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Dufferin Aggregates Paris Pit – 2023 Combined Annual Monitoring Report

Please find enclosed the Combined Annual Monitoring Report for the Dufferin Aggregates Paris Pit for the 2023 calendar year, required by the ARA Licence No. 5601, Amended PTTW No. 7481-C4BQTA and ECA (ISW) No. 0302-ALCK5W. Dufferin Aggregates is a division of CRH Canada Group Inc.

Hard copies of the report can be provided upon request.

Please do not hesitate to contact me if you have any questions or comments.

Yours sincerely,

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2023 Combined Annual Monitoring Report

Dufferin Aggregates Paris Pit

Dufferin Aggregates, a CRH Company

28 March 2024

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1. Introduction

GHD was retained by Dufferin Aggregates, a CRH Company (Dufferin), to complete the 2023 Combined Annual Monitoring Report (AMR) for the Dufferin Paris Pit for the period between January 1 and December 31, 2023. This monitoring report was completed pursuant to and combines the associated monitoring results of:

– Ministry of Natural Resources and Forestry (MNRF) Aggregate Resource Act (ARA) Licence No. 5601
– Amended Permit to Take Water (PTTW) No. 7481-C4BQTA issued by the Ontario Ministry of the Environment, Conservation and Parks (MECP) on August 13, 2021
– Amended Environmental Compliance Approval (ECA) No. 3994-CCDR8L issued by the MECP on March 14, 2022

The Dufferin Paris Pit (Site) is located at 716 Watts Pond Road on Part Lot 27 in Concession 2, Part Lot 26 in Concession 3, and Part of Subdivision Lots 1, 2, and 3 in Concession 2 West of the Grand River and Part of the Canadian National Railway (CNR), in the County of Brant, Ontario. The Site location is presented on Figure 1.1. An area of 249 hectares (ha) is licensed under the ARA (Licence No. 5601), 207 ha of which are approved for extraction. A map of the Site and surrounding lands is presented on Figure 1.2.

The purpose of this 2023 Combined Annual Monitoring Report is to document the results of the 2023 monitoring program specified in the ARA Licence**,** PTTW, and ECA. Copies of the PTTW and ECA are provided in Appendix A and Appendix B, respectively.

The 2023 monitoring program and related activities included the following:

– Hydraulic monitoring (groundwater levels and surface water levels)
– Additional hydraulic monitoring (weekly events) in January, April to May, and July 2023
– Water quality monitoring (groundwater, surface water, and recirculation cell)
– Measurement of water taking amounts

The Site-wide monitoring locations are presented on Figure 1.3, the monitoring well completion details are provided in Table 1.1, and the 2023 monitoring program is summarized in Table 1.2.

2. Background

2.1 Geologic/Hydrogeologic Setting

The geologic framework within the Site was characterized through evaluation of stratigraphic data from historical test pits, boreholes, and monitoring wells. In 2023, one additional monitoring well was installed by CRH in the vicinity of the Site; the stratigraphic and instrumentation log is presented in Appendix C. In addition, as part of construction of a new Paris Pit office, a private supply well was installed on-Site to provide a private water supply for the office facilities (i.e., washrooms, kitchen, etc.); a copy of the well log for well Tag A256542 is provided in Appendix C.

The historical test pit, borehole, and monitoring well stratigraphic data were used to prepare geologic/hydrogeologic cross sections (at cross-section locations illustrated on Figure 2.1), as presented in the Ontario Water Resources Act (OWRA) S34 Permit to Take Water Application and Supporting Hydrologic and Hydrogeologic Study (CRA, 2013), and updated herein on Figures 2.2 and 2.3 to show the historical maximum observed water table and the current extraction extents.

As shown on Figures 2.2 and 2.3, sand and gravel deposits of outwash origin are underlain by fine-grained (silt and clay) glacial till. The glacial till deposits are part of the regionally-extensive Port Stanley Till. Bedrock underlying the glacial till deposits was penetrated by a limited number of boreholes or monitoring wells within the Site. Regionally, bedrock is comprised of shale and bedded dolostone of the Salina Formation.

The outwash sand and gravel deposits form the upper unconfined aquifer. Within the Site area these deposits range in saturated thickness from approximately 7.5 metres (m) in the western portion of the Site to 0 m immediately northwest of the existing ponds (BH4-12) and in the central-eastern part of the Site. In this area, the upper part of the Port Stanley Till has a prominent northeast to southwest trending ridge defined by the 248.14 m above mean sea level (AMSL) top of till elevation at BH4-12 (GHD, 2021c). This ridge is located northwest of the existing natural ponds and restricts groundwater flow to and from the existing natural ponds under low groundwater table conditions typical of dry periods. Outside of the Site, the saturated thicknesses of the outwash sand and gravel deposits are approximately 10 to 20 m at the Gilbert Wellfield and up to 34 m at the Telfer Wellfield.

Based on additional characterization in 2023, two till ridges have been identified that correspond with the local topographic relief on-Site. The approximate location and extent of these features are presented on Figure 2.1. Additional discussing on the associated hydrogeology is presented in Section 4.2.

2.2 ARA Licence

The Paris Pit was approved by the Province of Ontario for extraction of aggregates (sand and gravel) in 1974 under the provincial Pits and Quarries Control Act, 1971. In 1990, the ARA replaced the Pits and Quarries Control Act and the Site Plans were revised to reflect the necessary changes needed to meet the ARA Provincial Standards at that time. Subsequently, the Site Plans have been further updated and approved by the MNRF from time to time. The most recent Site Plan Amendment was approved by MNRF on January 13, 2023.

ARA Licence Requirements

The 2023 monitoring requirements for the ARA Licence No. 5601 are described below as specified in the Below Water Table Hydrogeological Impact Assessment and Level 2 Water Report (GHD, 2022b), which presented the technical requirements for the amendment application which was issued on January 13, 2023:

– *Hydraulic (water level) monitoring three times per year at groundwater and surface water locations set for the purpose of the licence. Recording of water levels by transducers and data loggers at a regular frequency.*
    - Hydraulic monitoring was completed in May, August, and December 2023. All groundwater and surface water monitoring locations are equipped with dataloggers.
– *Water quality sampling three times per year from groundwater monitoring locations and surface water locations set for the purpose of the licence. The groundwater samples are analyzed for general chemistry and dissolved metals and the surface water samples are analyzed for general chemistry and total metals.*
    - Groundwater and surface water quality monitoring was completed in May, August, and December 2023. The groundwater samples were analyzed for general chemistry and dissolved metals and the surface water samples were analyzed for general chemistry and total metals.
– *Submission of an annual monitoring report to the MNRF and the MECP.*
    - The 2023 Combined Annual Monitoring Report will be submitted to the MNRF and MECP before March 31, 2024.

2.3 Permit to Take Water (PTTW)

In 2023 the Site operated under Amended PTTW No. 7481-C4BQTA dated August 13, 2021. A copy of the PTTW is provided in Appendix A.

The PTTW specifies terms and conditions regarding water taking limits, monitoring, reporting, and the response to well interference complaints, should they occur. These collected data are to be presented and interpreted in an annual report to be submitted to the MECP by March 31 for the 12-month period ending December 31 of each year.

Water Taking Limits

Table A of the PTTW allows water taking from the Source Pond (see Figure 1.2) for the purpose of aggregate washing, dust suppression, and vegetation watering at a flow rate not to exceed 10,000 L/min, for a maximum of 12 hours per day, to a maximum of 7,200,000 litres per day (L/day) for a total of 30 days per annum for the purpose of refilling the Settling and Recirculation Ponds (see Figure 1.2) after removal of accumulated sediment from these ponds or repairing the liner in the Recirculation Pond. For the remaining 200 days, the water taking shall be at a rate of no more than 1,400 L/min for 12 hours per day.

– *Condition 3.6: Water takings only occur between February 15 and December 31 of each year.*
  - Water takings occurred between March 2 and December 13 in 2023 (see Section 5.0).
– *Condition 3.7: If water is pumped from the Source Pond at lower than the maximum permitted rates, the saved water can be pumped in other days exceeding the total number of 230 days, provided the takings are between February 15 and December 31, the rate of taking shall not exceed 1,400 L/min (1,008,000 L/day), and the cumulative volume pumped in all days between February 15 and December 31 shall not exceed 417,600,000 litres annually.*
  - Water takings occurred between March 2 and December 13 in 2023 for a total of 201 days and a cumulative total of 263,463,840 litres. There were no exceedances of the PTTW maximum permitted rates in 2023 (see Section 5.0).
  - Pumping equipment is equipped with timed shutoff valve to prevent water taking greater than 12-hours per day.

Monitoring and Reporting Requirements

– *Condition 4.1: Record the daily water takings and rates.*
  - Water takings and rates were recorded daily for 2023 (see Section 5.0).
– *Condition 4.2 (a,b,c,d): Monitor groundwater levels in MW1-12, MW3-16, BH88-5-I and BH88-5-II with hourly dataloggers.*
  - The groundwater levels in MW1-12, MW3-16, BH88-5-I, and BH88-5-II were equipped with hourly programmed dataloggers that were generally monitored monthly, and on a weekly frequency in January, April/May, and July 2023. Water level data are presented in Appendix D.
– *Condition 4.3: Monitor surface water levels in SW1A, SW1B and multi-level piezometers (MP1-S and MP2-S) with hourly dataloggers and calculation of vertical hydraulic gradients at the multi-level piezometers.*
  - The surface water levels in SW1A, SW1B and multi-level piezometers (MP1S/MP2S) were equipped with hourly programmed dataloggers and monitored in 2023. In addition, a new staff gauge (SG2B) was installed on June 4, 2021 to monitor the open water portion of the SW1B pond. Water level data are presented in Appendix D.
  - Vertical hydraulic gradients at the multi-level piezometers are presented in Section 4.4 and water elevations in each of MP1-S and MP2-S are provided graphically in Appendix D (Figure D.17).
– *Condition 4.4: Submit a Combined Annual Monitoring Report to MECP, Section 34.1 Director and the County of Brant.*
  - The groundwater levels, surface water levels, and other data collected from the Site are included in the 2023 Combined Annual Monitoring Report. The groundwater and surface water levels collected through the year are compared with the simulated water level changes in Section 4.3. The 2023 Combined Annual Monitoring Report will be provided to the MECP, Section 34.1 Director and the County of Brant by March 31, 2024.

– *Condition 4.5: Make the annual report available to the Community Advisory Panel and publicly by posting it on CRH's website.*
    - Dufferin will make the 2023 Combined Annual Monitoring Report available to the Community Advisory Panel and publicly by posting it on CRH's website by March 31, 2024.
– *Condition 4.6: All permit renewals and amendments (other than administrative amendments) will be accompanied by a hydrogeological assessment report that presents and discusses the data collected in Conditions 4.1, 4.2 and 4.3 and will be signed by a qualified person.*
    - No PTTW Amendments were submitted in 2023.
– *Condition 4.7: Continue to implement the Trigger Mechanism and Contingency Plan for both groundwater and surface water. This Plan will be reviewed and updated with approval by the MECP as necessary and at minimum every two years. This review can be completed as part of the Combined Annual Monitoring report.*
    - The Trigger Mechanism and Contingency Plan was implemented at the Site for both groundwater and surface water in 2023. Details of the monitoring are described in Section 4.

All of the PTTW monitoring and reporting requirements have been met.

2.4 Environmental Compliance Approval (ECA)

The Site operates under Amended ECA No. 3994-CCDR8L dated March 14, 2022. The ECA is provided in Appendix B. Amended ECA No. 3994-CCDR8L specifies the terms and conditions regarding monitoring and reporting at the Site. These collected data are to be presented and interpreted in an annual report to be submitted to the MECP by March 31 for the 12-month period ending December 31 of each year.

Monitoring & Reporting Requirements

The following provides a summary of ECA No. 3994-CCDR8L monitoring and reporting requirements and how they are addressed:

– *Condition 3.1 and 3.2: Develop and implement an operations manual prior to the construction, use and operation of the Works.*
    - The Operations Manual was developed and implemented prior to the construction, use, and operation of the Works. It was first issued December 28, 2015 and further revised on May 15, 2017.
– *Condition 3.3: Develop a seal at the bottom of the settling pond (cells and recirculation cell).*
    - The seal at the bottom of the settling ponds (cells and recirculation cell) was initiated in September 2017 and is now completed. The recirculation pond was lined in November 2019. Additional information is provided in Section 3.2 and 3.3.
– *Condition 4.1: Groundwater monitoring from seven upper sand and gravel aquifer monitoring wells (BH88-2-I, BH88-6-I, MW1-12, MW3-16, MW4-16, MW5-16, and MW6-16).*
    - Groundwater monitoring was performed at the seven upper sand and gravel aquifer monitoring wells: BH88-2-I, BH88-6-I, MW1-12, MW3-16, MW4-16, MW5-16, and MW6-16; the results are discussed in Section 4.
– *Condition 4.2 and 4.3: Groundwater will be sampled from seven upper sand and gravel aquifer monitoring wells (BH88-2-I, BH88-6-I, MW1-12, MW3-16, MW4-16, MW5-16, and MW6-16) in May, August, and December each year and analyzed for general chemistry, dissolved metals, and pesticides (including organochlorine pesticides and herbicides).*
    - Groundwater was sampled from BH88-2-I, BH88-6-I, MW1-12, MW3-16, MW4-16, MW5-16, and MW6-16 in May, August, and December 2023 and analyzed for general chemistry, dissolved metals, and pesticides; the results are discussed in Section 6.

– *Condition 4.4: Surface water samples will be collected from SW1B in May, August, and December each year and analyzed for field parameters, general chemistry, total metals, oil & grease, and pesticides (including organochlorine pesticides and herbicides).*
    - Surface water was sampled from the SW1B Pond in May, August, and December 2023 and analyzed for field parameters, general chemistry, total metals, oil & grease, and pesticides; the results are discussed in Section 6.
– *Condition 4.6: Water samples collected from the recirculation pond and analyzed for general chemistry, nutrients, metals, and pesticides (including glyphosate, atrazine, atrazine desethyl and aminomethylphosphonic acid [AMPA]).*
    - Water samples from the recirculation cell were collected in March and November 2023 and analyzed for general chemistry, nutrients, metals, and pesticides. Additional information is provided in Section 3.3 and the results are discussed in Section 6.
– *Condition 5.1 to 5.3: Develop a Contingency and Pollution Prevention Plan prior to the commencement of the Works.*
    - A Contingency and Pollution Prevention Plan was developed prior to the commencement of the Works and submitted to the MECP on May 29, 2017 (email from Maria Topalovic [CRH] to Fariha Pannu [MECP] on May 29, 2017).
– *Condition 5.4: The plan required by Condition 5.1 shall be provided to the County of Brant and posted on the CRH website for a thirty (30) day comment period.*
    - The Contingency and Pollution Prevention Plan was provided to the County of Brant and posted on the CRH website on April 13, 2017 with the 30-day comment period completed on May 13, 2017.
– *Condition 6.1: Submit a spill report to the MECP District Manager within fifteen (15) working days of a reportable spill into the environment.*
    - No reportable spills occurred at the Site in 2023.
– *Condition 6.2: Submit an annual Report to the MECP District Manager within ninety (90) days following the end of the period being reported upon.*
    - The 2023 Combined Annual Monitoring Report will be submitted before the March 31, 2024 due date.
– *Condition 7: Make the annual report available to the Community Advisory Panel and publicly by posting it on the CRH website.*
    - The 2023 Combined Annual Monitoring Report will be made available to the Community Advisory Panel and the public on the CRH website by March 31, 2024.

All of the ECA monitoring and reporting requirements have been met.

A summary of the 2023 water level monitoring and sampling program as required by the ARA, PTTW, and ECA is provided in Table 1.2. Consistent with the MECP approved amendment to the ECA, total ammonia (as N) and unionized ammonia were removed from the Site wide monitoring program for 2023.

3. Pit Operations and Activities

3.1 2023 Monitoring Program

The 2023 Monitoring Program consisted of hydraulic monitoring at 22 groundwater monitoring well locations, two piezometer locations, two surface water features, and one supplemental off-Site monitoring well. Water quality sampling events were conducted on May 24/25, August 14/15, and December 12/13, 2023 at 18 groundwater monitoring wells installed on the property as well as one surface water monitoring location.

In 2023, water levels from a monitoring well located on an adjacent property owned by CRH (MW12-23) were included in this report.

The groundwater and surface water monitoring locations are provided on Figure 1.3, the monitoring well completion details are provided in Table 1.1, and the 2023 Monitoring Program is detailed in Table 1.2.

3.2 Settling Pond Operations

There were no issues encountered during operation of the Settling Pond in 2023.

3.3 Recirculation Pond Sampling

Water samples were collected prior to the washing season, in March 2023, and before the end of the washing season, in November 2023. The water samples were collected from the recirculation pond adjacent to the pump intake using a telescoping swing arm sample rod.

The recirculation pond samples were analyzed for general chemistry, metals, and pesticides (including glyphosate, atrazine, atrazine desethyl and AMPA), as specified in Condition 4.7 of the ECA.

3.4 Operation, Inspection and Maintenance

The Operations Manual required in Condition 3 of the ECA has been completed, reviewed, updated as necessary, and implemented by the Site. It includes information pertaining to operating procedures for routine operations, inspection programs, repair and maintenance programs, contingency plans and procedures, and procedures for receiving and responding to public complaints.

The Contingency and Pollution Prevention Plan required in Condition 5 of the ECA has been completed, reviewed, and updated as necessary by the Site.

3.5 Adequacy of the Works

No operating problems were encountered at the Site in 2023 that required corrective actions or maintenance on major structures, apparatus, or mechanisms forming part of the Works.

4. Hydraulic Monitoring

Hydraulic monitoring (manual water level measurement) was performed three times as part of the regular monitoring program in 2023 for all groundwater and surface water monitoring locations around the Site in accordance with the Site Plans. More frequent monthly/weekly monitoring was completed at a select number of monitoring locations, as per Condition 4.7 of the PTTW - Trigger Mechanism and Contingency Plan (TMCP; GHD, 2017).

Groundwater depths were measured manually at 22 monitoring wells, two piezometers and one supplemental off-Site wells using an electronic water level meter. Surface water elevations were measured manually at three locations (SW1A, SW1B, and SG2B) from surveyed instruments. Staff gauge location SG2B was installed proactively on June 4, 2021 to ensure monitoring of the main pond could continue should the SW1B monitoring location go dry and to establish a relationship between water levels within the wetland margins and the open pond area.

Dataloggers were operating at all groundwater and surface water locations and were downloaded during each monitoring event. Short-lived datalogger malfunctions were experienced at a few monitoring locations (BH88-5-II, BH88-5A-I, BH88-6-I, and SW1A) but have all been replaced/repaired as necessary and within a reasonable timeframe following issue identification.

The 2023 groundwater and surface water monitoring manual elevations are provided in Table 4.1, hydrographs of historical groundwater and surface water data are presented in Appendix D, including datalogger data.

Note that the last monitoring event for the groundwater and surface water locations at the Site was completed between December 12 and 13, 2023. The hydrographs in Appendix D show datalogger data up to the final monitoring event of 2023 at each location, and not to the end of the year (December 31, 2023). Outstanding datalogger data will be presented in the 2024 AMR.

4.1 Precipitation

The 2023 daily and monthly precipitation data obtained from Environment Canada for Hamilton A (Airport) Station (I.D. #6153193) are presented on Figure 4.1 compared to the monthly Environment Canada Climate Normals (1981-2010) prepared for the Station #6153193.

As shown on Figure 4.1, precipitation totals varied significantly month to month compared to historical averages with very wet periods (March-April, June-July-August) and very dry periods (May, September-October-November).

Overall, the 2023 total precipitation was 991 mm, compared to the 1981-2010 climate normal precipitation total of 930 mm; a 7% increase.

Based on the hydrographs in Appendix D, the groundwater and surface water elevations measured in 2023 were within the typical historical ranges for each of the monitoring locations. However, May 2023 received only 49% of the normal precipitation and these dry conditions (during a typically wet period) did result in lower than average water levels within on-Site surface water features SW1A and SW1B.

4.2 Site-Wide Groundwater Elevations

Dufferin groundwater monitoring wells at or near the Site are screened in the unconfined overburden aquifer (BH88-1-I, BH88-2-I, BH88-4-I, BH88-4A-II, BH88-5-I, BH88-5-II, BH88-6-I, MW1-12, MW2-12, MW3-16, MW4-16, MW5-16, MW6-16, MW8-22, MW9-22, MW10-22, MW11-22, OW1-96B, OW1-96C, and MW12-23), and confined bedrock aquifer (BH88-4A-I, BH88-5A-I, and OW1-96A). The locations of the groundwater monitoring wells are shown on Figure 1.3. Groundwater elevations measured in 2023 are provided in Table 4.1.

Hydrographs showing 2023 and historical data for the groundwater monitoring wells completed in the overburden are provided on the lower and upper panels of Figure 4.2, respectively, and hydrographs of the groundwater monitoring wells completed in the bedrock are provided on Figure 4.3. Individual (or nested were applicable) hydrographs for all groundwater monitoring wells are provided in Appendix D.

Figure 4.2 and Figure 4.3 show the overall, generally stable water level patterns across the Site while the hydrographs in Appendix D detail the individual variations.

Seasonal groundwater contours were prepared for the Outwash Sand and Gravel Deposits (overburden) using groundwater elevation data collected between May 24 and 25, 2023, as presented on Figures 4.4. The May groundwater elevation contours show the typically seasonal high water table conditions (see, for example, Figure 4.2).

Generally, the regional groundwater flow patterns remain unchanged (i.e., perpendicular to and toward the Grand River). Groundwater flow is generally in a southeasterly direction towards the Grand River with an average horizontal hydraulic gradient of approximately 0.01 metre of head loss per metre along the groundwater flow path (m/m) and are consistent with historical flow patterns and average horizontal hydraulic gradients.

However, based on the additional characterization completed in 2023, the local groundwater flow patterns on Site have been refined. On-Site, within the unconfined overburden, subterranean low permeability till ridges appear to interrupt the generally southeastward groundwater flow direction and redirect the groundwater flow south-southwest within the higher permeability sand and gravel between the till ridges until a higher permeability region within the till ridge is encountered. Observed groundwater flow patterns are presented on Figure 4.4. One such higher permeability

region is located between the Source Pond and the SW1B and has been observed correspond with seeps leading to the Southwest corner of SW1B during high water table conditions.

Contours for the historically observed maximum water table have also been developed for 2023 and are present on Figure 4.5. Monitoring results for all unconfined overburden monitoring wells (both manual and datalogger measurements) were reviewed to identify the maximum observed groundwater elevation at each location. The elevations were then contoured to represent the approximate maximum observed water table across the Site. Current ground surface contours (December 14, 2023) are also presented on Figure 4.5 for reference.

The bedrock groundwater levels show frequent oscillation in water levels (provided on Figure 4.3). These oscillations are attributed to pumping at nearby municipal bedrock wells for the Gilbert Wellfield (P28 and P29) and the Telfer Wellfield (P32).

In addition to the hydraulic monitoring described above, monitoring wells BH88-5-I, MW1-12, and MW3-16 were also monitored (typically monthly) as part of the Trigger Mechanism and Contingency Plan (Condition 4.7 of the PTTW), as described in Section 4.3, below.

Note that groundwater in the Upper Unconfined Aquifer at the Site is recharged vertically through infiltration of precipitation and from inflow from upgradient locations.

4.3 PTTW Groundwater and Surface Water Monitoring

The PTTW to allow water taking from the Source Pond was issued on April 27, 2017 and amended on August 13, 2021. The water taking is for the purpose of aggregate washing, dust control, and vegetation watering.

As required by Condition 4.7 of the PTTW, a TMCP was submitted and approved by the MECP on July 19, 2017. The purpose of the TMCP is to have an assessment and evaluation procedure in place to review water levels during the time when Dufferin is taking water from the Source Pond and establish an action plan to respond if key groundwater or surface water levels drop below predicted levels evaluated as part of the PTTW assessment.

PTTW Condition 4.2 and 4.3 requires continuous monitoring at BH88-5-I, BH88-5-II, MW1-12, MW3-16, SW1A, SW1B, MP1S, and MP2S (i.e., with a datalogger), the TMCP identified additional monitoring requirements for the following locations:

– BH88-5-I
– MW1-12
– MW3-16
– SW1B

In accordance with the PTTW Condition 4.4, groundwater and surface water elevations were compared to the simulated water level changes (drawdown) outlined in Section 6.1.2 of the PTTW Application and Supporting Hydrologic and Hydrogeologic Study (CRA, 2013).

For each of the four TMCP locations, historical lows based on analysis of monitoring data collected between 1988 and August 2016, early-warning threshold levels (EWTL), and trigger levels were established to facilitate monitoring during Source Pond operation as part of the TMCP.

Summaries of the trigger mechanism water elevations for 2023 are presented on Figures 4.6a through 4.6d for BH88-5-I, MW1-12, and MW3-16 and SW1B, respectively. Also shown on these hydrographs are the 2015 to 2023 water elevation data, historical water elevation ranges, EWTLs, and trigger levels following establishment in 2017.

In 2023, each of the trigger monitoring groundwater wells (BH88-5-I, MW1-12, and MW3-16) showed groundwater levels that were generally within the typical range. Pumping from the source pond at the higher approved rates in late March and early April 2023 resulted in a drop in the water table below the EWTL; however, a reduction in pumping rates to below the lower approved rates, combined with precipitation, allowed for water levels to recover to within historical ranges (and above the EWTL).

Following monitoring on April 21, 2023 and identification of the water levels below the EWTL and historical range in the preceding month at MW1-12, MW3-16, and SW1B, weekly monitoring was initiated and pumping rates were reduced (as required by the TMCP). Weekly monitoring ceased on June 1, 2023 following a month of water levels above the respective EWTLs. As a result of the significantly below average precipitation in May and early June 2023, surface water elevations at SW1B dropped below the EWTL and historical low at SWIB in June 2023.

Following monitoring on July 7, 2023 and identification of the water levels below the EWTL and historical range in the preceding month at SW1B, weekly monitoring was initiated (as required by the TMCP). No changes to the Site water taking were initiated as water taking rates were already below the levels identified in the TMCP (i.e., less than 1,400 L/min). Weekly monitoring ceased on July 21, 2023 following a month of water levels above the respective EWTLs.

As noted in the TMCP, for SW1B, the historical monitoring period used to prepare the historical low and EWTL was limited to approximately 4 years (August 2012 to August 2016) and was therefore expected to overestimate the elevation of the historical low levels experienced by the pond; due to the limited data set. It was further noted that the historical low water level and EWTLs should be recognized as conservatively high levels.

Throughout 2023, datalogger checks were completed at trigger well locations on a minimum monthly frequency to ensure continued operation and continuous recording [per Condition 4.2(d) of the PTTW]. Monitoring may occur more frequently or less frequently from time-to-time based on Site condition observations and routine reviews of the monitoring data.

4.4 Surface Water and Piezometer Level Elevations

Further to the TMCP discussion in Section 4.3, Surface water elevations are measured at locations SW1A (small pond), SW1B (main pond at edge), and SG2B (open water portion of main pond) as well as two piezometers; MP1S and MP2S. MP1D was decommissioned in 2017, as noted in the 2017 annual monitoring report. Currently, the multilevel piezometers are being monitored as "shallow" (MP2S) and "deep" (MP1S) to monitor the hydraulic connection and vertical flow directions.

Surface water monitoring locations are shown on Figure 1.3 and surface water elevations measured in 2023 are provided in Table 4.1.

Surface water elevation hydrographs are presented in Appendix D for locations MP1S/MP2S (Figure D.17), SW1A (Figure D.18), and SW1B/SG2B (Figure D.19). The surface water elevations in the SW1B pond are generally about 1 m higher than the elevation in the small downgradient (SW1A) pond to the southeast.

The surface water elevations in 2023 were at the low end of the historical ranges in the first half of 2023 as discussed in Section 4.3. However, water elevations returned to normal conditions following the wetter than average mid-to-late June, July, and August.

The SW1B Pond is monitored as part of the TMCP (Condition 4.7 of the PTTW). As shown on Figure 4.6d, the water elevations were on the lower end of historical observations from early April until the end of June and went below the historical range in both April and June 2023. It should be noted that precipitation during May 2023 was 49% of the climatic normal.

As presented on Figure 1.3 and Figure 4.6d, feature SW1B is installed within the wetland fringe. This is to allow for routine monitoring access; this location was used to develop the TMCP targets. In 2021, as surface water elevations decreased into the summer, SG2B was proactively installed within an open water portion of the wetland to ensure continuous data collection should SW1B dry out.

In 2021 and again in 2022, surface water elevations at SW1B dropped below the ground surface at that feature. Instrument SW1B, however, is advanced within the wetland soils which allows for continuous data collection following a dry-out of the wetland fringe. It should be noted that, during these times, surface water elevations at SG2B are often recorded at a slightly lower elevation than SW1B following precipitation events. This is attributed to a slower rate of infiltration within the fringe soils/vegetation resulting in higher recorded elevations at SW1B following small to mid-size

precipitation events which stabilize with the open pond water elevations within a few days to weeks. SW1B elevations continue to be used for comparison to the TMCP as that feature, in that location, was used to develop the historical ranges.

Vertical Hydraulic Gradient

In accordance with Condition 4.3 of the PTTW, calculation of the vertical hydraulic gradients at the multi-level piezometers is required.

Figure D.6 (in Appendix D) shows the hydrograph of the "shallow" piezometer location, MP2S, and the "deep" piezometer location, MP1S. The piezometer screen lengths are approximately 0.75 m.

The water level data and hydrographs for 2023 show an upward vertical hydraulic gradient occurs between the shallow (MP2S) and deep (MP1S) piezometers.

The following is an example vertical hydraulic gradient calculation from the May 25, 2023 monitoring data:

$$\text{Vertical Hydraulic Gradient} = \frac{\text{Difference in water level elevation}}{\text{Vertical distance between midpoints of well screen elevations}}$$

$$\text{Vertical Hydraulic Gradient} = \frac{(244.19 - 244.08)}{(242.25 - 243.10)}$$

$$\text{Vertical Hydraulic Gradient} = \frac{(0.11)}{(-0.85)}$$

$$\text{Vertical Hydraulic Gradient} = -0.12 \text{ (i.e., upward)}$$

The upward vertical hydraulic gradient in the piezometer locations confirms groundwater discharges to the SW1B (main pond) feature. Following periods of heavy precipitation, the upward vertical hydraulic gradient may be reduced to near zero and, for short durations, flow reversals can be noted in the transducer data (see, for example, water levels on March 31/April 1st on Figure D.17). As shown on Figure D.17, the long-term upward gradient has been evident since 2017 monitoring was established and was maintained in 2023.

5. Water Taking

In 2023, the Site operated under PTTW No. 7481-C4BQTA dated August 13, 2021. The PTTW is provided in Appendix A.

The maximum pumping rate allowed for the Source Pond under the PTTW is 10,000 L/min for a maximum of 12 hours per day to a maximum of 7,200,000 L/day. As specified in Condition 3.4, the “Taking Specific Purpose” includes aggregate washing, dust suppression, and watering vegetation. As specified in Condition 3.5, the allowed rate of taking from the Source Pond may only be at the rate in Table A (i.e., 10,000 L/min) for a total of 30 days per annum for the purpose of refilling the settling and recirculation ponds after removal of accumulated sediment from these ponds or repairing the liner in the recirculation pond with the remaining 200 days at a rate of no more than 1,400 L/min for 12 hours per day. As specified in Condition 3.5(i) and Condition 3.5(ii), water taken during a 12-hour period between a Sunday and the following Monday (or in the case of a long weekend, a holiday Monday and Tuesday) will be measured and shall be recorded as being taken on the Sunday (or holiday Monday). As specified in Condition 3.6, water takings will only occur between February 15 and December 31 of each year. As specified in Condition 3.7, if water takings from the Source Pond are at a lower than maximum permitted rate, the saved water can be pumped in other days exceeding the total number of 230 days, provided water takings occur between February 15 and December 31, inclusive. The rate of taking shall not exceed 1,400 L/min, 1,008,000 L/day, and the cumulative volume pumped in all days from February 15 to December 31 shall not exceed 417,600,000 litres annually.

Water takings are calculated using measurements obtained from a flow meter. The cumulative pump operating hours are recorded with an hour meter. Pumping equipment is equipped with a timed shutoff valve to prevent water taking greater than 12 hours per day.

These data were recorded daily by Dufferin personnel during the operating season. No water taking occurred outside of the operating season.

The rate of taking is determined by dividing the total flow in a period by the total number of pumping hours in that same period.

5.1 Water Taking Data

The water takings and rates were recorded daily for 2023 and are provided in Table 5.1.

The aggregate washing operation balances the amount of water taking with the need for top up water in the system and the water levels in the two main trigger level monitoring wells (MW3-16 and MW1-12). Dufferin manages and monitors water takings and only take water on an as-needed basis.

The maximum water taking rate occurred on May 12, 2023 with a rate of 9,984 L/min. The maximum daily water taking occurred on April 20, 2023 with an amount of 7,002,990 L/day. Only 18 days of the available 30 days of pumping to a maximum 10,000 L/min were used in 2023 with a combined average rate of taking of 8,843 L/min (significantly less than the permitted rate of 10,000 L/min). There were no exceedances of the higher water taking rate of 10,000 L/min in 2023. There were no exceedances of the lower water taking rate of 1,400 L/min during the applicable period in 2023.

Water takings occurred between March 2 and December 13 in 2023 for a total of 201 days and a cumulative total of 263,463,840 litres. There were no exceedances of the PTTW maximum permitted rates or limits in 2023.

6. Analytical Results

Groundwater and surface water quality monitoring is required as part of the ARA Licence and ECA. The 2023 monitoring program is summarized in Table 1.2.

Site-wide water quality sampling was performed on three occasions in 2023 to determine the groundwater and surface water quality at the Site. Prior to collecting any groundwater samples, the groundwater monitoring wells were purged and field parameters (typically pH, conductivity, turbidity, oxidation-reduction potential, dissolved oxygen, and temperature readings) were measured and recorded to ensure that representative groundwater samples were collected. Field parameters were also recorded at the surface water sample location during the sampling activities. Groundwater samples were field-filtered for dissolved metals. The groundwater and surface water samples were collected in laboratory-supplied analyte-specific sample containers, preserved according to laboratory requirements, and delivered in coolers, on ice, under chain-of-custody procedures. Samples were received and analyzed by ALS Laboratories, located in Waterloo, Ontario. Laboratory results were reviewed and validated by a GHD chemists to confirm acceptability of the laboratory results; all 2023 results were considered acceptable for use with the noted qualifiers.

The 2023 validated analytical results are provided in Tables 6.1 to 6.6.

6.1 Groundwater Quality

Groundwater analytical results for 2023 are summarized in Tables 6.1 to 6.3.

Routine groundwater samples were collected from 18 monitoring well locations around the Site during the May, August, and December sampling events, as summarized in Table 1.2.

The groundwater samples were analyzed for general chemistry and dissolved metals. Seven of the monitoring wells were also analyzed for pesticides (including organochlorine pesticides and herbicides), as specified in Condition 4.3 and 4.4 of the ECA.

The groundwater analytical results were compared to the 2020 Ontario Drinking Water Quality Standards, Objectives and Guidelines (ODWQS) including the Aesthetic Objective and Operation Guidelines (revised June 2006). The monitoring well groundwater quality is compared to the ODWQS for illustrative purposes only since the ODWQS pertain to municipal water supply and are not directly applicable to groundwater quality.

Consistent with the ECA requirements, some analyses were run to relatively low laboratory detection limits, well below those typically used for drinking water supply systems. No pesticides, atrazine, or metabolites were detected in any of the groundwater samples collected from monitoring wells during any of the monitoring events in 2023.

Parameter concentrations for the 2023 sampling events were generally comparable to historical results and met the ODWQS, with the following exceptions:

– Dissolved organic carbon (DOC) was above the ODWQS of 5 mg/L at BH88-6-I (August/December) and MW6-16 (May) with concentrations ranging from 5.42 estimated (J) to 6.67 J mg/L. DOC is periodically detected across the Site above the ODWQS at concentrations ranging from 5.4 to 52.4 mg/L. DOC is naturally occurring and the ODWQS for DOC is an aesthetic objective and is not considered a health concern.
– Hardness concentrations were above the ODWQS of 100 mg/L in all groundwater samples from monitoring wells during all 2023 monitoring events. Hardness concentrations have historically always been above the ODWQS in the groundwater samples in all monitoring well locations. In 2023 concentrations ranged from 268 to 518 mg/L and are within the historical detected range of concentrations between 244 and 559 mg/L. Hardness is a natural occurrence in this region and is characteristic of the local groundwater being influenced by carbonate-bearing overburden and the underlying carbonate bedrock. The ODWQS for hardness is an operational guideline for municipal water supply and is not considered a health concern.
– Nitrate concentrations were slightly above the ODWQS of 10 mg/L in BH88-2-I, MW5-16 and MW8-22 with concentrations ranging from 11.3/11.5 mg/L (duplicate results at MW5-16 in August 2023) to 15.2 mg/L (MW8-22 in December 2023). Nitrate concentrations have historically been above the ODWQS in the groundwater samples at each of these monitoring locations. The nitrate concentrations are comparable to historical results in the area (both on-Site and off-Site) and generally are the result of upgradient agricultural land use. Nitrate has also been a long-term issue for the County of Brant Gilbert/Telfer water supply wells and is unrelated to the Paris Pit aggregate operations.
– Total dissolved solids (TDS) concentrations were above the ODWQS of 500 mg/L in BH88-5A-I for the May, August, and December events with concentrations of 670, 678, and 684 mg/L, respectively. TDS concentrations in BH88-5A-I have historically been above the ODWQS consistently with a range of concentrations from 385 to 728 mg/L. The elevated concentrations of TDS reflect the increased calcium and sulphate concentrations within the bedrock aquifer at this location and are a natural occurrence. The ODWQS standard reflects an aesthetic objective related to taste and is not considered a health concern.
– Dissolved iron was above the ODWQS of 0.3 mg/L in BH88-5A-I (All samples) and in BH88-6-I (December) with concentrations ranging from 0.331 mg/L (BH88-5-AI in May 2023) to 0.906 mg/L (BH88-6-I in December 2023). Each of these monitoring well locations have had historical detections above the ODWQS. Dissolved iron is naturally occurring and is considered an aesthetic objective and is not a health concern.

Historical groundwater quality analytical data was presented in the 2021 annual monitoring report (GHD, 2022a) and on an annual basis thereafter.

6.2 Surface Water Quality

Surface water analytical results for 2023 are summarized in Tables 6.4 to 6.6.

Surface water samples were collected from SW1B (main pond) during the May, August, and December monitoring events.

The SW1B (main pond) surface water analytical results were compared to the Provincial Water Quality Objectives (PWQO; MECP July 1994, revised February 1999), which are generally applicable to surface water results. The comparison is for illustrative purposes as many factors influence the water quality of the pond.

SW1B

The SW1B samples were analyzed for field parameters, general chemistry, total metals, oil & grease, and pesticides (including organochlorine pesticides and herbicides), as specified in Condition 4.5 of the ECA.

No pesticides, atrazine, or atrazine metabolites, or glyphosate were detected in any of the SW1B water samples.

Parameter concentrations in SW1B for the 2023 sampling events were generally comparable to historical results and met the PWQOs, with the following exceptions:

– Aluminum was above the PWQO of 0.075 mg/L in December at a concentration of 0.398 mg/L. Aluminum concentrations have historically been above the PWQO on occasion ranging between 0.105 to 3.2 mg/L. Since the objective for aluminum is a clay-free sample and the submitted sample was not filtered, this could account for the elevated aluminum level. The dissolved (filtered) aluminum result was not detected at 0.005 mg/L; below the PWQO.
– Iron was above the PWQO of 0.3 mg/L in December at a concentration of 0.378 mg/L. Iron concentrations have historically been above the PWQO on occasion ranging between 0.33 to 7.9 mg/L. The submitted sample was not filtered and particulates in suspension could account for the elevated iron level.
– Phosphorus was above the PWQO of 0.01 mg/L in December at a concentration of 0.076 mg/L. Phosphorus concentrations have historically been above the PWQO on occasion ranging between 0.035 to 0.85 mg/L. Phosphorus was not detected in the other two samples taken in 2023.

Historical surface water quality analytical data was presented in the 2021 annual monitoring report (GHD, 2022a) and on an annual basis thereafter.

It should be noted that nitrate concentrations at SW1B in 2023 (and historically) were significantly lower than local groundwater concentrations; ranging from non-detect to 1.88 mg/L in 2023. These results continue to demonstrate the beneficial nitrate consuming effects of wetland and open water features.

6.3 Recirculation Pond Water Quality

Samples of wash water were collected in March and November 2023 from the recirculation cell, as required by ECA Condition 4.6 and 4.7. A duplicate sample was collected during each of the sampling events as part of the QA/QC measures. The water samples were collected from the recirculation cell adjacent to the pump using a telescoping swing arm sample rod.

Sample results are reported in Tables 6.4, 6.5, and 6.6 and compared to the PWQO; however, the recirculation cell water is not directly comparable to the PWQO's as the recirculation cell is part of the approved sewage works while the PWQOs apply to "natural water".

The recirculation pond samples were analyzed for general chemistry, total metals and pesticides (including glyphosate, atrazine, atrazine desethyl and AMPA), as specified in Condition 4.7 of the ECA.

No pesticides, atrazine, or atrazine metabolites, or glyphosate were detected in any of the recirculation pond water samples.

Nitrate concentrations in the Recirculation Pond ranged from 2.96 to 3.27 mg/L in 2023. The concentrations in the Recirculation Pond were stable in 2023 and below concentrations observed in the regional groundwater used to supply water to the washing operation. These results demonstrate that operation of the recirculating aggregate washing system does not accumulate nitrate in the recirculated wash water nor does the washing operations contribute to elevated nitrate concentrations in regional groundwater.

7. Response to Public Inquiries

No complaints were received by Dufferin in relation to the PTTW, ECA, or other water-related matters. Dufferin and GHD are not aware of any public inquiries reported to the MECP during the 2023 calendar year. There are currently no outstanding public inquiries or complaints.

8. Conclusions

The monitoring program at the Paris Pit was completed to satisfy the monitoring requirements of the Site ARA Licence, PTTW and ECA. Based on the results of the 2023 monitoring program the following conclusions are drawn:

- The water taking and aggregate washing operations have not caused any water (surface water or groundwater) quantity interference issues.
- Low water levels observed at SW1B in June 2023 were a result of limited precipitation combined with increasing evapotranspiration.
- No appreciable impacts to the surface or groundwater quality or quantity at the Paris Pit or nearby areas is indicated to have occurred as a result of aggregate washing operations.
- No pesticides, glyphosate, atrazine, or atrazine metabolites were detected in surface water or groundwater.
- No complaints were received by Dufferin in relation to the PTTW, ECA, or other water-related matters. Dufferin and GHD are not aware of any public inquiries reported to the MECP during the 2023 calendar year. There are currently no outstanding public inquiries or complaints.

