANAGEMENT
ERIN, ONTARIO

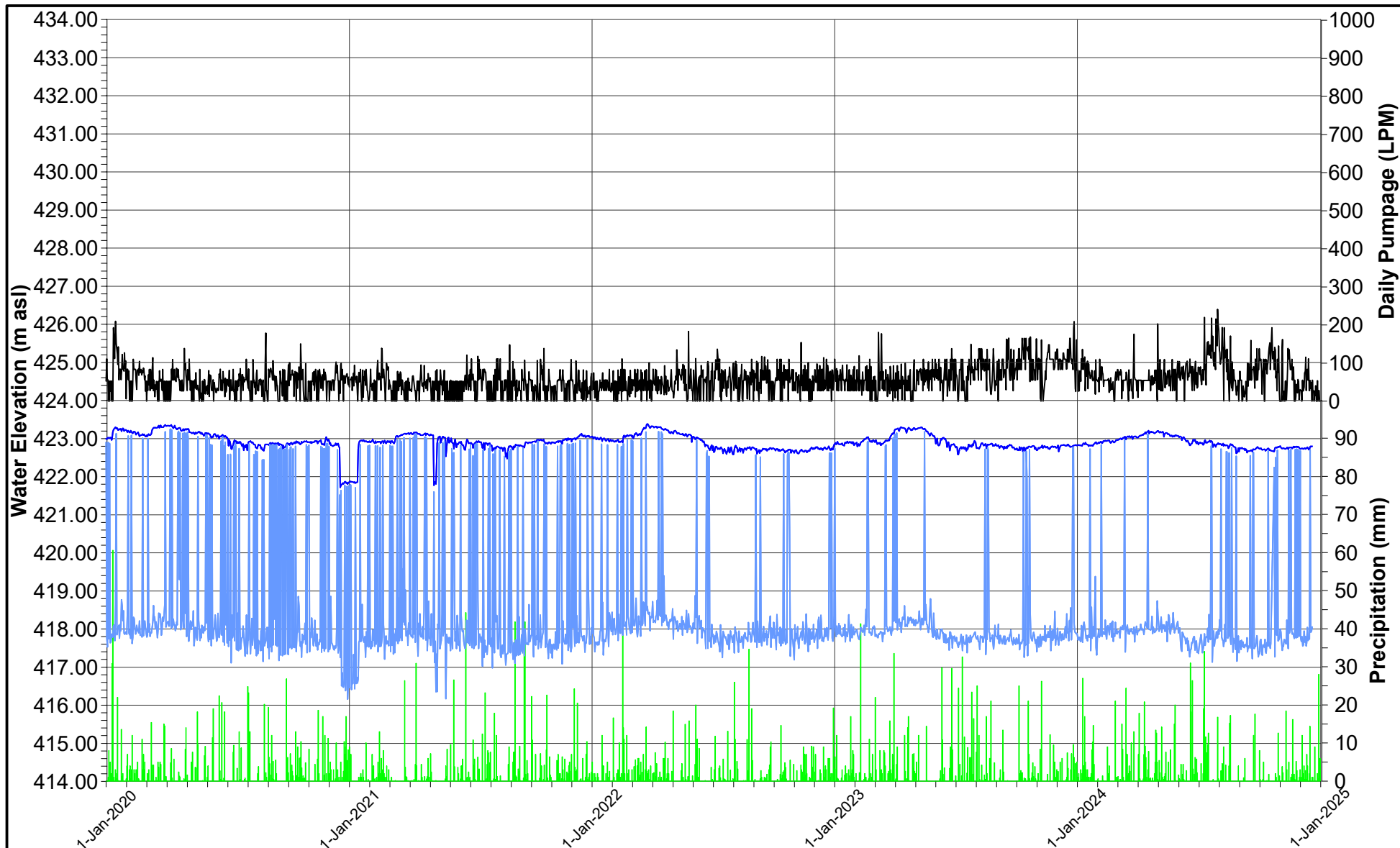
Date	Volume (US gpd)	Average Flow Rate Over Time Taken (US gpm)	Volume (L/day)	Average Flow Rate Over Time Taken (L/min)
01-Dec-24	10,550	7	39,936	27.7
02-Dec-24	14,060	10	53,223	37.0
03-Dec-24	28,030	19	106,105	73.7
04-Dec-24	29,950	21	113,373	78.7
05-Dec-24	43,890	30	166,142	115.4
06-Dec-24	10,520	7	39,823	27.7
07-Dec-24	31,480	22	119,165	82.8
08-Dec-24	31,710	22	120,035	83.4
09-Dec-24	21,030	15	79,607	55.3
10-Dec-24	42,270	29	160,009	111.1
11-Dec-24	10,520	7	39,823	27.7
12-Dec-24	10,740	7	40,655	28.2
13-Dec-24	20,740	14	78,509	54.5
14-Dec-24	12,730	9	48,188	33.5
15-Dec-24	18,760	13	71,014	49.3
16-Dec-24	0	0	0	0.0
17-Dec-24	21,050	15	79,683	55.3
18-Dec-24	10,510	7	39,785	27.6
19-Dec-24	10,540	7	39,898	27.7
20-Dec-24	0	0	0	0.0
21-Dec-24	9,980	7	37,778	26.2
22-Dec-24	5,650	4	21,388	14.9
23-Dec-24	15,480	11	58,598	40.7
24-Dec-24	0	0	0	0.0
25-Dec-24	0	0	0	0.0
26-Dec-24	20,580	14	77,904	54.1
27-Dec-24	0	0	0	0.0
28-Dec-24	10,200	7	38,611	26.8
29-Dec-24	10,590	7	40,087	27.8
30-Dec-24	0	0	0	0.0
31-Dec-24	0	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 MARCH 2025
DESIGN KS
REVIEW GP
APPROVED GP

PROJECT

WHITE WOLF PROPERTY MANAGEMENT
Town of Erin, Ontario

TITLE

HYDROGRAPH FOR TW1-88
2024 ANNUAL MONITORING REPORT

PROJECT NO.

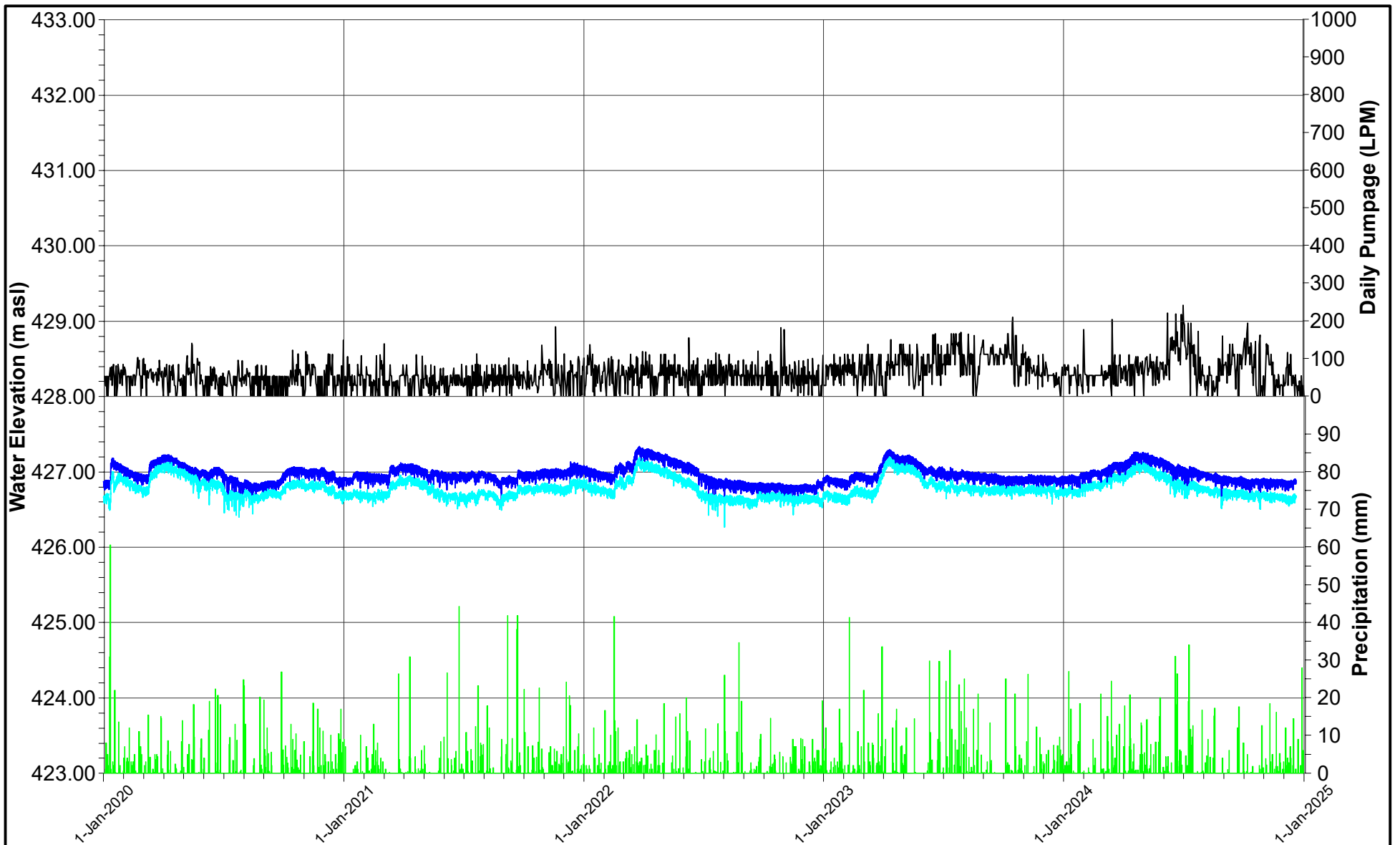
CA0049769.2148

REV

A

FIGURE

D1



— TW1-88 Daily Pumpage
■ Precipitation
— MW1-18A
— MW1-18B



DATE MARCH 2025
DESIGN KS
REVIEW GP
APPROVED GP

PROJECT

WHITE WOLF PROPERTY MANAGEMENT
Town of Erin, Ontario

TITLE

HYDROGRAPHS FOR MW1-18
2024 ANNUAL MONITORING REPORT

PROJECT NO.

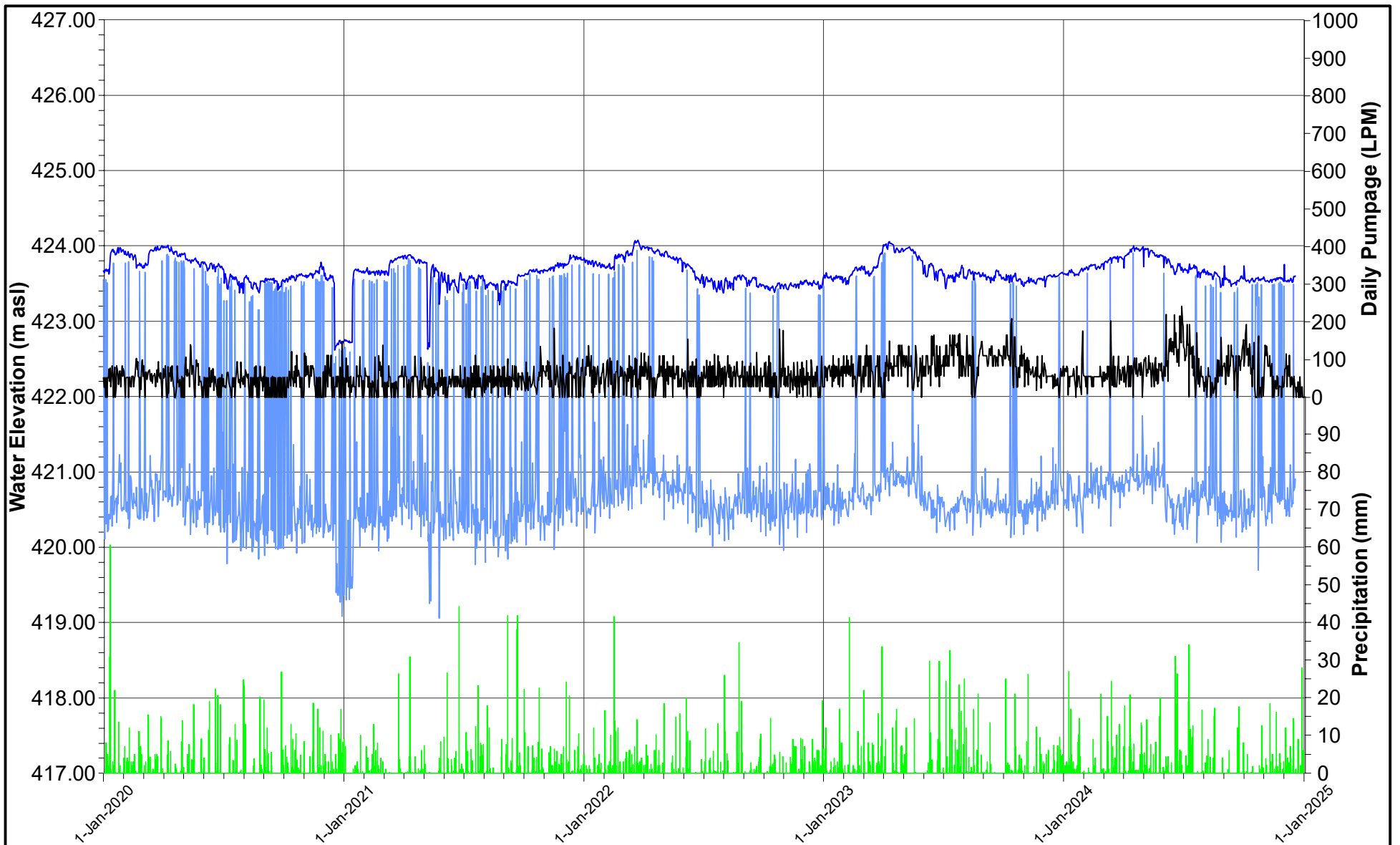
CA0049769.2148

REV

A

FIGURE

D2



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



DATE MARCH 2025
DESIGN KS
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APPROVED GP

PROJECT

WHITE WOLF PROPERTY MANAGEMENT
Town of Erin, Ontario

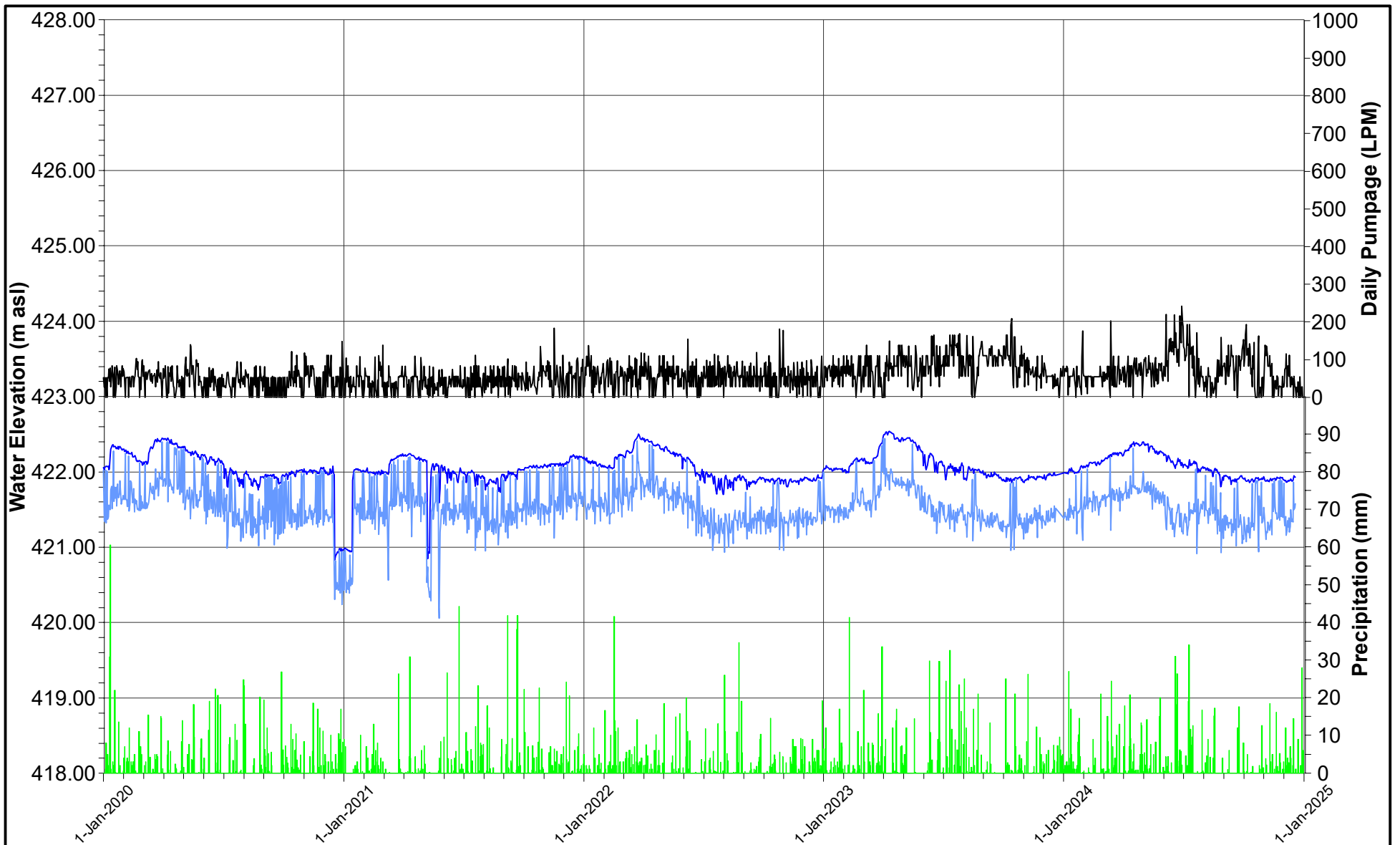
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HYDROGRAPH FOR MW5A-05
2024 ANNUAL MONITORING REPORT

PROJECT NO.
CA0049769.2148

REV
A

FIGURE
D3



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



DATE MARCH 2025
DESIGN AB
REVIEW GP
APPROVED GP

PROJECT

WHITE WOLF PROPERTY MANAGEMENT
Town of Erin, Ontario

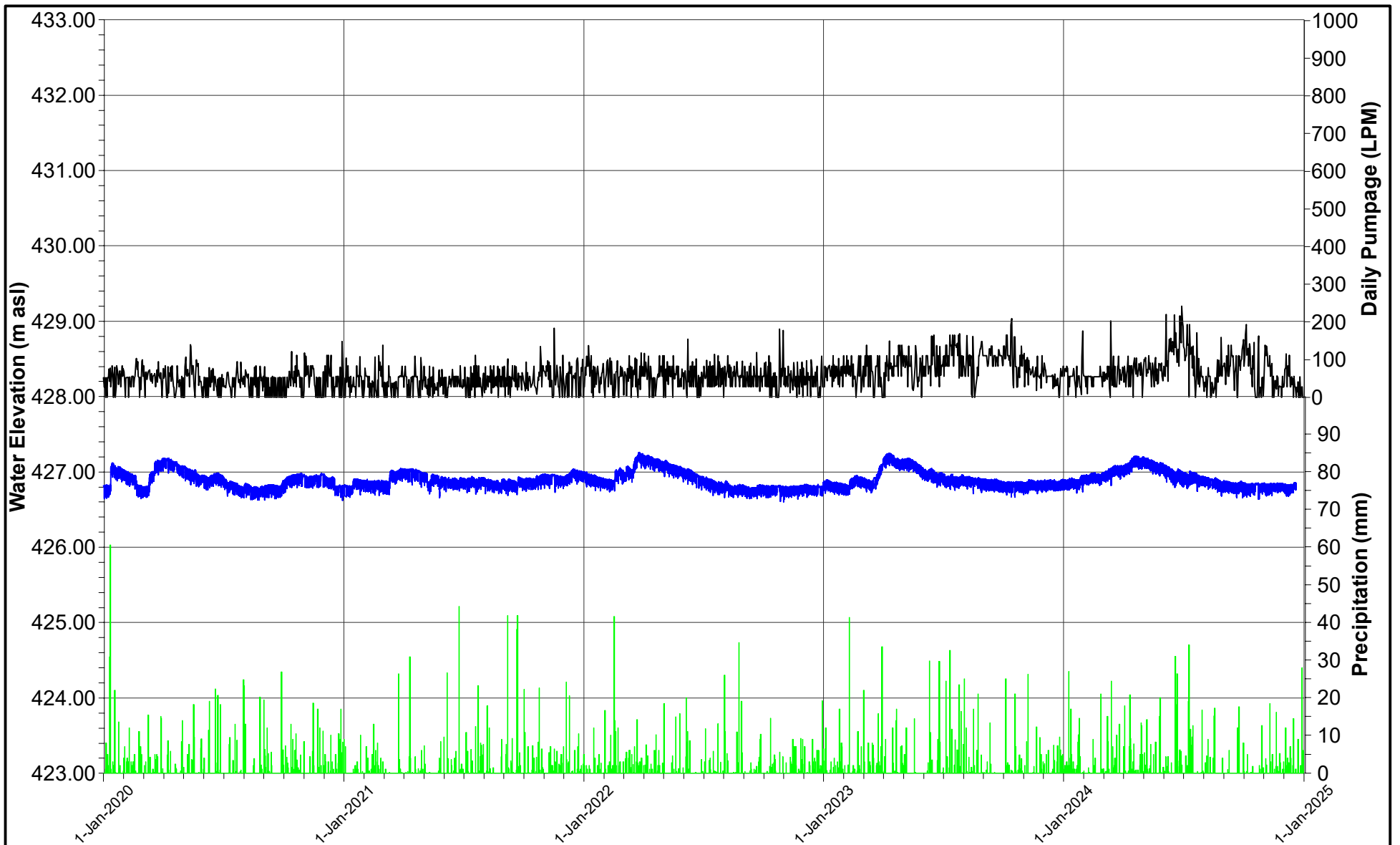
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HYDROGRAPH FOR MW6A-05
2024 ANNUAL MONITORING REPORT

PROJECT NO.
CA0049769.2148

REV
A

FIGURE
D4



— TW1-88 Daily Pumpage
■ Precipitation
— MW11A-08



DATE MARCH 2025
DESIGN KS
REVIEW GP
APPROVED GP

PROJECT

WHITE WOLF PROPERTY MANAGEMENT
Town of Erin, Ontario

TITLE

HYDROGRAPHS FOR MW11A-08
2024 ANNUAL MONITORING REPORT

PROJECT NO.

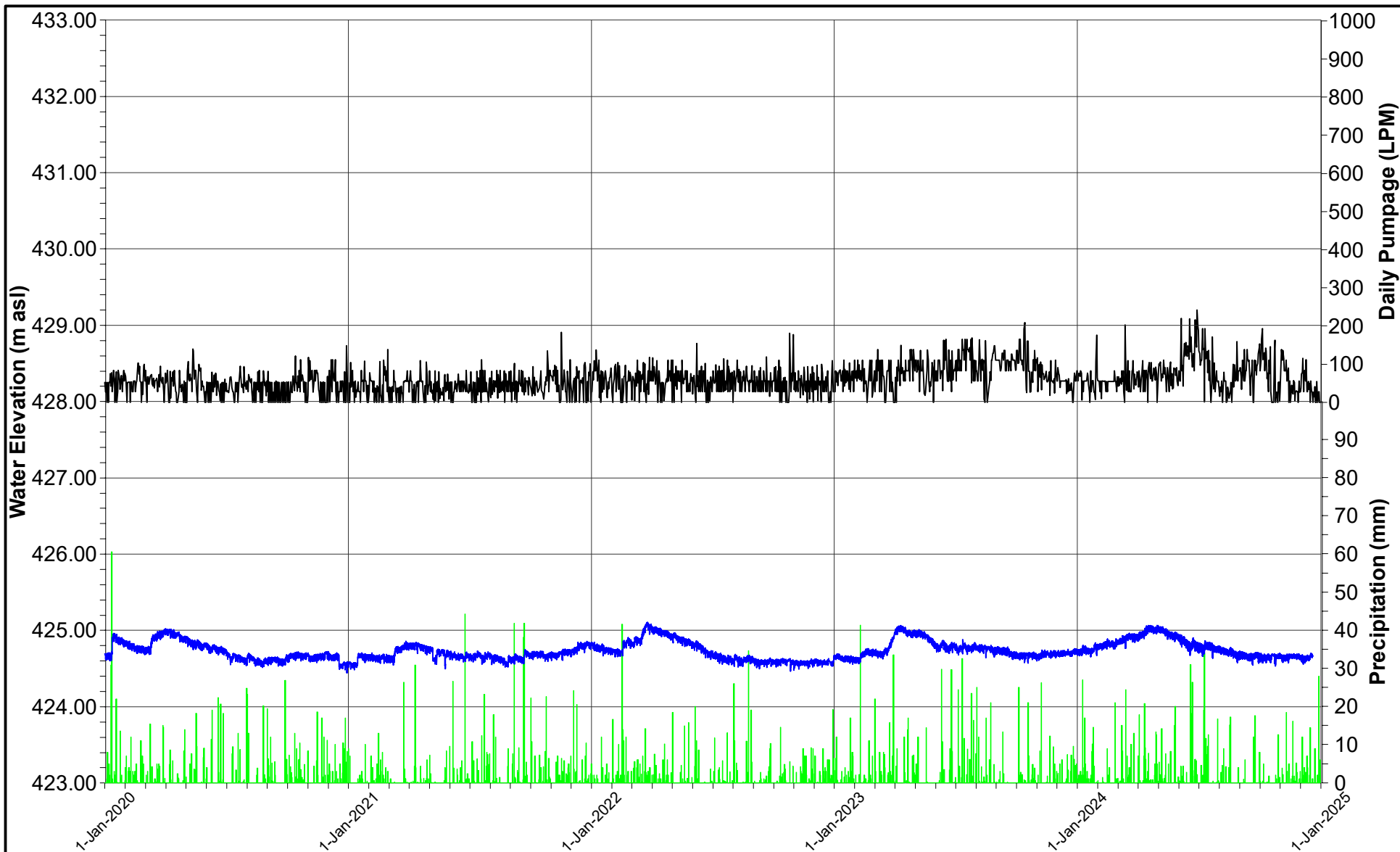
CA0049769.2148

REV

A

FIGURE

D5



■ Precipitation
— TW1-88 Daily Pumpage
—●— MW12A-08



DATE MARCH 2025
 DESIGN KS
 REVIEW GP
 APPROVED GP

PROJECT

WHITE WOLF PROPERTY MANAGEMENT
 Town of Erin, Ontario

TITLE

HYDROGRAPHS FOR MW12A-08
2024 ANNUAL MONITORING REPORT

PROJECT NO.

