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STORMWATER MANAGEMENT IMPLEMENTATION REPORT ISSUED FOR DRAFT PLAN OF SUBDIVISION AND ZONING BY-LAW AMENDMENT

HUMBER STATION DISTRIBUTION CENTRE

TOWN OF CALEDON
REGION OF PEEL

PREPARED FOR:

PLD HUMBER STATION INVESTMENT LP

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CROZIER

Revision Number	Date	Comments
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1.0 Introduction

C.F. Crozier & Associates Inc. (Crozier) was retained by PLD Humber Station Investment LP to prepare a Stormwater Management Implementation Report in support of a proposed industrial subdivision development located at 12519-12713 Humber Station Road (Site) within the Town of Caledon. For orientation purposes, within this report Humber Station Road is considered to be running north to south, and Street A is east to west. This report is in support of the Draft Plan of Subdivision and Zoning By-law applications for the development. Crozier has prepared a separate Servicing Report dated April 2026 that should be read in conjunction with this report.

The property occupies 78.5 hectares and is located east of Humber Station Road approximately 700 m south of Healy Road and 1.2 km north of Mayfield Road. The development of the property will be split into four main development blocks. Access for vehicles and trucks is proposed via driveway accesses to Humber Station Road and a proposed 'Street A' (designed by others) which will run east-west through the Site.

This report demonstrates that the development's stormwater management plan meets the design criteria established by the Town of Caledon (Town), Region of Peel (Region), Toronto Region Conservation Authority (TRCA), and the Province of Ontario. The following reports, design standards, and documentation were referenced during the preparation of this report:

- Ministry of Environment (MOE) Stormwater Management Planning and Design Manual, dated March 2003
- Town of Caledon Development Standards Manual (2019)
- Environmental Compliance Approval for the Corporation of the Town of Caledon (ECA Number 324-S701 Issue Number 1, October 2022)
- Region of Peel Public Works Stormwater Design Criteria Manual and Procedural Manual (Version 2.1, June 2019)
- Public Works Design, Specifications & Procedures Manual Stormwater Management Report (Region of Peel, December 2022)
- Consolidated Linear Infrastructure Environmental Compliance Approval (CLI-ECA) for the Regional Municipality of Peel Stormwater Management System (ECA Number 009-S701)
- Toronto and Region Conservation Authority Stormwater Management Criteria (August 2012)
- MTO Stormwater Management Requirements for Land Development Proposals (April 2022)
- Humber Station – Comprehensive Environmental Impact Study and Management Plan – Phase 1 – Characterization/Existing Conditions and Baseline Inventory (GEI Consultants et al., July 2025); hereon referred to as CEISMP Phase 1 Report (GEI, March 2026)
- Humber Station – Comprehensive Environmental Impact Study and Management Plan – Phase 2 – Analysis, Impact Assessment, and Mitigation (GEI Consultants et al., July 2025); hereon referred to as CEISMP Phase 2 Report (GEI, March 2026)
- Humber Station Village Phase 2 Stormwater Management Report (Schaeffers, March 2026); completed as part of the CEISMP Phase 2 Report

- Supplemental Geotechnical Investigation – Proposed Industrial Development (Pinchin, November 2024); hereon referred to as Geotechnical Investigation (Pinchin, November 2024)
- Hydrogeological Assessment – 12519 & 12713 Humber Station Road, Bolton, Ontario (Palmer/SLR, June 10, 2026)
- Test Pit Investigation – 12519 & 12713 Humber Station Road, Bolton, ON (SLR, February 2025)
- Draft Plan of Subdivision (Mainline Planning Services, June 2026)
- Topographic Survey (David B.Searles Surveying Ltd., May 2023)
- Ontario Classified Point Cloud (Lidar-Derived) (Ministry of Natural Resources and Forestry, August 2019)
- Street A Profile (LEA Consulting, April 2024)
- Environmental Impact Study – 12519 and 12713 Humber Station Road, Caledon (SLR, November 2024)

2.0 Site Description and Background

2.1 Existing drainage

The 78.5 ha property is in a rural area of the West Humber Watershed and is bordered to the east by industrial lands, agricultural lands planned for industrial development to the north and south, and Humber Station Road to the west. Under existing conditions, the property consists primarily of agricultural fields with a residential dwelling fronting Humber Station Road. The topography splits the property drainage to the south, east and west. Existing ground elevations range from approximately 245 m from the northern portion of the Site to approximately 230 m in the southern portion of the Site. Ultimately property runoff drains into the Humber River and eventually outlets into Lake Ontario.

The property is located within the TRCA-regulated area due to its associated watercourses and wetlands. There are two (2) West Humber River tributaries located near the property.

- Clarkway Drive Tributary runs in a north-south direction along the eastern property line, located within a valley in a landscape cover of riparian meadow marsh and meadow shallow marsh vegetation. It is a perennial watercourse, expected to serve as a primary wildlife corridor, providing connectivity between smaller woodlots and wetlands to the Main Humber River watershed. HDF-8 drains into the Clarkway Drive Tributary immediately south of Mayfield Road.
- Goreway Road Tributary reach 1 runs in a north-south direction, west of the Humber Station Road. The western side of the property drains to the roadside ditch on the east side of Humber Station Road. The east roadside ditch drains to the west roadside ditch through culverts, then drains into the Goreway Road tributary though three small drainage features.

The Clarkway Drive Tributary and Goreway Road Tributaries drain north-south, parallel to each other, and converge into the West Humber River approximately 10 km south of the property. Drainage within the property is collected in seven (7) Headwater Drainage Features (HDF) that occur within the property.

HDFs draining to the Clarkway Drive Tributary

- HDF-6 starts midway through the property and extends to the east portion of the property, connecting to the Clarkway Drive Tributary.
- HDF-8 starts midway through the property and extends to the south portion of the property, traveling south and eventually outlets to the Clarkway Drive Tributary.
- HDF-14 starts at the southeast corner of the property and connects east to the Clarkway Drive Tributary.

It should be noted that through discussions between the Town and GEI, it was determined that HDF-8 has limited hydrologic function and requires mitigation. It is understood that mitigation for HDF-8 will occur downstream of Block 1 through the creation of a wetland feature (SLR, March 2026). Therefore, no direct compensation or replication of function is required as part of the Site. All other HDF segments within the Site lack any hydrologic function.

HDFs draining to the Goreway Road Tributary reach 1

- HDF-1 starts at the southwest corner of the property and connects west to the Goreway Road Tributary reach 1.
- HDF-2 starts midway through the property along the west side and connects west to the Goreway Road Tributary reach 1.
- HDF-3 extends from the wooded area in the north to the southwest portion of the property, connecting into an existing wetland, with an existing natural pond area. The wetland then drains to the Goreway Road Tributary Reach 1 through the existing culvert under Humber Station Road. According to the CEISMP Phase 1 Report (GEI, March 2026), this feature appears to be realigned for agricultural drainage purposes and was observed with intermittent flow through the monitoring events.
- HDF-7 starts at the northwest corner of the property and connects west to the Goreway Road Tributary reach 1.

It should be noted that HDF-3 was found to have valued hydrologic function, and this function is to be maintained through Site level design and localized restoration. No interruptions to upstream contribution are anticipated and hydrologic function will be maintained along the HDF-3 feature during the entirety of the proposed natural channel design.

Please refer to **Figure SWM-1** for location and identification of all HDFs. **Figure SWM-1** also identifies the property drainage to each tributary, in general conformance with **Figure 2.1** and **Figure 4.4** in the Phase 2 SWM report (Schaeffers, March 2026), see **Appendix A** for details. **Table 1** summarizes the drainage patterns under existing conditions.

Table 1: Existing Drainage Area Summary

Outlet	Catchment ID	Humber River Catchment ID	Hatch Colour	HDF ID	Area (ha)
Clarkway Drive Tributary	101A, 101B, 101C, 101D & 110	43.03	Orange	HDF-8	34.43
	102A,102B, 102C & 109	43.06	Green	HDF-14	4.56
	103A & 103B	43.10	Cyan	HDF-6	1.61
				Total	40.60
Goreway Road Tributary Reach 1	104A, 104B, 104C & 104D	41.07	Pink	HDF-3	16.85
	105A & 105B	41.08	Blue	HDF-7	1.61
	106A & 106B	41.06	Yellow	HDF-1	5.10
				Total	23.56
Natural Heritage System/ future Channel/ Undeveloped Area	107A, 107B, 107C & 108	41.07	Pink	HDF-3	11.88
Roads & Blocks by Others (Block 3 & 15)/0.3 m Reserve	-	-	-	-	2.42
Total					78.46

2.2 Soil Conditions

A Geotechnical Investigation was completed by Pinchin dated November 25, 2024. The report notes that the investigation included advancing a total of eighty-two (82) sampled boreholes and fourteen (14) test pits throughout the Site. The boreholes were advanced to depths approximately 3.4 m to 6.7 meters below existing ground surface. The soil of the Site is comprised of surficial topsoil underlain by a low plasticity silty clay with sand to sandy silty clay till. Some boreholes included non-cohesive layers comprised of sandy silt to sand and gravel ground below or interlayered with till deposit.

A topsoil layer of thickness ranging from 150 mm to 260 mm was found at ground surface in all boreholes. A 2.9 m to at least 6.5 m thick deposit of sandy silty clay to silty clay with sand till was encountered below the topsoil in all boreholes. Sandy silt / silty sand and gravel layer were encountered at twenty-one (21) boreholes at depth ranging from 2.3 m to 6.1 m below ground.

Refer to the Geotechnical Investigation by Pinchin for further details.

2.3 Groundwater Conditions

SLR completed a Technical Memorandum for a Test Pit Investigation for the Site dated February 25, 2025. The memo notes that a test pit investigation was completed to daylight lithology and groundwater conditions. Major findings from the investigation note that no groundwater medium and no evidence of groundwater existence were identified in the test pits. The Hydrogeological Assessment completed by Palmer (SLR) dated June 10, 2026, was updated to include the test pit investigation.

A map of groundwater contours for the LID design is shown on Figure 10 (SLR, June 2026), which is included in **Appendix A** for reference. The figure shows that groundwater levels within the Site range

from an elevation of 226 m to 234 m. There is a predominant flow direction towards the tributary of the West Humber River. Palmer/SLR used information from previous background reports in addition to their own investigation to determine Site conditions. Significant aquifers are not identified below the Site.

Hydraulic conductivity values range from 6.0 x 10^{-10} m/s to 6.6 x10^{-7} m/s, according to the Hydrogeological Assessment. Further, Guelph Permeameter Infiltration tests (GP tests) were conducted on June 2, 2025, at six locations within Block 1. The results provided in the report show infiltration rates range from 42 mm/hr to 56 mm/hr. Infiltration test for the rest of the Site will be completed during detailed design.

2.4 Constraints

The property constraints include various natural features, including wetlands, woodlands, and watercourses. There are two existing wetland areas within the Site, where buffers are applied for the proposed Block 1 and Block 2 areas. A wetland area is located at the northeast corner of the Site and a second wetland with an existing natural pond fronting Humber Station Road is located to the east of Block 4. There is a woodland area located at the north border of the Site. An existing watercourse HDF-3 connects the existing woodland and east wetland, conveying the drainage southwest from the existing woodland to the east wetland.

The most conservative setback from the natural features and Archaeological Assessment completed by Archeoworks Inc., dated October 2024, are used as the constraints for proposed subdivision design. Please refer to the Draft Plan of Subdivision (Mainline, March 2026) and Figure 4a: Observed Natural Heritage Features - Terrestrial (GEI Consultants, March 2026) included in **Appendix A** for details.

3.0 Proposed Development

The property is located within the Humber Station Employment Area, Lots 1-5, Concession 5 (Albion) in the Town of Caledon. A Comprehensive Environmental Impact Study and Management Plan (CEISMP) Phase 1- Characterization/Existing Conditions and Baseline Inventory was prepared by GEI Consultants dated March 2026. The Humber Station Village Phase 2 Stormwater Management Report prepared by Schaeffers dated March 2026, hereon referred to as Phase 2 SWM Report (Schaeffers, March 2026).