9. References

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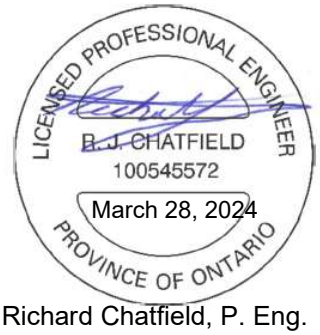
All of Which is Respectfully Submitted,

GHD



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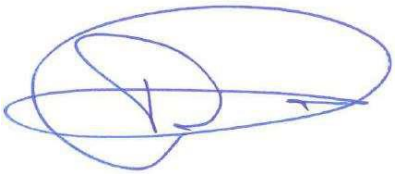

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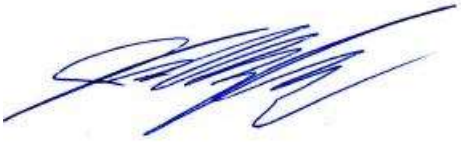

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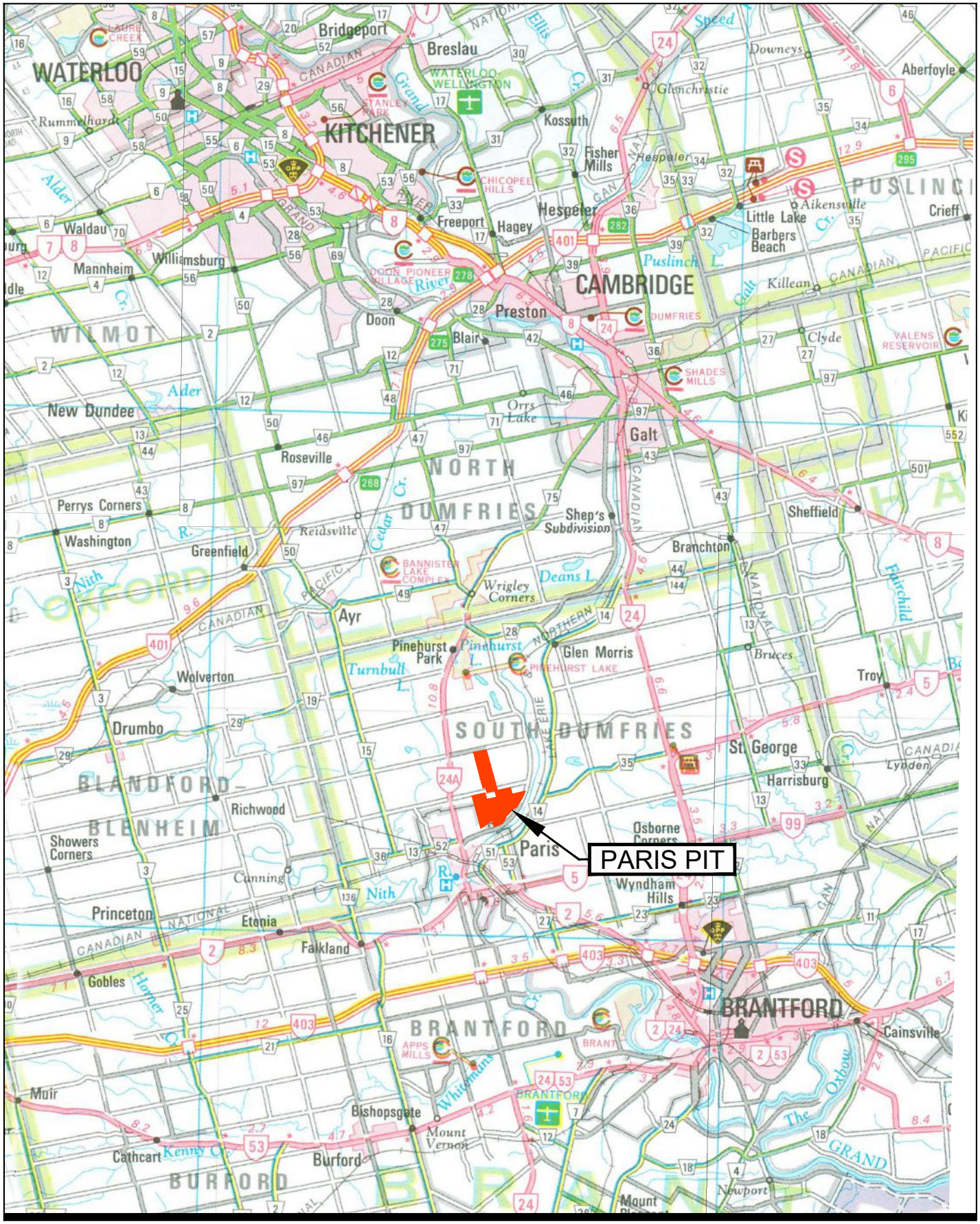
Figures



DUFFERIN AGGREGATES PARIS PIT
COUNTY OF BRANT, ONTARIO
2023 COMBINED ANNUAL MONITORING REPORT

Project No. **78410**
Date **January 2024**

SITE LOCATION

FIGURE 1.1

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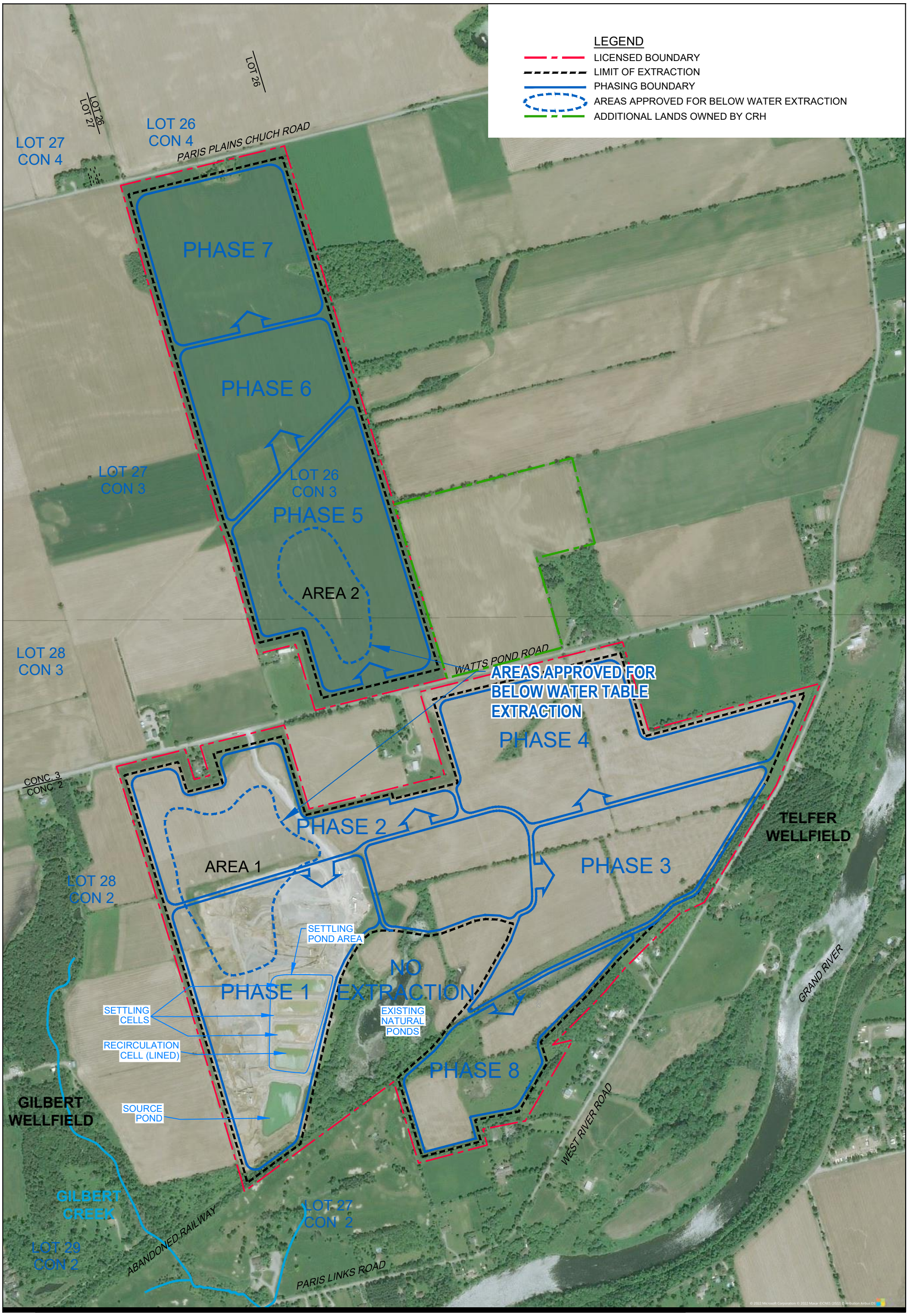

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Coordinate System:
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DUFFERIN AGGREGATES PARIS PIT
COUNTY OF BRANT, ONTARIO
2023 COMBINED ANNUAL MONITORING REPORT

PARIS PIT AND SURROUNDING LANDS

Project No. **78410**
Date **January 2024**

FIGURE 1.2

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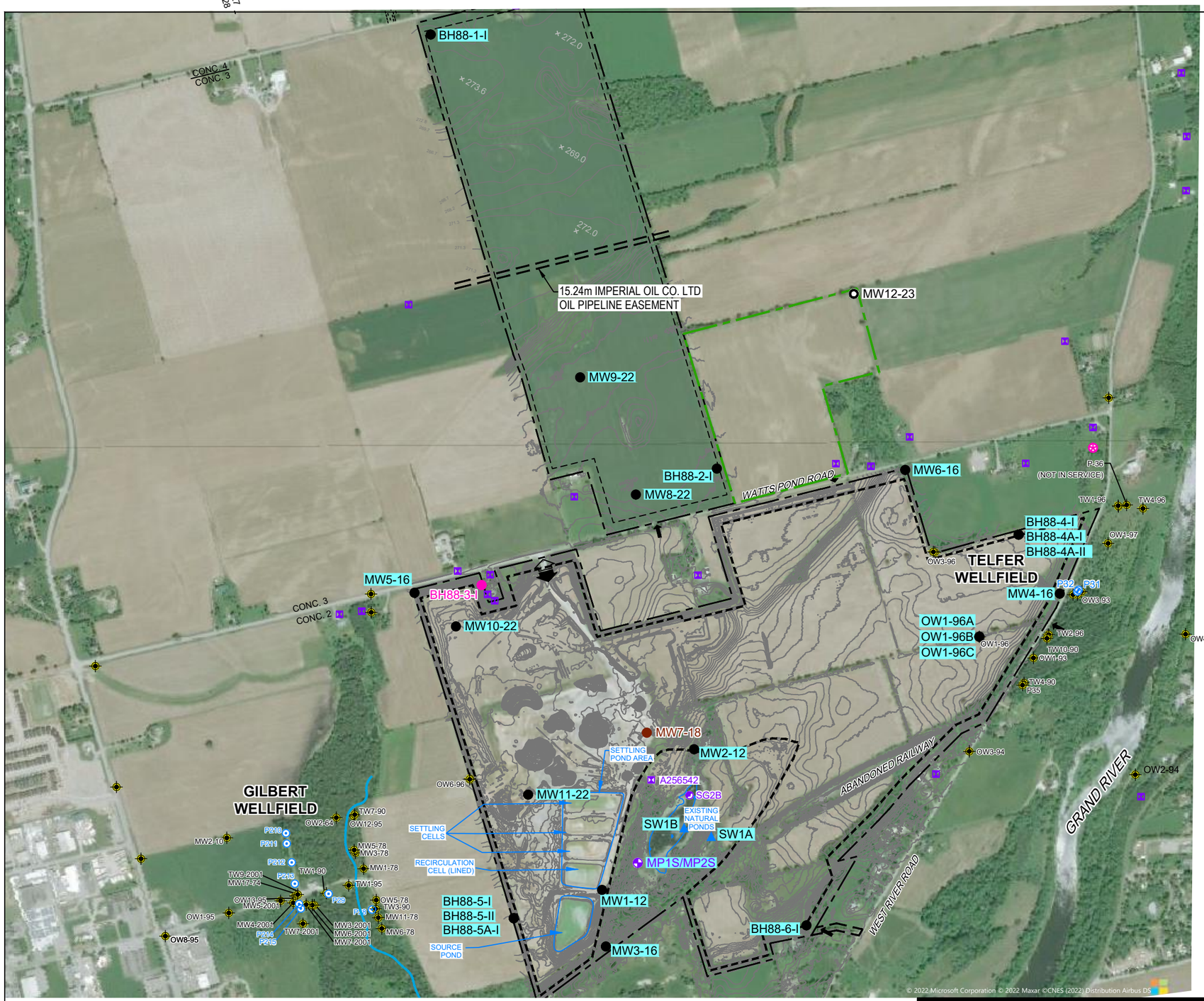
Source: Microsoft product Screen shot(s) Reprinted with permission from Microsoft corporation, Accessed 2022



LEGEND

- 253.0 — GROUND SURFACE ELEVATION CONTOUR (mAMSL) - DECEMBER 14, 2023
- LICENSED BOUNDARY
- LIMIT OF EXTRACTION
- EASEMENT
- ADDITIONAL LANDS OWNED BY CRH
- PROPOSED ENTRANCE/EXIT
- EXISTING FIELD ENTRANCE
- + 250.7 — SPOT ELEVATION
- MW1-12 — MONITORING WELL INCLUDED IN THE GROUNDWATER MONITORING NETWORK
- SW1A — SURFACE WATER LOCATION INCLUDED IN THE SURFACE WATER MONITORING NETWORK
- MP1S/MP1D/MP2S — PIEZOMETER (NESTED AS SHALLOW AND DEEP) INCLUDED IN THE MONITORING NETWORK
- BH88-3-I — MONITORING WELL WAS DESTROYED
- MW7-18 — DECOMMISSIONED MONITORING WELL
- SG2B — STAFF GAUGE
- MW12-23 — SUPPLEMENTAL MONITORING WELL

WATER WELL RECORD (WWR) PRIMARY USE

- DOMESTIC WATER SUPPLY WELL (APPROXIMATE LOCATION)
- MUNICIPAL MONITORING WELL
- PUBLIC WATER SUPPLY WELL
- IRRIGATION WELL (APPROXIMATE LOCATION)
- LIVESTOCK WELL (APPROXIMATE LOCATION)

0 125 250 375m

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Coordinate System:
UTM ZONE 17 NAD83
METRES

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GHD

DUFFERIN AGGREGATES PARIS PIT
COUNTY OF BRANT, ONTARIO
2023 COMBINED ANNUAL MONITORING REPORT

SITE MAP AND MONITORING LOCATIONS

Project No. **78410**
Date **January 2024**

FIGURE 1.3

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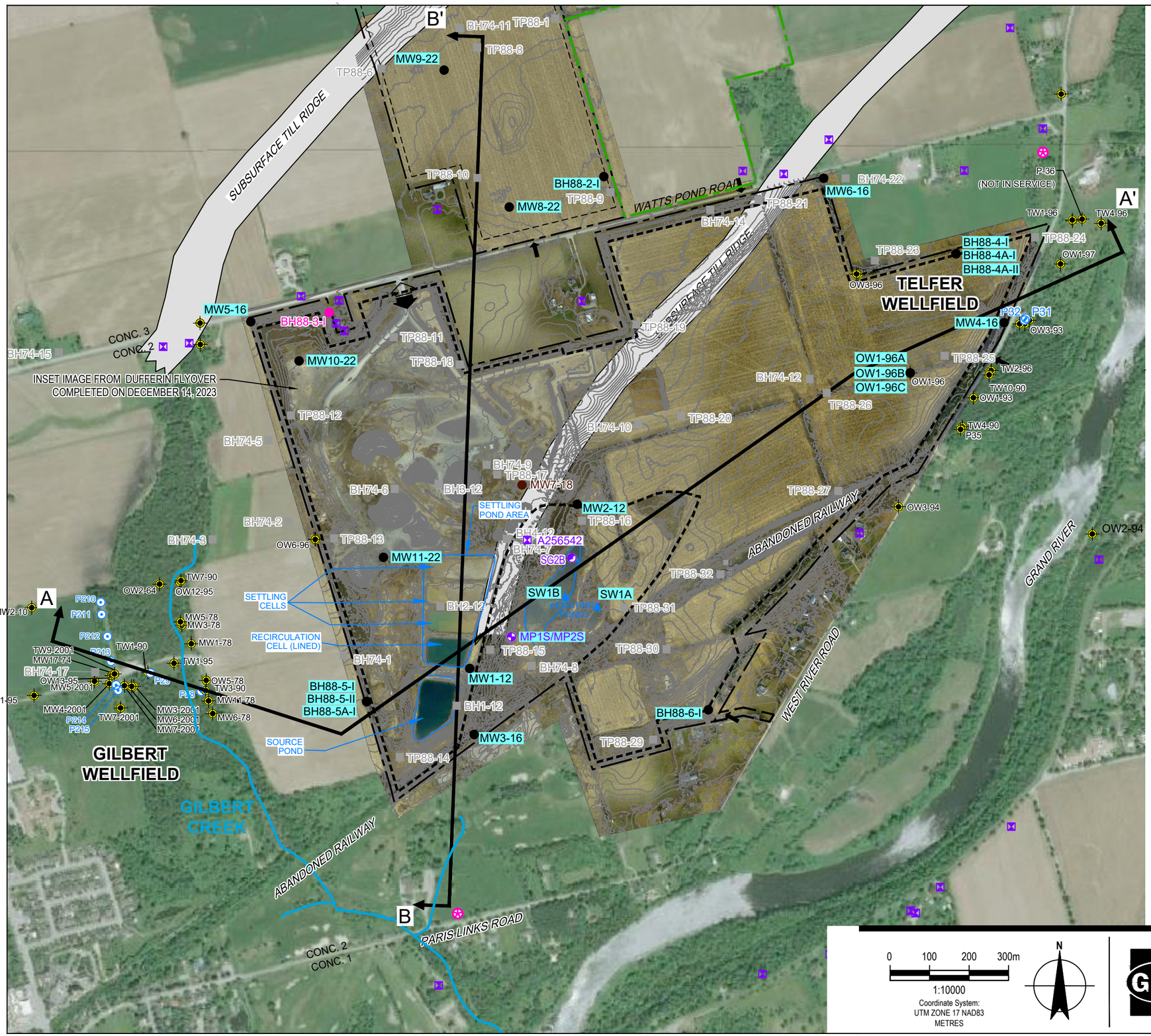


LEGEND

- 253.0 — GROUND SURFACE ELEVATION CONTOUR - DECEMBER 14, 2023
- LICENSED BOUNDARY
- LIMIT OF EXTRACTION
- EASEMENT
- ADDITIONAL LANDS OWNED BY CRH
- SITE ENTRANCE/EXIT
- EXISTING FIELD ENTRANCE
- + 250.7 — SPOT ELEVATION
- MW1-12 — MONITORING WELL INCLUDED IN THE GROUNDWATER MONITORING NETWORK
- BH1-12 — BOREHOLE (CRA, JULY 2012)
- TP88-11 — TEST PIT (JAGGER HIMS LTD., 1988) (APPROXIMATE LOCATION)
- BH74-10 — BOREHOLE (FARVOLDEN, 1974) (APPROXIMATE LOCATION)
- SW1A — SURFACE WATER LOCATION INCLUDED IN THE SURFACE WATER MONITORING NETWORK
- MP1S/MP1D/MP2S — PIEZOMETER (NESTED AS SHALLOW AND DEEP) INCLUDED IN THE MONITORING NETWORK
- BH88-3-I — MONITORING WELL WAS DESTROYED
- MW7-18 — DECOMMISSIONED MONITORING WELL
- SG2B — STAFF GAUGE
- MW12-23 — SUPPLEMENTAL MONITORING WELL
- GEOLOGIC CROSS-SECTION LOCATION

WATER WELL RECORD (WWR) PRIMARY USE

- DOMESTIC WATER SUPPLY WELL (APPROXIMATE LOCATION)
- MUNICIPAL MONITORING WELL
- PUBLIC WATER SUPPLY WELL
- IRRIGATION WELL (APPROXIMATE LOCATION)
- LIVESTOCK WELL (APPROXIMATE LOCATION)

0 100 200 300m

1:10000

Coordinate System: UTM ZONE 17 NAD83 METRES

N

GHD

DUFFERIN AGGREGATES PARIS PIT
COUNTY OF BRANT, ONTARIO
2023 COMBINED ANNUAL MONITORING REPORT

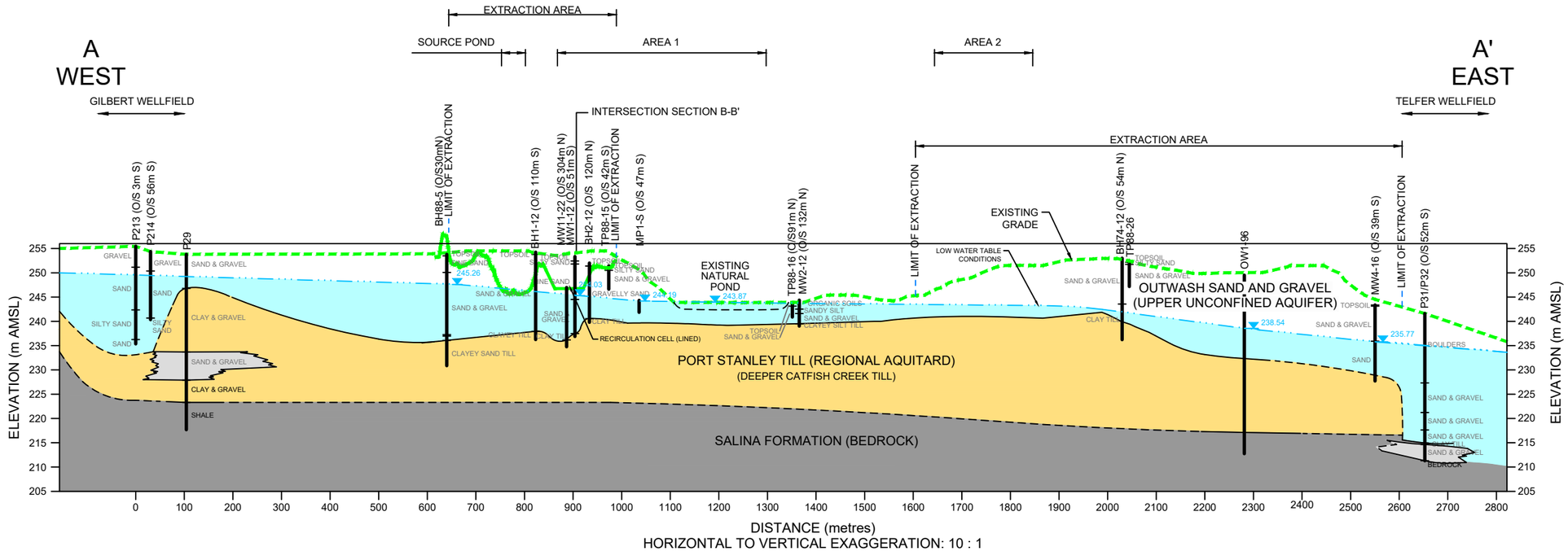
SITE STRATIGRAPHIC CROSS - SECTION LOCATIONS

Project No. **78410**
Date **January 2024**

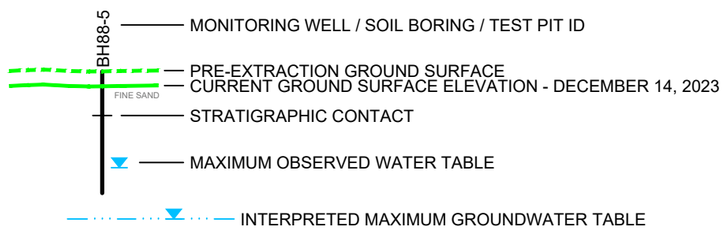
FIGURE 2.1

Filename: N:\CA\Waterloo\Projects\662\078410\Digital_Design\ACAD\Figures\RPT015\078410-GHD-00-00-RPT-EN-D104_WA-015.dwg
Plot Date: 23 January 2024 10:39 AM

Source: J.H. Cohoon Engineering limited, Job 9738, Existing Features, 2 of 5, Microsoft Product Screen shot(s), Reprinted with permission from Microsoft Corporation, Accessed 2022



LEGEND



HORIZONTAL
1:10000
0 100 200 300
VERTICAL
1:1000
0 10 20 30

GHD

DUFFERIN AGGREGATES PARIS PIT
COUNTY OF BRANT, ONTARIO
2023 COMBINED ANNUAL MONITORING REPORT

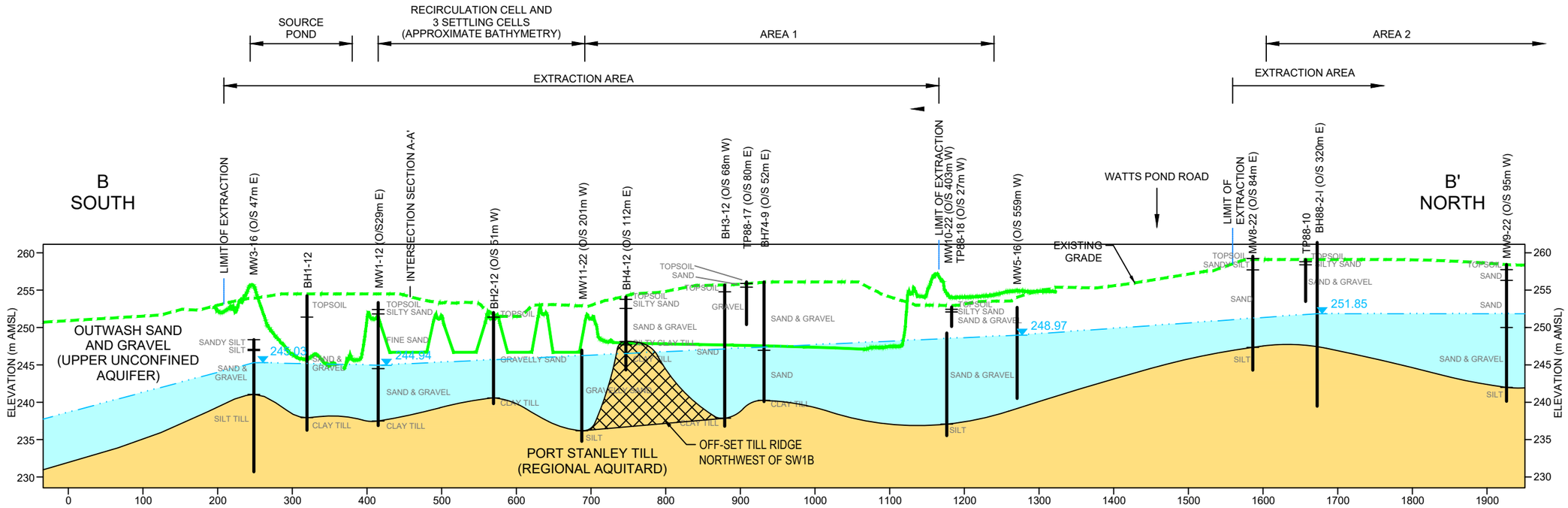
SITE STRATIGRAPHIC CROSS-SECTION A-A'

Project No. **78410**
Date **January 2024**

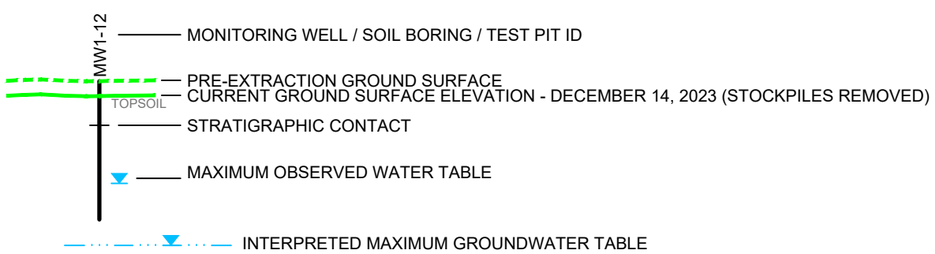
FIGURE 2.2

Filename: N:\CA\Waterloo\Projects\662\078410\Digital_Design\ACAD\Figures\RPT015\078410-GHD-00-00-RPT-EN-D105_WA-015.dwg
Plot Date: 23 January 2024 10:39 AM

Source: Reproduced and modified from County of Brant Municipal Groundwater Study, Lotowater June 8, 2005 (figure 5.4.2)



LEGEND



NOTE:
STOCKPILES REMOVED FROM DECEMBER 14, 2023 TOPOGRAPHIC PROFILE BY INTERPOLATION ACROSS THE PILE BASE.

HORIZONTAL
1:6000
0 60 120 180
0 6 12 18
VERTICAL
1:600

DUFFERIN AGGREGATES PARIS PIT
COUNTY OF BRANT, ONTARIO
2023 COMBINED ANNUAL MONITORING REPORT

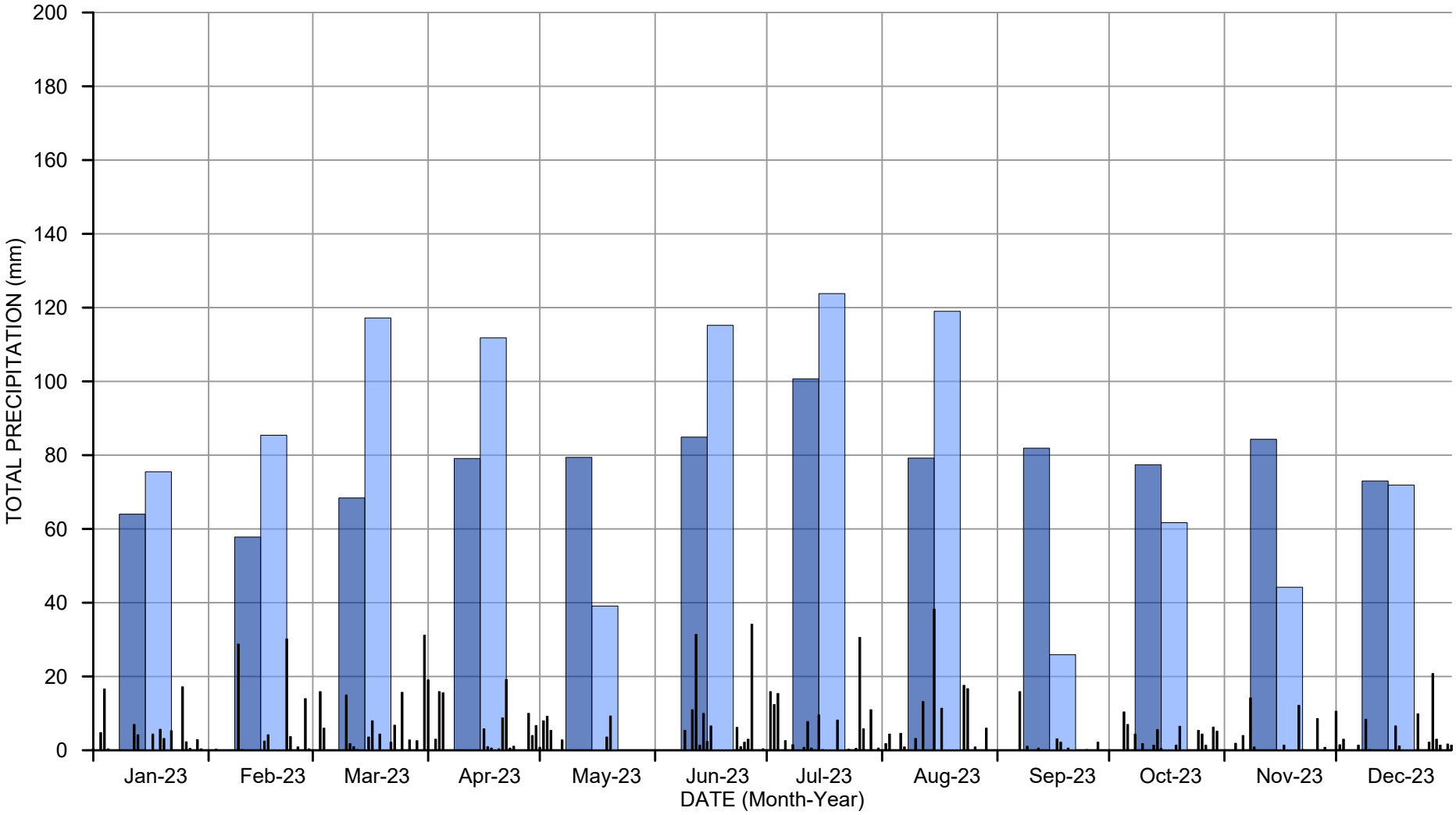
SITE STRATIGRAPHIC CROSS-SECTION B-B'

Project No. **78410**
Date **January 2024**

FIGURE 2.3

Filename: N:\CA\Waterloo\Projects\662\078410\Digital_Design\ACAD\Figures\RPT015\078410-GHD-00-00-RPT-EN-D105_WA-015.dwg
Plot Date: 23 January 2024 10:39 AM

Source: Reproduced and modified from County of Brant Municipal Groundwater Study, Lotowatr, June 8, 2005 (Figure 5.4.2)



NOTE:
(1) Hamilton Airport data obtained from Environment Canada Station #6153193.

LEGEND
- Climate Normals (1981-2010, Hamilton Airport)
- Monthly Precipitation
- Daily Precipitation

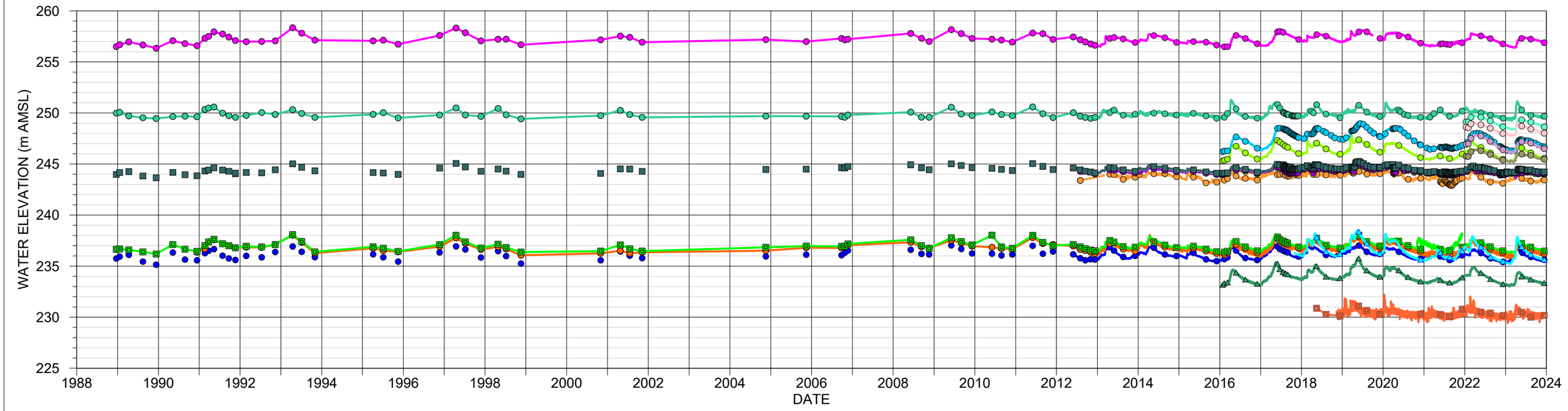
DUFFERIN AGGREGATES - PARIS PIT
COUNTY OF BRANT, ONTARIO

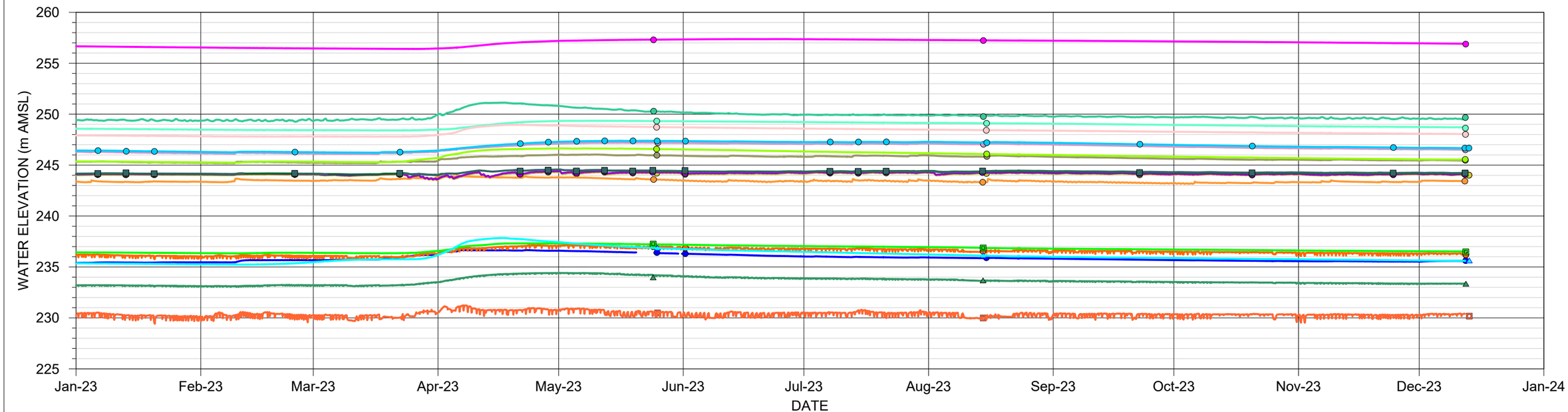
2023 PRECIPITATION SUMMARY

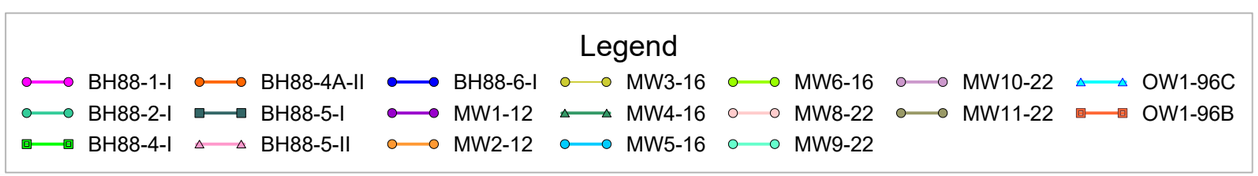
Project No. **078410-20**
Date **January 16, 2024**

FIGURE 4.1

HEG file: N:\CA\Waterloo\HEG\HEG\78410\GRAPHER\AMR\2023\Figure 4.1 - Precipitation.grf







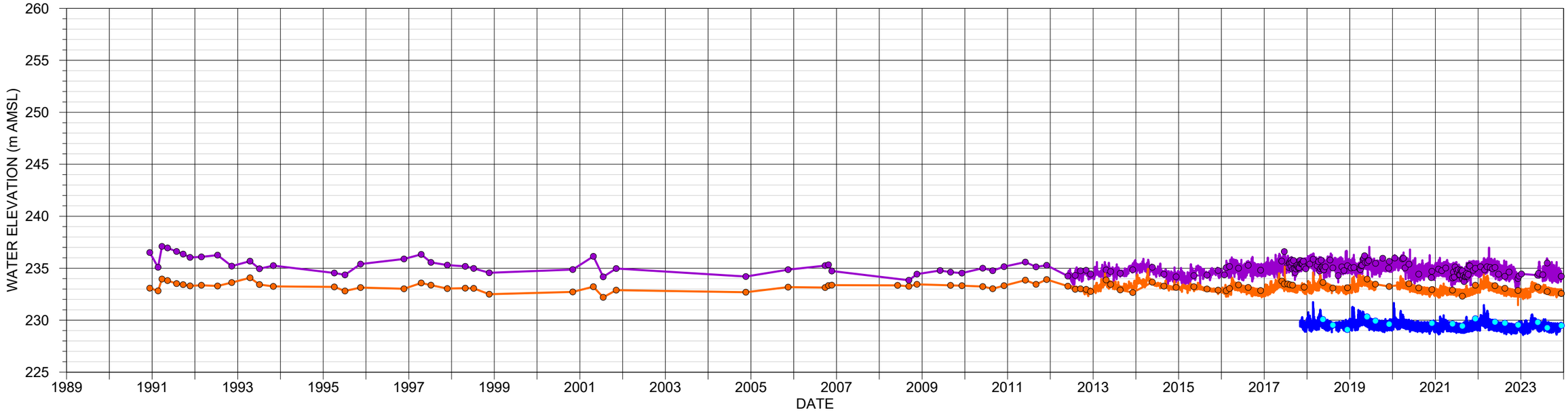
DUFFERIN AGGREGATES PARIS PIT
COUNTY OF BRANT, ONTARIO
2023 COMBINED ANNUAL MONITORING REPORT

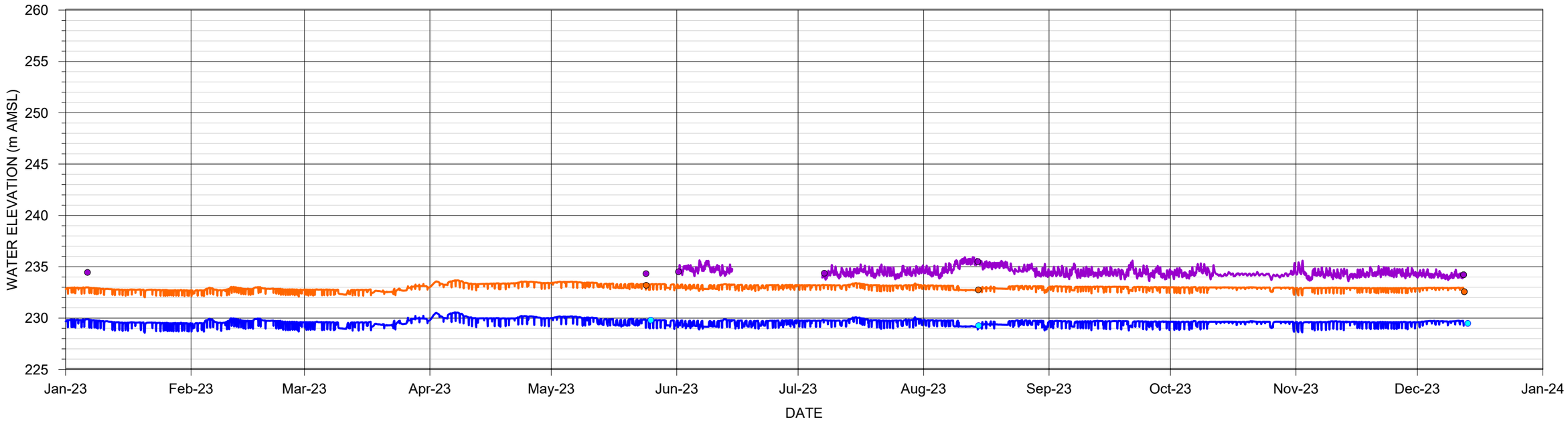
GROUNDWATER HYDROGRAPH
OVERBURDEN

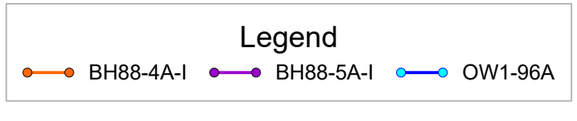
Project No. **078410-20**
Date **January 16, 2024**

FIGURE 4.2

HEG file: N:\CA\Waterloo\HEG\HEG\78410\GRAPHER\AMR\2023\Figure 4.2-Groundwater Hydrograph - Overburden.grf







DUFFERIN AGGREGATES PARIS PIT
COUNTY OF BRANT, ONTARIO
2023 COMBINED ANNUAL MONITORING REPORT

GROUNDWATER HYDROGRAPH
BEDROCK

Project No. **078410-20**
Date **January 16, 2024**

FIGURE 4.3

HEG file: N:\CA\Waterloo\HEG\HEG\78410\GRAPHER\AMR\2023\Figure 4.3-Groundwater Hydrograph - Bedrock.grf

BH88-1-I
257.55
(~460m N)
MW12-23
DRY
(TOP OF TILL AT 251.70 m)
MW11-22
249.32
BH88-2-I
250.29
MW8-22
248.71
MW6-16
246.57
BH88-4-I
BH88-4A-I
BH88-4A-II
237.24
MW5-16
247.37
BH88-3-I
MW10-22
247.19
MW4-16
233.98
OW1-96A
OW1-96B
OW1-96C
236.89
TELFER WELLFIELD
SUBSURFACE TILL RIDGE
ATTS POND ROAD
CONC. 3
CONC. 2
INSET IMAGE FROM DUFFERIN FLYOVER COMPLETED ON DECEMBER 14, 2023
MW7-18
MW2-12
243.59
A256542
MW11-22
245.97
SW1B
243.87
SW1A
242.86
ABANDONED RAILWAY
GRAND RIVER
SETTLING CELLS
RECIRCULATION CELL (LINED)
MP1S/MP2S
244.19
244.25
BH88-5-I
BH88-5-II
BH88-5A-I
244.49
MW1-12
244.30
BH88-6-I
236.41
MW3-16
244.21
SOURCE POND
GILBERT WELLFIELD
GILBERT CREEK
WEST RIVER ROAD
PARIS LINKS ROAD
CONC. 2
CONC. 1
256.0
255.5
255.0
250.0
249.5
249.0
248.5
248.0
247.5
247.0
246.5
246.0
245.5
245.0
244.5
244.0
245.0
244.0
243.5
243.0
242.5
242.0
241.5
241.0
240.5
240.0
239.5
239.0
238.5
238.0
237.5
237.0
236.5
234.5
234.0

LEGEND

- GROUNDWATER SURFACE ELEVATION CONTOUR (mAMSL) - DECEMBER 14, 2023
- LICENSED BOUNDARY
- LIMIT OF EXTRACTION
- EASEMENT
- SITE ENTRANCE/EXIT
- EXISTING FIELD ENTRANCE
- SPOT ELEVATION
- MW1-12 — MONITORING WELL INCLUDED IN THE GROUNDWATER MONITORING NETWORK
- SW1A — SURFACE WATER LOCATION INCLUDED IN THE SURFACE WATER MONITORING NETWORK
- MP1S — PIEZOMETER (NESTED AS SHALLOW AND DEEP) INCLUDED IN THE MONITORING NETWORK
- BH88-3-I — MONITORING WELL WAS DESTROYED
- MW7-18 — MONITORING WELL INSTALLED IN 2018
- SG2B — STAFF GAUGE
- 233.64 — GROUNDWATER ELEVATION (MAY 24 TO 25, 2023) (mAMSL)
- 235 — GROUNDWATER CONTOUR (mAMSL)
- (1) — GROUNDWATER ELEVATION NOT INCLUDED IN CONTOURS

WATER WELL RECORD (WWR) PRIMARY USE

- DOMESTIC WATER SUPPLY WELL (APPROXIMATE LOCATION)
- MUNICIPAL MONITORING WELL
- PUBLIC WATER SUPPLY WELL
- IRRIGATION WELL (APPROXIMATE LOCATION)
- LIVESTOCK WELL (APPROXIMATE LOCATION)

0 125 250 375m

1:12500

Coordinate System:
UTM ZONE 17 NAD83
METRES

N

GHD

DUFFERIN AGGREGATES PARIS PIT
COUNTY OF BRANT, ONTARIO
2023 COMBINED ANNUAL MONITORING REPORT

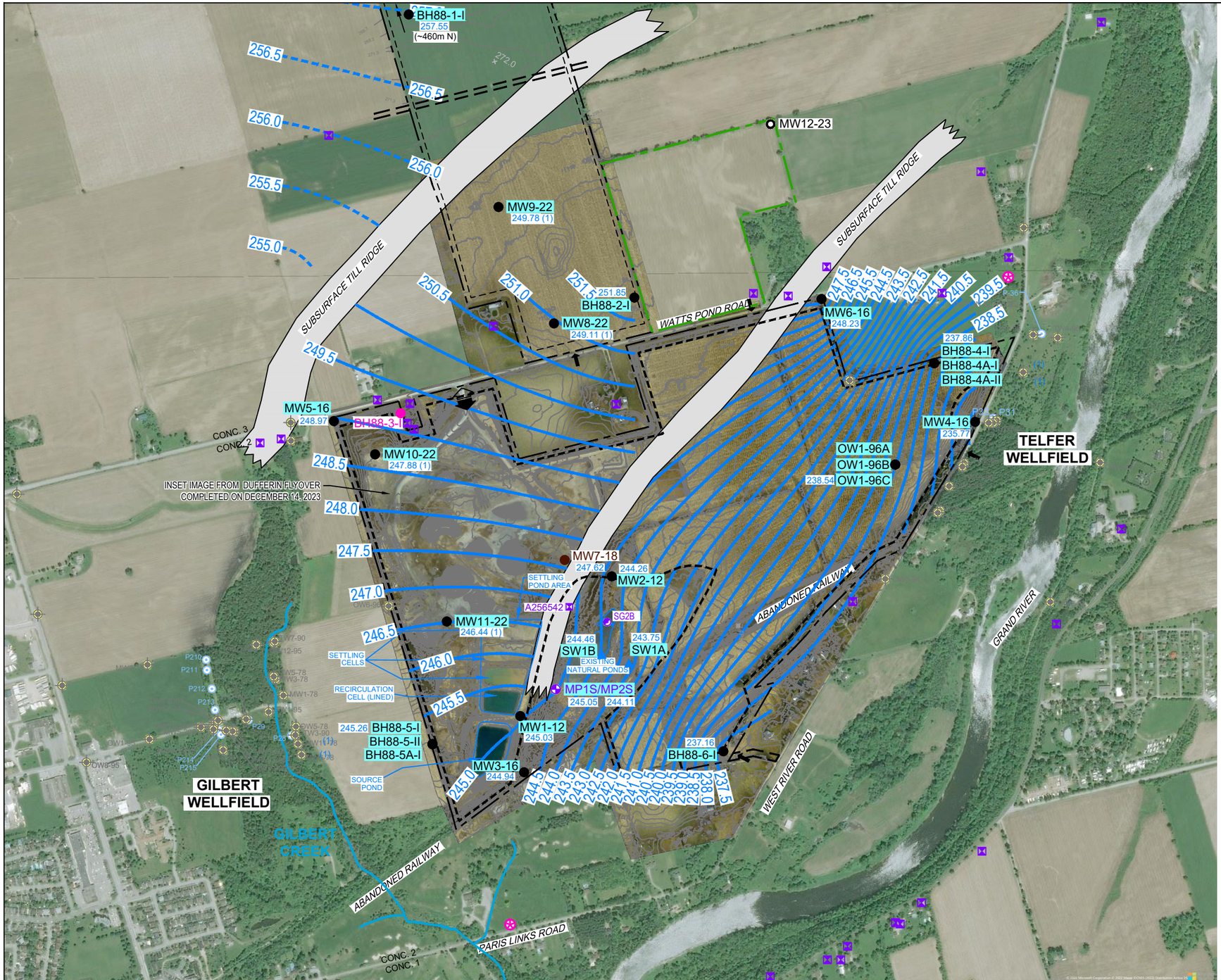
SITE GROUNDWATER ELEVATION CONTOURS MAY 2023

Project No. **78410**
Date **March 2024**

FIGURE 4.4

Filename: N:\CA\Waterloo\Projects\662\078410\Digital_Design\ACAD\Figures\RPT015\078410-GHD-00-00-RPT-EN-D106_WA-015.dwg
Plot Date: 13 March 2024 10:45 AM

Source: J.H. Cohoon Engineering Limited, Job 9738, Existing Features, 2 of 5 Microsoft Product Screen shot(s), Reprinted with permission from Microsoft Corporation, Accessed 2022



LEGEND

- 253.0 — GROUND SURFACE ELEVATION CONTOUR (mAMSL) - DECEMBER 14, 2023
- LICENSED BOUNDARY
- LIMIT OF EXTRACTION
- EASEMENT
- SITE ENTRANCE/EXIT
- EXISTING FIELD ENTRANCE
- + 250.7 — SPOT ELEVATION
- MW1-12 — MONITORING WELL INCLUDED IN THE GROUNDWATER MONITORING NETWORK
- SW1A — SURFACE WATER LOCATION INCLUDED IN THE SURFACE WATER MONITORING NETWORK
- MP1S — PIEZOMETER (NESTED AS SHALLOW AND DEEP) INCLUDED IN THE MONITORING NETWORK
- BH88-3-I — MONITORING WELL WAS DESTROYED
- MW7-18 — MONITORING WELL INSTALLED IN 2018
- SG2B — STAFF GAUGE
- 233.64 — MAXIMUM OBSERVED GROUNDWATER ELEVATION (mAMSL)
- 235 — MAXIMUM WATER TABLE CONTOUR (mAMSL)
- (1) — GROUNDWATER ELEVATION NOT INCLUDED IN CONTOURS DUE TO LIMITED DATA HISTORY

WATER WELL RECORD (WWR) PRIMARY USE

- DOMESTIC WATER SUPPLY WELL (APPROXIMATE LOCATION)
- MUNICIPAL MONITORING WELL
- PUBLIC WATER SUPPLY WELL
- IRRIGATION WELL (APPROXIMATE LOCATION)
- LIVESTOCK WELL (APPROXIMATE LOCATION)