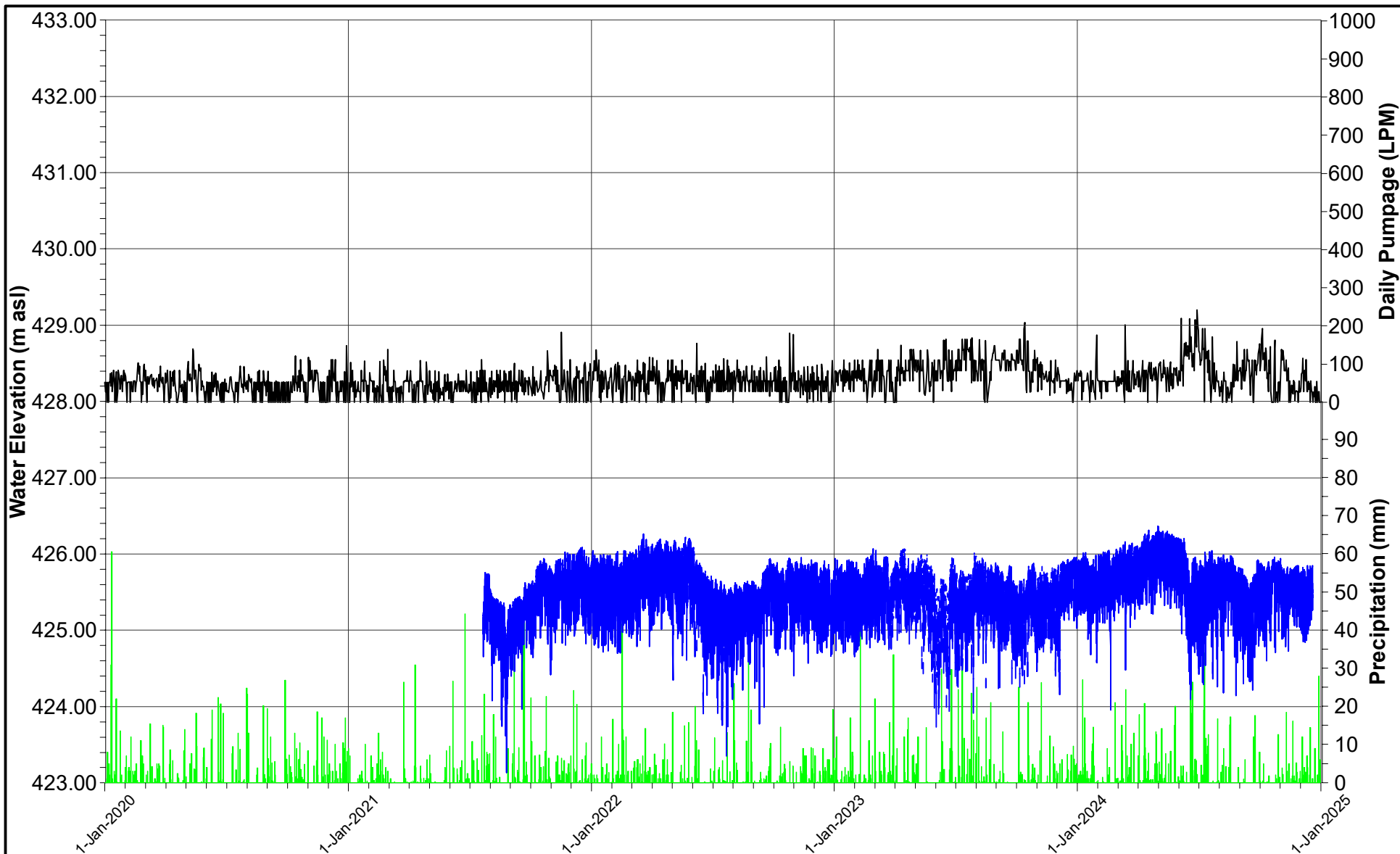
CA0049769.2148

REV

A

FIGURE

D6



— TW1-88 Daily Pumpage
— Precipitation
— MW13A-20-7



DATE MARCH 2025
DESIGN KS
REVIEW GP
APPROVED GP

PROJECT

WHITE WOLF PROPERTY MANAGEMENT
Town of Erin, Ontario

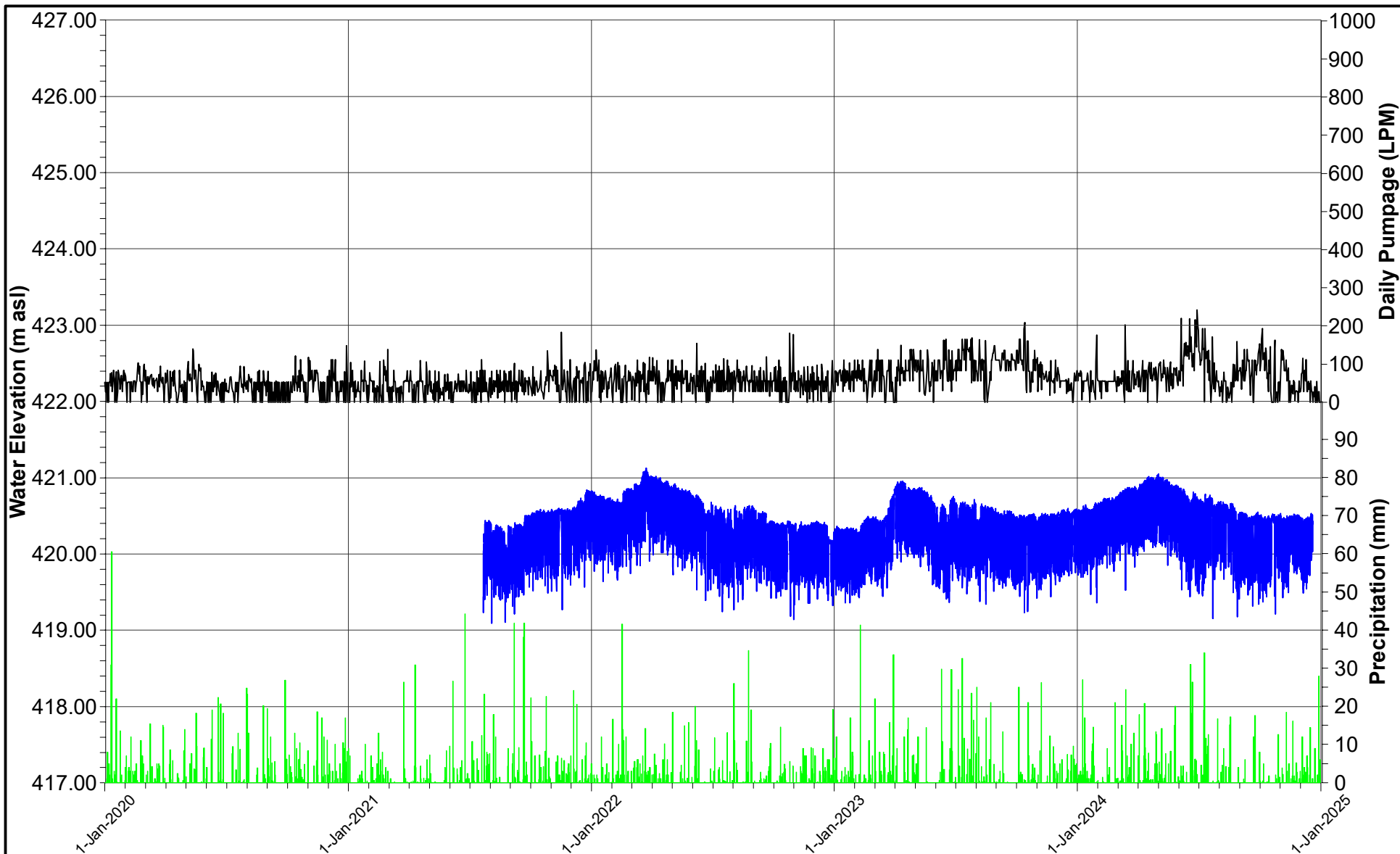
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HYDROGRAPH FOR MW13A-20-7
2024 ANNUAL MONITORING REPORT

PROJECT NO.
CA0049769.2148

REV
A

FIGURE
D7



— TW1-88 Daily Pumpage
— Precipitation
— MW14A-20-7



DATE MARCH 2025
DESIGN KS
REVIEW GP
APPROVED GP

PROJECT

WHITE WOLF PROPERTY MANAGEMENT
Town of Erin, Ontario

TITLE

HYDROGRAPH FOR MW14A-20-7
2024 ANNUAL MONITORING REPORT

PROJECT NO.

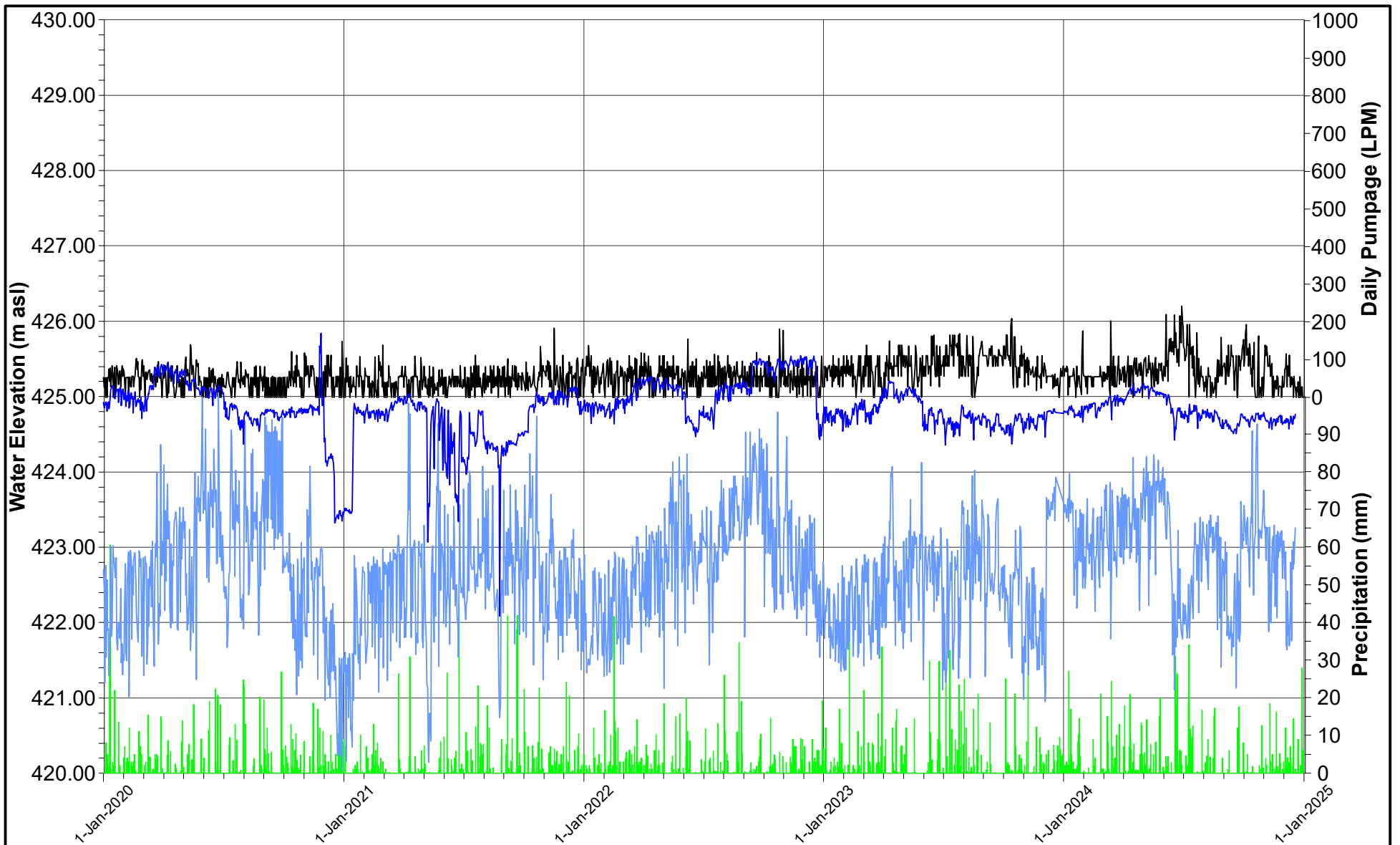
CA0049769.2148

REV

A

FIGURE

D8



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



DATE MARCH 2025
DESIGN KS
REVIEW GP
APPROVED GP

PROJECT

WHITE WOLF PROPERTY MANAGEMENT
Town of Erin, Ontario

TITLE

HYDROGRAPHS FOR D3
2024 ANNUAL MONITORING REPORT

PROJECT NO.

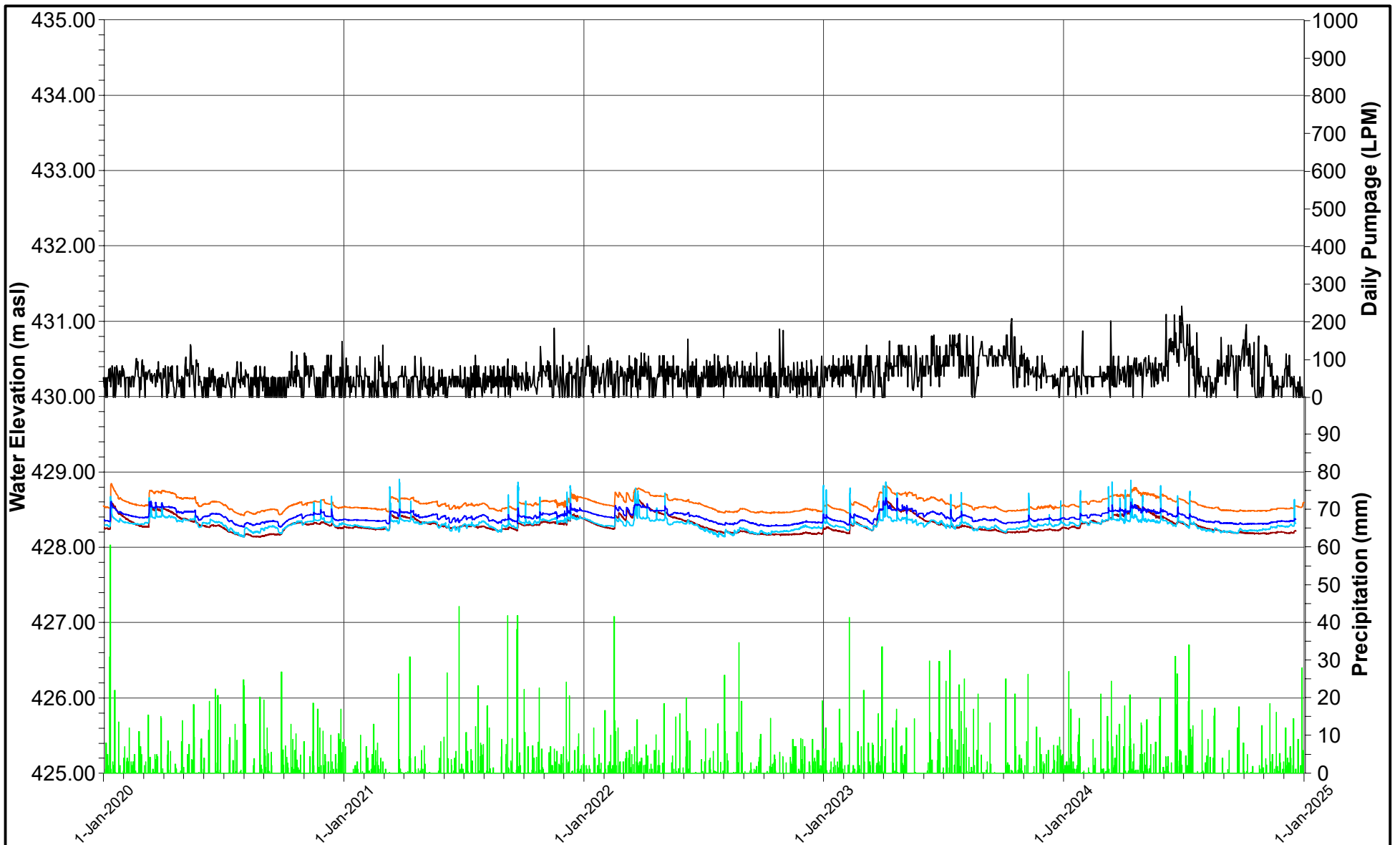
CA0049769.2148

REV

A

FIGURE

D9



- TW1-88 Daily Pumpage
- █ Precipitation
- MW3A-00
- MW3B-00
- MW5B-05
- MW6B-05



DATE	MARCH 2025
DESIGN	KS
REVIEW	GP
APPROVED	GP

PROJECT

WHITE WOLF PROPERTY MANAGEMENT
Town of Erin, Ontario

TITLE

**HYDROGRAPHS FOR MW3-00, MW5B-05,
AND MW6B-05
2024 ANNUAL MONITORING REPORT**

PROJECT NO.

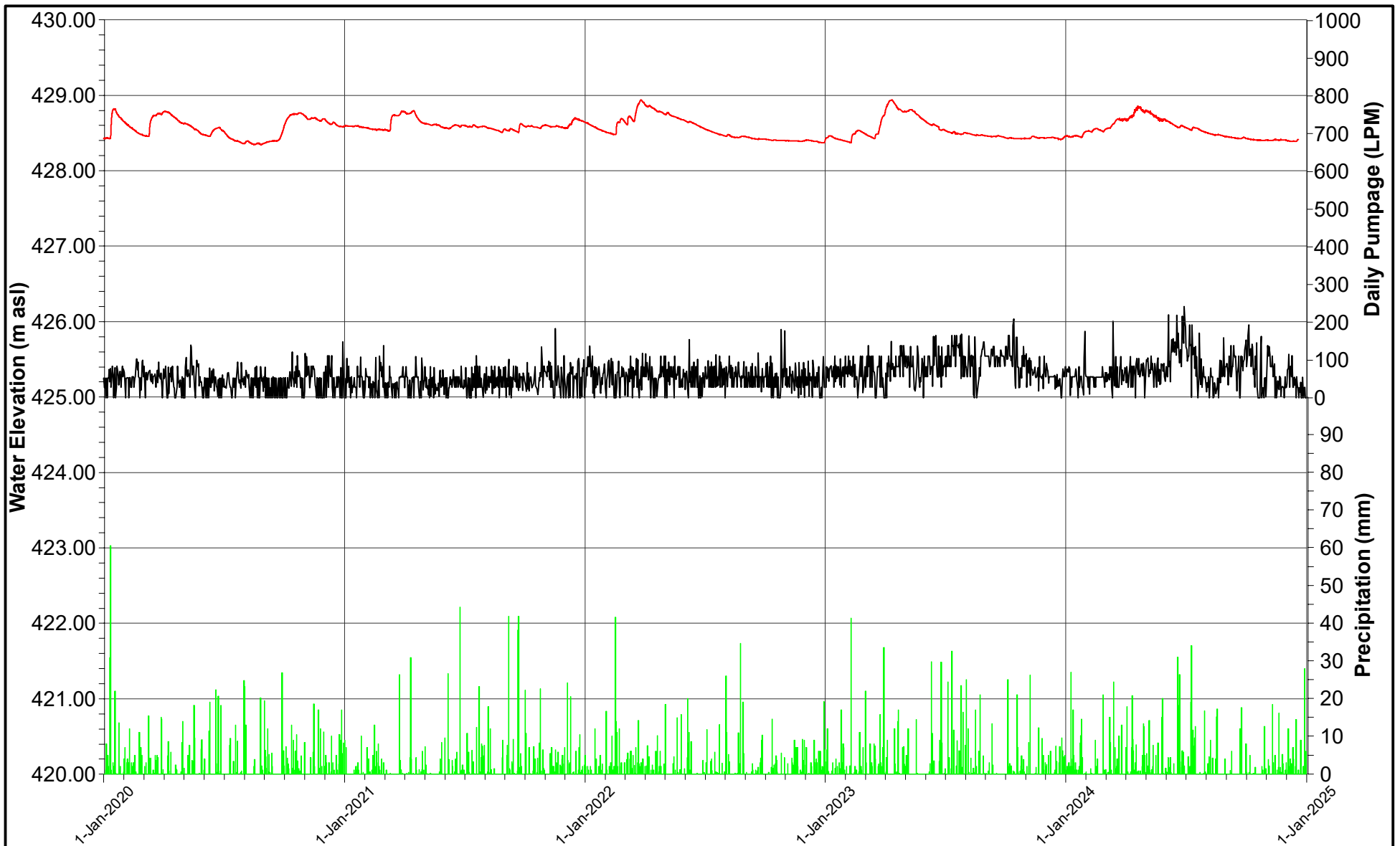
CA0049769.2148

REV

A

FIGURE

D10



— TW1-88 Daily Pumpage
 ■ Precipitation
 — MW11B-08



DATE MARCH 2025
 DESIGN KS
 REVIEW GP
 APPROVED GP

PROJECT

WHITE WOLF PROPERTY MANAGEMENT
 Town of Erin, Ontario

TITLE

HYDROGRAPHS FOR MW11B-08
2024 ANNUAL MONITORING REPORT

PROJECT NO.

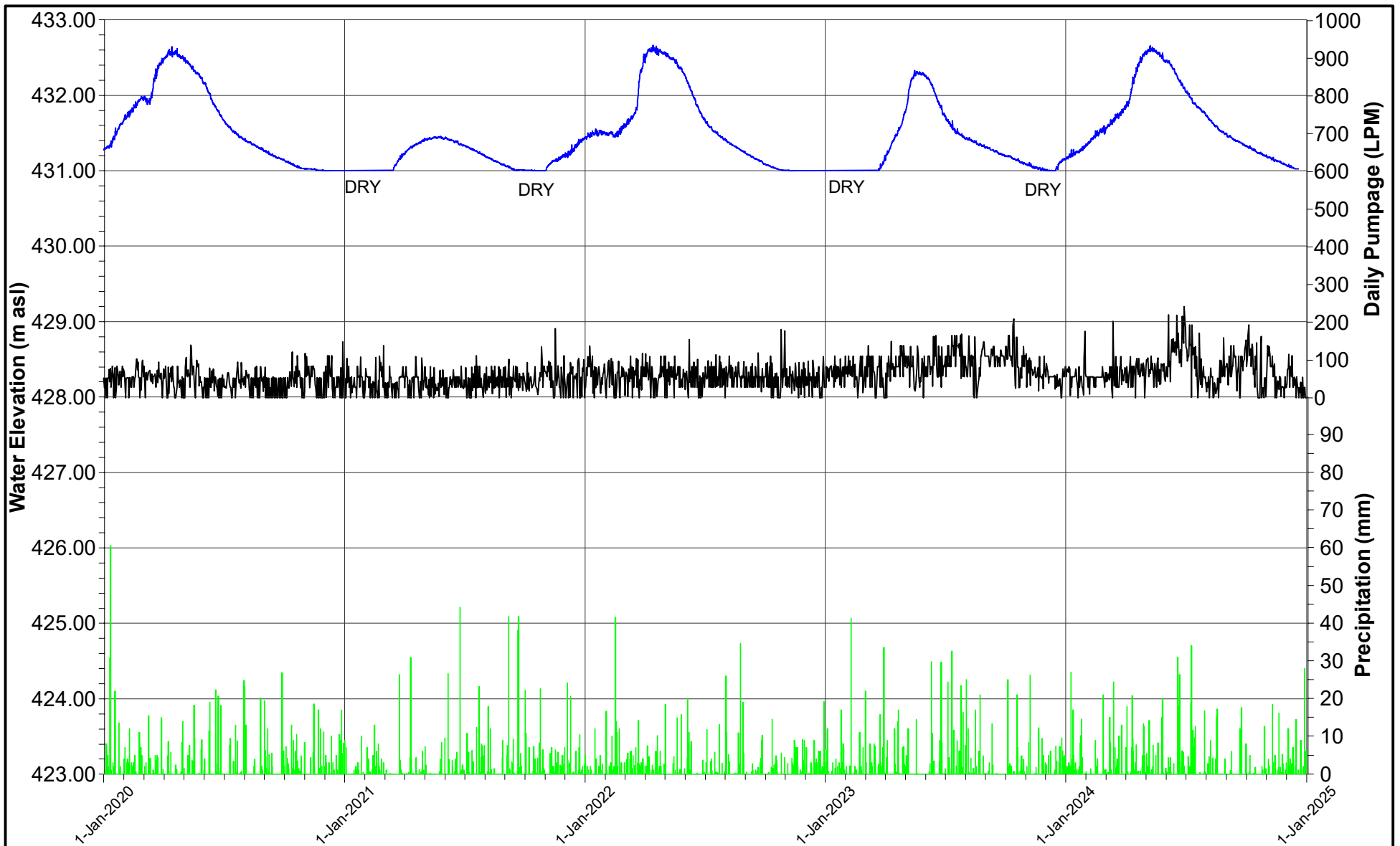
CA0049769.2148

REV

A

FIGURE

D11



— TW1-88 Daily Pumpage
 ■ Precipitation
 — MW12B-08



DATE MARCH 2025
 DESIGN KS
 REVIEW GP
 APPROVED GP

PROJECT

WHITE WOLF PROPERTY MANAGEMENT
 Town of Erin, Ontario

TITLE

HYDROGRAPHS FOR MW12B-08
2024 ANNUAL MONITORING REPORT

PROJECT NO.

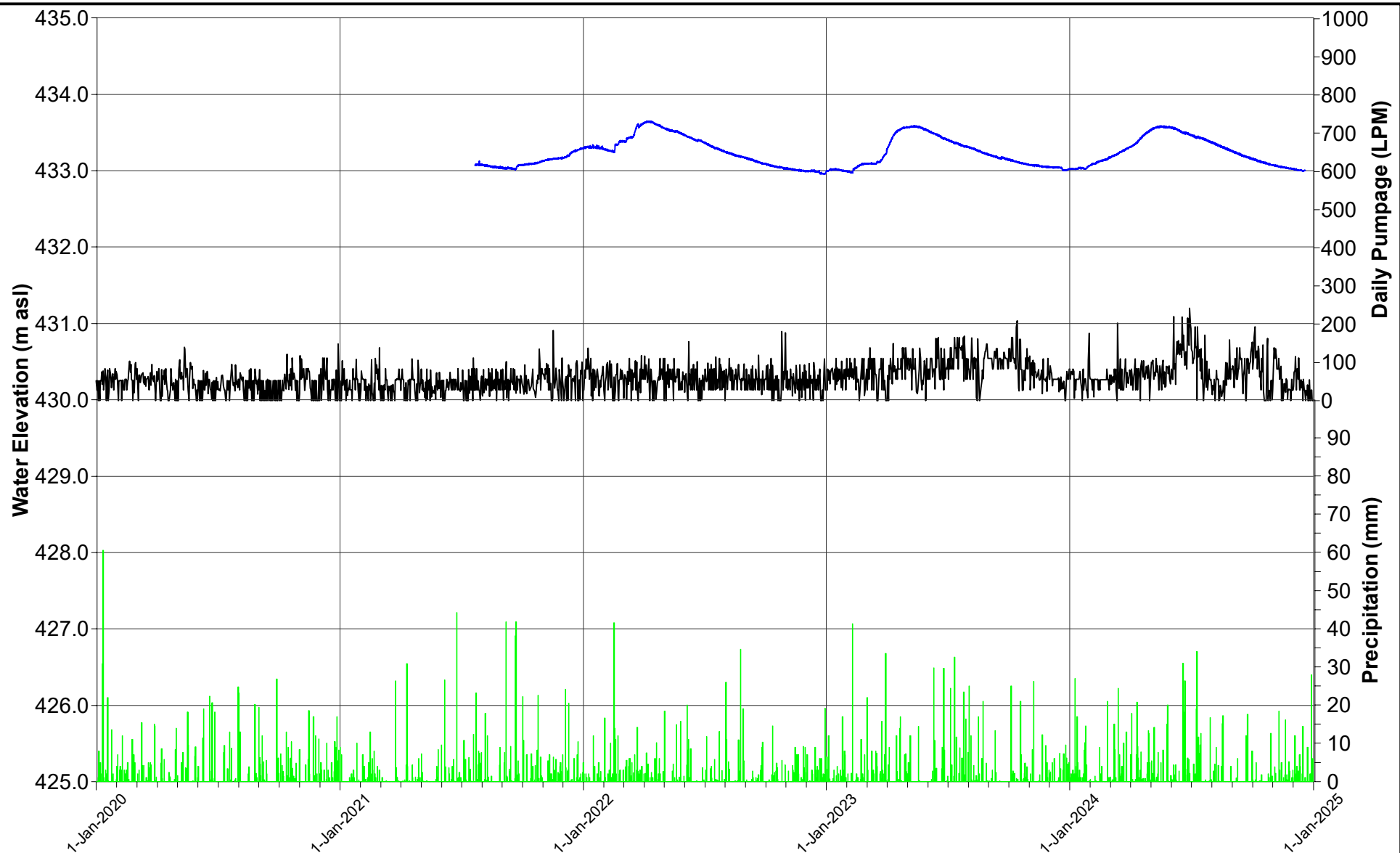
CA0049769.2148

REV

A

FIGURE

D12



— TW1-88 Daily Pumpage
— Precipitation
— MW13B-20-7



DATE MARCH 2025
DESIGN KS
REVIEW GP
APPROVED GP

PROJECT

WHITE WOLF PROPERTY MANAGEMENT
Town of Erin, Ontario

TITLE

**HYDROGRAPH FOR MW13B-20-7
2024 ANNUAL MONITORING REPORT**

PROJECT NO.

