



REPORT

STORMWATER MANAGEMENT AND EROSION AND SEDIMENT CONTROL PLAN

READY-MIX CONCRETE PLANT, 424 HILLIS ROAD, TOWNSHIP OF SELWYN,
PETERBOROUGH COUNTY, ON

Submitted to:

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Table of Contents

1	INTRODUCTION	1
2	BACKGROUND INFORMATION.....	1
2.1	Site Description	1
2.2	Project Description	1
2.3	Scope of Work.....	2
3	STORMWATER MANAGEMENT PLAN	3
3.1	Site Reconnaissance	3
3.2	Existing Drainage Conditions and Estimation of Peak Flows	3
3.2.1	Southeast Pond Storage Capacity Assessment	4
3.3	Stormwater Management Plan and Design Criteria.....	4
3.3.1	Storm water quantity control	5
3.3.2	Storm water quality control	5
3.4	Proposed Drainage Conditions	5
3.5	Proposed Stormwater Management Design	6
3.5.1	Stormwater quality control	6
3.5.2	Stormwater quantity control	6
3.5.3	Ditches and Swales	7
3.5.4	Culverts	8
3.5.5	Riprap Aprons	9
4	EROSION AND SEDIMENT CONTROL.....	9
5	WATER QUALITY MONITORING PROGRAM	9
6	CONCLUSIONS AND RECOMMENDATIONS	10
7	SPILL PREVENTION, CONTROL AND COUNTERMEASURE PLAN	11
8	LIMITATIONS AND ASSUMPTIONS	11
9	CLOSURE	12
	REFERENCES	13

TABLES

Table 3-1: Existing (pre-development) conditions area and runoff parameters4

Table 3-2: Existing (pre-development) conditions peak flows and runoff volumes4

Table 3-3: Estimated Southeast Pond Available Storage Capacity4

Table 3-4: Proposed (post-development) conditions area and runoff parameters5

Table 3-5: Proposed (post-development) conditions peak flows and runoff volumes6

Table 3-6: Required storage volumes for quantity control.....6

Table 3-7: Required storage volume for quantity control6

Table 3-8: Summary of Ditches and Swales Sizing8

Table 3-9: Sizing of the culverts under the entrance and ring roads.....8

Table 3-10: Sizing of the Riprap Aprons at the Onsite Ditches and Culvert Outlets9

APPENDICES

APPENDIX A

Context Plan, Catchment Area and Licensed Site Plan

APPENDIX B

Site Visit Photos

APPENDIX C

Stormwater Management Calculations, and Elevation Contours and Regulatory Flood Maps

APPENDIX D

EPA SWMM Model Results

APPENDIX E

Sunrock Spill Prevention, Control and Countermeasure (SPCC) Plan

1 INTRODUCTION

WSP Canada Inc. (WSP) was retained by Sunrock Industries Canada ULC (Sunrock) to provide stormwater management consulting services at the Dunford Pit located on 424 Hillis Rd, Township of Selwyn, Peterborough County, Ontario (the site) – see Figure 1 and Figure A-1 in Appendix A.

The site has been licensed by the Ministry of Natural Resources and Forestry (MNR) for aggregate pit extraction under the Aggregate Resources Act (ARA) (Class A License 3293) with a maximum of 127,000 tonnes of aggregate leaving the site annually. The licensed pit (see the original licensed 1992 site rehabilitation plan in Appendix A) is located approximately 400 m to the west of the intersection of Highway 12 and Hillis Rd. Sunrock is currently planning to develop part of the site for the construction of a new ready-mix concrete (RMC) plant.

This stormwater management study has been undertaken to facilitate the zoning by-law amendment application and planning approval for the development of the proposed RMC plant at the Site. The primary objectives of this Stormwater Management (SWM) and Erosion & Sediment Control (ESC) Plan are to provide:

- Background information regarding the subject property (the site) and the proposed development plans
- Existing (pre-development) and proposed (post-development) site drainage conditions
- SWM and ESC plan for the proposed development conditions

This report has been developed in accordance with the guidelines published in the Peterborough County Official Plan (2022), the Otonabee Region Conservation Authority (ORCA) Watershed Planning & Regulations Policy Manual (2015), and the design criteria and requirements of the City of Peterborough (the City).

2 BACKGROUND INFORMATION

2.1 Site Description

The site is located on 424 Hillis Road, Township of Selwyn, Peterborough County, Ontario. The site is part of a sub-catchment of an unnamed creek, which is a tributary of Jackson River that eventually discharges into Little Lake (see Figure A-2 in Appendix A). The site is located within the jurisdiction of the Otonabee Region Conservation Authority (ORCA). The sub-catchment area encompassing the site has an area of approximately 2,924 hectares (ha).

As shown on Figure 1, the site includes wooded areas to the west and northeast, an agriculture land at the northwest corner, an existing pond along the southeast area of the site that is separated through a berm from another pond located on the neighbouring aggregate pit to the east, an existing scale house and a small building. Two residential lots exist northwest and southeast from the site boundary, and Hillis Road bounds the site to the south.

Figure 2.1 shows 1-meter elevation contour mapping of the site derived from Light Detection and Ranging (LiDAR) capture during 2025. From the contours, it is seen that the highest elevation of approximately 285 meters above sea level (masl) is along the west site boundary and the lowest elevation of about 246 masl is at the surface water of the existing southeast pond. The general surface runoff drainage direction is anticipated to be from northwest to southeast.

2.2 Project Description

The RMC plant will be developed in the central area of the site that is at a relatively milder slope compared to other areas within the site (see Figure 2.1). The proposed RMC plant has an area of approximately 427 m² and includes

access to the plant is planned to be the same through the existing site driveway, situated approximately 395 m west of the centreline of County Road 12. An 8-m wide ring road will service the RMC plant and its associated facilities including a distribution yard southwest of the plant area.

The RMC plant area will include a self-contained truck washout weir, silos that will store cement, an aggregate stockpiling area, a conveyor to load the aggregates into bins, internal aggregate and sand loading bins, weigh hoppers, a dust collector, water tanks, and a loading point for transferring the materials to the ready-mix trucks. An employee/batch office, enclosed batch plant, and employee parking are also planned to be constructed within the ring road area. Additional onsite facilities include aggregate and sand mining and associated stockpiles, truck parking, returned concrete processing and storage, and a distribution yard - all permitted under the existing ARA site plan as noted by Sunrock.

Within the ring road surrounding the RMC plant, it is assumed that the area will generally be graded at 1% - 2% min. slope toward southeast. Otherwise, the zone surrounding the plant, the loading hopper, and the cement unloading location will be graded at 5% min. slope, to keep high-pH process water internalized for recycling back into the plant during operations. A suitable sump-pump configuration located at the lowest spot of that zone will be used for collecting the process water and pumping it back into the plant. Water collection and utility services will be installed to support the plant operations. More details of stormwater management works are explained in Section 3 below.

2.3 Scope of Work

Consultations with the Town of Selwyn (the Town), Peterborough County and the ORCA were initiated in November 2024, to discuss the terms of references (ToR) and identify the site-specific concerns and stormwater management design criteria for the Site. Further discussions with the ORCA and MHBC (the project Planner) during January 2026 and recognizing the Site is already licensed under the ARA as a below-water table aggregate pit, resulted in the following revised ToR for this scoped SWM report:

- No water balance assessment is required for the site,
- Documentation that no stormwater/runoff leaves the site and that all water will be directed to the onsite southeast pond,
- Peak flow calculations to confirm that all stormwater runoff could be retained on site in the existing southeast pond,
- Confirming no potential for offsite impacts, or no creation or increase to flooding/natural hazards,
- Documentation of any ESC and quality controls that may be implemented at the site,
- The ARA Site Plan will be updated to add the RMC plant use. No separate Site Plan will be submitted as part of the Zoning By-Law Amendment Application.

The following sections describe how the relevant SWM requirements of the ToR have been met.

3 STORMWATER MANAGEMENT PLAN

3.1 Site Reconnaissance

A site visit was conducted in June 2025 (see the photo log in Appendix B), to identify the drainage pathways and observe the existing conditions land covers among other relevant features to stormwater management and drainage. Land cover consists of meadow and vegetation except at the central section (west of the entrance road) that is open space without vegetation/grassed area (see Photos 1 and 3) and the southeast corner that has an existing pond (the southeast pond; see Photos 1, 2 and 3). The northwest corner of the site was observed to be forested (see Photo 6). No roadside ditch was observed along Hillis Road (see Photo 7), and the outlet shown on the 1992 Licensed Site Plan (see Appendix A) at the southeast corner of the site does not exist.

The house on the residential lot southeast of the site was observed to be at a relatively higher elevation than the surface water elevation in the southeast pond (see Photos 1 and 3). An existing shallow berm (approximately 1 m higher than the water level in the southeast pond) was observed separating between the onsite pond and the pond on the neighbouring aggregate site (ARA License 3348; see Figure 2.1, and Photos 1 and 2). Two onsite groundwater monitoring wells were also observed on site (see Photos 4 and 5).

3.2 Existing Drainage Conditions and Estimation of Peak Flows

The site is relatively steep and slopes from northwest to southeast. Under the existing conditions, runoff from the site drains toward the onsite southeast pond. The property is licensed under the ARA (License 3293), and so is the adjacent east site (License 3348) for aggregate extraction. The approved Site Plan (dated August 24, 1992) in Appendix A shows the northeast berm separating the 2 existing ponds on both sites as removed. It is WSP's understanding, based on the 1992 licensed Site Plan, that it is therefore permitted to remove the existing berm separating between the 2 ponds at some point in the future (see Photo 1 in Appendix B). Alternatively, if the berm is not removed in future, overflow across the berm between the 2 ponds is permitted.

Figure 1 provides details of the existing conditions land use and soil types. It is seen that most of the site area (approximately 75%) is disturbed land. Figure 2.1 shows the elevation contour mapping reflecting the site topography. A review of the ORCA regulated areas was also completed, and it indicates that the site is located outside the floodplain mapping by the ORCA (ORCA, 2026); see Figure C-2 in Appendix C. The small, regulated area shown on Figure C-2 near the northeast site corner is the wooded area shown on Figure 1.

While determining the existing (pre-development) conditions peak flows and runoff volumes, the site was analysed using one catchment, since the entire site ultimately drains to southeast pond and is within the larger catchment area of the unnamed creek discharging into Jackson River and Little Lake (see Figure A-2, Appendix A). The existing (pre-development) conditions peak flows from the site were determined using the U.S. Environmental Protection Agency (EPA) Stormwater SWMM software for the 1:2-, 1:5-, and 1:100-year storm events as recommended in Section F.4.10.1 of the City of Peterborough Engineering Design Standards (City of Peterborough, 2022). The rainfall amount, storm distribution, SCS hydrological soil group conditions, curve number and initial abstractions were adopted from the City of Peterborough Engineering Design Standards (City of Peterborough, 2022).

The existing (pre-development) conditions parameters are provided in Table 3-1 below, the storm distributions with the rainfall amount, peak runoff rates and volumes are provided in Table 3-2. The EPA-SWMM model output (Status report and summary results) for existing (pre-development) conditions are attached to Appendix D.

Table 3-1: Existing (pre-development) conditions area and runoff parameters

Land use	Area (ha)	Hydrologic Soil Group (HSG) ¹	Curve Number (CN)	Initial Abstraction (mm)	Average Catchment slope	Site Imperviousness
Meadow	18.9	B	66	2.5	7.5%	3.7%

Note:

1. Based on the available site soil information, Hydrologic Soil Group (HSG) B was selected.

Table 3-2: Existing (pre-development) conditions peak flows and runoff volumes

Storm Event	Storm Distribution	Rainfall (mm)	Peak Flows (m ³ /s)	Runoff Volume (m ³)
1:2-year	6-hour SCS type II	38.7	0.03	300
1:5-year	6-hour SCS type II	52.5	0.10	1,230
1:100-year	6-hour SCS type II	89.9	0.57	5,060

3.2.1 Southeast Pond Storage Capacity Assessment

The existing onsite southeast pond receives stormwater runoff from the site, and is approved under the ARA License No. P732136 (see Appendix A) and No. 3293 (see Figure 2.1). The neighbouring property (ARA License No. 3348), located east of the site, features another pond that is currently separated from the onsite southeast pond by a shallow berm. As noted above in Section 3.2, it is WSP's understanding that it is permitted to remove the existing berm separating between the 2 ponds, or if the berm is not removed in future, overflow across the berm between the 2 ponds is permitted (based on the approved Site Plan in Appendix A).

Figure C-1 in Appendix C shows the elevation contour mapping around the pond. Based on the contours, the existing water level in the pond was estimated to be 246 masl. The elevation contours also show that the existing shallow berm (currently separating the 2 ponds) has a top elevation higher than 247 masl. The contours also indicate that the floor elevation of the house within the neighbouring southeast residential lot is at an elevation higher than 247 masl; hence, the water level may rise to 247 masl without flooding the neighbouring properties.

An estimate of the southeast pond storage volume between the elevations of 246 masl and 247 masl showed available storage capacity of approximately 7,928 m³ (see **Table 3-3** below). This estimated available storage capacity within the southeast pond is approximately 1.6 times larger than the calculated 1:100-year storm runoff volume noted in Table 3-2 above (i.e., 5,060 m³).

Table 3-3: Estimated Southeast Pond Available Storage Capacity

Elevation (masl)	Surface Area (ha)	Storage Volume (m ³) ¹
246	0.63257	-
247	0.95308	7,928

Note:

1- Available storage volume between 246 masl and 247 masl elevations and excludes storage below 246 masl elevation.

3.3 Stormwater Management Plan and Design Criteria

The stormwater management plan and design criteria for the proposed RMC plant development are described in the following sections.

3.3.1 Storm water quantity control

Stormwater runoff from the proposed development is to be retained on site and directed to the onsite southeast pond. For most site plans, the City of Peterborough (F.4.10.1 of City of Peterborough (2022)) recommends, 1:2-, 1:5- and 1:100-year storms.

3.3.2 Storm water quality control

Enhanced protection (i.e., 80% total suspended solids (TSS) removal) is typically required (City of Peterborough, 2022).

3.4 Proposed Drainage Conditions

Under the proposed (post-development) conditions, the RMC plant will be constructed north of the entrance from Hillis Road, with a distribution yard located west of the entrance (see Figure 2.1). The RMC plant and the access roads have area of approximately 2.04 ha, and the distribution yard has an area of approximately 1.55 ha. For runoff volume and peak flow estimates, the RMC plant, the access roads, and the distribution yard areas were assumed to be fully impervious, increasing the site imperviousness to approximately 23%. During operations, the potential aggregate extraction areas will be regraded to milder slopes, hence it is anticipated that the runoff volumes and peak flows would decrease in magnitude. However, for calculation purposes, the proposed conditions site slopes are conservatively assumed to be the same as of the existing conditions slopes.

Like the existing (pre-development) conditions, the proposed (post-development) conditions area consists of one catchment area. As shown on Figure 2.1, proposed onsite ditches (D-1, D-2 and D-3), swales (S-1 through S-4) and local intermediate culverts (C1 and C2) will collect runoff from the undeveloped and the RMC plant non-process water areas and convey them through a main local culvert (C3 under the site access road) to be discharged into the existing southeast pond. The proposed ditches and swales will be grass-lined to protect against erosion, and fibre roll check dams will be constructed across the ditches, to retain sediments and minimize their amounts reaching the pond. Riprap aprons will be constructed at the main culvert (C3) outlet and at the mouth of the two clean water diversion ditches (D-1 and D-2), to protect against erosion.

Process water from the area around the plant will be internalized through a negative-slope area and collected within a sump. The collected process water will be recycled back into the RMC plant using a suitable pump. This is a typical process water management system that Sunrock has been using on other sites in Canada and the US where such system captures, treats and recycle the process water, operating as a self-contained/closed-loop system.

A summary of the proposed (post-development) parameters for the Site area is provided in Table 3-4 below and the storm distributions with the rainfall amounts, peak runoff rates and volumes are provided in Table 3-5. EPA-SWMM model output (Status report and summary results) for the proposed (post-development) conditions are attached to Appendix D.

Table 3-4: Proposed (post-development) conditions area and runoff parameters

Land use	Area (ha)	Hydrologic Soil Group (HSG) ¹	Curve Number (CN)	Pervious Area Initial Abstraction (mm)	Average Catchment Slope	Site Imperviousness
Vegetation/Lawns	18.9	B	67	2.5	7.5%	23%

Note:

1. Based on the available site soil information, Hydrologic Soil Group (HSG) B was selected.

Table 3-5: Proposed (post-development) conditions peak flows and runoff volumes

Storm Event	Storm Distribution	Rainfall (mm)	Proposed (post-development) Peak Flows (m ³ /s) ¹	Runoff Volume (m ³)
1:2-year	6-hour SCS type II	38.7	0.73	1,870
1:5-year	6-hour SCS type II	52.48	1.04	3,260
1:100-year	6-hour SCS type II	89.9	2.26	7,980

Note:

1. Presents post-development peak flow without hydraulic controls.

3.5 Proposed Stormwater Management Design

The following sub-sections provide details of the project drainage components to meet the stormwater management design criteria.

3.5.1 Stormwater quality control

According to Table 3.2 of the Ministry of Environment, Conservation and Parks (MECP) SWM Planning and Design Manual (MOE, 2003), a permanent pool of 1,890 m³ is required to meet Enhanced Level (80% TSS removal) water quality treatment for a wet pond. This is based on the data, assumptions and estimates in Table 3-6 below.

Table 3-6: Required storage volumes for quantity control

Parameter	Site area (ha)	Imperviousness (%)	Total Volume (m ³)	Extended Detention Volume (m ³)	Permanent Pool Volume (m ³)
Value	18.2 ⁽¹⁾	23 %	2,646	756	1,890

Notes: These estimates in Table 3-6 are based on the lowest published impervious level of 35% in Table 3.2 (MOE, 2003); the required volumes would be smaller considering the estimated site impervious level of 23%. (1) This site area excludes the pond water surface area at 246 masl (see Figure C-1; Appendix C).

A conservative estimate for the existing southeast pond permanent pool (dead storage) is approximately 2,372 m³ (based on the pond water surface area at 246 masl of 0.6325 ha, and assuming a pond depth of 0.5 m and that the bottom area of the pond equals half of the surface area at 246 masl). This estimate of 2,372 m³ exceeds the required dead storage for Enhanced Level of water quality treatment under the proposed (post-development) conditions.

3.5.2 Stormwater quantity control

The excess runoff storage under the proposed (post-development) conditions to be retained in the existing southeast pond has been calculated as the difference between the proposed (post-development) and the existing (pre-development) runoff volumes. Table 3-7 below provides a summary of the required storage volumes to be retained in the southeast pond during the different storm events.