0 125 250 375m

1:12500

Coordinate System:
UTM ZONE 17 NAD83
METRES

N

GHD

DUFFERIN AGGREGATES PARIS PIT
COUNTY OF BRANT, ONTARIO
2023 COMBINED ANNUAL MONITORING REPORT

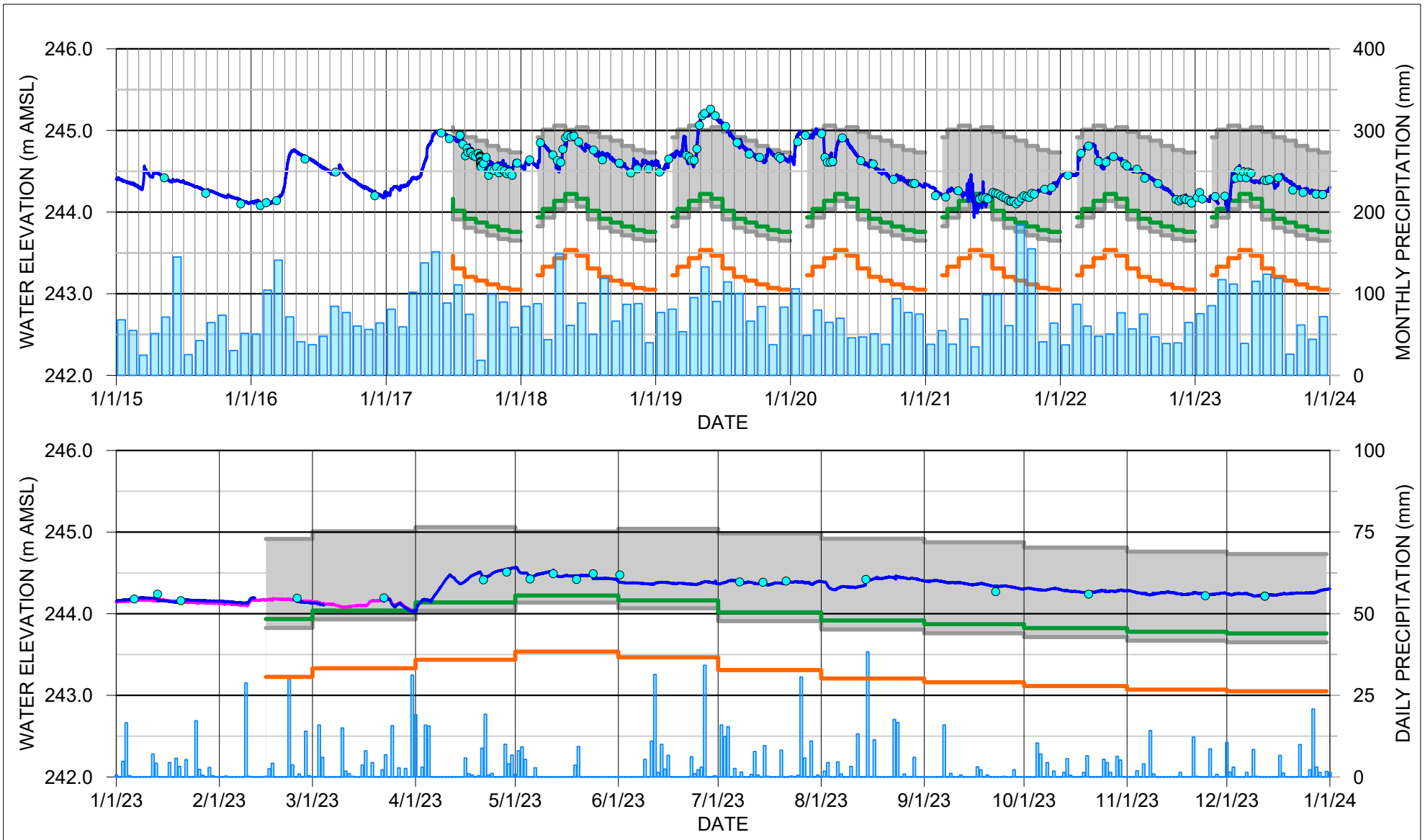
SITE GROUNDWATER ELEVATION HISTORICAL MAXIMUM ELEVATIONS

Project No. **78410**
Date **January 2024**

FIGURE 4.5

Filename: N:\CA\Waterloo\Projects\662\078410\Digital_Design\ACAD\Figures\RPT015\078410-GHD-00-00-RPT-EN-D107_WA-015.dwg
Plot Date: 23 January 2024 10:44 AM

Source: J.H. Cohoon Engineering Limited, Job 9738, Existing Features, 2 of 5 Microsoft Product Screen shot(s), Reprinted with permission from Microsoft Corporation, Accessed 2022



LEGEND

- BH88-5-I
- Early-Warning Threshold Level
- Groundwater Trigger Level
- Historical Range (per TMCP)
- Precipitation Total
- BH88-5-II

GHD

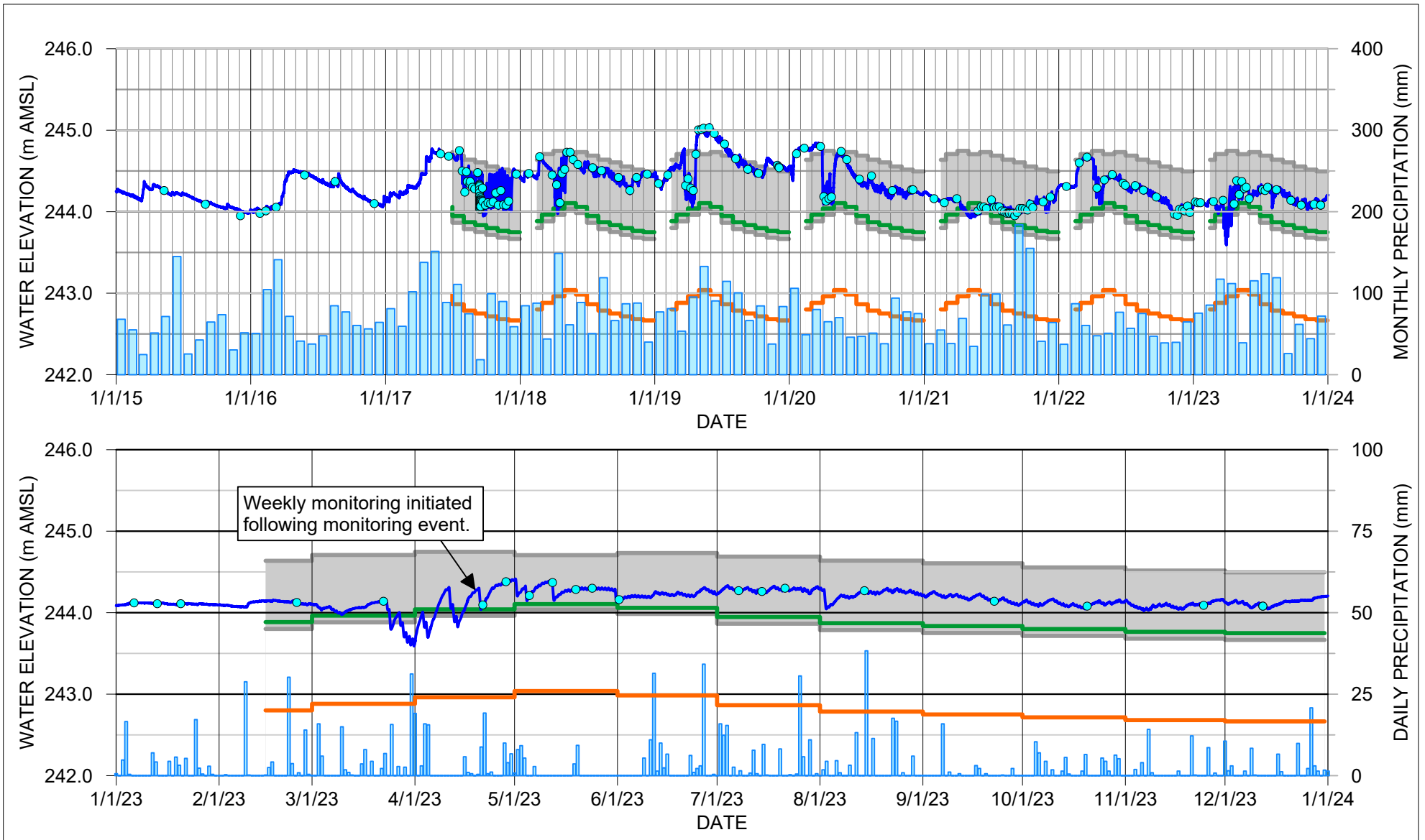
DUFFERIN AGGREGATES PARIS PIT
COUNTY OF BRANT, ONTARIO
2023 COMBINED ANNUAL MONITORING REPORT

TRIGGER MECHANISM SUMMARY
BH88-5-I

Project No. **078410-20**
Date **March 11, 2024**

FIGURE 4.6a

HEG file: N:\CA\Waterloo\HEG\HEG\78410\GRAPHER\AMR\2023\Figure 4.6a - BH88-5-I Trigger Mechanism Summary.grf



LEGEND

- MW1-12
- Early-Warning Threshold Level
- Groundwater Trigger Level
- Historical Range (per TMCP)
- Precipitation Total

GHD

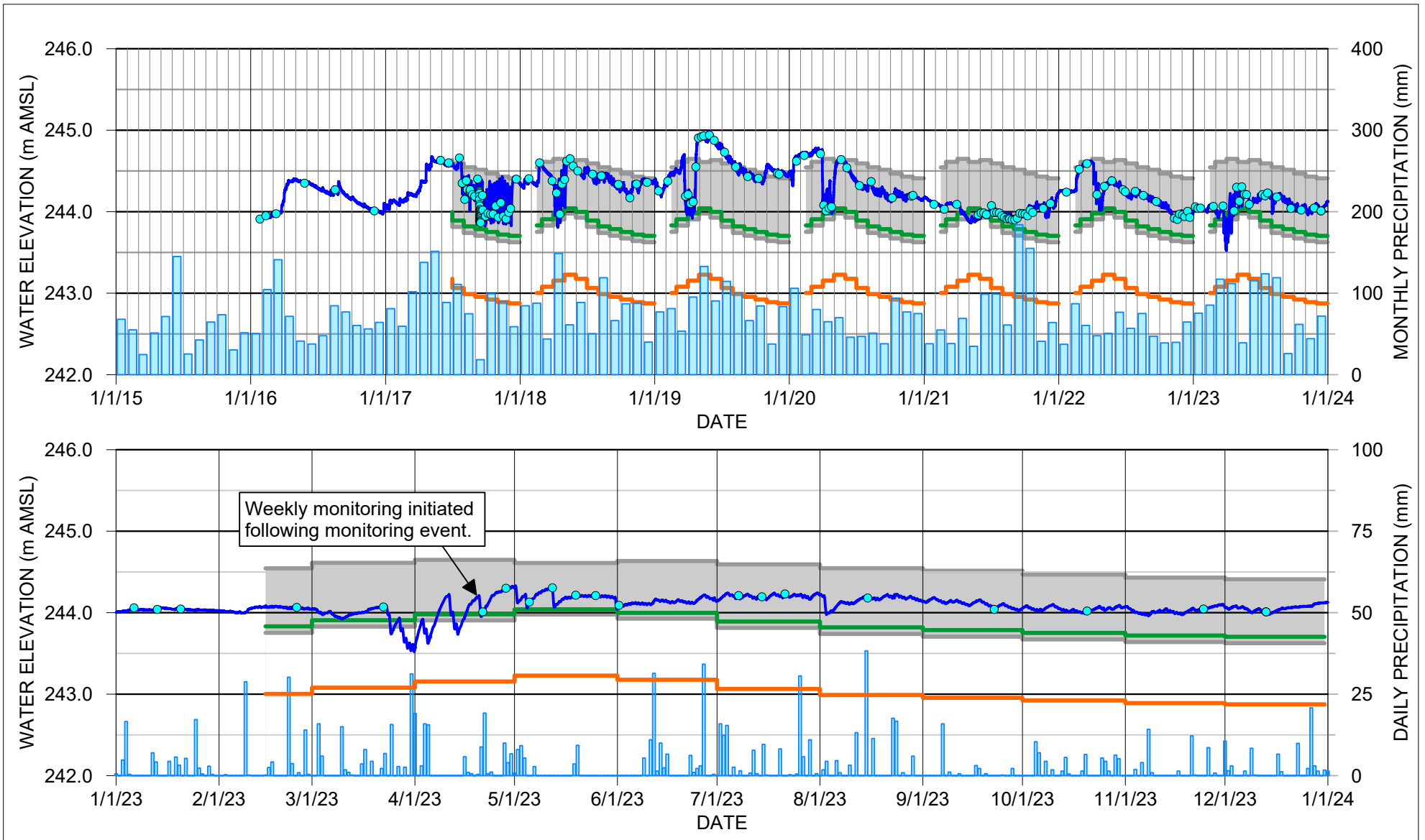
DUFFERIN AGGREGATES PARIS PIT
COUNTY OF BRANT, ONTARIO
2023 COMBINED ANNUAL MONITORING REPORT

TRIGGER MECHANISM SUMMARY
MW1-12

Project No. **078410-20**
Date **March 11, 2024**

FIGURE 4.6b

HEG file: N:\CA\Waterloo\HEG\HEG\78410\GRAPHER\AMR\2023\Figure 4.6b - MW1-12 Trigger Mechanism Summary.grf



Note: MW3-16 installed in January 2016

LEGEND

- MW3-16
- Early-Warning Threshold Level
- Groundwater Trigger Level
- Historical Range (per TMCP)
- Precipitation Total

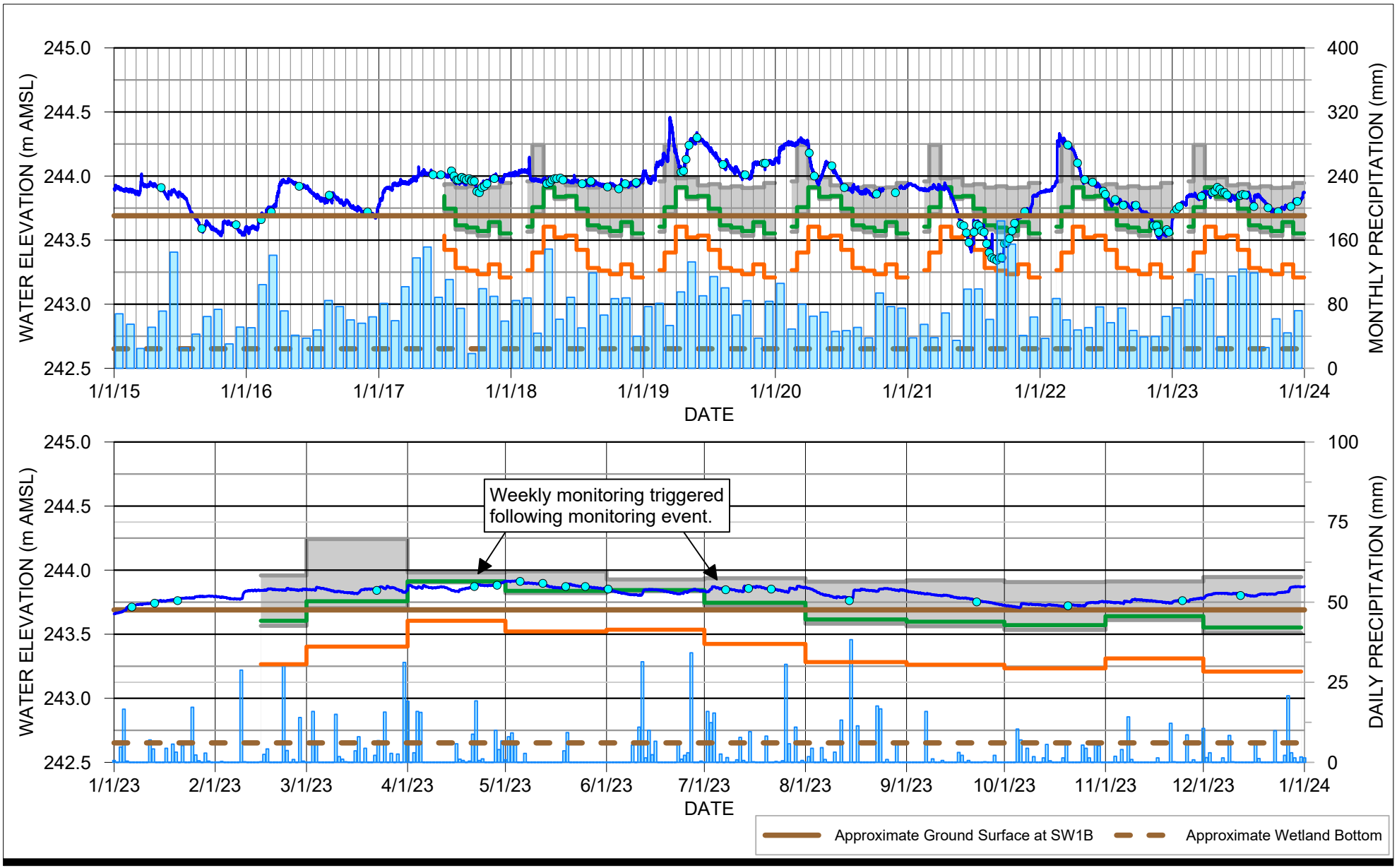
DUFFERIN AGGREGATES PARIS PIT
COUNTY OF BRANT, ONTARIO
2023 COMBINED ANNUAL MONITORING REPORT

TRIGGER MECHANISM SUMMARY
MW3-16

Project No. **078410-20**
Date **March 11, 2024**

FIGURE 4.6c

HEG file: N:\CA\Waterloo\HEG\HEG\78410\GRAPHER\AMR\2023\Figure 4.6c - MW3-16 Trigger Mechanism Summary.grf



LEGEND

- SW1B
- Early-Warning Threshold Level
- Surface Water Trigger Level
- Historical Range (per TMCP)
- Precipitation Total

GHD

DUFFERIN AGGREGATES PARIS PIT
COUNTY OF BRANT, ONTARIO
2023 COMBINED ANNUAL MONITORING REPORT

TRIGGER MECHANISM SUMMARY
SW1B

Project No. **078410-20**
Date **March 11, 2024**

FIGURE 4.6d

HEG file: N:\CA\Waterloo\HEG\HEG\78410\GRAPHER\AMR\2023\Figure 4.6d - SW1B Trigger Mechanism Summary.grf

Tables

Table 1.1

Monitoring Well Completion Details
2023 Combined Annual Monitoring Report
Dufferin Aggregates Paris Pit
County of Brant, Ontario

Monitoring Location	Easting	Northing	Completion Date	Ground Surface Elevation (m AMSL)	Top of Riser Reference Elevation (m AMSL)	Borehole Completion Depth (m bgs)	Borehole Completion Elevation (m AMSL)	Screened Interval (m bgs) Top - Bottom	Screened Interval (m AMSL) Top - Bottom	Screened Lithology
BH88-1-I	550356.0	4787344.2	12/6/1988	271.28	272.16	24.10	247.18	18.30 - 19.82	252.98 - 251.46	Fine Sandy Silt
BH88-2-I	551201.9	4786061.5	12/5/1988	261.38	262.78	21.90	239.48	9.70 - 11.22	251.68 - 250.16	Sand & Gravel
BH88-3-I[(1)]	550506.4	4785718.6	11/28/1988	254.45	254.76	15.90	238.55	10.80 - 11.60	243.65 - 242.85	Sand & Gravel
BH88-4-I	552093.9	4785866.3	12/1/1988	250.39	251.76	21.30	229.09	16.78 - 18.30	233.61 - 232.09	Sand
BH88-4A-I	552093.9	4785866.3	10/31/1990	250.39	251.47	35.60	214.79	33.80 - 35.20	216.59 - 215.19	Gravel & Bedrock
BH88-4A-II	552093.9	4785866.3	10/31/1990	250.39	251.50	28.00	222.39	25.10 - 26.60	225.29 - 223.79	Sand & Gravel
BH88-5-I	550602.2	4784729.1	11/23/1988	253.78	255.15	22.90	230.88	16.50 - 17.00	237.28 - 236.78	Sand & Gravel
BH88-5-II	550602.6	4784727.6	11/23/1988	253.78	254.77	14.81	238.97	10.10 - 10.90	243.68 - 242.88	Sand & Gravel
BH88-5A-I	550601.3	4784732.5	10/30/1990	253.78	255.08	33.20	220.58	30.50 - 32.00	223.28 - 221.78	Till & Bedrock
BH88-6-I	551466.6	4784711.6	11/30/1988	239.84	240.91	16.20	223.64	6.90 - 7.90	232.94 - 231.94	Sand & Gravel
MW1-12	550862.3	4784816.3	7/20/2012	253.34	254.25	16.46	236.88	12.80 - 15.85	240.54 - 237.49	Sand
MW2-12	551134.7	4785232.0	7/23/2012	244.36	245.31	5.33	239.03	2.74 - 4.27	241.62 - 240.09	Sand & Gravel
MW3-16	550873.7	4784649.2	1/14/2016	248.38	249.43	17.68	230.70	6.10 - 9.14	242.28 - 239.24	Sand & Gravel
MW4-16	552215.7	4785691.7	1/18/2016	243.37	244.39	17.68	225.69	11.58 - 14.63	231.79 - 228.74	Sand
MW5-16	550307.8	4785694.2	1/19/2016	252.70	253.69	12.19	240.51	9.14 - 12.19	243.56 - 240.51	Sand
MW6-16	551758.8	4786057.5	1/15/2016	250.47	251.42	11.43	239.04	8.23 - 11.28	242.24 - 239.19	Sand
MW7-18[(2)]	550994.8	4785280.9	4/24/2018	256.56	255.85	13.72	242.84	8.99 - 13.56	247.57 - 243.00	Sand & Gravel
MW8-22	550962.5	4785984.6	1/6/2022	259.55	260.385	15.24	244.30	9.14 - 12.19	250.40 - 247.35	Sand & Gravel
MW9-22	550797.6	4786331.0	1/7/2022	258.42	259.122	18.29	240.13	13.11 - 16.15	245.32 - 242.27	Sand & Gravel
MW10-22	550430.3	4785595.1	1/10/2022	249.26	250.041	13.72	235.55	9.14 - 12.19	240.12 - 237.07	Sand & Gravel
MW11-22	550643.8	4785097.6	1/11/2022	246.98	247.840	12.19	234.78	7.62 - 10.67	239.35 - 236.31	Sand & Gravel
MP1S	550967.9	4784896.1	5/26/2016	244.32	245.93	2.45	241.87	1.69 - 2.45	242.63 - 241.87	Sand & Gravel
MP1D	550967.4	4784896.2	5/26/2016	244.40	245.41	4.21	240.19	3.45 - 4.21	240.95 - 240.19	Sand & Gravel
MP2S	550967.4	4784896.2	11/9/2017	244.25	245.20	1.53	242.72	0.78 - 1.53	243.47 - 242.72	Sand & Gravel
OW1-96A	551977.9	4785564.5	1996	249.22	249.73	36.80	212.42	33.6 - 36.6	215.62 - 212.62	Bedrock
OW1-96B	551977.9	4785564.5	1996	249.23	249.72	25.26	223.97	23.6 - 25.1	225.63 - 224.13	Overburden (Int)
OW1-96C	551977.9	4785564.5	1996	249.24	249.70	16.43	232.81	14.6 - 16.1	234.64 - 233.14	Overburden (Upp)

Notes:

(1) Monitoring well has been destroyed
(2) Location decommissioned in November 2022 prior to extraction
NA Location not surveyed
m AMSL Metres above mean sea level
m bgs Metres below ground surface

Table 1.2

2023 Monitoring Program
2023 Combined Annual Monitoring Report
Dufferin Aggregates Paris Pit
County of Brant, Ontario

Monitoring Locations	PTTW[1]	ECA[2]	ARA[3]	Pressure Transducer	TMCP Water Level Monitoring [1]	Manual Water Level Monitoring[4]	Sampling Freqency	Field Parameters	General Chemistry	Dissolved Metals	Total Metals	Pesticides & Herbicides
BH88-1-I			X	X[3]		X	3/year[4]		X[3]	X[3]		
BH88-2-I		X	X	X[3]		X	3/year[2,4]		X[2,3]	X[2,3]		X[2]
BH88-4-I			X	X[3]		X	3/year[4]		X[3]	X[3]		
BH88-4A-I			X	X[3]		X	3/year[4]		X[3]	X[3]		
BH88-4A-II			X	X[3]		X	3/year[4]		X[3]	X[3]		
BH88-5-I	X		X	X[1,3]	X	X	3/year[4]		X[3]	X[3]		
BH88-5-II			X	X[1,3]	X	X	3/year[4]		X[3]	X[3]		
BH88-5A-I			X	X[3]		X	3/year[4]		X[3]	X[3]		
BH88-6-I		X	X	X[3]		X	3/year[2,4]		X[2,3]	X[2,3]		X[2]
MW1-12	X	X	X	X[1,3]	X	X	3/year[2,4]		X[2,3]	X[2,3]		X[2]
MW2-12			X	X[3]		X	3/year[4]		X[3]	X[3]		
MW3-16	X	X	X	X[1,3]	X	X	3/year[2,4]		X[2,3]	X[2,3]		X[2]
MW4-16		X	X	X[3]		X	3/year[2,4]		X[2,3]	X[2,3]		X[2]
MW5-16		X	X	X[3]		X	3/year[2,4]		X[2,3]	X[2,3]		X[2]
MW6-16		X	X	X[3]		X	3/year[2,4]		X[2,3]	X[2,3]		X[2]
MW8-22			X	X[3]		X	3/year[4]		X[3]	X[3]		
MW9-22			X	X[3]		X	3/year[4]		X[3]	X[3]		
MW10-22			X	X[3]		X						
MW11-22			X	X[3]		X	3/year[4]		X[3]	X[3]		
OW1-96A[5]				X		X						
OW1-96B[5]				X		X						
OW1-96C[5]				X		X						
MP1S	X			X[1]	X	X						
MP2S	X			X[1]	X	X						
SW1A	X		X	X[1,3]		X						
SW1B	X	X	X	X[1,3]	X	X	3/year[2,4]	X[2,3]	X[2,3]		X[2,3]	X[2]
SG2B [6]				X		X						
BWT Area 1 [7]			X	X[3]		X						
BWT Area 2 [7]			X	X[3]		X						
Recirculation Cell		X					2/year[2]		X[2]		X[2]	X[2]

Notes:

General Chemistry:	Conductivity, pH, Hardness (as CaCO3), Total Suspended Solids (TSS), Total Dissolved Solids (TDS), Alkalinity - Bicarbonate (as CaCO3), Alkalinity - Carbonate (as CaCO3), Alkalinity - Hydroxide (as CaCO3), Total - Alkalinity (as CaCO3), Chloride, Nitrate-N, Nitrite-N, Nitrate & Nitrite (as N), Phosphate-P (ortho), Sulphate, Anion Sum, Cation Sum, Cation - Anion Balance, Dissolved Organic Carbon (DOC), Total Organic Carbon (TOC), Turbidity. Includes oil and grease for surface water samples only.
Field Parameters:	pH, Temperature
Metals:	Aluminium, Antimony, Arsenic, Barium, Beryllium, Bismuth, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Lithium, Magnesium, Manganese, Molybdenum, Nickel, Phosphorus, Potassium, Selenium, Silicon (total and dissolved), Silver, Sodium, Strontium, Thallium, Tin, Titanium, Tungsten, Uranium, Vanadium, Zinc, Zirconium.

(1) Requirement of Permit to Take Water No. 7481-C4BQTA (PTTW).
(2) Requirement of Environmental Compliance Approval No. 3994-CCDR8L (ECA).
(3) Aggregate Resource Act (ARA) license Groundwater Monitoring Program (i.e., locations not monitored as part of PTTW or ECA requirements)
(4) Groundwater and surface water monitoring/sampling will be completed in May, August and December every year.
(5) Included as part of the Monitoring Program at the request of the MECP and County of Brant.
(6) Supplemental monitoring proactively completed on-Site in support of ECA.
(7) Below water table (BWT) area hydraulic monitoring to be completed during extraction below the water table.

Table 4.1

2023 Water Elevation Data
2023 Combined Annual Monitoring Report
Dufferin Aggregates Paris Pit
County of Brant, Ontario

Location: Date	BH88-1-I	BH88-2-I	BH88-4A-I	BH88-4A-II	BH88-4-I	BH88-5A-I	BH88-5-I	BH88-5-II	BH88-6-I	MW1-12	MW2-12	MW3-16	MW4-16	MW5-16	MW6-16
01/06/2023	--	--	--	--	--	234.45	244.18	244.16	--	244.12	--	244.06	--	246.42	--
01/13/2023	--	--	--	--	--	--	244.24	244.14	--	244.11	--	244.04	--	246.36	--
01/20/2023	--	--	--	--	--	--	244.16	--	--	244.11	--	244.05	--	246.35	--
02/24/2023	--	--	--	--	--	--	244.19	244.17	--	244.13	--	244.07	--	246.28	--
03/22/2023	--	--	--	--	--	--	244.20	244.17	--	244.14	--	244.07	--	246.28	--
04/21/2023	--	--	--	--	--	--	244.42	244.39	--	244.10	--	244.01	--	247.11	--
04/28/2023	--	--	--	--	--	--	244.51	244.49	--	244.38	--	244.30	--	247.26	--
05/05/2023	--	--	--	--	--	--	244.43	244.41	--	244.21	--	244.13	--	247.34	--
05/12/2023	--	--	--	--	--	--	244.49	244.47	--	244.37	--	244.31	--	247.38	--
05/19/2023	--	--	--	--	--	--	244.42	244.40	--	244.29	--	244.22	--	247.38	--
05/24/2023	257.30	250.29	233.19	237.00	237.24	234.33	244.49	244.48	--	244.30	243.59	--	233.98	--	--
05/25/2023	--	--	--	--	--	--	--	--	236.41	--	--	244.21	--	247.37	246.58
06/01/2023	--	--	--	236.87	--	234.51	244.48	244.35	236.30	244.16	--	244.09	--	247.36	--
07/07/2023	--	--	--	--	--	234.37	244.39	244.36	--	244.27	--	244.21	--	247.27	--
07/14/2023	--	--	--	--	--	--	244.39	244.36	--	244.26	--	244.20	--	247.27	--
07/21/2023	--	--	--	--	--	--	244.40	244.43	--	244.30	--	244.23	--	247.28	--
08/14/2023	257.23	249.77	232.75	236.54	236.87	235.50	244.42	244.38	--	244.27	243.32	--	233.68	--	--
08/15/2023	--	--	--	--	--	--	--	--	235.90	--	--	244.18	--	247.20	246.09
09/22/2023	--	--	--	--	--	--	244.27	244.32	--	244.14	--	244.04	--	247.05	--
10/20/2023	--	--	--	--	--	--	244.24	244.22	--	244.08	--	244.02	--	246.87	--
11/24/2023	--	--	--	--	--	--	244.22	244.20	--	244.09	--	244.05	--	246.72	--
12/12/2023	256.88	249.67	232.57	236.19	236.48	234.22	244.22	244.19	235.62	244.08	243.43	--	233.35	246.67	245.56
12/13/2023	--	--	--	--	--	--	--	--	--	--	--	244.01	--	--	--

Notes:
All elevations shown are in meters above mean sea level (m AMSL)
-- No measurement recorded on indicated date

Table 4.1

2023 Water Elevation Data
2023 Combined Annual Monitoring Report
Dufferin Aggregates Paris Pit
County of Brant, Ontario

Location: Date	MW8-22	MW9-22	MW10-22	MW11-22	MW12-23	OW1-96A	OW1-96B	OW1-96C	SG2B	SW1A	SW1B	MP1S	MP2S
01/06/2023	--	--	--	--	--	--	--	--	ozen at -1.	--	243.71	244.06	243.94
01/13/2023	--	--	--	--	--	--	--	--	Frozen	--	243.74	244.08	244.06
01/20/2023	--	--	--	--	--	--	--	--	243.73	--	243.76	244.12	244.10
02/24/2023	--	--	--	--	--	--	--	--	--	--	--	--	--
03/22/2023	--	--	--	--	--	--	--	--	243.81	--	243.84	244.11	244.09
04/21/2023	--	--	--	--	--	--	--	--	243.82	--	243.87	244.14	244.09
04/28/2023	--	--	--	--	--	--	--	--	243.84	--	243.88	244.25	244.20
05/05/2023	--	--	--	--	--	--	--	--	243.88	--	243.91	244.12	244.08
05/12/2023	--	--	--	--	--	--	--	--	243.86	--	243.90	244.19	244.14
05/19/2023	--	--	--	--	--	--	--	--	243.83	--	243.87	244.20	244.16
05/24/2023	--	--	--	--	--	--	--	--	--	--	--	--	--
05/25/2023	248.72	249.32	247.19	245.97	Dry at 9.97	229.80	230.49	236.89	243.83	242.86	243.87	244.19	244.08
06/01/2023	--	--	--	--	--	--	--	--	243.81	--	243.85	244.13	244.08
07/07/2023	--	--	--	--	--	--	--	--	243.83	--	243.85	244.18	244.09
07/14/2023	--	--	--	--	--	--	--	--	243.83	--	243.86	244.17	244.14
07/21/2023	--	--	--	--	--	--	--	--	243.81	--	243.85	244.19	244.14
08/14/2023	--	--	247.05	--	--	229.27	229.99	236.15	243.80	242.77	243.76	--	--
08/15/2023	248.42	249.10	--	245.86	Dry at 9.96	--	--	--	--	--	--	244.10	244.06
09/22/2023	--	--	--	--	--	--	--	--	243.83	--	243.75	--	--
10/20/2023	--	--	--	--	--	--	--	--	243.67	--	243.72	--	--
11/24/2023	--	--	--	--	--	--	--	--	243.72	--	243.76	--	--
12/12/2023	248.02	248.63	246.50	245.47	--	--	--	--	243.79	242.83	243.80	--	--
12/13/2023	--	--	--	--	Dry at 9.97	229.49	230.18	235.64	--	--	--	244.07	244.03

Notes:
All elevations shown are in meters above mean sea level (m AMSL)
-- No measurement recorded on indicated date

2023 Water Taking
2023 Combined Annual Monitoring Report
Dufferin Aggregates Paris Pit
County of Brant, Ontario

Date	Hours of Taking (hrs)	Rate of Taking (Lpm)	Amount of Taking (Lpd)	Comments
Jan/Feb 2023	--	--	--	No taking occurred.
Wednesday March 01 2023	0.0	0	0	-
Thursday March 02 2023	11.9	1,166	832,788	
Friday March 03 2023	0.0	0	0	-
Saturday March 04 2023	0.0	0	0	-
Sunday March 05 2023	11.8	1,230	870,642	-
Monday March 06 2023	11.9	1,166	832,788	
Tuesday March 07 2023	11.8	1,176	832,788	
Wednesday March 08 2023	11.9	1,113	794,934	
Thursday March 09 2023	0.0	0	0	
Friday March 10 2023	0.0	0	0	
Saturday March 11 2023	0.0	0	0	
Sunday March 12 2023	0.0	0	0	
Monday March 13 2023	0.0	0	0	
Tuesday March 14 2023	0.0	0	0	
Wednesday March 15 2023	0.0	0	0	
Thursday March 16 2023	0.0	0	0	
Friday March 17 2023	0.0	0	0	
Saturday March 18 2023	0.0	0	0	
Sunday March 19 2023	0.0	0	0	
Monday March 20 2023	0.0	0	0	
Tuesday March 21 2023	0.0	0	0	
Wednesday March 22 2023	11.9	1,166	832,788	Large Pump
Thursday March 23 2023	7.8	9,868	4,618,188	Large Pump
Friday March 24 2023	9.3	9,294	5,185,998	Large Pump
Saturday March 25 2023	0.0	0	0	
Sunday March 26 2023	0.0	0	0	
Monday March 27 2023	9.0	8,062	4,353,210	Large Pump
Tuesday March 28 2023	8.8	9,894	5,223,852	Large Pump
Wednesday March 29 2023	8.6	8,363	4,315,356	Large Pump
Thursday March 30 2023	7.4	7,929	3,520,422	Large Pump
Friday March 31 2023	0.0	0	0	
Saturday April 01 2023	0.0	0	0	
Sunday April 02 2023	7.0	8,382	3,520,422	Large Pump
Monday April 03 2023	10.9	8,335	5,450,976	Large Pump
Tuesday April 04 2023	11.1	9,208	6,132,348	Large Pump
Wednesday April 05 2023	12.0	1,104	794,934	
Thursday April 06 2023	0.0	0	0	
Friday April 07 2023	0.0	0	0	
Saturday April 08 2023	0.0	0	0	
Sunday April 09 2023	11.9	1,166	832,788	
Monday April 10 2023	11.9	1,007	719,226	
Tuesday April 11 2023	12.0	9,569	6,889,428	Large Pump
Wednesday April 12 2023	11.9	9,119	6,510,888	Large Pump
Thursday April 13 2023	8.5	8,907	4,542,480	Large Pump
Friday April 14 2023	11.9	1,272	908,496	
Saturday April 15 2023	0.0	0	0	
Sunday April 16 2023	11.8	1,176	832,788	
Monday April 17 2023	11.9	1,166	832,788	
Tuesday April 18 2023	11.9	1,060	757,080	
Wednesday April 19 2023	11.8	1,123	794,934	
Thursday April 20 2023	11.9	9,808	7,002,990	Large Pump
Friday April 21 2023	11.9	1,166	832,788	
Saturday April 22 2023	0.0	0	0	
Sunday April 23 2023	11.9	1,219	870,642	

2023 Water Taking
2023 Combined Annual Monitoring Report
Dufferin Aggregates Paris Pit
County of Brant, Ontario

Date	Hours of Taking (hrs)	Rate of Taking (Lpm)	Amount of Taking (Lpd)	Comments
Monday April 24 2023	11.8	1,123	794,934	
Tuesday April 25 2023	11.9	1,272	908,496	
Wednesday April 26 2023	11.9	1,272	908,496	
Thursday April 27 2023	11.9	1,325	946,350	
Friday April 28 2023	11.9	1,272	908,496	
Saturday April 29 2023	11.9	1,272	908,496	
Sunday April 30 2023	11.8	1,337	946,350	
Monday May 01 2023	11.9	7,793	5,564,538	Large Pump
Tuesday May 02 2023	11.9	1,272	908,496	
Wednesday May 03 2023	11.8	1,283	908,496	
Thursday May 04 2023	8.7	9,427	4,921,020	Large Pump
Friday May 05 2023	11.9	1,219	870,642	
Saturday May 06 2023	11.9	1,272	908,496	
Sunday May 07 2023	11.9	1,166	832,788	
Monday May 08 2023	11.8	1,176	832,788	
Tuesday May 09 2023	11.8	1,230	870,642	
Wednesday May 10 2023	11.7	1,240	870,642	
Thursday May 11 2023	11.9	1,325	946,350	
Friday May 12 2023	10.3	9,984	6,170,202	Large Pump
Saturday May 13 2023	11.9	1,272	908,496	
Sunday May 14 2023	11.9	1,113	794,934	
Monday May 15 2023	11.9	1,113	794,934	
Tuesday May 16 2023	11.8	1,230	870,642	
Wednesday May 17 2023	11.9	1,325	946,350	
Thursday May 18 2023	11.9	1,325	946,350	
Friday May 19 2023	11.9	1,272	908,496	
Saturday May 20 2023	11.8	1,337	946,350	
Sunday May 21 2023	11.9	1,325	946,350	
Monday May 22 2023	11.9	1,219	870,642	
Tuesday May 23 2023	11.8	1,337	946,350	
Wednesday May 24 2023	11.9	1,325	946,350	
Thursday May 25 2023	11.9	1,325	946,350	
Friday May 26 2023	11.9	1,325	946,350	
Saturday May 27 2023	11.8	1,337	946,350	
Sunday May 28 2023	11.9	1,378	984,204	
Monday May 29 2023	11.9	1,378	984,204	
Tuesday May 30 2023	11.8	1,390	984,204	
Wednesday May 31 2023	11.9	5,938	4,239,648	Large Pump
Thursday June 01 2023	11.8	1,230	870,642	
Friday June 02 2023	11.9	1,219	870,642	
Saturday June 03 2023	11.9	1,378	984,204	
Sunday June 04 2023	11.9	1,219	870,642	
Monday June 05 2023	11.8	1,283	908,496	
Tuesday June 06 2023	11.9	1,272	908,496	
Wednesday June 07 2023	11.9	1,378	984,204	
Thursday June 08 2023	11.9	1,325	946,350	
Friday June 09 2023	11.8	1,390	984,204	
Saturday June 10 2023	0.0	0	0	
Sunday June 11 2023	11.9	1,325	946,350	
Monday June 12 2023	11.9	1,378	984,204	
Tuesday June 13 2023	11.9	1,378	984,204	
Wednesday June 14 2023	11.8	1,390	984,204	
Thursday June 15 2023	11.9	1,325	946,350	
Friday June 16 2023	11.9	1,378	984,204	
Saturday June 17 2023	0.0	0	0	

2023 Water Taking
2023 Combined Annual Monitoring Report
Dufferin Aggregates Paris Pit
County of Brant, Ontario

Date	Hours of Taking (hrs)	Rate of Taking (Lpm)	Amount of Taking (Lpd)	Comments
Sunday June 18 2023	11.9	1,378	984,204	
Monday June 19 2023	11.8	1,390	984,204	
Tuesday June 20 2023	11.9	1,325	946,350	
Wednesday June 21 2023	11.9	1,378	984,204	
Thursday June 22 2023	11.8	1,390	984,204	
Friday June 23 2023	0.0	0	0	
Saturday June 24 2023	0.0	0	0	
Sunday June 25 2023	0.0	0	0	
Monday June 26 2023	11.9	1,378	984,204	
Tuesday June 27 2023	11.9	1,378	984,204	
Wednesday June 28 2023	11.9	1,378	984,204	
Thursday June 29 2023	11.8	1,390	984,204	
Friday June 30 2023	11.9	1,378	984,204	
Saturday July 01 2023	0.0	0	0	
Sunday July 02 2023	0.0	0	0	
Monday July 03 2023	0.0	0	0	
Tuesday July 04 2023	11.9	1,378	984,204	
Wednesday July 05 2023	11.9	1,378	984,204	
Thursday July 06 2023	11.8	1,390	984,204	
Friday July 07 2023	0.0	0	0	
Saturday July 08 2023	0.0	0	0	
Sunday July 09 2023	11.9	1,378	984,204	
Monday July 10 2023	11.9	1,166	832,788	
Tuesday July 11 2023	11.9	1,272	908,496	
Wednesday July 12 2023	11.8	1,337	946,350	
Thursday July 13 2023	11.9	1,325	946,350	
Friday July 14 2023	11.9	1,378	984,204	
Saturday July 15 2023	0.0	0	0	
Sunday July 16 2023	11.8	1,390	984,204	
Monday July 17 2023	0.0	0	0	
Tuesday July 18 2023	11.9	1,378	984,204	
Wednesday July 19 2023	11.9	1,166	832,788	
Thursday July 20 2023	10.8	1,285	832,788	
Friday July 21 2023	11.8	962	681,372	
Saturday July 22 2023	0.0	0	0	
Sunday July 23 2023	11.9	1,060	757,080	
Monday July 24 2023	11.9	1,272	908,496	
Tuesday July 25 2023	11.9	1,060	757,080	
Wednesday July 26 2023	11.8	1,337	946,350	
Thursday July 27 2023	11.9	1,272	908,496	
Friday July 28 2023	0.0	0	0	
Saturday July 29 2023	0.0	0	0	
Sunday July 30 2023	11.9	1,325	946,350	
Monday July 31 2023	11.8	1,283	908,496	
Tuesday August 01 2023	11.9	1,378	984,204	
Wednesday August 02 2023	11.0	9,291	6,132,348	Large Pump
Thursday August 03 2023	11.9	1,166	832,788	
Friday August 04 2023	11.9	1,219	870,642	
Saturday August 05 2023	0.0	0	0	
Sunday August 06 2023	0.0	0	0	
Monday August 07 2023	11.8	1,390	984,204	
Tuesday August 08 2023	11.9	1,325	946,350	
Wednesday August 09 2023	11.9	1,325	946,350	
Thursday August 10 2023	0.0	0	0	
Friday August 11 2023	0.0	0	0	

Table 5.1

2023 Water Taking
2023 Combined Annual Monitoring Report
Dufferin Aggregates Paris Pit
County of Brant, Ontario

Date	Hours of Taking (hrs)	Rate of Taking (Lpm)	Amount of Taking (Lpd)	Comments
Saturday August 12 2023	0.0	0	0	
Sunday August 13 2023	11.8	1,337	946,350	
Monday August 14 2023	11.1	1,137	757,080	
Tuesday August 15 2023	11.8	1,390	984,204	
Wednesday August 16 2023	11.9	1,378	984,204	
Thursday August 17 2023	11.9	1,325	946,350	
Friday August 18 2023	0.0	0	0	
Saturday August 19 2023	0.0	0	0	
Sunday August 20 2023	11.9	1,378	984,204	
Monday August 21 2023	11.8	1,390	984,204	
Tuesday August 22 2023	0.0	0	0	
Wednesday August 23 2023	11.9	1,378	984,204	
Thursday August 24 2023	11.9	1,378	984,204	
Friday August 25 2023	11.9	1,378	984,204	
Saturday August 26 2023	0.0	0	0	
Sunday August 27 2023	11.8	1,390	984,204	
Monday August 28 2023	11.9	1,325	946,350	
Tuesday August 29 2023	11.9	1,378	984,204	
Wednesday August 30 2023	11.8	1,390	984,204	
Thursday August 31 2023	11.9	1,378	984,204	
Friday September 01 2023	0.0	0	0	
Saturday September 02 2023	0.0	0	0	
Sunday September 03 2023	11.9	1,378	984,204	
Monday September 04 2023	11.9	1,378	984,204	
Tuesday September 05 2023	11.0	1,377	908,496	
Wednesday September 06 2023	11.9	1,378	984,204	
Thursday September 07 2023	0.0	0	0	
Friday September 08 2023	11.9	1,378	984,204	
Saturday September 09 2023	0.0	0	0	
Sunday September 10 2023	11.8	1,390	984,204	
Monday September 11 2023	11.9	1,378	984,204	
Tuesday September 12 2023	11.9	1,378	984,204	
Wednesday September 13 2023	11.8	1,390	984,204	
Thursday September 14 2023	0.0	0	0	
Friday September 15 2023	0.0	0	0	
Saturday September 16 2023	0.0	0	0	
Sunday September 17 2023	11.9	1,378	984,204	
Monday September 18 2023	11.9	1,378	984,204	
Tuesday September 19 2023	11.9	1,378	984,204	
Wednesday September 20 2023	11.8	1,390	984,204	
Thursday September 21 2023	11.9	1,378	984,204	
Friday September 22 2023	0.0	0	0	
Saturday September 23 2023	0.0	0	0	
Sunday September 24 2023	11.9	1,378	984,204	
Monday September 25 2023	11.8	1,390	984,204	
Tuesday September 26 2023	11.9	1,378	984,204	
Wednesday September 27 2023	11.9	1,378	984,204	
Thursday September 28 2023	11.8	1,390	984,204	
Friday September 29 2023	0.0	0	0	
Saturday September 30 2023	0.0	0	0	
Sunday October 01 2023	11.9	1,325	946,350	
Monday October 02 2023	11.9	1,378	984,204	
Tuesday October 03 2023	11.9	1,378	984,204	
Wednesday October 04 2023	11.8	1,337	946,350	
Thursday October 05 2023	11.9	1,378	984,204	

2023 Water Taking
2023 Combined Annual Monitoring Report
Dufferin Aggregates Paris Pit
County of Brant, Ontario

Date	Hours of Taking (hrs)	Rate of Taking (Lpm)	Amount of Taking (Lpd)	Comments
Friday October 06 2023	0.0	0	0	
Saturday October 07 2023	0.0	0	0	
Sunday October 08 2023	0.0	0	0	
Monday October 09 2023	11.9	1,325	946,350	
Tuesday October 10 2023	11.9	1,378	984,204	
Wednesday October 11 2023	11.8	1,390	984,204	
Thursday October 12 2023	11.9	1,378	984,204	
Friday October 13 2023	11.9	1,325	946,350	
Saturday October 14 2023	0.0	0	0	
Sunday October 15 2023	11.8	1,390	984,204	
Monday October 16 2023	11.9	1,378	984,204	
Tuesday October 17 2023	11.9	1,378	984,204	
Wednesday October 18 2023	11.9	1,325	946,350	
Thursday October 19 2023	0.0	0	0	
Friday October 20 2023	11.8	1,390	984,204	
Saturday October 21 2023	0.0	0	0	
Sunday October 22 2023	0.0	0	0	
Monday October 23 2023	5.9	1,390	492,102	
Tuesday October 24 2023	11.9	1,325	946,350	
Wednesday October 25 2023	11.9	1,378	984,204	
Thursday October 26 2023	0.0	0	0	
Friday October 27 2023	0.0	0	0	
Saturday October 28 2023	0.0	0	0	
Sunday October 29 2023	11.9	1,378	984,204	
Monday October 30 2023	0.0	0	0	
Tuesday October 31 2023	11.9	1,378	984,204	
Wednesday November 01 2023	11.8	1,390	984,204	
Thursday November 02 2023	11.7	1,348	946,350	
Friday November 03 2023	12.0	1,393	1,003,131	
Saturday November 04 2023	12.0	1,393	1,003,131	
Sunday November 05 2023	11.8	1,390	984,204	
Monday November 06 2023	11.9	1,378	984,204	
Tuesday November 07 2023	11.8	1,390	984,204	
Wednesday November 08 2023	0.0	0	0	
Thursday November 09 2023	11.9	1,378	984,204	
Friday November 10 2023	0.7	901	37,854	
Saturday November 11 2023	0.0	0	0	
Sunday November 12 2023	11.8	1,390	984,204	
Monday November 13 2023	11.9	1,378	984,204	
Tuesday November 14 2023	11.9	1,378	984,204	
Wednesday November 15 2023	11.8	1,337	946,350	
Thursday November 16 2023	11.9	1,378	984,204	
Friday November 17 2023	0.0	0	0	
Saturday November 18 2023	0.0	0	0	
Sunday November 19 2023	0.0	0	0	
Monday November 20 2023	11.9	1,325	946,350	
Tuesday November 21 2023	11.9	1,378	984,204	
Wednesday November 22 2023	4.0	1,104	264,978	
Thursday November 23 2023	0.0	0	0	
Friday November 24 2023	0.0	0	0	
Saturday November 25 2023	0.0	0	0	
Sunday November 26 2023	0.0	0	0	
Monday November 27 2023	11.9	1,378	984,204	
Tuesday November 28 2023	0.0	0	0	
Wednesday November 29 2023	2.0	0	0	- pump ran for 2hrs but line was frozen; no taking occurred