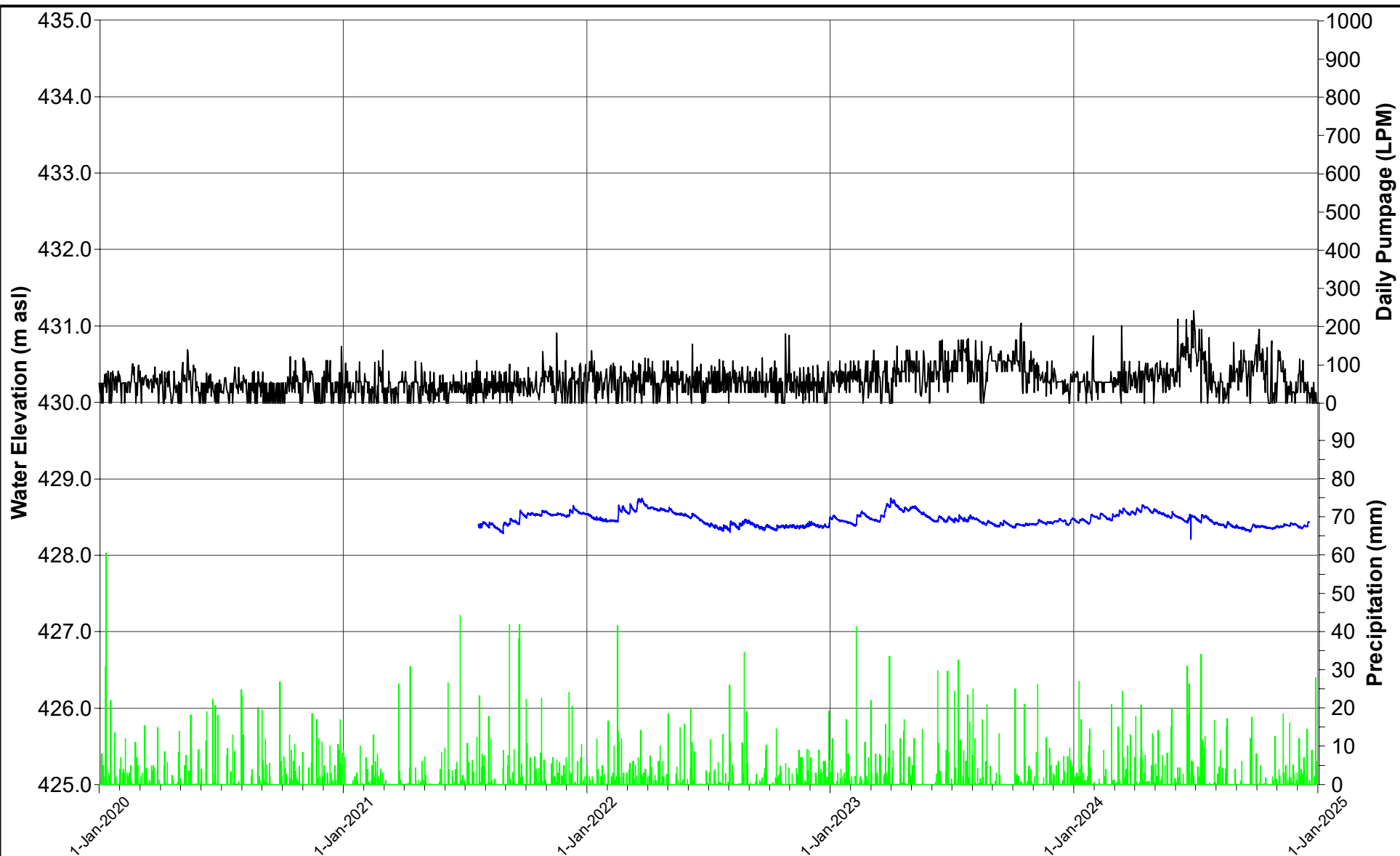
CA0049769.2148

REV

A

FIGURE

D13



— TW1-88 Daily Pumpage
■ Precipitation
— MW14B-20-6



DATE MARCH 2025
DESIGN KS
REVIEW GP
APPROVED GP

PROJECT

WHITE WOLF PROPERTY MANAGEMENT
Town of Erin, Ontario

TITLE

**HYDROGRAPH FOR MW14B-20-6
2024 ANNUAL MONITORING REPORT**

PROJECT NO.

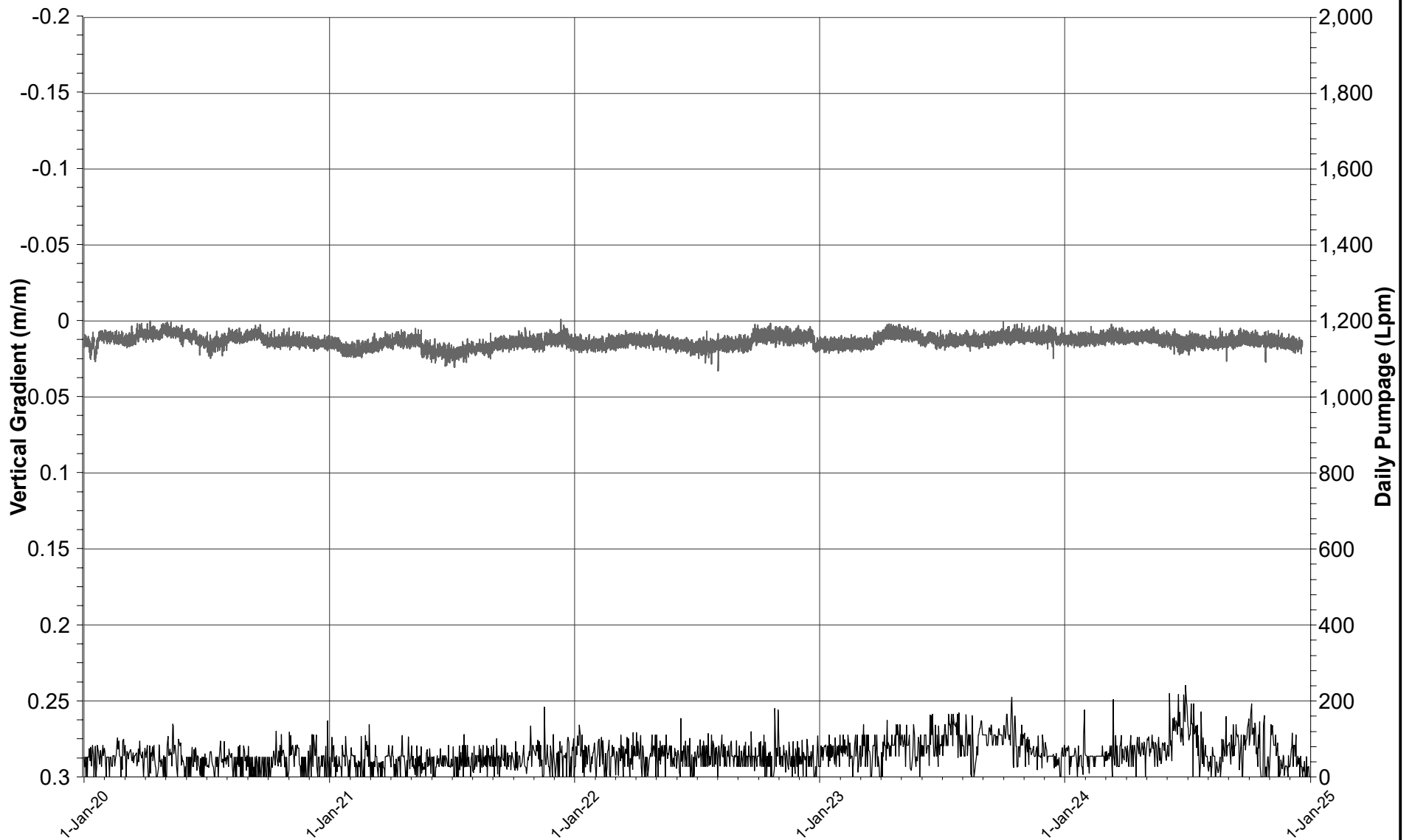
CA0049769.2148

REV

A

FIGURE

D14



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



DATE MARCH 2025
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 APPROVED GP

PROJECT

WHITE WOLF PROPERTY MANAGEMENT
 Town of Erin, Ontario

TITLE

**MW1-18 VERTICAL GRADIENT
 2024 ANNUAL MONITORING REPORT**

PROJECT NO.

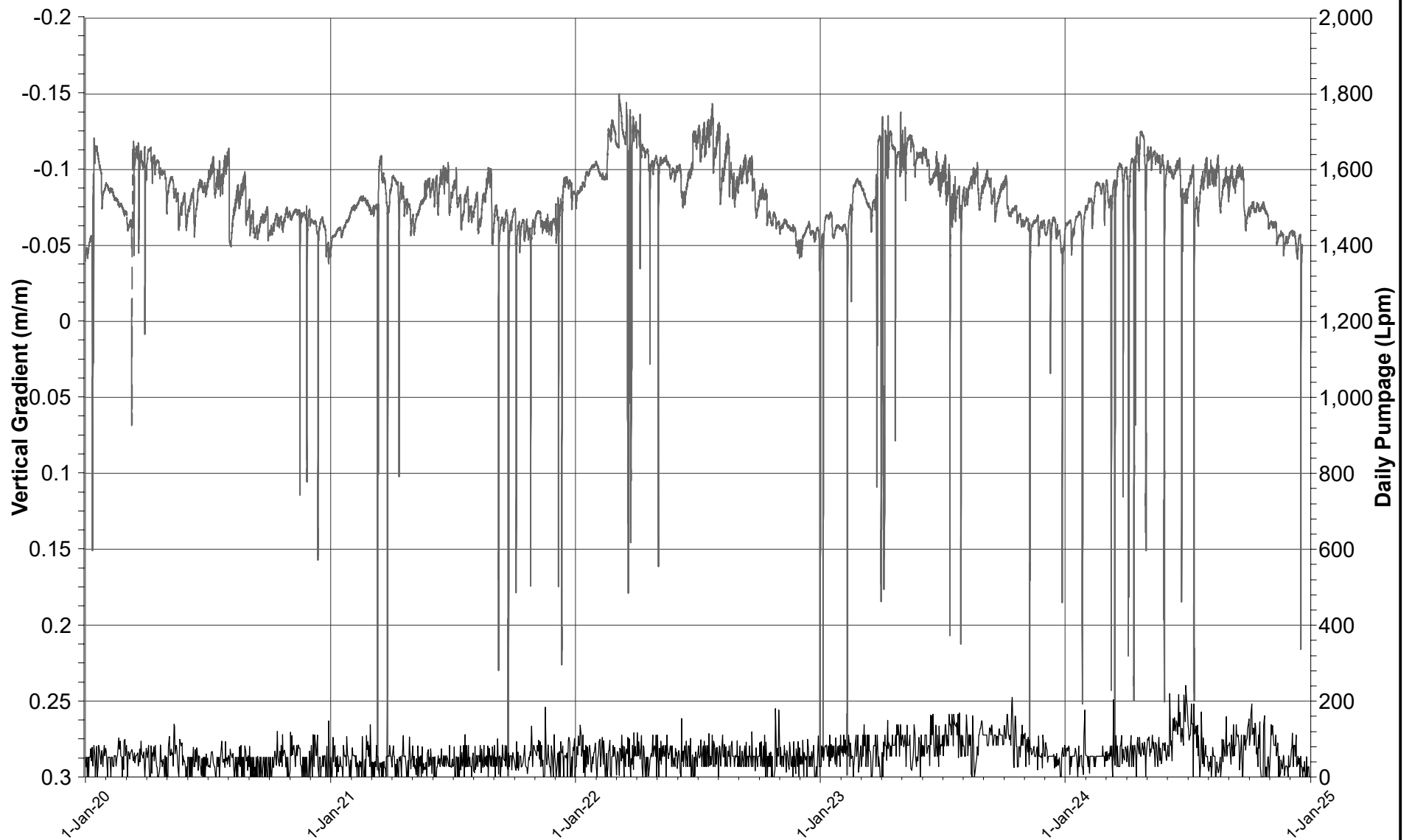
CA0049769.2148

REV

A

FIGURE

D15



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



DATE MARCH 2025
 DESIGN AB
 REVIEW GP
 APPROVED GP

PROJECT

WHITE WOLF PROPERTY MANAGEMENT
 Town of Erin, Ontario

TITLE

**MW3-00 VERTICAL GRADIENT
 2024 ANNUAL MONITORING REPORT**

PROJECT NO.

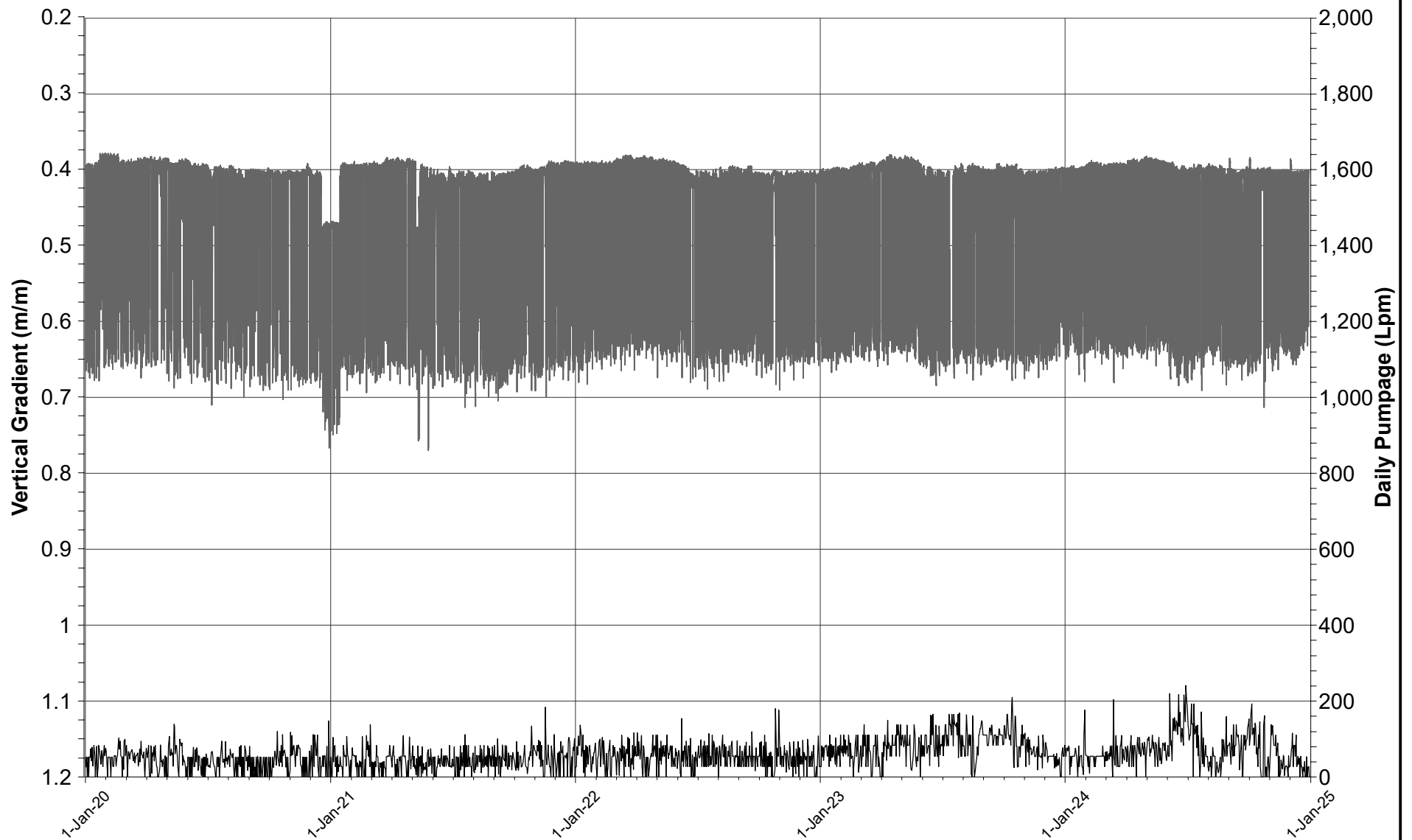
CA0049769.2148

REV

A

FIGURE

D16



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



DATE MARCH 2025
 DESIGN AB
 REVIEW GP
 APPROVED GP

PROJECT

WHITE WOLF PROPERTY MANAGEMENT
 Town of Erin, Ontario

TITLE

MW5-05 VERTICAL GRADIENT
2024 ANNUAL MONITORING REPORT

PROJECT NO.

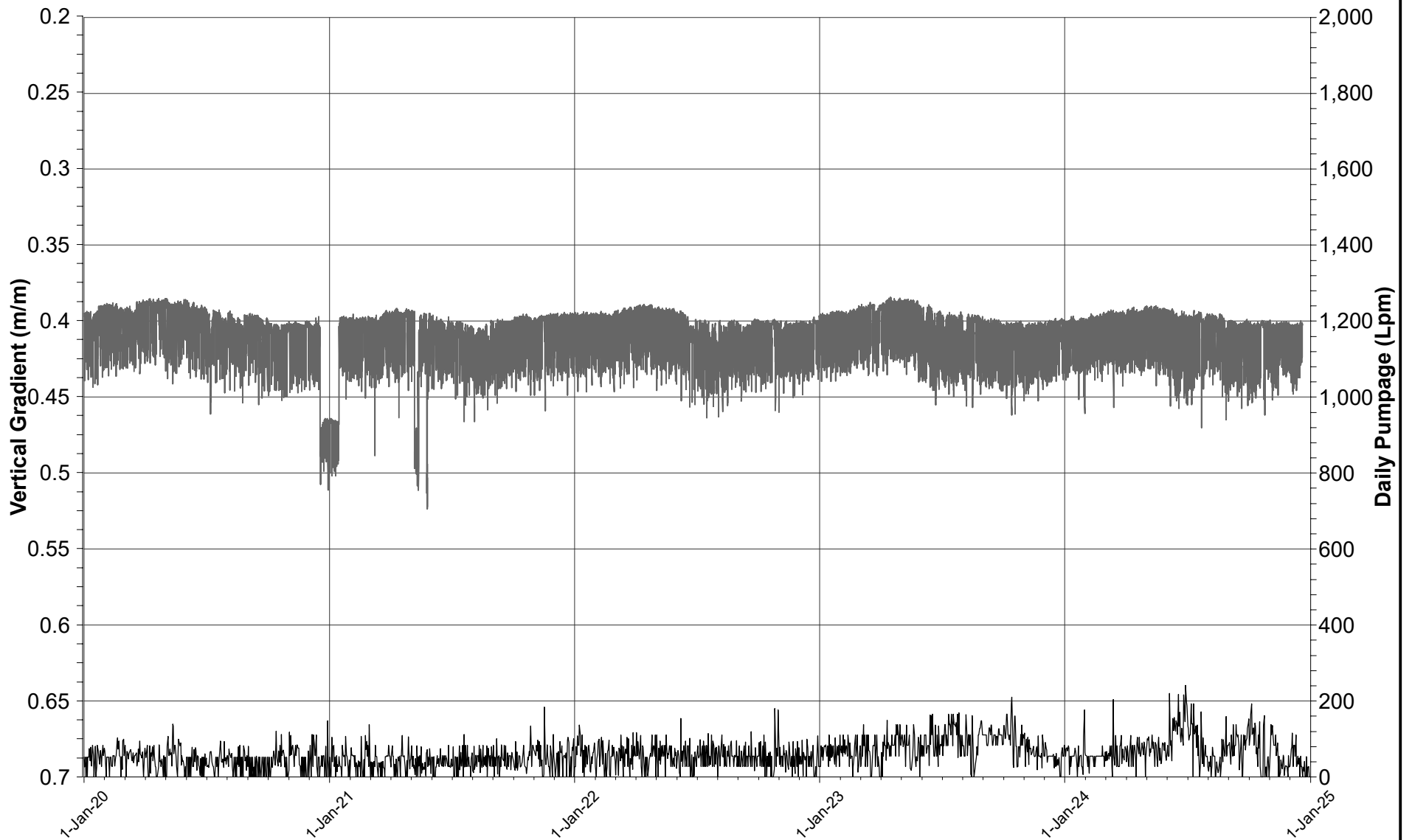
CA0049769.2148

REV

A

FIGURE

D17



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



DATE MARCH 2025
 DESIGN AB
 REVIEW GP
 APPROVED GP

PROJECT

WHITE WOLF PROPERTY MANAGEMENT
 Town of Erin, Ontario

TITLE

MW6-05 VERTICAL GRADIENT
2024 ANNUAL MONITORING REPORT

PROJECT NO.

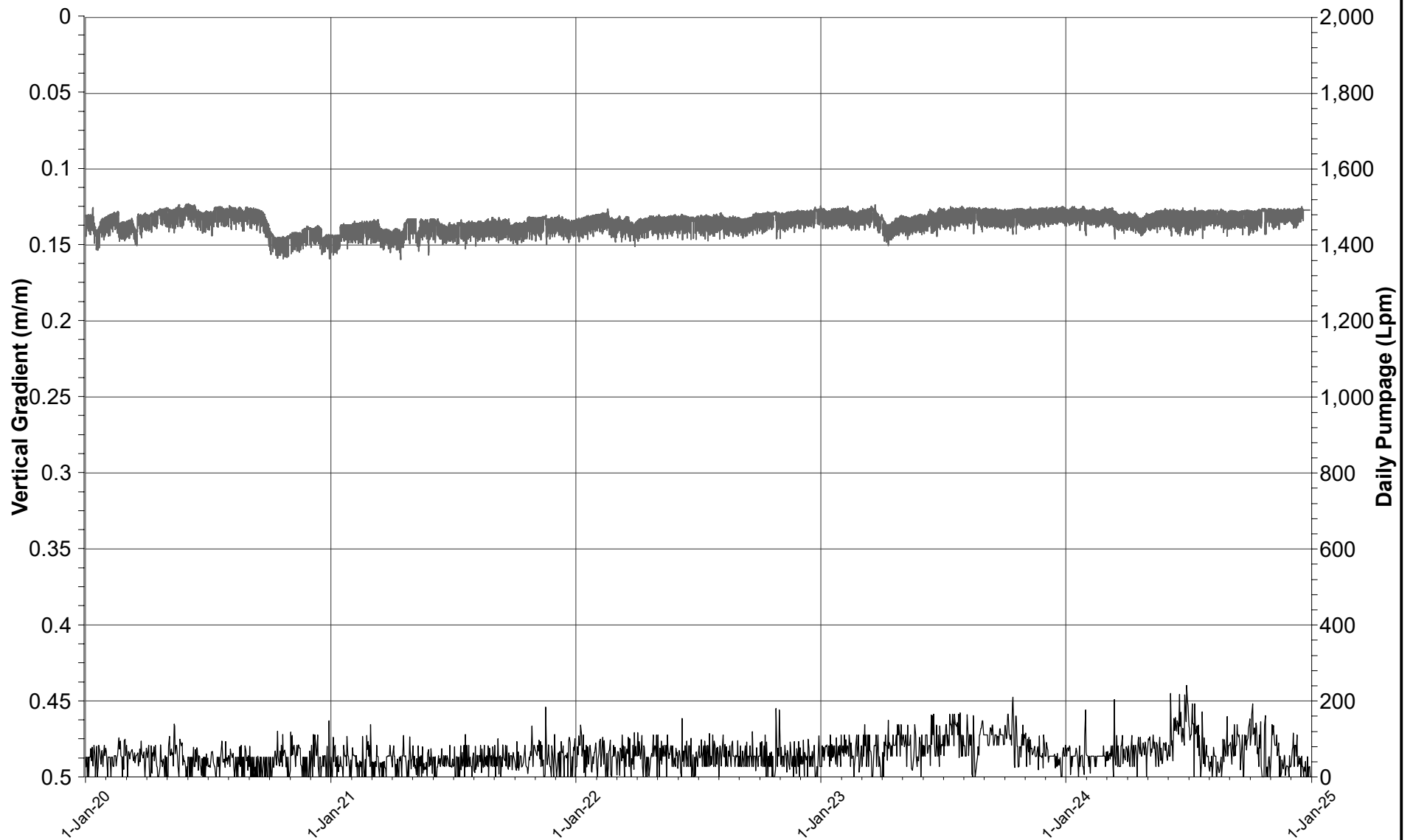
CA0049769.2148

REV

A

FIGURE

D18



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



DATE MARCH 2025
 DESIGN AB
 REVIEW GP
 APPROVED GP

PROJECT

WHITE WOLF PROPERTY MANAGEMENT
 Town of Erin, Ontario

TITLE

**MW11-08 VERTICAL GRADIENT
 2024 ANNUAL MONITORING REPORT**

PROJECT NO.

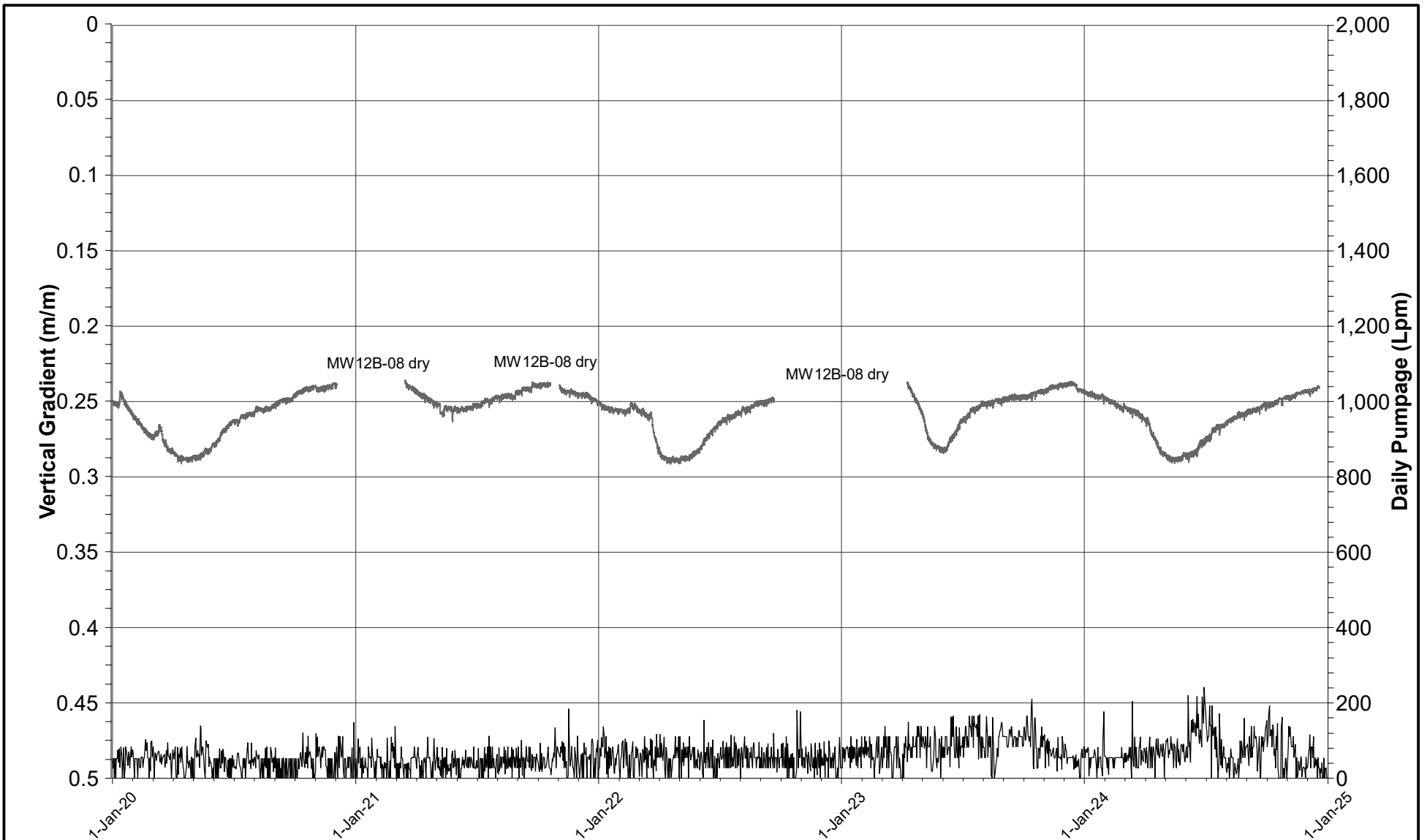
CA0049769.2148

REV

A

FIGURE

D19



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



DATE MARCH 2025
 DESIGN KS
 REVIEW GP
 APPROVED GP

PROJECT

WHITE WOLF PROPERTY MANAGEMENT
 Town of Erin, Ontario

TITLE

**MW12-08 VERTICAL GRADIENT
 2024 ANNUAL MONITORING REPORT**

PROJECT NO.