Table 3-7: Required storage volume for quantity control

Storm Event	Existing (pre-development) Conditions Runoff Volume (m ³)	Proposed (post-development) Conditions Runoff Volume (m ³)	Storage to be retained in the Southeast Pond (m ³)
1:2-year	300	1,870	1,570

Storm Event	Existing (pre-development) Conditions Runoff Volume (m ³)	Proposed (post-development) Conditions Runoff Volume (m ³)	Storage to be retained in the Southeast Pond (m ³)
1:5-year	1,230	3,260	2,030
1:100-year	5,060	7,980	2,920

As shown in Table 3-7, for the quantity control of the 1:100-year storm runoff volume of the post-development conditions (i.e., 7,980 m³), the storage of the excess runoff volume over that of the pre-development conditions (i.e., 2,920 m³) would be required. Based on the stage-volume estimates presented in Table 3-3, the southeast pond has a storage capacity of approximately 7,928 m³ at 247 masl, and therefore it is expected to retain approximately 99% of the 1:100-year proposed development storm runoff volume of 7,980 m³. The small difference of 52 m³ is insignificant and is not expected to cause any flooding issues. Note that fibre-roll check dams proposed in the upstream ditches (D-1 through D-2) will retain storm runoff and provide additional quantity control. The storage volume in the proposed check dams is approximately 640 m³.

Further, as seen in Figure C-1 in Appendix C, any excess water above 247 masl is expected to spread along the pond west embankment where its slope is milder up to the 248 masl elevation contour (see also Photo 1 in Appendix B).

The following sections (3.5.3 to 3.5.4) provide the design details of the proposed drainage components for the onsite stormwater management.

3.5.3 Ditches and Swales

The proposed ditches and swales were designed as grassed channels using Manning's Equation to convey the estimated peak flow discharges of the 1:100-year storm event based on the Rational method. The Time of Concentration (T_c) was assumed to be 15 minutes and the rainfall intensity was calculated using the City of Peterborough Intensity-Duration-Frequency (IDF) curves (Table C-1 in Appendix C). Runoff coefficient for 1:25-year, 1:50-year and 1:100-year were adjusted as per the Ministry of Transportation (MTO) Chart 1.07. Drainage/catchment area for each ditch and swale was estimated using local contours. Tables C-1 through C-7 in Appendix C summarize the drainage area, runoff coefficient and peak flow for each ditch and swale under the 1:2-year through the 1:100-year storm events.

Three grassed trapezoidal ditches (North perimeter ditch D-1, North-South ditch D-2, and South perimeter ditch D-3) are proposed to collect and convey clear stormwater runoff to the southeast pond. These ditches will have a bed width of 1.5 m, depth of 0.6 m, side slopes of 3(H):1(V), and a channel bed slope ranging from 0.017 to 0.083 (depending on local elevations); see Figure 2.1 for layout and Figure 2.2 for cross section details. Fibre roll check dams are proposed across the ditches as a form of low impact development (LID) features, to partially retain the runoff and sediments from the site, upstream near the source before reaching the receiver downstream southeast pond. Summary of sizing the check dams is provided in Table 3-8 below, and sizing calculations are provided in Tables C-8 to C-10 in Appendix C.

Four grassed triangular-shaped swales (S-1, S-2, S-3 and S-4) are proposed to collect clear and non-process stormwater runoff from around the RMC plant area and the area outside the ring road, and convey it through culverts C1, C2 and C3 before discharging to southeast pond. Summary of the design parameters is provided in Table 3-8 below and sizing calculations are provided in Tables C-11 to C-14 in Appendix C. See Figure 2.1 for layout and

Figure 2.2 for cross sections details. Reach lengths, upstream and downstream invert elevations are provided in Table C-15 in Appendix C.

Table 3-8: Summary of Ditches and Swales Sizing

Stormwater Drainage Channel	Channel Cover and Cross Section Shape	Bed Width (m)	Design Parameters	
			Channel Depth (m)	Channel Longitudinal Slope
North perimeter ditch D-1	Grassed, trapezoidal	1.5	0.6	0.024-0.036 ¹
North-South ditch D-2 ²				0.017
South perimeter ditch D-3				0.024-0.083 ¹
Swale S-1	Grassed, triangular	Not applicable	0.30	0.011
Swale S-2				0.017
Swale S-3			0.50	0.010
Swale S-4 ³				0.017

Notes:

- 1- Channel bed slope varies based on actual ground elevations. Check dams are provided to slowdown the flow and to retain water. Design is based on conservative slope providing larger depths of water.
- 2- Also receives runoff from Swale S-1.
- 3- Swale S-4 conveys flow from Swale S-2 and Swale S-3.
- 4- All ditches and swales have side sloped of 3(H):1(V).

For the purposes of retaining the runoff volumes partially and capturing the sediments through upstream controls in the ditches and the swales, fibre roll check dams were proposed across them as shown in Figure 2.1. The number of those check dams was calculated based on the channel longitudinal slopes and the height of the proposed dams being 0.45 m (see Figures 2.1 and 2.2). For the west reach of ditch D-3, and due to its steeper slopes than other areas, the number of the dams was selected based on a suitable spacing of 15 m. The estimated total storage volume in the proposed check dams is approximately 640 m³.

3.5.4 Culverts

Three concrete box culverts (C1, C2 and C3) under the RMC plant access/ring roads are proposed (see Figure 2.1). All culverts are designed to convey the 1:10-year peak flow discharge from the drainage area upstream of the culvert using the relevant nomograph charts (US Department of Transportation Federal Highway Administration (FHWA), 2012). All three culverts are designed as projecting from fill (see Figure 2.2); with an assumed constant depth of cover of 0.50 m, all culvert lengths are 14 m (based on the design road width of 8 m). Table 3-9 summarizes the box culvert sizing, the headwater depth (H_w) to the culvert depth/rise (D), and H_w and its elevations under 1:10-year peak flow rates.

Table 3-9: Sizing of the culverts under the entrance and ring roads

Culvert Label	Width (m) x Depth (m)	Length (m)	H_w/D	H_w (m)	H_w Elevation (masl)
Culvert C1	1.5 x 0.5	14	0.35	0.175	257.20
Culvert C2	1.5 x 0.5		0.68	0.34	255.64

Culvert Label	Width (m) x Depth (m)	Length (m)	H _w /D	H _w (m)	H _w Elevation (masl)
Culvert C3	2.0 x 0.5		0.88	0.44	254.84

The Culvert C3 was also checked against the 1:100-year peak flow discharge. Its H_w/D for the 1:100-year peak flow rate was calculated to be 1.15, with H_w of 0.58 m implying acceptable surcharge. The surcharge is expected to be contained within the site and the runoff will drain eventually to southeast pond.

3.5.5 Riprap Aprons

Riprap aprons at the outlets of ditches D-1 and D-2, and the culvert C3 were designed to protect the soil against erosion, due to the collected runoff discharges exiting the ditches and culvert. The following Table 3-10 summarises the riprap sizing.

The apron design was based on the US Department of Transportation Hydraulic Design of Energy Dissipators for Culverts and Channels (US Department of Transportation, 2006).

Table 3-10: Sizing of the Riprap Aprons at the Onsite Ditches and Culvert Outlets

Apron Label	Location	Riprap Specification	Cross-section Details
Apron 1	Downstream of ditch D-1	300 mm thick R-50 Riprap per Table 8 of OPSS PROV 1004	See Figure 2.2
Apron 2	Downstream of ditch D-2		
Apron 3	Downstream of Culvert C3	400 mm thick R-50 per Table 8 of OPSS. PROV 1004	

Geotextile fabric (Terrafix 270R non-woven or equivalent) is recommended to be laid down, prior to placing the riprap aprons.

4 EROSION AND SEDIMENT CONTROL

Sunrock and its contractors are required to use temporary erosion and sediment control (ESC) measures during construction. Prior to construction, an ESC plan will be developed and implemented. The ESC measures will be inspected at least once every two weeks, and after each significant rainfall event (rainfall amount > 25 mm) and maintained in proper working conditions. The ESC measures to prevent the migration of sediment laden runoff to the receiving environment will include but not limited to silt fences, fibre roll check dams, and strawbale check dams.

More details of the proposed ESC measures are provided in Figure 2.3. A detailed ESC plan will be prepared.

5 WATER QUALITY MONITORING PROGRAM

The following are the recommendations for the site:

- To confirm that the contact water/contaminants from the proposed development are not affecting the quality of stormwater runoff and the receiving pond, Sunrock is recommended to carry out the following monitoring program consisting of collecting water quality grab samples as described below.

- Prior to construction, a pre-characterisation of water quality for pH, conductivity, total suspended solids (TSS), anions and nutrients, and metals with respect to the Provincial Water Quality Objectives (PWQOs) at the southeast pond should be completed to establish existing/background conditions. Post construction, collection of grab samples is recommended at the outlet of Culvert C3 (see SW-B on Figure 2.1) and outlet of Ditch D-1 (see SW-A on Figure 2.1) semi-annually during a flow event for testing of field pH, temperature, conductivity, TSS and oil and grease. All samples and measurements are to be taken at a time and in a location characteristic of the quality and quantity of the storm runoff stream.
- All samples collected for the parameters under the storm runoff monitoring program should be analysed by a laboratory accredited by ISO/IEC:17025, noting that a handheld water quality meter may be used for field parameters. Sunrock to follow the directions of the retained accredited lab with respect to sample containers and collection procedure.
- A Qualified Professional (QP) must review the results of the laboratory analyses right after the analysis is done, to identify water quality concerns or exceedances, if any, compared to the water quality objectives of 6.5-8.5 for pH, 25 mg/L for TSS, and 10 mg/L for oil and grease. These proposed water quality objectives are based on water quality guidelines (such as PWQOs, Canadian Council of Ministers of the Environment) and widely used performance standards. Sunrock to follow recommendations of QP, if any water quality issue or exceedance is identified.
- After two years, the monitoring program may be reduced upon review and assessment by the QP. It is Sunrock's responsibility to retain the QP to conduct this monitoring and assess the results. In the event exceedances might occur, the QP will inform Sunrock of the next steps, which may include applying additional mitigation measures and consulting with the Town and/or ORCA.
- Sunrock is to keep the monitoring records for at least five (5) years.

6 CONCLUSIONS AND RECOMMENDATIONS

The stormwater management controls described in the previous Section 3.5 for the proposed (post-development) conditions at the Site can be implemented according to the guidelines provided by the City of Peterborough and ORCA.

Below is a summary of conclusions regarding the site water management plan:

- Based on the conservative estimates presented in this report, the storage in the existing southeast pond would meet the stormwater quality control criteria.
- The southeast pond assessment showed that it can retain approximately 99% of the 1:100-year proposed development storm runoff volume (i.e., 7,928 m³ out of 7,980 m³). The remaining small volume (approximately 1% or 52 m³) is not expected to cause flooding issues, noting that fibre-roll checks are also proposed in the upstream ditches that will retain a total storm runoff volume of approximately 640 m³, which is larger than that remaining volume of 52 m³.
- The fibre roll check dams are also expected to enhance the quality control and onsite storm runoff retention.
- To confirm that the contact water from the proposed development is not affecting the quality of storm runoff and the receiving pond, a water quality monitoring program is recommended under Section 5.0 above. In addition to pre-characterisation of water quality of the southeast pond, the monitoring program includes semi-annual sampling at two sampling locations during a storm flow event.

It is concluded that the proposed development would meet the stormwater management objectives with the proposed stormwater management plan outlined in this report.

7 SPILL PREVENTION, CONTROL AND COUNTERMEASURE PLAN

In addition to the above noted water quality program, Sunrock has a spill prevention, control and countermeasure plan (SPCC) that is required as part of the proposed stormwater management plan. A copy of the SPCC is included in Appendix E of this report.

8 LIMITATIONS AND ASSUMPTIONS

A summary of limitations and assumptions is as follows:

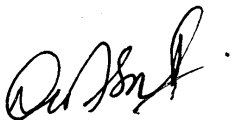
- The stormwater management plan is based on the drainage from the site area. Based on the catchment area delineation shown on Figure A-2 in Appendix A, the site is located along the catchment boundary. No significant runoff contributions from adjacent areas are expected to impact the site.
- During extreme events (for example, the 1:100-year storm), temporary surcharging of the main Culvert C3 at its inlet is expected. However, this is assumed not to cause significant flooding within the site and it is anticipated that Sunrock will stop their operations and take the necessary measures to safeguard the personnel and property during such extreme events.

9 CLOSURE

We trust that this technical memorandum meets your current needs. If you have any questions or require clarification, please contact the undersigned at your earliest convenience.

Signature Page

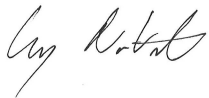
WSP Canada Inc.



Mohsin Siddique, Ph.D., P.Eng.
Senior Water Resources Engineer



Hesham Fouli, Ph.D., P.Eng.
Senior Water Resources Engineer



Craig DeVito, Lead, P.Eng.
Water Resources Engineer

MS/HF/CDV/ldk

[https://wsponlinecan.sharepoint.com/sites/ca-ca0054344.1346/shared documents/06. deliverables/stormwater management/report/ca0054344.1346-r-sunrock hillis rd swm report-rev 0-1mayapr2026.docx](https://wsponlinecan.sharepoint.com/sites/ca-ca0054344.1346/shared%20documents/06.%20deliverables/stormwater%20management/report/ca0054344.1346-r-sunrock%20hillis%20rd%20swm%20report-rev%200-1mayapr2026.docx)

REFERENCES

- MOE (Ministry of Environment). 2003. *Stormwater Management Planning and Design Manual*, Ministry of Environment, 2003.
- ORCA (Otonabee Region Conservation Authority). 2025. Virtual Public Information Center, Floodplain Mapping: Jackson Creek Downtown, Otonabee Region Conservation Authority. Retrieved from: <https://experience.arcgis.com/experience/6f52b7dfb5e0423db30cf22889f5ab4a>, accessed on 15 April 2026.
- City of Peterborough, 2022, Engineering Design Standards, Asset Management & capital Planning Division, December 2022.
- US Department of Transportation. 2006. Hydraulic Design of Energy Dissipators for Culverts and Channels, July 2006.

FIGURES



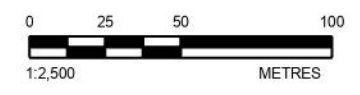
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SCALE: 1:200,000

LEGEND

	SUBJECT LANDS
	EXCAVATION LIMIT
SOIL TYPE	
	BRINCO SANDY LOAM
	EMILY LOAM
	OTONABEE LOAM
LAND USE TYPE (AREA IN HA.)	
	AGRICULTURE (1.14)
	DISTURBED LAND (14.07)
	EXISTING BUILDING (0.03)
	EXISTING SCALE HOUSE (0.02)
	WOODED AREA (2.94)
	WATERBODY (0.7)



NOTE(S)
1. ALL LOCATIONS ARE APPROXIMATE

REFERENCE(S)
1. CONTAINS INFORMATION LICENSED UNDER THE OPEN GOVERNMENT LICENCE - ONTARIO
2. BASE MAP: SOURCES: ESRI, TOMTOM, GARMIN, FAO, NOAA, USGS, © OPENSTREETMAP CONTRIBUTORS, AND THE GIS USER COMMUNITY, NEW YORK STATE, MICROSOFT, VANTOR
3. COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N

CLIENT
SUNROCK INDUSTRIES CANADA ULC

PROJECT
SUNROCK READY-MIX CONCRETE PLANT, HILLIS PIT,
PETERBOROUGH COUNTY, ONTARIO

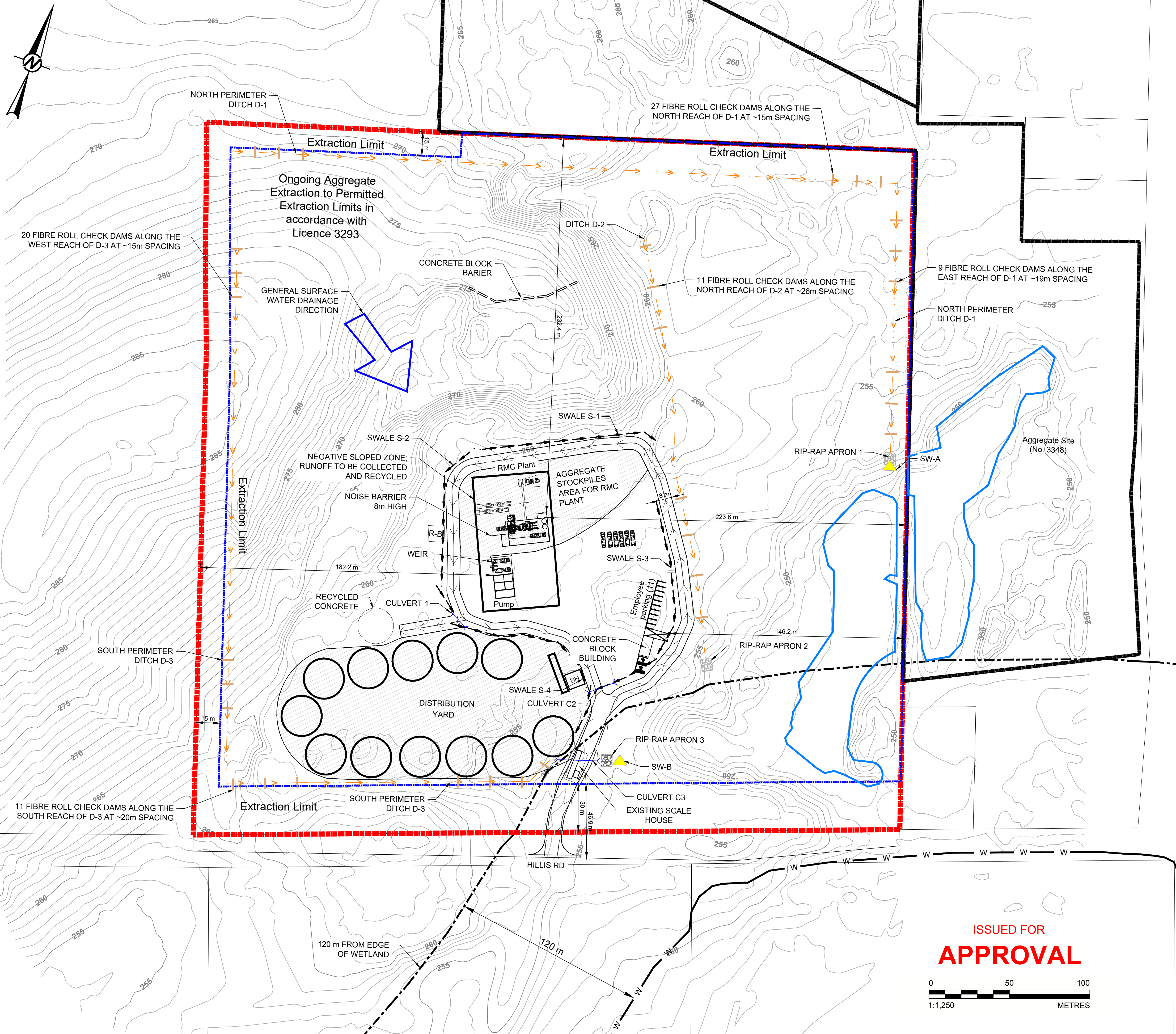
TITLE
SITE PLAN, AND EXISTING CONDITIONS LAND USE AND SOIL TYPES

CONSULTANT	YYYY-MM-DD	2026-05-04
	DESIGNED	SPC
	PREPARED	BA
	REVIEWED	MS
	APPROVED	HF

PROJECT NO. CA0054344.1346 CONTROL 0001 REV. 0 FIGURE 1

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

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LEGEND

- 260 CONTOURS
- PROPOSED DITCH LINE
- PROPOSED DRAINAGE SWALE
- W WETLANDS
- WATER BODY
- SITE BOUNDARY
- LICENSE BOUNDARY
- EXTRACTION LIMIT
- 300 mm THICK R-50 RIP-RAP PER TABLE 8 OF OPSS. PROV 1004
- 400 mm THICK R-50 RIP-RAP PER TABLE 8 OF OPSS. PROV 1004
- FIBER ROLL CHECK DAMS PER OPSD 219.191 REV 1 IN FIGURE 2.3 AND DETAIL A / FIGURE 2.2
- PROPOSED CULVERT
- WATER QUALITY SAMPLING LOCATION