The Phase 2 SWM Report (Schaeffers, March 2026) was completed as part of the CEISMP Phase 2 Report. This report provides a plan for stormwater management for the Humber Station Villages Employment Area, including the preliminary design of three (3) stormwater management ponds to support development within the study area. The proposed development for the Site is in general conformance with the proposed stormwater management strategies in the Phase 2 SWM Report (Schaeffers, March 2026).

The proposed development will ultimately include six slab-on grade buildings (Buildings 1 to 6), at-grade asphalt parking and loading areas, access driveways, and landscaped areas. The development will be constructed in phases, including Phase 1A, Phase 1B, and Phase 2.

Phase 1A of the development includes the construction of a 1-storey industrial Building (Building 1) located on the northeast side of the Site within Block 1, and an interim stormwater management pond on the southeast side of the Site within Block 6. The Block 1 area will also include loading docks on the east and west sides of the building, trailer parking on the east and west Site limits, an internal drive aisle that wraps around the extents of the building, and passenger vehicle parking lots north

and south of the building. Access for passenger vehicles and trucks is proposed via two driveway accesses to Street A.

Phase 1B of the development includes the construction of three 1-storey industrial buildings (Buildings 2, 3 and 4), located on the west side of the Site within Blocks 2 and 4. The Phase 1B area will also include loading docks, trailer parking, internal drive aisles, and passenger vehicle parking lots. Access for passenger vehicles and trucks is proposed via driveway access to Humber Station Road for Block 2 and to Street A for Block 4.

Phase 2 of the development includes the removal of the interim SWM pond, and construction of two 1-storey industrial buildings (Buildings 5 and 6), located on the south side of the Site, within Blocks 5 and 6. Stormwater flows from Block 1 that were previously directed to the interim SWM pond in Block 6, and the post-development stormwater flows from Blocks 5 and 6 will be directed to the ultimate SWM Pond 3, which is located south of the Site, within the overall Secondary Plan area. The Phase 2 area will also include loading docks, trailer parking, internal drive aisles, and passenger vehicle parking lots. Access for passenger vehicles and trucks is proposed via driveway access to Humber Station Road and to Street A.

Table 2 summarizes the drainage patterns under proposed ultimate conditions.

Table 2: Proposed Drainage Area Summary

Outlet	Block	Catchment ID	Proposed Area (ha)	Existing Area (ha)	Area Difference (ha)
Clarkway Drive Tributary	1	C201, C201R, UC01-UC03	28.44	-	-
	5 & 6	C205	11.71	-	-
	7	C209A	1.26	-	-
		Total	41.41	40.60	0.81
Goreway Road Tributary reach 1	2	C202, 104D & 105B	12.13	-	-
	4	C203	10.62	-	-
		Total	22.75	23.56	-0.81
Natural Heritage System/Channel/ Undeveloped Area	3 & 8	107A, 107B, 107C, 108	11.88	11.88	0.00
Roads by Others & SWM Tank/Reserve	9-15		2.42	2.42	0.00
		Total	78.46	78.46	0.00

3.1 Property Layout

The proposed subdivision will include several blocks, including blocks with developable general employment area, an interim SWM pond block, a block for a Natural Heritage Features, an east-west right-of-way with adjacent SWM block, a north-south right-of-way, as well as road widenings and reserve blocks. See below for a summary of each block in the Draft Plan:

- **Block 1** covers 29.06 ha and will be developed for General Employment. Block 1 is currently proposed to be developed with one large industrial building, as well as associated drive aisles and parking areas.

- **Block 2** covers 12.13 ha and will be retained by the owner for future general employment development. Block 2 is currently proposed to be developed with two industrial buildings, as well as associated drive aisles and parking areas.

- **Block 3** covers an area of 0.13 ha and will be retained by the owner for future general employment development. At this time, however, there is no plan for development of Block 3.

- **Block 4** is 10.65 ha and will be retained by the owner for future general employment development. Block 4 is currently proposed to be developed with one industrial building, as well as associated drive aisles and parking areas.

- **Block 5** covers 7.94 ha and will be retained by the owner for future general employment development. Block 5 is ultimately proposed to be combined with Block 6, for a total area of 12.31 ha. This total area will be developed with two industrial buildings, as well as associated drive aisles and parking areas.

- **Block 6** covers 3.77 ha and is proposed to be an interim stormwater management facility to support the development of Block 1, until SWM Pond 3 at the south end of the Secondary Plan area is constructed. Once the ultimate stormwater management facility is constructed, Block 6 will be developed as one industrial parcel with Block 5.

- **Block 7** covers 2.02 ha and will contain an east-west right-of-way currently described as 'Street A'. This right-of-way will extend George Bolton Parkway to the west, ultimately connecting to Humber Station Road and acting as the access point for Blocks 1, 4, 5, and 6. The servicing, grading, and stormwater management design for Block 7 is not included in this report. Please refer to the CEISMP and drawings prepared by Schaeffers for Block 7.

- **Block 8** covers 10.52 ha and will contain Natural Heritage Features. The Site currently contains a headwater drainage feature of the Gore Road Tributary, known as HDF-3, that flows southwest through the Site, towards Humber Station Road. The portion of HDF-3 that flows through the subdivision is proposed to be realigned as part of redevelopment. A channel is proposed for this HDF realignment, that will make up the majority of Block 8, with existing wetlands and wetland compensation at the north and southwest extents of Block 8. Please refer to the Hydraulic Analysis Report and Channel Realignment drawings prepared by Crozier submitted under a separate cover for more information on the design of Block 8.

- **Blocks 9-10** cover a total area of 0.73 ha and will be conveyed to the Region for a road widening on Humber Station Road.

- **Blocks 11-12** cover a total area of 0.01 ha and are 0.3 m reserve blocks along Humber Station Road.

- **Block 13** covers 0.74 ha and will contain a north-south right-of-way that will run south from the eastern extent of Block 7, ultimately connecting the development to the lands to the south of the Secondary Plan area. The servicing, grading, and stormwater management design for Block 13 is not included in this report. Please refer to the CEISMP and drawings prepared by Schaeffers for Block 13.

- **Block 14** covers an area of 0.23 ha and will serve as a stormwater management facility for the west portion of Block 7. The servicing, grading, and stormwater management design for Block 15 is not included in this report. Please refer to the CEISMP and drawings prepared by Schaeffers for Block 15.

- **Block 15** covers an area of 0.53 ha and will be retained by the owner for future development once the Narrowed Area of Interest (NAI) for Northwest GTA Transmission Corridor Study area is released or the Ministry of Energy.

Refer to the Draft Plan included in **Appendix A** for details regarding the Site layout.

3.2 Headwater Drainage Features (HDF)

Under post-development conditions, the existing drainage features HDF-6 and HDF-8 will be removed for the proposed Block 1 development, based on the CEISMP Phase 1 Report (GEI, March 2026). Through email correspondence with SLR dated January 6, 2026, it was confirmed that these HDF segments lack any hydrologic function. Refer to email correspondence and Figure 4a: Observed Natural Heritage Features - Terrestrial (GEI Consultants, March 2026) provided in **Appendix A** for details.

The existing watercourse HDF-3 will be realigned, connecting the woodland area to the east wetland, fronting Humber Station Road. The channel realignment design and analysis have been completed by Crozier under a separate cover.

4.0 Stormwater Management (Ultimate Scenario)

In ultimate conditions, Blocks 1, 5 and 6 will drain into the storm sewer along Street A, which will convey stormwater into future SWM Pond 3, following strategy from Phase 2 SWM Report (Schaeffers, March 2026). SWM Pond 3 will be located at the southeast corner of the Humber Station Villages Employment Area and is designed with a contributing area of 75.34 ha from the site plans and 2.87 ha from proposed municipal roadways, accepting on-site controlled flows and uncontrolled runoff from the proposed municipal roadways, including Street A.

4.1 Design Criteria

The proposed drainage and stormwater management system for the property has been designed in accordance with the design guidelines provided by Town of Caledon, Region of Peel, TRCA, and the Ministry of the Environment, Conservation and Parks (MECP). Phase 2 SWM Report (Schaeffers, March 2026) was also referenced when determining the criteria for the stormwater management design. The stormwater management criteria include:

<u>Quantity Control</u>

Control post-development flows for the 2 through 100-year storm events to unitary release rates for Sub-basin 36 of the Humber River watershed. Refer to Equation F from Table E.1 in the TRCA SWM Criteria and **Table 3** below for details.

For Blocks 1, 5 and 6 draining to the Clarkway Drive Tributary system via the future municipal Storm sewer and pond, control post-development flows for the regional storm to release rates calculated based on Figure 4.5 Regional Release Rate in the Phase 2 SWM Report (Schaeffers, March 2026).

For areas draining to the Goreway Road Tributary reach 1 (Blocks 2 and 4), no quantity control is required for the Regional Storm.

Quality Control

Water quality treatment is required to meet an Enhanced level of Water Quality Protection. This requires treatment to an average annual rate of 80% Total Suspended Solids (TSS) removal rate, as specified in the 2003 MOE Stormwater Management Planning and Design Guidelines.

For areas draining to the Clarkway Drive Tributary system via the future municipal Storm sewer and pond, water quality treatment will be provided by the future municipal SWM Pond 3.

Erosion Control

- Retain the first 5 mm of rainfall across the property's impervious areas.
- Provide a minimum of 48 hours of drawdown time for 25 mm event.

For areas draining to the Clarkway Drive Tributary system via the future municipal Storm sewer and pond, extended detention will be provided in the future municipal pond.

Water Balance

Maintain pre-development annual infiltration levels by providing mitigation measures to infiltrate clean stormwater for site-based water balance.

Climate Change

Through coordination with the Town, it has been noted that the Town is currently in the process of updating the criteria for climate change considerations, including IDF parameters. Therefore, climate change criteria is not available at this time. The Town confirmed in a meeting on May 7, 2026, that the following Phase 1 blocks are exempt from climate change considerations:

- Block 1
- Block 6
- Block 7
- Block 8
- Block 14

Climate change considerations will be incorporation into the design once confirmed by the Town at the Site Application stage for the remaining Blocks 2, 4 and 5. Refer to email correspondence with the Town included in **Appendix A** for details.

4.2 Target Release Rates

This section discusses the methodology and results for the quantity control design for each development block within the Site.

4.2.1 Unitary Flow Rates

Unit flow relationships have been established by the TRCA for most areas located within the Humber River Watershed. The unit flow rates for the Secondary Plan Area, which is in Sub-Basin 36, are summarized in **Table 3**.

Table 3: Summary of Unit Flow Relationships for the Site

Storm Event	Unit Flow Equations (Sub-Basin 36)
2-year	Q = 9.506 – 0.719 * ln (A)
5-year	Q = 14.652 – 1.136 * ln (A)
10-year	Q = 17.957 – 1.373 * ln (A)
25-year	Q = 22.639 – 1.741 * ln (A)
50-year	Q = 26.566 – 2.082 * ln (A)
100-year	Q = 29.912 – 2.316 * ln (A)

Notes: Q = unit flow (L/s/ha), A = area (ha)
Source: Stormwater Management Criteria prepared by TRCA (August 2012)

4.2.2 Clarkway Drive Tributary

Under proposed conditions, runoff from Blocks 1, 5 and 6 will be collected, stored and released at a controlled release rate. Each development block will include its own quantity control storage, so targets have been determined for Block 1, 5 and 6. It should be noted that in ultimate conditions, Block 5 and 6 will be part of the same industrial block so the stormwater design for these two blocks has been combined. Runoff from undeveloped areas will continue to sheet flow to the Clarkway Drive Tributary, as it does in existing conditions.