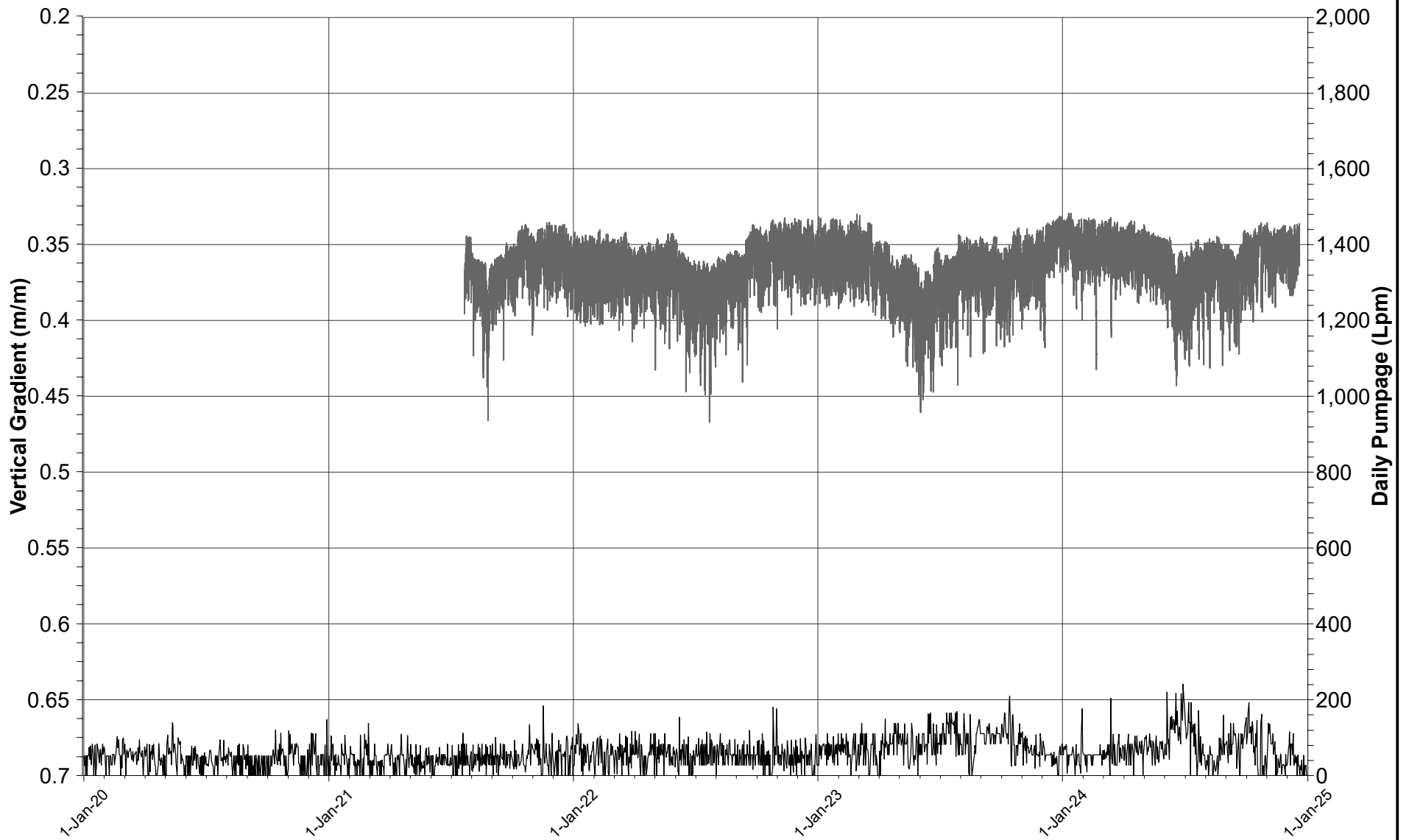
CA0049769.2148

REV

A

FIGURE

D20



— TW1-88 Daily Pumpage
 — MW13-20 Vertical Gradient OB/BR



DATE MARCH 2025
 DESIGN KS
 REVIEW GP
 APPROVED GP

PROJECT

WHITE WOLF PROPERTY MANAGEMENT
 Town of Erin, Ontario

TITLE

MW13-20 VERTICAL GRADIENT
2024 ANNUAL MONITORING REPORT

PROJECT NO.

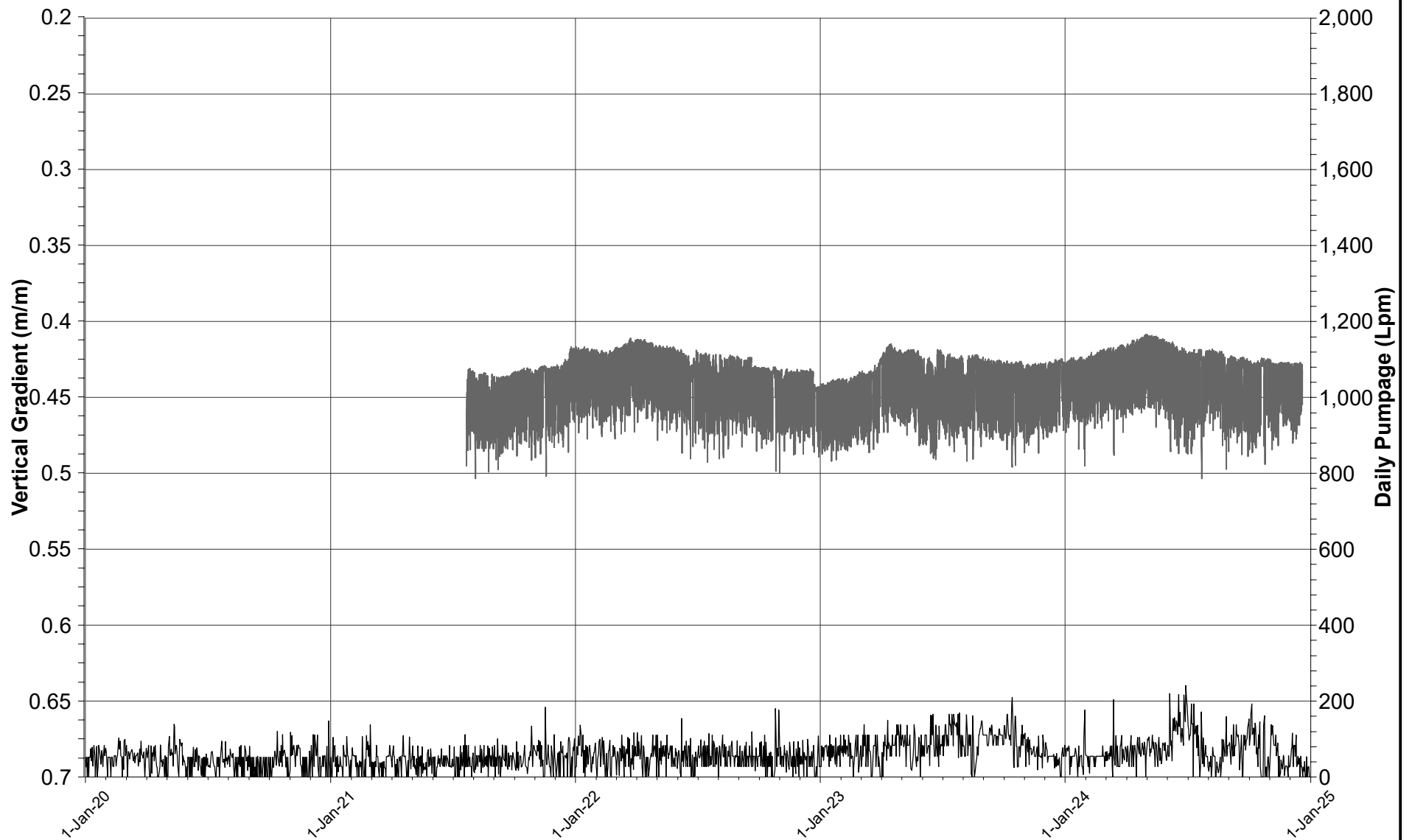
CA0049769.2148

REV

A

FIGURE

D21



—— TW1-88 Daily Pumpage
 —— MW14-20 Vertical Gradient OB/BR



DATE MARCH 2025
 DESIGN KS
 REVIEW GP
 APPROVED GP

PROJECT

WHITE WOLF PROPERTY MANAGEMENT
 Town of Erin, Ontario

TITLE

**MW14-20 VERTICAL GRADIENT
 2024 ANNUAL MONITORING REPORT**

PROJECT NO.

CA0049769.2148

REV

A

FIGURE

D22

TABLE D1
Manual Groundwater Elevations (masl)
2024 Annual Report

DATE	Water Level Elevation (masl)							
	TW1-88	MW1-18A	MW1-18B	MW3A-00	MW3B-00	MW5A-05	MW5B-05	MW6A-05
3/21/24	423.01	426.88	427.09	428.48	428.36	423.79	428.69	422.21
6/18/24	422.30	426.72	426.89	428.41	428.28	423.09	428.59	421.20
9/20/24	422.14	426.66	426.86	428.30	428.19	423.06	428.47	421.34
12/19/24	422.75	426.66	426.89	428.37	428.30	423.51	428.45	421.93

TABLE D1
Manual Groundwater Elevations (masl)
2024 Annual Report

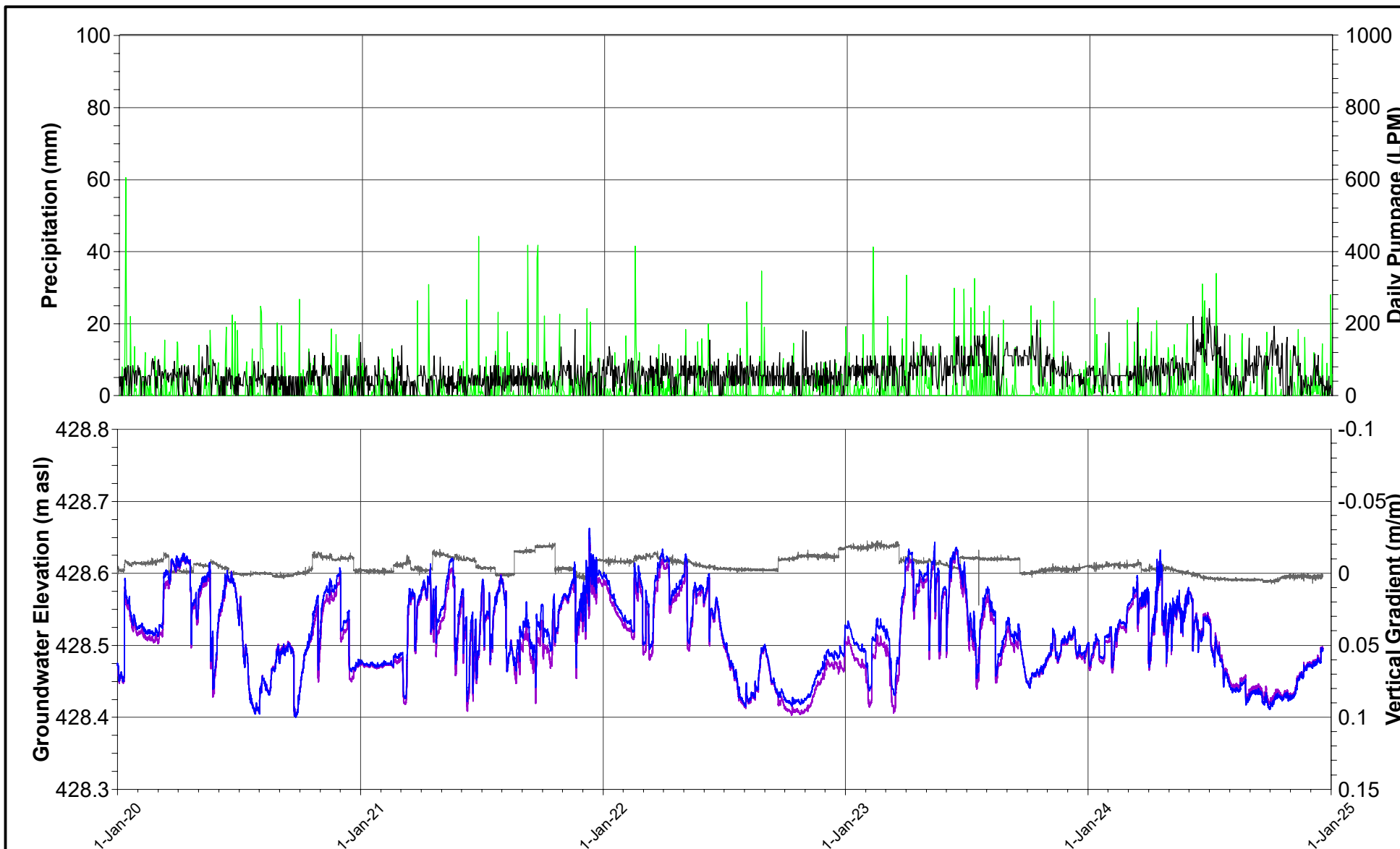
DATE	Water Level Elevation (masl)							
	MW6B-05	MW11A-08	MW11B-08	MW12A-08	MW12B-08	MW13A-20-7	MW13B-20-07	MW14A-20-7
3/21/24	428.43	427.06	428.69	424.88	431.70	425.60	433.28	420.72
6/18/24	428.31	426.80	428.58	424.81	432.25	424.21	433.50	419.75
9/20/24	428.19	426.76	428.43	424.63	431.41	424.25	433.20	419.47
12/19/24	428.20	426.86	428.41	424.67	431.02	425.60	433.01	420.47

TABLE D1
Manual Groundwater Elevations (masl)
2024 Annual Report

DATE	Water Level Elevation (masl)	
	MW14B-20-06	D3
3/21/24	428.58	424.88
6/18/24	428.46	422.12
9/20/24	428.34	422.63
12/19/24	428.46	424.80

APPENDIX E

Surface Water Level Monitoring



— TW1-88 Daily Pumpage
 — Precipitation
 — P03B-05 (Shallow)
 — P03A-05 (Deep)
 — Vertical Gradient OB/OB



DATE MARCH 2025
 DESIGN KS
 REVIEW GP
 APPROVED GP

PROJECT

WHITE WOLF PROPERTY MANAGEMENT
 Town of Erin, Ontario

TITLE

**P03-05 NEST HYDROGRAPHS
 AND VERTICAL GRADIENTS
 2024 ANNUAL MONITORING REPORT**

PROJECT NO.

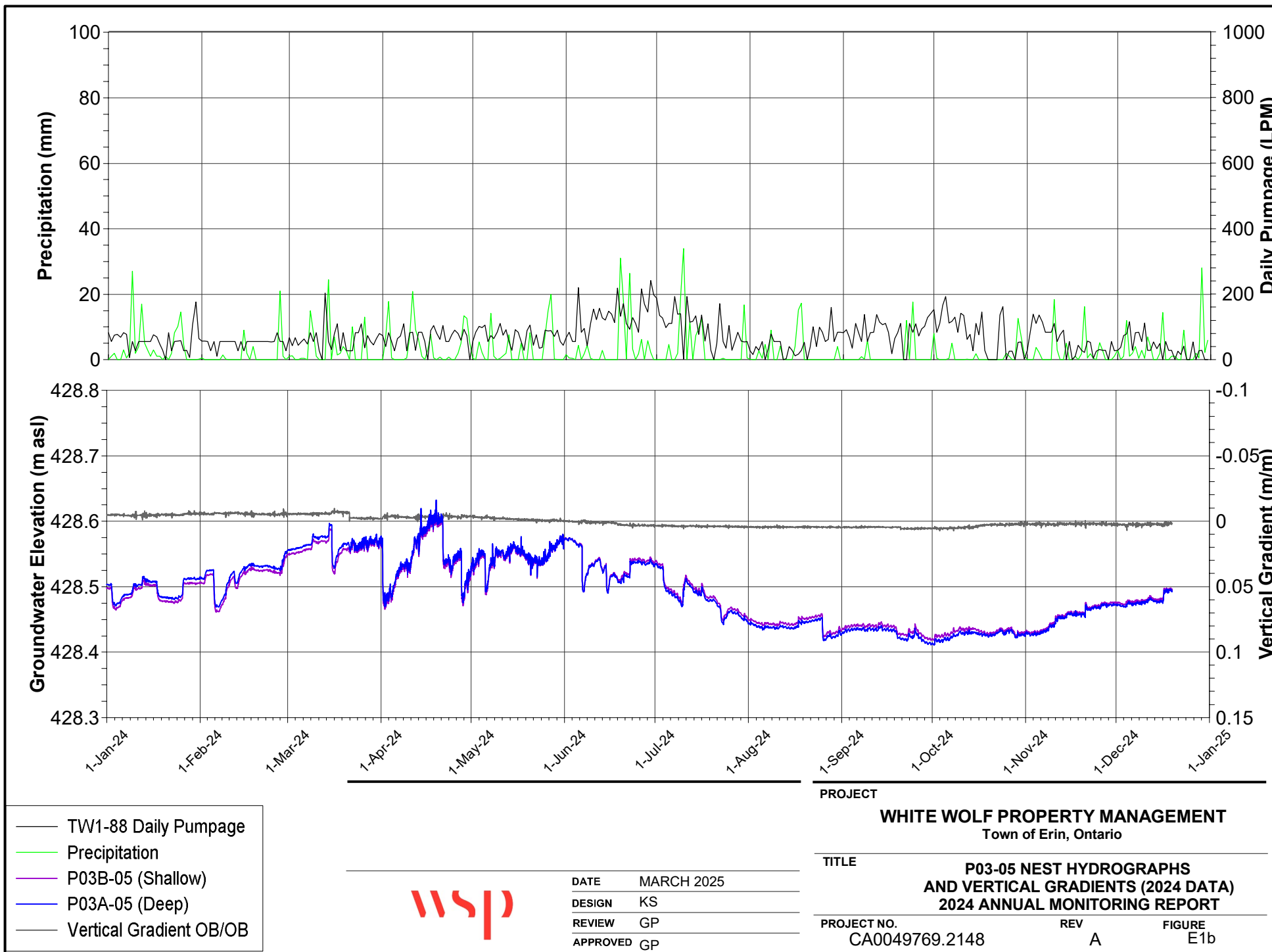
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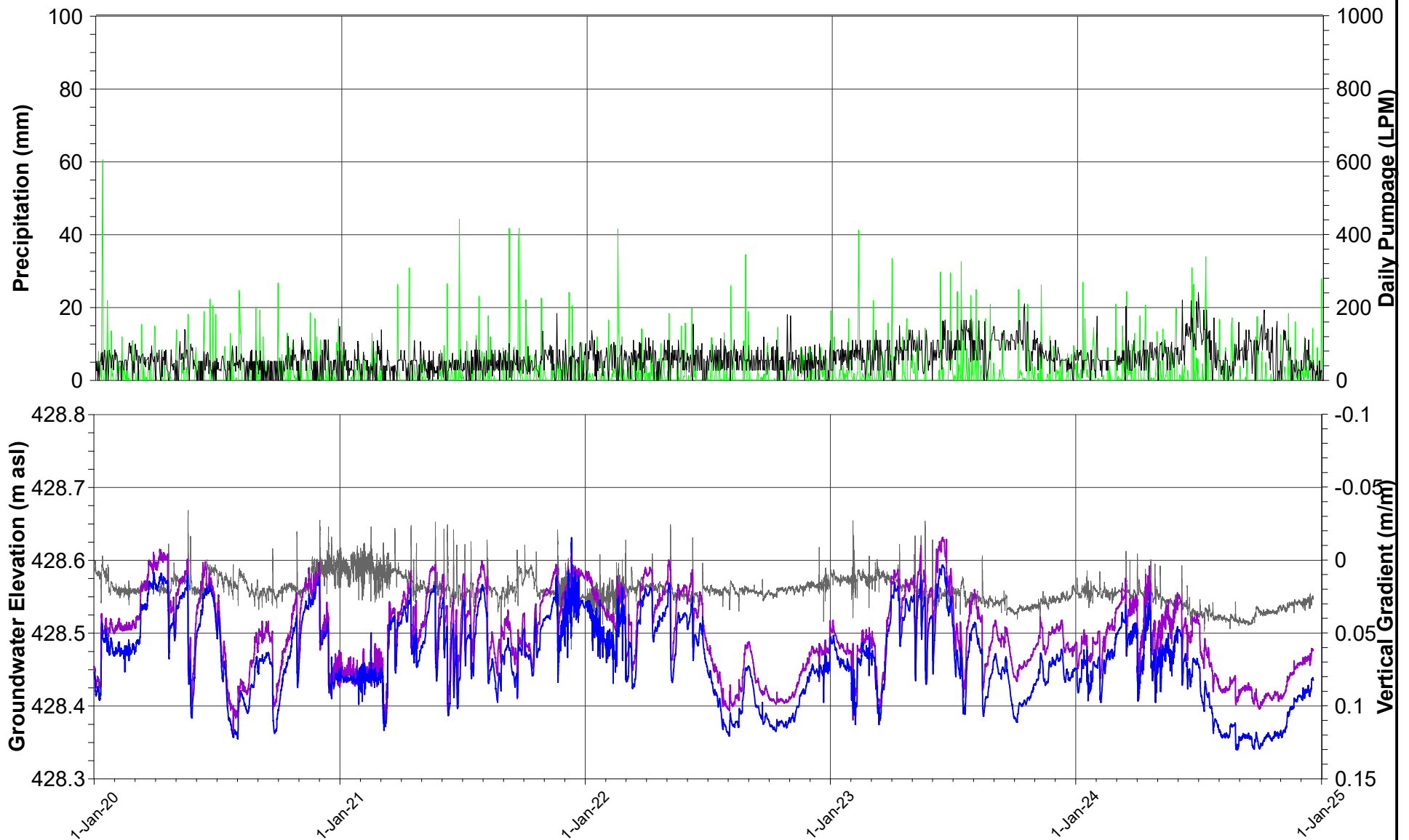
REV

A

FIGURE

E1a





— P06B-07 (Shallow)
— P06A-07 (Deep)
— Vertical Gradient OB/OB



DATE	MARCH 2025
DESIGN	KS
REVIEW	GP
APPROVED	GP

PROJECT

WHITE WOLF PROPERTY MANAGEMENT
Town of Erin, Ontario

TITLE

**P06-07 NEST HYDROGRAPHS
AND VERTICAL GRADIENTS
2024 ANNUAL MONITORING REPORT**

PROJECT NO.

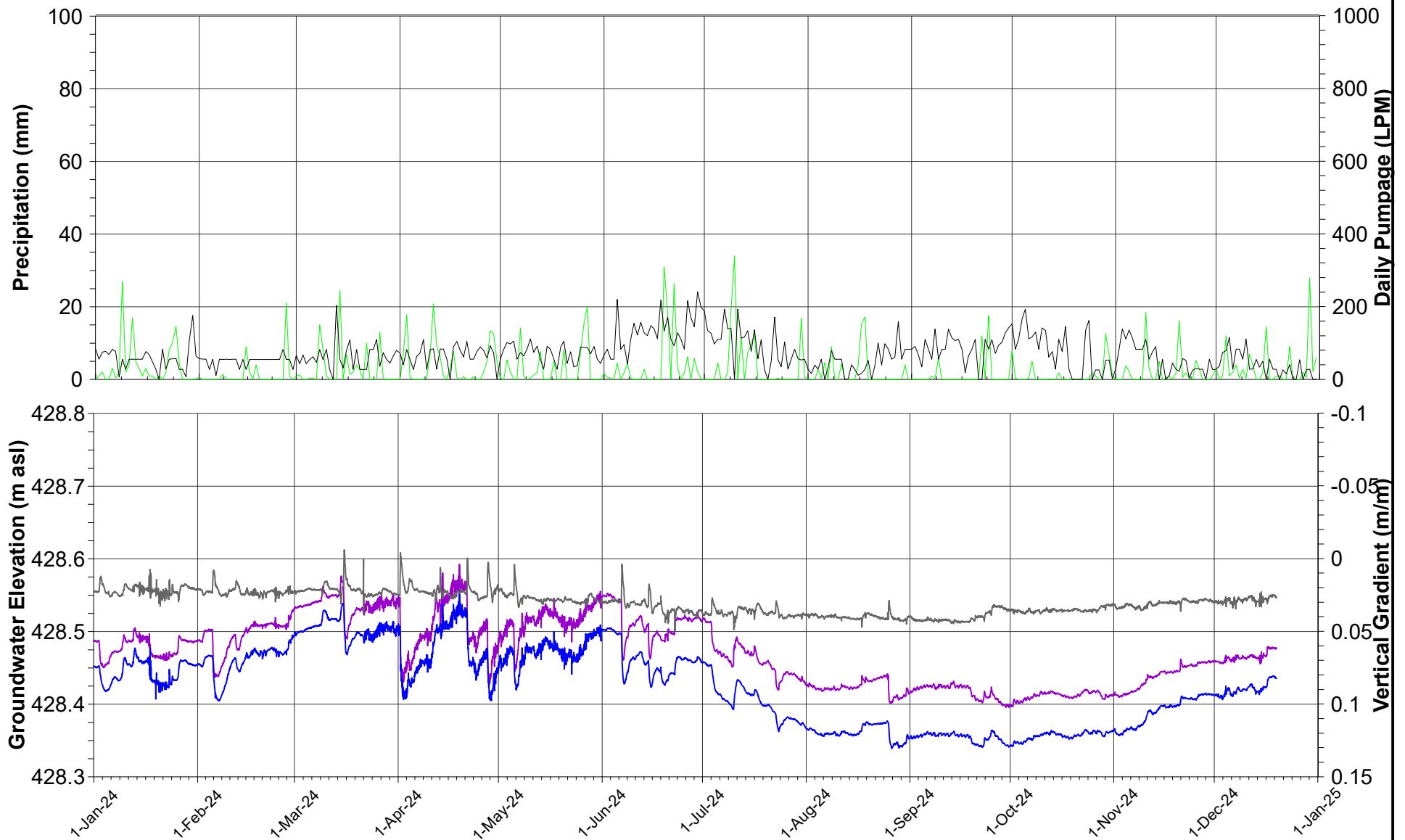
CA0049769.2148

REV

A

FIGURE

E2a



— TW1-88 Daily Pumping
 — Precipitation
 — P06B-07 (Shallow)
 — P06A-07 (Deep)
 — Vertical Gradient OB/OB



DATE	MARCH 2025
DESIGN	KS
REVIEW	GP
APPROVED	GP

PROJECT

WHITE WOLF PROPERTY MANAGEMENT
Town of Erin, Ontario

TITLE

**P06-07 NEST HYDROGRAPHS
AND VERTICAL GRADIENTS (2024 DATA)
2024 ANNUAL MONITORING REPORT**

PROJECT NO.

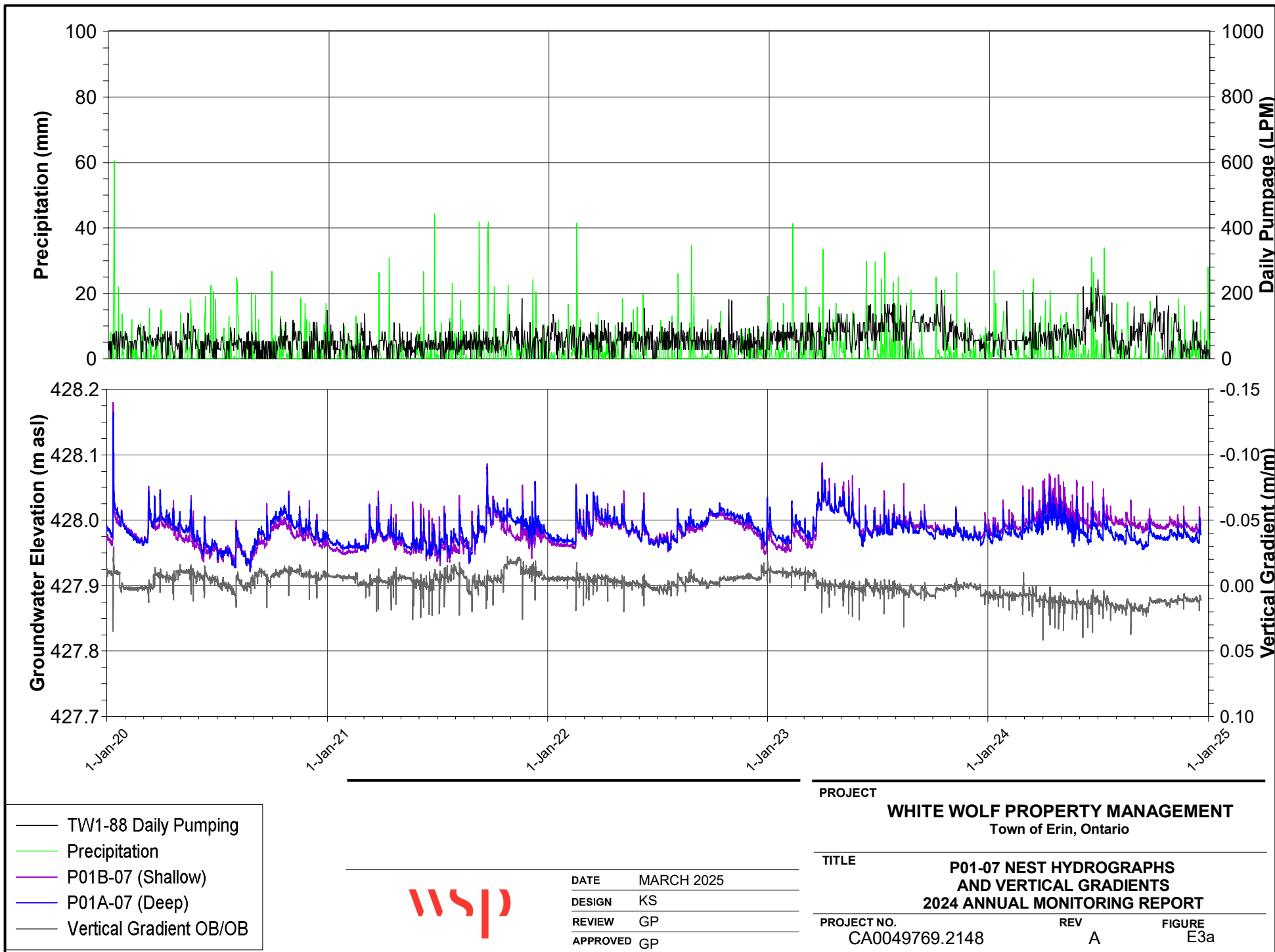
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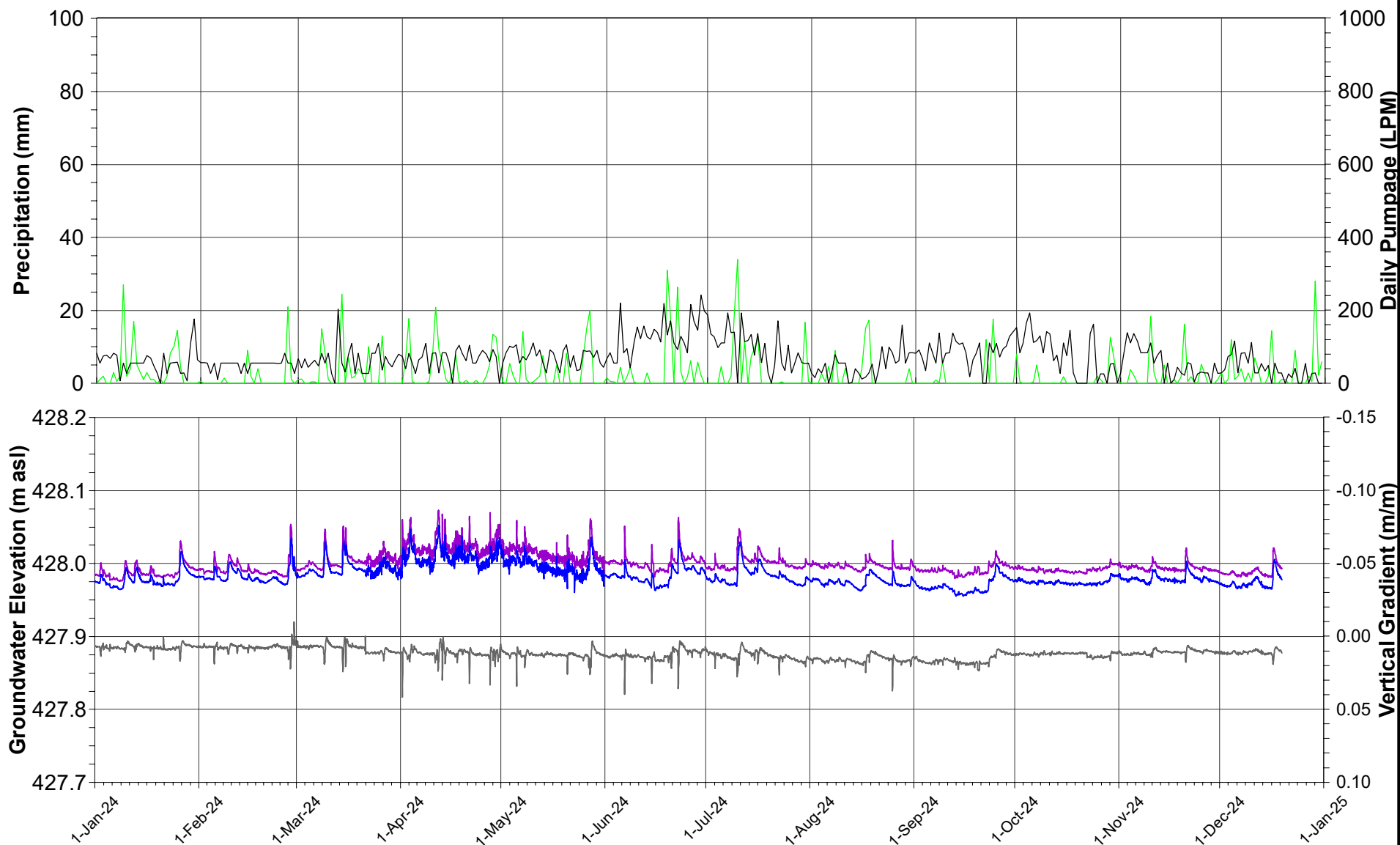
REV

A

FIGURE

E2b





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



DATE MARCH 2025
 DESIGN KS
 REVIEW GP
 APPROVED GP

PROJECT

WHITE WOLF PROPERTY MANAGEMENT
 Town of Erin, Ontario

TITLE

**P01-07 NEST HYDROGRAPHS
 AND VERTICAL GRADIENTS (2024 DATA)
 2024 ANNUAL MONITORING REPORT**

PROJECT NO.