2023 Water Taking
2023 Combined Annual Monitoring Report
Dufferin Aggregates Paris Pit
County of Brant, Ontario

Date	Hours of Taking (hrs)	Rate of Taking (Lpm)	Amount of Taking (Lpd)	Comments
Thursday November 30 2023	11.8	1,283	908,496	
Friday December 01 2023	11.9	1,325	946,350	
Saturday December 02 2023	0.0	0	0	
Sunday December 03 2023	0.0	0	0	
Monday December 04 2023	11.8	1,390	984,204	
Tuesday December 05 2023	0.0	0	0	
Wednesday December 06 2023	11.9	1,325	946,350	
Thursday December 07 2023	11.9	1,378	984,204	
Friday December 08 2023	11.8	1,337	946,350	
Saturday December 09 2023	0.0	0	0	
Sunday December 10 2023	0.0	0	0	
Monday December 11 2023	11.9	1,378	984,204	
Tuesday December 12 2023	11.9	1,325	946,350	
Wednesday December 13 2023	11.9	1,325	946,350	
Thursday December 14 2023	0.0	0	0	
Friday December 15 2023	0.0	0	0	
Saturday December 16 2023	0.0	0	0	
Sunday December 17 2023	0.0	0	0	
Monday December 18 2023	0.0	0	0	
Tuesday December 19 2023	0.0	0	0	
Wednesday December 20 2023	0.0	0	0	
Thursday December 21 2023	0.0	0	0	
Friday December 22 2023	0.0	0	0	
Saturday December 23 2023	0.0	0	0	
Sunday December 24 2023	0.0	0	0	
Monday December 25 2023	0.0	0	0	
Tuesday December 26 2023	0.0	0	0	
Wednesday December 27 2023	0.0	0	0	
Thursday December 28 2023	0.0	0	0	
Friday December 29 2023	0.0	0	0	
Saturday December 30 2023	0.0	0	0	
Sunday December 31 2023	0.0	0	0	

Table 6.1

2023 Groundwater Analytical Data - General Chemistry
2023 Combined Annual Monitoring Report
Dufferin Aggregates Paris Pit
County of Brant, Ontario

Sample Location:			BH88-1-I	BH88-1-I	BH88-1-I	BH88-2-I	BH88-2-I	BH88-2-I	BH88-4-AI	BH88-4A-I	BH88-4A-I	BH88-4-AII
Sample ID:			GW-78410-052423-EH-009	GW-78410-081423-EH-011	GW-78410-121223-RC-08	GW-78410-052423-EH-010	GW-78410-081423-EH-012	GW-78410-121323-EH-03	GW-78410-121223-RC-09	GW-78410-052423-EH-005	GW-78410-081423-EH-008	GW-78410-121223-RC-10
Sample Date:			5/24/2023	8/14/2023	12/12/2023	5/24/2023	8/14/2023	12/13/2023	12/12/2023	5/24/2023	8/14/2023	12/12/2023
Parameters	**Units**	**ODWQS**										
Field Parameters												
Conductivity, field	µS/cm	-	601	629	639	295	543	546	670	619	621	642
Dissolved oxygen (DO), field	mg/L	-	7.69	-	-	8.01	3.29	7.5	-	8.33	-	-
Oxidation reduction potential (ORP), field	millivolts	-	173	202	192	204	151	266	203	188	215	212
pH, field	s.u.	6.5-8.5	7.96	7.54	7.71	7.69	7.15	7.7	7.79	8.05	7.51	7.75
Temperature, field	Deg C	-	12.44	12.5	9.17	15.07	14.17	7.37	9.41	11.99	13.15	9.8
Turbidity, field	NTU	-	-	0	5.8	-	18.2	24.1	7	-	0.8	336
General Chemistry												
Alkalinity, bicarbonate	mg/L	-	274	270	280	253	240	252	260	220	250	273
Alkalinity, carbonate	mg/L	-	ND (10.0)	ND (10.0)	ND (10.0)	ND (10.0)	ND (10.0)	ND (10.0)	ND (10.0)	ND (10.0)	ND (10.0)	ND (10.0)
Alkalinity, hydroxide	mg/L	-	ND (10.0)	ND (10.0)	ND (10.0)	ND (10.0)	ND (10.0)	ND (10.0)	ND (10.0)	ND (10.0)	ND (10.0)	ND (10.0)
Alkalinity, total (as $CaCO_3$)	mg/L	500	274	270	280	253	240	252	260	220	250	273
Anion sum	meq	-	6.93	6.88	7.05	6.76	5.91	6.20	7.10	6.07	6.66	7.16
Anion/Cation ratio	%	-	-3.28	0.79	-0.71	2.17	-0.34	-2.73	-0.64	2.10	-1.52	-3.24
Cation sum	meq	-	6.49	6.99	6.95	7.06	5.87	5.87	7.01	6.33	6.46	6.71
Chloride (dissolved)	mg/L	250	13.0	13.7	13.0	19.5	8.98	8.72	31.6	23.6	23.1	24.7
Conductivity	µS/cm	-	622	637	653	613	553	546	681	563	627	642
Dissolved organic carbon (DOC) (dissolved)	mg/L	5	0.59	0.77	3.77 J	2.51 J	1.65 J	4.14 J	1.72 J	ND (0.50)	0.79	0.95
Hardness	mg/L	100	**314**	**338**	**336**	**345**	**287**	**286**	**332**	**297**	**304**	**318**
Nitrate (as N)	mg/L	10	8.98	9.08	9.33	**11.6**	8.21	7.03	8.96	8.76	8.93	8.61
Nitrite (as N)	mg/L	1	ND (0.010)	ND (0.010)	ND (0.010)	ND (0.010)	ND (0.010)	ND (0.010)	ND (0.010)	ND (0.010)	ND (0.010)	ND (0.010)
Nitrite/Nitrate	mg/L	-	8.98	9.08	9.33	11.6	8.21	7.03	8.96	8.76	8.93	8.61
Orthophosphate (dissolved)	mg/L	-	ND (0.0030)	ND (0.0030)	ND (0.0030)	ND (0.0030)	0.0042	0.0126	ND (0.0030)	ND (0.0030)	ND (0.0030)	ND (0.0030)
pH, lab	s.u.	6.5-8.5	7.75	8.09	8.06	7.93	8.10	8.23	8.01	8.00	8.09	7.77
Sulfate (dissolved)	mg/L	500	21.6	21.7	20.4	15.9	13.2	20.1	17.7	18.5	18.2	18.9
Total dissolved solids (TDS)	mg/L	500	365	376	357	364	318	278	370	365	358	368
Total organic carbon (TOC)	mg/L	-	ND (0.50)	0.65	1.29 J	1.55 J	0.76 J	1.53 J	1.10 J	0.61	ND (0.50)	2.18
Total suspended solids (TSS)	mg/L	-	3.6	6.7	30.2	23.2	7.5	3.4	3.4	4.6	ND (3.0)	691
Turbidity	NTU	-	0.37	0.78	0.67	2.51	5.53	2.08	0.63	0.38	0.54	194

Notes:

ODWQS	Ontario Drinking Water Quality Standards (2020); including aethetic objectives and operations guidelines (June 2003, revised 2006).
-	Not analyzed.
ND (##)	Not detected at the associated reporting limit shown in brackets
J	Estimated concentration
J+	The result is an estimated quantity, but the result may be biased high.
µS/cm	MicroSiemens per centimetre
µmhos/cm	Micromhos per centimetre
mg/L	Milligram per litre
meq	Milliequivalents
NTU	Nephelometric turbidity units
314	Concentration shown is above the respective ODWQS

Table 6.1

2023 Groundwater Analytical Data - General Chemistry
2023 Combined Annual Monitoring Report
Dufferin Aggregates Paris Pit
County of Brant, Ontario

Sample Location:			BH88-4A-II	BH88-4A-II	BH88-4-I	BH88-4-I	BH88-4-I	BH88-5A-I	BH88-5A-I	BH88-5-AI	BH88-5-I	BH88-5-I
Sample ID:			GW-78410-052423-EH-006	GW-78410-081423-EH-009	GW-78410-052423-EH-007	GW-78410-081423-EH-007	GW-78410-121223-RC-11	GW-78410-052423-EH-003	GW-78410-081423-EH-001	GW-78410-121223-RC-04	GW-78410-052423-EH-002	GW-78410-081423-EH-002
Sample Date:			5/24/2023	8/14/2023	5/24/2023	8/14/2023	12/12/2023	5/24/2023	8/14/2023	12/12/2023	5/24/2023	8/14/2023
Parameters	**Units**	**ODWQS**										
Field Parameters												
Conductivity, field	µS/cm	-	614	635	594	629	637	939	978	988	622	642
Dissolved oxygen (DO), field	mg/L	-	6.91	-	5.96	-	-	4.4	-	-	8.83	-
Oxidation reduction potential (ORP), field	millivolts	-	234	228	213	140	212	39	-88	-34	163	152
pH, field	s.u.	6.5-8.5	7.94	7.47	7.93	7.57	7.72	7.59	7.28	7.57	7.81	7.41
Temperature, field	Deg C	-	12.14	12.65	15.17	13.51	10.08	11.53	12.4	9.46	10.52	10.85
Turbidity, field	NTU	-	-	207	-	0	2	-	0	5.5	-	0
General Chemistry												
Alkalinity, bicarbonate	mg/L	-	259	253	226	245	265	195	204	214	226	260
Alkalinity, carbonate	mg/L	-	ND (10.0)	ND (10.0)	ND (10.0)	ND (10.0)	ND (10.0)	ND (10.0)	ND (10.0)	ND (10.0)	ND (10.0)	ND (10.0)
Alkalinity, hydroxide	mg/L	-	ND (10.0)	ND (10.0)	ND (10.0)	ND (10.0)	ND (10.0)	ND (10.0)	ND (10.0)	ND (10.0)	ND (10.0)	ND (10.0)
Alkalinity, total (as $CaCO_3$)	mg/L	500	259	253	226	245	265	195	204	214	226	260
Anion sum	meq	-	6.93	6.84	6.22	6.57	6.92	10.8	11.0	11.2	6.12	6.82
Anion/Cation ratio	%	-	-6.04	-0.88	-0.73	-0.84	-0.87	-1.41	-0.92	0.88	3.55	-1.19
Cation sum	meq	-	6.14	6.72	6.13	6.46	6.80	10.5	10.8	11.4	6.57	6.66
Chloride (dissolved)	mg/L	250	25.7	26.5	25.5	23.4	21.8	24.8	25.2	25.0	20.2	20.3
Conductivity	µS/cm	-	563	629	577	626	649	944	989	1020	565	644
Dissolved organic carbon (DOC) (dissolved)	mg/L	5	ND (0.50)	ND (0.50)	ND (0.50)	0.60	0.99	ND (0.50)	1.03	1.12	ND (0.50)	ND (0.50)
Hardness	mg/L	100	**291**	**319**	**283**	**297**	**322**	**514**	**526**	**559**	**309**	**313**
Nitrate (as N)	mg/L	10	8.66	8.96	9.42	9.69	9.32	ND (0.020)	ND (0.020)	ND (0.020)	7.89	8.12
Nitrite (as N)	mg/L	1	ND (0.010)	ND (0.010)	ND (0.010)	ND (0.010)	ND (0.010)	ND (0.010)	ND (0.010)	ND (0.010)	ND (0.010)	ND (0.010)
Nitrite/Nitrate	mg/L	-	8.66	8.96	9.42	9.69	9.32	ND (0.0224)	ND (0.0224)	ND (0.0224)	7.89	8.12
Orthophosphate (dissolved)	mg/L	-	ND (0.0030)	ND (0.0030)	ND (0.0030)	ND (0.0030)	ND (0.0030)	0.0148	ND (0.0030)	ND (0.0030)	ND (0.0030)	ND (0.0030)
pH, lab	s.u.	6.5-8.5	7.87	7.84	8.15	8.06	8.05	8.15	7.89	7.83	7.95	8.03
Sulfate (dissolved)	mg/L	500	19.6	19.2	15.0	15.7	16.3	296	301	298	22.8	22.8
Total dissolved solids (TDS)	mg/L	500	366	395	365	364	368	**670**	**678**	**684**	359	372
Total organic carbon (TOC)	mg/L	-	ND (2.50)	0.55	ND (0.50)	ND (0.50)	1.19	ND (0.50)	0.60	1.24	0.57	0.63
Total suspended solids (TSS)	mg/L	-	454	196	4.0	ND (3.0)	ND (3.0)	7.8	ND (3.0)	3.6	43.0	ND (3.0)
Turbidity	NTU	-	157	51.8	0.16	0.22	ND (0.10)	4.73	3.78	4.51	2.39	0.33

Notes:

ODWQS	Ontario Drinking Water Quality Standards (2020); including aethetic objectives and operations guidelines (June 2003, revised 2006).
-	Not analyzed.
ND (##)	Not detected at the associated reporting limit shown in brackets
J	Estimated concentration
J+	The result is an estimated quantity, but the result may be biased high.
µS/cm	MicroSiemens per centimetre
µmhos/cm	Micromhos per centimetre
mg/L	Milligram per litre
meq	Milliequivalents
NTU	Nephelometric turbidity units
314	Concentration shown is above the respective ODWQS

Table 6.1

2023 Groundwater Analytical Data - General Chemistry
2023 Combined Annual Monitoring Report
Dufferin Aggregates Paris Pit
County of Brant, Ontario

Sample Location:			BH88-5-I	BH88-5-II	BH88-5-II	BH88-5-II	BH88-6-I	BH88-6-I	BH88-6-I	BH88-6-I	MW1-12	MW1-12
Sample ID:			GW-78410-121223-RC-02	GW-78410-052423-EH-001	GW-78410-081423-EH-003	GW-78410-121223-RC-03	GW-78410-052523-EH-017	GW-78410-052523-EH-018	GW-78410-081523-EH-013	GW-78410-121223-AB-04	GW-78410-052423-EH-004	GW-78410-081423-EH-004
Sample Date:			12/12/2023	5/24/2023	8/14/2023	12/12/2023	5/25/2023	5/25/2023 Duplicate	8/15/2023	12/12/2023	5/24/2023	8/14/2023
Parameters	**Units**	**ODWQS**										
Field Parameters												
Conductivity, field	µS/cm	-	638	617	636	640	704	704	648	578	270	562
Dissolved oxygen (DO), field	mg/L	-	-	7.9	-	-	1.49	1.49	0	0	8.24	4.42
Oxidation reduction potential (ORP), field	millivolts	-	84	148	257	40	77	77	59	-213	198	163
pH, field	s.u.	6.5-8.5	7.66	7.68	7.26	7.72	7.52	7.52	6.94	7.26	7.39	7
Temperature, field	Deg C	-	9.74	10.75	12.29	9.49	15.91	15.91	16.56	8.35	11.41	14.33
Turbidity, field	NTU	-	0.7	-	3.1	13.9	-	-	0	2.7	-	0
General Chemistry												
Alkalinity, bicarbonate	mg/L	-	273	232	254	271	385	378	334	356	194	207
Alkalinity, carbonate	mg/L	-	ND (10.0)	ND (10.0)	ND (10.0)	ND (10.0)	ND (10.0)	ND (10.0)	ND (10.0)	ND (10.0)	ND (10.0)	ND (10.0)
Alkalinity, hydroxide	mg/L	-	ND (10.0)	ND (10.0)	ND (10.0)	ND (10.0)	ND (10.0)	ND (10.0)	ND (10.0)	ND (10.0)	ND (10.0)	ND (10.0)
Alkalinity, total (as $CaCO_3$)	mg/L	500	273	232	254	271	385	378	334	356	194	207
Anion sum	meq	-	7.07	6.25	6.70	7.02	8.88	8.74	7.43	7.68	5.72	5.95
Anion/Cation ratio	%	-	-1.43	2.95	-0.98	-1.44	-0.22 J	-0.34 J	1.65	-1.18	2.97	-0.93
Cation sum	meq	-	6.87	6.63	6.57	6.82	8.84	8.68	7.68	7.50	6.07	5.84
Chloride (dissolved)	mg/L	250	19.6	20.4	20.3	19.5	16.6	16.5	15.4	15.2	35.8	34.1
Conductivity	µS/cm	-	649	579	645	650	770	763	679	681	529	573
Dissolved organic carbon (DOC) (dissolved)	mg/L	5	1.26	0.67	0.88	3.09 J	1.64 J	4.80 J	**5.46 J**	**6.67 J**	1.08 J	1.30 J
Hardness	mg/L	100	**324**	**312**	**308**	**321**	**427**	**420**	**370**	**361**	**274**	**264**
Nitrate (as N)	mg/L	10	8.14	7.94	8.11	8.13	1.98	1.99	2.18	0.843	5.82	6.20
Nitrite (as N)	mg/L	1	ND (0.010)	ND (0.010)	ND (0.010)	ND (0.010)	ND (0.010)	ND (0.010)	ND (0.010)	ND (0.010)	ND (0.010)	ND (0.010)
Nitrite/Nitrate	mg/L	-	8.14	7.94	8.11	8.13	1.98	1.99	2.18	0.843	5.82	6.20
Orthophosphate (dissolved)	mg/L	-	ND (0.0030)	0.0298	ND (0.0030)	ND (0.0030)	ND (0.0030)	ND (0.0030)	0.0035	ND (0.0030)	0.0309	ND (0.0030)
pH, lab	s.u.	6.5-8.5	7.90	8.03	7.98	7.97	7.73	7.82	7.59	7.98	7.88	8.18
Sulfate (dissolved)	mg/L	500	23.1	22.8	22.6	22.9	27.9	27.7	8.13	3.50	20.2	19.6
Total dissolved solids (TDS)	mg/L	500	346	340	363	331	393	403	360	332	299	332
Total organic carbon (TOC)	mg/L	-	0.88	0.51	0.65	1.26 J	1.08 J	0.61 J	0.67 J	1.30 J	0.57 J	0.76 J
Total suspended solids (TSS)	mg/L	-	ND (3.0)	3.4	ND (3.0)	3.6	ND (3.0)	ND (3.0)	ND (3.0)	3.8	ND (3.0)	ND (3.0)
Turbidity	NTU	-	ND (0.10)	0.34	2.35	1.14	0.58	0.89	2.89	20.8	0.19	0.39

Notes:

ODWQS	Ontario Drinking Water Quality Standards (2020); including aethetic objectives and operations guidelines (June 2003, revised 2006).
-	Not analyzed.
ND (##)	Not detected at the associated reporting limit shown in brackets
J	Estimated concentration
J+	The result is an estimated quantity, but the result may be biased high.
µS/cm	MicroSiemens per centimetre
µmhos/cm	Micromhos per centimetre
mg/L	Milligram per litre
meq	Milliequivalents
NTU	Nephelometric turbidity units
314	Concentration shown is above the respective ODWQS

Table 6.1

2023 Groundwater Analytical Data - General Chemistry
2023 Combined Annual Monitoring Report
Dufferin Aggregates Paris Pit
County of Brant, Ontario

Sample Location:			MW1-12	MW1-12	MW2-12	MW2-12	MW2-12	MW3-16	MW3-16	MW3-16	MW4-16	MW4-16
Sample ID:			GW-78410-121223-EH-01	GW-78410-121223-EH-02	GW-78410-052423-EH-011	GW-78410-081423-EH-006	GW-78410-121223-RC-01	GW-78410-052523-EH-013	GW-78410-081523-EH-016	GW-78410-121323-AB-05	GW-78410-052423-EH-008	GW-78410-081423-EH-010
Sample Date:			12/12/2023	12/12/2023 Duplicate	5/24/2023	8/14/2023	12/12/2023	5/25/2023	8/15/2023	12/13/2023	5/24/2023	8/14/2023
Parameters	**Units**	**ODWQS**										
Field Parameters												
Conductivity, field	µS/cm	-	558	558	716	521	684	491	590	581	283	574
Dissolved oxygen (DO), field	mg/L	-	9.07	9.07	7.02	-	-	8.22	-	0	7.32	3.33
Oxidation reduction potential (ORP), field	millivolts	-	224	224	214	171	345	32	261	46	220	146
pH, field	s.u.	6.5-8.5	8.38	8.38	7.65	7.54	7.2	7.47	7.34	6.79	7.65	6.99
Temperature, field	Deg C	-	9.21	9.21	9.98	13.12	9.9	10.87	12.54	7.7	12.8	13.53
Turbidity, field	NTU	-	12.4	12.4	-	109	54.1	-	0	1.5	-	244
General Chemistry												
Alkalinity, bicarbonate	mg/L	-	208	208	350	270	350	186	215	227	238	267
Alkalinity, carbonate	mg/L	-	ND (10.0)	ND (10.0)	ND (10.0)	ND (10.0)	ND (10.0)	ND (10.0)	ND (10.0)	ND (10.0)	ND (10.0)	ND (10.0)
Alkalinity, hydroxide	mg/L	-	ND (10.0)	ND (10.0)	ND (10.0)	ND (10.0)	ND (10.0)	ND (10.0)	ND (10.0)	ND (10.0)	ND (10.0)	ND (10.0)
Alkalinity, total (as $CaCO_3$)	mg/L	500	212	212	350	270	350	186	215	227	238	267
Anion sum	meq	-	6.06	6.09	7.88	6.04	7.78	5.51	6.12	6.41	5.97	6.43
Anion/Cation ratio	%	-	-0.50 J	-1.33 J	0.82	ND (0.01)	-2.37	-1.38	0.16	-3.89	7.23	-0.39
Cation sum	meq	-	6.00	5.93	8.01	6.04	7.42	5.36	6.14	5.93	6.90	6.38
Chloride (dissolved)	mg/L	250	36.1	36.7	7.86	9.24	20.4	34.8	34.3	36.6	15.8	14.8
Conductivity	µS/cm	-	586	589	684	563	687	516	591	593	530	591
Dissolved organic carbon (DOC) (dissolved)	mg/L	5	1.41	1.15	1.62	1.00	1.77	0.96	1.69 J	1.57	1.45	1.35 J
Hardness	mg/L	100	**272**	**269**	**394**	**296**	**364**	**244**	**278**	**268**	**332**	**307**
Nitrate (as N)	mg/L	10	5.15	5.26	6.50	3.33	0.469	5.02	6.43	5.71	6.98	6.21
Nitrite (as N)	mg/L	1	ND (0.010)	ND (0.010)	ND (0.010)	ND (0.010)	ND (0.010)	ND (0.010)	ND (0.010)	ND (0.010)	ND (0.010)	ND (0.010)
Nitrite/Nitrate	mg/L	-	5.15	5.26	6.50	3.33	0.469	5.02	6.43	5.71	6.98	6.21
Orthophosphate (dissolved)	mg/L	-	ND (0.0030)	ND (0.0030)	ND (0.0030)	ND (0.0030)	ND (0.0030)	ND (0.0030)	ND (0.0030)	ND (0.0030)	ND (0.0030)	0.0030
pH, lab	s.u.	6.5-8.5	8.34	8.33	7.65	7.91	7.69	7.89	7.66	8.17	8.02	7.91
Sulfate (dissolved)	mg/L	500	20.8	21.2	9.86	6.96	8.63	21.9	18.9	20.7	12.9	11.2
Total dissolved solids (TDS)	mg/L	500	295	297	424	307	362	281	328	304	327	333
Total organic carbon (TOC)	mg/L	-	1.04	1.11	1.20	1.10	1.76	0.72	0.76 J	1.09 J+	1.13	0.68 J
Total suspended solids (TSS)	mg/L	-	ND (3.0)	ND (3.0)	5.2	19.1	71.4	86.8	11.1	3.4	210	872
Turbidity	NTU	-	ND (0.10)	ND (0.10)	7.03	18.8	52.8	55.6	1.18	0.42	94.9	75.2

Notes:

ODWQS	Ontario Drinking Water Quality Standards (2020); including aethetic objectives and operations guidelines (June 2003, revised 2006).
-	Not analyzed.
ND (##)	Not detected at the associated reporting limit shown in brackets
J	Estimated concentration
J+	The result is an estimated quantity, but the result may be biased high.
µS/cm	MicroSiemens per centimetre
µmhos/cm	Micromhos per centimetre
mg/L	Milligram per litre
meq	Milliequivalents
NTU	Nephelometric turbidity units
314	Concentration shown is above the respective ODWQS

Table 6.1

2023 Groundwater Analytical Data - General Chemistry
2023 Combined Annual Monitoring Report
Dufferin Aggregates Paris Pit
County of Brant, Ontario

Sample Location:			MW4-16	MW5-16	MW5-16	MW5-16	MW5-16	MW5-16	MW5-16	MW6-16	MW6-16	MW6-16
Sample ID:			GW-78410-121323-EH-04	GW-78410-052523-EH-020	GW-78410-052523-EH-021	GW-78410-081523-EH-017	GW-78410-081523-EH-018	GW-78410-121223-AB-01	GW-78410-121223-AB-02	GW-78410-052523-EH-012	GW-78410-081523-EH-014	GW-78410-081523-EH-015
Sample Date:			12/13/2023	5/25/2023	5/25/2023 Duplicate	8/15/2023	8/15/2023 Duplicate	12/12/2023	12/12/2023 Duplicate	5/25/2023	8/15/2023	8/15/2023 Duplicate
Parameters	**Units**	**ODWQS**										
Field Parameters												
Conductivity, field	µS/cm	-	582	583	583	597	597	590	590	594	601	601
Dissolved oxygen (DO), field	mg/L	-	7.31	7.51	7.51	-	-	0	0	5.1	3.3	3.3
Oxidation reduction potential (ORP), field	millivolts	-	202	-1	-1	271	271	86	86	253	168	168
pH, field	s.u.	6.5-8.5	7.74	7.38	7.38	7.39	7.39	7.24	7.24	7.76	7.33	7.33
Temperature, field	Deg C	-	8.54	11.77	11.77	13.19	13.19	6.01	6.01	11.3	17.01	17.01
Turbidity, field	NTU	-	47.3	-	-	7.8	7.8	4	4	-	0	0
General Chemistry												
Alkalinity, bicarbonate	mg/L	-	283	260	260	245	244	252	254	261	255	257
Alkalinity, carbonate	mg/L	-	ND (10.0)	ND (10.0)	ND (10.0)	ND (10.0)	ND (10.0)	ND (10.0)	ND (10.0)	ND (10.0)	ND (10.0)	ND (10.0)
Alkalinity, hydroxide	mg/L	-	ND (10.0)	ND (10.0)	ND (10.0)	ND (10.0)	ND (10.0)	ND (10.0)	ND (10.0)	ND (10.0)	ND (10.0)	ND (10.0)
Alkalinity, total (as $CaCO_3$)	mg/L	500	283	260	260	245	244	252	254	261	255	257
Anion sum	meq	-	6.66	6.72	6.72	6.52	6.47	6.55	6.59	6.65	6.54	6.58
Anion/Cation ratio	%	-	-4.88	-0.37 J	-0.90 J	0.76	0.84	-1.47 J	-1.23 J	-1.29	0.91 J	0.38 J
Cation sum	meq	-	6.04	6.67	6.60	6.62	6.58	6.36	6.43	6.48	6.66	6.63
Chloride (dissolved)	mg/L	250	12.2	16.8	16.7	15.6	15.3	16.5	16.5	17.0	17.3	17.3
Conductivity	µS/cm	-	578	611	610	613	617	612	613	602	612	607
Dissolved organic carbon (DOC) (dissolved)	mg/L	5	1.40	4.99 J	1.52 J	1.12 J	1.02	2.07 J	2.64 J	**5.42 J**	1.64 J	3.44 J
Hardness	mg/L	100	**291**	**319**	**315**	**313**	**312**	**305**	**308**	**310**	**319**	**317**
Nitrate (as N)	mg/L	10	5.48	9.22	9.18	**11.5**	**11.3**	9.62	9.65	7.18	7.35	7.36
Nitrite (as N)	mg/L	1	ND (0.010)	ND (0.010)	ND (0.010)	ND (0.010)	ND (0.010)	ND (0.010)	ND (0.010)	ND (0.010)	ND (0.010)	ND (0.010)
Nitrite/Nitrate	mg/L	-	5.48	9.22	9.18	11.5	11.3	9.62	9.65	7.18	7.35	7.36
Orthophosphate (dissolved)	mg/L	-	ND (0.0030)	0.0034	ND (0.0030)	ND (0.0030)	ND (0.0030)	ND (0.0030)	ND (0.0030)	0.0179	0.0034	ND (0.0030)
pH, lab	s.u.	6.5-8.5	8.17	7.88	7.93	7.65	7.70	8.10	8.09	7.85	7.67	7.73
Sulfate (dissolved)	mg/L	500	13.2	19.1	19.0	17.4	17.2	17.2	17.2	21.2	20.8	20.8
Total dissolved solids (TDS)	mg/L	500	306	331	357	364	372	323	322	316	346	340
Total organic carbon (TOC)	mg/L	-	1.86 J+	0.60 J	0.57 J	ND (0.50) J	0.69	1.40 J	1.34 J	0.76 J	0.55 J	ND (0.50) J
Total suspended solids (TSS)	mg/L	-	179	4.4	ND (3.0)	3.5	ND (3.0)	6.3 J	9.4 J	ND (3.0)	ND (3.0)	ND (3.0)
Turbidity	NTU	-	44.4	1.35 J	0.62 J	1.61 J	0.72 J	0.56 J	1.64 J	0.45	0.19	0.20

Notes:

ODWQS	Ontario Drinking Water Quality Standards (2020); including aethetic objectives and operations guidelines (June 2003, revised 2006).
-	Not analyzed.
ND (##)	Not detected at the associated reporting limit shown in brackets
J	Estimated concentration
J+	The result is an estimated quantity, but the result may be biased high.
µS/cm	MicroSiemens per centimetre
µmhos/cm	Micromhos per centimetre
mg/L	Milligram per litre
meq	Milliequivalents
NTU	Nephelometric turbidity units
314	Concentration shown is above the respective ODWQS

Table 6.1

2023 Groundwater Analytical Data - General Chemistry
2023 Combined Annual Monitoring Report
Dufferin Aggregates Paris Pit
County of Brant, Ontario

Sample Location:			MW6-16	MW8-22	MW8-22	MW8-22	MW9-22	MW9-22	MW9-22	MW11-22	MW11-22	MW11-22
Sample ID:			GW-78410-121223-AB-03	GW-78410-052523-EH-014	GW-78410-081523-EH-019	GW-78410-121223-RC-07	GW-78410-052523-EH-015	GW-78410-081523-EH-020	GW-78410-121223-RC-06	GW-78410-052523-EH-016	GW-78410-081523-EH-021	GW-78410-121223-RC-05
Sample Date:			12/12/2023	5/25/2023	8/15/2023	12/12/2023	5/25/2023	8/15/2023	12/12/2023	5/25/2023	8/15/2023	12/12/2023
Parameters	**Units**	**ODWQS**										
Field Parameters												
Conductivity, field	µS/cm	-	601	626	538	633	635	635	668	600	595	602
Dissolved oxygen (DO), field	mg/L	-	0	5	5.85	-	5.21	5.1	-	6.1	5.85	-
Oxidation reduction potential (ORP), field	millivolts	-	96	173	212	198	184	134	193	166	156	171
pH, field	s.u.	6.5-8.5	7.39	7.73	6.71	7.71	7.67	7.31	7.64	7.75	7.14	7.64
Temperature, field	Deg C	-	7.25	9.23	12.25	9.21	9.49	11.98	9.11	10.68	12.84	10.33
Turbidity, field	NTU	-	0	-	648	305	-	3.1	14.1	-	0	115
General Chemistry												
Alkalinity, bicarbonate	mg/L	-	270	256	263	262	266	258	275	251	237	249
Alkalinity, carbonate	mg/L	-	ND (10.0)	ND (10.0)	ND (10.0)	ND (10.0)	ND (10.0)	ND (10.0)	ND (10.0)	ND (10.0)	ND (10.0)	ND (10.0)
Alkalinity, hydroxide	mg/L	-	ND (10.0)	ND (10.0)	ND (10.0)	ND (10.0)	ND (10.0)	ND (10.0)	ND (10.0)	ND (10.0)	ND (10.0)	ND (10.0)
Alkalinity, total (as $CaCO_3$)	mg/L	500	270	256	263	262	266	258	275	251	237	249
Anion sum	meq	-	6.79	6.95	7.13	7.14	7.05	6.92	7.24	6.60	6.33	6.61
Anion/Cation ratio	%	-	-2.41	-2.20	-2.08	-2.51	-1.73	1.42	-0.90	0.45	1.32	-1.22
Cation sum	meq	-	6.47	6.65	6.84	6.79	6.81	7.12	7.11	6.66	6.50	6.45
Chloride (dissolved)	mg/L	250	16.7	17.2	15.4	15.4	22.5	23.4	23.4	20.8	22.5	23.2
Conductivity	µS/cm	-	629	622	640	673	631	654	667	597	602	609
Dissolved organic carbon (DOC) (dissolved)	mg/L	5	3.32 J	0.88	2.46	1.55	0.84	1.52 J	1.23	0.89	0.84	2.86 J
Hardness	mg/L	100	**310**	**319**	**330**	**327**	**319**	**332**	**332**	**303**	**304**	**301**
Nitrate (as N)	mg/L	10	6.97	**12.5**	**14.6**	**15.2**	7.66	7.57	7.29	7.62	7.09	7.25
Nitrite (as N)	mg/L	1	ND (0.010)	ND (0.010)	ND (0.010)	ND (0.010)	ND (0.010)	ND (0.010)	ND (0.010)	ND (0.010)	ND (0.010)	ND (0.010)
Nitrite/Nitrate	mg/L	-	6.97	12.5	14.6	15.2	7.66	7.57	7.29	7.62	7.09	7.25
Orthophosphate (dissolved)	mg/L	-	ND (0.0030)	ND (0.0030)	ND (0.0030)	ND (0.0030)	ND (0.0030)	ND (0.0030)	ND (0.0030)	ND (0.0030)	ND (0.0030)	ND (0.0030)
pH, lab	s.u.	6.5-8.5	8.13	7.88	7.68	7.90	7.94	7.65	7.88	7.94	7.71	7.88
Sulfate (dissolved)	mg/L	500	20.6	21.8	19.1	18.6	26.4	26.9	27.0	21.6	21.7	22.1
Total dissolved solids (TDS)	mg/L	500	322	355	378	389	346	348	361	320	344	344
Total organic carbon (TOC)	mg/L	-	1.28 J	1.13	ND (2.50)	2.20	0.83	0.84 J	1.39	0.57	ND (0.50)	1.28 J
Total suspended solids (TSS)	mg/L	-	ND (3.0)	32.4	226	83.6	3.6	14.7	9.4	ND (3.0)	ND (3.0)	120
Turbidity	NTU	-	0.20	31.2	183	111	0.64	5.66	5.11	1.12	0.54	35.9

Notes:

ODWQS	Ontario Drinking Water Quality Standards (2020); including aethetic objectives and operations guidelines (June 2003, revised 2006).
-	Not analyzed.
ND (##)	Not detected at the associated reporting limit shown in brackets
J	Estimated concentration
J+	The result is an estimated quantity, but the result may be biased high.
µS/cm	MicroSiemens per centimetre
µmhos/cm	Micromhos per centimetre
mg/L	Milligram per litre
meq	Milliequivalents
NTU	Nephelometric turbidity units
314	Concentration shown is above the respective ODWQS

Table 6.2

2023 Groundwater Analytical Data - Metals
2023 Combined Annual Monitoring Report
Dufferin Aggregates Paris Pit
County of Brant, Ontario

Sample Location:			BH88-1-I	BH88-1-I	BH88-1-I	BH88-2-I	BH88-2-I	BH88-2-I	BH88-4-AI	BH88-4A-I	BH88-4A-I	BH88-4-AII	BH88-4A-II	BH88-4A-II
Sample ID:			GW-78410-052423-EH-009	GW-78410-081423-EH-011	GW-78410-121223-RC-08	GW-78410-052423-EH-01	GW-78410-081423-EH-012	GW-78410-121323-EH-03	GW-78410-121223-RC-09	GW-78410-052423-EH-005	GW-78410-081423-EH-008	GW-78410-121223-RC-10	GW-78410-052423-EH-006	GW-78410-081423-EH-009
Sample Date:			5/24/2023	8/14/2023	12/12/2023	5/24/2023	8/14/2023	12/13/2023	12/12/2023	5/24/2023	8/14/2023	12/12/2023	5/24/2023	8/14/2023
Parameters	**Units**													
Metals														
Aluminum (dissolved)	mg/L	0.1	ND (0.0050)	ND (0.0050)	ND (0.0050)	ND (0.0050)	0.0058	ND (0.0050)	ND (0.0050)	ND (0.0050)	ND (0.0050)	ND (0.0050)	ND (0.0050)	0.0068
Antimony (dissolved)	mg/L	0.006	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	0.00010	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)
Arsenic (dissolved)	mg/L	0.01	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	0.00017	ND (0.00010)	ND (0.00010)	ND (0.00010)	0.00013	0.00014	0.00014
Barium (dissolved)	mg/L	1	0.149	0.158	0.155	0.0993	0.0918	0.0927	0.249	0.232	0.234	0.224	0.235	0.227
Beryllium (dissolved)	mg/L	-	ND (0.000100)	ND (0.000100)	ND (0.000100)	ND (0.000100)	ND (0.000100)	ND (0.000100)	ND (0.000100)	ND (0.000100)	ND (0.000100)	ND (0.000100)	ND (0.000100)	ND (0.000100)
Bismuth (dissolved)	mg/L	-	ND (0.000050)	ND (0.000050)	ND (0.000050)	ND (0.000050)	ND (0.000050)	ND (0.000050)	ND (0.000050)	ND (0.000050)	ND (0.000050)	ND (0.000050)	ND (0.000050)	ND (0.000050)
Boron (dissolved)	mg/L	5	0.011	0.012	0.013	0.015	ND (0.010)	ND (0.015)	0.010	ND (0.010)	ND (0.010)	ND (0.010)	ND (0.010)	ND (0.010)
Cadmium (dissolved)	mg/L	0.005	0.0000121	0.0000131	0.0000093	0.0000293	0.0000210	0.0000142	ND (0.0000050)	ND (0.0000050)	ND (0.0000050)	ND (0.0000050)	ND (0.0000050)	0.0000065
Calcium (dissolved)	mg/L	-	80.2	86.2	88.5	91.2	76.5	77.7	88.6	76.9	77.6	84.7	72.9	82.3
Chromium (dissolved)	mg/L	0.05	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	0.00052	ND (0.00050)
Cobalt (dissolved)	mg/L	-	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)
Copper (dissolved)	mg/L	1	0.00089	0.00041	0.00043	0.00303	0.00449	0.00109	ND (0.00020)	ND (0.00020)	0.00039	ND (0.00020)	ND (0.00020)	0.00022
Iron (dissolved)	mg/L	0.3	ND (0.010)	ND (0.010)	ND (0.010)	ND (0.010)	ND (0.010)	ND (0.010)	ND (0.010)	ND (0.010)	ND (0.010)	ND (0.010)	ND (0.010)	ND (0.010)
Lead (dissolved)	mg/L	0.01	ND (0.000100)	ND (0.000100)	ND (0.000100)	ND (0.000100)	ND (0.000100)	ND (0.000100)	ND (0.000100)	ND (0.000100)	ND (0.000100)	ND (0.000100)	ND (0.000100)	ND (0.000100)
Lithium (dissolved)	mg/L	-	0.0025	0.0031	0.0033	0.0011	0.0150	0.0017	0.0029	0.0024	0.0024	0.0032	0.0022	0.0029
Magnesium (dissolved)	mg/L	-	27.6	29.9	28.0	28.4	23.3	22.4	27.0	25.6	26.9	25.9	26.5	27.5
Manganese (dissolved)	mg/L	0.05	ND (0.00050)	ND (0.00050)	ND (0.00050)	0.00163	0.00114	0.00935	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)
Molybdenum (dissolved)	mg/L	-	0.000221	0.000225	0.000226	0.000204	0.000214	0.000348	0.000224	0.000275	0.000250	0.000370	0.000381	0.000359
Nickel (dissolved)	mg/L	-	ND (0.00050)	ND (0.00050)	ND (0.00050)	0.00056	ND (0.00050)	0.00100	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)
Phosphorus (dissolved)	mg/L	-	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)	0.312	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)
Potassium (dissolved)	mg/L	-	1.45	1.49	1.48	1.22	0.870	1.30	1.15	1.13	1.13	1.08	1.09	1.11
Selenium (dissolved)	mg/L	0.05	0.000277	ND (0.000500)	0.000250	0.000092	ND (0.000500)	0.000105	0.000389	0.000380	ND (0.000500)	0.000395	0.000401	ND (0.000500)
Silicon (dissolved)	mg/L	-	5.20	5.54	5.06	4.27	4.20	4.21	5.57	5.36	5.75	5.55	5.43	5.94
Silicon	mg/L	-	5.32	5.50	5.38	4.75	4.48	4.97	5.77	5.60	5.73	11.7	11.9	8.42
Silver (dissolved)	mg/L	-	ND (0.000500)	ND (0.000500)	ND (0.000500)	ND (0.000500)	ND (0.000500)	ND (0.000500)	ND (0.000500)	ND (0.000500)	ND (0.000500)	ND (0.000500)	ND (0.000500)	ND (0.000500)
Sodium (dissolved)	mg/L	200	4.13	4.44	4.42	3.32	2.56	2.70	7.84	8.17	7.90	7.48	6.88	7.48
Strontium (dissolved)	mg/L	-	0.174	0.169	0.175	0.107	0.0974	0.109	0.211	0.211	0.205	0.308	0.302	0.292
Thallium (dissolved)	mg/L	-	ND (0.000010)	ND (0.000010)	ND (0.000010)	ND (0.000010)	ND (0.000010)	ND (0.000010)	ND (0.000010)	ND (0.000010)	ND (0.000010)	ND (0.000010)	ND (0.000010)	ND (0.000010)
Tin (dissolved)	mg/L	-	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)
Titanium (dissolved)	mg/L	-	ND (0.00030)	ND (0.00030)	ND (0.00030)	ND (0.00030)	ND (0.00030)	ND (0.00030)	ND (0.00030)	ND (0.00030)	ND (0.00030)	ND (0.00030)	ND (0.00030)	ND (0.00030)
Tungsten (dissolved)	mg/L	-	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)
Uranium (dissolved)	mg/L	0.02	0.000346	0.000348	0.000347	0.000247	0.000251	0.000345	0.000348	0.000341	0.000338	0.000421	0.000401	0.000391
Vanadium (dissolved)	mg/L	-	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)
Zinc (dissolved)	mg/L	5	0.0040	0.0028	0.0026	0.0274	0.0302	0.0145	0.0021	0.0022	0.0018	0.0014	0.0011	0.0019
Zirconium (dissolved)	mg/L	-	ND (0.00030)	ND (0.00030)	ND (0.00030)	ND (0.00030)	ND (0.00030)	ND (0.00030)	ND (0.00030)	ND (0.00030)	ND (0.00030)	ND (0.00030)	ND (0.00030)	ND (0.00030)

Notes:

ODWQS	Ontario Drinking Water Quality Standards (2020); including aethetic objectives and operations guidelines (June 2003, revised 2006).
ND (##)	Not detected at the associated reporting limit shown in brackets
J	Estimated concentration.
mg/L	Milligram per litre.
0.331	Concentration shown is above the respective ODWQS

Table 6.2

2023 Groundwater Analytical Data - Metals
2023 Combined Annual Monitoring Report
Dufferin Aggregates Paris Pit
County of Brant, Ontario

Sample Location:			**BH88-4-I**	**BH88-4-I**	**BH88-4-I**	**BH88-5A-I**	**BH88-5A-I**	**BH88-5-AI**	**BH88-5-I**	**BH88-5-I**	**BH88-5-I**	**BH88-5-II**	**BH88-5-II**	**BH88-5-II**
Sample ID:			**GW-78410-052423-EH-00**	**GW-78410-081423-EH-007**	**GW-78410-121223-RC-11**	**GW-78410-052423-EH-003**	**GW-78410-081423-EH-001**	**GW-78410-121223-RC-04**	**GW-78410-052423-EH-00**	**GW-78410-081423-EH-002**	**GW-78410-121223-RC-02**	**GW-78410-052423-EH-00**	**GW-78410-081423-EH-003**	**GW-78410-121223-RC-03**
Sample Date:			**5/24/2023**	**8/14/2023**	**12/12/2023**	**5/24/2023**	**8/14/2023**	**12/12/2023**	**5/24/2023**	**8/14/2023**	**12/12/2023**	**5/24/2023**	**8/14/2023**	**12/12/2023**
Parameters	**Units**													
Metals														
Aluminum (dissolved)	mg/L	0.1	ND (0.0050)	ND (0.0050)	ND (0.0050)	ND (0.0050)	ND (0.0050)	ND (0.0050)	ND (0.0050)	ND (0.0050)	ND (0.0050)	ND (0.0050)	ND (0.0050)	ND (0.0050)
Antimony (dissolved)	mg/L	0.006	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)
Arsenic (dissolved)	mg/L	0.01	ND (0.00010)	ND (0.00010)	ND (0.00010)	0.00052	0.00054	0.00052	0.00011	0.00011	0.00010	0.00011	0.00012	0.00011
Barium (dissolved)	mg/L	1	0.225	0.224	0.230	0.0152	0.0146	0.0141	0.189	0.185	0.191	0.190	0.187	0.189
Beryllium (dissolved)	mg/L	-	ND (0.000100)	ND (0.000100)	ND (0.000100)	ND (0.000100)	ND (0.000100)	ND (0.000100)	ND (0.000100)	ND (0.000100)	ND (0.000100)	ND (0.000100)	ND (0.000100)	ND (0.000100)
Bismuth (dissolved)	mg/L	-	ND (0.000050)	ND (0.000050)	ND (0.000050)	ND (0.000050)	ND (0.000050)	ND (0.000050)	ND (0.000050)	ND (0.000050)	ND (0.000050)	ND (0.000050)	ND (0.000050)	ND (0.000050)
Boron (dissolved)	mg/L	5	ND (0.010)	ND (0.010)	ND (0.010)	0.037	0.039	0.040	ND (0.010)	0.010	0.011	ND (0.010)	0.010	0.011
Cadmium (dissolved)	mg/L	0.005	ND (0.0000050)	0.0000068	ND (0.0000050)	ND (0.0000050)	ND (0.0000050)	ND (0.0000050)	0.0000079	0.0000094	0.0000095	0.0000083	0.0000127	0.0000153
Calcium (dissolved)	mg/L	-	72.7	77.1	86.5	150	152	167	80.4	79.8	86.1	80.9	78.6	85.8
Chromium (dissolved)	mg/L	0.05	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)
Cobalt (dissolved)	mg/L	-	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)
Copper (dissolved)	mg/L	1	ND (0.00020)	0.00311	ND (0.00020)	ND (0.00020)	ND (0.00020)	ND (0.00020)	0.00023	0.00033	0.00023	0.00116	0.00034	0.00201
Iron (dissolved)	mg/L	0.3	ND (0.010)	ND (0.010)	ND (0.010)	**0.331**	**0.359**	**0.372**	ND (0.010)	ND (0.010)	ND (0.010)	ND (0.010)	ND (0.010)	ND (0.010)
Lead (dissolved)	mg/L	0.01	ND (0.000100)	ND (0.000100)	ND (0.000100)	ND (0.000100)	ND (0.000100)	ND (0.000100)	ND (0.000100)	ND (0.000100)	ND (0.000100)	ND (0.000100)	ND (0.000100)	ND (0.000100)
Lithium (dissolved)	mg/L	-	0.0020	0.0024	0.0027	0.0093	0.0096	0.0110	0.0029	0.0028	0.0034	0.0027	0.0028	0.0033
Magnesium (dissolved)	mg/L	-	24.6	25.4	25.8	33.8	35.6	34.5	26.4	27.6	26.5	26.8	27.2	26.0
Manganese (dissolved)	mg/L	0.05	ND (0.00050)	ND (0.00050)	ND (0.00050)	0.00969	0.0100	0.0118	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)
Molybdenum (dissolved)	mg/L	-	0.000204	0.000199	0.000195	0.00190	0.00193	0.00177	0.000216	0.000221	0.000208	0.000232	0.000215	0.000221
Nickel (dissolved)	mg/L	-	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)
Phosphorus (dissolved)	mg/L	-	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)
Potassium (dissolved)	mg/L	-	1.11	1.12	1.10	1.39	1.41	1.40	1.43	1.42	1.42	1.45	1.43	1.48
Selenium (dissolved)	mg/L	0.05	0.000403	ND (0.000500)	0.000420	ND (0.000050)	ND (0.000500)	0.000308	0.000304	ND (0.000500)	0.000273	0.000315	ND (0.000500)	0.000275
Silicon (dissolved)	mg/L	-	5.27	5.44	5.41	6.11	6.53	6.54	5.26	5.54	5.56	5.30	5.61	5.29
Silicon	mg/L	-	5.36	5.54	5.68	6.51	6.62	6.76	5.45	5.55	5.68	5.45	5.60	5.66
Silver (dissolved)	mg/L	-	ND (0.000500)	ND (0.000500)	ND (0.000500)	ND (0.000500)	ND (0.000500)	ND (0.000500)	ND (0.000500)	ND (0.000500)	ND (0.000500)	ND (0.000500)	ND (0.000500)	ND (0.000500)
Sodium (dissolved)	mg/L	200	10.4	11.4	7.75	5.04	5.36	5.06	8.03	8.46	8.33	8.17	8.61	8.35
Strontium (dissolved)	mg/L	-	0.193	0.191	0.206	5.07	4.92	5.09	0.194	0.197	0.198	0.196	0.193	0.199
Thallium (dissolved)	mg/L	-	ND (0.000010)	ND (0.000010)	ND (0.000010)	ND (0.000010)	ND (0.000010)	ND (0.000010)	ND (0.000010)	ND (0.000010)	ND (0.000010)	ND (0.000010)	ND (0.000010)	ND (0.000010)
Tin (dissolved)	mg/L	-	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)
Titanium (dissolved)	mg/L	-	ND (0.00030)	ND (0.00030)	ND (0.00030)	ND (0.00030)	ND (0.00030)	ND (0.00030)	ND (0.00030)	ND (0.00030)	ND (0.00030)	ND (0.00030)	ND (0.00030)	ND (0.00030)
Tungsten (dissolved)	mg/L	-	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)
Uranium (dissolved)	mg/L	0.02	0.000303	0.000302	0.000320	0.000072	0.000072	0.000071	0.000315	0.000314	0.000324	0.000319	0.000324	0.000324
Vanadium (dissolved)	mg/L	-	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)
Zinc (dissolved)	mg/L	5	ND (0.0010)	0.0024	ND (0.0010)	ND (0.0010)	ND (0.0010)	ND (0.0010)	0.0037	0.0033	0.0032	0.0043	0.0149	0.0101
Zirconium (dissolved)	mg/L	-	ND (0.00030)	ND (0.00030)	ND (0.00030)	ND (0.00030)	ND (0.00030)	ND (0.00030)	ND (0.00030)	ND (0.00030)	ND (0.00030)	ND (0.00030)	ND (0.00030)	ND (0.00030)