Block 1 Uncontrolled Flows to Clarkway Drive Tributary

Under existing conditions, 4.05 ha of agricultural lands located within the east portion of Block 1 sheet flows east towards the Clarkway Drive Tributary. This area is shown as Catchments 102A, 102B, 103A, and 103B on **Figure SWM-1**. Under proposed conditions, 0.23 ha along the east property line of Block 1 will remain undeveloped and will sheet flow towards the Clarkway Drive Tributary, mimicking existing conditions. Given the 3.82 ha reduction in area, there is no anticipated increase in peak flows from these catchments and no stormwater quantity control is provided for this landscaped area. **Table 4** provides a detailed breakdown of the uncontrolled pre-and-post development areas draining to the Clarkway Drive Tributary.

Table 4: Block 1 Uncontrolled Drainage Area to Clarkway Drive Tributary

Humber River Catchment ID	Catchment ID		Area (ha)		Difference
	Existing	Proposed	Existing	Proposed	ha
43.10	103A + 103B	UC03	1.61	0.12	-1.49
43.06	102A + 102B	UC01	2.44	0.11	-2.33
Total Area			4.05	0.23	-3.82

Controlled Flows to Clarkway Drive Tributary

The remaining development area from Blocks 1, 5 and 6 will drain to the future municipal storm Pond 3 via the future municipal sewer along Street A. This infrastructure will be designed by others per the recommendations in the Phase 2 SWM Report (Schaeffers, March 2026). The Phase 2 SWM Report (Schaeffers, March 2026) uses the 65.02 ha area within Humber River Catchments 43.03 (orange), 43.06 (green), and 43.10 (cyan) to size the storm sewers and SWM Pond 3. Refer to Figure 4.5 Regional Release Rate in the Phase 2 SWM Report (Schaeffers, March 2026) for details. These calculated unit flow rates, in L/s/ha, were multiplied by the areas in Blocks 1, 5 and 6 which are part of Humber River Catchments 43.03, 43.06, and 43.10. Refer to **Table 5** for a breakdown of the areas used to calculate the target release rates for Blocks 1, 5 and 6.

Table 5: Target Flow Rate Areas – Blocks 1, 5 and 6

Block	Humber River Catchment ID	Catchment ID	Existing Area (ha)	Total Area (ha)
1	43.10	103A	1.49	30.53
	43.03	101A & 101B	26.71	
	43.06	102A	2.33	
5 & 6	43.03	101C & 101D	6.89	8.58
	43.06	102C	1.69	
Total Area	-	-	-	**39.11**

The 39.11 ha area calculated in **Table 5** was used to calculate the target release rates for Blocks 1, 5 and 6 as contributing drainage to future SWM Pond 3, following the strategy from the Phase 2 SWM Report (Schaeffers, March 2026). **Table 6** provides the target release rates for the 2 through 100-year storm events.

Table 6: Target Release Rates Summary (2 to 100-year) - Blocks 1, 5 and 6

Storm Event	Sub-Basin 36 Controlled Release Rate[1] (L/s/ha)	Block 1		Block 5 & 6	
		Existing Drainage Area (ha)	Target Release Rate (m^3/s)	Existing Drainage Area (ha)	Existing Drainage Area (ha)
2-year	6.50	30.53	0.199	8.58	0.056
5-year	9.91		0.303		0.085
10-year	12.23		0.373		0.105
25-year	15.37		0.469		0.132
50-year	17.87		0.546		0.153
100-year	20.24		0.618		0.174

Notes: 1. CEISMP area of 65.02 ha is used to calculate sub-basin 36 controlled release rate (L/s/ha) using Equation F from Table E.1 in the Stormwater Management Criteria (TRCA, August 2012).

Regional target release rates are calculated based on the unitary release rates provided in Figure 4.5 Regional Release Rate in the Phase 2 SWM Report (Schaeffers, March 2026). The same contributing drainage areas were used to calculate the Regional release rate. **Table 7** summarizes the Regional release rates for Blocks 1, 5 and 6.

Table 7: Target Release Rates Summary (Regional) - Blocks 1, 5 & 6

Humber River Catchment ID	Unitary Release Rates (L/s/ha)	Block 1		Block 5 & 6	
		Drainage Area (ha)	Target Release Rate (m^3/s)	Drainage Area (ha)	Target Release Rate (m^3/s)
43.03 (Orange)	71.1	26.71	1.90	6.89	0.49
43.10 (Blue)	145.1	1.49	0.22	-	-
43.06 (Green)	102.5	2.33	0.24	1.69	0.17
Total		**30.53**	**2.35**	**8.58**	**0.66**

As shown in **Table 7**, the total area used to calculate the Regional target release rate for Blocks 1, 5, 6 & 7 is 39.11 ha, resulting in a release rate of 3.0 m^3/s. Please refer to detailed calculations provided in **Appendix B** for details.

4.2.3 Goreway Drive Tributary

Blocks 2 and 4 are proposed to outlet to the Goreway Road Tributary. Each development block will include its own quantity control storage, so separate targets have been determined for Block 2 and 4.

Uncontrolled Flows to Goreway Drive Tributary (HDF-7)

Under existing conditions, 1.12 ha of undeveloped lands located north of Block 2 flows into HDF-7. This area is shown as Catchments 104D and 105B on **Figure SWM-1**. Under proposed conditions, the same area will remain undeveloped and continue to flow into HDF-7, mimicking existing conditions. **Table 8** provides a detailed breakdown of the uncontrolled pre and post areas draining to HDF-7.

Table 8: Uncontrolled Drainage Area to HDF-7

Humber River Catchment ID	Catchment ID		Area (ha)		Difference
	Existing	Proposed	Existing	Proposed	ha
41.07	104D	104D	0.46	0.46	0.00
41.08	105B	105B	0.66	0.66	0.00
Total Area			1.12	1.12	0.00

Controlled Flows to Goreway Road Tributary Reach 1

The total drainage area for Block 2 and 4 (22.44 ha) was used to calculate the Sub-Basin 36 controlled release rates. These release rates are multiplied by the areas for each Block to establish the target release rates. The areas used to calculate the release rates do not match the proposed development areas as they are based on the existing drainage areas to the Goreway Road Tributary. Areas for each Block are summarized in **Table 9** and calculated release rates are provided in **Table 10**. Please note, areas are based on Figure SWM-1.

Table 9: Target Flow Rate Areas – Blocks 2 and 4

Block	Humber River Catchment ID	Catchment ID	Existing Area (ha)	Total Area (ha)
2	41.07	104B	10.06	11.01
	41.08	105A	0.95	
4	41.07	104A & 104C	6.33	11.43
	41.06	106A & 106B	5.10	
Total Area	-	-	-	**22.44**

Table 10: Target Release Rates Summary (2 to 100-year) – Blocks 2 and 4

Storm Event	Sub-Basin 36 Controlled Release Rate[1] (L/s/ha)	Block 2		Block 4	
		Drainage Area (ha)	Target Release Rate (m^3/s)	Drainage Area (ha)	Target Release Rate (m^3/s)
2-year	7.3	11.01	0.080	11.43	0.083
5-year	11.1		0.122		0.127
10-year	13.7		0.151		0.156
25-year	17.2		0.190		0.197
50-year	20.1		0.221		0.230
100-year	22.7		0.250		0.260

Notes:

1. An area of 22.44 ha is used to calculate sub-basin 36 controlled release rate using Equation F from Table E.1 in the Stormwater Management Criteria (TRCA, August 2012).

Based on the Phase 2 SWM Report (Schaeffers, March 2026), regional quantity control is not required for catchments discharging to the Goreway Road Tributary Reach 1. Therefore, Blocks 2 and 4 do not have target release rates for the Regional Storm.

4.3 Quantity Control

The proposed development Blocks for the Site are summarized in **Table 11** below.

Table 11: Post-Development Block Summary

Block	Catchments	Total Area (ha)	Outlet
1	C201, C201R, UC01-UC03	28.44	Street A storm sewer
2	C202	11.01	Goreway Drive Tributary
4	C203	10.62	Goreway Drive Tributary
5 & 6	C206	11.71	Street A storm sewer

Refer to **Figure SWM-2** for the Ultimate Post-development Drainage Plan, **Figure 2** for the Functional Servicing Plan and **Figure 4** for the Functional Grading Plan.

4.3.1 Design Storm Selection

Visual OTTHYMO (version 6.2) was used to determine the appropriate design storm to use for peak flow calculations and quantity control analysis, since the Humber River unit flow rates are based on results from the VO model. As the Town, Region and TRCA each require specific design storm distributions to be used to size stormwater conveyance systems and quantity controls, a sensitivity analysis was completed in the VO model to determine the most conservative storm event. This analysis looked at five storm distributions including:

- 24-hour Chicago storm, developed with the Town/Region IDF
- 4-hour Chicago storm, developed with the Town/Region IDF
- 24-hour - SCS Type II storm, developed with the Town/Region IDF
- 6-hour AES storm, taken from the Humber River Subwatershed Model
- 12-hour AES storm, taken from the Humber River Subwatershed Model

A preliminary model was set up for Block 1, and the required storage meets the target peak flow for the outlet are summarized in the table below. It should be noted that this analysis was completed during the preliminary design phases to identify the most conservative storm event.

Table 12: Design Storm Storage Summary

Storm Event	Required Storage (m^3)
100yr 24hr 15min Chicago	19,828
100yr 4hr 15min Chicago	18,980
100yr 24hr 15min SCS Type II	15,915
100 Year 6 Hour AES (Bloor, TRCA)	16,282
100 Year 12 Hour AES (Bloor, TRCA)	15,822

Based on the storage volume summarized in Table , the 24-hour Chicago storm results in the greatest storage volume required. Thus, the 24-hour Chicago storm is the design storm that was selected to design the quantity control storage for the development. Once the design was completed, all other storm events were run in the model to confirm that the design works for all storms.

4.3.2 VO Modelling Methodology

The CN value for post-development conditions was determined based on the Geotechnical Investigation (Pinchin, 2024) and CN values for lawn provided within the TRCA Humber River Hydrology report dated April 2018. The CN value was selected based on Table 2-1 – CN Values in the Humber River Hydrology Report (Civica, 2018) which is included in **Appendix A** for reference and through discussions with the TRCA. It should be noted that the CN values were converted to CN* within VO software for the 2-year to 100-year storm events and converted to CNIII within VO for the Regional model to better represent the available soil moisture storage volume during a storm event.

The total imperviousness (TIMP) and directly connected imperviousness (XIMP) values for each STANDHYD were determined based on the existing land cover on Site. It is noted that highly pervious catchments are represented as NASHYDs (which do not require TIMP/XIMP inputs), and highly impervious catchments are represented as STANDHYD commands. The TIMP of each catchment is determined based on the proposed surface on site.

The input parameters for post-development catchments are summarized in **Table 13** below. Refer to **Figure SWM-2** for proposed catchments.

Table 13: Post-Development Catchments

Catchment ID	NASHYD/ STANHYD	Drainage Area (ha)	TIMP	XIMP	Curve Number (CN)	Initial Abstraction (IA)	Tp (hr)
C201	STANHYD	15.90	0.87	0.87	81	5.0	-
C201R	STANHYD	12.04	0.99	0.99	81	5.0	-
C202	STANHYD	11.01	0.97	0.97	81	5.0	-
C203	STANHYD	10.62	0.90	0.90	81	5.0	-
C204	STANHYD	3.77	0.50	0.50	81	5.0	-
C205	STANHYD	0.74	0.54	0.54	81	5.0	-
C206	STANHYD	11.71	0.95	0.95	81	5.0	-
UC02	NASHYD	0.27	-	-	81	4.7	0.17
Subtotal	-	**66.06**	-	-	-	-	-
C209A	STANHYD	1.26	0.91	0.91	81	5.0	-
C209B	STANHYD	0.76	0.83	0.83	81	5.0	-
Total	-	**68.08**	-	-	-	-	-

Note:
1. The CN is converted to CN* based on the 100-year rainfall volume of 101.55 mm.
2. CN values for STANHYD commands are for pervious areas only.

Visual Otthymo 6.2 is used for the detailed quantity control model. Through previous design submissions for Block 1, it has been determined that rooftop storage will be provided. Therefore, the model includes a catchment for the Block 1 rooftop, denoted with an "R" in the catchment ID. A preliminary roof storage curve is used and will be detailed with mechanical engineers in future SPA design submissions for Block 1. The remaining development area for Block 1 is modelled through Catchments C201 and UC02.