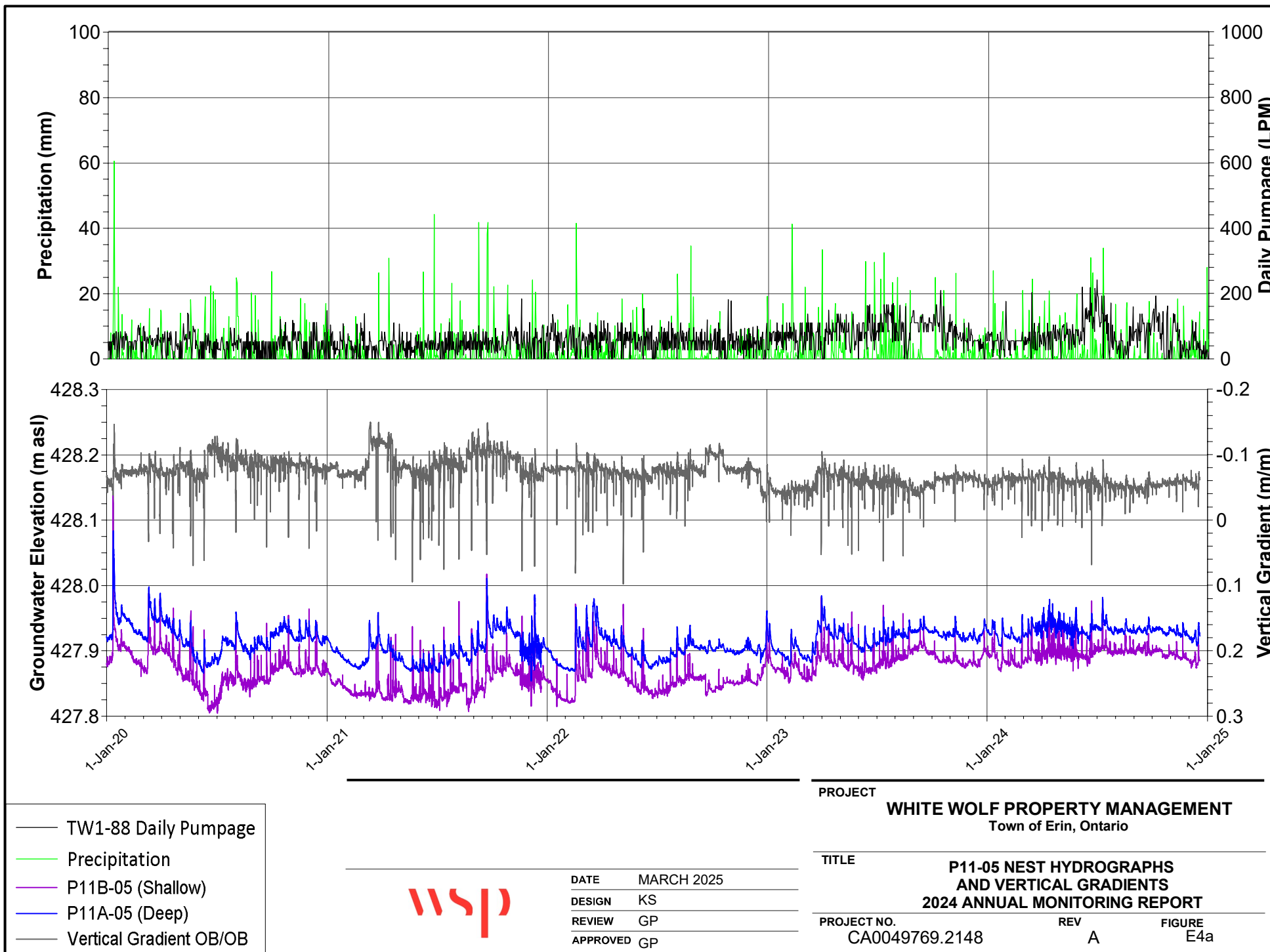
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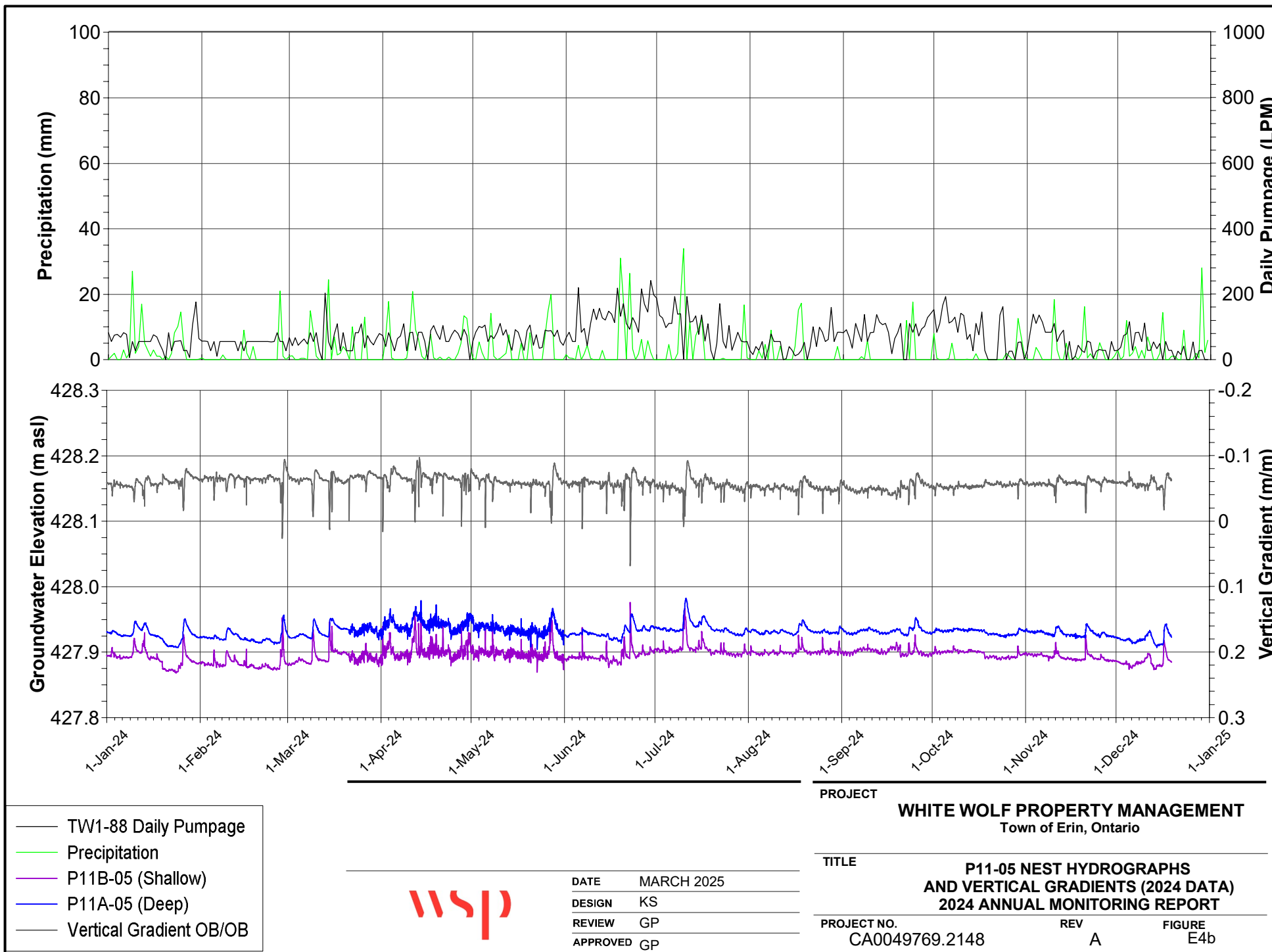
REV

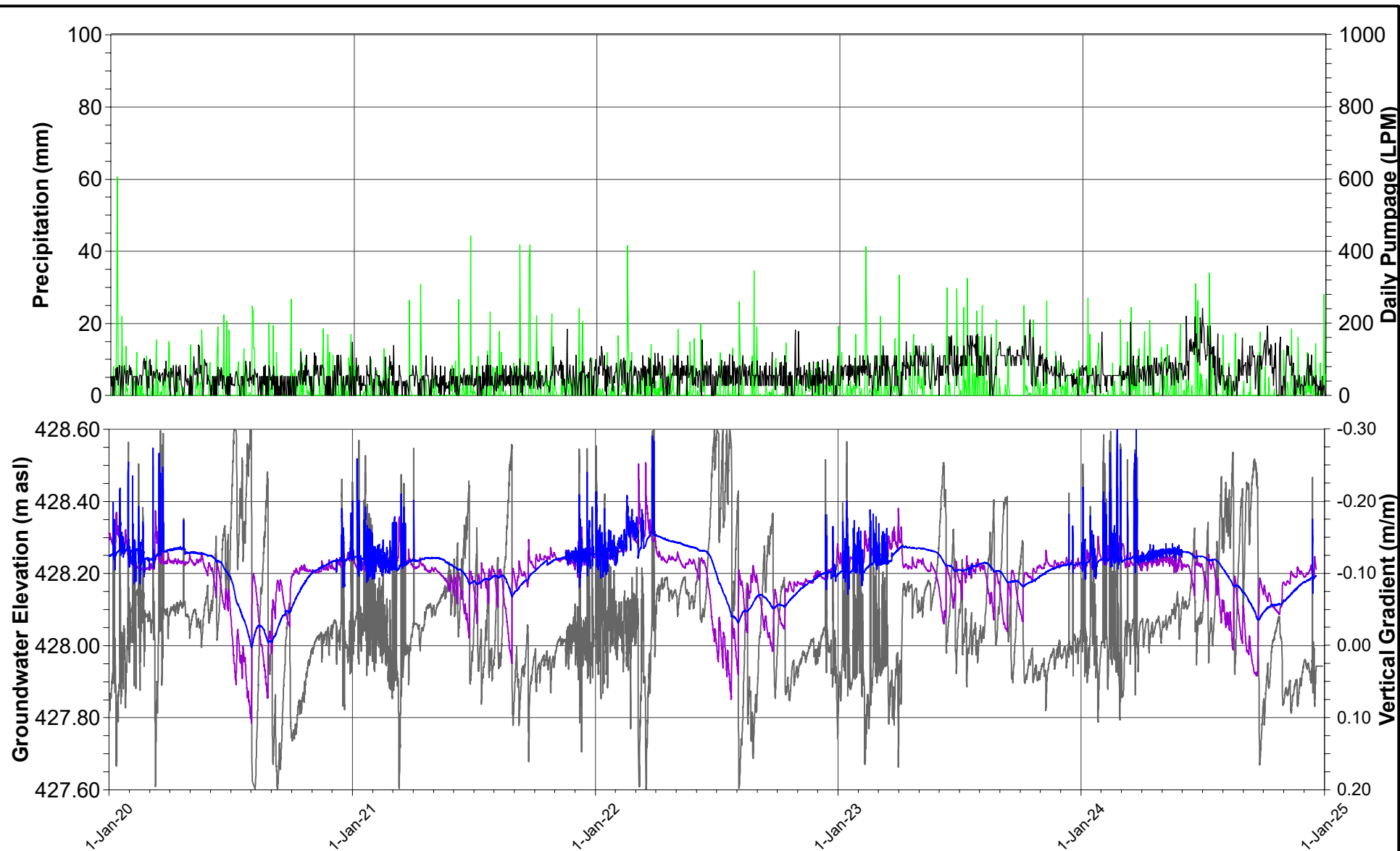
A

FIGURE

E3b





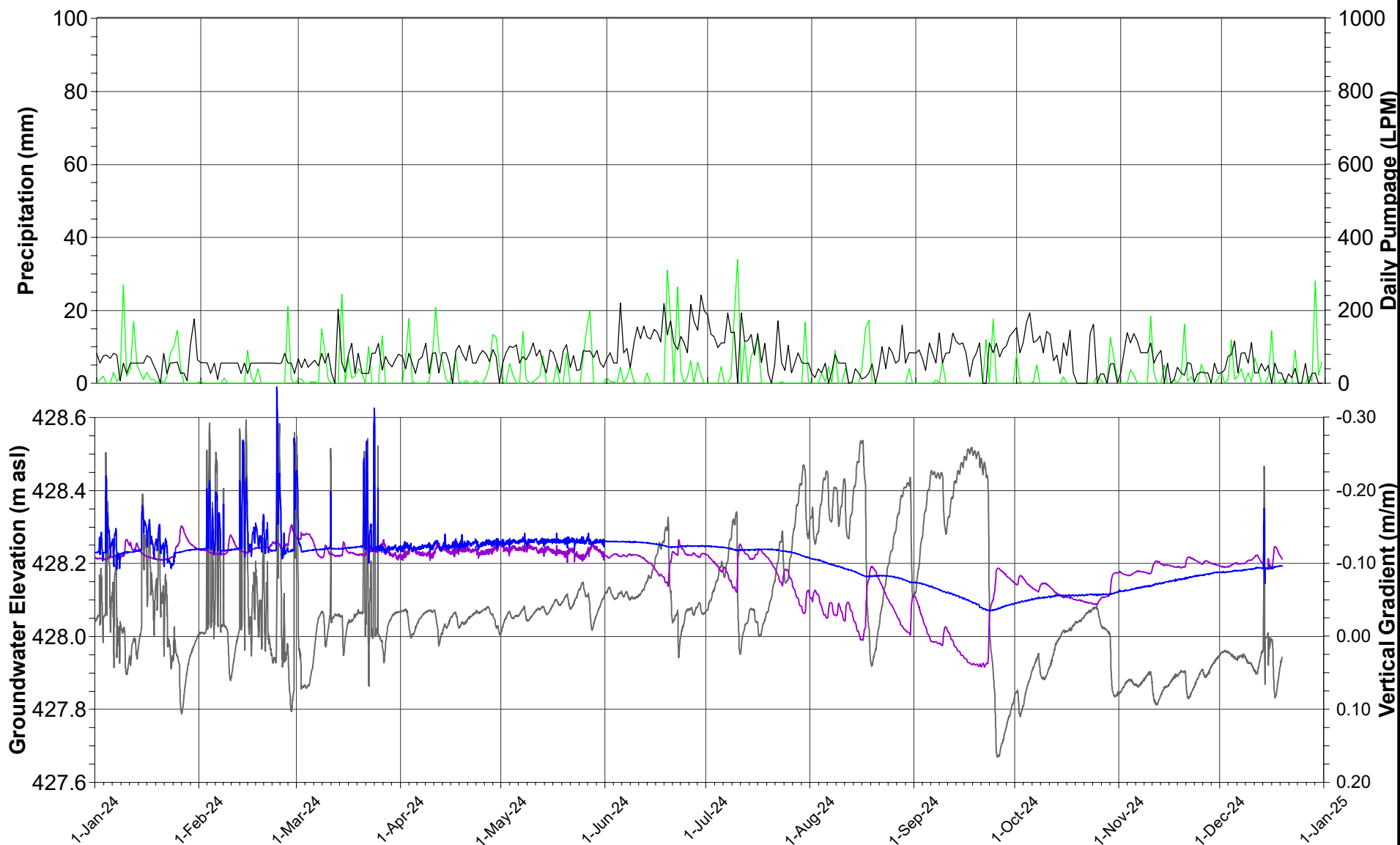


- TW1-88 Daily Pumpage
- Precipitation
- P10B-05 (Shallow)
- P10A-05 (Deep)
- Vertical Gradient OB/OB



DATE	MARCH 2025
DESIGN	KS
REVIEW	GP
APPROVED	GP

PROJECT	WHITE WOLF PROPERTY MANAGEMENT Town of Erin, Ontario		
TITLE	P10-05 NEST HYDROGRAPHS AND VERTICAL GRADIENTS 2024 ANNUAL MONITORING REPORT		
PROJECT NO.	CA0049769.2148	REV	A
		FIGURE	E5a



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



DATE	MARCH 2025
DESIGN	KS
REVIEW	GP
APPROVED	GP

PROJECT

WHITE WOLF PROPERTY MANAGEMENT
Town of Erin, Ontario

TITLE

**P10-05 NEST HYDROGRAPHS
AND VERTICAL GRADIENTS (2024 DATA)
2024 ANNUAL MONITORING REPORT**

PROJECT NO.

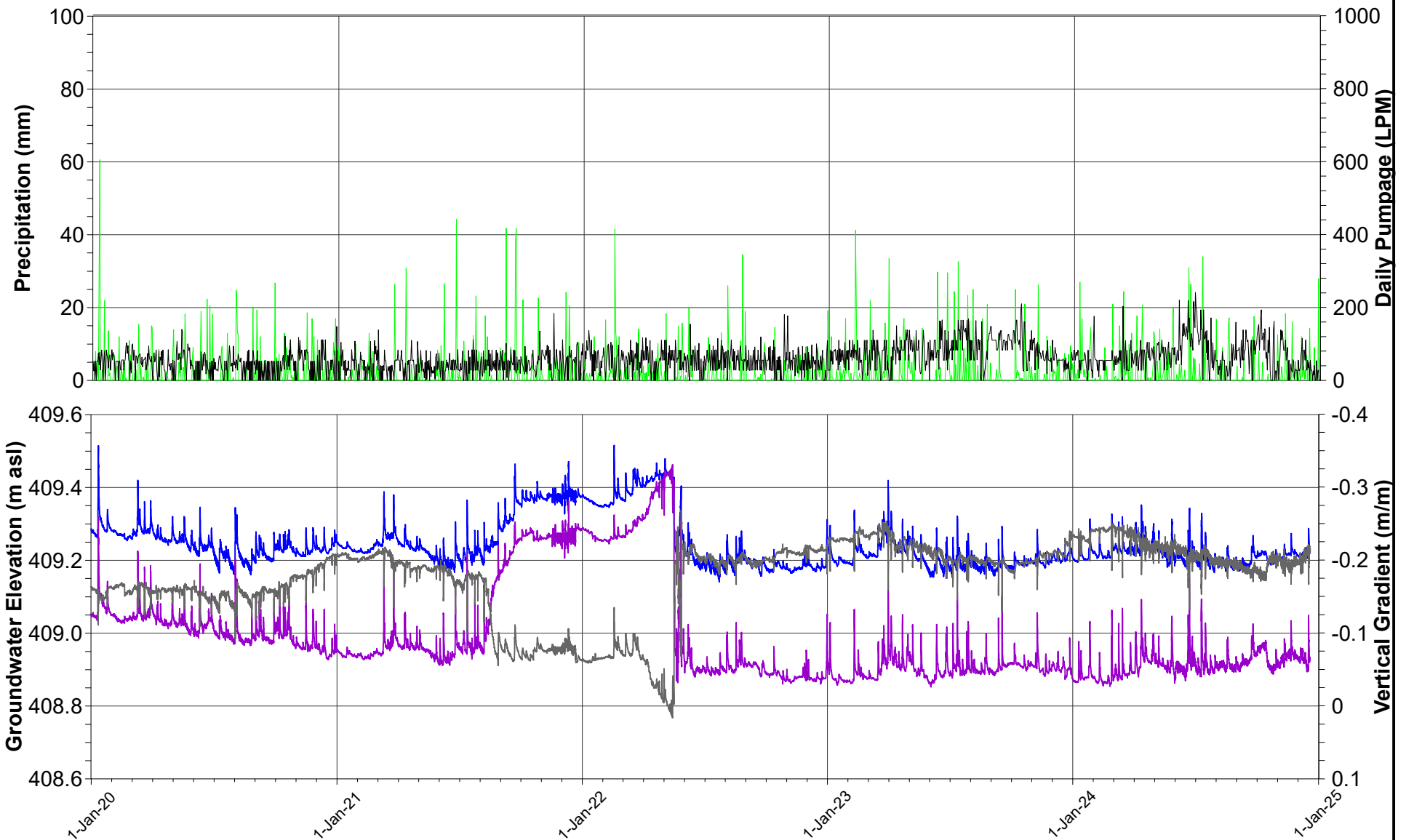
CA0049769.2148

REV

A

FIGURE

E5b



— P12B-07 (Shallow)
 — P12A-07 (Deep)
 — Vertical Gradient OB/OB

NOTE:

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



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REVIEW	GP
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PROJECT

WHITE WOLF PROPERTY MANAGEMENT
 Town of Erin, Ontario

TITLE

**P12-07 NEST HYDROGRAPHS
 AND VERTICAL GRADIENTS
 2024 ANNUAL MONITORING REPORT**

PROJECT NO.

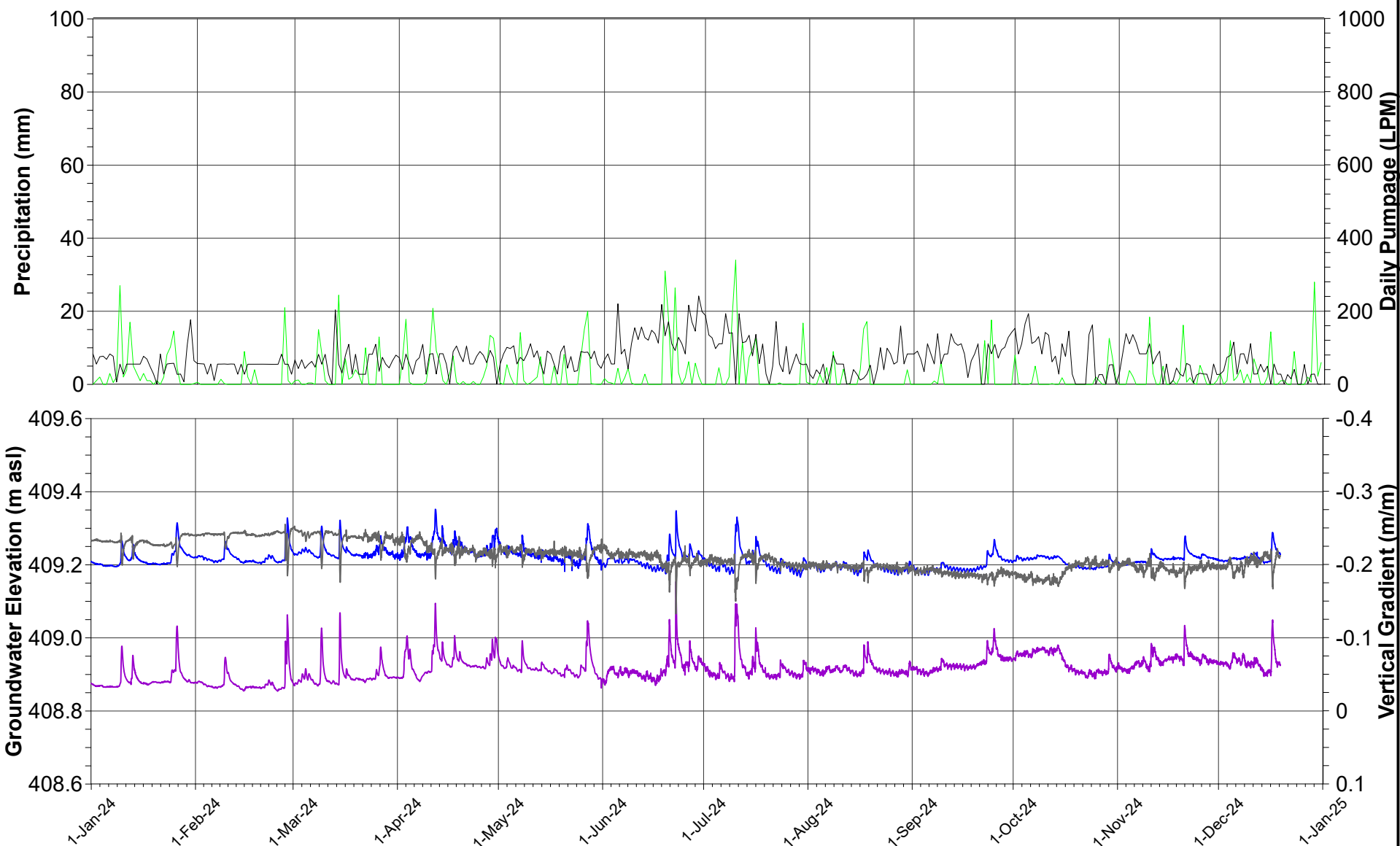
CA0049769.2148

REV

A

FIGURE

E6a



NOTE:

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

— P12B-07 (Shallow)
 — P12A-07 (Deep)
 — Vertical Gradient OB/OB



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PROJECT

WHITE WOLF PROPERTY MANAGEMENT
 Town of Erin, Ontario

TITLE

**P12-07 NEST HYDROGRAPHS
 AND VERTICAL GRADIENTS (2024 DATA)
 2024 ANNUAL MONITORING REPORT**

PROJECT NO.