Notes:

ODWQS	Ontario Drinking Water Quality Standards (2020); including aethetic objectives and operations guidelines (June 2003, revised 2006).
ND (##)	Not detected at the associated reporting limit shown in brackets
J	Estimated concentration.
mg/L	Milligram per litre.
0.331	Concentration shown is above the respective ODWQS

Table 6.2

2023 Groundwater Analytical Data - Metals
2023 Combined Annual Monitoring Report
Dufferin Aggregates Paris Pit
County of Brant, Ontario

Sample Location:			BH88-6-I	BH88-6-I	BH88-6-I	BH88-6-I	MW1-12	MW1-12	MW1-12	MW1-12	MW2-12	MW2-12	MW2-12	MW3-16
Sample ID:			GW-78410-052523-EH-01	GW-78410-052523-EH-018	GW-78410-081523-EH-013	GW-78410-121223-AB-043	GW-78410-052423-EH-00	GW-78410-081423-EH-004	GW-78410-121223-EH-01	GW-78410-121223-EH-02	GW-78410-052423-EH-011	GW-78410-081423-EH-00	GW-78410-121223-RC-01	GW-78410-052523-EH-013
Sample Date:			5/25/2023	5/25/2023	8/15/2023	12/12/2023	5/24/2023	8/14/2023	12/12/2023	12/12/2023	5/24/2023	8/14/2023	12/12/2023	5/25/2023
				Duplicate						Duplicate				
Parameters	**Units**								**ODWQS**					
Metals														
Aluminum (dissolved)	mg/L	0.1	ND (0.0050)	ND (0.0050)	0.0059	ND (0.0050)	ND (0.0050)	ND (0.0050)	ND (0.0050)	ND (0.0050)	ND (0.0050)	ND (0.0050)	ND (0.0050)	ND (0.0050)
Antimony (dissolved)	mg/L	0.006	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)
Arsenic (dissolved)	mg/L	0.01	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	0.00014	ND (0.00010)	ND (0.00010)	ND (0.00010)
Barium (dissolved)	mg/L	1	0.142	0.147	0.119	0.138	0.143	0.163	0.166	0.168	0.0804	0.0573	0.0732	0.142
Beryllium (dissolved)	mg/L	-	ND (0.000100)	ND (0.000100)	ND (0.000100)	ND (0.000100)	ND (0.000100)	ND (0.000100)	ND (0.000100)	ND (0.000100)	ND (0.000100)	ND (0.000100)	ND (0.000100)	ND (0.000100)
Bismuth (dissolved)	mg/L	-	ND (0.000050)	ND (0.000050)	ND (0.000050)	ND (0.000050)	ND (0.000050)	ND (0.000050)	ND (0.000050)	ND (0.000050)	ND (0.000050)	ND (0.000050)	ND (0.000050)	ND (0.000050)
Boron (dissolved)	mg/L	5	0.013	0.013	0.017	0.018	0.017	0.015	0.016	0.016	ND (0.010)	ND (0.010)	0.011	0.012
Cadmium (dissolved)	mg/L	0.005	0.0000080	0.0000096	0.0000084	0.0000097	0.0000073	0.0000116	0.0000070	0.0000063	0.0000141	0.0000147	0.0000149	0.0000094
Calcium (dissolved)	mg/L	-	110	108	96.5	95.7	71.3	69.5	75.5	74.5	103	79.2	99.5	66.2
Chromium (dissolved)	mg/L	0.05	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)
Cobalt (dissolved)	mg/L	-	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)
Copper (dissolved)	mg/L	1	0.00051	0.00061	0.00067	0.00048	0.00077	0.00393	0.00022	0.00024	0.00037	0.00119	0.00098	0.00305
Iron (dissolved)	mg/L	0.3	0.052	0.053	0.279	**0.906**	ND (0.010)	ND (0.010)	ND (0.010)	ND (0.010)	ND (0.010)	ND (0.010)	ND (0.010)	ND (0.010)
Lead (dissolved)	mg/L	0.01	ND (0.000100)	ND (0.000100)	ND (0.000100)	ND (0.000100)	ND (0.000100)	ND (0.000100)	ND (0.000100)	ND (0.000100)	ND (0.000100)	ND (0.000100)	ND (0.000100)	ND (0.000100)
Lithium (dissolved)	mg/L	-	0.0014	0.0014	0.0022	0.0016	0.0017	0.0114	0.0024	0.0022	0.0025	0.0036	0.0032	0.0074
Magnesium (dissolved)	mg/L	-	37.1	36.4	31.4	29.6	23.2	22.0	20.4	20.1	33.2	23.9	28.1	19.2
Manganese (dissolved)	mg/L	0.05	0.0318	0.0335	0.0360	0.0460	ND (0.00050)	0.00072	ND (0.00050)	0.00080	ND (0.00050)	ND (0.00050)	ND (0.00050)	0.00614
Molybdenum (dissolved)	mg/L	-	0.000406	0.000408	0.000502	0.000592	0.000318	0.000317	0.000302	0.000286	0.000098	0.000127	0.000124	0.000289
Nickel (dissolved)	mg/L	-	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)
Phosphorus (dissolved)	mg/L	-	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)
Potassium (dissolved)	mg/L	-	1.59	1.57	1.65	1.48	2.04	2.06	2.09	2.07	0.638	0.612	0.690	1.90
Selenium (dissolved)	mg/L	0.05	ND (0.000050)	0.000064	0.000108	0.000068	0.000247	ND (0.000500)	0.000193	0.000201	0.000159	ND (0.000500)	0.000064	0.000200
Silicon (dissolved)	mg/L	-	4.85	4.78	4.64	4.70	3.75	4.25	4.18	4.18	5.29	5.32	5.53	3.80
Silicon	mg/L	-	5.19	5.16	4.59	4.76	3.72	4.37	4.30	4.32	5.69	6.03	7.98	4.10
Silver (dissolved)	mg/L	-	ND (0.000500)	ND (0.000500)	ND (0.000500)	ND (0.000500)	ND (0.000500)	ND (0.000500)	ND (0.000500)	ND (0.000500)	ND (0.000500)	ND (0.000500)	ND (0.000500)	ND (0.000500)
Sodium (dissolved)	mg/L	200	5.91	5.80	5.20	5.14	12.6	11.6	11.6	11.7	2.86	2.43	2.83	9.96
Strontium (dissolved)	mg/L	-	0.185	0.182	0.156	0.159	0.129	0.139	0.140	0.142	0.184	0.132	0.165	0.158
Thallium (dissolved)	mg/L	-	ND (0.000010)	ND (0.000010)	ND (0.000010)	ND (0.000010)	ND (0.000010)	ND (0.000010)	ND (0.000010)	ND (0.000010)	ND (0.000010)	ND (0.000010)	ND (0.000010)	ND (0.000010)
Tin (dissolved)	mg/L	-	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)
Titanium (dissolved)	mg/L	-	ND (0.00030)	ND (0.00030)	ND (0.00030)	ND (0.00030)	ND (0.00030)	ND (0.00030)	ND (0.00030)	ND (0.00030)	ND (0.00030)	ND (0.00030)	ND (0.00030)	ND (0.00030)
Tungsten (dissolved)	mg/L	-	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)
Uranium (dissolved)	mg/L	0.02	0.000281	0.000273	0.000197	0.000177	0.000238	0.000246	0.000253	0.000260	0.000350	0.000247	0.000335	0.000245
Vanadium (dissolved)	mg/L	-	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)
Zinc (dissolved)	mg/L	5	0.0028	0.0030	0.0037	0.0032	0.0034	0.0188	0.0023	0.0024	0.0031	0.0062	0.0027	0.0154
Zirconium (dissolved)	mg/L	-	ND (0.00030)	ND (0.00030)	ND (0.00030)	ND (0.00030)	ND (0.00030)	ND (0.00030)	ND (0.00030)	ND (0.00030)	ND (0.00030)	ND (0.00030)	ND (0.00030)	ND (0.00030)

Notes:

ODWQS	Ontario Drinking Water Quality Standards (2020); including aethetic objectives and operations guidelines (June 2003, revised 2006).
ND (##)	Not detected at the associated reporting limit shown in brackets
J	Estimated concentration.
mg/L	Milligram per litre.
0.331	Concentration shown is above the respective ODWQS

Table 6.2

2023 Groundwater Analytical Data - Metals
2023 Combined Annual Monitoring Report
Dufferin Aggregates Paris Pit
County of Brant, Ontario

Sample Location:			MW3-16	MW3-16	MW4-16	MW4-16	MW4-16	MW5-16	MW5-16	MW5-16	MW5-16	MW5-16	MW5-16	MW5-16	MW6-16
Sample ID:			GW-78410-081523-EH-01(	GW-78410-121323-AB-05	GW-78410-052423-EH-008	GW-78410-081423-EH-010	GW-78410-121323-EH-04	GW-78410-052523-EH-020	GW-78410-052523-EH-021	GW-78410-081523-EH-01(	GW-78410-081523-EH-01(	GW-78410-121223-AB-01	GW-78410-121223-AB-02	GW-78410-052523-EH-012	
Sample Date:			8/15/2023	12/13/2023	5/24/2023	8/14/2023	12/13/2023	5/25/2023	5/25/2023	8/15/2023	8/15/2023	12/12/2023	12/12/2023	5/25/2023	
									Duplicate		Duplicate		Duplicate		
Parameters	**Units**														
Metals															
Aluminum (dissolved)	mg/L	0.1	ND (0.0050)	ND (0.0050)	ND (0.0050)	ND (0.0050)	ND (0.0050)	ND (0.0050)	ND (0.0050)	ND (0.0050)	ND (0.0050)	ND (0.0050)	ND (0.0050)	ND (0.0050)	ND (0.0050)
Antimony (dissolved)	mg/L	0.006	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)
Arsenic (dissolved)	mg/L	0.01	ND (0.00010)	ND (0.00010)	0.00011	0.00011	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	0.00011
Barium (dissolved)	mg/L	1	0.148	0.165	0.220	0.218	0.213	0.142	0.149	0.129	0.130	0.139	0.142	0.223	
Beryllium (dissolved)	mg/L	-	ND (0.000100)	ND (0.000100)	ND (0.000100)	ND (0.000100)	ND (0.000100)	ND (0.000100)	ND (0.000100)	ND (0.000100)	ND (0.000100)	ND (0.000100)	ND (0.000100)	ND (0.000100)	ND (0.000100)
Bismuth (dissolved)	mg/L	-	ND (0.000050)	ND (0.000050)	ND (0.000050)	ND (0.000050)	ND (0.000050)	ND (0.000050)	ND (0.000050)	ND (0.000050)	ND (0.000050)	ND (0.000050)	ND (0.000050)	ND (0.000050)	ND (0.000050)
Boron (dissolved)	mg/L	5	0.017	ND (0.017)	ND (0.010)	0.010	ND (0.010)	ND (0.010)	ND (0.010)	0.010	0.010	ND (0.010)	ND (0.010)	ND (0.010)	
Cadmium (dissolved)	mg/L	0.005	0.0000131	0.0000157	ND (0.0000050)	0.0000093	ND (0.0000050)	0.0000053	0.0000064	0.0000099	0.0000053	0.0000065	0.0000063	0.0000062	
Calcium (dissolved)	mg/L	-	75.9	71.9	81.0	73.9	71.2	87.7	86.0	86.6	86.9	85.8	86.8	80.3	
Chromium (dissolved)	mg/L	0.05	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)
Cobalt (dissolved)	mg/L	-	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)
Copper (dissolved)	mg/L	1	0.00255	0.00047	0.00050	0.00472	0.00026	0.00069	0.00051	0.00044	0.00029	0.00022	0.00023	0.00055	
Iron (dissolved)	mg/L	0.3	ND (0.010)	ND (0.010)	ND (0.010)	ND (0.010)	ND (0.010)	ND (0.010)	ND (0.010)	ND (0.010)	ND (0.010)	ND (0.010)	ND (0.010)	ND (0.010)	ND (0.010)
Lead (dissolved)	mg/L	0.01	ND (0.000100)	ND (0.000100)	ND (0.000100)	ND (0.000100)	ND (0.000100)	ND (0.000100)	ND (0.000100)	ND (0.000100)	ND (0.000100)	ND (0.000100)	ND (0.000100)	ND (0.000100)	ND (0.000100)
Lithium (dissolved)	mg/L	-	0.0084	0.0024	0.0018	0.0141	0.0019	0.0022	0.0020	0.0026	0.0026	0.0025	0.0025	0.0025	
Magnesium (dissolved)	mg/L	-	21.6	21.4	31.5	29.7	27.4	24.2	24.3	23.6	23.2	22.0	22.2	26.7	
Manganese (dissolved)	mg/L	0.05	ND (0.00050)	ND (0.00050)	0.00086	0.00158	0.00057	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)
Molybdenum (dissolved)	mg/L	-	0.000256	0.000295	0.000245	0.000231	0.000223	0.000222	0.000216	0.000221	0.000236	0.000208	0.000216	0.000213	
Nickel (dissolved)	mg/L	-	ND (0.00050)	0.00054	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)
Phosphorus (dissolved)	mg/L	-	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)
Potassium (dissolved)	mg/L	-	2.07	2.34	1.59	1.45	1.38	1.28	1.30	1.49	1.37	1.21	1.22	1.44	
Selenium (dissolved)	mg/L	0.05	0.000251	0.000230	0.000302	ND (0.000500)	0.000287	0.000340	0.000331	0.000369	0.000382	0.000395	0.000435	0.000254	
Silicon (dissolved)	mg/L	-	4.13	4.49	5.26	5.17	5.05	5.15	5.23	5.18	5.14	4.93	4.86	5.22	
Silicon	mg/L	-	4.26	4.59	9.47	11.5	7.52	5.54	5.40	5.32 J	19.8 J	5.12	5.09	5.63	
Silver (dissolved)	mg/L	-	ND (0.000500)	ND (0.000500)	ND (0.000500)	ND (0.000500)	ND (0.000500)	ND (0.000500)	ND (0.000500)	ND (0.000500)	ND (0.000500)	ND (0.000500)	ND (0.000500)	ND (0.000500)	ND (0.000500)
Sodium (dissolved)	mg/L	200	12.1	12.1	5.31	4.76	4.53	6.34	6.48	7.26	6.89	5.53	5.57	5.43	
Strontium (dissolved)	mg/L	-	0.140	0.142	0.132	0.122	0.129	0.171	0.171	0.163	0.164	0.163	0.166	0.172	
Thallium (dissolved)	mg/L	-	ND (0.000010)	ND (0.000010)	0.000012	0.000014	0.000011	ND (0.000010)	ND (0.000010)	ND (0.000010)	ND (0.000010)	ND (0.000010)	ND (0.000010)	ND (0.000010)	ND (0.000010)
Tin (dissolved)	mg/L	-	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)
Titanium (dissolved)	mg/L	-	ND (0.00030)	ND (0.00030)	ND (0.00030)	ND (0.00030)	ND (0.00030)	ND (0.00030)	ND (0.00030)	ND (0.00030)	ND (0.00030)	ND (0.00030)	ND (0.00030)	ND (0.00030)	ND (0.00030)
Tungsten (dissolved)	mg/L	-	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)
Uranium (dissolved)	mg/L	0.02	0.000251	0.000262	0.000322	0.000285	0.000308	0.000297	0.000304	0.000295	0.000296	0.000290	0.000290	0.000325	
Vanadium (dissolved)	mg/L	-	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)
Zinc (dissolved)	mg/L	5	0.0155	0.0178	0.0083	0.0289	0.0057	0.0024	0.0025	0.0126 J	0.0023 J	0.0020	0.0020	0.0024	
Zirconium (dissolved)	mg/L	-	ND (0.00030)	ND (0.00030)	ND (0.00030)	ND (0.00030)	ND (0.00030)	ND (0.00030)	ND (0.00030)	ND (0.00030)	ND (0.00030)	ND (0.00030)	ND (0.00030)	ND (0.00030)	

Notes:

ODWQS	Ontario Drinking Water Quality Standards (2020); including aethetic objectives and operations guidelines (June 2003, revised 2006).
ND (##)	Not detected at the associated reporting limit shown in brackets
J	Estimated concentration.
mg/L	Milligram per litre.
0.331	Concentration shown is above the respective ODWQS

Table 6.2

2023 Groundwater Analytical Data - Metals
2023 Combined Annual Monitoring Report
Dufferin Aggregates Paris Pit
County of Brant, Ontario

Sample Location:			MW6-16	MW6-16	MW6-16	MW8-22	MW8-22	MW8-22	MW9-22	MW9-22	MW9-22	MW11-22	MW11-22	MW11-22
Sample ID:			GW-78410-081523-EH-014	GW-78410-081523-EH-015	GW-78410-121223-AB-03	GW-78410-052523-EH-014	GW-78410-081523-EH-019	GW-78410-121223-RC-07	GW-78410-052523-EH-015	GW-78410-081523-EH-020	GW-78410-121223-RC-06	GW-78410-052523-EH-016	GW-78410-081523-EH-021	GW-78410-121223-RC-05
Sample Date:			8/15/2023	8/15/2023 Duplicate	12/12/2023	5/25/2023	8/15/2023	12/12/2023	5/25/2023	8/15/2023	12/12/2023	5/25/2023	8/15/2023	12/12/2023
Parameters	**Units**													
Metals														
Aluminum (dissolved)	mg/L	0.1	ND (0.0050)	ND (0.0050)	ND (0.0050)	ND (0.0050)	ND (0.0050)	ND (0.0050)	ND (0.0050)	ND (0.0050)	ND (0.0050)	ND (0.0050)	ND (0.0050)	ND (0.0050)
Antimony (dissolved)	mg/L	0.006	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)
Arsenic (dissolved)	mg/L	0.01	0.00013	0.00013	0.00012	0.00012	0.00013	0.00012	0.00010	ND (0.00010)	ND (0.00010)	0.00011	ND (0.00010)	0.00010
Barium (dissolved)	mg/L	1	0.211	0.205	0.232	0.153	0.146	0.162	0.157	0.146	0.165	0.163	0.147	0.164
Beryllium (dissolved)	mg/L	-	ND (0.000100)	ND (0.000100)	ND (0.000100)	ND (0.000100)	ND (0.000100)	ND (0.000100)	ND (0.000100)	ND (0.000100)	ND (0.000100)	ND (0.000100)	ND (0.000100)	ND (0.000100)
Bismuth (dissolved)	mg/L	-	ND (0.000050)	ND (0.000050)	ND (0.000050)	ND (0.000050)	ND (0.000050)	ND (0.000050)	ND (0.000050)	ND (0.000050)	ND (0.000050)	ND (0.000050)	ND (0.000050)	ND (0.000050)
Boron (dissolved)	mg/L	5	0.011	0.011	0.010	ND (0.010)	0.011	0.010	ND (0.010)	0.011	0.011	0.012	0.012	0.012
Cadmium (dissolved)	mg/L	0.005	0.0000061	0.0000057	ND (0.0000050)	0.0000127	0.0000146	0.0000113	0.0000104	0.0000051	ND (0.0000050)	0.0000193	ND (0.0000050)	0.0000095
Calcium (dissolved)	mg/L	-	82.9	82.9	81.8	83.6	87.4	86.6	81.1	86.5	86.7	80.3	81.8	81.3
Chromium (dissolved)	mg/L	0.05	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)
Cobalt (dissolved)	mg/L	-	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)
Copper (dissolved)	mg/L	1	0.00025	0.00020	ND (0.00020)	0.00304	0.00094	0.00054	0.00405	0.00107	0.00030	0.00042	0.00045	0.00180
Iron (dissolved)	mg/L	0.3	ND (0.010)	ND (0.010)	ND (0.010)	ND (0.010)	ND (0.010)	ND (0.010)	ND (0.010)	ND (0.010)	ND (0.010)	ND (0.010)	ND (0.010)	ND (0.010)
Lead (dissolved)	mg/L	0.01	ND (0.000100)	ND (0.000100)	ND (0.000100)	ND (0.000100)	ND (0.000100)	ND (0.000100)	ND (0.000100)	ND (0.000100)	ND (0.000100)	ND (0.000100)	ND (0.000100)	ND (0.000100)
Lithium (dissolved)	mg/L	-	0.0029	0.0028	0.0028	0.0084	0.0027	0.0025	0.0026	0.0032	0.0032	0.0024	0.0029	0.0028
Magnesium (dissolved)	mg/L	-	27.2	26.8	25.8	26.7	27.1	26.9	28.2	28.3	28.1	25.0	24.2	23.8
Manganese (dissolved)	mg/L	0.05	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	0.00083	ND (0.00050)	ND (0.00050)	ND (0.00050)	0.00076	ND (0.00050)	ND (0.00050)
Molybdenum (dissolved)	mg/L	-	0.000226	0.000231	0.000198	0.000252	0.000219	0.000209	0.000221	0.000206	0.000200	0.000226	0.000225	0.000208
Nickel (dissolved)	mg/L	-	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)
Phosphorus (dissolved)	mg/L	-	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)	ND (0.050)
Potassium (dissolved)	mg/L	-	1.58	1.56	1.41	1.39	1.41	1.28	1.52	1.58	1.46	1.82	1.86	1.76
Selenium (dissolved)	mg/L	0.05	0.000263	0.000285	0.000237	0.000272	0.000287	0.000235	0.000255	0.000262	0.000272	0.000304	0.000313	0.000271
Silicon (dissolved)	mg/L	-	5.44	5.39	5.53	4.62	4.81	4.73	5.29	5.38	5.46	4.94	5.06	4.89
Silicon	mg/L	-	5.45	5.42	5.50	6.18	11.5	8.67	5.71	5.54	5.72	5.41	5.01	6.63
Silver (dissolved)	mg/L	-	ND (0.000500)	ND (0.000500)	ND (0.000500)	ND (0.000500)	ND (0.000500)	ND (0.000500)	ND (0.000500)	ND (0.000500)	ND (0.000500)	ND (0.000500)	ND (0.000500)	ND (0.000500)
Sodium (dissolved)	mg/L	200	5.73	5.68	5.35	5.66	5.04	5.23	9.31	10.1	9.93	12.6	8.74	8.99
Strontium (dissolved)	mg/L	-	0.173	0.172	0.175	0.160	0.161	0.163	0.180	0.171	0.178	0.177	0.170	0.169
Thallium (dissolved)	mg/L	-	ND (0.000010)	ND (0.000010)	ND (0.000010)	ND (0.000010)	ND (0.000010)	ND (0.000010)	ND (0.000010)	ND (0.000010)	ND (0.000010)	ND (0.000010)	ND (0.000010)	ND (0.000010)
Tin (dissolved)	mg/L	-	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	0.00036	0.00023	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)
Titanium (dissolved)	mg/L	-	ND (0.00030)	ND (0.00030)	ND (0.00030)	ND (0.00030)	ND (0.00030)	ND (0.00030)	ND (0.00030)	ND (0.00030)	ND (0.00030)	ND (0.00030)	ND (0.00030)	ND (0.00030)
Tungsten (dissolved)	mg/L	-	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)
Uranium (dissolved)	mg/L	0.02	0.000334	0.000338	0.000344	0.000320	0.000332	0.000330	0.000312	0.000340	0.000334	0.000286	0.000289	0.000286
Vanadium (dissolved)	mg/L	-	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)	ND (0.00050)
Zinc (dissolved)	mg/L	5	0.0014	0.0014	0.0033	0.0167	0.0063	0.0046	0.0166	0.0032	0.0018	0.0020	0.0022	0.0079
Zirconium (dissolved)	mg/L	-	ND (0.00030)	ND (0.00030)	ND (0.00030)	ND (0.00030)	ND (0.00030)	ND (0.00030)	ND (0.00030)	ND (0.00030)	ND (0.00030)	ND (0.00030)	ND (0.00030)	ND (0.00030)

Notes:

ODWQS	Ontario Drinking Water Quality Standards (2020); including aethetic objectives and operations guidelines (June 2003, revised 2006).
ND (##)	Not detected at the associated reporting limit shown in brackets
J	Estimated concentration.
mg/L	Milligram per litre.
0.331	Concentration shown is above the respective ODWQS

Table 6.3

2023 Groundwater Analytical Data - Pesticides and Herbicides
2023 Combined Annual Monitoring Report
Dufferin Aggregates Paris Pit
County of Brant, Ontario

Sample Location:			BH88-2-I	BH88-2-I	BH88-2-I	BH88-6-I	BH88-6-I	BH88-6-I
Sample ID:			GW-78410-052423-EH-010	GW-78410-081423-EH-012	GW-78410-121323-EH-03	GW-78410-052523-EH-017	GW-78410-052523-EH-018	GW-78410-081523-EH-013
Sample Date:			5/24/2023	8/14/2023	12/13/2023	5/25/2023	5/25/2023 Duplicate	8/15/2023
Parameters	**Units**	**ODWQS**						
Pesticides and Herbicides								
2,4,5-T	ug/L	0.02	ND (0.500)	ND (0.500)	ND (0.500)	ND (0.500)	ND (0.500)	ND (0.500)
2,4,5-TP (Silvex)	ug/L	-	ND (0.500)	ND (0.500)	ND (0.500)	ND (0.500)	ND (0.500)	ND (0.500)
2,4'-DDD	ug/L	-	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)
2,4'-DDE	ug/L	-	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)
2,4'-DDT	ug/L	-	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)
2,4-Dichlorophenoxyacetic acid (2,4-D)	ug/L	100	ND (0.500)	ND (0.500)	ND (0.500)	ND (0.500)	ND (0.500)	ND (0.500)
2-Methyl-4-chlorophenoxyacetic acid (MCPA)	ug/L	100	ND (0.500)	ND (0.500)	ND (0.500)	ND (0.500)	ND (0.500)	ND (0.500)
4,4'-DDD	ug/L	-	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)
4,4'-DDE	ug/L	-	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)
4,4'-DDT	ug/L	-	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)
4-Amino-3,5,6-trichloropicolinic acid (Picloram)	ug/L	190	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
Alachlor	ug/L	5	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)
Aldrin	ug/L	-	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)
alpha-BHC	ug/L	-	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)
alpha-Chlordane	ug/L	-	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)
Ametryn	ug/L	-	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)
Atrazine	ug/L	-	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)
Atrazine and N-Dealkylated Metabolites	ug/L	5	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)
Azinphos-methyl	ug/L	20	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)
Bendiocarb	ug/L	-	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
Benzo(a)pyrene	ug/L	0.01	ND (0.0100)	ND (0.0100)	ND (0.0100)	ND (0.0100)	ND (0.0100)	ND (0.0100)
beta-BHC	ug/L	-	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)
Bladex (Cyanazine)	ug/L	-	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)
Bromoxynil	ug/L	5	ND (0.500)	ND (0.500)	ND (0.500)	ND (0.500)	ND (0.500)	ND (0.500)
Carbaryl	ug/L	90	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
Carbofuran	ug/L	90	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
Chlordane	ug/L	-	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)
Chlorpyrifos	ug/L	90	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)
delta-BHC	ug/L	-	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)
Desethyl atrazine	ug/L	-	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)
Diazinon	ug/L	20	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)
Dicamba	ug/L	120	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
Dichlorprop	ug/L	-	ND (0.500)	ND (0.500)	ND (0.500)	ND (0.500)	ND (0.500)	ND (0.500)
Diclofop-methyl	ug/L	9	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)
Dieldrin	ug/L	-	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)
Dimethoate	ug/L	20	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)
Dinoseb	ug/L	-	ND (0.500)	ND (0.500)	ND (0.500)	ND (0.500)	ND (0.500)	ND (0.500)
Endosulfan I	ug/L	-	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)
Endosulfan II	ug/L	-	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)
Endosulfan sulfate	ug/L	-	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)
Endrin	ug/L	-	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)
Endrin aldehyde	ug/L	-	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)
Ethyl parathion	ug/L	-	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)
gamma-BHC (lindane)	ug/L	-	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)
Glyphosate	ug/L	280	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)

Table 6.3

2023 Groundwater Analytical Data - Pesticides and Herbicides
2023 Combined Annual Monitoring Report
Dufferin Aggregates Paris Pit
County of Brant, Ontario

Sample Location:			**BH88-2-I**	**BH88-2-I**	**BH88-2-I**	**BH88-6-I**	**BH88-6-I**	**BH88-6-I**
Sample ID:			**GW-78410-052423-EH-010**	**GW-78410-081423-EH-012**	**GW-78410-121323-EH-03**	**GW-78410-052523-EH-017**	**GW-78410-052523-EH-018**	**GW-78410-081523-EH-013**
Sample Date:			**5/24/2023**	**8/14/2023**	**12/13/2023**	**5/25/2023**	**5/25/2023 Duplicate**	**8/15/2023**
Parameters	**Units**	**ODWQS**						
Heptachlor	ug/L	-	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)
Heptachlor epoxide	ug/L	-	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)
Hexachlorobenzene	ug/L	-	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)
Malathion	ug/L	190	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)
Mecoprop (MCPP)	ug/L	-	ND (0.500)	ND (0.500)	ND (0.500)	ND (0.500)	ND (0.500)	ND (0.500)
Methoxychlor	ug/L	-	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)
Methyl parathion	ug/L	-	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)
Metolachlor	ug/L	50	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)
Metribuzin	ug/L	80	ND (1.00)	ND (1.00)	ND (1.00)	ND (1.00)	ND (1.00)	ND (1.00)
Mirex	ug/L	-	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)
Oxychlordane	ug/L	-	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)
Phorate	ug/L	2	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)
Prometon	ug/L	-	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)
Prometryn	ug/L	1	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)
Propazine	ug/L	-	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)
Simazine	ug/L	10	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)
Temephos	ug/L	-	ND (1.0)	ND (1.0)	ND (1.0) J	ND (1.0)	ND (1.0)	ND (1.0)
Terbufos	ug/L	1	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)
Terbutryn	ug/L	-	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)
Triallate	ug/L	230	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)
Trifluralin	ug/L	45	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)

Notes:

ODWQS	Ontario Drinking Water Quality Standards (2020); including aethetic objectives and operations guidelines (June 2003, revised 2006).
ND (##)	Not detected at the associated reporting limit shown in brackets
µg/L	Microgram per litre.

Table 6.3

2023 Groundwater Analytical Data - Pesticides and Herbicides
2023 Combined Annual Monitoring Report
Dufferin Aggregates Paris Pit
County of Brant, Ontario

Sample Location:			BH88-6-I	MW1-12	MW1-12	MW1-12	MW1-12	MW4-16
Sample ID:			GW-78410-121223-AB-04	GW-78410-052423-EH-004	GW-78410-081423-EH-004	GW-78410-121223-EH-01	GW-78410-121223-EH-02	GW-78410-052423-EH-008
Sample Date:			12/12/2023	5/24/2023	8/14/2023	12/12/2023	12/12/2023 Duplicate	5/24/2023
Parameters	**Units**	**ODWQS**						
Pesticides and Herbicides								
2,4,5-T	ug/L	0.02	ND (0.500)	ND (0.500)	ND (0.500)	ND (0.500)	ND (0.500)	ND (0.500)
2,4,5-TP (Silvex)	ug/L	-	ND (0.500)	ND (0.500)	ND (0.500)	ND (0.500)	ND (0.500)	ND (0.500)
2,4'-DDD	ug/L	-	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)
2,4'-DDE	ug/L	-	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)
2,4'-DDT	ug/L	-	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)
2,4-Dichlorophenoxyacetic acid (2,4-D)	ug/L	100	ND (0.500)	ND (0.500)	ND (0.500)	ND (0.500)	ND (0.500)	ND (0.500)
2-Methyl-4-chlorophenoxyacetic acid (MCPA)	ug/L	100	ND (0.500)	ND (0.500)	ND (0.500)	ND (0.500)	ND (0.500)	ND (0.500)
4,4'-DDD	ug/L	-	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)
4,4'-DDE	ug/L	-	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)
4,4'-DDT	ug/L	-	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)
4-Amino-3,5,6-trichloropicolinic acid (Picloram)	ug/L	190	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
Alachlor	ug/L	5	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)
Aldrin	ug/L	-	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)
alpha-BHC	ug/L	-	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)
alpha-Chlordane	ug/L	-	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)
Ametryn	ug/L	-	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)
Atrazine	ug/L	-	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)
Atrazine and N-Dealkylated Metabolites	ug/L	5	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)
Azinphos-methyl	ug/L	20	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)
Bendiocarb	ug/L	-	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
Benzo(a)pyrene	ug/L	0.01	ND (0.0100)	ND (0.0100)	ND (0.0100)	ND (0.0100)	ND (0.0100)	ND (0.0100)
beta-BHC	ug/L	-	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)
Bladex (Cyanazine)	ug/L	-	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)
Bromoxynil	ug/L	5	ND (0.500)	ND (0.500)	ND (0.500)	ND (0.500)	ND (0.500)	ND (0.500)
Carbaryl	ug/L	90	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
Carbofuran	ug/L	90	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
Chlordane	ug/L	-	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)
Chlorpyrifos	ug/L	90	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)
delta-BHC	ug/L	-	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)
Desethyl atrazine	ug/L	-	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)
Diazinon	ug/L	20	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)
Dicamba	ug/L	120	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
Dichlorprop	ug/L	-	ND (0.500)	ND (0.500)	ND (0.500)	ND (0.500)	ND (0.500)	ND (0.500)
Diclofop-methyl	ug/L	9	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)
Dieldrin	ug/L	-	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)
Dimethoate	ug/L	20	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)
Dinoseb	ug/L	-	ND (0.500)	ND (0.500)	ND (0.500)	ND (0.500)	ND (0.500)	ND (0.500)
Endosulfan I	ug/L	-	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)
Endosulfan II	ug/L	-	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)
Endosulfan sulfate	ug/L	-	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)
Endrin	ug/L	-	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)
Endrin aldehyde	ug/L	-	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)
Ethyl parathion	ug/L	-	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)
gamma-BHC (lindane)	ug/L	-	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)
Glyphosate	ug/L	280	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)

Table 6.3

2023 Groundwater Analytical Data - Pesticides and Herbicides
2023 Combined Annual Monitoring Report
Dufferin Aggregates Paris Pit
County of Brant, Ontario

Sample Location:			**BH88-6-I**	**MW1-12**	**MW1-12**	**MW1-12**	**MW1-12**	**MW4-16**
Sample ID:			**GW-78410-121223-AB-04**	**GW-78410-052423-EH-004**	**GW-78410-081423-EH-004**	**GW-78410-121223-EH-01**	**GW-78410-121223-EH-02**	**GW-78410-052423-EH-008**
Sample Date:			**12/12/2023**	**5/24/2023**	**8/14/2023**	**12/12/2023**	**12/12/2023 Duplicate**	**5/24/2023**
Parameters	**Units**	**ODWQS**						
Heptachlor	ug/L	-	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)
Heptachlor epoxide	ug/L	-	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)
Hexachlorobenzene	ug/L	-	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)
Malathion	ug/L	190	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)
Mecoprop (MCPP)	ug/L	-	ND (0.500)	ND (0.500)	ND (0.500)	ND (0.500)	ND (0.500)	ND (0.500)
Methoxychlor	ug/L	-	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)
Methyl parathion	ug/L	-	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)
Metolachlor	ug/L	50	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)
Metribuzin	ug/L	80	ND (1.00)	ND (1.00)	ND (1.00)	ND (1.00)	ND (1.00)	ND (1.00)
Mirex	ug/L	-	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)
Oxychlordane	ug/L	-	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)
Phorate	ug/L	2	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)
Prometon	ug/L	-	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)
Prometryn	ug/L	1	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)
Propazine	ug/L	-	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)
Simazine	ug/L	10	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)
Temephos	ug/L	-	ND (1.0) J	ND (1.0)	ND (1.0)	ND (1.0) J	ND (1.0) J	ND (1.0)
Terbufos	ug/L	1	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)
Terbutryn	ug/L	-	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)
Triallate	ug/L	230	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)
Trifluralin	ug/L	45	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)

Notes:

ODWQS Ontario Drinking Water Quality Standards (2020); including aethetic objectives and operations guidelines (June 2003, revised 2006).

ND (##) Not detected at the associated reporting limit shown in brackets

µg/L Microgram per litre.

Table 6.3

2023 Groundwater Analytical Data - Pesticides and Herbicides
2023 Combined Annual Monitoring Report
Dufferin Aggregates Paris Pit
County of Brant, Ontario

Sample Location:			MW4-16	MW4-16	MW5-16	MW5-16	MW5-16	MW5-16
Sample ID:			GW-78410-081423-EH-010	GW-78410-121323-EH-04	GW-78410-052523-EH-020	GW-78410-052523-EH-021	GW-78410-081523-EH-017	GW-78410-081523-EH-018
Sample Date:			8/14/2023	12/13/2023	5/25/2023	5/25/2023 Duplicate	8/15/2023	8/15/2023 Duplicate
Parameters	**Units**	**ODWQS**						
Pesticides and Herbicides								
2,4,5-T	ug/L	0.02	ND (0.500)	ND (0.500)	ND (0.500)	ND (0.500)	ND (0.500)	ND (0.500)
2,4,5-TP (Silvex)	ug/L	-	ND (0.500)	ND (0.500)	ND (0.500)	ND (0.500)	ND (0.500)	ND (0.500)
2,4'-DDD	ug/L	-	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)
2,4'-DDE	ug/L	-	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)
2,4'-DDT	ug/L	-	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)
2,4-Dichlorophenoxyacetic acid (2,4-D)	ug/L	100	ND (0.500)	ND (0.500)	ND (0.500)	ND (0.500)	ND (0.500)	ND (0.500)
2-Methyl-4-chlorophenoxyacetic acid (MCPA)	ug/L	100	ND (0.500)	ND (0.500)	ND (0.500)	ND (0.500)	ND (0.500)	ND (0.500)
4,4'-DDD	ug/L	-	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)
4,4'-DDE	ug/L	-	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)
4,4'-DDT	ug/L	-	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)
4-Amino-3,5,6-trichloropicolinic acid (Picloram)	ug/L	190	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
Alachlor	ug/L	5	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)
Aldrin	ug/L	-	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)
alpha-BHC	ug/L	-	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)
alpha-Chlordane	ug/L	-	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)
Ametryn	ug/L	-	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)
Atrazine	ug/L	-	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)
Atrazine and N-Dealkylated Metabolites	ug/L	5	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)
Azinphos-methyl	ug/L	20	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)
Bendiocarb	ug/L	-	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
Benzo(a)pyrene	ug/L	0.01	ND (0.0100)	ND (0.0100)	ND (0.0100)	ND (0.0100)	ND (0.0100)	ND (0.0100)
beta-BHC	ug/L	-	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)
Bladex (Cyanazine)	ug/L	-	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)
Bromoxynil	ug/L	5	ND (0.500)	ND (0.500)	ND (0.500)	ND (0.500)	ND (0.500)	ND (0.500)
Carbaryl	ug/L	90	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
Carbofuran	ug/L	90	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
Chlordane	ug/L	-	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)
Chlorpyrifos	ug/L	90	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)
delta-BHC	ug/L	-	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)
Desethyl atrazine	ug/L	-	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)
Diazinon	ug/L	20	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)
Dicamba	ug/L	120	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
Dichlorprop	ug/L	-	ND (0.500)	ND (0.500)	ND (0.500)	ND (0.500)	ND (0.500)	ND (0.500)
Diclofop-methyl	ug/L	9	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)
Dieldrin	ug/L	-	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)
Dimethoate	ug/L	20	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)
Dinoseb	ug/L	-	ND (0.500)	ND (0.500)	ND (0.500)	ND (0.500)	ND (0.500)	ND (0.500)
Endosulfan I	ug/L	-	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)
Endosulfan II	ug/L	-	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)
Endosulfan sulfate	ug/L	-	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)
Endrin	ug/L	-	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)
Endrin aldehyde	ug/L	-	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)
Ethyl parathion	ug/L	-	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)
gamma-BHC (lindane)	ug/L	-	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)
Glyphosate	ug/L	280	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)

Table 6.3

2023 Groundwater Analytical Data - Pesticides and Herbicides
2023 Combined Annual Monitoring Report
Dufferin Aggregates Paris Pit
County of Brant, Ontario

Sample Location:			MW4-16	MW4-16	MW5-16	MW5-16	MW5-16	MW5-16
Sample ID:			GW-78410-081423-EH-010	GW-78410-121323-EH-04	GW-78410-052523-EH-020	GW-78410-052523-EH-021	GW-78410-081523-EH-017	GW-78410-081523-EH-018
Sample Date:			8/14/2023	12/13/2023	5/25/2023	5/25/2023 Duplicate	8/15/2023	8/15/2023 Duplicate
Parameters	**Units**	**ODWQS**						
Heptachlor	ug/L	-	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)
Heptachlor epoxide	ug/L	-	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)
Hexachlorobenzene	ug/L	-	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)
Malathion	ug/L	190	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)
Mecoprop (MCPP)	ug/L	-	ND (0.500)	ND (0.500)	ND (0.500)	ND (0.500)	ND (0.500)	ND (0.500)
Methoxychlor	ug/L	-	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)
Methyl parathion	ug/L	-	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)
Metolachlor	ug/L	50	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)
Metribuzin	ug/L	80	ND (1.00)	ND (1.00)	ND (1.00)	ND (1.00)	ND (1.00)	ND (1.00)
Mirex	ug/L	-	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)
Oxychlordane	ug/L	-	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)
Phorate	ug/L	2	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)
Prometon	ug/L	-	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)
Prometryn	ug/L	1	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)
Propazine	ug/L	-	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)
Simazine	ug/L	10	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)
Temephos	ug/L	-	ND (1.0)	ND (1.0) J	ND (1.0)	ND (1.0)	ND (1.0) J	ND (1.0)
Terbufos	ug/L	1	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)
Terbutryn	ug/L	-	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)
Triallate	ug/L	230	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)
Trifluralin	ug/L	45	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)

Notes:

ODWQS	Ontario Drinking Water Quality Standards (2020); including aethetic objectives and operations guidelines (June 2003, revised 2006).
ND (##)	Not detected at the associated reporting limit shown in brackets
µg/L	Microgram per litre.

Table 6.3

2023 Groundwater Analytical Data - Pesticides and Herbicides
2023 Combined Annual Monitoring Report
Dufferin Aggregates Paris Pit
County of Brant, Ontario

Sample Location:			**MW5-16**	**MW5-16**	**MW6-16**	**MW6-16**	**MW6-16**	**MW6-16**
Sample ID:			**GW-78410-121223-AB-01**	**GW-78410-121223-AB-02**	**GW-78410-052523-EH-012**	**GW-78410-081523-EH-014**	**GW-78410-081523-EH-015**	**GW-78410-121223-AB-03**
Sample Date:			**12/12/2023**	**12/12/2023**	**5/25/2023**	**8/15/2023**	**8/15/2023**	**12/12/2023**
				Duplicate			**Duplicate**	
Parameters	**Units**	**ODWQS**						
Pesticides and Herbicides								
2,4,5-T	ug/L	0.02	ND (0.500)	ND (0.500)	ND (0.500)	ND (0.500)	ND (0.500)	ND (0.500)
2,4,5-TP (Silvex)	ug/L	-	ND (0.500)	ND (0.500)	ND (0.500)	ND (0.500)	ND (0.500)	ND (0.500)
2,4'-DDD	ug/L	-	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)
2,4'-DDE	ug/L	-	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)
2,4'-DDT	ug/L	-	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)
2,4-Dichlorophenoxyacetic acid (2,4-D)	ug/L	100	ND (0.500)	ND (0.500)	ND (0.500)	ND (0.500)	ND (0.500)	ND (0.500)
2-Methyl-4-chlorophenoxyacetic acid (MCPA)	ug/L	100	ND (0.500)	ND (0.500)	ND (0.500)	ND (0.500)	ND (0.500)	ND (0.500)
4,4'-DDD	ug/L	-	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)
4,4'-DDE	ug/L	-	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)
4,4'-DDT	ug/L	-	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)
4-Amino-3,5,6-trichloropicolinic acid (Picloram)	ug/L	190	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
Alachlor	ug/L	5	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)
Aldrin	ug/L	-	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)
alpha-BHC	ug/L	-	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)
alpha-Chlordane	ug/L	-	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)
Ametryn	ug/L	-	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)
Atrazine	ug/L	-	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)
Atrazine and N-Dealkylated Metabolites	ug/L	5	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)
Azinphos-methyl	ug/L	20	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)
Bendiocarb	ug/L	-	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
Benzo(a)pyrene	ug/L	0.01	ND (0.0100)	ND (0.0100)	ND (0.0100)	ND (0.0100)	ND (0.0100)	ND (0.0100)
beta-BHC	ug/L	-	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)
Bladex (Cyanazine)	ug/L	-	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)
Bromoxynil	ug/L	5	ND (0.500)	ND (0.500)	ND (0.500)	ND (0.500)	ND (0.500)	ND (0.500)
Carbaryl	ug/L	90	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
Carbofuran	ug/L	90	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
Chlordane	ug/L	-	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)
Chlorpyrifos	ug/L	90	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)
delta-BHC	ug/L	-	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)
Desethyl atrazine	ug/L	-	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)
Diazinon	ug/L	20	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)
Dicamba	ug/L	120	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
Dichlorprop	ug/L	-	ND (0.500)	ND (0.500)	ND (0.500)	ND (0.500)	ND (0.500)	ND (0.500)
Diclofop-methyl	ug/L	9	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)
Dieldrin	ug/L	-	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)
Dimethoate	ug/L	20	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)
Dinoseb	ug/L	-	ND (0.500)	ND (0.500)	ND (0.500)	ND (0.500)	ND (0.500)	ND (0.500)
Endosulfan I	ug/L	-	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)
Endosulfan II	ug/L	-	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)
Endosulfan sulfate	ug/L	-	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)
Endrin	ug/L	-	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)
Endrin aldehyde	ug/L	-	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)
Ethyl parathion	ug/L	-	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)
gamma-BHC (lindane)	ug/L	-	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)
Glyphosate	ug/L	280	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)

Table 6.3

2023 Groundwater Analytical Data - Pesticides and Herbicides
2023 Combined Annual Monitoring Report
Dufferin Aggregates Paris Pit
County of Brant, Ontario

Sample Location:			**MW5-16**	**MW5-16**	**MW6-16**	**MW6-16**	**MW6-16**	**MW6-16**
Sample ID:			**GW-78410-121223-AB-01**	**GW-78410-121223-AB-02**	**GW-78410-052523-EH-012**	**GW-78410-081523-EH-014**	**GW-78410-081523-EH-015**	**GW-78410-121223-AB-03**
Sample Date:			**12/12/2023**	**12/12/2023**	**5/25/2023**	**8/15/2023**	**8/15/2023**	**12/12/2023**
				Duplicate			**Duplicate**	
Parameters	**Units**	**ODWQS**						
Heptachlor	ug/L	-	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)
Heptachlor epoxide	ug/L	-	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)
Hexachlorobenzene	ug/L	-	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)
Malathion	ug/L	190	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)
Mecoprop (MCPP)	ug/L	-	ND (0.500)	ND (0.500)	ND (0.500)	ND (0.500)	ND (0.500)	ND (0.500)
Methoxychlor	ug/L	-	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)
Methyl parathion	ug/L	-	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)
Metolachlor	ug/L	50	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)
Metribuzin	ug/L	80	ND (1.00)	ND (1.00)	ND (1.00)	ND (1.00)	ND (1.00)	ND (1.00)
Mirex	ug/L	-	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)
Oxychlordane	ug/L	-	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)
Phorate	ug/L	2	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)
Prometon	ug/L	-	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)
Prometryn	ug/L	1	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)
Propazine	ug/L	-	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)
Simazine	ug/L	10	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)
Temephos	ug/L	-	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0) J	ND (1.0) J	ND (1.0)
Terbufos	ug/L	1	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)
Terbutryn	ug/L	-	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)
Triallate	ug/L	230	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)
Trifluralin	ug/L	45	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)

Notes:

ODWQS	Ontario Drinking Water Quality Standards (2020); including aethetic objectives and operations guidelines (June 2003, revised 2006).
ND (##)	Not detected at the associated reporting limit shown in brackets
µg/L	Microgram per litre.