Block 2 and 4 have been modeled as Catchments C202 and C203, respectively. Block 5 and 6 will be part of the same industrial block and have been modelled together as Catchment C205.

The east portion of Street A (Block 7) running through the Site has been modelled as C209A and the west portion has been modelled as C209B.

VO was used to determine the required storage volumes to control the post-development flows to their allowable release rates as outlined in **Section 4.2**. A summary of the storage requirements for the 100-year design storm is summarized in **Table 14**.

Table 14: Peak Flow and Storage Summary – 100 Year Design Storm

Block	Target Release Rate (m^3/s)	Uncontrolled Release Rate (m^3/s)	Controlled Release Rate (m^3/s)	Rooftop Storage (m^3)	Required Storage (m^3)
1	0.618	12.46	0.563	8,000	14,260[1]
2	0.250	5.02	0.250	-	8,270
4	0.260	4.67	0.260	-	7,620
5 & 6	0.174	5.26	0.174	-	9,150

Note:

1. Value does not include roof storage, total storage for Block 1: 8,000 + 14,260 = 22,260 m^3

It should be noted that the rooftop storage is an estimated value at this time and should be confirmed during detailed design.

As noted in **Section 4.1** above, no quantity control is required for the Regional Storm for areas draining to the Goreway Road Tributary reach 1 (Blocks 2 and 4). A summary of the storage requirements for the Regional event is summarized in **Table 15** below. It should be noted that the Regional storage is required in additional to the 100-year storage.

Table 15: Peak Flow and Storage Summary – Regional Storm

Block	Target Release Rate (m^3/s)	Uncontrolled Release Rate (m^3/s)	Controlled Release Rate (m^3/s)	Required Storage (m^3)	Total Required Storage (100-yr + Regional) (m^3)
1	2.35	4.12	2.34	16,490	38,750
2	-	1.62	-	-	8,270
4	-	1.55	-	-	7,620
5 & 6	0.66	1.71	0.66	11,100	20,250

Detailed VO model inputs and are included in **Appendix C**.

4.3.3 Storage Design and Outlet Controls

The stormwater quantity storage design and outlet control will be specified during detailed design for each Block. Storage volume requirements and peak flow controls will need to be reviewed and refined at the detailed design stage to meet the target release rates indicated in **Section 4.2**. SWM facility options include, but are not limited to, rooftop storage, at-grade ponding, stormwater management ponds and/or underground storage tanks. Sizing the SWM facilities will be completed as part of future development applications.

4.4 Quality Control

The property is required to provide Enhanced Level Protection, removing 80% of the total suspended solids (TSS) from 90% of the annual runoff for water quality.

4.4.1 Blocks 1, 5 and 6

As outlined in the Phase 2 SWM Report (Schaeffers, March 2026), the controlled runoff from Blocks 1, 5 and 6 will be conveyed by the proposed sewer along 'Street A2' (design by others) to SWM Pond 3. SWM Pond 3 will be located at the southeast corner of the Humber Station Villages Employment Area. SWM Pond 3 is designed with a contributing area of 75.34 ha from the site plans and 2.87 ha from proposed municipal roadways, accepting on-site controlled flows and uncontrolled runoff from the proposed municipal roadways, including Street A and Street A2. SWM Pond 3 will provide enhanced level water quality protection for the upstream contributing area, achieving 80 % TSS removal. Therefore, no water quality treatment is required for Blocks 1, 5 and 6.

4.4.2 Blocks 2 and 4

Stormwater quality control for Blocks 2 and 4 will be specified in the detailed design stage, meeting the Enhanced Level Protection and removing 80% of the total suspended solids (TSS), as specified in the 2003 MOE Stormwater Management Planning and Design Guidelines.

Given the size of the blocks, quality control can be achieved through filtration systems including but not limited to Jellyfish systems or isolator rows. Alternatively, a treatment train including oil and grit separator (OGS) and LIDs could be used to provide water quality treatment.

4.5 Erosion Control

As outlined in **Section 4.0**, a minimum of 5 mm retention is required across the Site's proposed impervious area for erosion control, as well as providing a minimum 48 hours of drawdown time for 25 mm storm events. The 5 mm of onsite retention was calculated for each block and is summarized in **Table 16** below.

Table 16: On-site Retention Summary

Block	Impervious Area (ha)	On-site Retention (mm)	Volume Required (m^3)	Contributing Area (m^2)	Design Storm (mm)	LID Volume (m^3)
1	25.90	5	1,295	120,400	13.0	1,565
2	10.68		534	62,500	8.0	500
4	9.56		478	49,350	9.5	469
5 & 6	11.12		556	57,593	9.5	547

It should be noted that the impervious areas and on-site volume requirements should be confirmed during detailed design. Rooftop areas have been estimated to determine the potential contributing areas for mitigation in **Table 16**.

SWM Pond 3 (designed by others) provides a minimum of 48 hours of drawdown time for 25 mm storm events per Phase 2 SWM Report (Schaeffers, March 2026). As SWM Pond 3's contributing drainage area includes Block 1, 5, 6, Street A, and Street A2, on-site extended detention is not required for these Blocks.
Erosion control for Blocks 2 and 4 will be provided in the detailed design stage. A minimum of 5 mm retention across the Site's impervious area for erosion control, as well as providing a minimum 48 hours of drawdown time for the 25 mm storm event shall be provided.

4.6 Water Balance

The property is required to maintain pre-development annual infiltration levels by providing mitigation measures to infiltrate clean stormwater for site-based water balance. It should be noted that neither the wetland east nor west of Block 1 receive groundwater discharge contribution, the minor reduction in infiltration within the catchment of each wetland will not adversely impact the wetland; therefore, a feature-based water balance is not required for Block 1.

Water balance calculations were completed using the Thornthwaite and Mather Method (1957). The Thornthwaite and Mather water balance is an accounting type method to analyze the allocation of water among various components of the hydrologic cycle. Inputs to the model include monthly temperature, site latitude, precipitation, and stormwater run-on. The Albion Field Centre Weather Station was chosen as the most representative database for the Site. The most recent average weather data available from Environment Canada covers the period from 1981 to 2010.

A site-wide water balance analysis was completed by SLR providing an infiltration deficit for each development block separately. As noted in **Section 4.1**, the Town also has an erosion criterion that applies to the Site, which requires onsite retention of 5 mm of runoff generated from the total impervious area. Therefore, the larger infiltration target between the water balance and erosion control requirements must be applied, resulting in a target of 5 mm for all blocks.

It should be noted that the NHS area in Block 8 had an infiltration surplus of 4,614 m^3. Therefore, this surplus was area weighted for the remaining blocks and subtracted from the infiltration deficit for each block. Please refer to **Appendix E** for detailed calculations.

A summary of the private block water balance is provided in **Table 17**.

Table 17: Water Balance Summary

Block	Infiltration Deficit[1] (m^3)	Contributing Area (m^2)	Design Storm (mm)	LID Volume (m^3)
Block 1	-24,960	120,400	6.5	783
Block 2	-13,453	62,500	6.5	406
Block 4	-11,975	49,350	7.0	345
Block 5	-8,864	57,593	7.0	403
Block 6	-4,182			

Note:
1. Value accounts for NHS Block 8 surplus, which has been area weighted for each development block and subtracted from the infiltration deficit.
2. SWM Pond 3 (designed by others) provides water balance for municipal roadways, including Street A and Street A2, per Phase 2 SWM Report (Schaeffers, March 2026).

To achieve the private block infiltration water balance, the infiltration deficit will be mitigated through measures within each of the industrial blocks (Blocks 1, 2, 4, 5 and 6). To mitigate the infiltration deficit for the blocks, it was assumed that rooftop drainage from each of the private development blocks could be directed to Low Impact Development (LID) measures designed to promote infiltration. Water balance measures shall be provided by each block during the detailed design stage to provide mitigation for the infiltration deficit caused by development. As can be seen by comparing the required LID volumes from **Tables 16** and **Table 17**, if LIDs are sized for the erosion target of 5mm onsite retention they will also provide sufficient infiltration to meet the water balance targets. Detailed calculations are provided in **Appendix E**.

5.0 Stormwater Management (Phase 1A Interim Scenario)

Under the interim conditions scenario where Phase 1A construction is ahead of the Humber Station Villages Employment Area construction, SWM Pond 3 will not be available. Block 1 will discharge directly towards the Clarkway Drive Tributary at the southeast corner of the property.

An interim SWM Pond will be located downstream of Block 1, within Block 6 as shown on the Draft Plan. The interim SWM pond will provide water quality, erosion control, and additional water quantity control on top of the Block 1 on-site control, due to the stricter discharge criteria on the Clarkway Drive Tributary. The interim SWM Pond will be removed once SWM Pond 3 is constructed and fully functional.

A flow diversion analysis has been completed per TRCA's request, demonstrating that the controlled runoff from Block 1 can be discharged to the Clarkway Drive Tributary as a temporary outlet, without negatively impacting the downstream. Refer to Prologis Humber Station – Temporary Stormwater Management Outlet Letter (Crozier, August 2025) for the flow diversion analysis under a separate cover. The Block 1 interim stormwater management criteria were established based on the meeting with TRCA dated September 6, 2024.

5.1 Design Criteria

The stormwater management criteria include:

Quantity Control

Attenuation of the post-development to the target release rates calculated in the Prologis Humber Station – Temporary Stormwater Management Outlet Letter (Crozier, August 2025). The target release rates are calculated for the portion of Block 1 that drains to the Clarkway Drive Tributary under existing conditions.

Quality Control

Water quality treatment is required to meet an Enhanced level of Water Quality Protection. This requires treatment to an average annual rate of 80% Total Suspended Solids (TSS) removal rate, as specified in the 2003 MOE Stormwater Management Planning and Design Guidelines.

Erosion Control

- Retain the first 5 mm of rainfall across Block 1's impervious areas.
- Provide a minimum of 48 hours of drawdown time for 25 mm event.
- Retain an additional 5 mm of rainfall across the rooftop.

Please note water balance will be satisfied through detailed design of Block 1.

CLI-ECA

As the Town will have temporary ownership of the Interim SWM Pond, it must meet the requirements of the Town's CLI-ECA No. 324-S701.

Climate Change

Through coordination with the Town, it has been noted that the Town is currently in the process of updating the criteria for climate change considerations, including IDF parameters. Therefore, climate change criteria is not available at this time. The Town confirmed in a meeting on May 7, 2026, that the following Phase 1 blocks are exempt from climate change considerations:

- Block 1
- Block 6 (in the interim only)
- Block 7
- Block 8
- Block 14
- Block 15

Climate change considerations will be incorporation into the design once confirmed by the Town at the Site Application stage for the remaining Blocks 2, 4 and 5. Refer to email correspondence with the Town included in **Appendix A** for details.

5.2 Quantity Control

The target release rates calculated for Block 1 are summarized in **Table 18** below. Refer to Prologis Humber Station – Temporary Stormwater Management Outlet Letter (Crozier, August 2025) for calculations details.

Table 18: Interim Target Release Rates

Return Period	Block 1 Target Release Rates (m^3/s)	Interim Target Release Rates (m^3/s)
2-Year	0.199	0.300
5-Year	0.303	0.464
10-Year	0.373	0.568
25-Year	0.469	0.716
50-Year	0.546	0.836
100-Year	0.618	0.944
Regional	3.120	1.697

The proposed Block 1 infrastructure will be designed and constructed to the ultimate scenario. As the 2-year to 100-year interim target release rates in **Table 18** are greater than the ultimate target release rates, the interim SWM pond is only required to provide quantity control for the regional storm. A total active storage of 45,208 m^3 is provided in the interim SWM pond.

5.3 Quality and Erosion Control

The interim SWM pond located downstream of Block 1 will provide additional quality and erosion control.