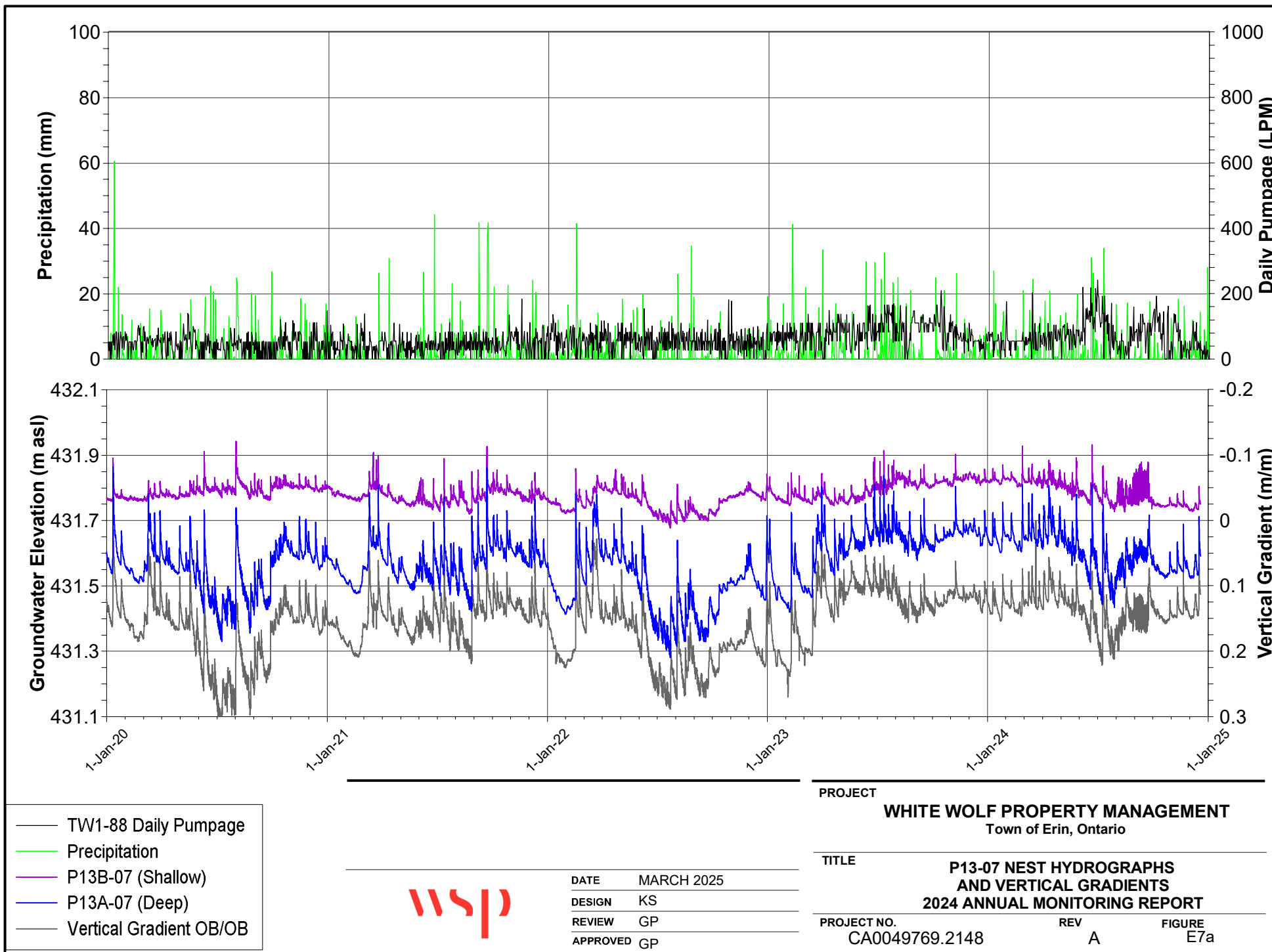
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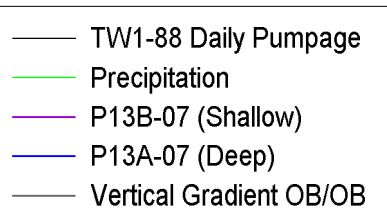
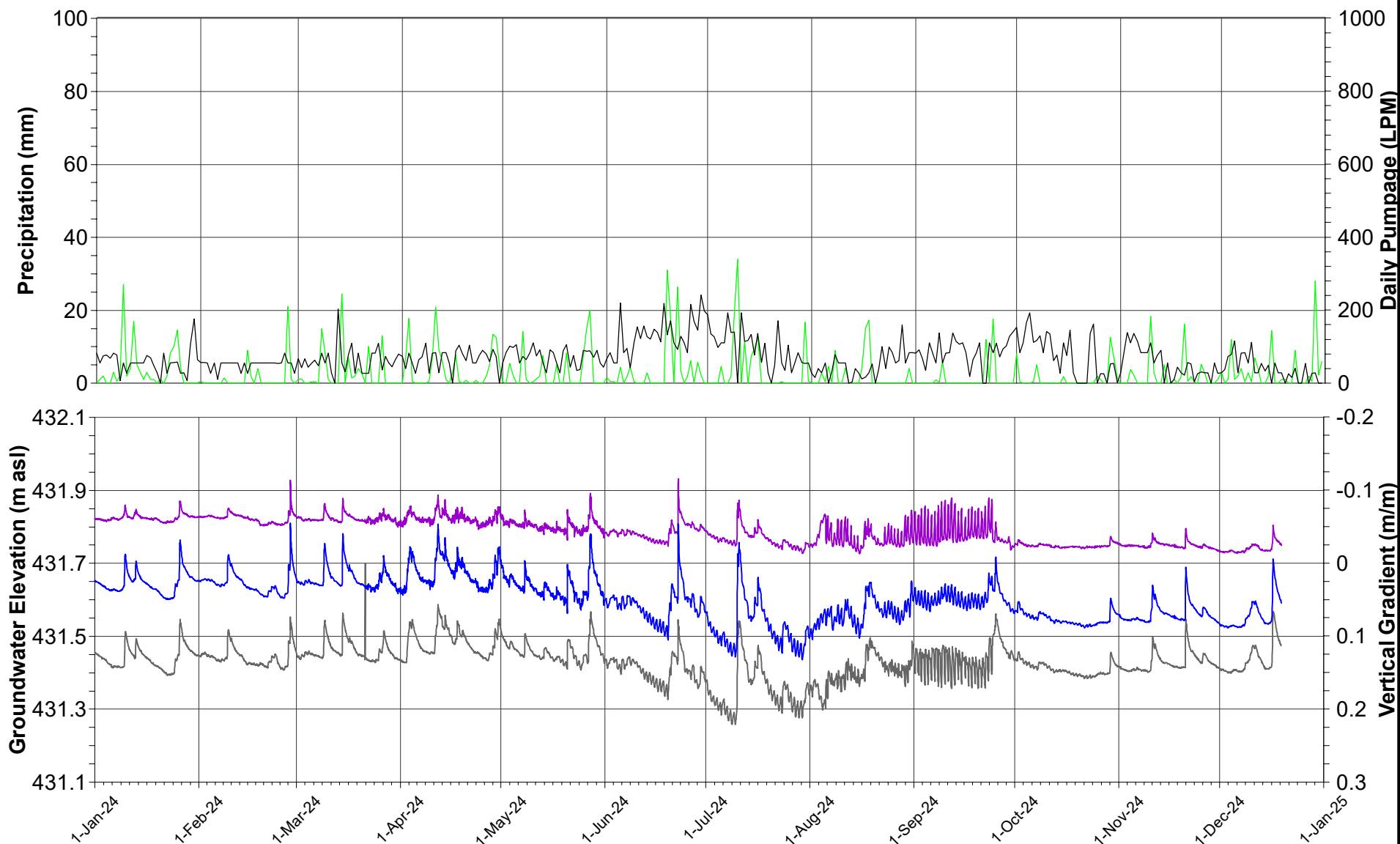
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FIGURE

E6b





DATE	MARCH 2025
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REVIEW	GP
APPROVED	GP

PROJECT

WHITE WOLF PROPERTY MANAGEMENT
Town of Erin, Ontario

TITLE

**P13-07 NEST HYDROGRAPHS
AND VERTICAL GRADIENTS (2024 DATA)
2024 ANNUAL MONITORING REPORT**

PROJECT NO.

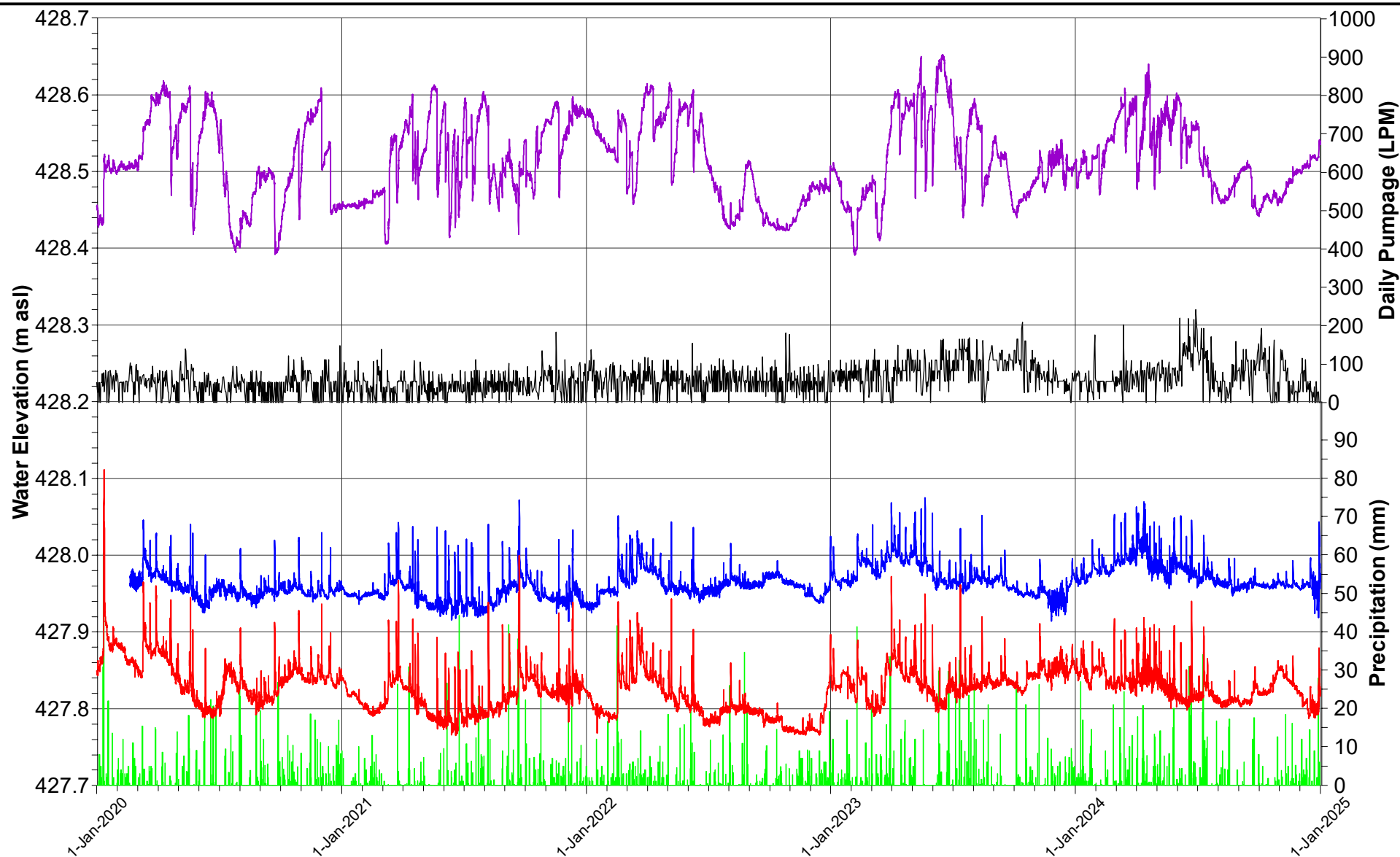
CA0049769.2148

REV

A

FIGURE

E7b



— TW1-88 Daily Pumpage
 ■ Precipitation
 — SW1-08 (Creek d/s of on-Site Pond)
 — SW3-08 (on-Site Pond)
 — SW1A-20 (Creek d/s of on-Site Pond)



DATE MARCH 2025
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PROJECT

WHITE WOLF PROPERTY MANAGEMENT
 Town of Erin, Ontario

TITLE

**HYDROGRAPHS FOR SURFACE WATER LEVELS
 IN VICINITY OF ON-SITE POND
 2024 ANNUAL MONITORING REPORT**

PROJECT NO.

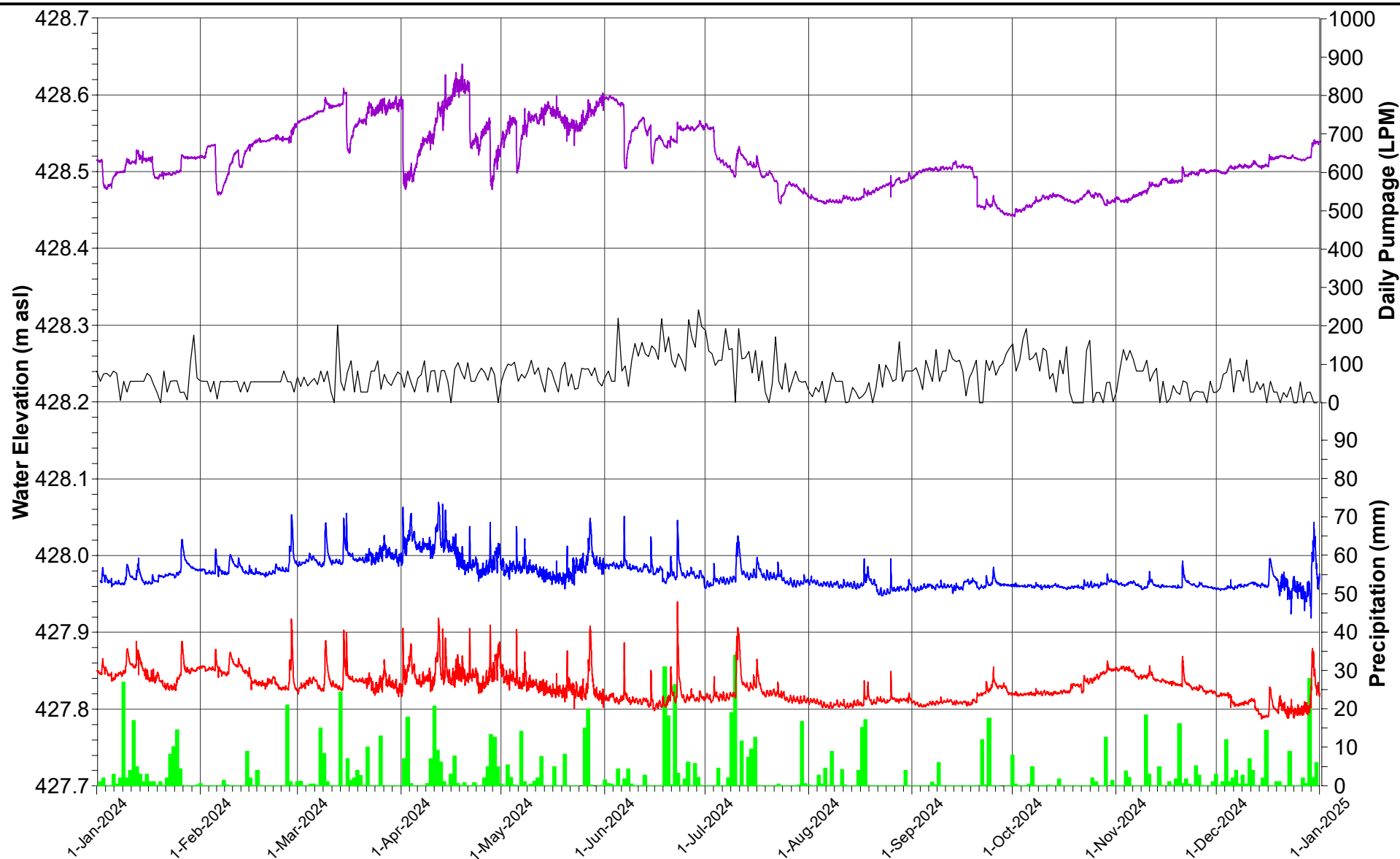
CA0049769.2148

REV

A

FIGURE

E8a



- Precipitation
- SW1-08 (Creek d/s pf on-Site Pond)
- SW3-08 (on-Site Pond)
- SW1A-20 (Creek d/s of on-Site Pond)



DATE MARCH 2025
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PROJECT

WHITE WOLF PROPERTY MANAGEMENT
 Town of Erin, Ontario

TITLE

**HYDROGRAPHS FOR SURFACE WATER LEVELS
 IN VICINITY OF ON-SITE POND (2024 DATA)
 2024 ANNUAL MONITORING REPORT**

PROJECT NO.

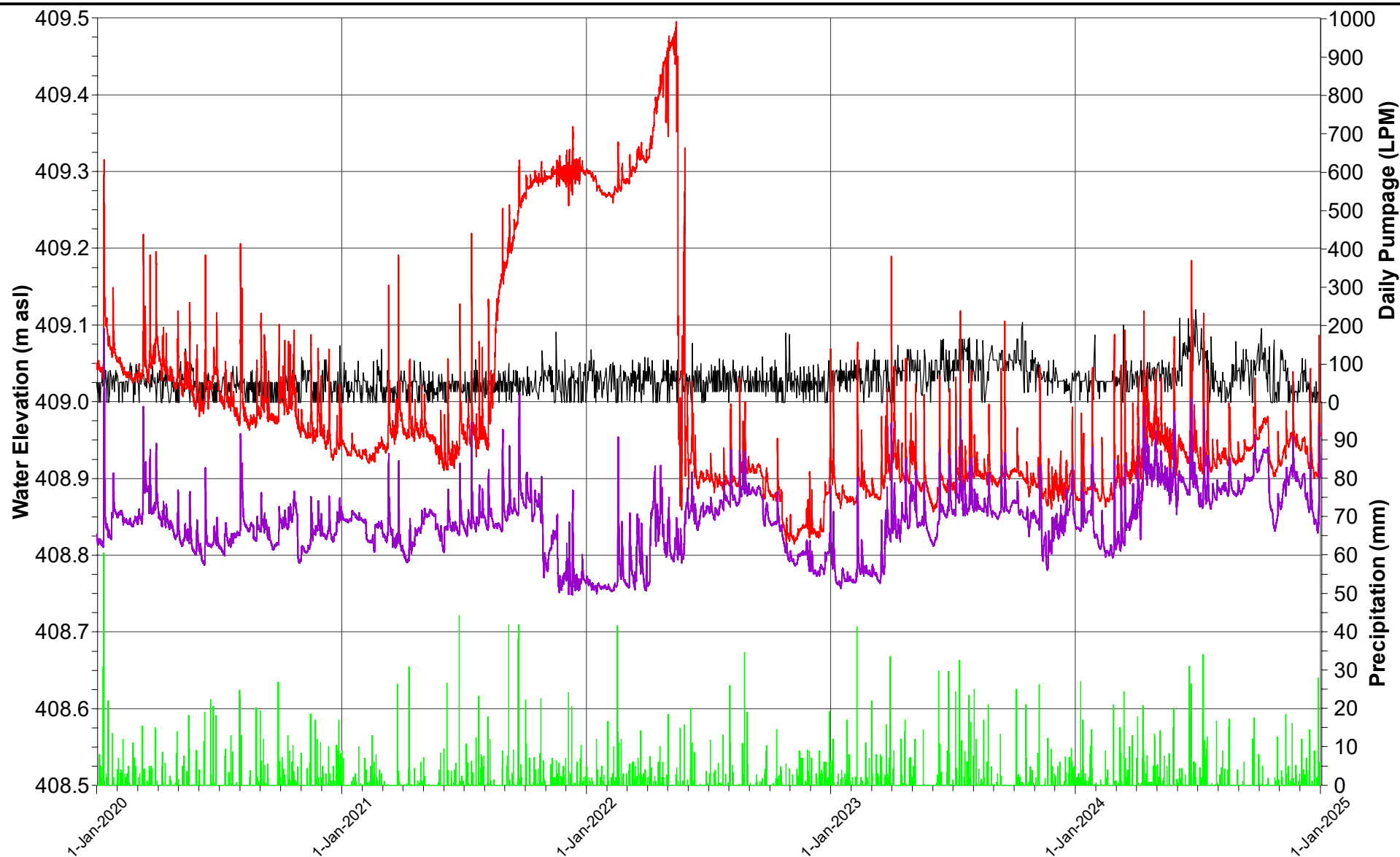
CA0049769.2148

REV

A

FIGURE

E8b



NOTE:

Beaver activity caused higher stream water levels at SW4-08

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



DATE MARCH 2025
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APPROVED GP

PROJECT

WHITE WOLF PROPERTY MANAGEMENT
Town of Erin, Ontario

TITLE

**HYDROGRAPHS FOR SURFACE WATER LEVELS
IN VICINITY OF ROMAN LAKE
2024 ANNUAL MONITORING REPORT**

PROJECT NO.

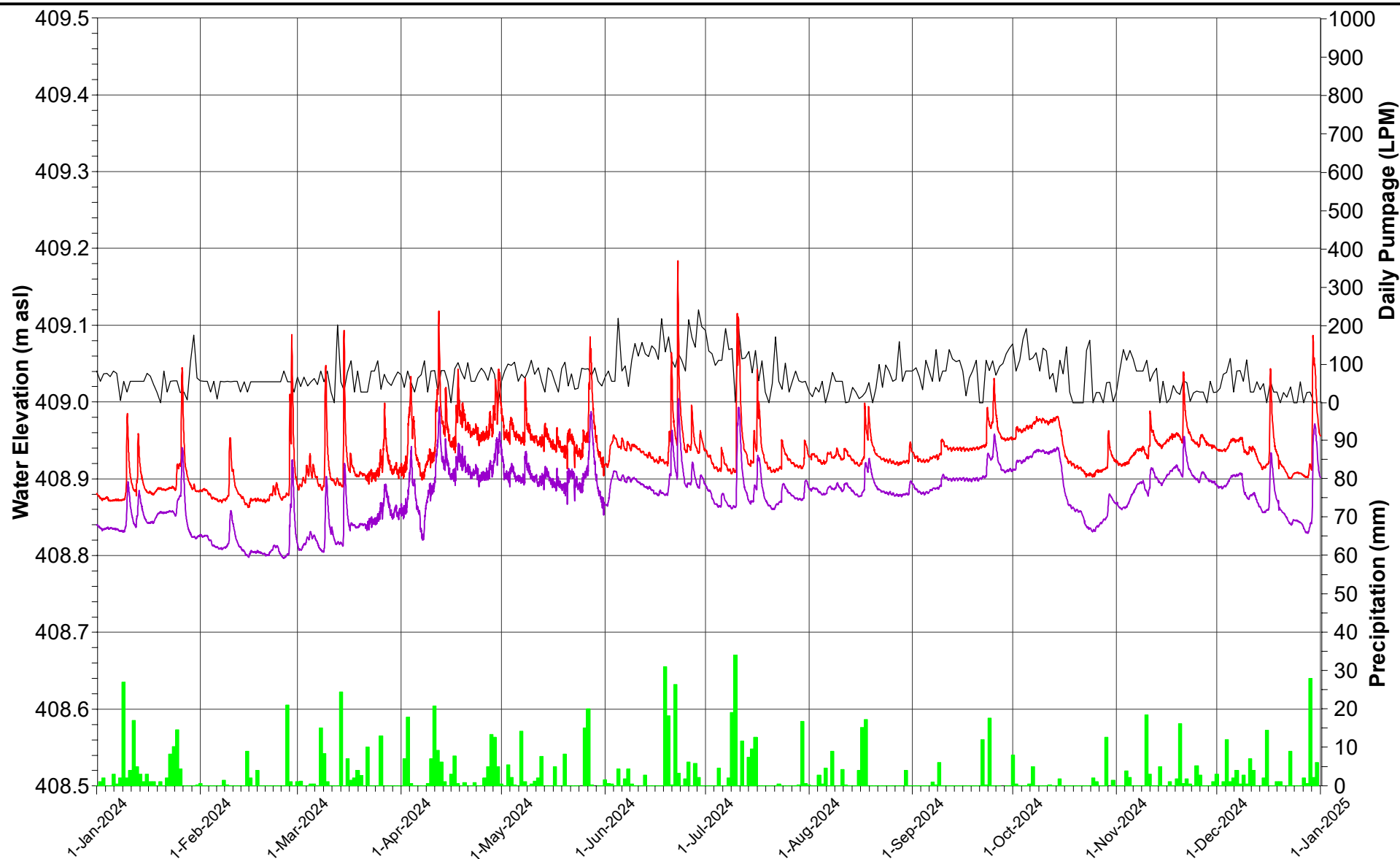
CA0049769.2148

REV

A

FIGURE

E9a



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



DATE MARCH 2025
 DESIGN KS
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 APPROVED GP

PROJECT

WHITE WOLF PROPERTY MANAGEMENT
 Town of Erin, Ontario

TITLE

**HYDROGRAPHS FOR SURFACE WATER LEVELS
 IN VICINITY OF ROMAN LAKE (2024 DATA)
 2024 ANNUAL MONITORING REPORT**

PROJECT NO.