Table 6.3

2023 Groundwater Analytical Data - Pesticides and Herbicides
2023 Combined Annual Monitoring Report
Dufferin Aggregates Paris Pit
County of Brant, Ontario

Sample Location:			**MW8-22**	**MW8-22**	**MW8-22**
Sample ID:			**GW-78410-052523-EH-014**	**GW-78410-081523-EH-019**	**GW-78410-121223-RC-07**
Sample Date:			**5/25/2023**	**8/15/2023**	**12/12/2023**
Parameters	**Units**	**ODWQS**			
Pesticides and Herbicides					
2,4,5-T	ug/L	0.02	ND (0.500)	ND (0.500)	ND (0.500)
2,4,5-TP (Silvex)	ug/L	-	ND (0.500)	ND (0.500)	ND (0.500)
2,4'-DDD	ug/L	-	ND (0.100)	ND (0.100)	ND (0.100)
2,4'-DDE	ug/L	-	ND (0.100)	ND (0.100)	ND (0.100)
2,4'-DDT	ug/L	-	ND (0.100)	ND (0.100)	ND (0.100)
2,4-Dichlorophenoxyacetic acid (2,4-D)	ug/L	100	ND (0.500)	ND (0.500)	ND (0.500)
2-Methyl-4-chlorophenoxyacetic acid (MCPA)	ug/L	100	ND (0.500)	ND (0.500)	ND (0.500)
4,4'-DDD	ug/L	-	ND (0.100)	ND (0.100)	ND (0.100)
4,4'-DDE	ug/L	-	ND (0.100)	ND (0.100)	ND (0.100)
4,4'-DDT	ug/L	-	ND (0.100)	ND (0.100)	ND (0.100)
4-Amino-3,5,6-trichloropicolinic acid (Picloram)	ug/L	190	ND (0.50)	ND (0.50)	ND (0.50)
Alachlor	ug/L	5	ND (0.10)	ND (0.10)	ND (0.10)
Aldrin	ug/L	-	ND (0.100)	ND (0.100)	ND (0.100)
alpha-BHC	ug/L	-	ND (0.100)	ND (0.100)	ND (0.100)
alpha-Chlordane	ug/L	-	ND (0.100)	ND (0.100)	ND (0.100)
Ametryn	ug/L	-	ND (0.10)	ND (0.10)	ND (0.10)
Atrazine	ug/L	-	ND (0.10)	ND (0.10)	ND (0.10)
Atrazine and N-Dealkylated Metabolites	ug/L	5	ND (0.20)	ND (0.20)	ND (0.20)
Azinphos-methyl	ug/L	20	ND (0.10)	ND (0.10)	ND (0.10)
Bendiocarb	ug/L	-	ND (0.50)	ND (0.50)	ND (0.50)
Benzo(a)pyrene	ug/L	0.01	ND (0.0100)	ND (0.0100)	ND (0.0100)
beta-BHC	ug/L	-	ND (0.100)	ND (0.100)	ND (0.100)
Bladex (Cyanazine)	ug/L	-	ND (0.10)	ND (0.10)	ND (0.10)
Bromoxynil	ug/L	5	ND (0.500)	ND (0.500)	ND (0.500)
Carbaryl	ug/L	90	ND (0.50)	ND (0.50)	ND (0.50)
Carbofuran	ug/L	90	ND (0.50)	ND (0.50)	ND (0.50)
Chlordane	ug/L	-	ND (0.100)	ND (0.100)	ND (0.100)
Chlorpyrifos	ug/L	90	ND (0.10)	ND (0.10)	ND (0.10)
delta-BHC	ug/L	-	ND (0.100)	ND (0.100)	ND (0.100)
Desethyl atrazine	ug/L	-	ND (0.10)	ND (0.10)	ND (0.10)
Diazinon	ug/L	20	ND (0.10)	ND (0.10)	ND (0.10)
Dicamba	ug/L	120	ND (0.50)	ND (0.50)	ND (0.50)
Dichlorprop	ug/L	-	ND (0.500)	ND (0.500)	ND (0.500)
Diclofop-methyl	ug/L	9	ND (0.10)	ND (0.10)	ND (0.10)
Dieldrin	ug/L	-	ND (0.100)	ND (0.100)	ND (0.100)
Dimethoate	ug/L	20	ND (0.10)	ND (0.10)	ND (0.10)
Dinoseb	ug/L	-	ND (0.500)	ND (0.500)	ND (0.500)
Endosulfan I	ug/L	-	ND (0.100)	ND (0.100)	ND (0.100)
Endosulfan II	ug/L	-	ND (0.100)	ND (0.100)	ND (0.100)
Endosulfan sulfate	ug/L	-	ND (0.100)	ND (0.100)	ND (0.100)
Endrin	ug/L	-	ND (0.100)	ND (0.100)	ND (0.100)
Endrin aldehyde	ug/L	-	ND (0.100)	ND (0.100)	ND (0.100)
Ethyl parathion	ug/L	-	ND (0.10)	ND (0.10)	ND (0.10)
gamma-BHC (lindane)	ug/L	-	ND (0.100)	ND (0.100)	ND (0.100)
Glyphosate	ug/L	280	ND (0.10)	ND (0.10)	ND (0.10)

Table 6.3

2023 Groundwater Analytical Data - Pesticides and Herbicides
2023 Combined Annual Monitoring Report
Dufferin Aggregates Paris Pit
County of Brant, Ontario

Sample Location:			**MW8-22**	**MW8-22**	**MW8-22**
Sample ID:			**GW-78410-052523-EH-014**	**GW-78410-081523-EH-019**	**GW-78410-121223-RC-07**
Sample Date:			**5/25/2023**	**8/15/2023**	**12/12/2023**
Parameters	**Units**	**ODWQS**			
Heptachlor	ug/L	-	ND (0.100)	ND (0.100)	ND (0.100)
Heptachlor epoxide	ug/L	-	ND (0.100)	ND (0.100)	ND (0.100)
Hexachlorobenzene	ug/L	-	ND (0.100)	ND (0.100)	ND (0.100)
Malathion	ug/L	190	ND (0.10)	ND (0.10)	ND (0.10)
Mecoprop (MCPP)	ug/L	-	ND (0.500)	ND (0.500)	ND (0.500)
Methoxychlor	ug/L	-	ND (0.100)	ND (0.100)	ND (0.100)
Methyl parathion	ug/L	-	ND (0.10)	ND (0.10)	ND (0.10)
Metolachlor	ug/L	50	ND (0.10)	ND (0.10)	ND (0.10)
Metribuzin	ug/L	80	ND (1.00)	ND (1.00)	ND (1.00)
Mirex	ug/L	-	ND (0.100)	ND (0.100)	ND (0.100)
Oxychlordane	ug/L	-	ND (0.100)	ND (0.100)	ND (0.100)
Phorate	ug/L	2	ND (0.10)	ND (0.10)	ND (0.10)
Prometon	ug/L	-	ND (0.10)	ND (0.10)	ND (0.10)
Prometryn	ug/L	1	ND (0.10)	ND (0.10)	ND (0.10)
Propazine	ug/L	-	ND (0.10)	ND (0.10)	ND (0.10)
Simazine	ug/L	10	ND (0.10)	ND (0.10)	ND (0.10)
Temephos	ug/L	-	ND (1.0)	ND (1.0)	ND (1.0) J
Terbufos	ug/L	1	ND (0.10)	ND (0.10)	ND (0.10)
Terbutryn	ug/L	-	ND (0.10)	ND (0.10)	ND (0.10)
Triallate	ug/L	230	ND (0.10)	ND (0.10)	ND (0.10)
Trifluralin	ug/L	45	ND (0.10)	ND (0.10)	ND (0.10)

Notes:

ODWQS	Ontario Drinking Water Quality Standards (2020); including aethetic objectives and operations guidelines (June 2003, revised 2006).
ND (##)	Not detected at the associated reporting limit shown in brackets
µg/L	Microgram per litre.

Table 6.4

2023 Surface Water Analytical Data - General Chemistry
2023 Combined Annual Monitoring Report
Dufferin Aggregates Paris Pit
County of Brant, Ontario

Sample Location:			SW1B	SW1B	SW1B	RECIRCULATION POND	RECIRCULATION POND	RECIRCULATION POND	RECIRCULATION POND
Sample ID:			SW-78410-052523-EH-00	SW-78410-081423-EH-005	SW-78410-121223-RC-01	W-78410-032223-EH-01	W-78410-132223-EH-02 (DUF	W-78410-112423-EH-01	W-78410-112423-EH-02
Sample Date:			5/25/2023	8/14/2023	12/12/2023	3/22/2023	3/22/2023 Duplicate	11/24/2023	11/24/2023 Duplicate
Parameters	**Units**	**PWQO**							
Field Parameters									
Conductivity, field	µS/cm	-	368	357	505	471	471	574	574
Dissolved oxygen (DO), field	mg/L	-	5.19	5.49	-	12.75	12.75	9.01	9.01
Oxidation reduction potential (ORP), field	millivolts	-	182	77	239	419	419	334	334
pH, field	s.u.	6.5-8.5	8.26	7.08	7.85	5.09 (1)	5.09 (1)	6.61	6.61
Temperature, field	Deg C	-	16.06	20.87	2.67	8.3	8.3	5.8	5.8
Turbidity, field	NTU	-	-	27.9	0	2.9	2.9	29.7	29.7
General Chemistry									
Alkalinity, bicarbonate	mg/L	-	142	172	200	108	111	140	142
Alkalinity, carbonate	mg/L	-	ND (10.0)	ND (10.0)	ND (10.0)	ND (10.0)	ND (10.0)	ND (10.0)	ND (10.0)
Alkalinity, hydroxide	mg/L	-	ND (10.0)	ND (10.0)	ND (10.0)	ND (10.0)	ND (10.0)	ND (10.0)	ND (10.0)
Alkalinity, total (as CaCO3)	mg/L	-	142	172	200	113	116	140	142
Anion sum	meq	-	3.74	4.57	5.46	4.14	4.20	5.51	5.54
Anion/Cation ratio	%	-	1.58	-1.44	-2.34	9.01	9.09	2.91 J	0.89 J
Cation sum	meq	-	3.86	4.44	5.21	4.96	5.04	5.84	5.64
Chloride (dissolved)	mg/L	-	23.9	32.0	33.6	42.1	42.0	70.2	69.8
Conductivity	µmhos/cm	-	349	439	520	397	397	558	556
Dissolved organic carbon (DOC) (dissolved)	mg/L	-	8.76	12.7 J	4.78	58.8 J	54.7 J	18.9 J	5.24 J
Hardness	mg/L	-	176	196	234	181	184	236	241
Nitrate (as N)	mg/L	-	ND (0.020)	ND (0.020)	1.88	3.27	3.27	2.96	2.96
Nitrite (as N)	mg/L	-	ND (0.010)	ND (0.010)	0.069	0.023	0.023	0.034	0.033
Nitrite/Nitrate	mg/L	-	ND (0.0224)	ND (0.0224)	1.95	3.29	3.29	2.99	2.99
Oil and grease	mg/L	-	ND (5.0)	ND (5.0)	ND (5.0)	ND (5.0)	ND (5.0)	ND (5.0)	ND (5.0)
Orthophosphate (dissolved)	mg/L	-	ND (0.0030)	ND (0.0030)	0.0032	ND (0.0030)	ND (0.0030)	ND (0.0030)	ND (0.0030)
pH, lab	s.u.	6.5-8.5	8.01	8.09	8.19	8.42	8.42	8.06	8.12
Sulfate (dissolved)	mg/L	-	11.1	10.9	18.2	22.1	22.1	25.1	25.0
Total dissolved solids (TDS)	mg/L	-	192	266	266	170	182	315	312
Total organic carbon (TOC)	mg/L	-	9.39	10.0 J	4.97	4.54 J	1.62 J	2.69 J	2.07 J
Total suspended solids (TSS)	mg/L	-	ND (3.0)	18.7	19.2	ND (3.0)	ND (3.0)	16.3	24.7
Turbidity	NTU	-	1.10	1.38	16.6	0.38	0.45	18.6	27.4

Notes:

PWQO	Provincial Water Quality Objectives, July 1994, revised February 1999
(1)	Erroneous field pH reading confirmed by laboratory results.
-	Not analyzed.
ND (##)	Not detected at the associated reporting limit shown in brackets
J	Estimated concentration
µS/cm	MicroSiemens per centimetre
µmhos/cm	Micromhos per centimetre
mg/L	Milligram per litre
Deg C	Degrees Celsius
meq	Milliequivalents
NTU	Nephelometric turbidity units

Table 6.5

2023 Surface Water Analytical Data - Metals
2023 Combined Annual Monitoring Report
Dufferin Aggregates Paris Pit
County of Brant, Ontario

Sample Location:			SW1B	SW1B	SW1B	RECIRCULATION POND	RECIRCULATION POND	RECIRCULATION POND	RECIRCULATION POND
Sample ID:			SW-78410-052523-EH-00	SW-78410-081423-EH-005	SW-78410-121223-RC-01	W-78410-032223-EH-01	V-78410-132223-EH-02 (DUI	W-78410-112423-EH-01	W-78410-112423-EH-02
Sample Date:			5/25/2023	8/14/2023	12/12/2023	3/22/2023	3/22/2023 Duplicate	11/24/2023	11/24/2023 Duplicate
Parameters	**Units**	**PWQO**							
Metals									
Aluminum	mg/L	0.075	0.0118	0.0137 J-	**0.398**	0.0166 J	0.0108 J	**0.286**	**0.382**
Aluminum (dissolved)	mg/L	0.075	0.0054	ND (0.0050)	ND (0.0050)	ND (0.0050)	ND (0.0050)	0.0090	0.0085
Antimony	mg/L	0.02	ND (0.00010)	ND (0.00010) J	ND (0.00010)	ND (0.00010)	ND (0.00010)	0.00013	ND (0.00010)
Arsenic	mg/L	0.005	0.00028	0.00016 J-	0.00021	0.00024	0.00023	0.00065	0.00078
Barium	mg/L	-	0.0863	0.126 J-	0.130	0.0422	0.0420	0.0406	0.0410
Beryllium	mg/L	0.011	ND (0.000100)	ND (0.000100) J	ND (0.000100)	ND (0.000100)	ND (0.000100)	ND (0.000100)	ND (0.000100)
Bismuth	mg/L	-	ND (0.000050)	ND (0.000050) J	ND (0.000050)	ND (0.000050)	ND (0.000050)	ND (0.000050)	ND (0.000050)
Boron	mg/L	0.2	0.017	0.021 J-	0.015	0.020	0.020	0.046	0.046
Cadmium	mg/L	0.0002	ND (0.0000050)	ND (0.0000050) J	0.0000149	ND (0.0000050)	ND (0.0000050)	0.0000451	0.0000407
Calcium	mg/L	-	40.1	44.4 J-	59.6	35.2	35.2	55.8	58.6
Calcium (dissolved)	mg/L	-	39.2	44.8	58.8	35.0	35.7	51.6	52.7
Chromium	mg/L	0.0089	ND (0.00050)	ND (0.00050) J	0.00062	ND (0.00050)	ND (0.00050)	0.00096	0.00104
Cobalt	mg/L	0.0009	ND (0.00010)	ND (0.00010) J	0.00022	ND (0.00010)	ND (0.00010)	0.00063	0.00065
Copper	mg/L	0.005	ND (0.00100)	ND (0.00100) J	ND (0.00100)	0.00163	ND (0.00100)	**0.00961**	**0.00586**
Iron	mg/L	0.3	0.063	0.068 J-	**0.378**	ND (0.050)	ND (0.050)	**0.681**	**0.925**
Lead	mg/L	0.005	0.000145	0.000092 J-	0.00102	0.000093	ND (0.000050)	0.00172	0.00220
Lithium	mg/L	-	0.0014	0.0012 J-	0.0023	0.0011	0.0010	0.0025	0.0028
Magnesium	mg/L	-	19.3	21.1 J-	21.6	22.6	22.4	27.3	26.9
Magnesium (dissolved)	mg/L	-	19.0	20.5	21.2	22.8	23.0	26.1	26.5
Manganese	mg/L	-	0.0270	0.0394 J-	0.0141	0.00284 J	0.00193 J	0.0625	0.0775
Molybdenum	mg/L	0.04	0.000128	ND (0.000050) J	0.000368	0.000734	0.000738	0.00162	0.00163
Nickel	mg/L	0.025	ND (0.00050)	ND (0.00050) J	ND (0.00050)	0.00061	ND (0.00050)	0.00412 J	0.00220 J
Phosphorus	mg/L	0.01	ND (0.050)	ND (0.050) J	**0.076**	ND (0.050)	ND (0.050)	**0.108**	**0.080**
Potassium	mg/L	-	1.35	1.62 J-	3.32	3.32	2.15	11.5 J	4.96 J
Selenium	mg/L	0.1	0.000088	0.000057 J-	0.000096	0.000113	0.000108	0.000150	0.000132
Silicon	mg/L	-	0.95	7.05 J-	1.28	0.26	0.25	3.10	3.21
Silicon (dissolved)	mg/L	-	0.967	7.28	0.700	0.227	0.225	2.70	2.74
Silver	mg/L	0.0001	ND (0.000050)	ND (0.000050) J	ND (0.000050)	ND (0.000050)	ND (0.000050)	0.000054	ND (0.000050)
Sodium	mg/L	-	6.76	9.18 J-	10.5	13.1	12.8	18.6	15.3
Strontium	mg/L	-	0.101	0.113 J-	0.129	0.125	0.125	0.168	0.169
Thallium	mg/L	0.0003	ND (0.000010)	ND (0.000010) J	ND (0.000010)	ND (0.000010)	ND (0.000010)	0.000019	0.000023
Tin	mg/L	-	ND (0.00010)	ND (0.00010) J	ND (0.00010)	ND (0.00010)	ND (0.00010)	0.00077 J	0.00017 J
Titanium	mg/L	-	0.00051	0.00054 J-	0.0123	ND (0.00300)	ND (0.00030)	0.0109 J	0.0192 J
Tungsten	mg/L	0.03	ND (0.00010)	ND (0.00010) J	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)
Uranium	mg/L	0.005	0.000125	0.000033 J-	0.000393	0.000181	0.000183	0.000217	0.000221
Vanadium	mg/L	0.006	ND (0.00050)	ND (0.00050) J	0.00110	ND (0.00050)	ND (0.00050)	0.00079	0.00105
Zinc	mg/L	0.02	ND (0.0030)	ND (0.0030) J	0.0076	0.0047	ND (0.0030)	0.0237	0.0182
Zirconium	mg/L	0.004	ND (0.00030)	ND (0.00030) J	ND (0.00030)	ND (0.00030)	ND (0.00030)	0.00034	ND (0.00030)

Notes:

PWQO	Provincial Water Quality Objectives, July 1994, revised February 1999.
ND (##)	Not detected at the associated reporting limit shown in brackets
J	Estimated concentration.
J-	The result is an estimated quantity, but the result may be biased low.
mg/L	Milligram per litre.
0.072	Concentration is above the PWQO.

Table 6.6

2023 Surface Water Analytical Data - Pesticides and Herbicides
2023 Combined Annual Monitoring Report
Dufferin Aggregates Paris Pit
County of Brant, Ontario

Sample Location:			SW1B	SW1B	SW1B	RECIRCULATION POND	RECIRCULATION POND	RECIRCULATION POND	RECIRCULATION POND
Sample ID:			SW-78410-052523-EH-00	SW-78410-081423-EH-005	SW-78410-121223-RC-01	W-78410-032223-EH-01	W-78410-132223-EH-02 (DUF	W-78410-112423-EH-01	W-78410-112423-EH-02
Sample Date:			5/25/2023	8/14/2023	12/12/2023	3/22/2023	3/22/2023 Duplicate	11/24/2023	11/24/2023 Duplicate
Parameters	**Units**	**PWQO**							
Pesticides and Herbicides									
2,4,5-T	µg/L	-	ND (0.500)	ND (0.500)	ND (0.500)	ND (0.500)	ND (0.500)	ND (0.500)	ND (0.500)
2,4,5-TP (Silvex)	µg/L	-	ND (0.500)	ND (0.500)	ND (0.500)	ND (0.500)	ND (0.500)	ND (0.500)	ND (0.500)
2,4'-DDD	µg/L	-	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)
2,4'-DDE	µg/L	-	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)
2,4'-DDT	µg/L	-	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)
2,4-Dichlorophenoxyacetic acid (2,4-D)	µg/L	4	ND (0.500)	ND (0.500)	ND (0.500)	ND (0.500)	ND (0.500)	ND (0.500)	ND (0.500)
2-Methyl-4-chlorophenoxyacetic acid (MCPA)	µg/L	-	ND (0.500)	ND (0.500)	ND (0.500)	ND (0.500)	ND (0.500)	ND (0.500)	ND (0.500)
4,4'-DDD	µg/L	-	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)
4,4'-DDE	µg/L	-	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)
4,4'-DDT	µg/L	0.003	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)
4-Amino-3,5,6-trichloropicolinic acid (Picloram)	µg/L	-	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
Alachlor	µg/L	-	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)
Aldrin	µg/L	0.001	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)
alpha-BHC	µg/L	-	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)
alpha-Chlordane	µg/L	-	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)
Ametryn	µg/L	-	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)
Aminomethyl phosphoric acid (AMPA)	µg/L	-	-	-	-	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
Atrazine	µg/L	-	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)
Atrazine and N-Dealkylated Metabolites	µg/L	-	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)	ND (0.20)
Azinphos-methyl	µg/L	0.005	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)
Bendiocarb	µg/L	-	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
Benzo(a)pyrene	µg/L	-	ND (0.0100)	ND (0.0100)	ND (0.0100)	ND (0.0100)	ND (0.0100)	ND (0.0100)	ND (0.0100)
beta-BHC	µg/L	-	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)
Bladex (Cyanazine)	µg/L	-	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)
Bromoxynil	µg/L	-	ND (0.500)	ND (0.500)	ND (0.500)	ND (0.500)	ND (0.500)	ND (0.500)	ND (0.500)
Carbaryl	µg/L	0.2	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
Carbofuran	µg/L	-	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
Chlordane	µg/L	0.06	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)
Chlorpyrifos	µg/L	0.001	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)
delta-BHC	µg/L	-	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)
Desethyl atrazine	µg/L	-	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)
Diazinon	µg/L	0.08	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)
Dicamba	µg/L	200	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (1.00)	ND (0.50)
Dichlorprop	µg/L	-	ND (0.500)	ND (0.500)	ND (0.500)	ND (0.500)	ND (0.500)	ND (0.500)	ND (0.500)
Diclofop-methyl	µg/L	-	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)
Dieldrin	µg/L	0.001	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)
Dimethoate	µg/L	-	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)
Dinoseb	µg/L	-	ND (0.500)	ND (0.500)	ND (0.500)	ND (0.500)	ND (0.500)	ND (0.500)	ND (0.500)
Endosulfan I	µg/L	0.003	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)
Endosulfan II	µg/L	0.003	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)
Endosulfan sulfate	µg/L	-	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)
Endrin	µg/L	0.002	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)
Endrin aldehyde	µg/L	-	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)
Ethyl parathion	µg/L	0.008	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)
gamma-BHC (lindane)	µg/L	0.01	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)
Glyphosate	µg/L	-	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)
Heptachlor	µg/L	0.001	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)
Heptachlor epoxide	µg/L	0.001	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)
Hexachlorobenzene	µg/L	0.0065	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)
Malathion	µg/L	0.1	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)
Mecoprop (MCPP)	µg/L	-	ND (0.500)	ND (0.500)	ND (0.500)	ND (0.500)	ND (0.500)	ND (0.500)	ND (0.500)
Methoxychlor	µg/L	0.04	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)
Methyl parathion	µg/L	-	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)
Metolachlor	µg/L	3	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)

Table 6.6

2023 Surface Water Analytical Data - Pesticides and Herbicides
2023 Combined Annual Monitoring Report
Dufferin Aggregates Paris Pit
County of Brant, Ontario

Sample Location:			**SW1B**	**SW1B**	**SW1B**	**RECIRCULATION POND**	**RECIRCULATION POND**	**RECIRCULATION POND**	**RECIRCULATION POND**
Sample ID:			**SW-78410-052523-EH-00**	**SW-78410-081423-EH-005**	**SW-78410-121223-RC-01**	**W-78410-032223-EH-01**	**W-78410-132223-EH-02 (DUF**	**W-78410-112423-EH-01**	**W-78410-112423-EH-02**
Sample Date:			**5/25/2023**	**8/14/2023**	**12/12/2023**	**3/22/2023**	**3/22/2023 Duplicate**	**11/24/2023**	**11/24/2023 Duplicate**
Parameters	**Units**	**PWQO**							
Metribuzin	µg/L	-	ND (1.00)	ND (1.00)	ND (1.00)	ND (1.00)	ND (1.00)	ND (1.00)	ND (1.00)
Mirex	µg/L	0.001	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)
Oxychlordane	µg/L	-	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)	ND (0.100)
Phorate	µg/L	-	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)
Prometon	µg/L	-	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)
Prometryn	µg/L	-	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)
Propazine	µg/L	-	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)
Simazine	µg/L	10	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)
Temephos	µg/L	-	ND (1.0)	ND (1.0)	ND (1.0) J	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
Terbufos	µg/L	-	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)
Terbutryn	µg/L	-	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)
Triallate	µg/L	-	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)
Trifluralin	µg/L	-	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)

Notes:

PWQO	Provincial Water Quality Objectives, July 1994, revised February 1999.
-	Not analyzed.
ND (##)	Not detected at the associated reporting limit shown in brackets
µg/L	Microgram per litre.

Appendices

Appendix A

Amended PTTW No. 7481 C4BQTA (August 13, 2021)

AMENDED PERMIT TO TAKE WATER
Ground Water
NUMBER 7481-C4BQTA

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

CRH Canada Group Inc.
Floor 4 - 2300 Steeles Ave W
Concord, Ontario
L4K 5X6

For the water taking from: Source Water Pond located at 716 Watts Pond Road

Located at: Lot 27, Concession 2, Geographic Township of Dumfries
Brant

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. 7481-C4BQTA including its Schedules, if any, issued in accordance with Section 34.1 of the OWRA.

(f) "Permit Holder" means CRH Canada Group 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 January 6, 2021 and signed by Kevin Mitchell, 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 **October 29, 2025**. 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	Source Water Pond	Pond Dugout	Aggregate Washing	Industrial	10,000	12	7,200,000	230	17 550738 4784696
						Total Taking:	7,200,000		

3.3 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.

3.4 The "Taking Specific Purpose" identified in Table A, includes the water to be used for dust suppression, watering trees, shrubs and native plants planted within the last 18 months..

3.5 Notwithstanding Table A, the rate of taking from the Source Pond shall only be at the rate and daily maximum listed in Table A for a total of 30 days per annum for the purpose of refilling the Settling and Recirculation Ponds after removal of accumulated sediment from these ponds or repairing the liner in the Recirculation Pond. For the remaining 200 days, the water taking shall be at a rate of no more than 1,400 L/min for 12 hours per day.

i. Water may be taken during a 12 hour period between a Sunday and the following Monday (e.g. Sunday 7:00pm and Monday 7:00am) at the rate of 10,000 L/min. This water taking shall be measured and shall be recorded as being taken on the Sunday. Water may be taken on the Monday at a rate of 1,400 L/min as per Condition 3.4 above.

ii. In the event of a long holiday weekend, water may be taken during a 12 hour period between the holiday Monday and Tuesday (e.g. holiday Monday 7:00pm and Tuesday 7:00am). This water taking shall be measured and shall be recorded as being taken on the holiday Monday. Water may be taken on the Tuesday at a rate of 1,400 L/min as per Condition 3.4 above.

3.6 Water taking under the authorization of this permit shall only occur between February 15 and December 31 of each year during the validity of this Permit.

3.7 In the event the Permit Holder pumps water from the Source Pond at lower than the maximum permitted rates, the saved water can be pumped in other days exceeding the total number of 230 days provided the additional days shall be within the permitted window of February 15 to December 31 inclusive, and the rate of taking shall not exceed 1,400 litres per minute and 1,008,000 litres per day. The Cumulative Volume pumped in all days from February 15 to December 31 shall not exceed 417,600,000 litres annually.

4. Monitoring

4.1 Under section 9 of O. Reg. 387/04 as amended from time to time, 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 maintain a separate record of the water taking used for both dust suppression and vegetation watering.

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. These records shall be included in the Combined Annual Monitoring Report described in Condition 4.4.

4.2 a) The Permit Holder shall monitor groundwater levels at the following monitoring wells;

i) MW1-12 or replacement well in the same general area,
ii) MW3-16 or replacement well located between the Source Pond and the south property boundary, and
iii) Wells BH88-5 and BH88-5-II or replacement wells in the same general area.

b) The three (3) groundwater monitoring wells listed in Condition 4.2 a) shall be located at three (3) different distances from the edge of the Source Pond. In addition, these three (3) wells shall be screened within the upper Sand and Gravel Aquifer. These three (3) wells may be used for other monitoring purposes.

c) The Permit Holder shall ensure that groundwater levels are collected at the three groundwater monitoring wells described in Condition 4.2 a) between February 15 and December 31 of every for which the Permit is valid.Water levels shall be collected at a minimum of hourly intervals using a datalogger.

d) The Permit Holder shall ensure that the data loggers described in Condition 4.2 d) operate without interruption. Repairs or replacement of the dataloggers shall be completed within a reasonable period once a malfunction has been identified.

4.3 The Permit Holder shall establish the following surface water monitoring program seasonally during non-freezing conditions:

a) continuous surface water level monitoring at SW1A, SW1B and MP1S and MP2S.

b) calculation of vertical hydraulic gradient at the multi-level piezometer; and
c) continuous water level monitoring shall be logged at a minimum of 4 hour intervals.

4.4 The Permit Holder shall ensure that groundwater levels, surface water levels, and any other data collected from any on site monitoring wells are included in a Combined Annual Monitoring Report. Copies of this Combined Annual Monitoring Report shall be submitted to both the Ministry of the Environment, Conservation and Parks, Section 34.1 Director and the County of Brant by March 31st of each year following the issuance of the Permit to Take Water.

The Combined Annual Monitoring Report shall include a comparison of the annual groundwater elevation contours with the simulated water level changes outlined in the OWRA s34 Permit-To-Take-Water Application and Supporting Hydrologic and Hydrogeologic Study, Dufferin Paris Pit, County of Brant, Ontario, prepared by Conestoga-Rovers & Associates, dated March 2013.

4.5 The Permit Holder shall make the report required by Condition 4.4 available to the Community Advisory Panel, and publicly by posting it on the Company's website at the time specified in Condition 4.4.

4.6 All Permit renewals and amendments other than administrative amendments shall be accompanied by a hydrogeological assessment report which presents and discusses the data collected in Conditions 4.1, 4.2 and 4.3. This report shall be signed and stamped by a qualified person.

4.7 The Permit Holder shall continue to implement the Trigger Mechanism and Contingency Plan for both groundwater and surface water. This Plan shall be reviewed and updated with approval by the ministry as necessary at minimum every two years. This review can be completed as part of the Combined Annual Monitoring report referenced in Condition 4.4.

5. Impacts of the Water Taking

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

5.2 For Groundwater Takings
If the taking of water is observed to cause any negative impact to other water supplies obtained from any adequate sources that were in use prior to initial issuance of a Permit for this water taking, the Permit Holder shall take such action necessary to make available to those affected, a supply of water equivalent in quantity and quality to their normal takings, or shall compensate

such persons for their reasonable costs of so doing, or shall reduce the rate and amount of taking to prevent or alleviate the observed negative impact. Pending permanent restoration of the affected supplies, the Permit Holder shall provide, to those affected, temporary water supplies adequate to meet their normal requirements, or shall compensate such persons for their reasonable costs of doing so.

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

6. Director May Amend Permit

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

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

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

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

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

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

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

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

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

This notice must be served upon:

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

AND

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

AND

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

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

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

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

This Permit cancels and replaces Permit Number 7115-9VVLJW, issued on 2015/10/29.

Dated at Toronto this 13th day of August, 2021.

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 7481-C4BQTA, dated August 13, 2021.

1. Application for Amendment to PTTW received by the ministry on January 12, 2021 from CRH Canada Group Inc. Mailing Address: Floor 4 - 2300 Steeles Ave W, Concord, Ontario, Canada, L4K 5X6 for Dufferin Aggregates Paris Pit at Lot 27, Concession 2, 716 Watts Pond Road, geographic township: DUMFRIES, County of Brant, signed by Kevin Mitchell, January 6, 2021. GHD. 2021.

2. Category 3 Permit-To-Take Water Amendment Application Supporting Hydrologic and Hydrogeologic Study, Dufferin Aggregates Paris Pit, signed and stamped by Gary I. Lagos, P. Geo of GHD, January 6, 2021. Dufferin. 2021.

3. Paris Pit Permit to Take Water Amendment Application, Reference No. 8637-BXAR22, letter to Ministry of Environment, Conservation and Parks from Kevin Mitchell of Dufferin Aggregates, May 6, 2021.

4. Trigger Mechanism and Contingency Plan Condition 4.7 – PTTW No. 5826-ALCNNN Dufferin Aggregates Paris Pit, County of Brant, Ontario; for CRH Canada Group Inc. Signed by Michael R. Tomka, P. Eng. and signed and stamped by Gary I. Lagos, P. Geo. of GHD, July 19, 2017, Reference No. 078410.

Appendix B

Amended Environmental Compliance Approval (ECA) (March 14, 2022)

AMENDED ENVIRONMENTAL COMPLIANCE APPROVAL

NUMBER 3994-CCDR8L
Issue Date: March 14, 2022

CRH Canada Group Inc.
2300 Steeles Avenue West, 4th Floor
Concord, Ontario
L4K 5X6

Site Location: Dufferin Aggregates - Paris Pit
708 Watts Pond Road
South Dumfries, Ontario
N3L 3E2

You have applied under section 20.2 of Part II.1 of the Environmental Protection Act, R.S.O. 1990, c. E. 19 (Environmental Protection Act) for approval of:

sewage works for the collection, transmission, treatment and reuse of wash water effluent from an aggregate washing operation, consisting of the following:

- one (1) ***settling pond*** (comprised of the settling cell(s) and the recirculation cell) constructed above the ground-water table receiving wash water from the Processing Wash Plant and make-up water from the source water pond, and returning settled water back to the Processing Wash Plant.

all other controls, electrical equipment, instrumentation, piping, pumps, valves and appurtenances essential for the proper operation of the aforementioned sewage works.

all in accordance with the supporting documents listed in Schedule A.

For the purpose of this environmental compliance approval, the following definitions apply:

"Application" means the application for an environmental compliance approval submitted to the Ministry for approval by or on behalf of the Owner and dated February 10, 2022.

"Approval" means this environmental compliance approval, any schedules attached to it, and the Application;

"Director" means a person appointed by the Minister pursuant to section 5 of the EPA for the purposes of Part

II.1 of the EPA;

"District Manager" means the District Manager of the Guelph District Office of the Ministry;

"EPA" means the *Environmental Protection Act* , R.S.O. 1990, c.E.19, as amended;

"Ministry" means the ministry of the government of Ontario responsible for the EPA and OWRA and includes all officials, employees or other persons acting on its behalf;

"Owner" means CRH Canada Group Inc., and includes its successors and assignees;

"OWRA" means the *Ontario Water Resources Act* , R.S.O. 1990, c. O.40, as amended; and

"Works" means the sewage works described in the Approval.

You are hereby notified that this environmental compliance approval is issued to you subject to the terms and conditions outlined below:

TERMS AND CONDITIONS

1. GENERAL CONDITION

1.1 The Owner shall ensure that any person authorized to carry out work on or operate any aspect of the Works is notified of this Approval and the terms and conditions herein and shall take all reasonable measures to ensure any such person complies with the same.

1.2 Except as otherwise provided by these terms and conditions, the Owner shall design, build, install, operate and maintain the Works in accordance with this Approval.

1.3 Where there is a conflict between a provision of this environmental compliance approval and any document submitted by the Owner, the conditions in this environmental compliance approval shall take precedence. Where there is a conflict between one or more of the documents submitted by the Owner, the Application shall take precedence unless it is clear that the purpose of the document was to amend the Application

1.4 Where there is a conflict between the documents listed in the Schedule A, and the application, the application shall take precedence unless it is clear that the purpose of the document was to amend the application.

1.5 The terms and conditions of this Approval are severable. If any term and condition of this environmental compliance approval, or the application of any requirement of this environmental compliance approval to any circumstance, is held invalid or unenforceable, the application of such condition to other circumstances and the remainder of this Approval shall not be affected thereby.

2. CHANGE OF OWNER

2.1 The Owner shall notify the District Manager and the Director, in writing, of any of the following changes within **thirty (30) days** of the change occurring:

(a) change of address of Owner or operating authority;

(b) change of Owner or operating authority or both, including address of new Owner or operating authority, or both;

(c) change of partners where the Owner or operating authority is or at any time becomes a partnership, and a copy of the most recent declaration filed under the *Business Names Act, R.S.O. 1990, c. B.17* ; and

(d) change of name of the corporation where the Owner or operator is or at any time becomes a corporation, and a copy of the "Initial Return" or "Notice of Change" filed under the *Corporations Information Act, R.S.O. 1990, c. C.39* , shall be included in the notification to the District Manager.

2.2 In the event of any change in ownership of the Works, the Owner shall notify in writing the succeeding owner of the existence of this Approval, and a copy of such notice shall be forwarded to the District Manager.

2.3 The Owner shall ensure that all communications made pursuant to this condition refer to the number at the top of this environmental compliance approval.

3. OPERATIONS MANUAL

3.1 The Owner shall prepare an operations manual prior to the construction, use and operation of the Works that includes, but is not limited to, the following information:

(a) operating procedures for routine operation of the Works;

(b) inspection programs, including frequency of inspection, for the Works and the methods or tests to be employed to detect when maintenance is necessary;

(c) repair and maintenance programs, including the frequency of repair and maintenance for the Works;

(d) contingency plans and procedures for dealing with a potential spill, bypasses or any other abnormal situations, including notifying the District Manager of the situation; and

(e) procedures for receiving and responding to public complaints.

3.2 The Owner shall review and update the operations manual from time to time and shall retain a copy of

the updated manual onsite at the Works. Upon request, the Owner shall make the manual available for inspection and copying by Ministry personnel.

3.3 The Owner shall make all reasonable efforts to promptly develop a seal at the bottom of the settling pond (comprised of the settling cell(s) and the recirculation cell) and to maintain the integrity of the seal when removing excess sediment from the bottom of the settling pond.

4. MONITORING AND RECORDING

4.1 The Owner shall monitor the groundwater through seven (7) groundwater monitoring wells. Existing wells may be used or new wells installed. The groundwater monitoring wells shall meet the following requirements:

(a) the wells shall be screened within the upper sand and gravel aquifer;

(b) three (3) groundwater monitoring wells shall be located along the northern boundary of the Paris South Pit, one (1) of these wells may be located at the south boundary of the Paris North Pit;

(c) three (3) groundwater monitoring wells shall be located along the southern boundary of the Paris South Pit, with one of these monitoring wells located up gradient of the County of Brant's Telfer wells P31 and P32 and another located immediately down gradient of the source water pond; and

(d) existing groundwater monitoring well MW1-12 or a suitable replacement shall be included in the monitoring.

4.2 Groundwater samples shall be collected from the seven (7) wells required by Condition 4.1 above in **May**, **August** and **December** of each year and sent for analysis in accordance with the table below:

General Chemistry	**Metals** (1)
Conductivity, pH, Hardness (as CaCO3), Total Suspended Solids (TSS), Total Dissolved Solids, Alkalinity - Bicarbonate (as CaCO3), Alkalinity - Carbonate (as CaCO3), Alkalinity - Hydroxide (as CaCO3), Total - Alkalinity (as CaCO3), Nitrate-N, Nitrite-N, Nitrate & Nitrite (as N), Phosphate-P (ortho), Sulphate, Anion Sum, Cation Sum, Cation - Anion Balance, Dissolved Organic Carbon, Total Organic Carbon, Turbidity.	Aluminium, Antimony, Arsenic, Barium, Beryllium, Bismuth, Boron, Cadmium, Calcium, Chromium, Cobalt, Chloride, Copper, Iron, Lead, Lithium, Magnesium, Manganese, Molybdenum, Nickel, Phosphorus, Potassium, Selenium, Silicon (total and dissolved silicon), Silver, Sodium, Strontium, Thallium, Tin, Titanium, Tungsten, Uranium, Vanadium, Zinc, Zirconium.

(1) - Groundwater samples are analyzed for dissolved metals. Surface water samples are analyzed for total metals.

4.3 Groundwater samples shall also be analysed for pesticides, including organochlorine pesticides and herbicides, as listed in Assessment of Herbicide and Pesticide Concerns, Dufferin Paris Pit, County of Brant, Ontario, CRA (2014) (see Schedule A), at detection limits equal to or lower than those listed. In

the event of any analytical issue (e.g. matrix interference), reasonably achievable laboratory detection limits will apply.

4.4 Surface water samples shall be collected from SW1B (previously referred to as SW1; see OWRA S53 Environmental Compliance Approval (ECA) Application and Supporting Information, Dufferin Paris Pit, County of Brant, CRA, 2013, See Schedule A) and analysed as follows:

(a) Samples shall be collected three (3) times per year in **May**, **August** and **December**; and,

(b) Samples shall be analysed for: Field Parameters General Chemistry, Metals and Oil and Grease in accordance with the table below:

Field Parameters	**General Chemistry, Metals** (1) **and Oil & Grease**
pH, temperature, conductivity, dissolved oxygen, turbidity	Total Suspended Solids, hardness, alkalinity, nutrients (total phosphorous, total nitrate, and total nitrite), major ions, metals (unfiltered samples except for aluminium which should be from a clay free sample), Oil and Grease.

(c) Surface water samples shall also be analysed for the suite of pesticides, including organochlorine pesticides and herbicides, listed in Assessment of Herbicide and Pesticide Concerns, Dufferin Paris Pit, County of Brant, Ontario, CRA (2014) (see Schedule A). For pesticides, the analytical detection limits shall be equal to or lower than those listed in Assessment of Herbicide and Pesticide Concerns, Dufferin Paris Pit, County of Brant, Ontario, CRA (2014). In the event of any analytical issue (e.g. matrix interference), reasonably achievable laboratory detection limits will apply.

4.5 The Owner shall ensure that no sediment shall be used on Site for rehabilitation without complying with all applicable laws in place at the time of reuse.

4.6 Water samples shall be collected from the recirculation cell as follows:

(a) Water samples shall be collected two (2) times during the calendar year, between **February 15th** and **December 15th**, with the first sample taken prior to the start of aggregate washing season and the second taken at the end.

4.7 The water samples collected from the recirculation cell shall be sent for analysis of general chemistry and metals (as described in condition 4.2) and pesticides, including Glyphosate, Atrazine, Atrazine Desethyl and Aminomethylphosphonic Acid (AMPA). The sampling methods shall have detection limits at levels identical to or lower than those described in Assessment of Herbicide and Pesticide Concerns, Dufferin Paris Pit, County of Brant, Ontario , CRA (2014) (see Schedule 1). In the event of any analytical issues (e.g. matrix interference), reasonably achievable laboratory detection limits will apply.

4.8 After **three (3) years** of continuous data collection, application may be made to the Director to have the monitoring conditions amended.

5. CONTINGENCY AND POLLUTION PREVENTION PLAN

5.1 The Owner shall prepare a Contingency and Pollution Prevention Plan prior to the commencement of operation of the Works that includes, but is not necessarily limited to, the following information:

(a) the name, job title and address of the Owner, person in charge, management or control of the facility.

(b) the name, job title and 24-hour telephone number of the person(s) responsible for activating the Contingency Plan.

(c) a site plan drawn to scale showing the facility, nearby buildings, streets, maintenance access and the Works (including direction(s) of flow in storm events) and any features which need to be taken into account in terms of potential impacts on access and response (including physical obstructions and location of response and clean-up equipment).

(d) a listing of telephone numbers for: local clean-up company(ies) who may be called upon to assist in responding to spills; local emergency responders including health institution(s); and MOECC Spills Action Centre 1-800-268-6060.

(e) Materials Safety Data Sheets (MSDS) for each hazardous material which may be transported or stored within the area serviced by the Works.

(f) the written procedures by which the Contingency and Pollution Prevention Plan is activated and a description of the Trigger Mechanism(s).

(g) a description of the spill response and pollution prevention training provided to employees assigned to work in the area serviced by the Works, the date(s) on which the training was provided and to whom.

(h) the date on which the Contingency and Pollution Prevention Plan was prepared and subsequently, amended.

(i) any other information the District Manager requires from time to time.

5.2 The Contingency and Pollution Prevention Plan shall be kept in a conspicuous place inside the office building. Upon request, the Owner shall make the manual available for inspection and copying by Ministry personnel.

5.3 The Contingency and Pollution Prevention Plan shall be reviewed and amended from time to time, as needed by changes in the operation of the facility.

5.4 A minimum of **thirty (30) days** prior to submission, a copy of the Plan required by Condition 5.1 shall be provided to the County of Brant and posted on the Company's website for a period of thirty (30) days to permit the County of Brant and the public the opportunity to provide comments to the Company.

6. REPORTING

6.1 In addition to the obligations under Part X of the EPA and O. Reg. 675/98 (Classification and Exemption Of Spills and Reporting of Discharges**)**, the Owner shall, within **fifteen (15) days** of the occurrence of any reportable spill as provided in Part X of the EPA and Ontario Regulation 675/98, submit a full written report of the occurrence to the District Manager describing the cause and discovery of the spill, clean-up and recovery measures taken, preventative measures to be taken and a schedule of implementation.

6.2 The Owner shall prepare and submit a report to the District Manager on an annual basis within **ninety (90) days** following the end of the period being reported upon. The first such report shall cover the first annual period following the commencement of operation of the Works and subsequent reports shall be submitted to cover successive annual periods following thereafter. The reports shall contain, but shall not be limited to, the following information:

(a) a summary and interpretation of all monitoring data with a comparison to applicable objectives, guidelines, standards, and modelled predictions;

(b) an overview of the success and adequacy of the Works;

(c) a description of any operating problems encountered and corrective actions taken;

(d) a summary of all maintenance carried out on any major structure, equipment, apparatus, mechanism or thing forming part of the Works; and

(e) any other information the District Manager requires from time to time.

7. SPECIAL CONDITION – PUBLIC ACCESSIBILITY TO REPORT

The Owner shall, make the report required by Condition 6.3 available to the community advisory panel and publicly by posting it on the Company's website at the time specified in Condition 6.3.

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

1. Condition 1 is imposed to ensure that the Works are built and operated in the manner in which they were described for review and upon which approval was granted. This condition is also included to emphasize the precedence of Conditions in the Approval and the practice that the Approval is based on the most current document, if several conflicting documents are submitted for review.

2. Condition 2 is included to ensure that the Ministry records are kept accurate and current with respect to approved Works and to ensure that subsequent owners of the Works are made aware of the Approval and continue to operate the works in compliance with it.