5.3.1 Permanent Pool

Enhanced level water quality control will be achieved through the permanent pool component and extended detention of the proposed interim SWM pond. Detailed permanent pool sizing calculations are provided in **Appendix C**. Results are summarized in **Table** below.

Table 19: Interim SWM Facility Water Quality Storage Volume

Contributing Drainage Area (ha)	Imperviousness of Drainage Area (%)	Required PP Storage[1] (m^3/ha)	Required PP Storage (m^3)	Provided PP Storage (m^3)
34.04	93.0	272	7,892	16,832

Note:
1. Required storage volumes interpolated from Table 3.2 of MECP SWM Planning and Design Manual (2003) based on upstream impervious area, less 40 m^3/ha for extended detention.
2. PP stands for Permanent Pool.
3. The contributing area is assumed to be 100% to be conservative. Area includes Block 1, 6 & 7 (East).

As demonstrated in **Table 19**, the proposed SWM facility exceeds the permanent pool volumes required to achieve the Enhanced Level Protection criteria.

5.3.2 Extended Detention

Per the MECP SWM Planning and Design Manual (2003) water quality ponds require a minimum extended detention time of 24 hours for a volume of 40 m^3/ha to allow for settling of suspended solids. The effectiveness of wet ponds for providing quality control can be further enhanced by providing extended detention of 48 hours. Calculations are summarized in **Table** .

Table 20: SWM Facility Extended Detention

SWM Facility	Contributing Drainage Area	Percent Impervious	MOE Recommendations		Provide Extended Detention	
			ED Volume	ED Time	ED Volume	ED Time
	(ha)	(%)	(m^3)	(hrs)	(m^3)	(hrs)
SWMP	34.04	93.0	1,266	48	6,802	48

Note: 1. The contributing area is assumed to be 100% to be conservative. Area includes Block 1, 6 & 7 (East).

Following the results provided in the table above, the volume and duration required to meet the erosion criteria for the Block 1 development, exceed those required by MECP. Thus, the extended detention design provided will meet the MECP requirements to provide settling as part of the water quality design of the interim SWM pond.

5.3.3 Forebay Sizing

Forebay sizing for the interim SWM pond was completed using calculations outlined in Section 4.6.2 of the MOE SWM Planning & Design Manual (2003). Detailed calculations are provided **in Appendix C**. Results are summarized in **Table 21** below.

Table 21: SWM Facility Forebay Sizing Summary

Design Criteria	Target	Provided
Forebay Length (Settling Calculation)	Minimum 57.6 m	135 m
Forebay Length (Dispersion Calculation)	Minimum 5.7 m	135 m
Forebay Bottom Width	Minimum 7.2 m	42 m
Length to Width Ratio	Minimum 2:1	3.2 : 1
Average Forebay velocity	Maximum 0.50 m/s	0.01 m/s

Note: The provided forebay length is measured from the forebay berm to the closest inlet to be conservative.
Average Forebay Velocity = 8 * Inlet Flow Rate * Dispersion Length / Depth of Forebay

As shown in **Table 21**, the forebay design for the proposed SWM facility meets the criteria outlined by the MECP.

5.3.4 Additional on-site Retention

The temporary outlet to Clarkway Drive Tributary has stricter criteria and an additional 5 mm on-site retention is required across Block 1 under interim conditions, based on the meeting with TRCA dated September 6, 2024. An additional 5 mm on-site retention across 12.04 ha roof area requires 602 m^3 of storage, which will be specified and provided during detailed design.

5.4 Interim SWM Pond Design

In addition to the criteria listed in the sections above, the interim SWM pond has been designed with considerations for grading, public safety, access for future maintenance, and safe conveyance of emergency flows, following Table 4.6 MECP SWM Planning and Design Manual (2003).

The municipality will assume responsibility for the operation and maintenance of the SWM facility following the full build-out maintenance period of the development, as established by the Town of Caledon. The developer will be responsible for inspection and maintenance until such time.

As the Town will temporarily take ownership of the Interim SWM Pond and pond block, it should be noted that the Interim SWM Pond complies with the Town's CLI-ECA as it meets the requirements outlined in **Appendix A** in terms of water quality. Once SWM Pond 3 is constructed and active, PLD Humber Station Investment LP will re-gain ownership of the Interim SWM Pond block. Further, Street A will eventually become a municipal road and is also being designed to meet the CLI-ECA criteria.

5.4.1 Pond Grading

The preliminary SWM Pond design includes the following features:

- Provide safe overland conveyance of flows exceeding the capacity of the storm sewer system to the stormwater management facility;
- Pond cells graded with maximum side slopes of 4:1 from the pond base to the normal water level, and with maximum side slopes of 3:1 elsewhere within the pond;
- Permanent pool volume sized as per the Enhanced Level Protection with a maximum depth of 1.5 m in forebays and main cells;

- Permanent pool elevation set above the Regional water level of receiving watercourse (230.26 m);
- Storage for both quantity and erosion control sized per criteria in Table 3.2 of MECP SWM Planning and Design Manual (2003);
- Emergency spillway to control overtopping of the pond in extreme storm events;
- Minimum 0.3 m freeboard above Regional level; and
- A 5.0 m wide maintenance access road with a maximum longitudinal slope of 8:1 and a maximum cross-fall slope of 2% to be provided within the SWM Pond block. The access road will facilitate access to the forebay and outlet structure for maintenance.

5.4.2 Pond Outlet Control

The interim SWM pond has been graded to provide the required storage volumes, and a multi-stage outlet control has been designed to provide the required extended detention and quantity (peak flow) controls. The multi-stage outlet control consists of a circular orifice to control the extended detention component of the pond, and above the extended detention water level, rectangular weir controls the quantity components of the pond volume for Regional storm. Details of the proposed outlet controls are summarized in **Table 22**.

Table 22: Interim SWM Pond Outlet Controls

Extended Detention Control	Active Storage Controls
Circular Orifice	**Rectangular Weir**
235 mm diameter Invert = 230.60 masl	700 mm wide Invert = 231.33 Top of Weir = 232.45

The detailed stage-storage discharge table, including orifice and weir sizing calculations, is provided in **Appendix C**. A summary of the required and provided active storage and discharge rates is provided in **Table 23**.

Table 23: Interim SWM Pond Operation Level

Design Storm	Target Release Rates (m^3/s)	Controlled Release Rates (m^3/s)	Peak Flow Differences (%)	Required Storage (m^3)	Provided Storage (m^3)
2-year	0.191	0.065	-66%	7,247	45,208
5-year	0.291	0.086	-70%	11,279	
10-year	0.358	0.101	-72%	13,013	
25-year	0.451	0.151	-67%	15,048	
50-year	0.524	0.189	-64%	16,039	
100-year	0.594	0.240	-60%	17,098	
Regional	1.697	1.697	0%	24,300	
Total Active Storage Required (Regional + 100 year)				41,398	

Note: VO peak flows from 24-hour Chicago storms and 12-hour Hazel are used to be conservative.

The stormwater outfall for the interim SWM pond is located at the southeast corner Block 6, within TRCA regulated area, discharging southeast towards Clarkway Drive Tributary. The outfall invert is set at 230.06 m, at the 25-year water level (230.05 m) in the water course. It is understood that the results

show the pond is overcontrolling flows and the pond design will be refined during detailed design of Block 1.

5.4.3 Emergency Spillway

An emergency spillway has been provided within the main cell of the stormwater management pond to provide safe conveyance of flows over topping the pond. The emergency spillway discharges towards the Clarkway Drive Tributary. The emergency spillway provides a controlled point of discharge should the outlet become blocked or runoff from back-to-back storm events exceed the capacity of the pond. The spillway invert (232.50 m) is set above the regional water level of the pond (231.52 m).

5.4.4 Construction and Decommissioning

As previously noted, Block 1 will be constructed ahead of the Humber Station Villages Employment Area. Therefore, SWM Pond 3 will not be immediately available to accept stormwater discharge from Block 1 and an interim solution is required. During interim conditions, Block 1 will discharge to a SWM facility. Once SWM Pond 3 is constructed and available to service Block 1, the storm sewers along Street A will be installed and Site flows will be redirected to the ultimate solution. The interim SWM pond will then be decommissioned and filled, and the infrastructure will be removed. Please refer to **Figure A-C607** for decommissioning details.

6.0 Conclusions and Recommendations

We conclude that the proposed development of the Site can be readily serviced from a functional stormwater management perspective. The proposed stormwater management design outlined in this report can meet the objectives of the regulatory agencies and will be subject to further detail design as a part of the Draft Plan of Subdivision and Zoning By-law applications for the development.

Based on the information contained in this report, we offer the following conclusions:

1. Stormwater quantity storage will be provided by Blocks 1, 2, 4, 5 and 6 to meet the Town, Region and TRCA stormwater quantity criteria. The required storage has been sized for each block to control the flow down to the target release rates, following Phase 2 SWM Report (Schaeffers, March 2026).

2. Water balance criteria are satisfied by Blocks 1, 2, 4, 5 and 6 to provide mitigation for the infiltration deficit for each individual Block. The Street A's water balance will be provided by SWM Pond 3, downstream of the property, designed by others.

3. Stormwater quality control criteria Blocks 1, 5, 6, Street A, and Street A2 are satisfied by SWM Pond 3, downstream of the property designed by others. On-site quality control will be provided for Blocks 2 and 4.

4. Erosion sediment control criteria are satisfied by providing 5 mm on-site retention for Blocks 1, 2, 4, 5 and 6. SWM Pond 3 downstream will provide extended detention for Blocks 1, 5 and 6 with minimum 48-hour drawdown time for 25 mm storm events.

5. During the interim scenario where Block 1 construction is ahead of the Humber Station Villages Employment Area construction and SWM Pond 3 is not available, the interim SWM pond will provide stormwater quantity control, quality control, and extended detention,

discharging towards Clarkway Drive Tributary directly. An additional 5 mm retention will be provided during detailed design.

We recommend approval of the Draft Plan of Subdivision and Zoning By-law applications for the development of the Site from the perspective of the Stormwater Management requirements. If you have any questions about this report, please call us.

Respectfully submitted,

C.F. CROZIER & ASSOCIATES INC.



Maggie Findlay, P.Eng.
Project Engineer

C.F. CROZIER & ASSOCIATES INC.



Rebecca Archer, P.Eng.
Senior Project Engineer

MF/stm

\\Crozier-Files\Projects\600\624 - Prologis\6777 - Prologis Humber Station - Phase 1 & 2\Reports\2026.06.23_SWM Report-DPS&ZBA\2026.06.24_6777_SWM Report.docx

APPENDIX A

Site Information

LEGEND

EP	DENOTES	EDGE OF PAVEMENT
FF	DENOTES	FINISHED FLOOR
FH	DENOTES	FIRE HYDRANT
INV	DENOTES	INVERT
LP	DENOTES	LIGHT POLE
MBOX	DENOTES	MAILBOX
MW	DENOTES	MONITORING WELL
PWF	DENOTES	POST AND WIRE FENCE
RF	DENOTES	RAIL FENCE
RM	DENOTES	ROAD MARKING
SP	DENOTES	SIGN POST
WIF	DENOTES	WROUGHT IRON FENCE
WV	DENOTES	WATER VALVE
ø	DENOTES	DIAMETER
BOS	DENOTES	BOTTOM OF SLOPE
DL	DENOTES	DITCH LINE
OHW	DENOTES	OVERHEAD WIRES
SW	DENOTES	SWALE
TOS	DENOTES	TOP OF SLOPE
	DENOTES	ARCHEOLOGY AREA
	DENOTES	CONIFEROUS TREE
	DENOTES	DECIDUOUS TREE
	DENOTES	TREE LINE

ADDITIONAL INFORMATION AS REQUIRED UNDER SECTION 51 OF THE ONTARIO PLANNING ACT, R.S.O. 1990, c.P.13 (AS AMENDED APRIL, 1997).

a) AS SHOWN
b) AS SHOWN
c) SEE LAND USE SCHEDULE
d) AS SHOWN
e) AS SHOWN
f) AS SHOWN
g) AS SHOWN
h) MUNICIPAL WATER SUPPLY AVAILABLE
i) SANDY
j) AS SHOWN
k) MUNICIPAL SANITARY AND STORM SEWERS
l) AS SHOWN