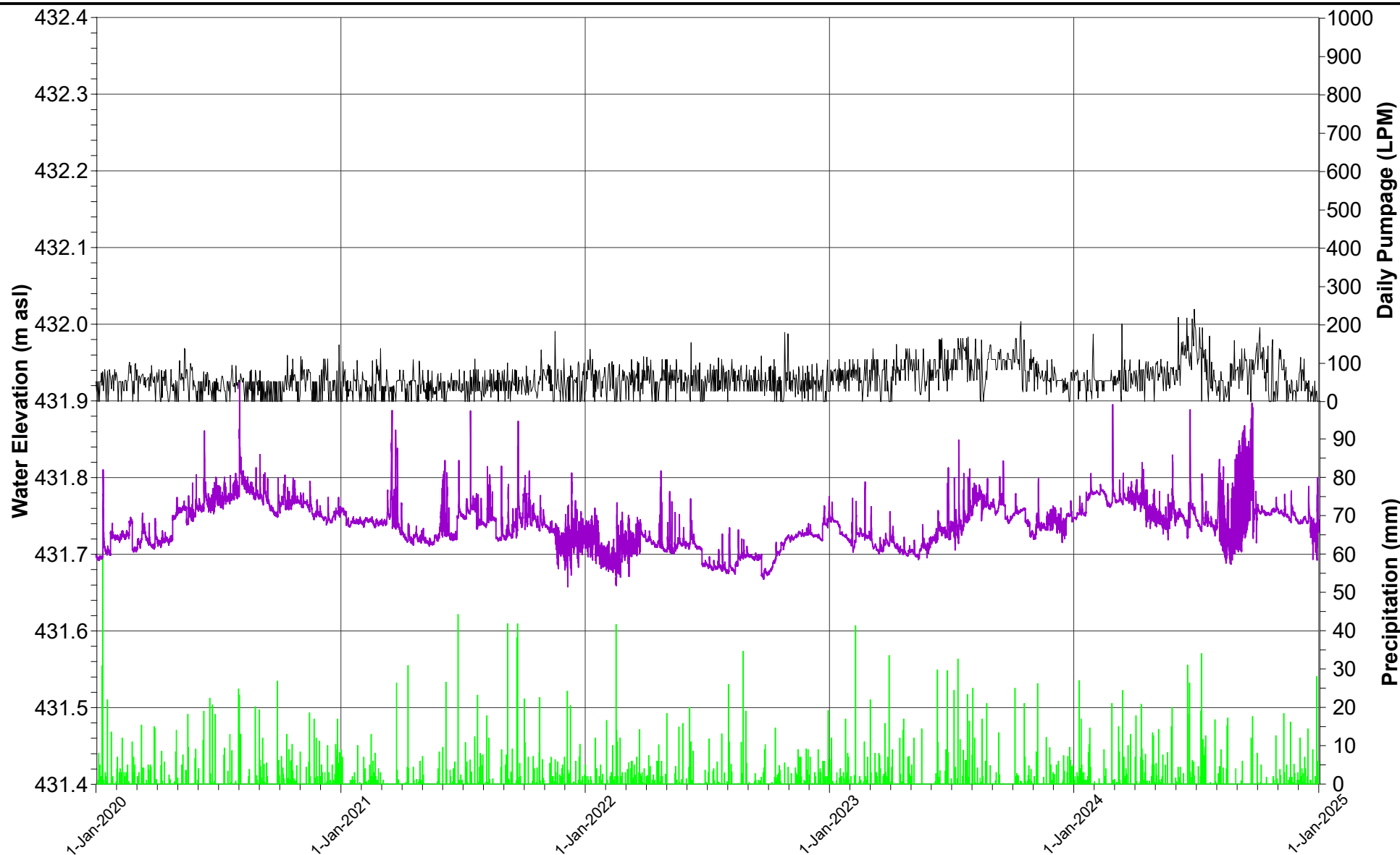
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FIGURE

E9b

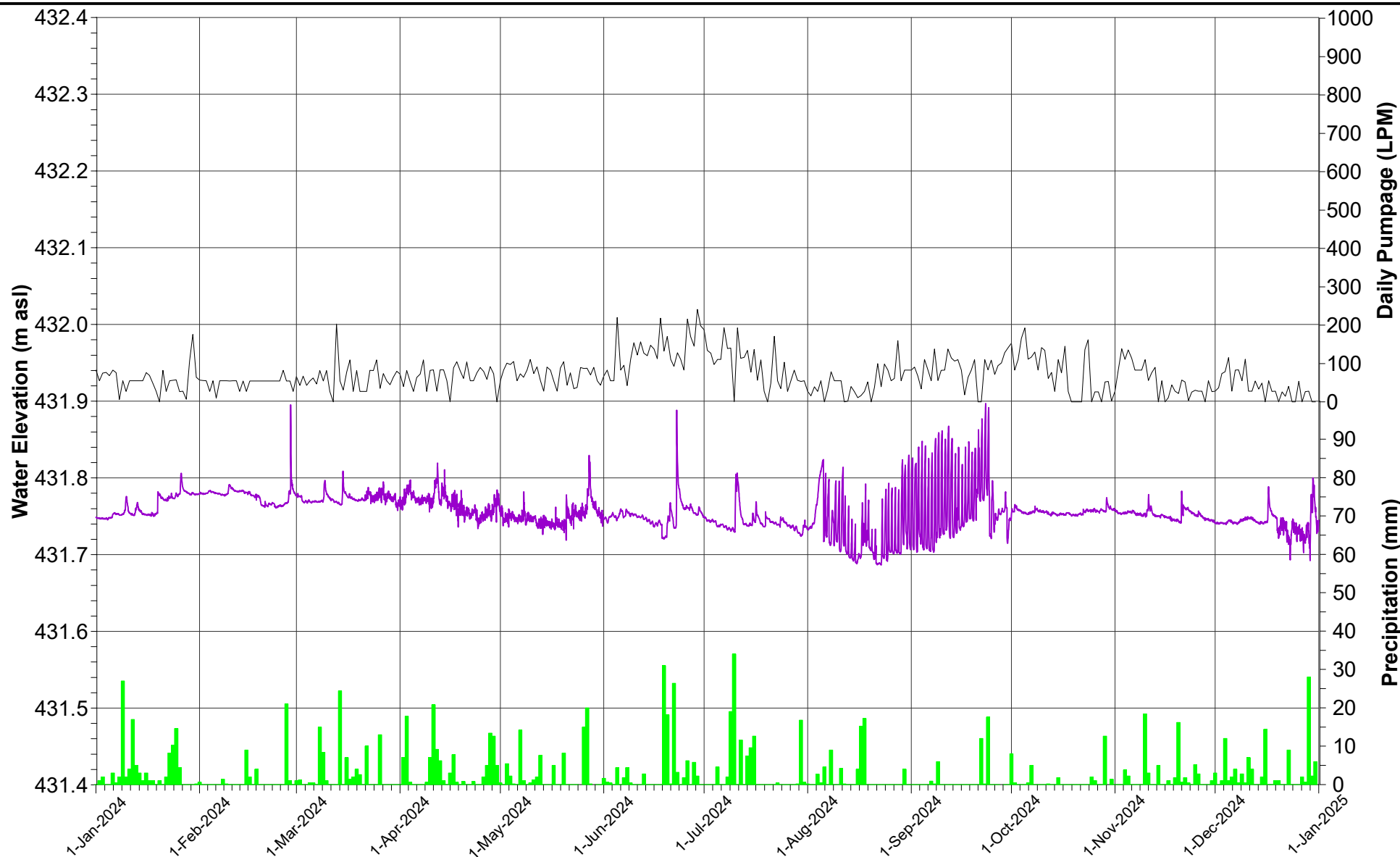


- TW1-88 Daily Pumpage
- Precipitation
- SW7-08 (Erin Branch of the Credit River)
- SW7



DATE	MARCH 2025
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PROJECT	WHITE WOLF PROPERTY MANAGEMENT Town of Erin, Ontario		
TITLE	HYDROGRAPHS FOR SURFACE WATER LEVELS IN ERIN BRANCH OF CREDIT RIVER 2024 ANNUAL MONITORING REPORT		
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		FIGURE	E10a



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



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WHITE WOLF PROPERTY MANAGEMENT
 Town of Erin, Ontario

TITLE

**HYDROGRAPHS FOR SURFACE WATER LEVELS
 IN ERIN BRANCH OF CREDIT RIVER (2024 DATA)
 2024 ANNUAL MONITORING REPORT**

PROJECT NO.

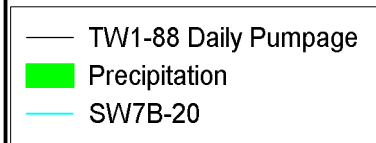
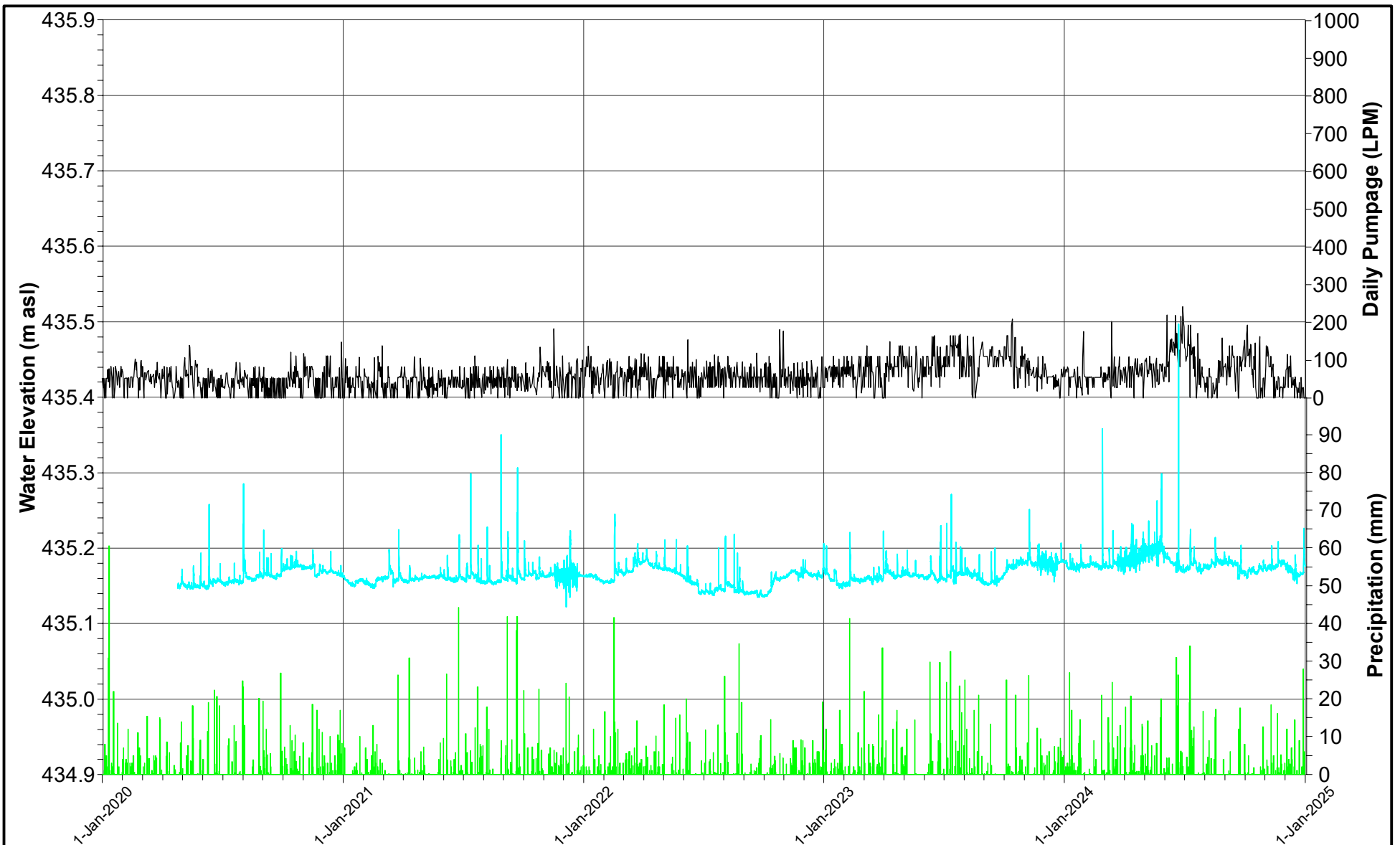
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FIGURE

E10b



DATE	MARCH 2025
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WHITE WOLF PROPERTY MANAGEMENT
Town of Erin, Ontario

TITLE

**HYDROGRAPHS FOR SURFACE WATER LEVELS
IN ERIN BRANCH OF CREDIT RIVER
2024 ANNUAL MONITORING REPORT**

PROJECT NO.

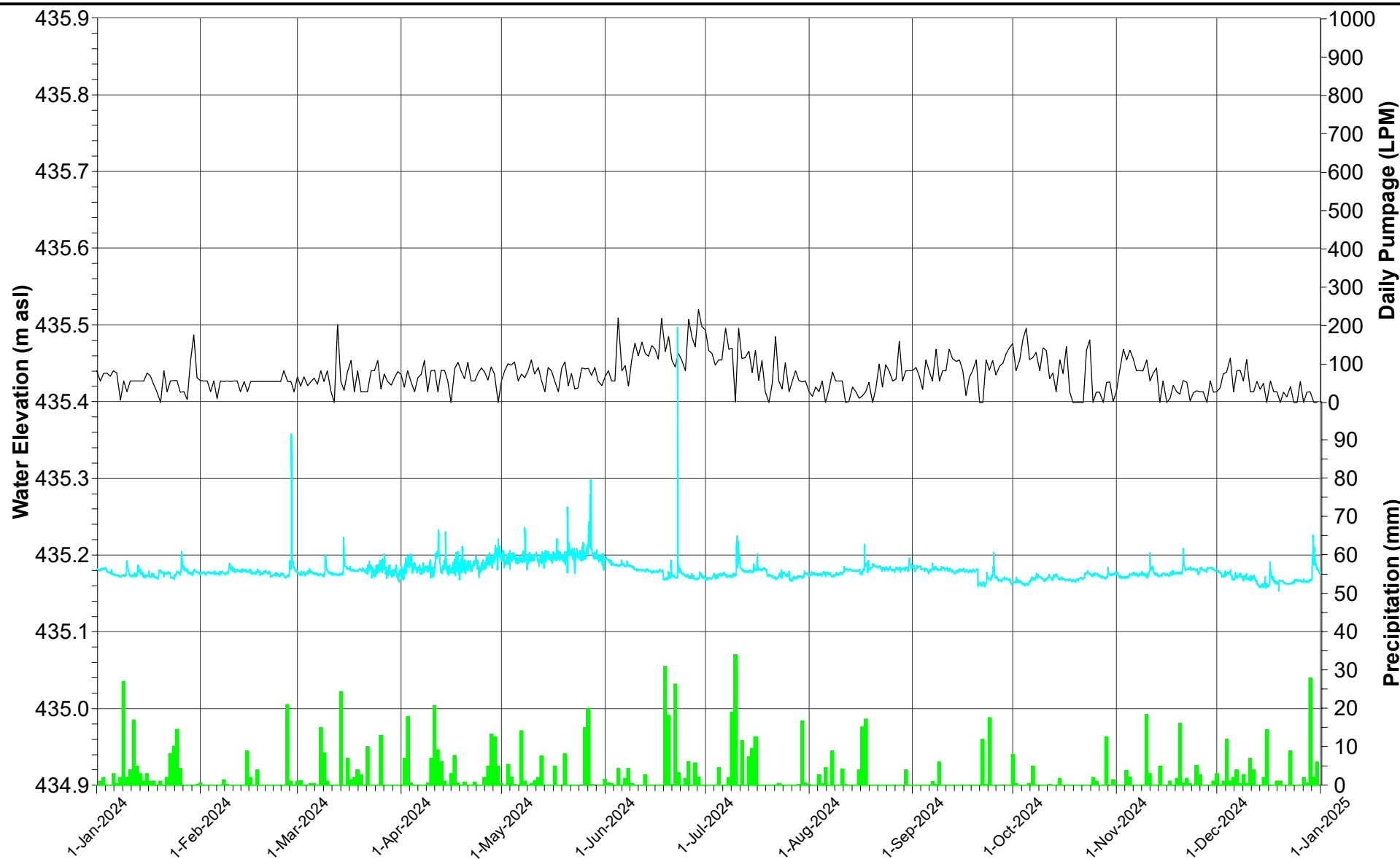
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FIGURE

E11a



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



DATE MARCH 2025
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 APPROVED GP

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WHITE WOLF PROPERTY MANAGEMENT
 Town of Erin, Ontario

TITLE
**HYDROGRAPHS FOR SURFACE WATER LEVELS
 IN ERIN BRANCH OF CREDIT RIVER (2024 DATA)
 2024 ANNUAL MONITORING REPORT**

PROJECT NO.
 CA0049769.2148

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FIGURE
 E11b

TABLE E1
Manual Surface Water Elevations (Mini Piezometers)
2024 Annual Report

DATE	Water Level Elevation (masl)							
	P01A-07	P01B-07	P03A-05	P03B-05	P06A-07	P06B-07	P10A-05	P10B-05
21-Mar-24	428.00	428.00	428.56	428.55	428.47	428.52	428.25	428.22
18-Jun-24	427.99	427.98	428.58	428.52	NA	428.47	428.25	428.35
20-Sep-24	427.98	427.97	428.44	428.43	428.37	428.44	428.09	427.93
19-Dec-24	427.99	427.97	428.50	428.50	428.44	428.48	428.20	428.21

* Water frozen

NA - data not available

TABLE E1
Manual Surface Water Elevations (Mini Piezometers)
2024 Annual Report

DATE	Water Level Elevation (masl)					
	P11A-05	P11B-05	P12A-07	P12B-07	P13A-07	P13B-07
21-Mar-24	427.93	427.89	409.26*	408.90	431.64	431.82
18-Jun-24	427.92	427.88	409.20	408.92	431.56	431.79
20-Sep-24	427.94	427.91	409.19	408.93	431.62	431.81
19-Dec-24	427.91	427.88	409.23*	408.91	431.61	431.76

* Water frozen

NA - data not available

TABLE E2
Manual Surface Water Elevations (Surface Water Stations)
2024 Annual Report

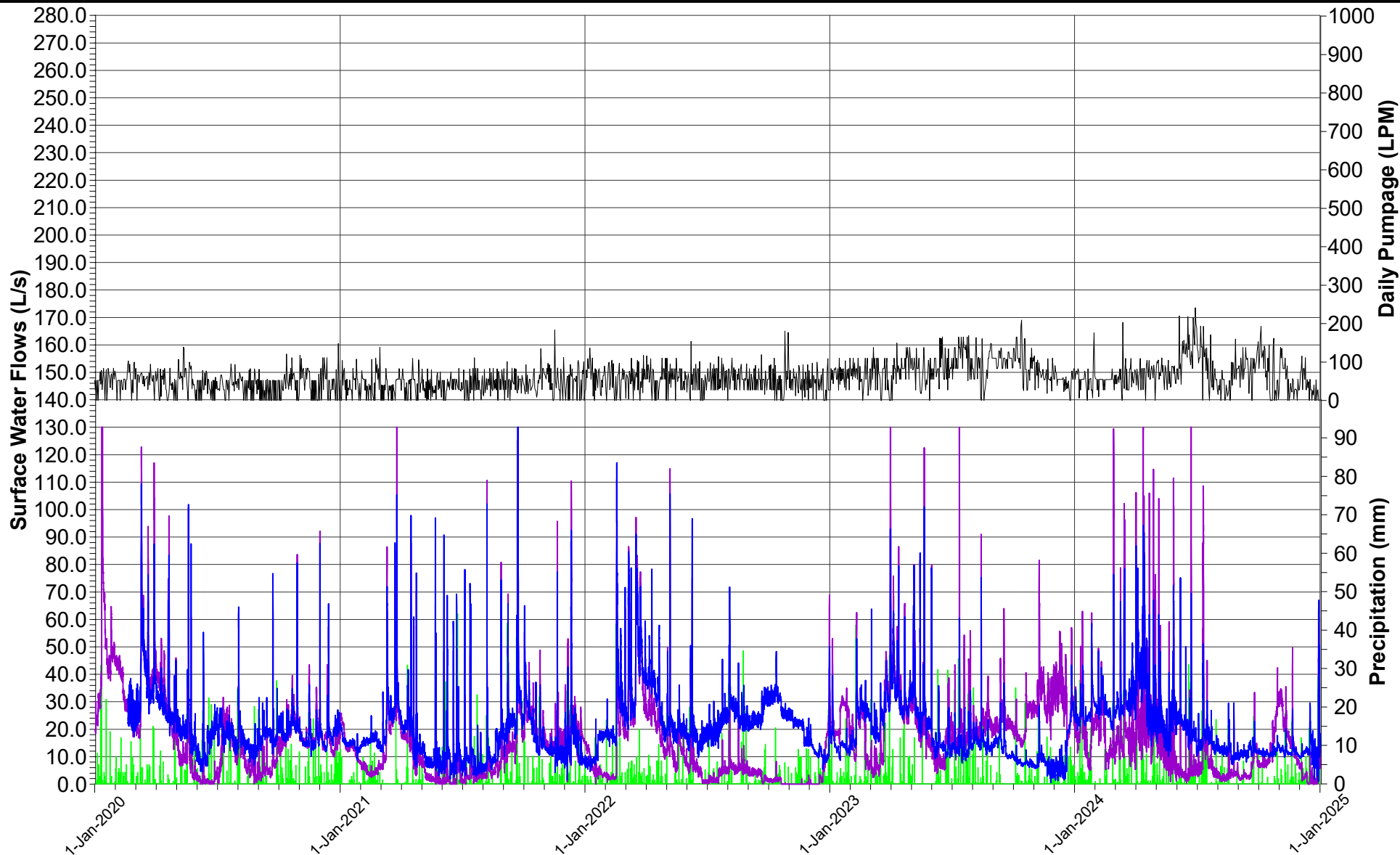
DATE	Water Level Elevation (masl)						
	SW1-08	SW1A-20	SW3-08	SW4-08	SW5-08	SW7-08	SW7B-20
19-Jan-24	427.84	427.97	NA	408.89	408.81*	431.79	435.17
23-Feb-24	427.82	427.98	428.55	408.89	408.81	431.77	435.17
21-Mar-24	427.84	427.99	428.56	408.90	408.83	431.78	435.17
17-Apr-24	427.85	428.02	428.59	408.94	408.89	431.79	435.18
22-May-24	427.83	427.97	428.55	408.93	408.90	431.75	435.18
18-Jun-24	427.80	427.97	428.50	408.91	408.87	431.74	435.16
19-Jul-24	427.84	427.98	428.49	408.91	408.86	431.74	435.16
21-Aug-24	427.83	427.97	428.48	408.93	408.87	431.71	435.18
20-Sep-24	427.80	427.98	428.45	408.94	408.90	431.77	435.16
22-Oct-24	427.84	427.97	428.47	408.91	408.84	431.74	435.18
21-Nov-24	427.85	427.98	428.50	408.99	408.95	431.73	435.18
19-Dec-24	427.79	427.97	428.52	408.91	408.86	431.76	435.16

* Water frozen

NA - data not available

APPENDIX F

Surface Water Flow Monitoring



- TW1-88 Daily Pumpage
- Precipitation
- SW1-08
- SW1A-20



DATE	MARCH 2025
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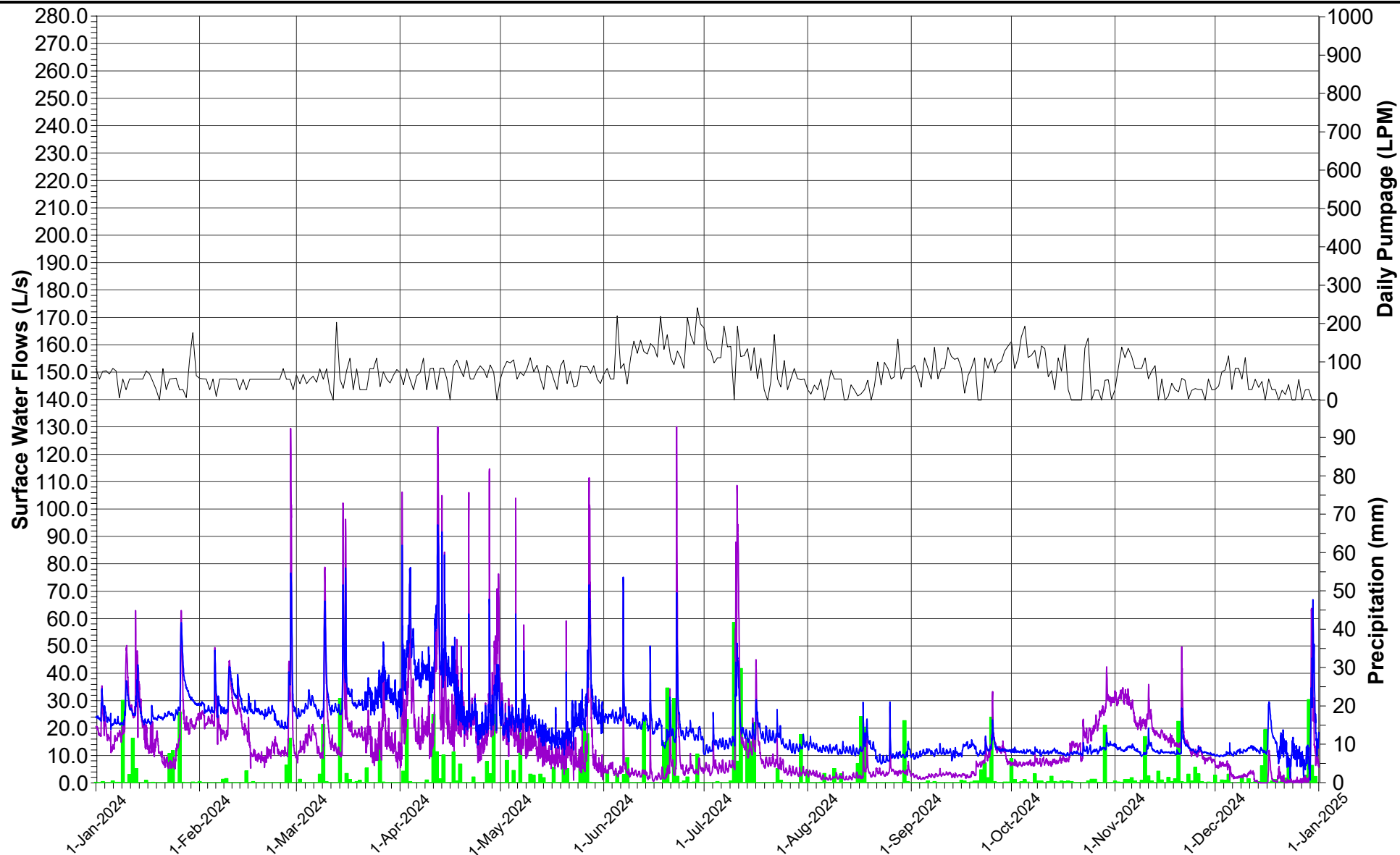
WHITE WOLF PROPERTY MANAGEMENT
Town of Erin, Ontario

TITLE **HYDROGRAPH FOR SURFACE WATER FLOWS
AT SW1-08 and SW1A-20
2024 ANNUAL MONITORING REPORT**

PROJECT NO.
CA0049769.2148

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FIGURE
F1a



— TW1-88 Daily Pumpage
 ■ Precipitation
 — SW1-08
 — SW1A-20



DATE MARCH 2025
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 Town of Erin, Ontario

TITLE

**HYDROGRAPH FOR SURFACE WATER FLOWS
 AT SW1-08 AND SW1A-20 (2024 DATA)
 2024 ANNUAL MONITORING REPORT**

PROJECT NO.

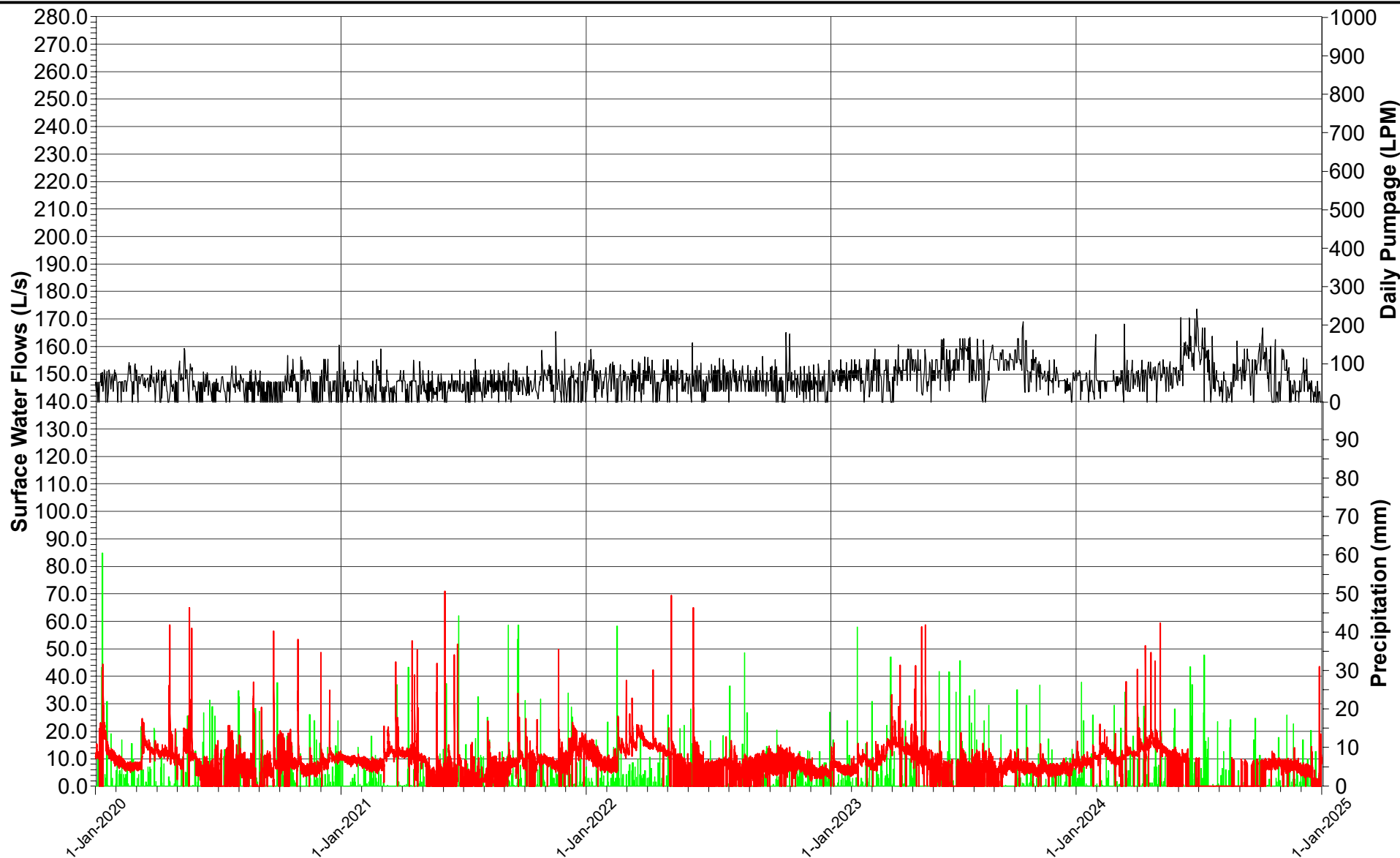
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FIGURE

F1b



— TW1-88 Daily Pumpage
 ■ Precipitation
 — SW3-08 (from on-site Pond)



DATE MARCH 2025
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WHITE WOLF PROPERTY MANAGEMENT
 Town of Erin, Ontario

TITLE

HYDROGRAPH FOR SURFACE WATER FLOW AT SW3-08
2024 ANNUAL MONITORING REPORT

PROJECT NO.