- NOTES(S)**
- PROJECTION: UTM NAD83-17N.
 - THE SHOWN SITE AND LICENSE BOUNDARY, AND THE EXTRACTION LIMITS WERE PROVIDED BY MHBC PLANNING (CAD DRAWING FILE DATED FEB 25, 2026).
 - FOR TYPICAL CROSS SECTION DIMENSIONS OF THE PROPOSED DRAINAGE AND SEDIMENT CONTROL FEATURES, REFER TO FIGURES 2.2 & 2.3.
 - THE PROPOSED ONSITE CULVERTS TO BE CONSTRUCTED AT A MIN. SLOPE OF 1%, TO ENSURE POSITIVE DRAINAGE.
 - THE SITE TOPOGRAPHY AROUND THE PROPOSED RING ROAD SURROUNDING THE READY-MIX CONCRETE (RMC) PLANT AREA TO REMAIN AS EXISTING. THE PROPOSED DITCHES AND SWALES LONGITUDINAL SLOPES TO FOLLOW THE NATURAL EXISTING GROUND ELEVATIONS.
 - WITHIN THE RING ROAD SURROUNDING THE RMC PLANT, IT IS ASSUMED THAT THE AREA WILL GENERALLY BE GRADED AT 1% - 2% MIN. SLOPE TOWARD SOUTHEAST. OTHERWISE, THE ZONE SURROUNDING THE PLANT, THE LOADING HOPPER, AND THE CEMENT UNLOADING LOCATION TO BE GRADED AT 5% MIN. SLOPE, TO KEEP HIGH-PH PROCESS WATER INTERNALIZED FOR RECYCLING BACK TO THE PLANT DURING OPERATIONS. A SUITABLE SUMP-PUMP CONFIGURATION LOCATED AT THE LOWEST SPOT OF THAT ZONE TO BE USED FOR COLLECTING THE PROCESS WATER AND PUMPING IT BACK INTO THE PLANT (SEE OPSD 219.240 FOR SUMP/DEWATERING TRAP GUIDANCE).
 - CLEAN NON-PROCESS SURFACE RUNOFF FROM THE SITE WILL BE COLLECTED THROUGH THE PROPOSED ONSITE DITCHES AND SWALES. THE PROPOSED FIBER ROLL CHECK DAMS ACROSS THE DITCHES AND THE GRASSED SWALES WILL TREAT THE COLLECTED RUNOFF BEFORE IT IS DISCHARGED INTO THE EXISTING ONSITE SOUTHEAST POND.
 - ALL CONSTRUCTION WORKS SHALL BE IN CONFORMANCE WITH THE ONTARIO BUILDING CODE (OBC).
 - FIRE ACCESS ROUTES SHALL BE DESIGNED IN CONFORMANCE WITH OBC AND CONSTRUCTED TO SUPPORT THE LARGEST RESPONDING APPARATUS TO THE PROPERTY DURING AN EMERGENCY.
 - ADEQUATE WATER FOR FIREFIGHTING SHALL BE PROVIDED IN ACCORDANCE WITH OBC.
 - FUEL STORAGE SHALL BE IN CONFORMANCE WITH PART 4 "FLAMMABLE LIQUIDS AND COMBUSTIBLE LIQUIDS" OF OBC.
 - MUD MATS TO BE CONSTRUCTED AT THE SITE ACCESS ROAD PER THE COUNTY OF PETERBOROUGH AND TOWNSHIP OF SELWYN REQUIRED STANDARDS.
 - FOR RIP-RAP APRON AND CULVERT SIZING, SEE DETAILS ON FIGURE 2.2.

- REFERENCE(S)**
- 1M-ELEVATION CONTOUR MAPPING CAD DRAWING DATED JUNE 2025 AS PROVIDED BY MHBC PLANNING.
 - THE WETLAND BOUNDARY IS REFERENCED FROM THE TOWNSHIP OF SELWYN LANDUSE PLAN (RURAL COMPONENT) AS PROVIDED BY MHBC PLANNING.

CLIENT
SUNROCK INDUSTRIES CANADA ULC

PROJECT
SUNROCK READY-MIX CONCRETE PLANT, HILLIS SITE, PETERBOROUGH, ONTARIO

TITLE
PROPOSED STORMWATER MANAGEMENT AND EROSION & SEDIMENT CONTROL PLAN

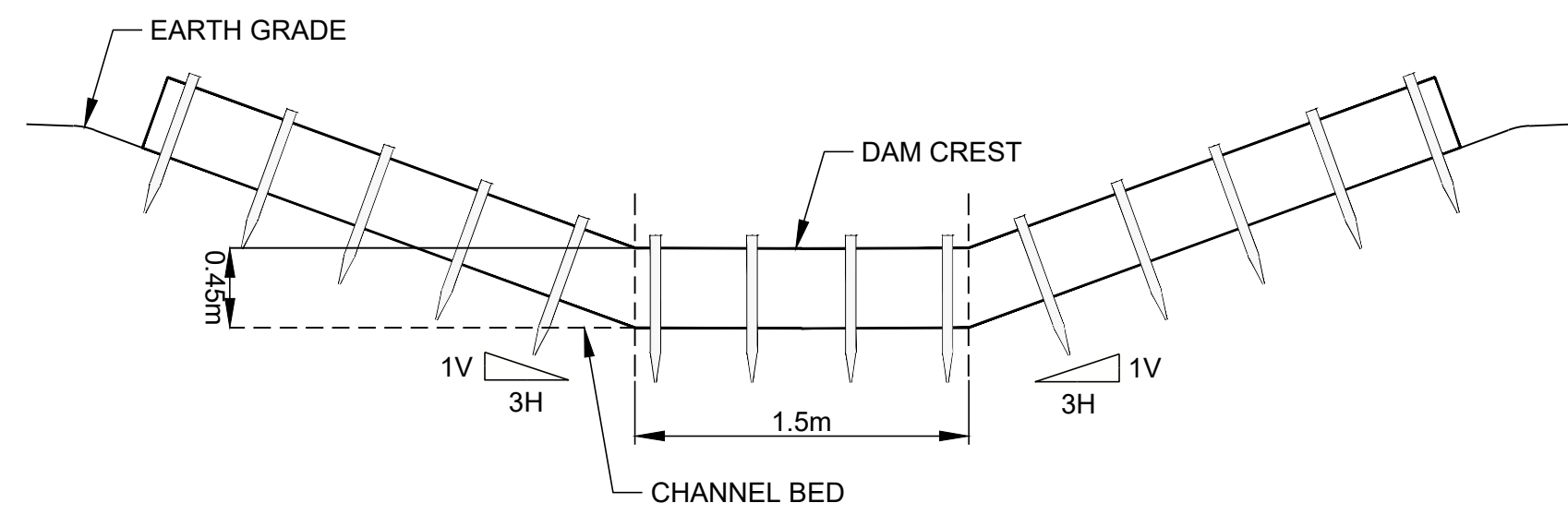
CONSULTANT	YYYY-MM-DD	2026-04-29
DESIGNED	MS	
PREPARED	YW	
REVIEWED	MS	
APPROVED	HF	

PROJECT NO. CONTROL REV. FIGURE
 CA0054344.1346 0001 0 2.1

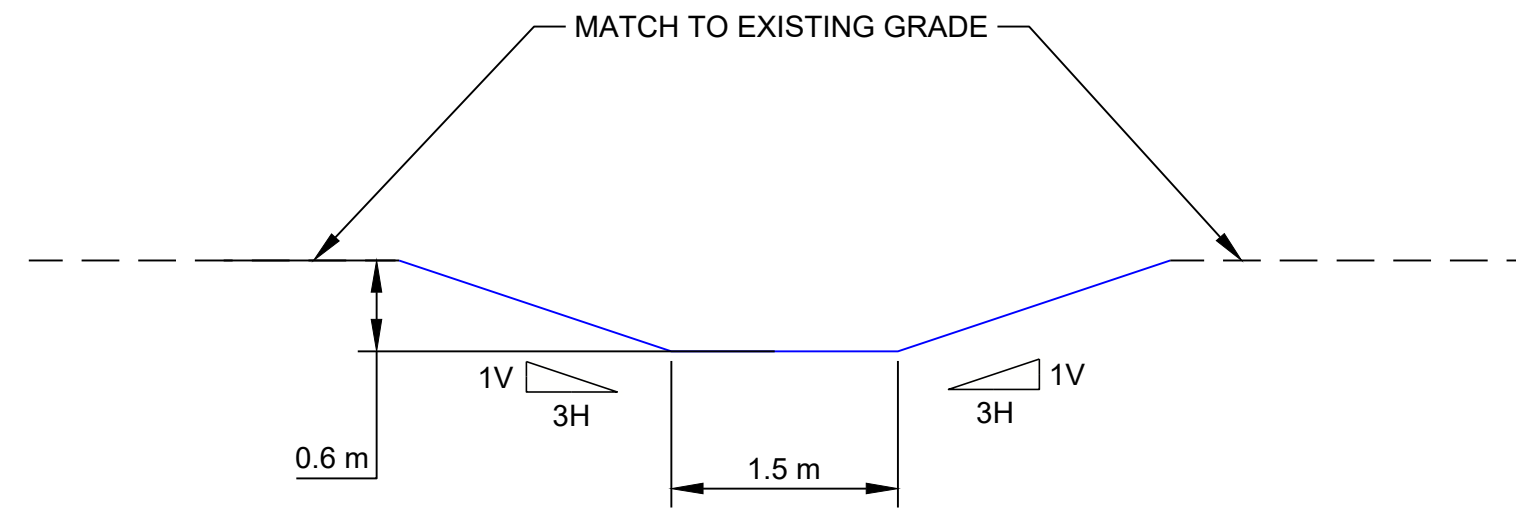
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APPROVAL

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

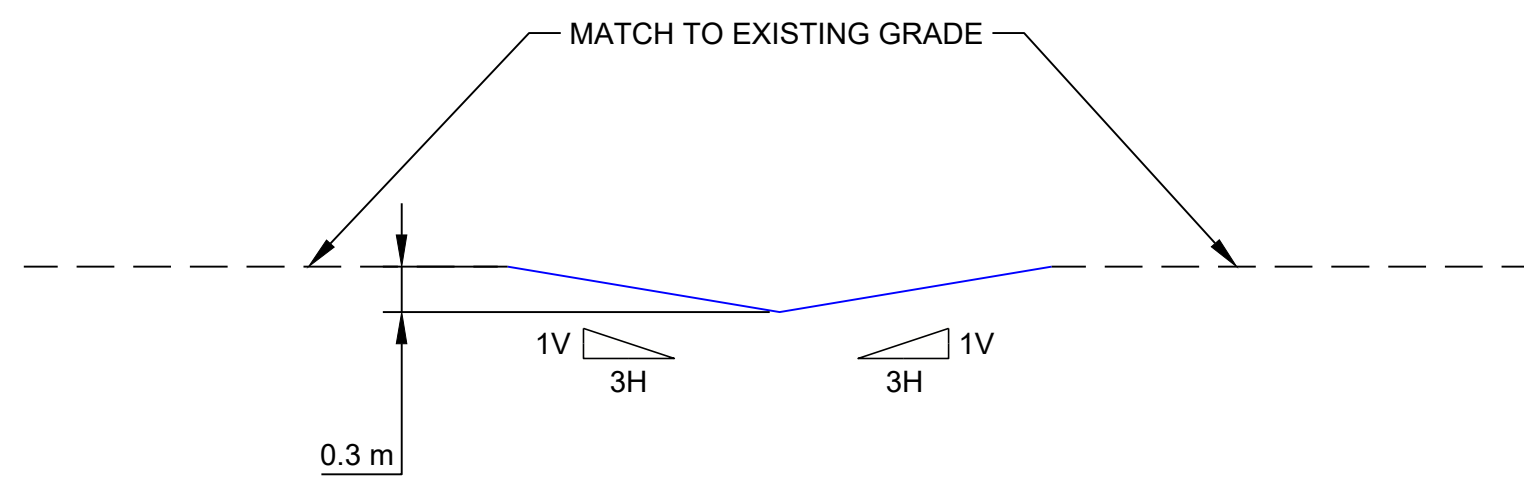
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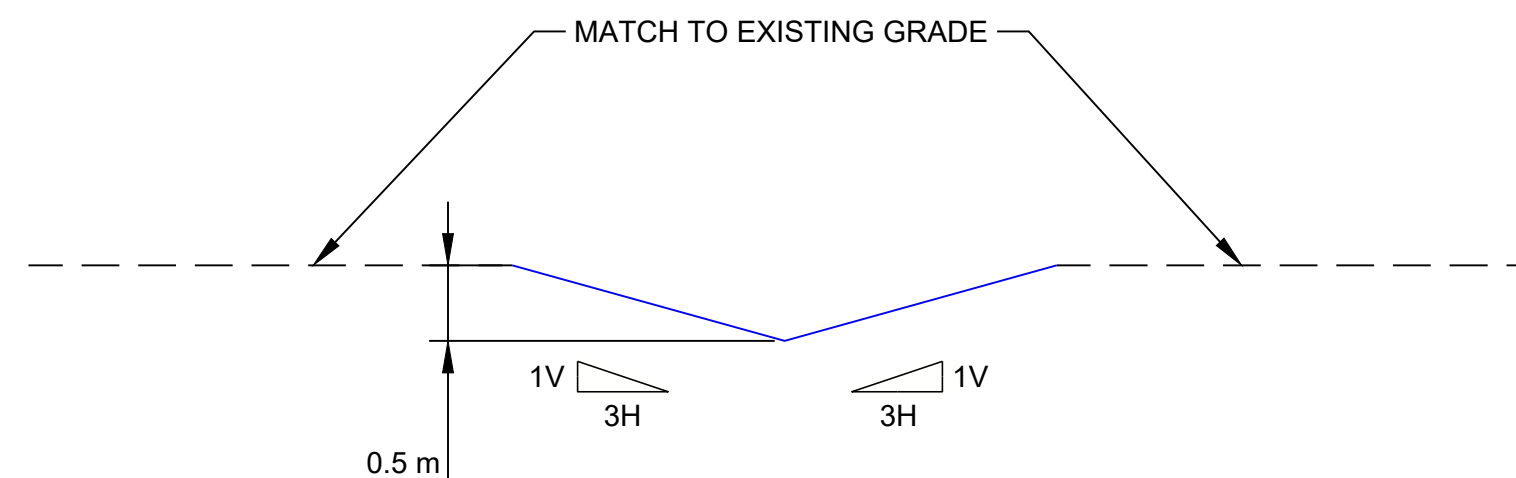
NTS 1 TYPICAL FIBRE ROLL CHECK DAM - SEE FIGURE 2.3



SCALE 1:50 2 TYPICAL SECTION FOR DITCHES (D-1, D-2 AND D-3)



SCALE 1:50 3 TYPICAL SECTION FOR SWALES S-1 AND S-2

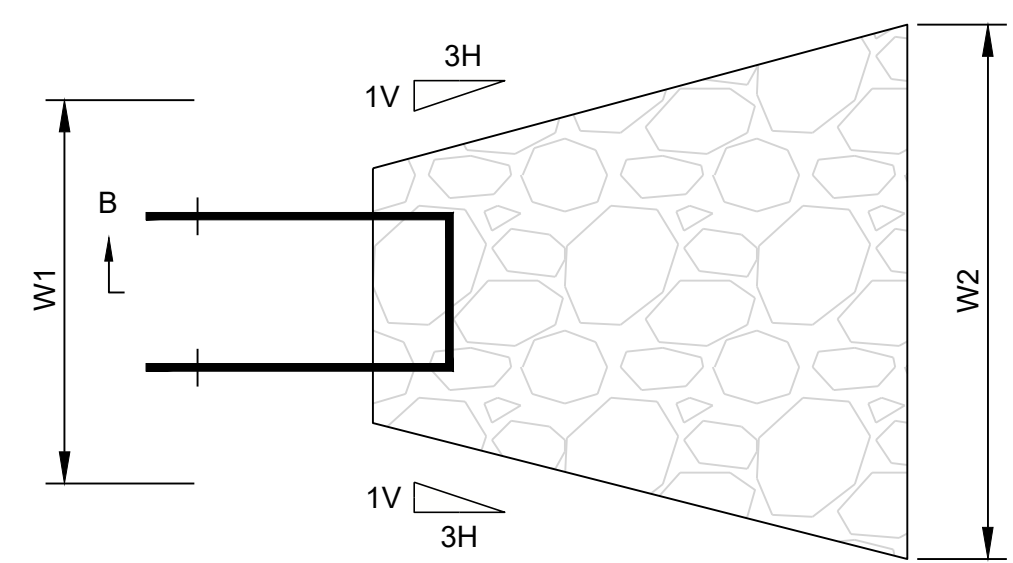


SCALE 1:50 4 TYPICAL SECTION FOR SWALES S-3 AND S-4

GEOMETRIC CHARACTERISTICS AND ESTIMATED ELEVATIONS OF THE PROPOSED DITCHES AND SWALES					
CHANNEL	REACH	LENGTH (m)	SLOPE	UPSTREAM INVERT ELEVATION (masl)	DOWNSTREAM INVERT ELEVATION (masl)
DITCH D-1	SEGMENT 1 (W-E)	412	0.036	272.4	257.4
	SEGMENT 2 (N-S)	170	0.024	257.4	253.3
DITCH D-2		294	0.017	259.4	254.4
DITCH D-3	SEGMENT 2 (N-S)	300	0.083	284.4	259.4
	SEGMENT 1 (W-E)	212	0.024	259.4	254.4
SWALE-1		120	0.011	258.51	257.2
SWALE-2		202	0.017	258.7	255.3
SWALE-3		150	0.010	256.6	255.1
SWALE-4		40	0.017	255.1	254.4