OWNER'S CERTIFICATE

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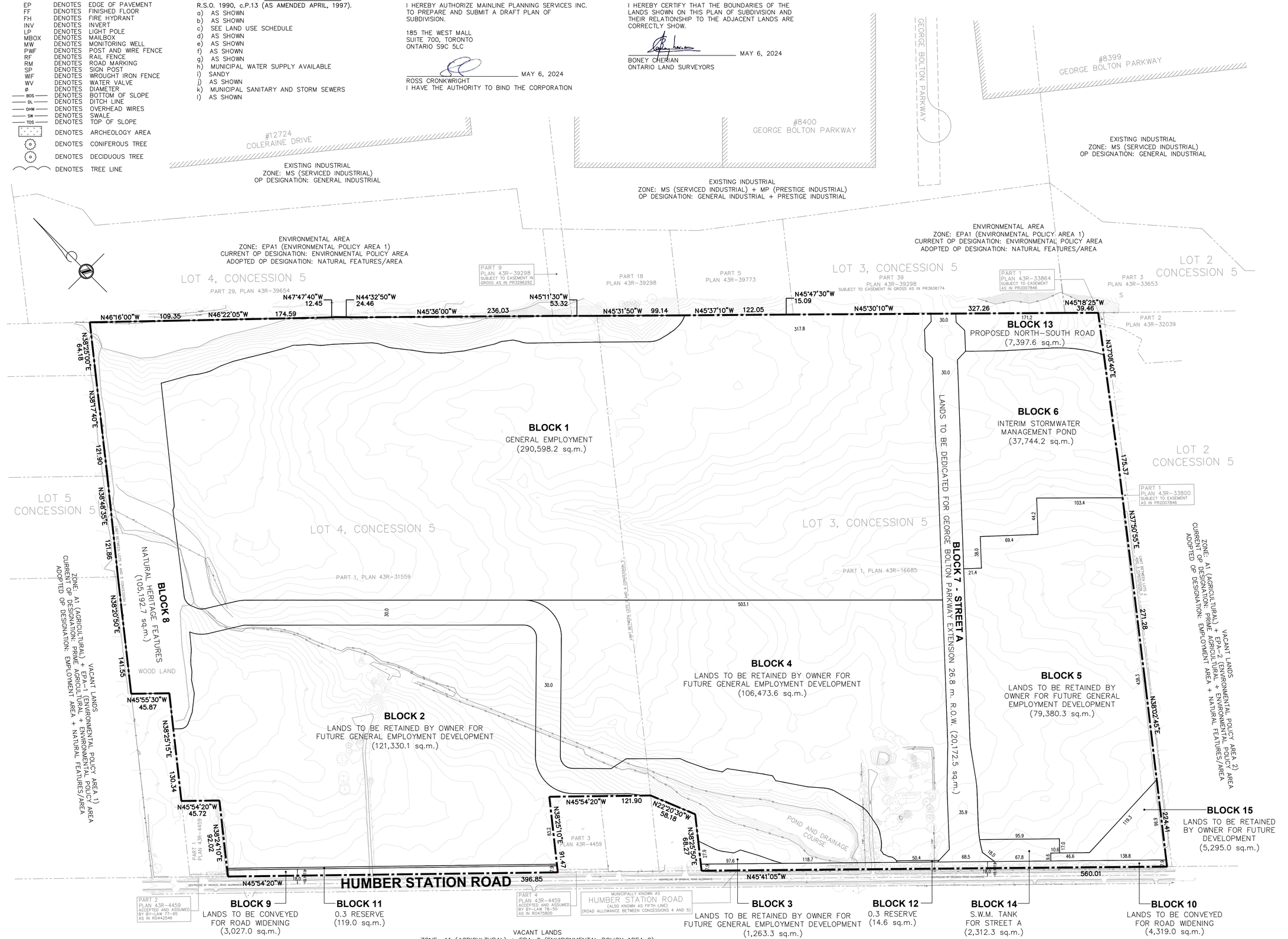
185 THE WEST MALL
SUITE 700, TORONTO
ONTARIO S9C 5LC

MAY 6, 2024
ROSS CRONKWRIGHT
I HAVE THE AUTHORITY TO BIND THE CORPORATION

SURVEYOR'S CERTIFICATE

I HEREBY CERTIFY THAT THE BOUNDARIES OF THE LANDS SHOWN ON THIS PLAN OF SUBDIVISION AND THEIR RELATIONSHIP TO THE ADJACENT LANDS ARE CORRECTLY SHOW.

MAY 6, 2024
BONEY CHERIAN
ONTARIO LAND SURVEYORS



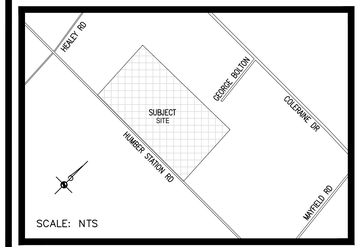
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LEGAL DESCRIPTION
12519-12712 HUMBER STATION ROAD
PART OF LOTS 3 AND 4 CONCESSION 5,
(FORMERLY TOWNSHIP OF ALBION, COUNTY OF PEEL)
TOWN OF CALEDON REGIONAL
MUNICIPALITY OF PEEL

NOTE:
ALL SURVEY INFORMATION PROVIDED BY DAVID B. SEARLES SURVEYING LTD. ONTARIO LAND SURVEYOR.



LAND USE SCHEDULE

TOTAL SITE AREA:	= 784,639.4 sq.m.	(100.0%)
BLOCK 1	= 290,598.2 sq.m.	(37.0%)
BLOCKS 2-5: LANDS TO BE RETAINED	= 308,447.3 sq.m.	(39.3%)
BLOCK 6: INTERIM S.W.M. POUND	= 37,744.2 sq.m.	(4.8%)
BLOCK 7: STREET A (26.8 m. R.O.W.)	= 20,172.5 sq.m.	(2.6%)
BLOCK 8: NATURAL HERITAGE FEATURES	= 105,192.7 sq.m.	(13.4%)
BLOCKS 9-10: LANDS TO BE CONVEYED	= 7,346.0 sq.m.	(0.9%)
BLOCKS 11-12: 0.3 RESERVE	= 133.6 sq.m.	(0.0%)
BLOCKS 13: PROPOSED NORTH-SOUTH ROAD	= 7,397.6 sq.m.	(1.0%)
BLOCKS 14: S.W.M. TANK FOR STREET A	= 2,312.3 sq.m.	(0.3%)
BLOCKS 15: LANDS TO BE RETAINED	= 5,295.0 sq.m.	(0.7%)

EXISTING OFFICIAL PLAN	= EMPLOYMENT AREA AND EPA-1 (ENVIRONMENTAL POLICY/AREA 1)
PROPOSED OFFICIAL PLAN	= EMPLOYMENT AREA AND EPA-1 (ENVIRONMENTAL POLICY/AREA 1)
EXISTING ZONING	= A1 (AGRICULTURAL) AND EPA-1 (ENVIRONMENTAL POLICY/AREA 1) EPA-2 (ENVIRONMENTAL POLICY/AREA 2)
PROPOSED ZONING	= MS (SERVICED INDUSTRIAL)
EXISTING USE OF LAND	= VACANT
ADJACENT USE OF LAND	= SEE PLAN

NO.	DATE	DESCRIPTION	BY
6	MAY-26	REVISED BLOCKS	J.P.P.
5	FEB-26	NATURAL HERITAGE REVISION	J.P.P.
4	AUG-25	REVISED ROAD WINDENING	J.P.P.
3	MAY-25	REVISED S.W.M. POUND	J..P.P.
2	FEB-25	REVISED BLOCKS PER STAFF COMMENTS	J.P.P.
1	APR-24	ISSUED FOR MUNICIPAL APPROVAL	J.P.P.

REVISIONS

mainline planning services inc.
PH (905) 893-0046 FAX (888) 370-9474
P.O. BOX 319, KLEINBURG, ONTARIO, L0J 1C0

DRAWING TITLE
DRAFT PLAN OF SUBDIVISION

PROJECT
HUMBER STATION DISTRIBUTION CENTER

DEVELOPER/OWNER
PLD HUMBER STATION INVESTMENT LP.

DRAWN	CHECKED	SCALE	DWG. NO.
K.A.R.	J.P.P.	1 = 2000	DPS1
DATE	ISSUED	JOB NO.	
APR-2024	J.P.P.	-	

SKETCH ILLUSTRATING
TOPOGRAPHIC INFORMATION
12519–12713 HUMBER STATION ROAD
FOR THE PURPOSE OF SITE ASSESSMENT
TOWN OF CALEDON
REGIONAL MUNICIPALITY OF PEEL

SCALE 1: 1250

25 0 25 50 75 100 125 metres

David B. Searles Surveying Ltd.
ONTARIO LAND SURVEYORS

METRIC
DISTANCES AND COORDINATES SHOWN ON THIS PLAN ARE IN METRES AND CAN BE CONVERTED TO FEET BY DIVIDING BY 0.3048

LOT 4, CONCESSION 5
LOT 3, CONCESSION 5
LOT 2 CONCESSION 5
LOT 5 CONCESSION 5
PART 29, PLAN 43R-39654
PART 8 PLAN 43R-39298 SUBJECT TO EASEMENT IN GROSS AS IN PR3296292
PART 18 PLAN 43R-39298
PART 5 PLAN 43R-39773
PART 39 PLAN 43R-39298 SUBJECT TO EASEMENT IN GROSS AS IN PR3606174
PART 1 PLAN 43R-33864 SUBJECT TO EASEMENT AS IN PR2007846
PART 3 PLAN 43R-33653
PART 2 PLAN 43R-32039
PART 1 PLAN 43R-33800 SUBJECT TO EASEMENT AS IN PR2007846
PART 1 PLAN 43R-31859
PART 1, PLAN 43R-16685
PART 1 PLAN 43R-32039
PART 1 PLAN 43R-4459
PART 3 PLAN 43R-4459
POND AND DRAINAGE COURSE
PIN 14349-0366(LT)
PIN 14349-0390(LT)
UNIT BETWEEN LOTS 4 AND 5 CONCESSION 5
UNIT BETWEEN LOTS 3 AND 4 CONCESSION 5
UNIT BETWEEN LOTS 2 AND 3 CONCESSION 5
109.35 174.59 19.46 24.46 236.03 53.32 99.14 122.05 15.09 327.26 39.46
141.69 45.87 130.34 45.72 92.02 396.85 121.90 68.19 68.19 271.28 224.41
PART 2 PLAN 43R-4459 ACCEPTED AND ASSUMED BY BY-LAW 77-85 AS IN RO442546
PART 4 PLAN 43R-4459 ACCEPTED AND ASSUMED BY BY-LAW 78-50 AS IN RO475800
MUNICIPALLY KNOWN AS
HUMBER STATION ROAD
(ALSO KNOWN AS FIFTH LINE)
(ROAD ALLOWANCE BETWEEN CONCESSIONS 4 AND 5)

LEGEND

ANC	DENOTES ANCHOR
BB	DENOTES BELL BOX
BF	DENOTES BOARD FENCE
BOLL	DENOTES BOLLARD
CB	DENOTES CATCH BASIN
CCP	DENOTES CULVERT (CONCRETE PIPE)
CLF	DENOTES CHAIN LINK FENCE
CPAD	DENOTES CONCRETE PAD
CSP	DENOTES CULVERT (STEEL PIPE)
CSW	DENOTES CONCRETE SIDE WALK
DS	DENOTES DOOR SILL
EG	DENOTES EDGE OF GRAVEL
EP	DENOTES EDGE OF PAVEMENT
FF	DENOTES FINISHED FLOOR
FH	DENOTES FIRE HYDRANT
INV	DENOTES INVERT
LP	DENOTES LIGHT POLE
MBOX	DENOTES MAILBOX
MW	DENOTES MONITORING WELL
PWF	DENOTES POST AND WIRE FENCE
RF	DENOTES RAIL FENCE
RM	DENOTES ROAD MARKING
SP	DENOTES SIGN POST
WIF	DENOTES WROUGHT IRON FENCE
WV	DENOTES WATER VALVE
Ø	DENOTES DIAMETER
	DENOTES BOTTOM OF SLOPE
	DENOTES DITCH LINE
	DENOTES OVERHEAD WIRES
	DENOTES SWALE
	DENOTES TOP OF SLOPE
	DENOTES CONIFEROUS TREE
	DENOTES DECIDUOUS TREE
	DENOTES TREE LINE