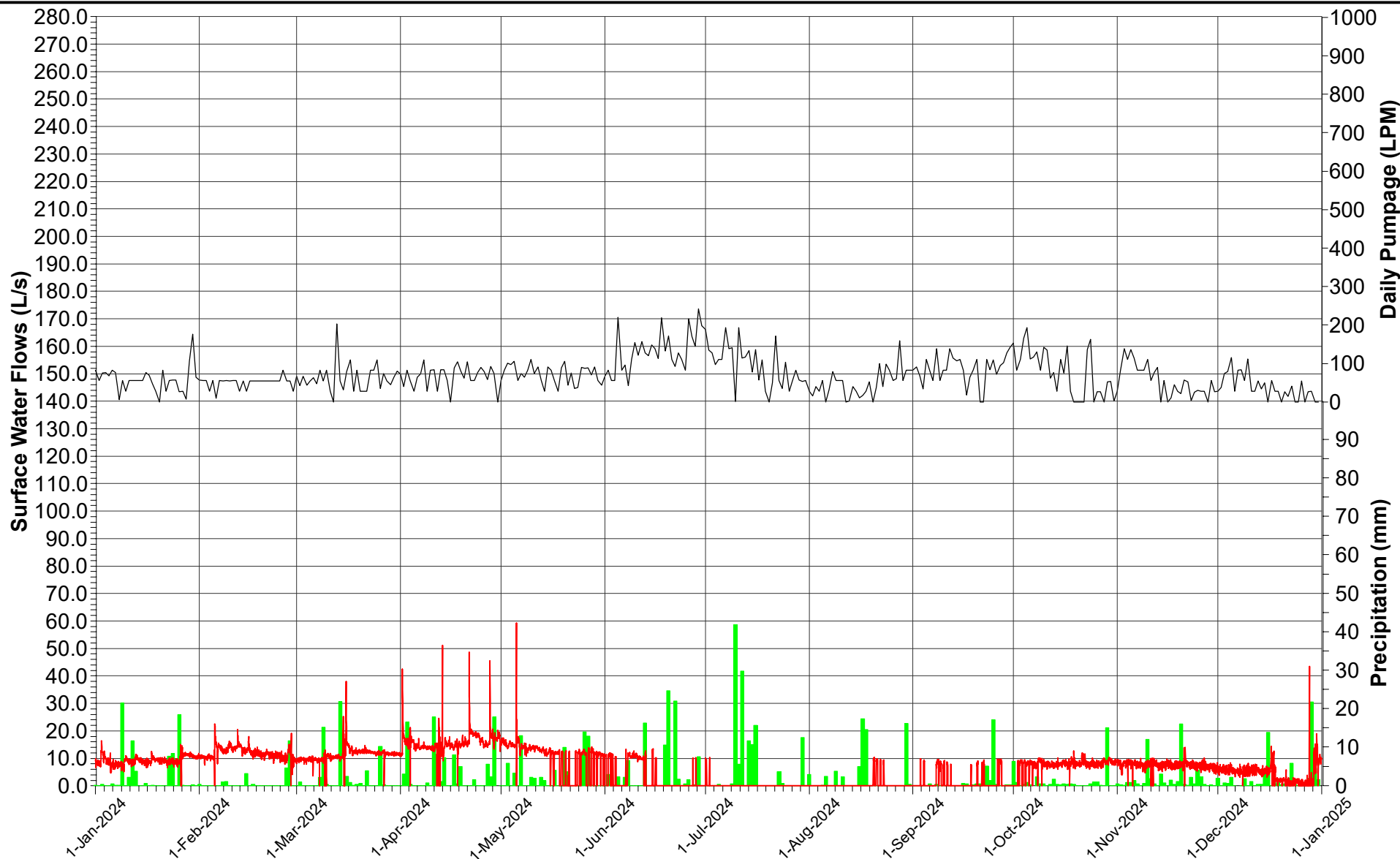
CA0049769.2148

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FIGURE

F2a



— TW1-88 Daily Pumpage
 ■ Precipitation
 — SW3-08 (from on-site Pond)



DATE MARCH 2025
 DESIGN AB
 REVIEW GP
 APPROVED GP

PROJECT

WHITE WOLF PROPERTY MANAGEMENT
 Town of Erin, Ontario

TITLE

HYDROGRAPH FOR SURFACE WATER FLOWS AT SW3-08 (2024 DATA)
 2024 ANNUAL MONITORING REPORT

PROJECT NO.

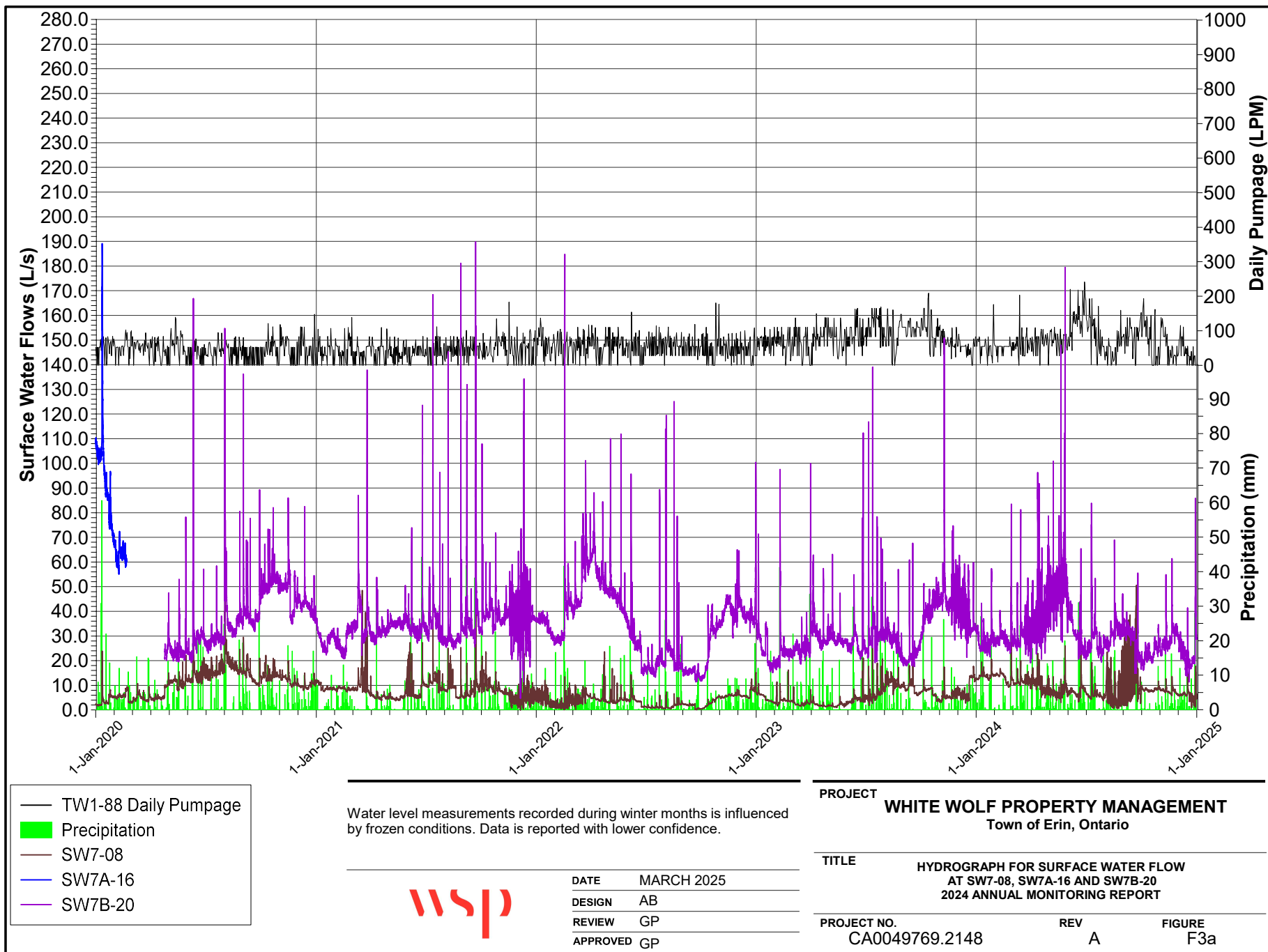
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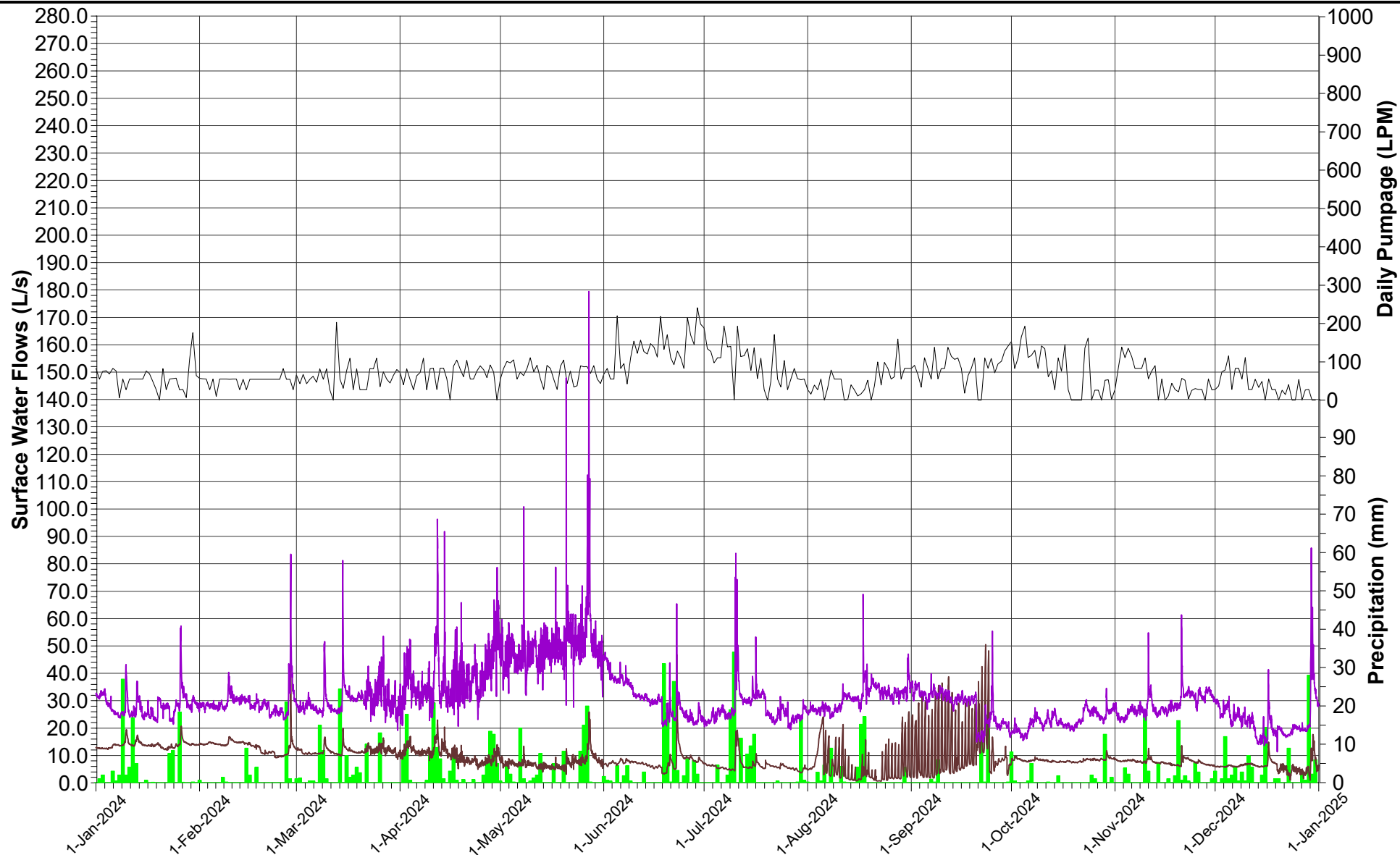
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FIGURE

F2b





DATE	MARCH 2025
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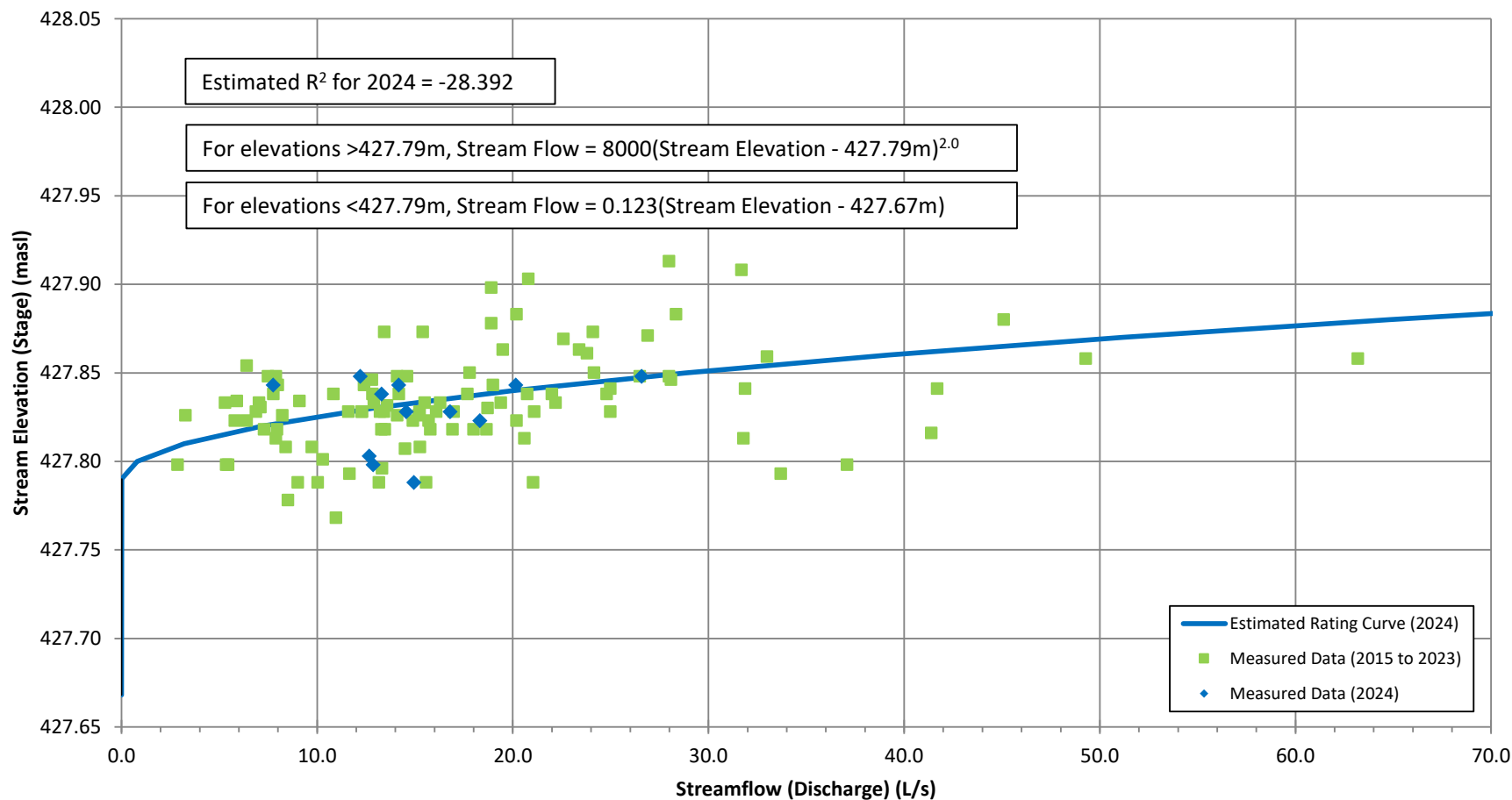
PROJECT **WHITE WOLF PROPERTY MANAGEMENT**
 Town of Erin, Ontario

TITLE **HYDROGRAPH FOR SURFACE WATER FLOWS AT
 SW7-08 and SW7B-20 (2024 DATA)
 2024 ANNUAL MONITORING REPORT**

PROJECT NO.
 CA0049769.2148

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FIGURE
 F3b

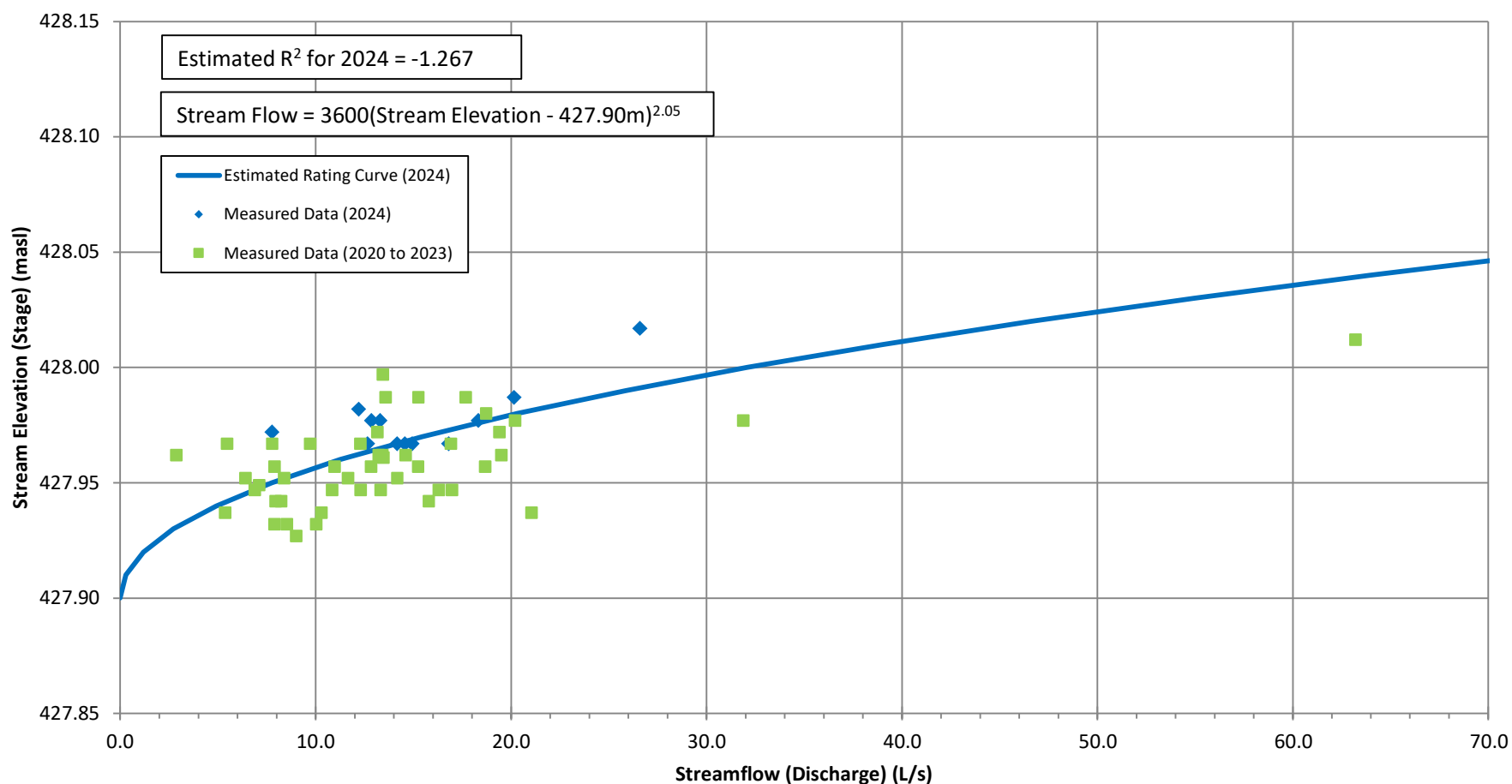


2024 Data Notes:
In 2024, the range of water levels recording during manual flow measurements= 427.79 to 427.85 masl. The full range of water levels recorded in 2024 = ~427.79 to ~427.94 masl.

Figure F4

STAGE-DISCHARGE MEASUREMENTS FOR SW1-08 (2024)
2024 ANNUAL MONITORING REPORT
WHITE WOLF PROPERTY MANAGEMENT
Town of Erin, Ontario



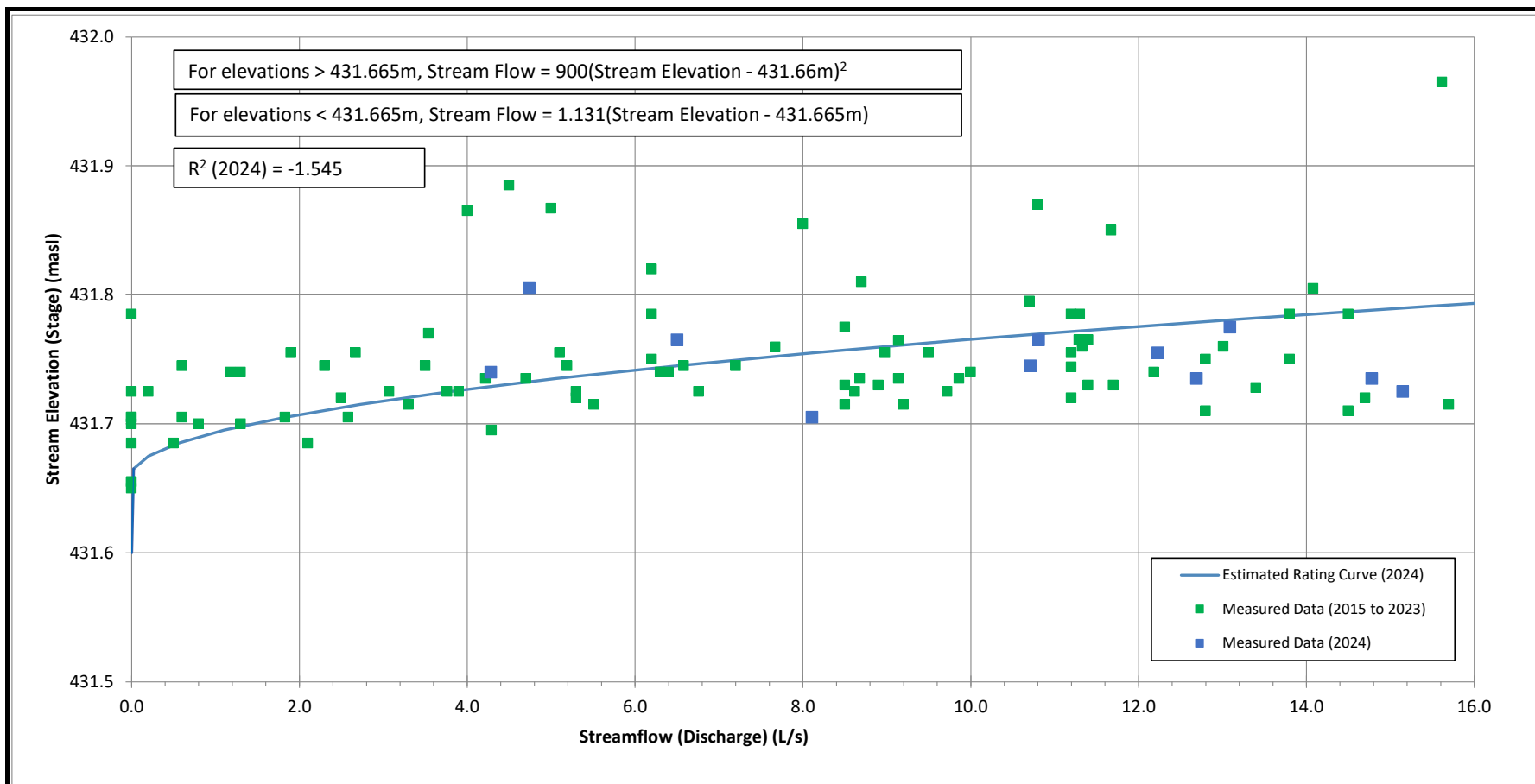


2024 Data Notes:
In 2024, the range of water levels recording during manual flow measurements= 427.97 to 428.02 masl. The full range of water levels recorded in 2024 = ~427.92 to ~428.07 masl.

Figure F5

STAGE-DISCHARGE MEASUREMENTS FOR SW1A-20 (2024)
2024 ANNUAL MONITORING REPORT
WHITE WOLF PROPERTY MANAGEMENT
Town of Erin, Ontario

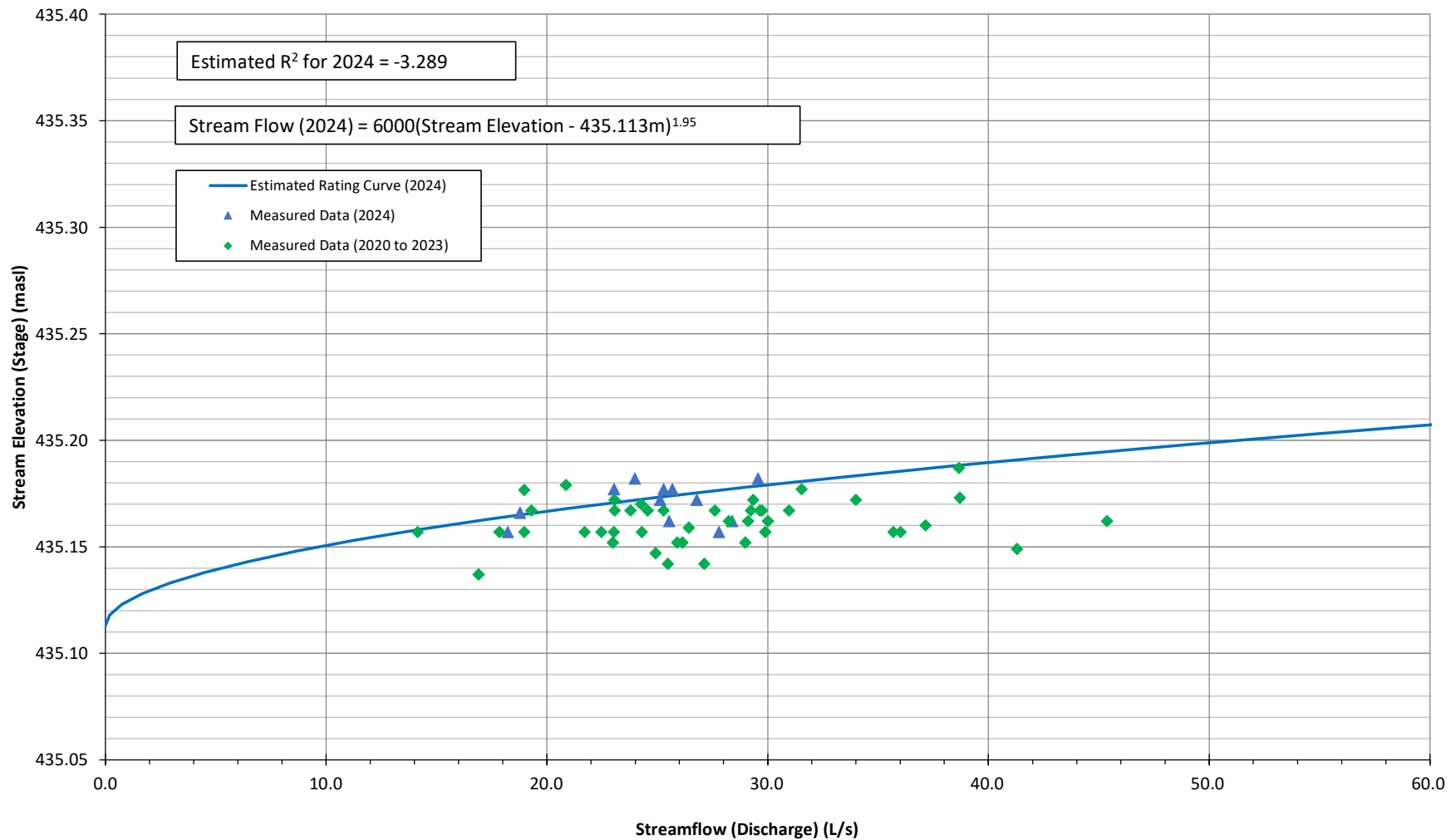




2024 Data Notes:
In 2024, the range of water levels recorded during manual flow measurements= 431.71 to 431.79 masl. The full range of water levels recorded in 2024 = ~431.69 to ~431.90 masl.



Figure F6
STAGE-DISCHARGE MEASUREMENTS FOR SW7-08 (2024)
2024 ANNUAL MONITORING REPORT
WHITE WOLF PROPERTY MANAGEMENT
Town of Erin, Ontario



2024 Data Notes:
In 2024, the range of water levels recorded during manual flow measurements= 435.16 to 435.18 masl. The full range of water levels recorded in 2024 = ~435.15 to ~435.50 masl.



Figure F7
STAGE-DISCHARGE MEASUREMENTS FOR SW7B-20 (2024)
2024 ANNUAL MONITORING REPORT
WHITE WOLF PROPERTY MANAGEMENT
Town of Erin, Ontario

TABLE F1
Surface Water Flow
2024 Annual Report

DATE	SW1-08 FLOW (L/sec)	SW3-08 FLOW (L/sec)	SW7-08 FLOW (L/sec)	SW7B-20 FLOW (L/sec)
2024/01/19	14.2	8.2	4.7	26.8
2024/02/23	18.3	5.7	10.8	18.8
2024/03/21	20.2	12.1	13.1	25.1
2024/04/17	26.6	11.6	20.4	29.6
2024/05/22	16.8	5.7	10.7	24.0
2024/06/18	12.7	5.6	12.7	18.2
2024/07/19	13.3	7.6	4.3	28.4
2024/08/21	14.6	5.1	8.1	25.7
2024/09/20	12.9	5.2	6.5	25.5
2024/10/22	7.8	4.2	14.8	23.0
2024/11/21	12.2	3.9	15.2	25.3
2024/12/19	14.9	4.6	12.2	27.8