NOTE(S)

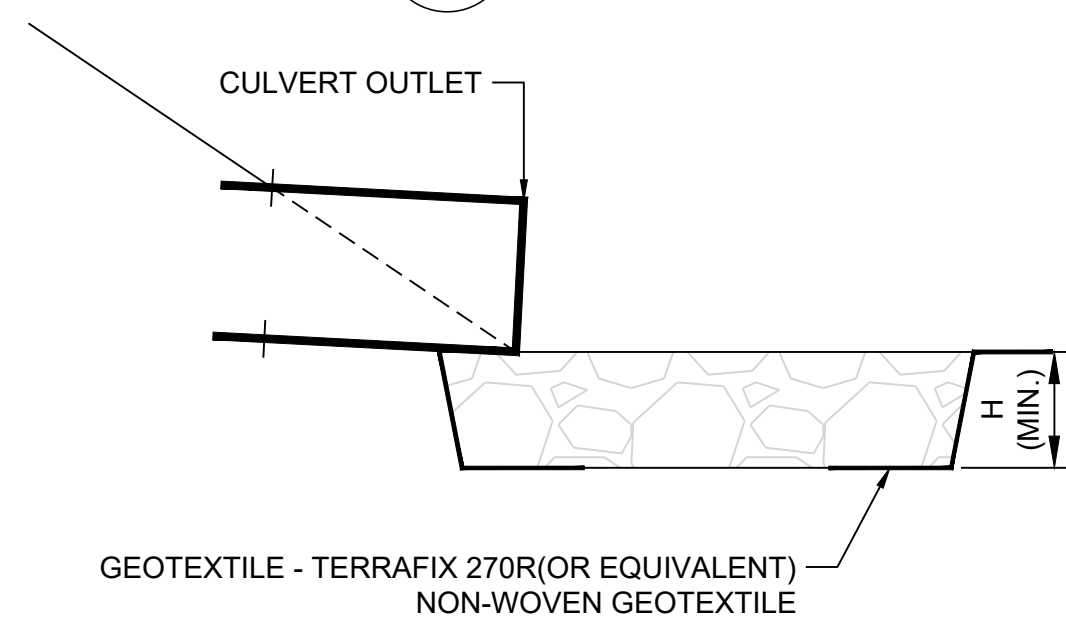
- FOR THE LOCATIONS OF THE DITCHES, SWALES, NOTED CULVERTS AND FIBRE ROLL CHECK DAMS REFER TO FIGURE 2.1.
- THE CONTRACTOR IS RESPONSIBLE FOR INSTALLING THE PROPOSED EROSION AND SEDIMENT CONTROL (ESC) MEASURES IN ACCORDANCE WITH REGULATORY AND MANUFACTURER'S RECOMMENDATION.
- REGARDING DITCH EARTHWORKS NEAR THE PROPOSED CULVERTS TO BE FIELD-FIT FOR MAINTAINING POSITIVE DRAINAGE.
- REFER TO FIGURE 2.3 FOR OTHER DETAIL AND REFERENCE EROSION AND SEDIMENT CONTROL MEASURES DURING CONSTRUCTION.
- CULVERT TO BE INSTALLED PER ONTARIO PROVINCIAL STANDARD SPECIFICATION OPSS. PROV 421 AS APPLICABLE TO THE SITE CONDITION.
- CULVERT INLET AND OUTLET PROTECTION TO BE PROVIDED AS PER ONTARIO PROVINCIAL STANDARD DRAWING OPSPD 221.040 AND OPSPD 803.030 AND 803.031 AS APPROVED BY A GEOTECHNICAL ENGINEER BASE ON SOIL TYPE.



SCALE NTS 5 RIP-RAP APRON PLAN VIEW

RIP-RAP APRON SIZING TABLE					
RIP-RAP APRON ID	LENGTH OF APRON, L, (m)	DEPTH OF APRON, H, (m)	UPSTREAM WIDTH OF APRON, W1, (m)	DOWNSTREAM WIDTH OF APRON, W2, (m)	OPSS RIP-RAP PER TABLE 8 OF OPSS.PROV 1004
APRON 1	3.6	0.3	4.5	5.7	R-50
APRON 2	3.4	0.3	4.5	5.6	
APRON 3	5.5	0.4	6.0	7.8	

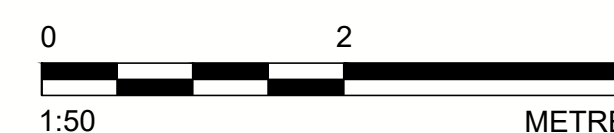
APRONS 1 AND 2 DO NOT HAVE A CULVERT OUTLET (SEE FIGURE 2.1)



SCALE NTS 6 TYPICAL SECTION B-B' FOR RIP-RAP APRON

PROPOSED CULVERT SIZING			
CULVERT ID	TYPE AND MATERIAL	WIDTH (m) x DEPTH (m)	LENGTH (m)
C1	CONCRETE BOX CULVERTS	1.5 x 0.5	14
C2		1.5 x 0.5	14
C3		2.0 x 0.5	14

ISSUED FOR
APPROVAL



CLIENT
SUNROCK INDUSTRIES CANADA ULC

PROJECT
SUNROCK READY-MIX CONCRETE PLANT, HILLIS ROAD SITE,
PETERBOROUGH, ONTARIO

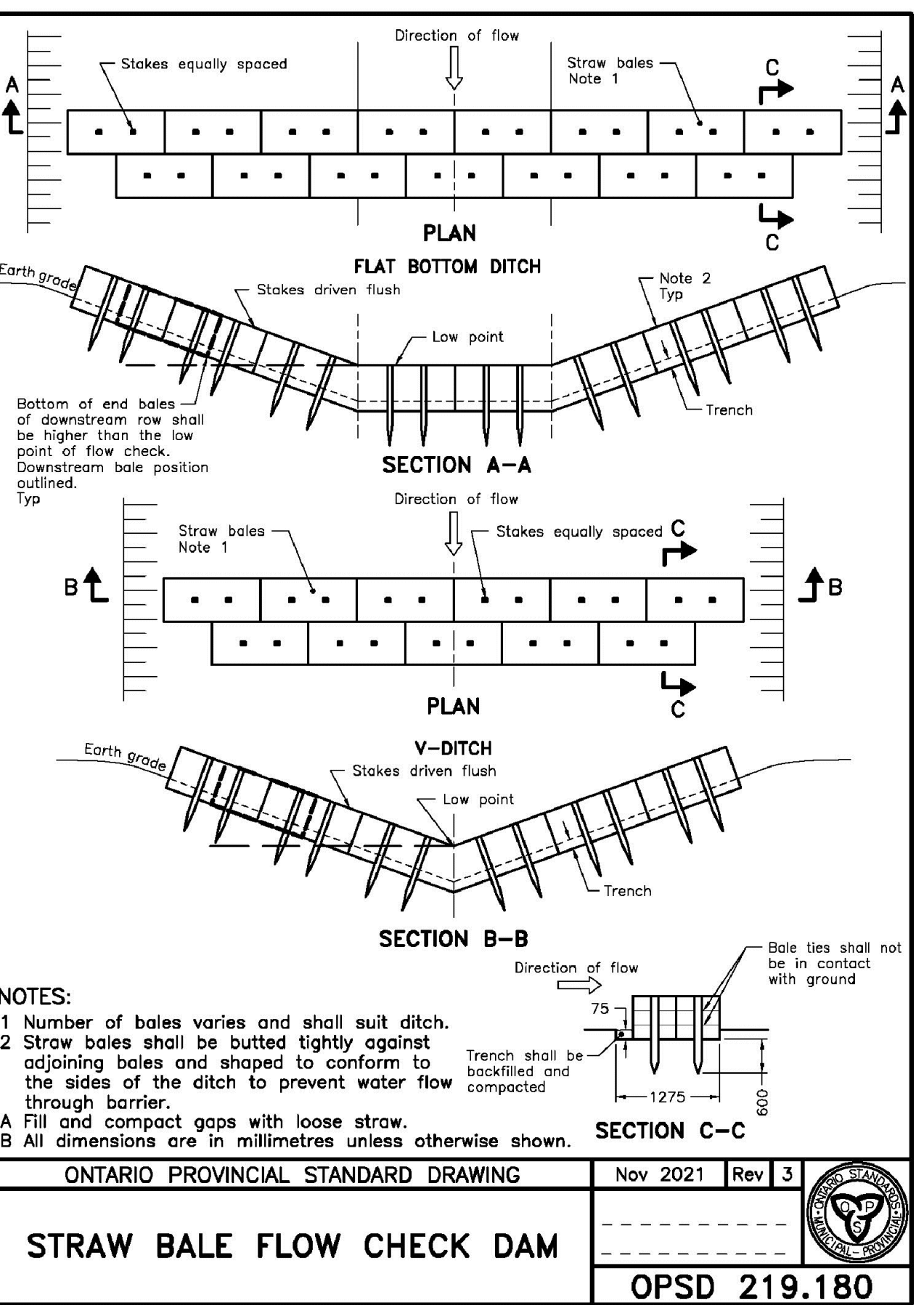
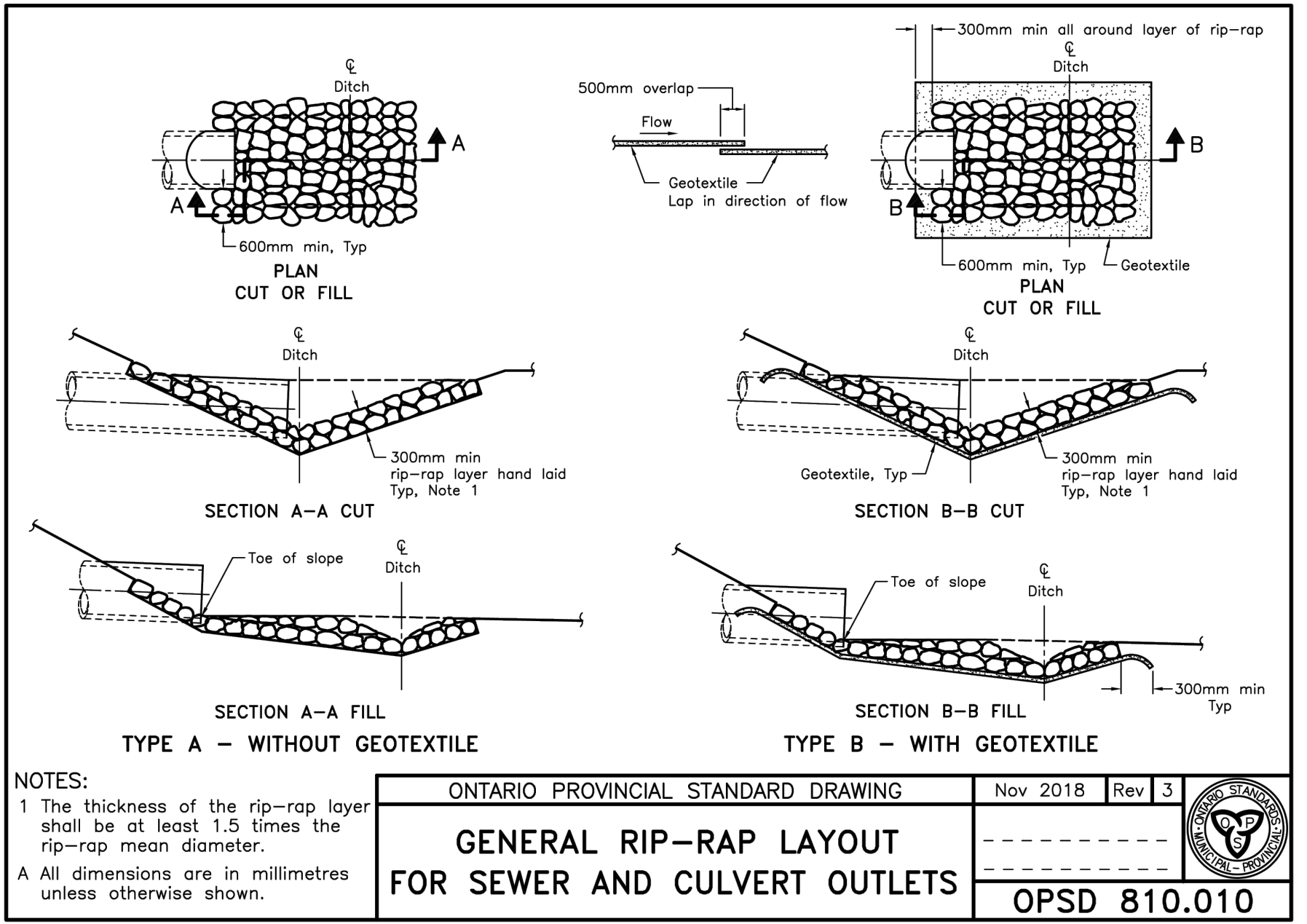
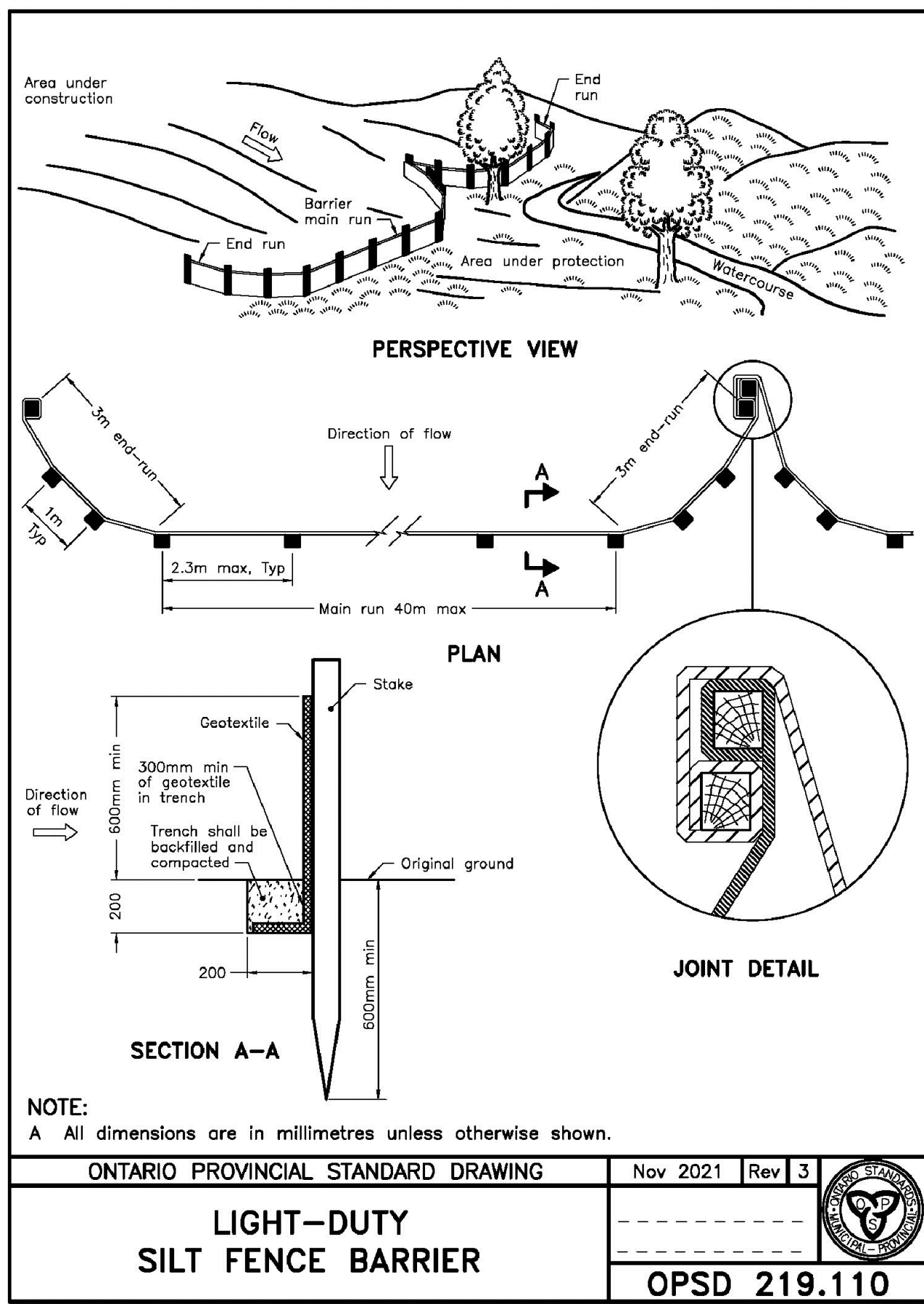
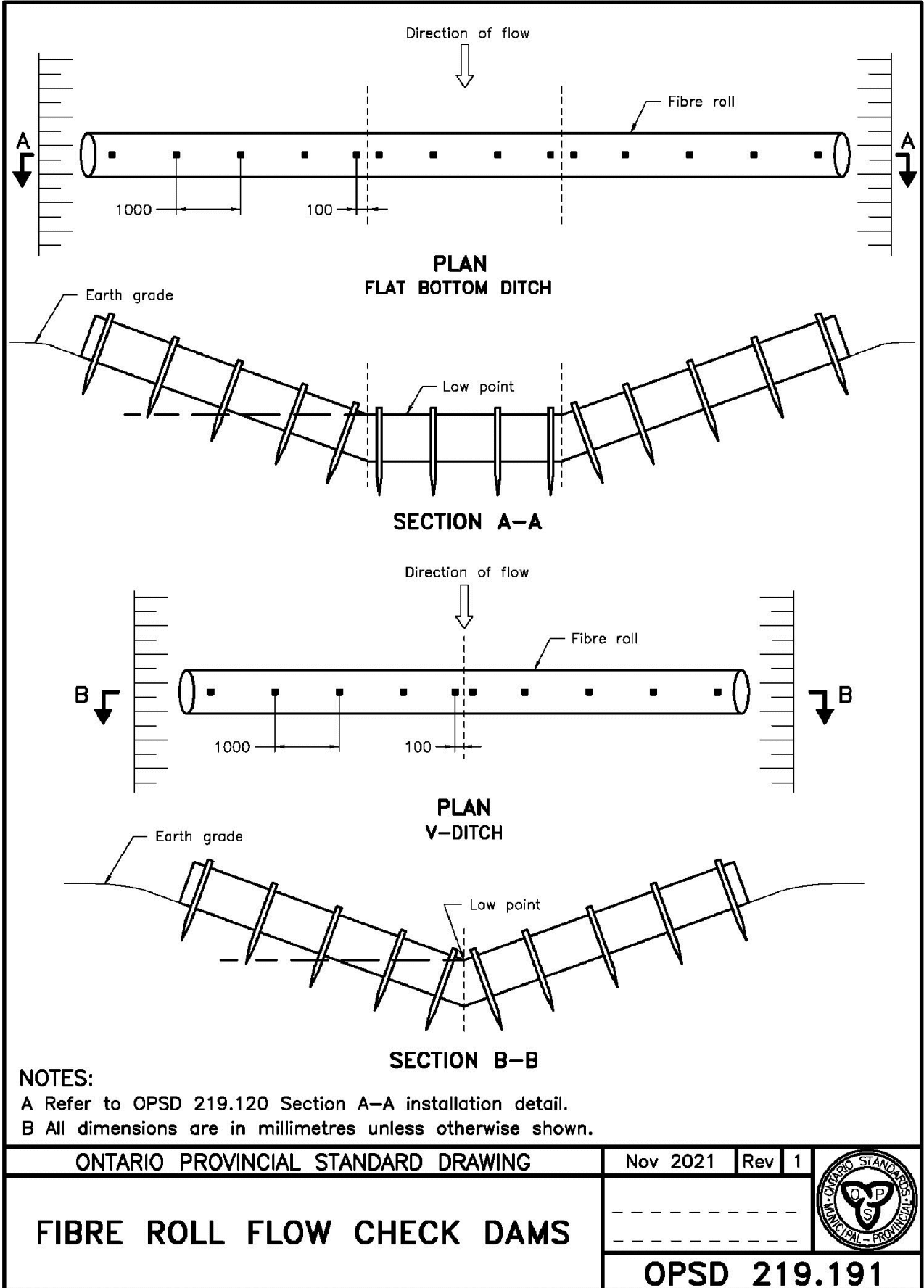
TITLE
DETAILS OF THE PROPOSED DRAINAGE FEATURES