3. Condition 3 is included to ensure that a comprehensive operations manual governing all significant areas of operation, maintenance and repair is prepared, implemented and kept up-to-date by the Owner and made available to the Ministry. Such a manual is an integral part of the operation of the Works. Its compilation and use should assist the owner in staff training, in proper plant operation and in identifying and planning for contingencies during possible abnormal conditions. The manual will also act as a benchmark for Ministry staff when reviewing the Owner's operation of the Works.

4. Condition 4 is included to enable the Owner to evaluate and demonstrate the performance of the Works, on a continual basis, so that the Works are properly operated and maintained and so that the Works do not cause any impairment to the environment. The Condition is also included for the following purposes:

    a) To determine the chemistry of groundwater flowing onto and from that part of the Paris Pit property located south of Watts Pond Road. This area is known as the Paris South Pit.

    b) To determine whether the recirculation and source ponds have an effect on groundwater chemistry.

5. Condition 5 is included to ensure that the Owner will implement the spill contingency plan, such that the environment is protected and deterioration, loss, injury or damage to any person(s) or property is prevented.

6. Condition 6 is included to provide a performance record for future references, to ensure that the Ministry is made aware of problems as they arise, and to provide a compliance record for all the terms and conditions outlined in this Approval, so that the Ministry can work with the Owner in resolving any problems in a timely manner.

7. Condition 7 is included to provide the general public with the report required in Condition 6.2.

SCHEDULE 'A'

This Schedule contains a list of supporting documentation / information received, reviewed and relied upon in the issuance of this Approval.

1. Environmental Compliance Approval Application for Industrial Sewage Works submitted by J. Richard Murphy, P.Eng., of Conestoga-Rovers & Associates Ltd., and signed by Kevin Mitchell, Manager Environment and Properties, of Holcim (Canada) Inc., dated June 03, 2013; and all supporting documentation and information.

2. CRA. 2013. OWRA S53 Environmental Compliance Approval (ECA) Application and Supporting Information, Dufferin Paris Pit, County of Brant, Ontario, signed and stamped by Michael R. Tomka, P. Eng., signed and stamped by Gary Lagos, P. Geo. and signed by J. Richard Murphy, P. Eng. of Conestoga-Rovers & Associates, June 2013, #078410, Report Number: 3.

3. CRA (2014). Assessment of Herbicide and Pesticide Concerns, Dufferin Paris Pit, County of Brant, Ontario; signed and stamped by Gary Lagos, P. Geo. and signed by J. Richard Murphy, P. Eng. of Conestoga-Rovers & Associates, July 2014, #078410, Report Number: 5.

4. CRA. 2015. Re: Modifications to Works for Existing ECA Application Dufferin Paris Pit, Paris, Ontario; letter addressed to Mr. Adedoyin Adenowo, Senior Wastewater Engineer, Ministry of Environment and Climate Change from Michael Tomka, P. Eng. of Conestoga-Rovers & Associates, April 16, 2015, Reference No. 078410.

5. AE. 2010. Alberta Tier 1Soil and Groundwater Remediation Guidelines, Alberta Environment, December 2010, ISBN: 978-0-7785-9015-6 (Printed Edition) ISBN: 978-0-7785-9947-0 (On-line Edition), Retrieved May 6, 2015 from: http://environment.gov.ab.ca/info/library/7751.pdf

6. NSE. 2014. Environmental Quality Standards for Contaminated Sites Rationale and Guidance, Nova Scotia Environment, Environmental Quality Standards for Contaminated Sites, April 2014, retrieved May 6, 2015 from: https://novascotia.ca/nse/contaminatedsites/docs/EQS-Contaminated%20Sites-Rationale-and-Guidance-NSE-2014.pdf

7. Environmental Compliance Approval Application for Industrial Sewage Works submitted by Richard Chatfield, P.Eng., GHD Limited, and signed by Jennah Pettenuzzo, Environmental Coordinator - Dufferin Aggregates,dated February 10, 2022; and all supporting documentation and information.

Upon issuance of the environmental compliance approval, I hereby revoke Approval No(s). 0302-ALCK5W issued on April 12, 2017.

In accordance with Section 139 of the *Environmental Protection Act,* you may by written notice served upon me and the Ontario Land Tribunal within 15 days after receipt of this notice, require a hearing by the Tribunal. Section 142 of the *Environmental Protection Act* provides that the notice requiring the hearing ("the Notice") shall state:

a. The portions of the environmental compliance approval or each term or condition in the environmental compliance approval in respect of which the hearing is required, and;
b. The grounds on which you intend to rely at the hearing in relation to each portion appealed.

Pursuant to subsection 139(3) of the *Environmental Protection Act,* a hearing may not be required with respect to any terms and conditions in this environmental compliance approval, if the terms and conditions are substantially the same as those contained in an approval that is amended or revoked by this environmental compliance approval.

The Notice should also include:

1. The name of the appellant;
2. The address of the appellant;
3. The environmental compliance approval number;
4. The date of the environmental compliance approval;
5. The name of the Director, and;
6. The municipality or municipalities within which the project is to be engaged in.

And the Notice should be signed and dated by the appellant.

This Notice must be served upon:

Registrar*
Ontario Land Tribunal
655 Bay Street, Suite 1500
Toronto, Ontario
M5G 1E5
OLT.Registrar@ontario.ca

and

The Director appointed for the purposes of Part II.1 of the *Environmental Protection Act*
Ministry of the Environment, Conservation and Parks
135 St. Clair Avenue West, 1st Floor
Toronto, Ontario
M4V 1P5

*** Further information on the Ontario Land Tribunal's requirements for an appeal can be obtained directly from the Tribunal at: Tel: (416) 212-6349 or 1 (866) 448-2248, or www.olt.gov.on.ca**

The above noted activity is approved under s.20.3 of Part II.1 of the *Environmental Protection Act.*

DATED AT TORONTO this 14th day of March, 2022

Fariha Pannu.

Fariha Pannu, P.Eng.
Director
appointed for the purposes of Part II.1 of the
Environmental Protection Act

AA/
c: District Manager, MECP Guelph District Office
Richard Chatfield, P.Eng., GHD Limited

Appendix C

Stratigraphic and Instrumentation Logs – 2022 Monitoring Wells

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: Paris Pit
PROJECT NUMBER: 078410
CLIENT: Dufferin Aggregates
LOCATION: Watts Pond Road, Paris, Ontario

HOLE DESIGNATION: MW12-23
DATE COMPLETED: 30 March 2023
DRILLING METHOD: Sonic
FIELD PERSONNEL: P. Whittier

NORTHING: 4786577.98
EASTING: 551607.04

	ELEV. BGS
TOP OF CASING	260.38
TOP OF RISER	260.26
GROUND SURFACE	259.32

DEPTH m BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. BGS
0	TOPSOIL, trace sand, brown, moist	
2	GP - SAND AND GRAVEL, trace silt, brown, dry	257.65
3	- trace cobble from 3.05 to 3.66m BGS	
4	SP - SAND AND GRAVEL, trace silt, brown, dry	255.67
8	ML - SILT (TILL) with sand, brown, dry	251.70
12	- moist at 12.19m BGS	

MONITOR INSTALLATION: 8" Concrete Seal; Bentonite Grout; Well Screen; Bentonite

SAMPLE NUMBER	INTERVAL	REC (%)	'N' Value
1		60	
2		80	
3		60	
4		80	
5		90	
6		80	
7		80	
8		80	
9		80	

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

File: \\GHDNET\GHD\CA\WATERLOO\PROJECTS\66210784 10\TECH\GINT\LOG DATABASE\078410-WA-032023.GPJ Library File: GHD_ENVIRO_V08.GLB Report: OVERBURDEN LOG Date: 13/4/23

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: Paris Pit
PROJECT NUMBER: 078410
CLIENT: Dufferin Aggregates
LOCATION: Watts Pond Road, Paris, Ontario

HOLE DESIGNATION: MW12-23
DATE COMPLETED: 30 March 2023
DRILLING METHOD: Sonic
FIELD PERSONNEL: P. Whittier

DEPTH m BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. BGS	MONITOR INSTALLATION	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (%)	SAMPLE 'N' Value
15				10		80	
16				11		80	
17				12		80	
18	END OF BOREHOLE @ 18.29m BGS	241.04	COMPLETION DETAILS Screened interval: 253.41 to 250.35BGS 5.91 to 8.97m BGS Length: 3.06m Diameter: 51mm Slot Size: 0.010 Material: PVC SCH 80 Seal: 259.32 to 253.84BGS 0.00 to 5.49m BGS Material: Bentonite Sand Pack: 253.84 to 250.18BGS 5.49 to 9.14m BGS Material: #3 Sand				
19							
20							
21							
22							
23							
24							
25							
26							
27							

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

File: \\GHDNET\GHD\CA\WATERLOO\PROJECTS\66210784 10\TECH\GINT\LOG DATABASE\078410-WA-032023.GPJ Library File: GHD_ENVIRO_V08.GLB Report: OVERBURDEN LOG Date: 13/4/23

Ontario — Ministry of the Environment, Conservation and Parks

Measurements recorded in: [x] Metric [ ] Imperial

Well Tag No. (Place Sticker and/or Print Below): A256542

Well Record

Regulation 903 Ontario Water Resources Act

Well Owner's Information

First Name	Last Name/Organization	E-mail Address	[ ] Well Constructed by Well Owner
	CRH CANADA		

Mailing Address (Street Number/Name)	Municipality	Province	Postal Code	Telephone No. (inc. area code)
2300 STEELES AVE W.	Concord	ON	L4K5X6	9057617800

Well Location

Address of Well Location (Street Number/Name)	Township	Lot	Concession
708 WATTS POND Rd.			

County/District/Municipality	City/Town/Village	Province	Postal Code
	PARIS	Ontario	N3L5E2

UTM Coordinates	Zone	Easting	Northing	Municipal Plan and Sublot Number	Other
NAD 83	17T	551009	4785140		

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

General Colour	Most Common Material	Other Materials	General Description	Depth (m/ft) From	To
brown	SAND, gravel	cobbles	loose	0	2.4
grey	clay,	silt, STONES	dense	2.4	15.5
grey	SAND,	gravel, silt, clay	well sorted	15.5	29.6
black	shale		Fractured	29.6	31.4
green	shale		brittle	31.4	35.9
grey	limestone		hard	35.9	44.8

Annular Space

Depth Set at (m/ft) From	To	Type of Sealant Used (Material and Type)	Volume Placed (m³/ft³)
0	6	hydrated bentonite	
6	33.5	Native Material	

Method of Construction

[ ] Cable Tool [ ] Diamond
[ ] Rotary (Conventional) [ ] Jetting
[ ] Rotary (Reverse) [ ] Driving
[ ] Boring [ ] Digging
[ ] Air percussion
[x] Other, specify: Dual Rotary

Well Use

[ ] Public [ ] Commercial [ ] Not used
[x] Domestic [ ] Municipal [ ] Dewatering
[ ] Livestock [ ] Test Hole [ ] Monitoring
[ ] Irrigation [ ] Cooling & Air Conditioning
[ ] Industrial
[ ] Other, specify

Construction Record - Casing

Inside Diameter (cm/in)	Open Hole OR Material (Galvanized, Fibreglass, Concrete, Plastic, Steel)	Wall Thickness (cm/in)	Depth (m/ft) From	To
15.24	steel	0.188	0	33.5

Construction Record - Screen

Outside Diameter (cm/in)	Material (Plastic, Galvanized, Steel)	Slot No.	Depth (m/ft) From	To
15.24	Rock		33.5	44.8

Status of Well

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

Water Details

Water found at Depth	Kind of Water	Gas
20.29 (m/ft)	[ ] Fresh [ ] Untested [ ] Other, specify	[ ] Gas
(m/ft)	[ ] Fresh [ ] Untested [ ] Other, specify	[ ] Gas
(m/ft)	[ ] Fresh [ ] Untested [ ] Other, specify	[ ] Gas

Hole Diameter

Depth (m/ft) From	To	Diameter (cm/in)
0	6	25.4

Results of Well Yield Testing

After test of well yield, water was:
[x] Clear and sand free
[ ] Other, specify

If pumping discontinued, give reason:

Pump intake set at (m/ft): 30.4 m

Pumping rate (l/min / GPM): 48

Duration of pumping: ___ hrs + 60 min

Final water level end of pumping (m/ft): 20.51

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

Recommended pump depth (m/ft):

Recommended pump rate (l/min/GPM):

Well production (l/min/GPM):

Disinfected?
[x] Yes [ ] No

Draw Down Time (min)	Water Level (m/ft)	Recovery Time (min)	Water Level (m/ft)
Static Level	20.29		20.51
1	20.43	1	20.44
2	20.45	2	20.42
3	20.46	3	20.41
4	20.47	4	20.40
5	20.48	5	20.395
10	20.49	10	20.385
15	20.49	15	20.375
20	20.495	20	20.365
25	20.495	25	20.36
30	20.50	30	20.36
40	20.505	40	20.355
50	20.51	50	20.35
60	20.51	60	20.345

Map of Well Location

Please provide a map below following instructions on the back.

See Attachment

Comments:

Well Contractor and Well Technician Information

Business Name of Well Contractor	Well Contractor's Licence No.
Insitu Contractors Inc	6875

Business Address (Street Number/Name)	Municipality
48 Dawson Rd	Guelph

Province	Postal Code	Business E-mail Address
ON	N1H5V1	general@insitucontractors.com

Bus. Telephone No. (inc. area code)	Name of Well Technician (Last Name, First Name)
5197032020	Kopec, Kevin

Well Technician's Licence No.	Signature of Technician and/or Contractor	Date Submitted
3653	Kevin Kopec	2022071 9

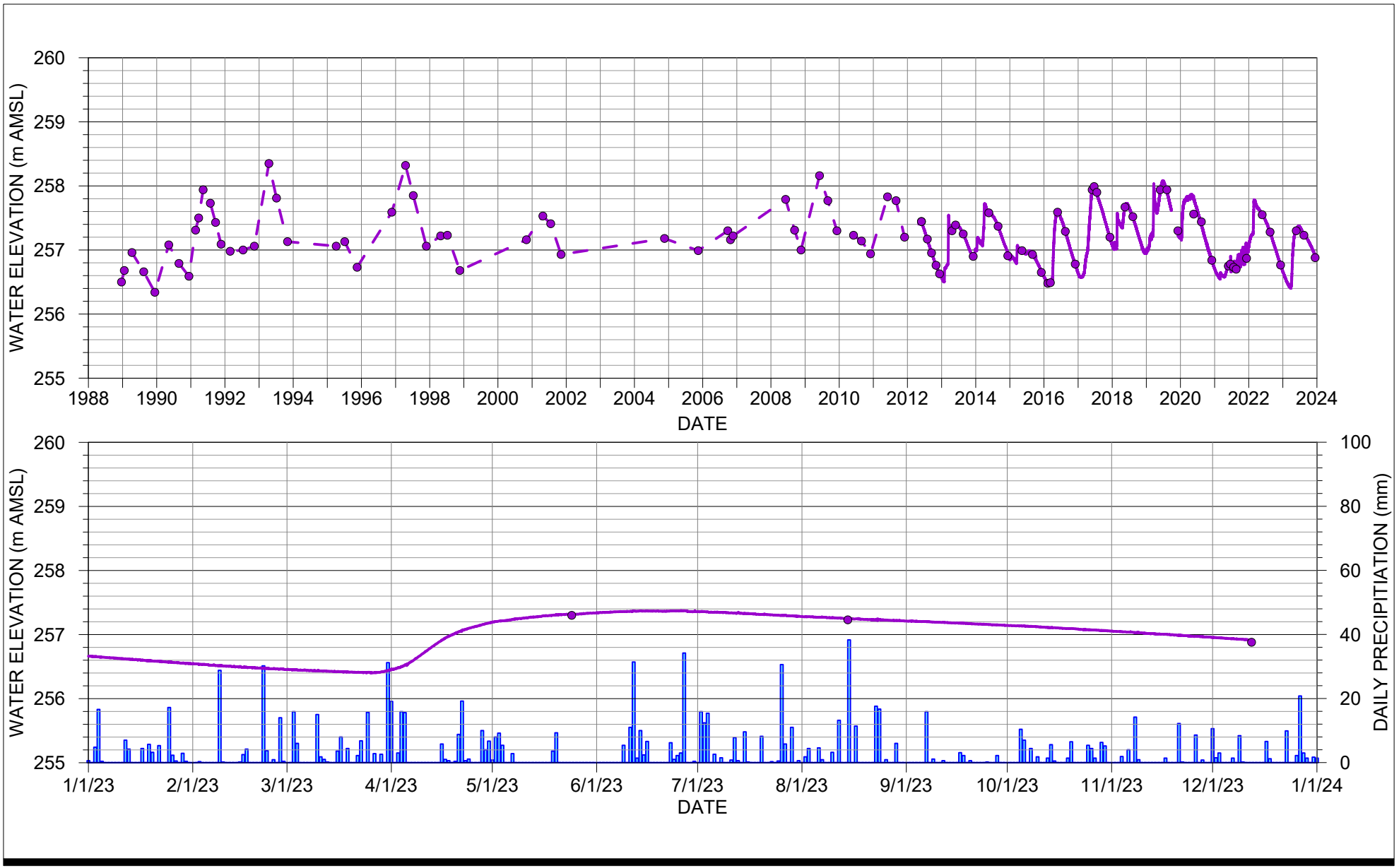
Well owner's information package delivered	Date Package Delivered	Ministry Use Only
[ ] Yes [ ] No	Y Y Y Y M M D D	Audit No. Z389662
	Date Work Completed: 2022062 0	Received

Ministry's Copy


708 Watts Pond Rd.
Watts Pond Rd
Legend
Well
Well
W River Rd
N
1000 ft
Google Earth

Appendix D

Hydrographs - Historical Hydraulic Monitoring Data



LEGEND

BH88-1-I Daily Precipitation

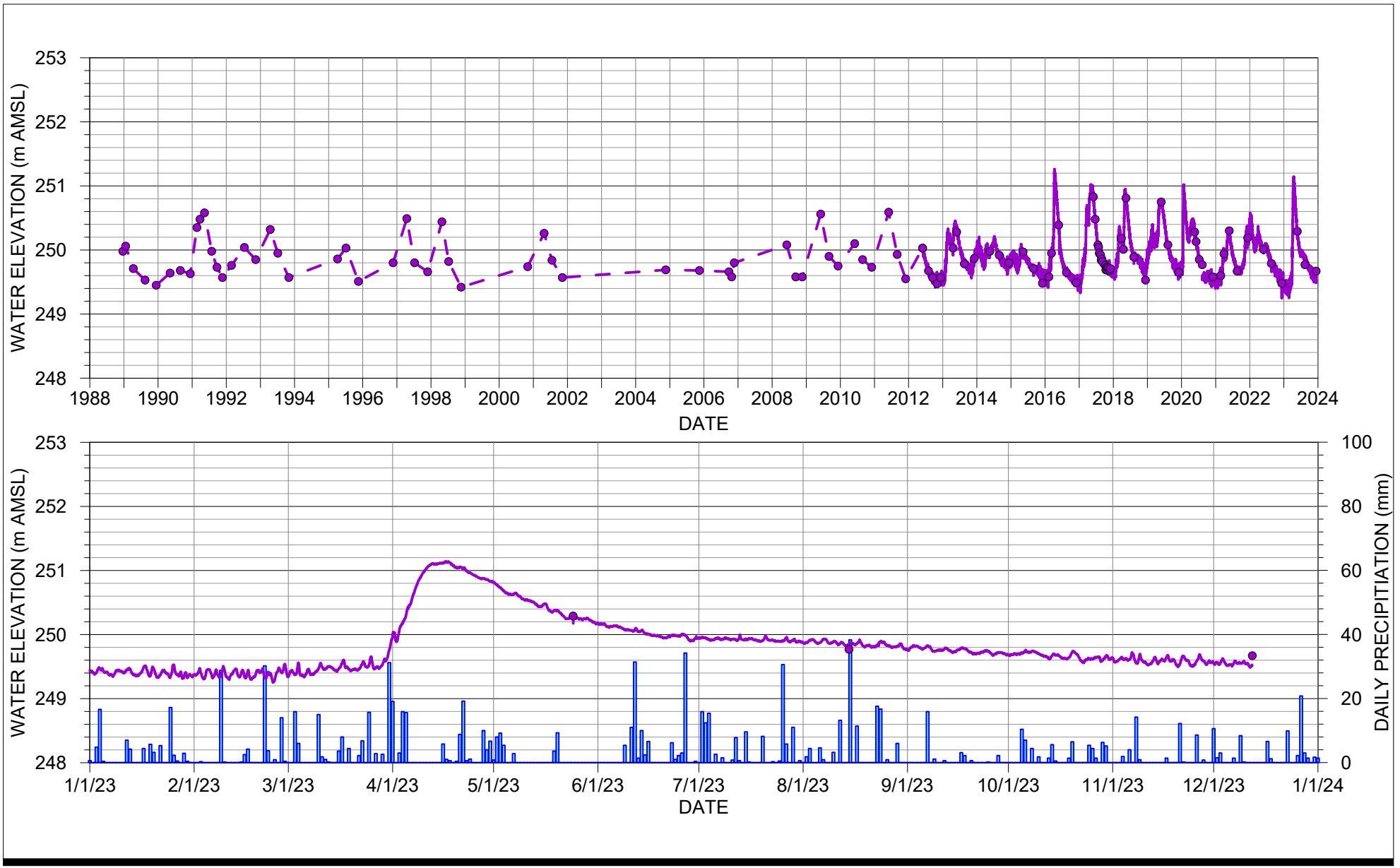
DUFFERIN AGGREGATES - PARIS PIT
COUNTY OF BRANT, ONTARIO

Project No. **078410-20**
Date **January 16, 2024**

HYDROGRAPH - BH88-1-I

FIGURE D.1

HEG file: N:\CA\Waterloo\HEG\HEG\78410\GRAPHER\AMR\2023\APPD\BH88-1-I.grf



LEGEND

BH88-2-I Daily Precipitation

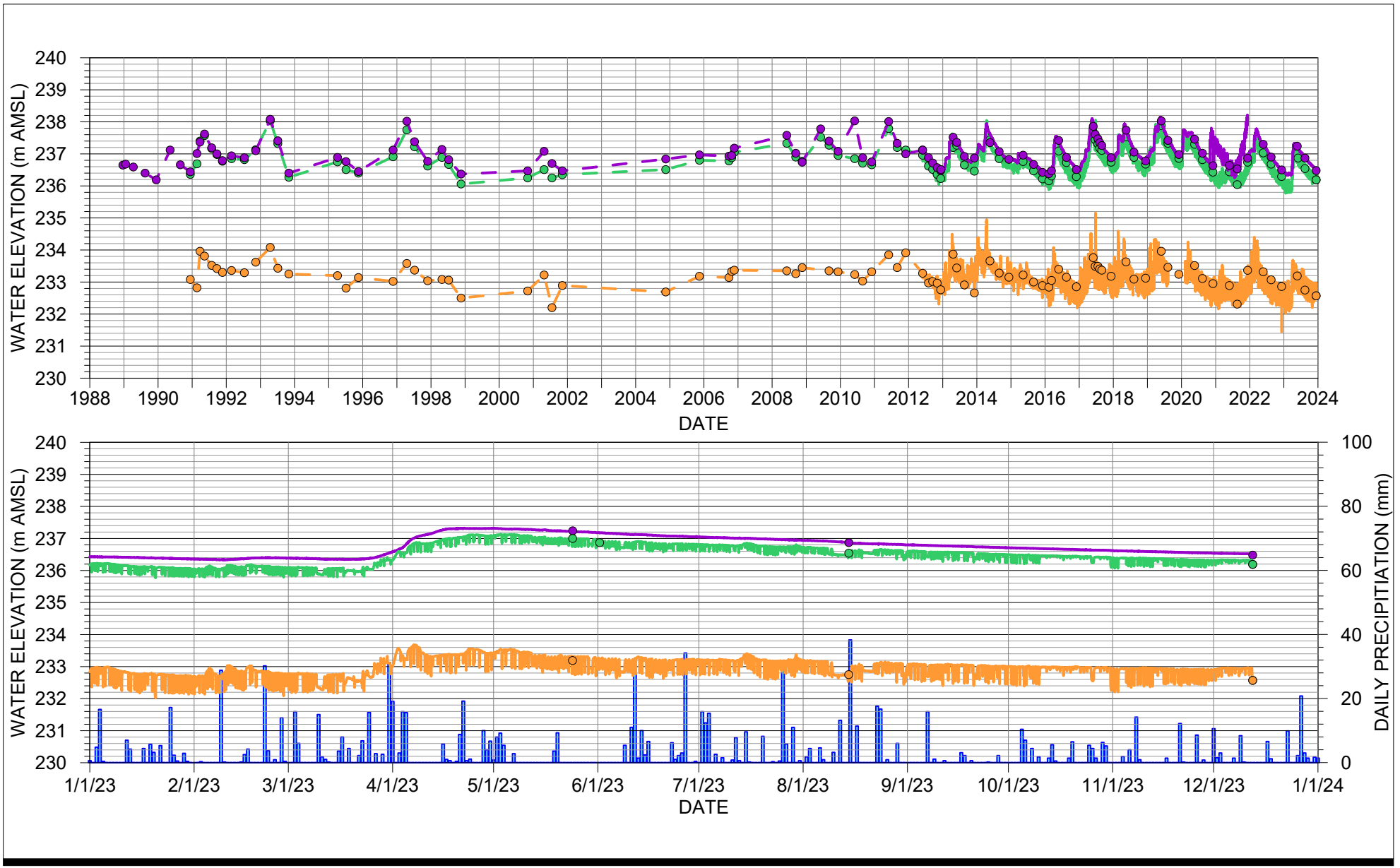
DUFFERIN AGGREGATES - PARIS PIT
COUNTY OF BRANT, ONTARIO

Project No. **078410-20**
Date **January 16, 2024**

HYDROGRAPH - BH88-2-I

FIGURE D.2

HEG file: N:\CA\Waterloo\HEG\HEG\78410\GRAPHER\AMR\2023\APPD\BH88-2-I.grf



LEGEND

BH88-4-I
BH88-4A-II
BH88-4A-I
Daily Precipitation

GHD

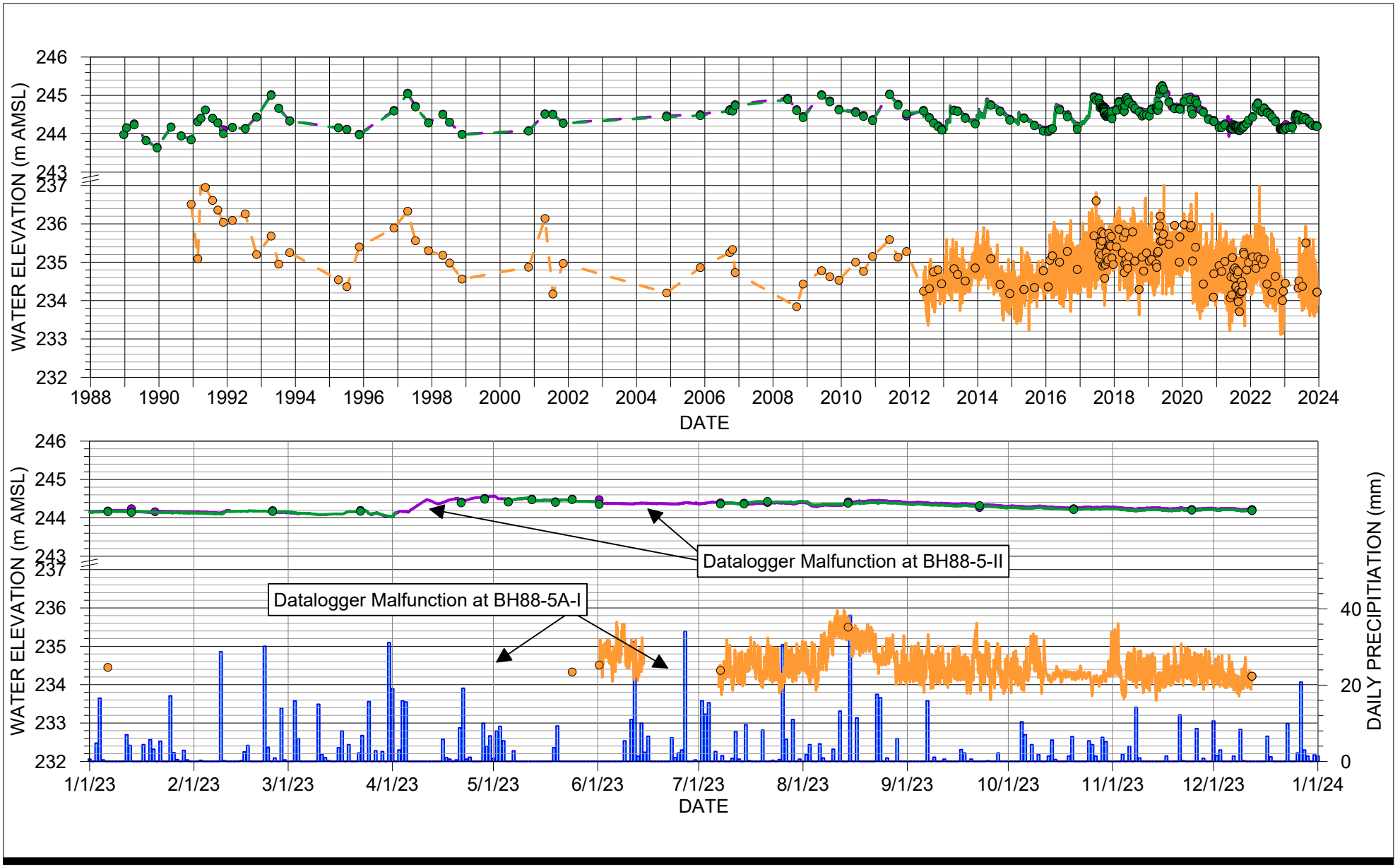
DUFFERIN AGGREGATES - PARIS PIT
COUNTY OF BRANT, ONTARIO

Project No. **078410-20**
Date **January 16, 2024**

HYDROGRAPH - BH88-4 NEST

FIGURE D.3

HEG file: N:\CA\Waterloo\HEG\HEG\78410\GRAPHER\AMR\2023\APPD\BH88-4 Nest.grf



LEGEND

BH88-5-I
BH88-5A-I
BH88-5-II
Daily Precipitation

GHD

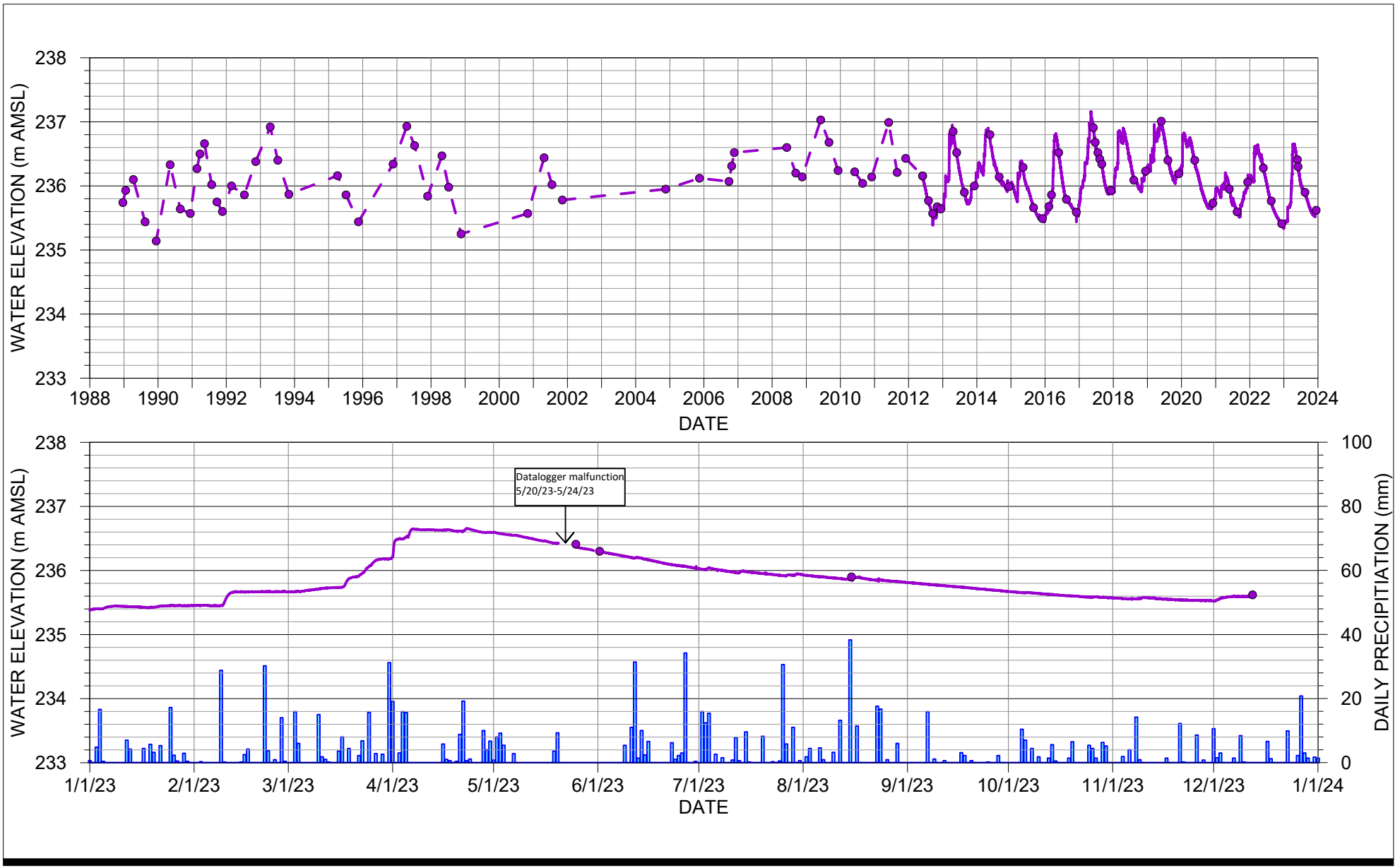
DUFFERIN AGGREGATES - PARIS PIT
COUNTY OF BRANT, ONTARIO

Project No. **078410-20**
Date **January 16, 2024**

HYDROGRAPH - BH88-5 NEST

FIGURE D.4

HEG file: N:\CA\Waterloo\HEG\HEG\78410\GRAPHER\AMR\2023\APPD\BH88-5 Nest.grf



LEGEND

BH88-6-I Daily Precipitation

GHD

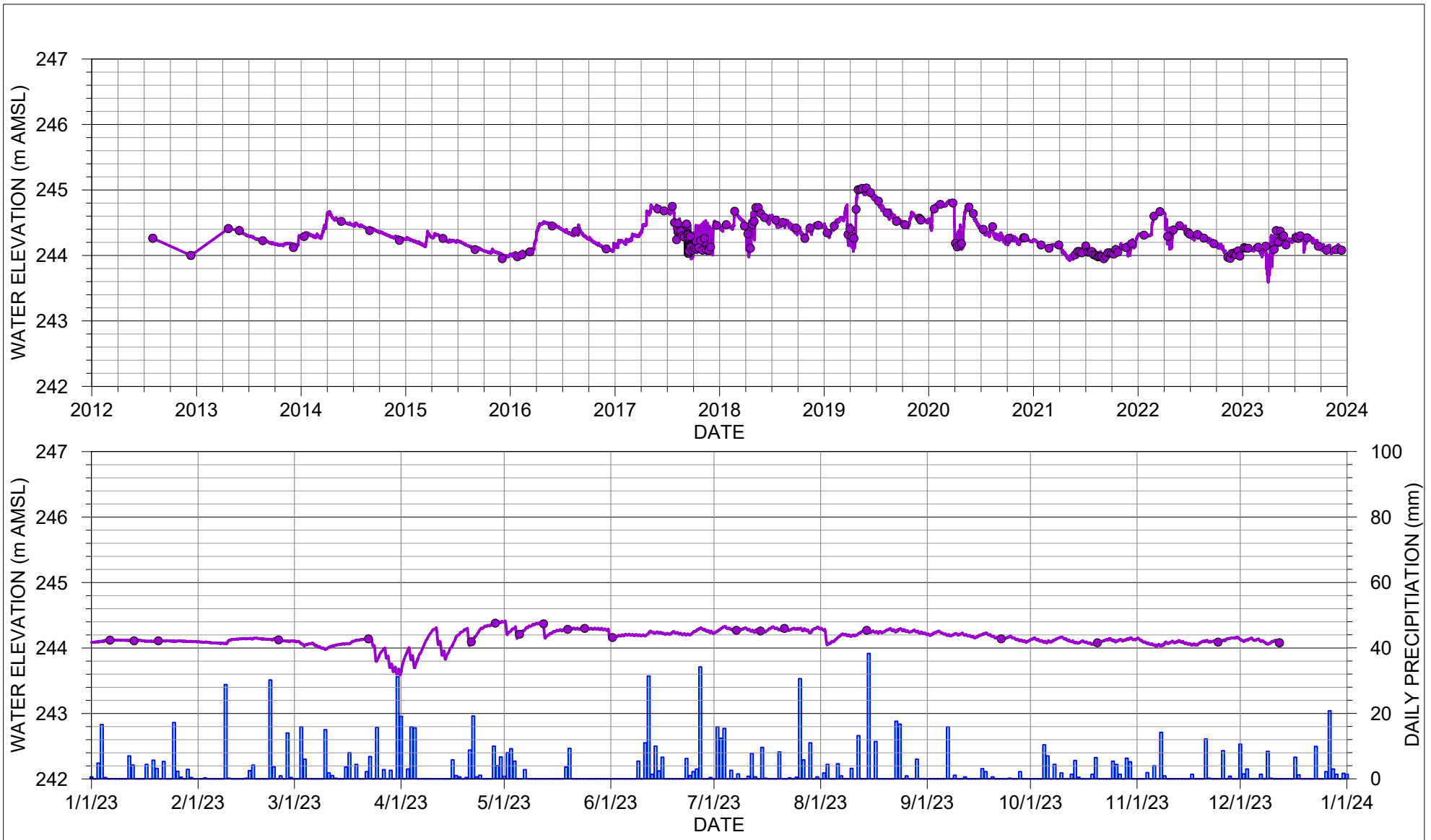
DUFFERIN AGGREGATES - PARIS PIT
COUNTY OF BRANT, ONTARIO

HYDROGRAPH - BH88-6-I

Project No. **078410-20**
Date **January 16, 2024**

FIGURE D.5

HEG file: N:\CA\Waterloo\HEG\HEG\78410\GRAPHER\AMR\2023\APPD\BH88-6-I.grf



LEGEND

MW1-12 Daily Precipitation

GHD

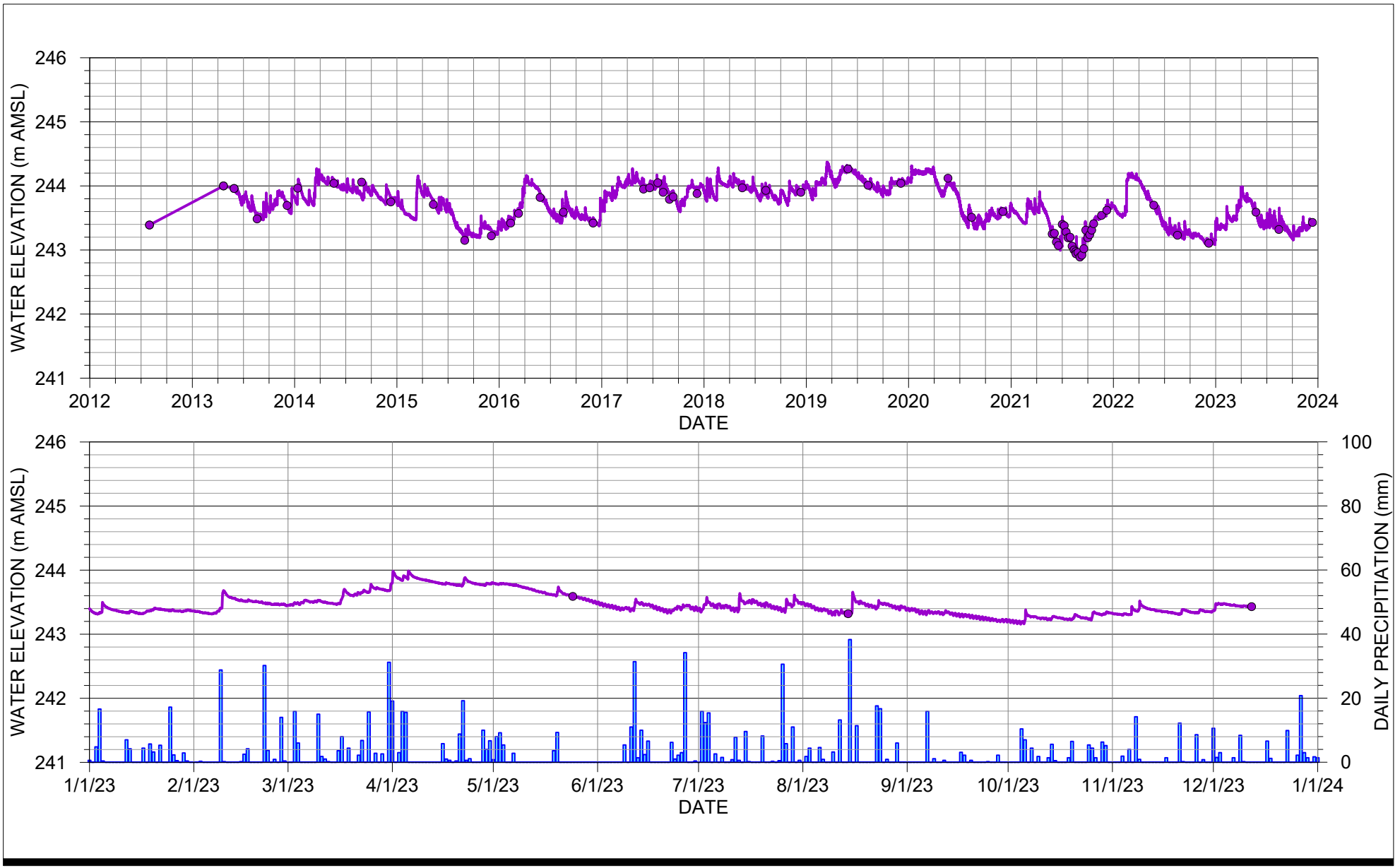
DUFFERIN AGGREGATES - PARIS PIT
COUNTY OF BRANT, ONTARIO

HYDROGRAPH - MW1-12

Project No. **078410-20**
Date **January 16, 2024**

FIGURE D.6

HEG file: N:\CA\Waterloo\HEG\HEG\78410\GRAPHER\AMR\2023\APPD\MW1-12.grf



LEGEND

MW2-12 Daily Precipitation

GHD

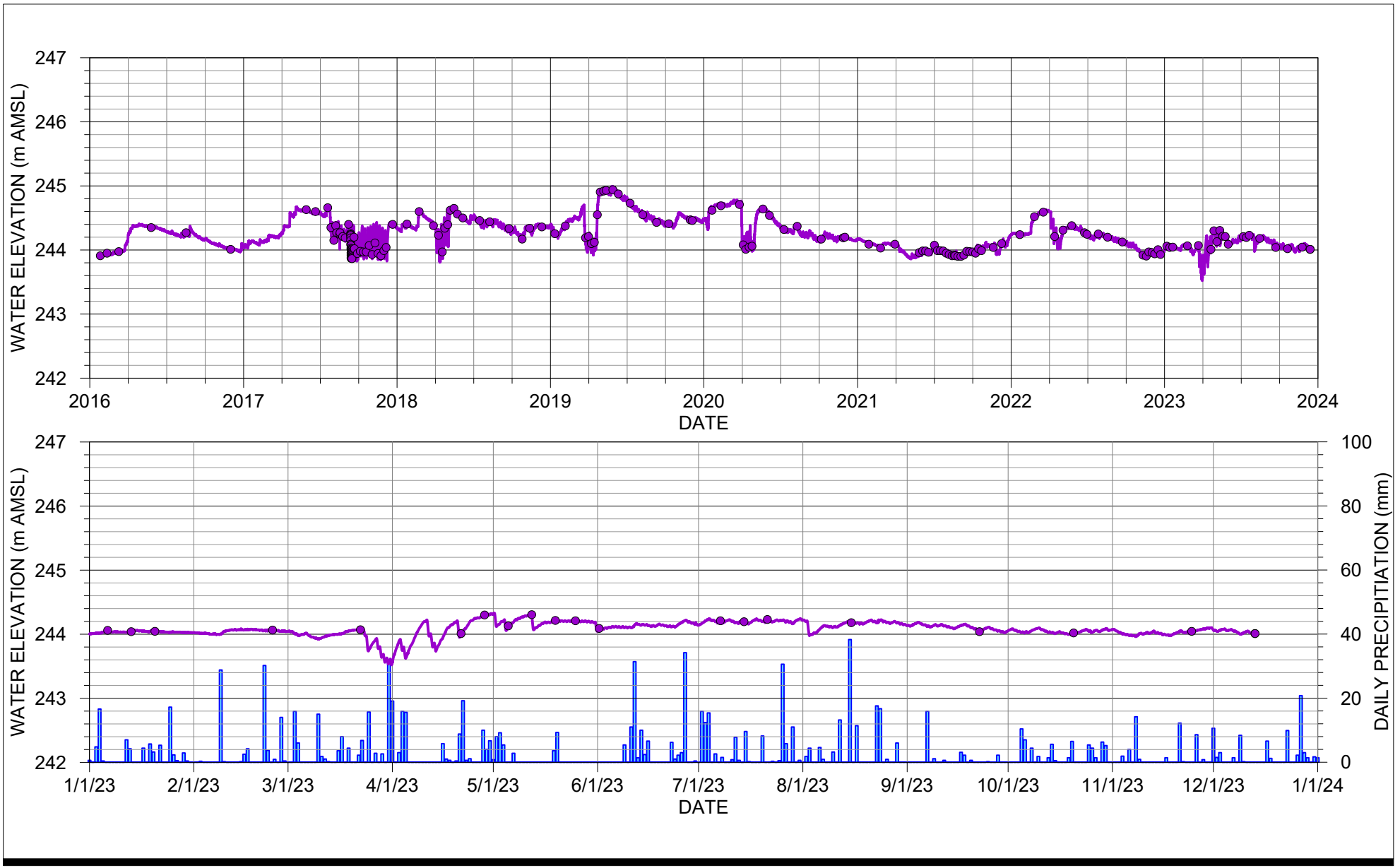
DUFFERIN AGGREGATES - PARIS PIT
COUNTY OF BRANT, ONTARIO

Project No. **078410-20**
Date **January 16, 2024**

HYDROGRAPH - MW2-12

FIGURE D.7

HEG file: N:\CA\Waterloo\HEG\HEG\78410\GRAPHER\AMR\2023\APPD\MW2-12.grf



LEGEND

MW3-16 Daily Precipitation

GHD

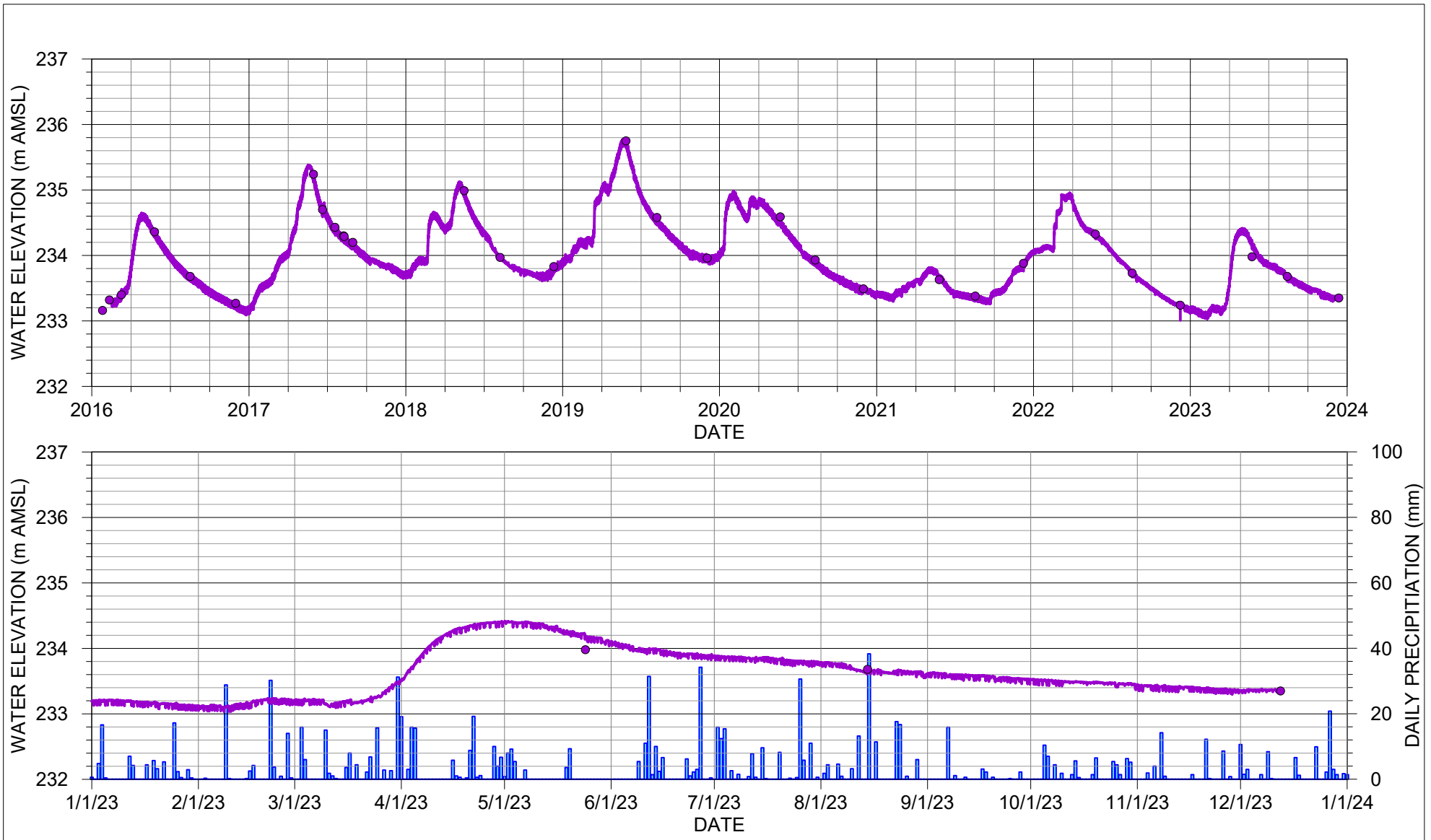
DUFFERIN AGGREGATES - PARIS PIT
COUNTY OF BRANT, ONTARIO