BENCHMARK NOTE

ELEVATIONS ARE REFERRED TO THE REGION OF PEEL BENCHMARK No. 40 LOCATED ON THE SOUTH FACE AT THE WEST CORNER OF SOUTH END OF A CONCRETE BOX CULVERT ACROSS MAYFIELD ROAD APPROXIMATELY 0.56 km EAST OF CLARKWAY DRIVE, HAVING AN ELEVATION OF 222.165 m.
VERTICAL DATUM: CANADIAN GEODETIC DATUM, 1928
(1978 SOUTHERN ONTARIO READJUSTMENT)

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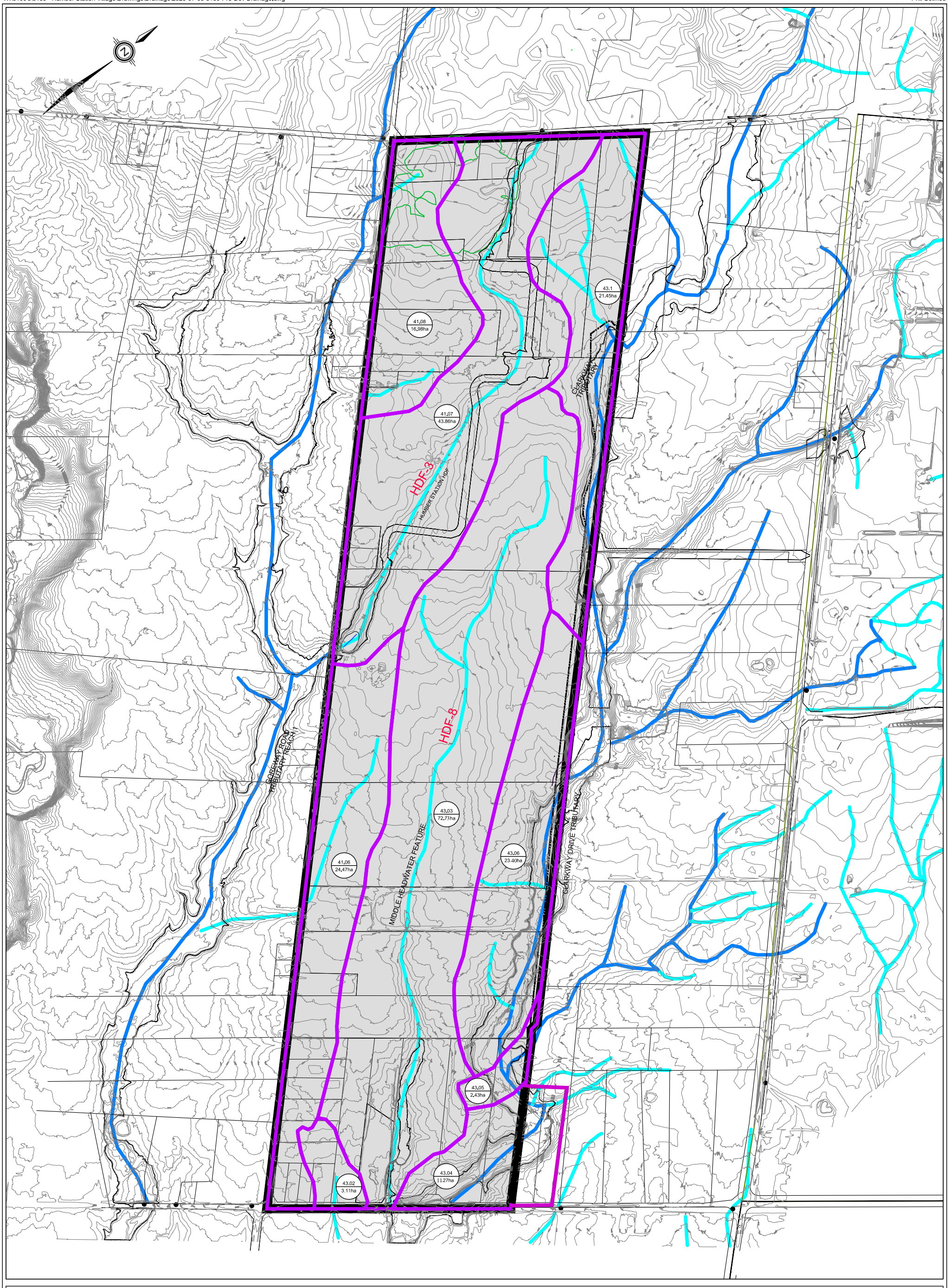
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Email: info@dbsearles.ca

Calculator	Draftsperson
BJ	IV
Editor	Plan Index No.
BJ	
Calculation File	Drawing File
19-22CALC.DWG	19-1-22.DWG
File No.	
19-1-22	



HUMBER STATION VILLAGES
TOWN OF CALEDON

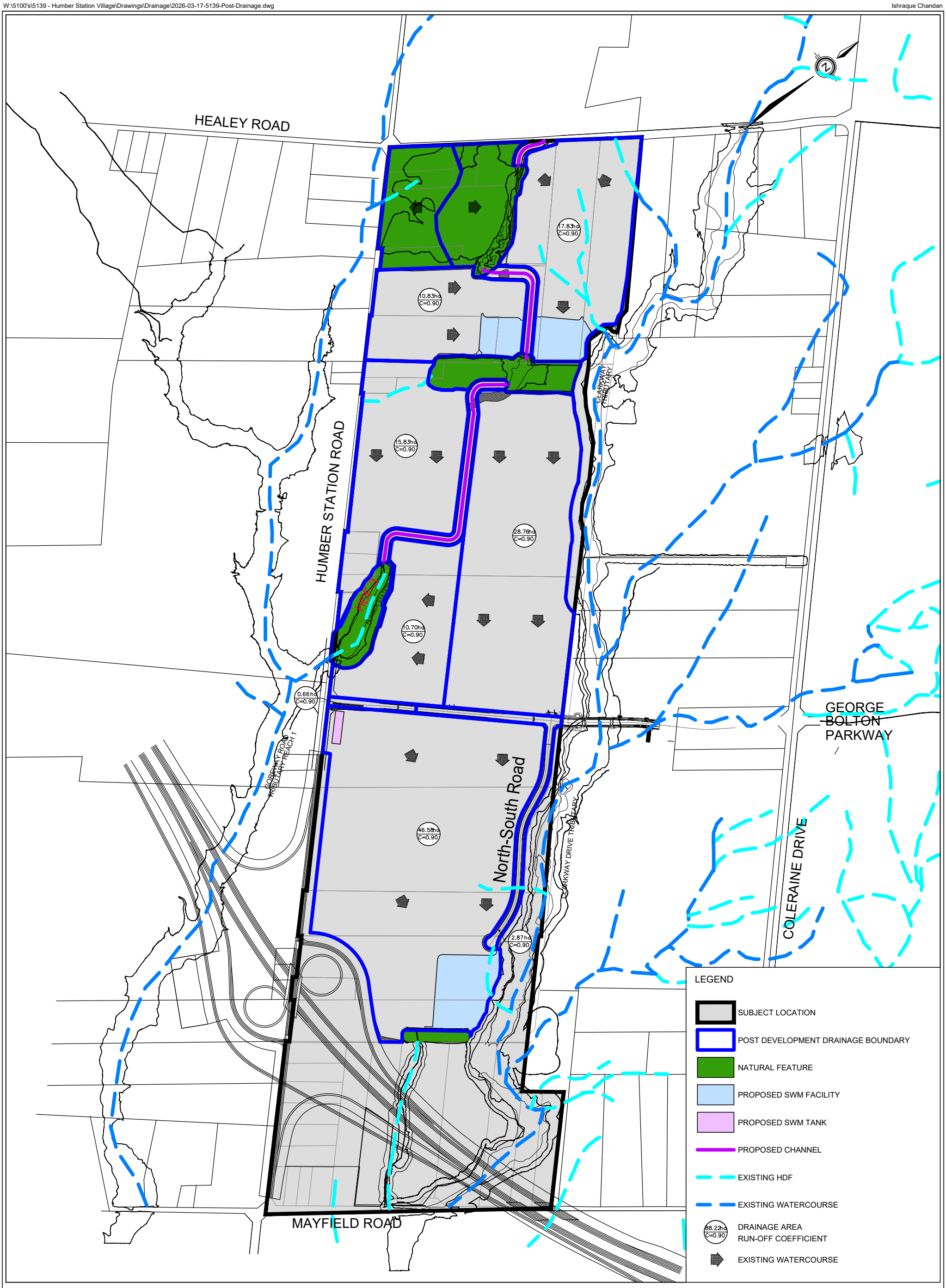
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CONSULTING ENGINEERS
6 Ronrose Drive, Concord, Ontario L4K 4R3
Tel: (905) 738-6100 Email: general@schaeffers.com
www.schaeffers.com

LEGEND

- SUBJECT LOCATION
- PRE DEVELOPMENT DRAINAGE BOUNDARY
- 43.02 / 3.11ha — TRCA CATCHMENT ID / TRCA AREA IN HECTARES
- WATERCOURSE
- HDF

FIGURE 2.1
PRE-DEVELOPMENT
DRAINAGE PLAN

2021-5139	MARCH 2026	SCALE: N.T.S.



HUMBER STATION VILLAGES
TOWN OF CALEDON

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LEGEND
(SEE ABOVE)

FIGURE 4.1
POST-DEVELOPMENT
BOUNDARIES

2021-5139	MARCH 2026	SCALE: N.T.S.

HEALEY ROAD

HUMBER STATION ROAD

Street A2

GEORGE BOLTON PARKWAY

MAYFIELD ROAD

CLARKWAY TRIBUTARY

CLARKWAY DRIVE TRIBUTARY

SOUTHWEST ROAD TRIBUTARY REACH 1

HDF-5

17.83ha C=0.90

10.83ha C=0.90

15.83ha C=0.90

28.76ha C=0.90

10.70ha C=0.90

0.66ha C=0.90

46.58ha C=0.90

2.87ha C=0.90

LEGEND

- SUBJECT LOCATION
- POST DEVELOPMENT DRAINAGE BOUNDARY
- NATURAL FEATURE
- PROPOSED SWM FACILITY
- PROPOSED SWM TANK
- DRAINAGE TO SWM POND 1
- DRAINAGE TO SWM POND 2
- DRAINAGE TO SWM POND 3
- DRAINAGE TO SWM TANK
- PROPOSED CHANNEL
- EXISTING HDF
- EXISTING WATERCOURSE
- 88.22ha C=0.90 DRAINAGE AREA RUN-OFF COEFFICIENT
- EXISTING WATERCOURSE
- * AREAS WITH ON-SITE CONTROLS