CONSULTANT	DATE	REVISION
	YYYY-MM-DD	2026-04-29
	DESIGNED	MS
	PREPARED	MLF/YW
	REVIEWED	MS
	APPROVED	HF

PROJECT NO. CA0054344.1346 CONTROL 0001 REV. 0 FIGURE 2.2

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- NOTE(S)**
- UPON OBTAINING ALL THE REQUIRED PERMITS AND APPROVALS FROM REGULATOR AGENCIES, THE DEVELOPMENT OF THE SITE IS EXPECTED TO CONSIDER THE FOLLOWING EROSION AND SEDIMENT CONTROL (ESC) MEASURES PRIOR TO AND DURING THE CONSTRUCTION ACTIVITIES:
 - PRIOR TO ANY TOPSOIL REMOVAL OR GRADING, THE WORK AREA IS TO BE SURROUNDED BY A SINGLE ROW OF LIGHT-DUTY SILT FENCE PER ONTARIO PROVINCIAL STANDARD DRAWING (OPSD 219.110).
 - STRAW BALES PER OPSD 219.180 INSTALLED IN THE DITCH(ES) DOWNSTREAM OF THE WORK AREA AND UPSTREAM OF THE SURROUNDING SILT FENCE.
 - STOCKPILED MATERIAL FOR USE AT THE ENTRANCE/EXIT SHOULD BE LOCATED WITHIN THE SILT FENCE BOUNDARY. STOCKPILED TOPSOIL MATERIAL SHOULD ALSO BE COVERED WITH TARPS OR COCONUT FIBER MATS, TO REDUCE SEDIMENT WASH OFF.
 - THE PROPOSED ESC MEASURES ARE TO BE INSPECTED DAILY BY THE CONTRACTOR AND DEFICIENCY ADDRESSED.
 - ALL AREAS THAT HAVE BEEN WORKED BUT WILL NOT RECEIVE FURTHER GRADING WITHIN 24 HOURS SHALL BE STABILIZED WITH A SUITABLE TEMPORARY SEED MIX TO REDUCE THE RISK OF EROSION.
 - GRADED AREAS SHOULD BE SEEDED ONCE FINAL GRADING IS GRADED IS COMPLETE, AND
 - THE PROPOSED ESC MEASURES SHALL REMAIN IN PLACE UNTIL POST-CONSTRUCTION PLANTING HAS SUFFICIENTLY STABILIZED THE SITE.
 - THE CONTRACTOR SHALL PREPARE AND BE RESPONSIBLE FOR ANY NECESSARY PUMPING ARRANGEMENTS THAT MAY BE REQUIRED FOR DEWATERING EXCAVATIONS FOR THE INSTALLATION OF THE PROPOSED STORMWATER MANAGEMENT FEATURES. POTENTIAL WATER MAY BE ENCOUNTERED FROM SURFACE AS WELL AS GROUNDWATER SOURCES.
 - DEWATERING ACTIVITIES WILL DISCHARGE ONLY CLEAN WATER, AND APPROVAL OF ITS DISCHARGE TO SURFACE OR SUB-SURFACE INFRASTRUCTURE WILL BE APPROVED BY THE RESPONSIBLE REGULATORY AGENCY PRIOR TO CONSTRUCTION. SEDIMENT BAGS ARE RECOMMENDED TO BE USED, TO ENSURE THE DISCHARGED WATER IS TREATED FOR POTENTIAL SUSPENDED SOLIDS FROM THE SITE CONSTRUCTION/DISTURBANCE ACTIVITIES.
 - THE PROPOSED FIBRE ROLL CHECK DAMS (SHOWN ON OPSD 219.191) ARE TO BE INSTALLED AFTER THE CONSTRUCTION OF THE PROPOSED DITCHES; SEE FIGURE 2.1 FOR THE DITCH(ES) LOCATION AND FIBRE ROLL CHECK DAMS NUMBER AND SPACING.
 - FOR DURING CONSTRUCTION, TEMPORARY CULVERT CROSSINGS TO BE PROVIDED AT THE INLET AND OUTLET OF EACH CULVERTS AS PER OPSD 221.040. FOR POST-DEVELOPMENT CONDITIONS, CULVERT INLET AND OUTLET PROTECTION TO BE PROVIDED AS PER OPSD 810.010 AND OPSD 803.030 AND 803.031 AS APPROVED BY A GEOTECHNICAL ENGINEER BASED ON SOIL TYPE.

**ISSUED FOR
APPROVAL**

CLIENT
SUNROCK INDUSTRIES CANADA ULC

PROJECT
**SUNROCK READY-MIX CONCRETE PLANT, HILLIS ROAD SITE,
PETERBOROUGH, ONTARIO**

TITLE
**DETAILS OF THE PROPOSED EROSION AND SEDIMENT
CONTROL MESURES, AND OTHER DRAIANGE FEATURES**

CONSULTANT	YYYY-MM-DD	2026-03-30
	DESIGNED	MS
	PREPARED	MLF/YW
	REVIEWED	MS
	APPROVED	HF



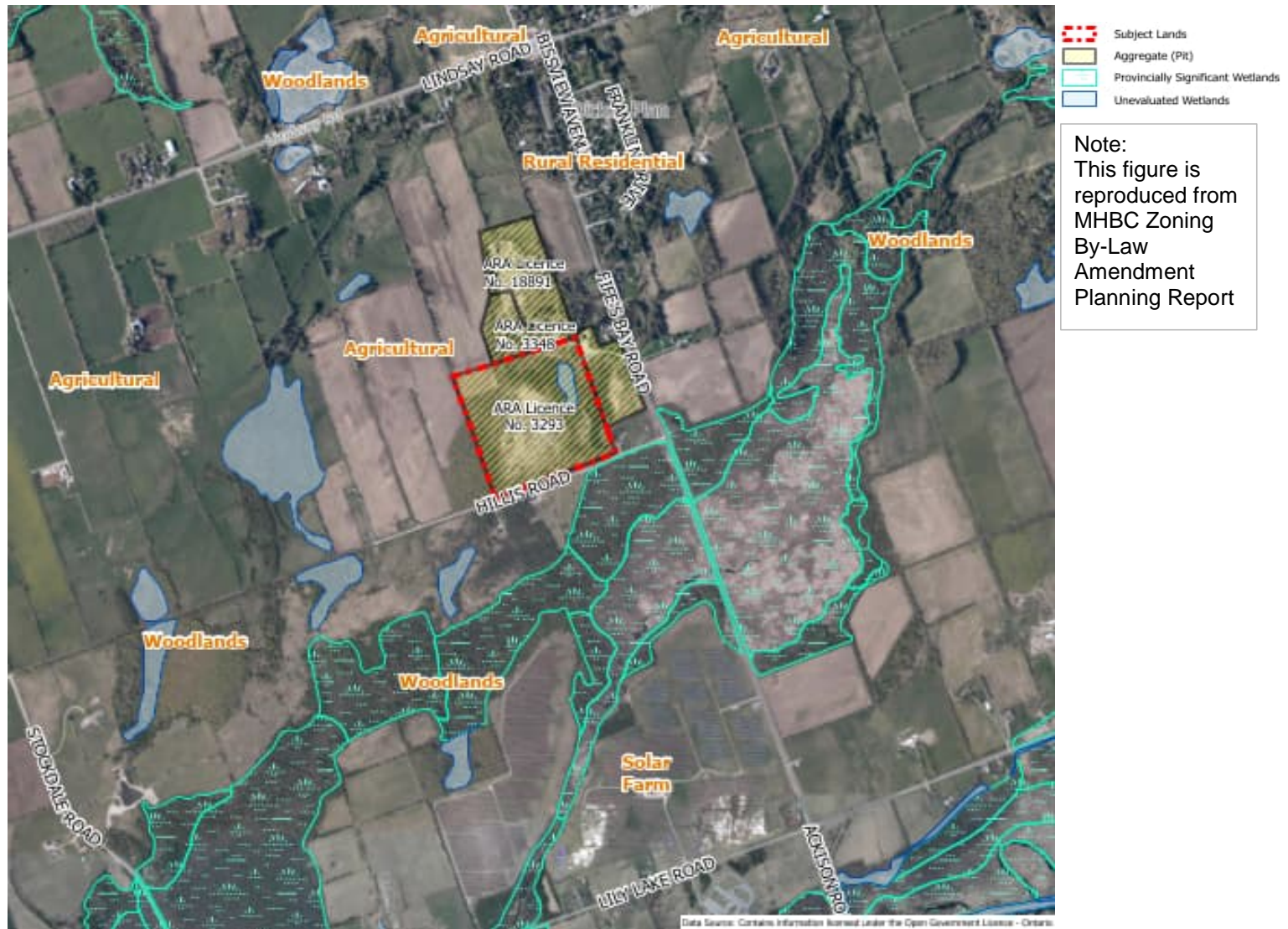
25 mm IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI D

APPENDIX A

**Context Plan, Catchment Area and
Licensed Site Plan**

Context Plan

Figure A-1



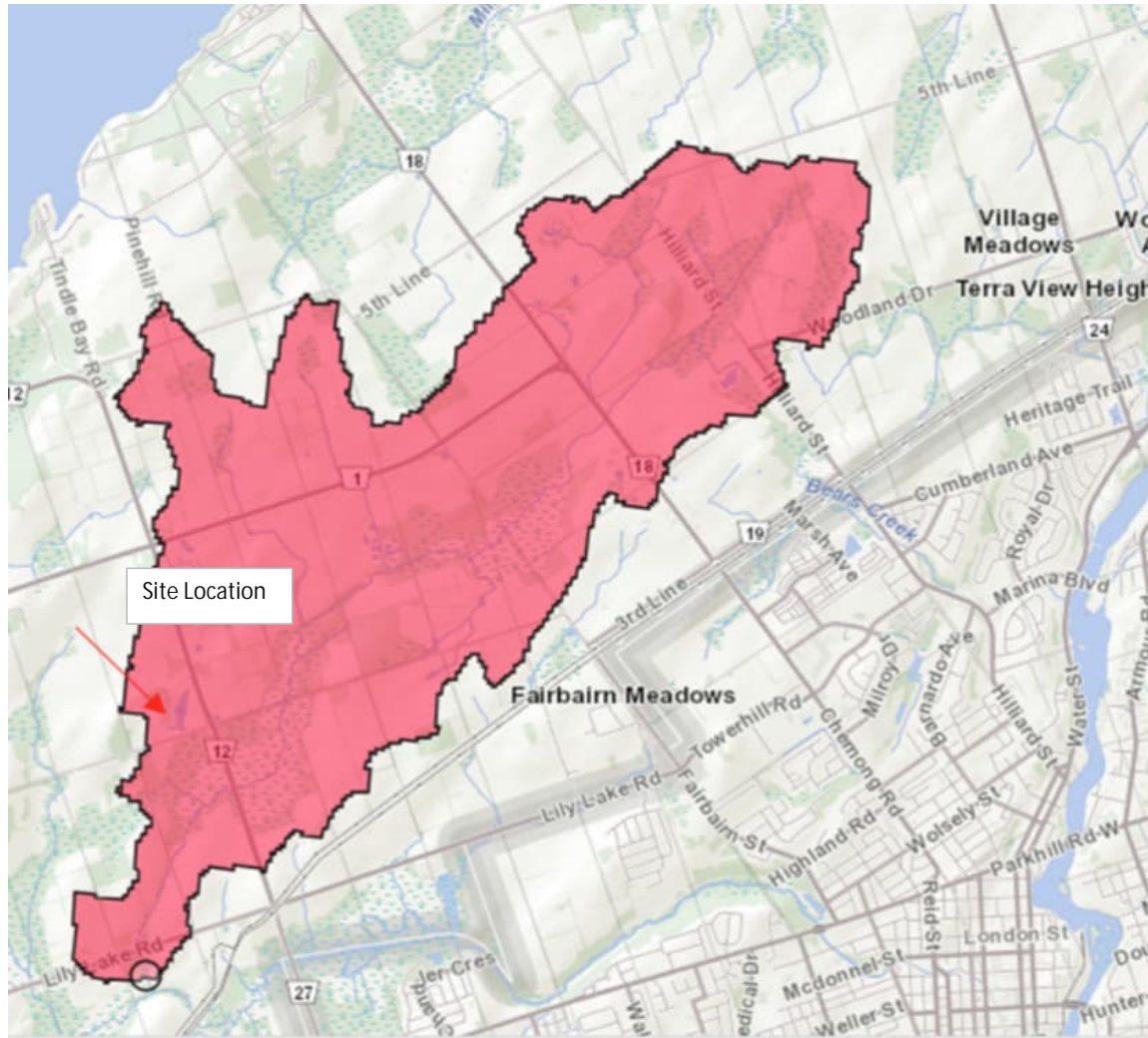
PROJECT: Sunrock RMC Plant, Hilis Rd Site, Peterborough, ON
PROJECT #: CA0054344.1346
CLIENT: Sunrock Industries Canada ULC



DATE: April 2026
DRAWN: MHBC
CHECK: HF

Catchment Area Encompassing the Site

Figure A-2

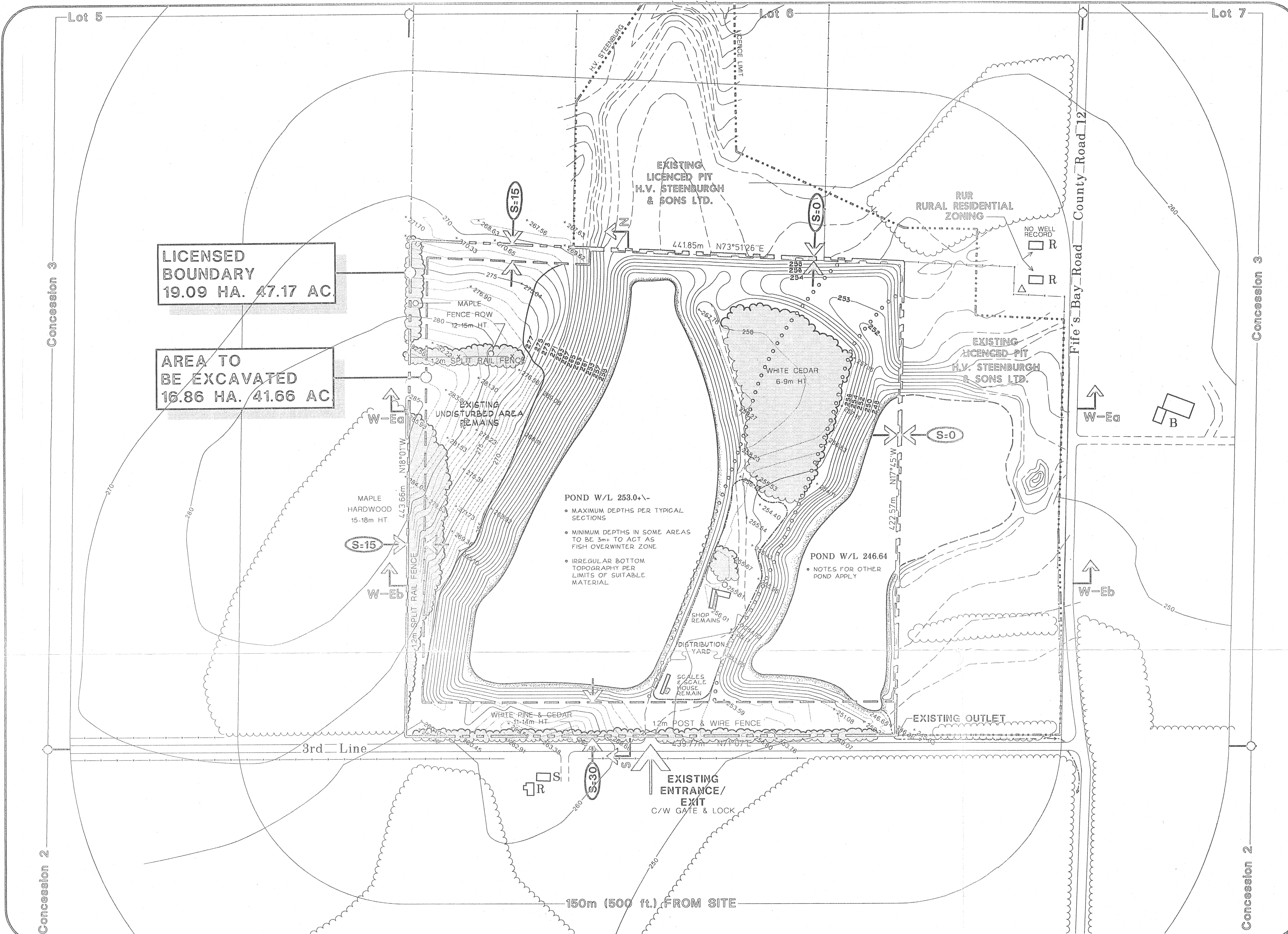


Note:
This catchment
area delineation is
produced from
Ontario Watershed
Information Tool
(OWIT)

PROJECT: Sunrock RMC Plant, Hillis Rd Site, Peterborough, ON
PROJECT #: CA0054344.1346
CLIENT: Sunrock Industries Canada ULC