Project No. **078410-20**
Date **January 16, 2024**

HYDROGRAPH - MW3-16

FIGURE D.8

HEG file: N:\CA\Waterloo\HEG\HEG\78410\GRAPHER\AMR\2023\APPD\MW3-16.grf



LEGEND

MW4-16 — Daily Precipitation

GHD

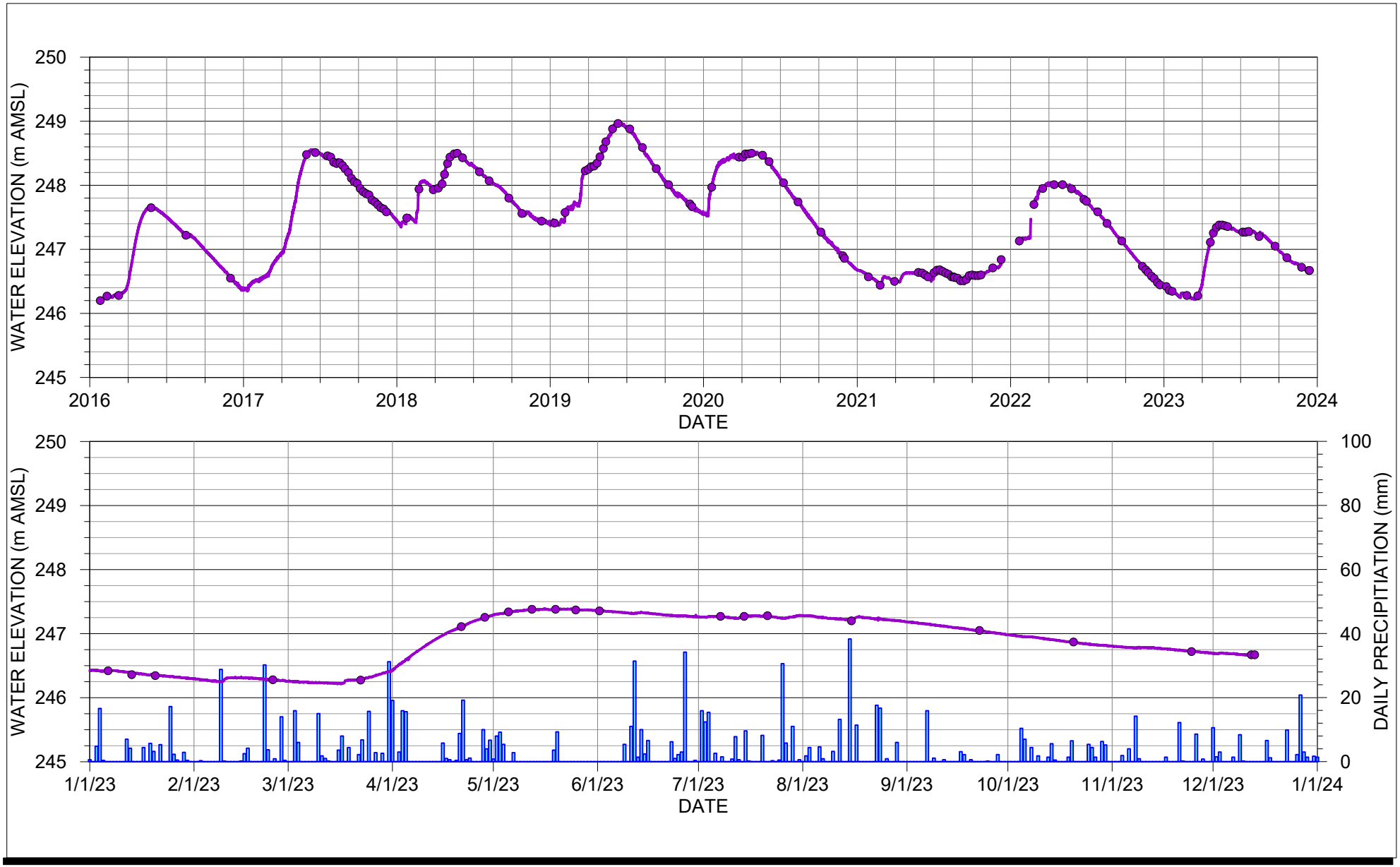
DUFFERIN AGGREGATES - PARIS PIT
COUNTY OF BRANT, ONTARIO

Project No. **078410-20**
Date **January 16, 2024**

HYDROGRAPH - MW4-16

FIGURE D.9

HEG file: N:\CA\Waterloo\HEG\HEG\78410\GRAPHER\AMR\2023\APPD\MW4-16.grf



LEGEND

MW5-16 Daily Precipitation

GHD

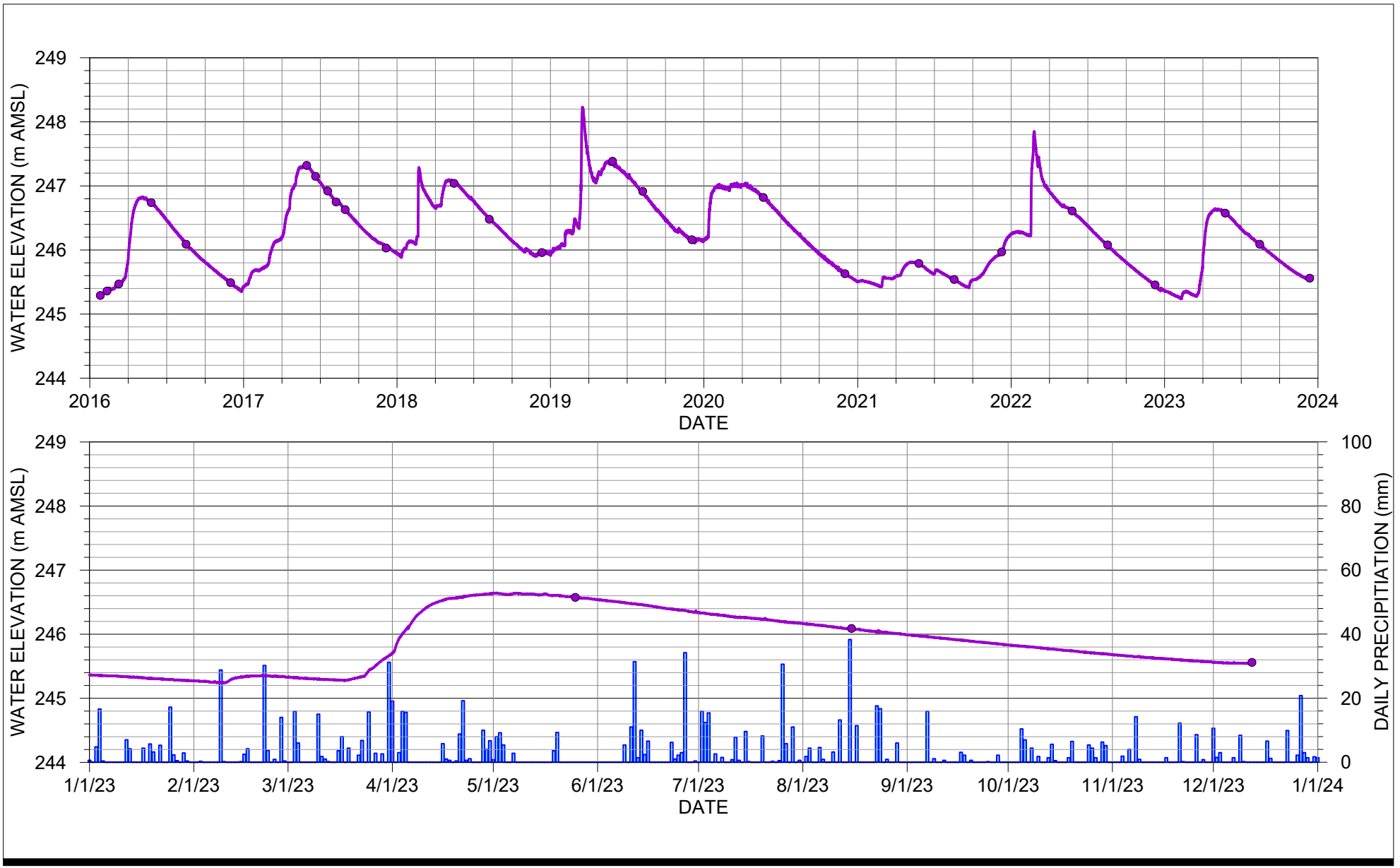
DUFFERIN AGGREGATES - PARIS PIT
COUNTY OF BRANT, ONTARIO

HYDROGRAPH - MW5-16

Project No. **078410-20**
Date **January 16, 2024**

FIGURE D.10

HEG file: N:\CA\Waterloo\HEG\HEG\78410\GRAPHER\AMR\2023\APPD\MW5-16.grf



LEGEND

MW6-16 Daily Precipitation

GHD

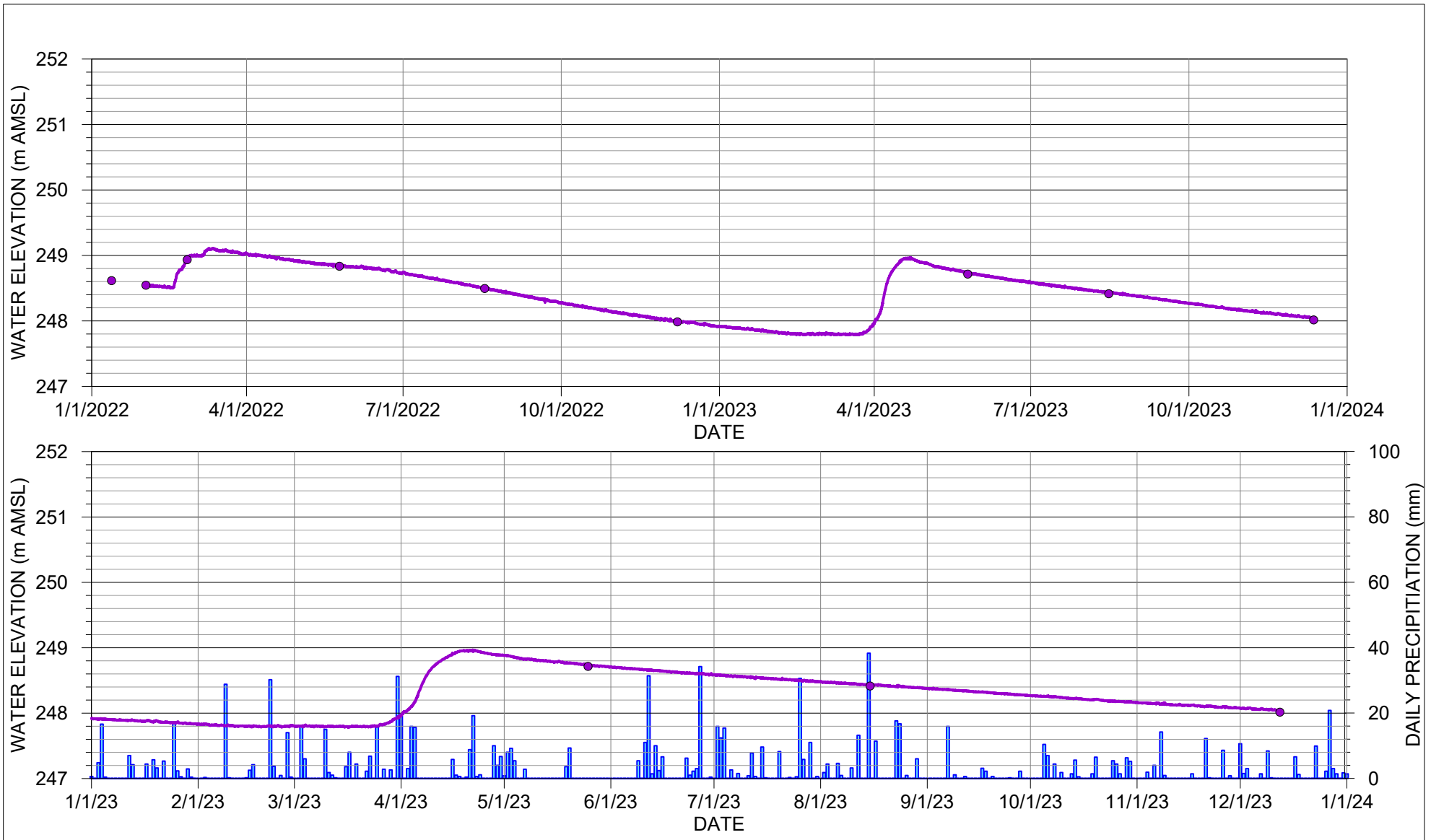
DUFFERIN AGGREGATES - PARIS PIT
COUNTY OF BRANT, ONTARIO

HYDROGRAPH - MW6-16

Project No. **078410-20**
Date **January 16, 2024**

FIGURE D.11

HEG file: N:\CA\Waterloo\HEG\HEG\78410\GRAPHER\AMR\2023\APPD\MW6-16.grf



LEGEND

MW8-22 Daily Precipitation

GHD

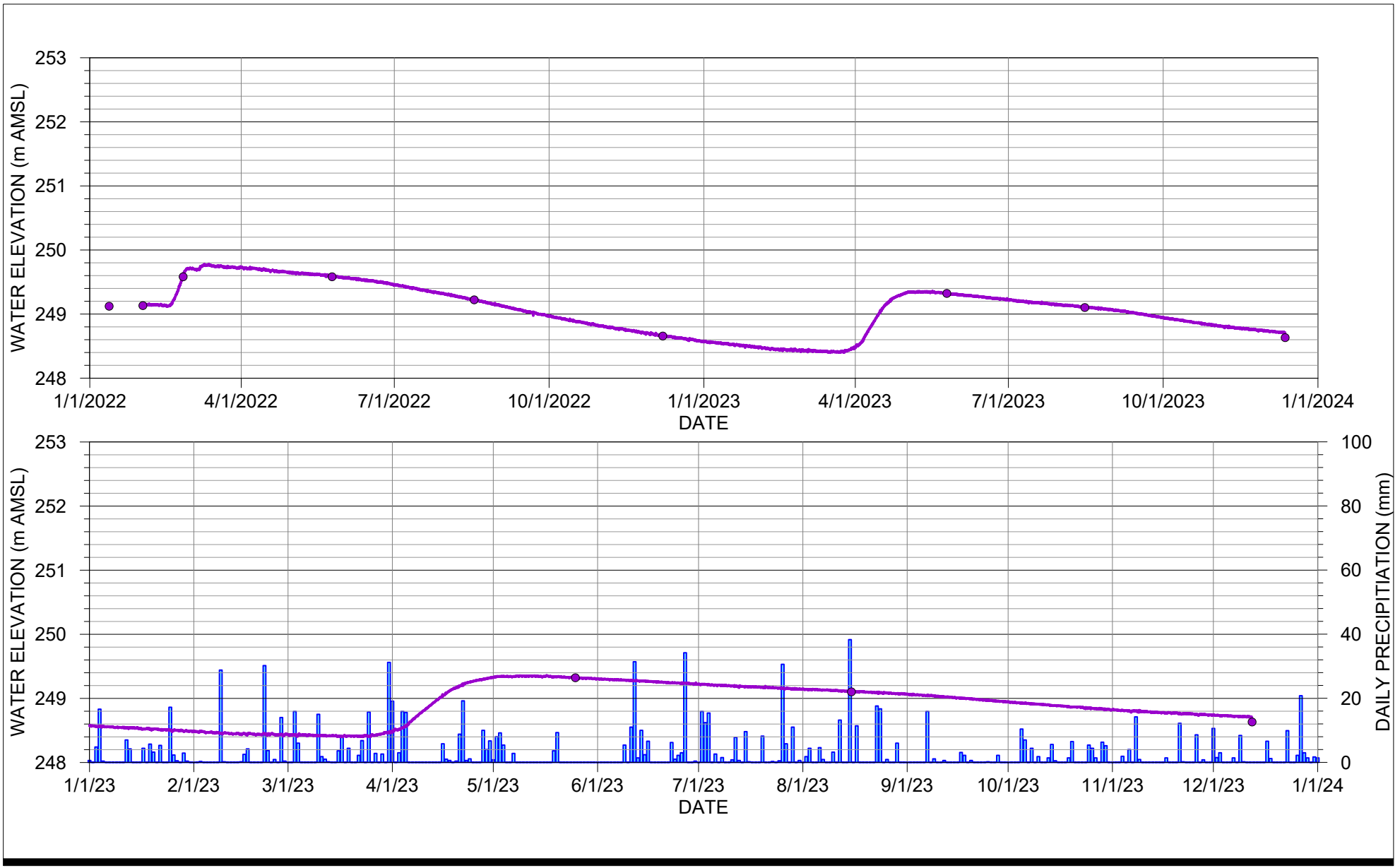
DUFFERIN AGGREGATES - PARIS PIT
COUNTY OF BRANT, ONTARIO

Project No. **078410-20**
Date **January 16, 2024**

HYDROGRAPH - MW8-22

FIGURE D.12

HEG file: N:\CA\Waterloo\HEG\HEG\78410\GRAPHER\AMR\2023\APPD\MW8-22.grf



LEGEND

MW9-22 — Daily Precipitation

GHD

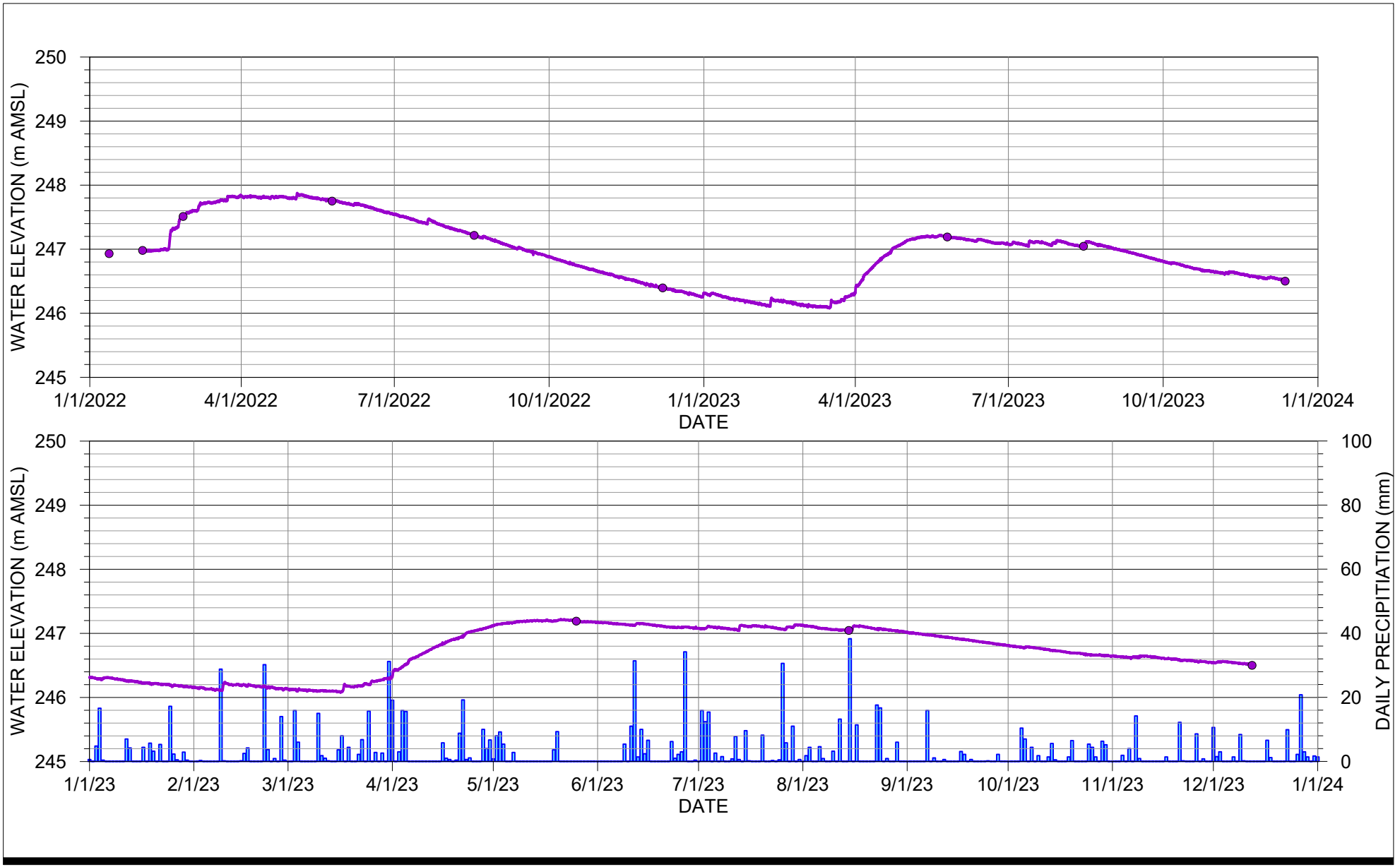
DUFFERIN AGGREGATES - PARIS PIT
COUNTY OF BRANT, ONTARIO

Project No. **078410-20**
Date **January 16, 2024**

HYDROGRAPH - MW9-22

FIGURE D.13

HEG file: N:\CA\Waterloo\HEG\HEG\78410\GRAPHER\AMR\2023\APPD\MW9-22.grf



LEGEND

MW10-22 — Daily Precipitation

GHD

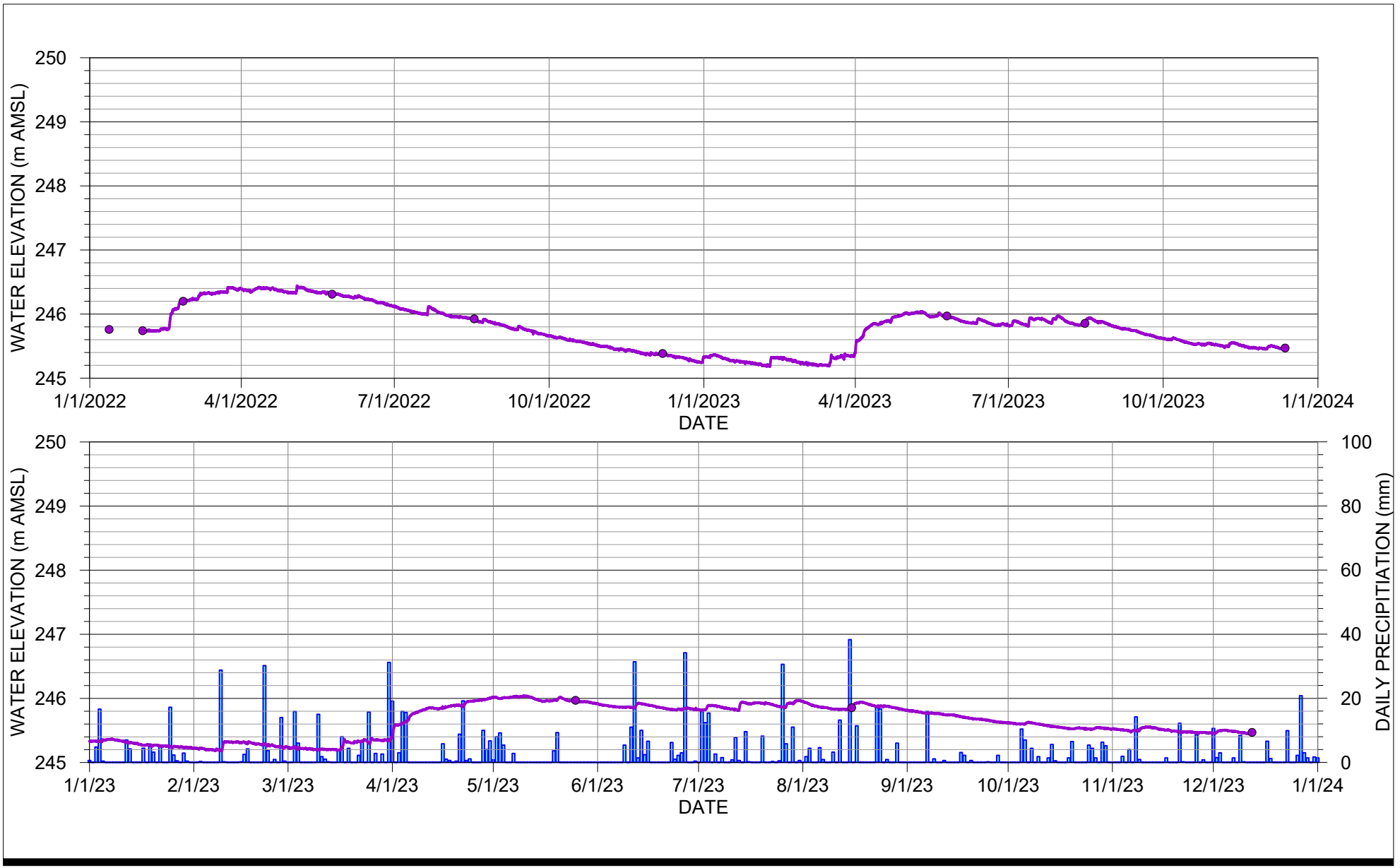
DUFFERIN AGGREGATES - PARIS PIT
COUNTY OF BRANT, ONTARIO

Project No. **078410-20**
Date **January 16, 2024**

HYDROGRAPH - MW10-22

FIGURE D.14

HEG file: N:\CA\Waterloo\HEG\HEG\78410\GRAPHER\AMR\2023\APPD\MW10-22.grf



LEGEND

MW11-22 Daily Precipitation

GHD

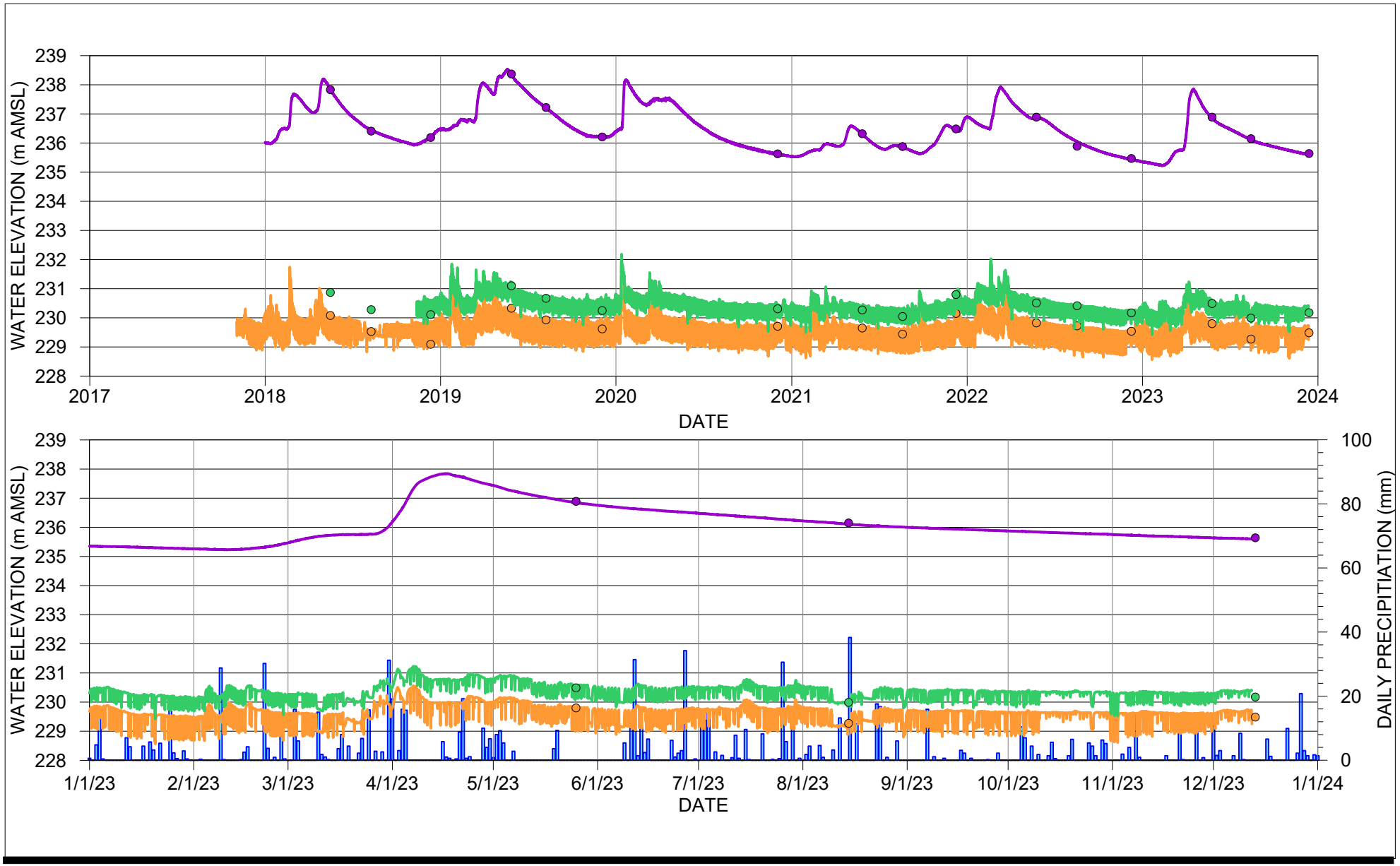
DUFFERIN AGGREGATES - PARIS PIT
COUNTY OF BRANT, ONTARIO

Project No. **078410-20**
Date **January 16, 2024**

HYDROGRAPH - MW11-22

FIGURE D.15

HEG file: N:\CA\Waterloo\HEG\HEG\78410\GRAPHER\AMR\2023\APPD\MW11-22.grf



LEGEND

Daily Precipitation

OW1-96A

OW1-96B

OW1-96C

GHD

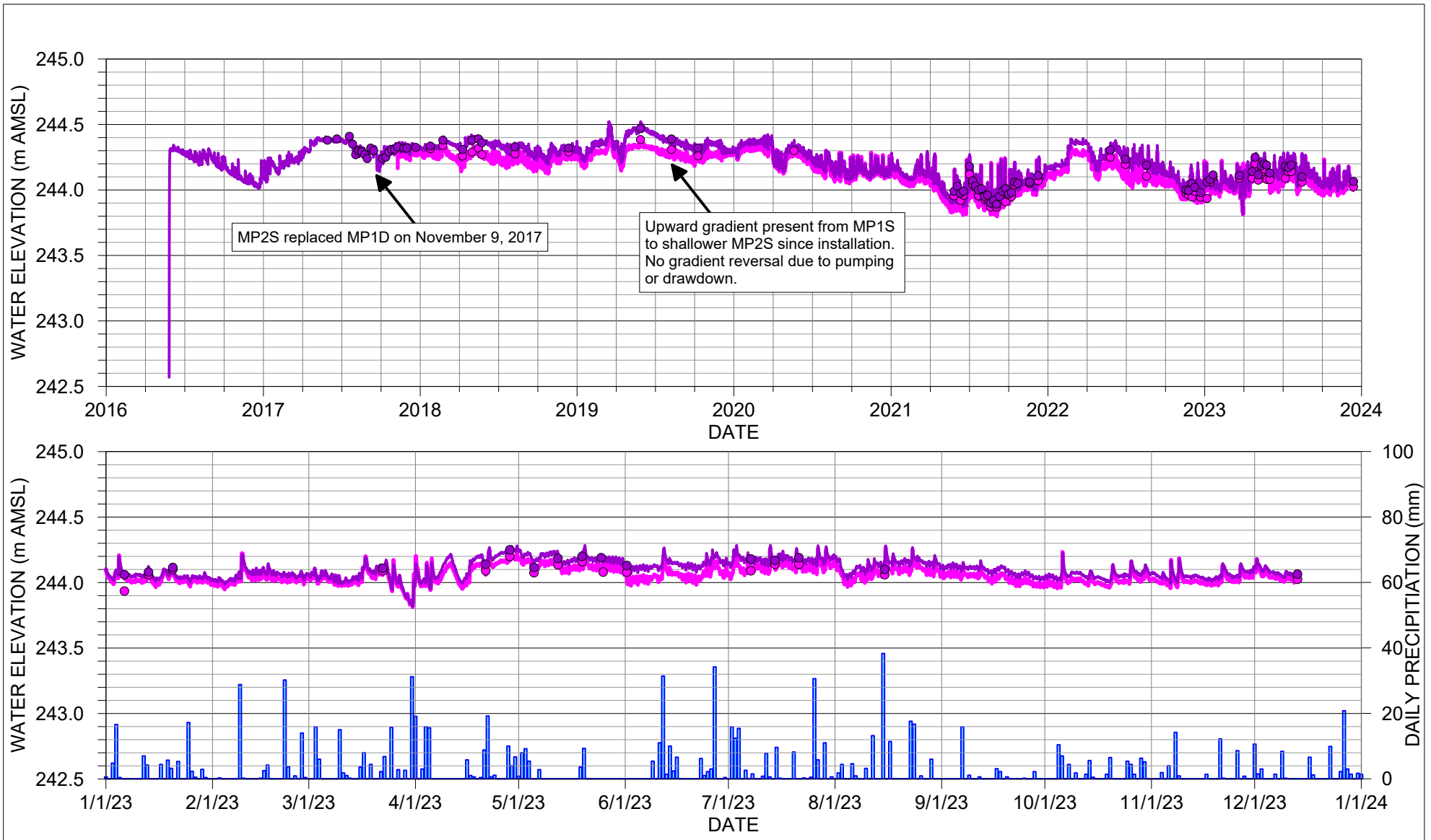
DUFFERIN AGGREGATES - PARIS PIT
COUNTY OF BRANT, ONTARIO

HYDROGRAPH - OW1-96 NEST

Project No. **078410-20**
Date **January 16, 2024**

FIGURE D.16

HEG file: N:\CA\Waterloo\HEG\HEG\78410\GRAPHER\AMR\2023\APPD\OW1-96.grf



LEGEND

MP1S

MP2S

Daily Precipitation

GHD

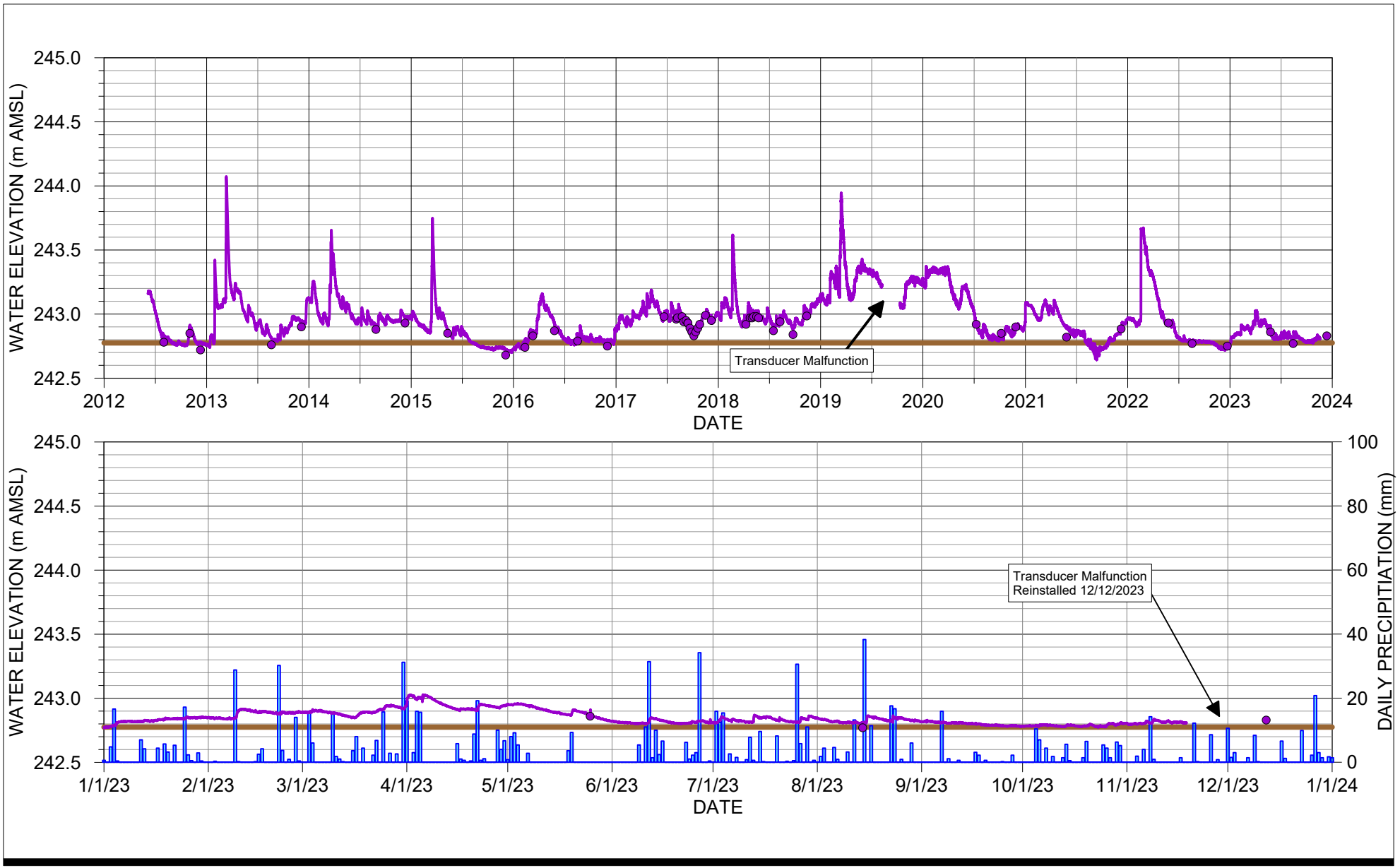
DUFFERIN AGGREGATES - PARIS PIT
COUNTY OF BRANT, ONTARIO

HYDROGRAPH
MULTI-LEVEL PIEZOMETER

Project No. **078410-20**
Date **January 16, 2024**

FIGURE D.17

HEG file: N:\CA\Waterloo\HEG\HEG\78410\GRAPHER\AMR\2023\APPD\MP1.grf



LEGEND

SW1A

Approximate Ground Surface

Daily Precipitation

GHD

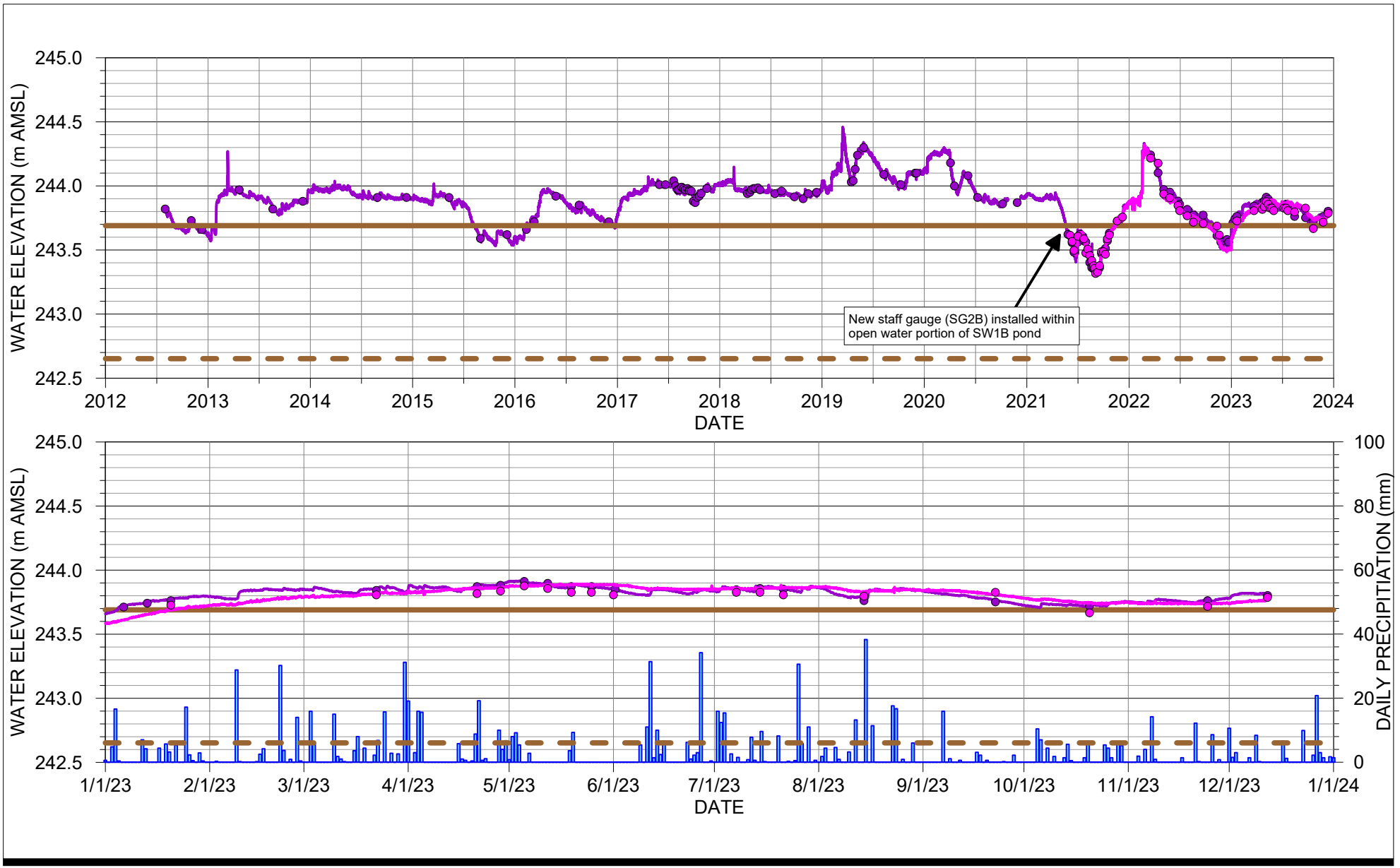
DUFFERIN AGGREGATES - PARIS PIT
COUNTY OF BRANT, ONTARIO

HYDROGRAPH - SW1A

Project No. **078410-20**
Date **January 16, 2024**

FIGURE D.18

HEG file: N:\CA\Waterloo\HEG\HEG\78410\GRAPHER\AMR\2023\APPD\SW1A.grf



LEGEND

- SW1B
- SG2B
- Daily Precipitation
- Approximate Ground Surface at SW1B
- Approximate Ground Surface at SG2B

GHD

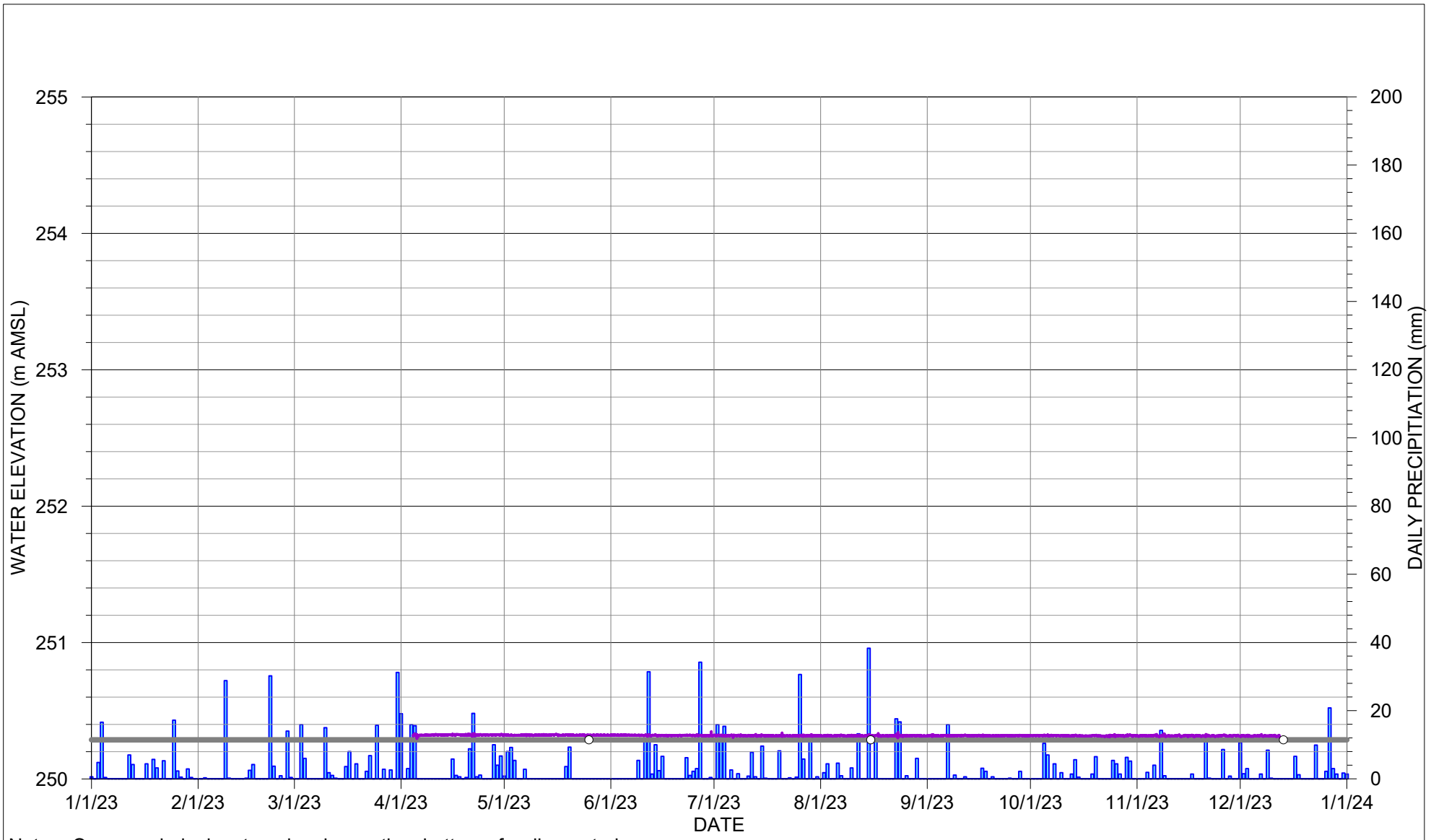
DUFFERIN AGGREGATES - PARIS PIT
COUNTY OF BRANT, ONTARIO

HYDROGRAPH - SW1B

Project No. **078410-20**
Date **January 16, 2024**

FIGURE D.19

HEG file: N:\CA\Waterloo\HEG\HEG\78410\GRAPHER\AMR\2023\APPD\SW1B.grf



Note: - Open symbols denote a dry observation; bottom of well reported.
- Top of till reported at 251.70 m AMSL

LEGEND
MW12-23
Daily Precipitation
Bottom of Well

GHD

DUFFERIN AGGREGATES - PARIS PIT
COUNTY OF BRANT, ONTARIO

HYDROGRAPH - MW12-23

Project No. **078410-20**
Date **January 16, 2024**

FIGURE D.20

HEG file: N:\CA\Waterloo\HEG\HEG\78410\GRAPHER\AMR\2023\APPD\MW12-23.grf