DATE: April 2026
DRAWN: MS
CHECK: HF



Legend

- LICENSED BOUNDARY
- - - EXCAVATION SETBACK LIMIT
- ← S-15 → SETBACKS, METRES
- EXISTING CONTOURS
- EXISTING SPOT ELEVATIONS
- EXISTING WOODY VEGETATION
- EXISTING FENCES
- ↑ W-15 ↑ CROSS SECTION LOCATION
- △ EXISTING WELLS WITHIN 300m
- R RESIDENCE
- S SHED
- B BARN
- EXISTING VEGETATION MAINTAINED
- PROPOSED CONTOURS
- PROPOSED SHORELINE
- SUB-SURFACE CLAY RIDGE APPROXIMATE EXTENT
- MAJOR INTERNAL ROAD

General Notes

- STAGES WILL BE PROGRESSIVELY REHABILITATED, AS SHOWN ON PAGE 2. REHABILITATION WILL BE SEQUENTIAL TO MINIMIZE THE EXTENT OF DISTURBED AREAS AT ANY ONE TIME.
- UPON COMPLETION OF EXTRACTION OPERATIONS, BOULDERS, LOGS AND STUMPS WILL BE RETAINED FOR USE AS HABITAT ENHANCEMENT, TO THE EXTENT POSSIBLE. OTHER NON-ORGANIC SCRAP MATERIAL SHALL BE DISPOSED OF IN ACCORDANCE WITH THE APPROVAL AND CURRENT GUIDELINES OF THE MINISTRY OF THE ENVIRONMENT.
- THE PIT FLOOR WILL BE GRADED PER THE FINAL CONTOURS. THE FINAL REHABILITATION DRAINAGE WILL GENERALLY BE BY PERCOLATION THROUGH THE REMAINING PONDS. A LIMITED AMOUNT OF DRAINAGE WILL LEAVE THE SITE, THROUGH THE EXISTING OUTLET AT THE SOUTHEAST CORNER.
- AREA TO BE REHABILITATED

	HA.	AC.	%
TOTAL LICENSED AREA	19.09	47.17	100
LESS SETBACKS	2.21	5.46	11.6
LESS EXISTING UNDISTURBED AREA	2.30	5.68	12
LESS EXISTING CEDAR BUSH	1.35	3.34	7.1
LESS EXISTING DISTRIBUTION YARD	0.87	2.15	4.6
LESS EXISTING POND	0.73	1.80	3.8
NET AREA TO BE REHABILITATED	11.63	28.74	60.9

 (INCLUDES PROPOSED PONDS)
- THE EXISTING FENCES, LOCATED ALONG THE WEST AND SOUTH LICENCE BOUNDARIES SHALL REMAIN IN PLACE AFTER FINAL REHABILITATION.
- THE EXISTING TREE SCREENS, LOCATED WITHIN THE EXCAVATION SETBACK AREAS, SHALL REMAIN IN PLACE AFTER FINAL REHABILITATION.
- THE SHOP, SCALE AND SCALE HOUSE WILL REMAIN FOLLOWING EXTRACTION OPERATIONS. THE DISTRIBUTION FACILITY IS EXPECTED TO CONTINUE FOLLOWING COMPLETION OF EXTRACTION AND REHABILITATION IN THE AREA INDICATED. THIS AREA WILL NOT REQUIRE REHABILITATION UNTIL SUCH TIME AS THE DISTRIBUTION FACILITY IS NO LONGER REQUIRED.
- FINAL AFTER-USE OF THIS SITE SHALL BE OPEN SPACE AND PONDS, UNLESS REDEVELOPMENT PLANS ARE PREPARED AND APPROVED BY THE AGENCIES HAVING JURISDICTION.
- CONTOURS SHOWN ON THIS PAGE FOR THE ADJACENT H.V. STEENBURGH PIT ARE TAKEN FROM THE EXISTING APPROVED REHABILITATION PLAN IN PLACE FOR THIS LICENCE. THE REHABILITATION CONTOURS HAVE BEEN ADJUSTED SLIGHTLY, IN SOME AREAS, TO ACCOUNT FOR ACTUAL AS-SURVEYED POND LIMITS AND SITE CONDITIONS.

ESSROC CANADA INC.
c/o Gormley Aggregates
P.O. Box 39, GORMLEY, ONTARIO L0H 1G0

DUNFORD PIT
LICENCE No. P732136

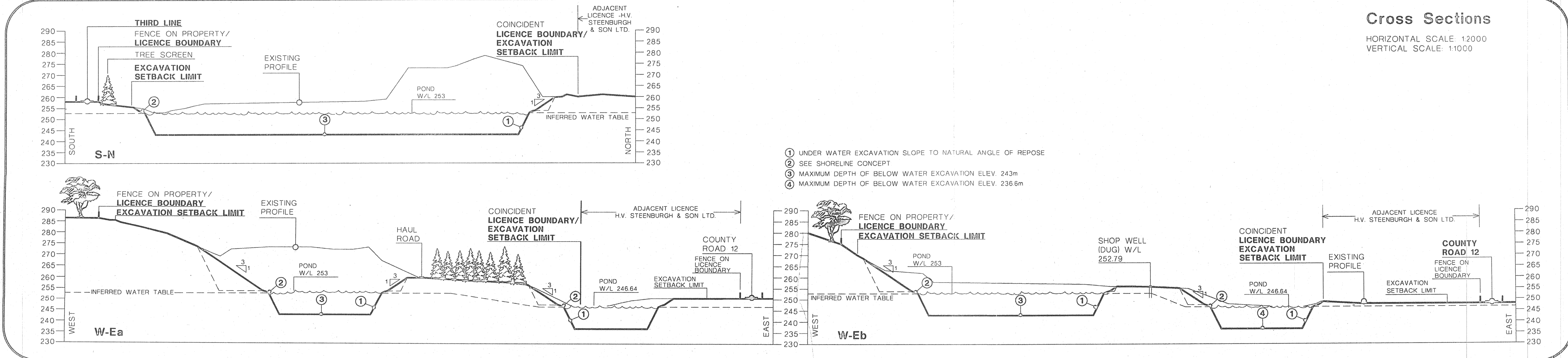
PART OF LOT 6, CONCESSION 3
TOWNSHIP OF SMITH
COUNTY OF PETERBOROUGH

Page 3 of 3

FINAL REHABILITATION PLAN

Rehabilitation Techniques

- ALL EXTRACTION FACES SHALL BE SLOPED AND GRADED TO NO STEEPER THAN 3:1, ACCOMPLISHED BY BACKFILLING WITH CLEAN FILL MATERIAL OBTAINED FROM WITHIN THE AREA TO BE EXCAVATED. WHERE MATERIAL IS FOUND TO BE UNSUITABLE FOR USE AS AGGREGATE IT MAY REMAIN IN PLACE, GRADED TO REQUIRED REHABILITATION LANDFORM.
- THE SITE WILL BE EXCAVATED BELOW THE ELEVATION OF THE WATER TABLE, CREATING TWO PONDS WITH MAXIMUM DEPTHS OF UP TO 10 METRES. THE SIDES OF THE PONDS WILL BE GRADED ACCORDING TO THE SHORELINE REHABILITATION EDGE STANDARD, WITH SHALLOW ZONES WHERE GOOD QUALITY AGGREGATE WARRANTS RECOVERY. THE FLOOR OF THE POND WILL HAVE IRREGULAR SURFACE ELEVATION, WITH DEEP AND SHALLOW ZONES, TO PROMOTE FISH HABITAT, IF POSSIBLE.
- SOIL COMPACTION SHALL BE ALLEVIATED BY RIPPING TO A MINIMUM DEPTH OF 0.5m, OR BY CULTIVATING AND/OR DISCING.
- SUBSOIL AND TOPSOIL SHALL BE REPLACED ON ALL PIT SLOPES AND THE PIT FLOOR TO MINIMUM DEPTH OF 0.3m, GRADED AND CULTIVATED IN PREPARATION FOR SEEDING. FERTILIZER(5-20-20) WILL THEN BE APPLIED ON THE AREAS TO BE SEEDDED.
- GRADED AREAS SHALL BE SEEDDED WITH A GRASS/LEGUME SEED MIXTURE COMPRISING WHITE CLOVER, TIMOTHY AND PERENNIAL RYEGRASS. ALL VEGETATION PLANTED ON AREAS UNDERGOING REHABILITATION SHALL BE REPLANTED, IF REQUIRED, TO ENSURE SUCCESSFUL ESTABLISHMENT AND PREVENT EROSION.



THIS SITE PLAN HAS BEEN PREPARED TO COMPLY WITH THE PROVISIONS OF SECTION 69 OF THE AGGREGATE RESOURCES ACT AND REPLACES THE SITE PLAN ORIGINALLY SUBMITTED AS PART OF A LICENCE APPLICATION UNDER THE PIT'S AND QUARRIES CONTROL ACT AND REGULATIONS DATE: 30 JUNE 1992

DRAWN: T.M.L. (On Autocad)
CHECKED: J.A.R.
APPROVED: R.J.L.
DATE: APR. 24 1992

REVISION NO.

No.	DATE	DESCRIPTION	APP'D
REVISIONS			

LONG ASSOCIATES CONSULTING LIMITED
Environmental Engineers and Planners
Orangeville, Ontario.

APPENDIX B

Site Visit Photos



Photo 1: Google Earth outlook view of the site showing the existing southeast pond and the adjacent east parcels (i.e., Aggregate Site; License No. 3348 northeast from the pond, and the southeast residential lot).



Photo 2: A closeup looking northeast at the onsite southeast pond showing the berm separating it from the pond in the adjacent Aggregate Site; License No. 3348.



Photo 3: Looking east from the site at the existing southeast pond; the house on the residential lot in Photo 1 is seen in the distance.



Photo 4: An existing onsite groundwater monitoring well within the site northwest area.



Photo 5: Another existing onsite groundwater monitoring well along the embankment of the southeast pond.



Photo 6: Looking at the northwest site corner; the wooded area shown in Figure 1 is seen in the distance at higher elevations and the sandy land cover below it.



Photo 7: Looking east along Hillis Road from the site entrance (to the left in the photo); no roadside ditch was observed for Hillis Road.

APPENDIX C

**Stormwater Management
Calculations, and Elevation
Contours and Regulatory Flood
Maps**

Edge of Water and Topographic Elevation Contours Near the Existing Pond

Figure C-1



PROJECT: Sunrock RMC Plant, Hillis Rd Site, Peterborough, ON
PROJECT #: CA0054344.1346
CLIENT: Sunrock Industries Canada ULC



DATE: April 2026
DRAWN: GU/RM

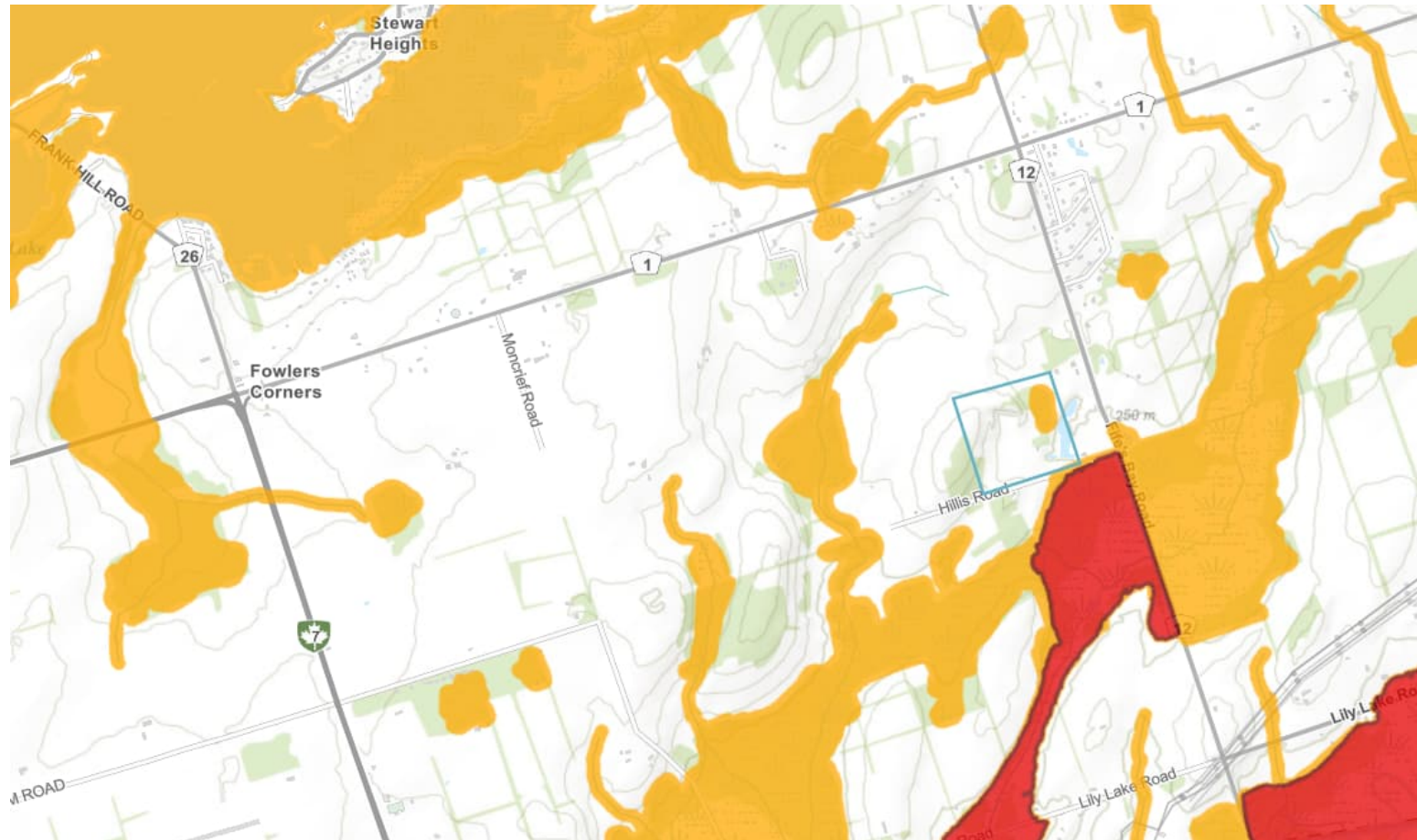


Table C-1: City of Peterborough Intensity-Duration-Frequency (IDF) Curve Parameters (A, B & C) (City of Peterborough, 2022)

Storm Event	1:2-year	1:5-year	1:10-year	1:25-year	1:50-year	1:100-year
A	662	1,098	1,560	2,010	2,200	2,507
B	7.5	10.1	13	14	14.6	14.8
C	0.79	0.83	0.86	0.88	0.87	0.88

Table C-2: Proposed (post-development) storm runoff rates in Ditch D-1

Storm Event	1:2-year	1:5-year	1:10-year	1:25-year	1:50-year	1:100-year
Drainage area, ha	4.32	4.32	4.32	4.32	4.32	4.32
Runoff coefficient, C	0.20	0.20	0.20	0.22	0.24	0.25
Post Development peak Q (m ³ /s)	0.14	0.18	0.21	0.28	0.34	0.38
Post Development peak Q (L/s)	136.9	183.0	214.9	276.3	335.2	382.3

Notes:

- 1- Runoff coefficients for 1:25-year, 1:50-year and 1:100-year are adjusted as per the Ministry of Transportation (MTO) Chart 1.07.

Table C-3: Proposed (post-development) storm runoff rates in Ditch D-2

Storm Event	1:2-year	1:5-year	1:10-year	1:25-year	1:50-year	1:100-year
Drainage area, ha	2.54	2.54	2.54	2.54	2.54	2.54
Runoff coefficient, C	0.20	0.20	0.20	0.22	0.24	0.25
Post Development peak Q (m ³ /s)	0.08	0.11	0.13	0.16	0.20	0.22
Post Development peak Q (L/s)	80.5	107.6	126.4	162.4	197.1	224.8

Notes:

- 1- Runoff coefficients for 1:25-year, 1:50-year and 1:100-year are adjusted as per MTO Chart 1.07.

Table C-4: Proposed (post-development) storm runoff rates in Ditch D-3

Storm Event	1:2-year	1:5-year	1:10-year	1:25-year	1:50-year	1:100-year
Drainage area, ha	5.28	5.28	5.28	5.28	5.28	5.28
Runoff coefficient, C	0.20	0.20	0.20	0.22	0.24	0.25
Post Development peak Q (m ³ /s)	0.17	0.22	0.26	0.34	0.41	0.47
Post Development peak Q (L/s)	167.3	223.7	262.7	337.7	409.6	467.3

Notes:

- 1- Runoff coefficients for 1:25-year, 1:50-year and 1:100-year are adjusted as per MTO Chart 1.07.

Table C-5: Proposed (post-development) storm runoff rates in Swale S-1

Storm Event	1:2-year	1:5-year	1:10-year	1:25-year	1:50-year	1:100-year
Drainage area, ha	0.34	0.34	0.34	0.34	0.34	0.34
Runoff coefficient, C	0.20	0.20	0.20	0.22	0.24	0.25
Post Development peak Q (m ³ /s)	0.01	0.01	0.02	0.02	0.03	0.03
Post Development peak Q (L/s)	10.9	14.6	17.1	22.0	26.7	30.4

Notes:

- 1- Runoff coefficients for 1:25-year, 1:50-year and 1:100-year are adjusted as per MTO Chart 1.07.

Table C-6: Proposed (post-development) storm runoff rates in Swale S-2

Storm Event	1:2-year	1:5-year	1:10-year	1:25-year	1:50-year	1:100-year
Drainage area, ha	3.13	3.13	3.13	3.13	3.13	3.13
Runoff coefficient, C	0.20	0.20	0.20	0.22	0.24	0.25
Post Development peak Q (m ³ /s)	0.10	0.13	0.16	0.20	0.24	0.28
Post Development peak Q (L/s)	99.2	132.6	155.7	200.2	242.8	277.0

Notes:

- 1- Runoff coefficients for 1:25-year, 1:50-year and 1:100-year are adjusted as per MTO Chart 1.07.

Table C-7: Proposed (post-development) storm runoff rates in Swale S-3

Storm Event	1:2-year	1:5-year	1:10-year	1:25-year	1:50-year	1:100-year
Drainage area, ha	1.88	1.88	1.88	1.88	1.88	1.88
Runoff coefficient, C	0.90	0.90	0.90	0.99	1.00	1.00
Post Development peak Q (m ³ /s)	0.27	0.36	0.42	0.54	0.61	0.67
Post Development peak Q (L/s)	268.0	358.5	420.8	541.0	607.7	665.5

Notes:

- 1- Runoff coefficients for 1:25-year, 1:50-year and 1:100-year are adjusted as per MTO Chart 1.07.

Table C-8: Trapezoidal Ditch D-1 Design / Sizing Calculations

	Value	Unit	Note
1:100-year peak flow rate	0.38	m ³ /s	North perimeter ditch D-1
Required sizing			
Width, B	1.50	m	Adjust as required and meet Check
depth, h	0.17	m	Adjust as required and meet Check
Side slope, Z	3	-	
Mannings' roughness (grassed channel)	0.035	-	
Channel bed slope, S	0.024	m/m	
Area, A	0.3417	m ²	
Perimeter, P	2.58	m	
Hydraulic radius, R	0.13	m	
Calculated flow rate, Q (Using Manning's Equation)	0.393	m ³ /s	> 100 yr storm peak flow
Check	OK	-	

Table C-9: Trapezoidal Ditch D-2 Design / Sizing Calculations

	Value	Unit	Note
1:100-year peak flow rate	0.26 ¹	m ³ /s	North South perimeter ditch D-2
Required sizing			
Width, B	1.50	m	Adjust as required and meet Check
Depth, h	0.15	m	Adjust as required and meet Check
Side slope, Z	3	-	
Mannings' roughness (grassed channel)	0.035	-	
Channel bed slope, S	0.017	m/m	
Area, A	0.2925	m ²	
Perimeter, P	2.45	m	
Hydraulic radius, R	0.12	m	
Calculated flow rate, Q (Using Manning's Equation)	0.264	m ³ /s	> 100 yr storm peak flow
Check	OK	-	

Note:

- 1- Includes flow received from Swale S-1

Table C-10: Trapezoidal Ditch D-3 Design / Sizing Calculations

	Value	Unit	Note
1:100-year peak flow rate	0.47	m ³ /s	South perimeter ditch D-3
Required sizing			
Width, B	1.50	m	Adjust as required and meet Check
Depth, h	0.19	m	Adjust as required and meet Check
Side slope, Z	3	-	
Mannings' roughness (grassed channel)	0.035	-	
Channel bed slope, S	0.024	m/m	
Area, A	0.3933	m ²	
Perimeter, P	2.70	m	
Hydraulic radius, R	0.15	m	
Calculated flow rate, Q (Using Manning's Equation)	0.482	m ³ /s	> 100 yr storm peak flow
Check	OK	-	

Table C-11: Triangular Swale S-1 Design / Sizing Calculations

	Value	Unit	Note
1:100-year peak flow rate	0.03	m ³ /s	Swale S-1
Required sizing			
Depth, h	0.15	m	Adjust as required and meet Check
Side slope, Z	3	-	
Mannings' roughness (grassed channel)	0.035	-	
Channel bed slope, S	0.011	m/m	
Area, A	0.0675	m ²	
Perimeter, P	0.95	m	
Hydraulic radius, R	0.07	m	
Calculated flow rate, Q (Using Manning's Equation)	0.035	m ³ /s	> 100 yr storm peak flow
Check	OK	-	

Table C-12: Triangular Swale S-2 Design / Sizing Calculations

	Value	Unit	Note
1:100-year peak flow rate	0.28	m ³ /s	Swale S-2
Required sizing			
Depth, h	0.30	m	Adjust as required and meet Check
Side slope, Z	3	-	
Mannings' roughness (grassed channel)	0.035	-	
Channel bed slope, S	0.017	m/m	
Area, A	0.2723	m ²	
Perimeter, P	1.91	m	
Hydraulic radius, R	0.14	m	
Calculated flow rate, Q (Using Manning's Equation)	0.28	m ³ /s	> 100 yr storm peak flow
Check	OK	-	

Table C-13: Triangular Swale S-3 Design / Sizing Calculations

	Value	Unit	Note
1:100-year peak flow rate	0.67	m ³ /s	Swale S-3
Required sizing			
Depth, h	0.47	m	Adjust as required and meet Check
Side slope, Z	3	-	
Mannings' roughness (grassed channel)	0.035	-	
Channel bed slope, S	0.01	m/m	
Area, A	0.6627	m ²	
Perimeter, P	2.97	m	
Hydraulic radius, R	0.22	m	
Calculated flow rate, Q (Using Manning's Equation)	0.696	m ³ /s	> 100 yr storm peak flow
Check	OK	-	

Table C-14: Triangular Swale S-4 Design / Sizing Calculations

	Value	Unit	Note
1:100-year peak flow rate	0.94 ¹	m ³ /s	Swale S-4
Required sizing			
Depth, h	0.48	m	Adjust as required and meet Check
Side slope, Z	3	-	
Mannings' roughness (grassed channel)	0.035	-	
Channel bed slope, S	0.017	m/m	
Area, A	0.6912	m ²	
Perimeter, P	3.04	m	
Hydraulic radius, R	0.23	m	
Calculated flow rate, Q (Using Manning's Equation)	0.960	m ³ /s	> 100 yr storm peak flow
Check	OK	-	

Note:

- 1- Includes flow received from Swale S-2 and Swale S-3

Table C-15: Reach length, and upstream and downstream invert elevations

Channel	Reach	Length (m)	Slope	Upstream Invert level (masl)	Downstream Invert level (masl)
Ditch D-1	Segment 1 (W-E)	412	0.036	272.4	257.4
	Segment 2 (N-S)	170	0.024	257.4	253.3
Ditch D-2	-	294	0.017	259.4	254.4
Ditch D-3	Segment 1 (N-S)	300	0.083	284.4	259.4
	Segment 2 (W-E)	212	0.024	259.4	254.4
Swale-1	-	120	0.011	258.5	257.2
Swale -2	-	202	0.017	258.7	255.3
Swale-3	-	150	0.010	256.6	255.1
Swale-4	-	40	0.017	255.1	254.4

APPENDIX D

EPA SWMM Model Results

EXISTING (PRE-DEVELOPMENT CONDITIONS) SCENARIOS

1. Status Report and Summary Results: Existing (pre-development conditions) - 1 in 2 Year Storm (6-hour SCS type II)

EPA STORM WATER MANAGEMENT MODEL - VERSION 5.2 (Build 5.2.4)

Analysis Options

Flow Units CMS

Process Models:

Rainfall/Runoff YES

RDII NO

Snowmelt NO

Groundwater NO

Flow Routing NO

Water Quality NO

Infiltration Method CURVE_NUMBER

Surcharge Method EXTRAN

Starting Date 06/01/2013 00:00:00

Ending Date 06/03/2013 00:00:00

Antecedent Dry Days 0.0

Report Time Step 00:05:00

Wet Time Step 00:05:00

Dry Time Step 00:05:00

*****	Volume	Depth
Runoff Quantity Continuity	hectare-m	mm
*****	-----	-----
Total Precipitation	0.730	38.600
Evaporation Loss	0.000	0.000
Infiltration Loss	0.676	35.774
Surface Runoff	0.030	1.569
Final Storage	0.024	1.257
Continuity Error (%)	-0.002	

*****	Volume	Volume
Flow Routing Continuity	hectare-m	10^6 ltr
*****	-----	-----
Dry Weather Inflow	0.000	0.000
Wet Weather Inflow	0.030	0.297
Groundwater Inflow	0.000	0.000
RDII Inflow	0.000	0.000

External Inflow	0.000	0.000
External Outflow	0.030	0.297
Flooding Loss	0.000	0.000
Evaporation Loss	0.000	0.000
Exfiltration Loss	0.000	0.000
Initial Stored Volume	0.000	0.000
Final Stored Volume	0.000	0.000
Continuity Error (%)	0.000	

Analysis begun on: Wed Apr 1 10:34:31 2026
 Analysis ended on: Wed Apr 1 10:34:31 2026
 Total elapsed time: < 1 sec

Subcatchment	Total Precip mm	Total Runon mm	Total Evap mm	Total Infil mm	Imperv Runoff mm	Perv Runoff mm	Total Runoff mm	Total Runoff 10 ⁶ ltr	Peak Runoff CMS	Runoff Coeff
1	38.60	0.00	0.00	35.77	0.00	1.57	1.57	0.30	0.03	0.041

2. Status Report and Summary Results: Existing (pre-development conditions) - 1 in 5 Year Storm (6-hour SCS type II)

EPA STORM WATER MANAGEMENT MODEL - VERSION 5.2 (Build 5.2.4)

Analysis Options

Flow Units CMS
 Process Models:
 Rainfall/Runoff YES
 RDII NO
 Snowmelt NO
 Groundwater NO
 Flow Routing NO
 Water Quality NO
 Infiltration Method CURVE_NUMBER
 Surcharge Method EXTRAN
 Starting Date 06/01/2013 00:00:00
 Ending Date 06/03/2013 00:00:00
 Antecedent Dry Days 0.0
 Report Time Step 00:05:00
 Wet Time Step 00:05:00
 Dry Time Step 00:05:00

	Volume	Depth
Runoff Quantity Continuity	hectare-m	mm

Total Precipitation	0.989	52.350
Evaporation Loss	0.000	0.000
Infiltration Loss	0.843	44.629
Surface Runoff	0.123	6.500
Final Storage	0.023	1.229
Continuity Error (%)	-0.015	

	Volume	Volume
Flow Routing Continuity	hectare-m	10^6 ltr

Dry Weather Inflow	0.000	0.000
Wet Weather Inflow	0.123	1.228
Groundwater Inflow	0.000	0.000
RDII Inflow	0.000	0.000
External Inflow	0.000	0.000
External Outflow	0.123	1.228
Flooding Loss	0.000	0.000
Evaporation Loss	0.000	0.000
Exfiltration Loss	0.000	0.000
Initial Stored Volume	0.000	0.000
Final Stored Volume	0.000	0.000
Continuity Error (%)	0.000	

Analysis begun on: Wed Apr 1 10:41:43 2026
 Analysis ended on: Wed Apr 1 10:41:43 2026
 Total elapsed time: < 1 sec

Summary Results

Topic: Subcatchment Runoff

Subcatchment	Total Precip mm	Total Runon mm	Total Evap mm	Total Infil mm	Imperv Runoff mm	Perv Runoff mm	Total Runoff mm	Total Runoff 10^6 ltr	Peak Runoff CMS	Runoff Coeff
1	52.35	0.00	0.00	44.63	0.00	6.50	6.50	1.23	0.10	0.124

3. Status Report and Summary Results: Existing (pre-development conditions) - 1 in 100 Year Storm (6-hour SCS type II)

EPA STORM WATER MANAGEMENT MODEL - VERSION 5.2 (Build 5.2.4)



 Analysis Options

Flow Units CMS
 Process Models:
 Rainfall/Runoff YES
 RDII NO
 Snowmelt NO
 Groundwater NO
 Flow Routing NO
 Water Quality NO
 Infiltration Method CURVE_NUMBER
 Surcharge Method EXTRAN
 Starting Date 06/01/2013 00:00:00
 Ending Date 06/03/2013 00:00:00
 Antecedent Dry Days 0.0
 Report Time Step 00:05:00
 Wet Time Step 00:05:00
 Dry Time Step 00:05:00

	Volume	Depth
Runoff Quantity Continuity	hectare-m	mm
*****	-----	-----
Total Precipitation	1.700	89.925
Evaporation Loss	0.000	0.000
Infiltration Loss	1.171	61.950
Surface Runoff	0.506	26.764
Final Storage	0.024	1.248
Continuity Error (%)	-0.040	

	Volume	Volume
Flow Routing Continuity	hectare-m	10^6 ltr
*****	-----	-----
Dry Weather Inflow	0.000	0.000
Wet Weather Inflow	0.506	5.058
Groundwater Inflow	0.000	0.000
RDII Inflow	0.000	0.000
External Inflow	0.000	0.000
External Outflow	0.506	5.058
Flooding Loss	0.000	0.000
Evaporation Loss	0.000	0.000
Exfiltration Loss	0.000	0.000

Initial Stored Volume 0.000 0.000
 Final Stored Volume 0.000 0.000
 Continuity Error (%) 0.000

Analysis begun on: Wed Apr 1 10:43:27 2026
 Analysis ended on: Wed Apr 1 10:43:27 2026
 Total elapsed time: < 1 sec

Summary Results										
Topic: Subcatchment Runoff										
Click a column header to sort the column.										
Subcatchment	Total Precip mm	Total Runon mm	Total Evap mm	Total Infil mm	Imperv Runoff mm	Perv Runoff mm	Total Runoff mm	Total Runoff 10 ^{^6} ltr	Peak Runoff CMS	Runoff Coeff
1	89.92	0.00	0.00	61.95	0.00	26.76	26.76	5.06	0.57	0.298

PROPOSED (POST-DEVELOPMENT CONDITIONS) SCENARIOS

1. Status Report and Summary Results: Proposed (post-development conditions) - 1 in 2 Year Storm (6-hour SCS type II)

EPA STORM WATER MANAGEMENT MODEL - VERSION 5.2 (Build 5.2.4)

Analysis Options

Flow Units CMS
 Process Models:
 Rainfall/Runoff YES
 RDII NO
 Snowmelt NO
 Groundwater NO
 Flow Routing YES
 Ponding Allowed NO
 Water Quality NO
 Infiltration Method CURVE_NUMBER
 Flow Routing Method DYNWAVE
 Surge Method EXTRAN
 Starting Date 06/01/2013 00:00:00
 Ending Date 06/03/2013 00:00:00
 Antecedent Dry Days 0.0
 Report Time Step 00:05:00
 Wet Time Step 00:05:00
 Dry Time Step 00:05:00
 Routing Time Step 5.00 sec
 Variable Time Step YES
 Maximum Trials 8
 Number of Threads 1
 Head Tolerance 0.005000 m

*****	Volume	Depth
Runoff Quantity Continuity	hectare-m	mm
*****	-----	-----
Total Precipitation	0.730	38.600
Evaporation Loss	0.000	0.000
Infiltration Loss	0.514	27.214
Surface Runoff	0.187	9.920
Final Storage	0.029	1.518
Continuity Error (%)	-0.135	

*****	Volume	Volume
Flow Routing Continuity	hectare-m	10^6 ltr
*****	-----	-----
Dry Weather Inflow	0.000	0.000
Wet Weather Inflow	0.187	1.875
Groundwater Inflow	0.000	0.000
RDII Inflow	0.000	0.000
External Inflow	0.000	0.000
External Outflow	0.000	0.000
Flooding Loss	0.000	0.000
Evaporation Loss	0.000	0.000
Exfiltration Loss	0.000	0.000
Initial Stored Volume	0.000	0.000
Final Stored Volume	0.187	1.875
Continuity Error (%)	0.011	

Time-Step Critical Elements

None

Highest Flow Instability Indexes

All links are stable.

Most Frequent Nonconverging Nodes

Convergence obtained at all time steps.

Routing Time Step Summary

Minimum Time Step : 4.50 sec
Average Time Step : 5.00 sec
Maximum Time Step : 5.00 sec
% of Time in Steady State : 0.00
Average Iterations per Step : 2.00

% of Steps Not Converging : 0.00

Time Step Frequencies :

- 5.000 - 3.155 sec : 100.00 %
- 3.155 - 1.991 sec : 0.00 %
- 1.991 - 1.256 sec : 0.00 %
- 1.256 - 0.792 sec : 0.00 %
- 0.792 - 0.500 sec : 0.00 %

Analysis begun on: Wed Apr 1 11:09:04 2026

Analysis ended on: Wed Apr 1 11:09:04 2026

Total elapsed time: < 1 sec

Summary Results										
Topic: Subcatchment Runoff										
Click a column header to sort the column.										
Subcatchment	Total Precip mm	Total Runon mm	Total Evap mm	Total Infil mm	Imperv Runoff mm	Perv Runoff mm	Total Runoff mm	Total Runoff 10 ^{^6} ltr	Peak Runoff CMS	Runoff Coeff
1	38.60	0.00	0.00	27.21	8.35	1.57	9.92	1.87	0.73	0.257

2. Status Report and Summary Results: Proposed (post-development conditions) - 1 in 5 Year Storm (6-hour SCS type II)

EPA STORM WATER MANAGEMENT MODEL - VERSION 5.2 (Build 5.2.4)

Analysis Options

- Flow Units CMS
- Process Models:
- Rainfall/Runoff YES
- RDII NO
- Snowmelt NO
- Groundwater NO
- Flow Routing YES
- Ponding Allowed NO
- Water Quality NO
- Infiltration Method CURVE_NUMBER
- Flow Routing Method DYNWAVE
- Surcharge Method EXTRAN
- Starting Date 06/01/2013 00:00:00
- Ending Date 06/03/2013 00:00:00
- Antecedent Dry Days 0.0
- Report Time Step 00:05:00

Wet Time Step 00:05:00
 Dry Time Step 00:05:00
 Routing Time Step 5.00 sec
 Variable Time Step YES
 Maximum Trials 8
 Number of Threads 1
 Head Tolerance 0.005000 m

*****	Volume	Depth
Runoff Quantity Continuity	hectare-m	mm
*****	-----	-----
Total Precipitation	0.989	52.350
Evaporation Loss	0.000	0.000
Infiltration Loss	0.636	33.647
Surface Runoff	0.326	17.267
Final Storage	0.029	1.513
Continuity Error (%)	-0.146	

*****	Volume	Volume
Flow Routing Continuity	hectare-m	10^6 ltr
*****	-----	-----
Dry Weather Inflow	0.000	0.000
Wet Weather Inflow	0.326	3.263
Groundwater Inflow	0.000	0.000
RDII Inflow	0.000	0.000
External Inflow	0.000	0.000
External Outflow	0.000	0.000
Flooding Loss	0.000	0.000
Evaporation Loss	0.000	0.000
Exfiltration Loss	0.000	0.000
Initial Stored Volume	0.000	0.000
Final Stored Volume	0.326	3.263
Continuity Error (%)	0.011	

 Time-Step Critical Elements

None

 Highest Flow Instability Indexes

All links are stable.

Most Frequent Nonconverging Nodes

Convergence obtained at all time steps.

Routing Time Step Summary

Minimum Time Step : 4.50 sec
 Average Time Step : 5.00 sec
 Maximum Time Step : 5.00 sec
 % of Time in Steady State : 0.00
 Average Iterations per Step : 2.00
 % of Steps Not Converging : 0.00
 Time Step Frequencies :
 5.000 - 3.155 sec : 100.00 %
 3.155 - 1.991 sec : 0.00 %
 1.991 - 1.256 sec : 0.00 %
 1.256 - 0.792 sec : 0.00 %
 0.792 - 0.500 sec : 0.00 %

Analysis begun on: Wed Apr 1 11:09:49 2026
 Analysis ended on: Wed Apr 1 11:09:49 2026
 Total elapsed time: < 1 sec

Summary Results										
Topic: Subcatchment Runoff										
Click a column header to sort the column.										
Subcatchment	Total Precip mm	Total Runon mm	Total Evap mm	Total Infil mm	Imperv Runoff mm	Perv Runoff mm	Total Runoff mm	Total Runoff 10 ^{^6} ltr	Peak Runoff CMS	Runoff Coeff
1	52.35	0.00	0.00	33.65	11.53	5.73	17.27	3.26	1.04	0.330

3. Status Report and Summary Results: Proposed (post-development conditions) - 1 in 100 Year Storm (6-hour SCS type II)

EPA STORM WATER MANAGEMENT MODEL - VERSION 5.2 (Build 5.2.4)

Analysis Options

Flow Units CMS
 Process Models:
 Rainfall/Runoff YES
 RDII NO
 Snowmelt NO
 Groundwater NO
 Flow Routing YES
 Ponding Allowed NO
 Water Quality NO
 Infiltration Method CURVE_NUMBER
 Flow Routing Method DYNWAVE
 Surcharge Method EXTRAN
 Starting Date 06/01/2013 00:00:00
 Ending Date 06/03/2013 00:00:00
 Antecedent Dry Days 0.0
 Report Time Step 00:05:00
 Wet Time Step 00:05:00
 Dry Time Step 00:05:00
 Routing Time Step 5.00 sec
 Variable Time Step YES
 Maximum Trials 8
 Number of Threads 1
 Head Tolerance 0.005000 m

*****	Volume	Depth
Runoff Quantity Continuity	hectare-m	mm
*****	-----	-----
Total Precipitation	1.700	89.925
Evaporation Loss	0.000	0.000
Infiltration Loss	0.875	46.314
Surface Runoff	0.798	42.208
Final Storage	0.029	1.546
Continuity Error (%)	-0.159	

*****	Volume	Volume
Flow Routing Continuity	hectare-m	10^6 ltr
*****	-----	-----
Dry Weather Inflow	0.000	0.000
Wet Weather Inflow	0.798	7.977
Groundwater Inflow	0.000	0.000
RDII Inflow	0.000	0.000
External Inflow	0.000	0.000

External Outflow	0.000	0.000
Flooding Loss	0.000	0.000
Evaporation Loss	0.000	0.000
Exfiltration Loss	0.000	0.000
Initial Stored Volume	0.000	0.000
Final Stored Volume	0.798	7.976
Continuity Error (%)	0.011	

Time-Step Critical Elements

None

Highest Flow Instability Indexes

All links are stable.

Most Frequent Nonconverging Nodes

Convergence obtained at all time steps.

Routing Time Step Summary

Minimum Time Step	:	4.50 sec
Average Time Step	:	5.00 sec
Maximum Time Step	:	5.00 sec
% of Time in Steady State	:	0.00
Average Iterations per Step	:	2.00
% of Steps Not Converging	:	0.00
Time Step Frequencies	:	
5.000 - 3.155 sec	:	100.00 %
3.155 - 1.991 sec	:	0.00 %
1.991 - 1.256 sec	:	0.00 %
1.256 - 0.792 sec	:	0.00 %
0.792 - 0.500 sec	:	0.00 %

Analysis begun on: Wed Apr 1 11:07:50 2026

Analysis ended on: Wed Apr 1 11:07:50 2026

Total elapsed time: < 1 sec

Summary Results										
Topic: Subcatchment Runoff										
Click a column header to sort the column.										
Subcatchment	Total Precip mm	Total Runon mm	Total Evap mm	Total Infil mm	Imperv Runoff mm	Perv Runoff mm	Total Runoff mm	Total Runoff 10 ⁶ ltr	Peak Runoff CMS	Runoff Coeff
1	89.92	0.00	0.00	46.31	20.21	21.99	42.21	7.98	2.26	0.469

APPENDIX E

**Sunrock Spill Prevention, Control
and Countermeasure (SPCC) Plan**



Sunrock Industries Canada ULC

SPILL RESPONSE – Site Posting

1. Stop and contain the spill and shut down all dewatering pumps immediately:

- **Eliminate** all ignition and/or power sources.
- In the event of fire or medical emergency, **call 911** for fire, police and ambulance.
- Immediately **prevent any further spilling** ONLY if there is no risk to health and safety.
- **Contain spill** to prevent further spreading or entry into waterways, sewers, basement or confined areas. Limit the area the spill will cover to reduce increased contamination.
- **Absorb or cover spilled** material using absorbent material or dry earth, sand or other material that won't burn. Utilize on site spill kits and stockpiles of aggregates.
- Any spilled material that is in liquid form and/or has come into contact with other liquids will be removed from the site by using a vacuum truck.
- Any spilled material that is in solid form will be contained on a tarp, covered with a tarp where it will wait for environmental sampling prior to removal from the site.

2. Notify:

- **Sunrock Personnel:**
Santosh Patel - 905-926-1257
Wayne Davenport - 905-716-6186
- **Otonabee-Peterborough Source Water Protection Risk Management Official:**
Meredith Carter - 705-745-5791 ext.223
Candace Clark - 705-745-5791 ext. 215
Jim Shrubbsall - 705-745-5791 ext. 217

3. External Notification - Ministry of the Environment, Conservation and Parks:

Spill must be reported to the MECP, by site personnel, immediately when the person knows or ought to know that the pollutant is spilled and is causing or is likely to cause an adverse effect.

Adverse Effect:

- Impairment to the quality of the natural environment
- Injury or damage to property or animal life
- Adverse health affects
- Safety risk
- Making property, plant, or animal life unfit for use
- Loss of enjoyment of normal use of property
- Interference with the normal conduct of business

Ministry of the Environment Spills Action Centre
1 (800) 268-6060 immediately after the spill is in control.

Environmental officers who receive the calls at the Spills Action Centre can provide advice and information related to spills or drinking water events through a series of operating procedures. They can also activate a field response when needed or initiate service continuity arrangements.

Make a record of and have the following information ready:

- Your name, company name, location
- What was spilled, how much and how it was spilled?
- Is there any potential impact to water in the area?
- What you are doing to contain and clean up the spill?

4. Record the Time/Date of the call to the MECP along with any instructions they give you.

5. Ensure that you record the name of the MECP representative on the phone.

CONTAMINANT MANAGEMENT PLAN

Sunrock Industries Canada ULC (herein referred to as “Sunrock”) has prepared the following contaminant management plan as per the MECP Ontario Regulation 224/07. As part of standard operations at the Site, the washout weir shall be inspected on a daily basis to ensure their continued integrity. Where deficiencies are identified, they shall be promptly rectified. Deficiencies and repairs shall be documented in an Operations and Maintenance Manual maintained on-Site.

Potential spills on-Site may include:

1. Unwanted discharge of concrete truck washing water; and
2. Fuels / lubricants from on-site equipment or dumping hydro-vac trucks.

1.0 SPILL PROCEDURE

A spill occurs when water within the truck washout weir is discharged to the surface or into the subsurface. As defined in Ontario Regulation 675/98 the MECP should be notified within ten (10) working days of the occurrence of any reportable spill.

If a spill occurs, Sunrock must follow the following procedures:

1. NOTIFY MECP: Contact Ministry of the Environment, Conservation and Parks (MECP) Spills Action Centre to inform them of the spill. The Spills Action Centre provides a province-wide toll-free number 1-800-268-6060 which is answered by an environmental officer, 24 hours a day, seven days a week. A written report of the spill is due to the MECP’s District Manager within ten (10) working days of the spill. The report to the District Manager required the cause and discovery of the spill, clean-up and recovery measures taken, preventative measures to be taken, and schedule of implementation.

The following information will be requested by the Spill Action Centre:

- Date and time of the spill;
- Nature of the spill. The type of spill being reported for is an accidental release of water to the natural environment;
- Approximate volume of the spill;
- Action taken to correct the spill; and
- Clean-up procedure for the spill, including date and time of clean-up.

2. CONTAIN SPILL: Attempt to safely contain the spill and minimize or prevent damage to the environment, until further assistance and instructions are received. Wear appropriate safety equipment (e.g. gloves, appropriate eye protection, rubber boots, protective clothing).

3. NOTIFY MUNICIPALITY: Contact the York Region Risk Management Official (1-877-464-9675 ext. 75050) within 24 hours of the spill.

4. INFORM SITE PERSONNEL: Report the spill to the required personnel on Site including the following:

- Santosh Patel - 905-926-1257
- Wayne Davenport - 905-716-6186

5. UNKNOWN SPILL CAUSE: If the cause of the spill is unknown or appears to be an issue with the washout weir, contact WSP to assist in troubleshooting the spill (see contact information below). Potential causes may include the following:

- Increased precipitation;
- Increased truck washing; and
- Failure of washout weir.

6. ASSESS IMPACT: In consultation with **WSP**, an investigation and sampling program may be required to determine the extent of the possible environmental impact (e.g. surface water and sediment sampling, etc.).

7. RECORD KEEPING: Record the spill event, including the cause and actions taken, in an Operations and Maintenance Manual to be kept on-Site.

1.1 CONTACTS

The following table provides contact numbers for spill reporting.

EMERGENCY NUMBERS

Contact	Phone Number
Spills Action Centre - MECP	1-800-268-6060
Otonabee-Peterborough Risk Management Official	705-745-5791 ext. 223, 215, 217
Sunrock Industries Canada	877-837-6934

1.2 SPILL CONTAINMENT STEPS

The following procedures may be used to contain spills in the following locations:

- Spills on Land;
- Spills into Water;
- Spills on Ice;
- Spills on Snow; and
- Worst-case scenario.

Any remedial action should be completed in consultation with WSP, the MECP, the Town of Georgina and York Region, in accordance with applicable local/regional/provincial and federal regulations.

1.2.1 CONTAINMENT OF SPILLS ON LAND

Spills on land include spills on rock, gravel, soil and/or vegetation. It is important to note that soil is a natural sorbent, thus spills on soil are generally less serious than spills on water as contaminated soil can be more easily recovered. Generally, spills on land occur during the late spring, summer, or fall when snow cover is at a minimum. It is important that all measures be undertaken to avoid spills reaching open water bodies.

1.2.1.1 DYKES

Dykes can be created using soil surrounding a spill on land. These dykes are constructed around the perimeter or down-slope of the spilled material (e.g. settling pond water, fuel). A dyke needs to be built up to a size that will ensure containment of the maximum quantity of spilled material that may reach it. In the case of fuel spills, a plastic tarp can be placed on and at the base of the dyke such that fuel can pool up and subsequently be removed

with sorbent materials or by pump into barrels or bags. If the spill is migrating very slowly a dyke may not be necessary and sorbents can be used to soak up fuels before they migrate away from the source of the spill. In the case of water from settling ponds, a trench may be more appropriate.

1.2.1.2 TRENCHES

Trenches can be dug out to contain spills as long as the top layer of soil is thawed. Shovels, pick axes, or a loader can be used depending on the size of trench required. If fuel was spilled it can then be recovered using a pump or sorbent materials. If settling pond water is contained it can then be recovered using a pump.

1.2.2 CONTAINMENT OF SPILLS IN WATER

Spills into water, such as rivers, streams, or lakes are the most serious types of spills as they can negatively impact water quality and aquatic life. All measures need to be undertaken to contain spills on open water.

1.2.2.1 WEIRS

Weirs can be used to contain spills in streams and to prevent further migration downstream. Plywood or other materials found on-site can be placed into and across the width of the stream, such that water can still flow under the weir. Spilled fuel will float on the water surface and be contained at the foot of the weir. It can then be removed using sorbents, booms or pumps and placed into barrels or plastic bags. In the case of settling pond water, this approach is not applicable.

1.2.2.2 BARRIERS

In some situations, barriers made of netting or fence material can be installed across a stream, and sorbent materials placed at the base to absorb spilled fuel. Sorbents will need to be replaced as soon as they are saturated. Water will be allowed to flow through. This is very similar to the weir option discussed above.

Note that in some cases, it may be appropriate to burn fuel or to let volatile fuels such as gasoline evaporate after containment on the water surface. This should only be undertaken in consultation with, and after approval from the MECP or Spills Action Centre Environmental Officer.

In the case of settling pond water, straw or hay bails shall be installed across the width of the stream in order to filter suspended particulate in conjunction with silt screens. The height of the hay bails and silt screen shall be at least double the height of the natural water course level. The amount of suspended particulate will determine the frequency the hay bails and screens shall be replaced.

1.2.2.3 DYKES

Dykes can be used to contain settling pond water spills into water. Clayey soil can be used to form a dyke down slope of the spill, thus a barrier is created thus helping to contain the spill before entering a waterway. Should the settling pond water enter a waterway, dykes can be used to isolate sections of the waterway to facilitate removal by pumping. The collected settling pond water can then be pumped back into the settling pond or into an on-site water truck.

1.2.3 CONTAINMENT OF SPILLS ON ICE

Spills on ice are generally the easiest spills to contain due to the predominantly impermeable nature of the ice. For small spills, sorbent materials are used to soak up spilled fuel. Remaining contaminated ice/slush can be scraped and shovelled into a plastic bag or barrel. However, all possible attempts should be made to prevent spills from entering ice-covered waters as no easy method exists for containment and recovery of spills if they seep under the ice.

1.2.3.1 DYKES

Dykes can be used to contain spills on ice. By collecting surrounding snow, compacting it and mounding it to form a dyke down slope of the spill, a barrier is created thus helping to contain the spill. If the quantity of spill is fairly large, a plastic tarp can be placed over the dyke such that the spill pools at the base of the dyke. If the spill is fuel it can then be pumped into barrels or collected with sorbent materials. If the material is settling pond water, it can then be pumped back into the settling pond or into an on-site water truck.

1.2.3.2 TRENCHES

For significant spills on ice, trenches can be cut into the ice surrounding and/or down slope of the spill such that the spill is allowed to pool in the trench. If the spill is fuel related it can then be removed via pump into barrels, collected with sorbent materials, or mixed with snow and shovelled into barrels or bags. If the material is settling pond water, it can then be pumped back into the settling pond or into an on-site water truck.

1.2.3.3 BURNING

Burning should only be considered if other approaches are not feasible, and is only to be undertaken with the permission of the MECP or Spills Action Centre Environmental Officer. This approach is not applicable to settling pond water.

1.2.4 CONTAINMENT OF SPILLS ON SNOW

Snow is a natural sorbent, thus as with spills on soil, spills can be more easily recovered. Generally, small spills on snow can be easily cleaned up by raking and shovelling the contaminated snow into plastic bags or empty barrels, and storing these at an approved location.

1.2.4.1 DYKES

Dykes can be used to contain spills on snow. By compacting snow down slope from the spill, and mounding it to form a dyke, a barrier or berm is created thus helping to contain the spill. If the quantity of spill is fairly large, a plastic tarp can be placed over the dyke such that the spill pools at the base of the dyke. If the spill is fuel it can then be pumped into barrels or collected with sorbent materials. If the material is settling pond water, it can then be pumped back into the settling pond or into an on-site water truck.

1.2.5 WORST-CASE SCENARIOS

Dealing with spills which exceed the freeboard of a dyke or barrier would present a possible worst-case scenario for the Site. To contain the overflow, a trench or collection pit would have to be created downstream of the spill to contain the overflow.

Another worst-case scenario would be an excessive spill into water that may be difficult to contain with the equipment present at the Site. In this case, an emergency response mobile unit would have to be called in to deal with the spill using appropriate equipment.

1.3 PROCEDURES FOR TRANSFERRING, STORING, AND MANAGING SPILL RELATED WASTES

In most cases, spill cleanups are initiated at the far end of the spill and contained moving toward the centre of the spill. Sorbent socks and pads are generally used for small fuel spill clean-ups. A pump with attached transfer hose can suction spills from leaking containers or large accumulations on land or ice and direct these larger quantities into empty drums. Hand tools such as cans, shovels, and rakes are also very effective for small spills or hard to reach areas. Heavy equipment can be used if deemed necessary, and given space and time constraints.

Used sorbent materials are to be placed in plastic bags for future disposal. All materials mentioned in this section should be readily available at a pre-determined location on Site. Following clean-up, any tools or equipment used will be properly washed and decontaminated or replaced, if this is not possible.

For most of the containment procedures outlined above, spilled petroleum products and materials used for containment will be placed into empty waste oil containers and sealed for proper disposal at an approved disposal facility.

1.4 PROCEDURES FOR RESTORING AFFECTED AREAS

Once a spill of reportable size has been contained, Sunrock will consult with WSP, the Town of Georgina, York Region, the MECP, or Spills Action Centre Environmental Officer assigned to the file to determine the level of clean-up required. The Officer may require a site-specific study to ensure appropriate clean-up levels are met. Criteria that may be considered include natural biodegradation of petroleum-based products, replacement of soil, and re-vegetation.

1.5 AVAILABLE ON-SITE RESOURCES

Sunrock shall assemble spill kits composed of the below mentioned items and shall be available at a predetermined location. The contents are described below. In addition, earth-moving and other equipment should be available at the Site.

Contents of Spill Kits:

- 10 large bags with ties for temporary use
- 5 sorbent socks
- 10 sorbent pads
- 1 roll duct tape
- 1 utility knife
- 1 field notebook and pencil

2.0 IMMEDIATELY REPORTABLE SPILL QUANTITIES

SUBSTANCE FOR SPILLS ACTION CENTRE 24 HOUR SPILL LINE		
TDG Class	IMMEDIATELY REPORTABLE QUANTITIES	IMMEDIATELY REPORTABLE QUANTITIES
1 2.3 2.4 6.2 7 None	Explosives Compressed gas (toxic) Compressed gas (corrosive) Infectious substances Radioactive Unknown substance	Any amount
2.1 2.2	Compressed gas (flammable) Compressed gas (non-corrosive, non-flammable)	Any amount of gas from containers with a capacity greater than 100 L
3.1 3.2 3.3	Flammable Liquids	> 100 L
4.1 4.2 4.3	Flammable solids Spontaneously combustible solids Water reactant	> 25 kg
5.1 9.1	Oxidizing substances Miscellaneous products or substances (leachate), excluding PCB mixtures	> 50 L or 50 kg
5.2 9.2	Organic peroxides Environmentally hazardous	> 1 L or 1 kg
6.1 8 9.3	Poisonous substances Corrosive substances Dangerous wastes	> 5 L or 5 kg
9.1	PCB mixtures of 5 or more ppm	> 0.5 L or 0.5 kg
None	Other contaminants (e.g. crude oil, drilling fluid, produced water, waste or spent chemicals, used or waste oil, vehicle fluids, waste water, etc.)	> 100 L or 100 kg
None	Sour natural gas (i.e. contains H ₂ S) Sweet natural gas	Uncontrolled release or sustained flow of 10 minutes or more

In addition, all releases of harmful substances, regardless of quantity, are to be reported to the Spills Action Centre spill line if the release is near or into a water body, is near or into a designated sensitive environment or sensitive wildlife habitat, poses imminent threat to human health or safety, poses imminent threat to a listed species at risk or its critical habitat, or is uncontrollable.

3.0 LIMITATIONS ON THE SPILL CONTINGENCY PLAN

This Spill Contingency Plan does not constitute an audit of environmental management practices, indicate geotechnical conditions, or identify geologic hazards. WSP has prepared this Spill Contingency Plan in accordance with local generally accepted professional practices and procedures in general accordance with O. Reg. 227/04.



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