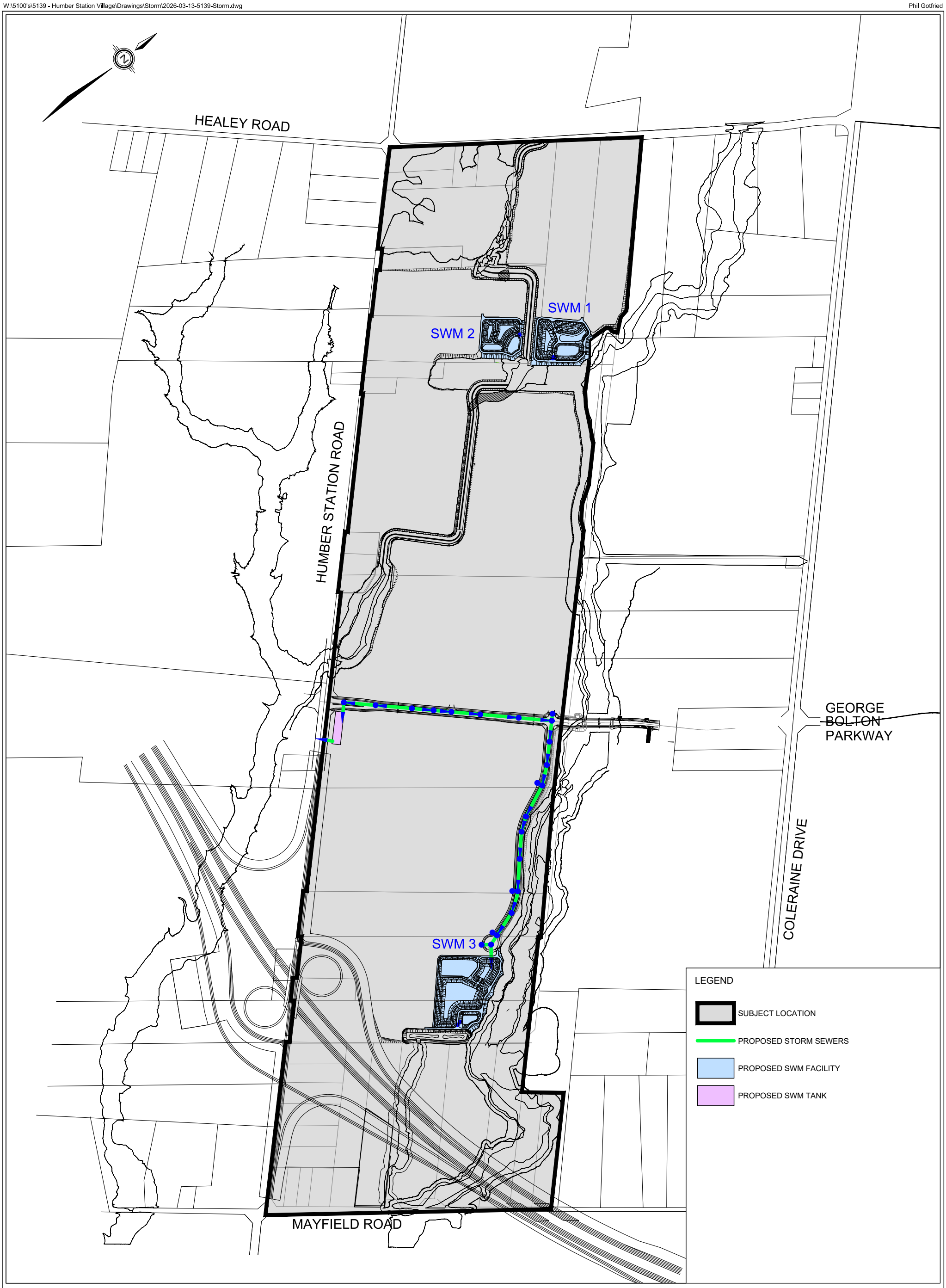
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TOWN OF CALEDON

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LEGEND
(SEE ABOVE)

FIGURE 4.2
PROPOSED
SWM TRIBUTARY AREAS

2021-5139	MARCH 2026	SCALE: N.T.S.



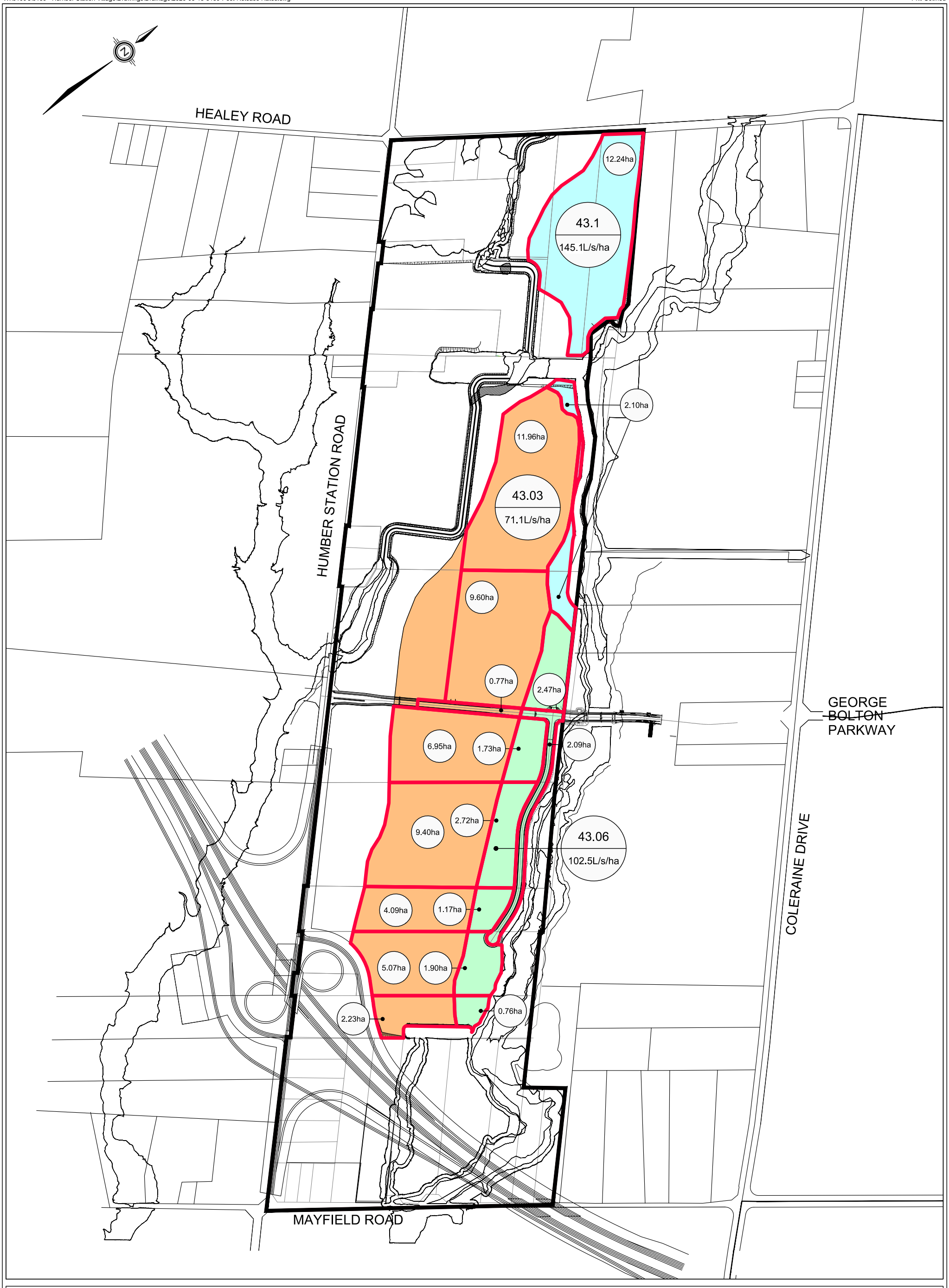
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LEGEND
(SEE ABOVE)

FIGURE 4.3
PROPOSED STORM SERVICING

2021-5139	MARCH 2026	SCALE: N.T.S.



HUMBER STATION VILLAGES
TOWN OF CALEDON

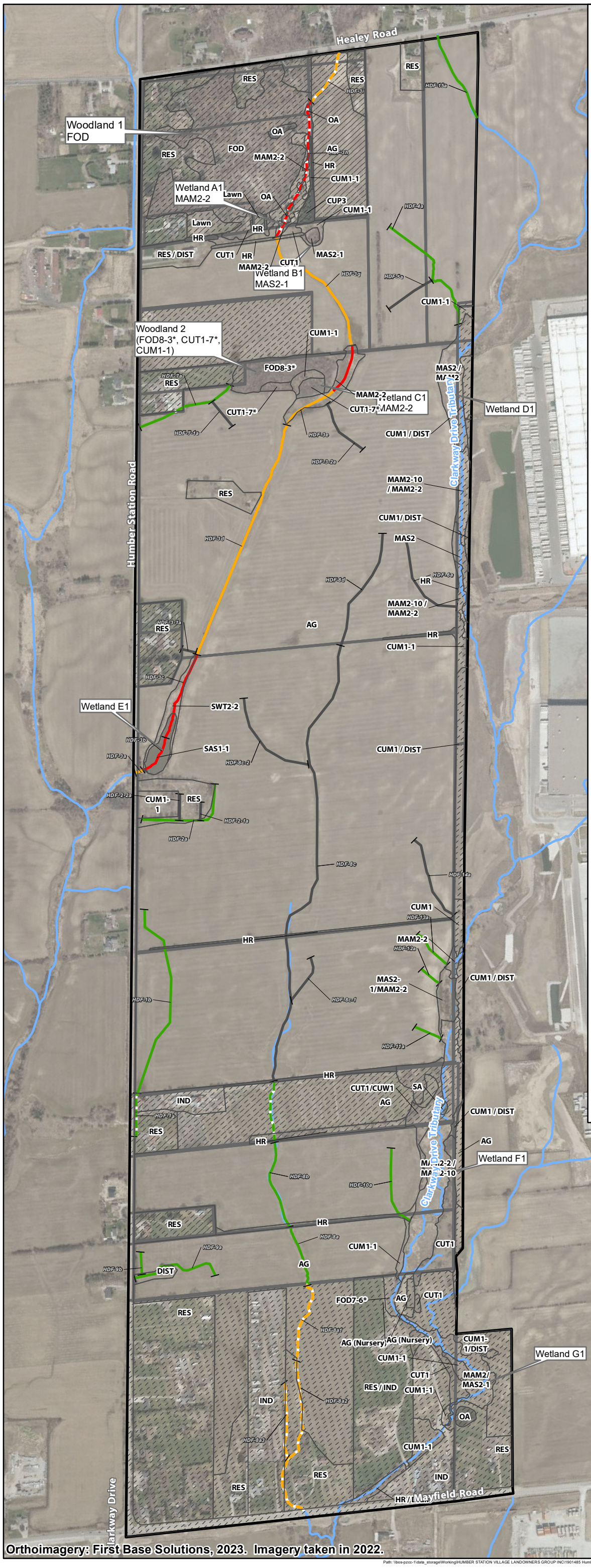
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LEGEND

- SUBJECT LOCATION
- AREA BOUNDARY
- 41.08 / 88L/s/ha — PRE-DEVELOPMENT CATHCMENT ID / REGIONAL RELEASE RATE
- 2.23ha — AREA IN HECTARES

FIGURE 4.5
REGIONAL RELEASE RATE

2021-5139	MARCH 2026	SCALE: N.T.S.



ELC Legend

CUM1-1	Dry Moist Old Field Meadow
CUP	Coniferous Plantation
CUT	Cultural Thicket
CUT1	Mineral Cultural Thicket
CUT1-1	Sumac Cultural Thicket
CUT1-7*	Buckthorn Cultural Thicket
FOD	Deciduous Forest
FOD7-6*	Fresh-Moist Manitoba Maple Lowland Deciduous Forest
FOD8-3*	Fresh-Moist Basswood Deciduous Forest
MAM	Meadow Marsh
MAM2	Mineral Meadow Marsh
MAM2-2	Reed-canary Grass Mineral Meadow Marsh
MAM2-10	Forb Mineral Meadow Marsh
MAS	Shallow Marsh
MAS2	Mineral Shallow Marsh
MAS2-1	Cattail Mineral Shallow Marsh
OA	Open Aquatic
SAS1-1	Pondweed Submerged Shallow Aquatic
SWT2-2	Willow Mineral Thicket Swamp

AG	Agricultural
DIST	Disturbed
H	Hedgerow
IND	Industrial
Lawn	Lawn
Pond	Pond
RES	Residential

**Not included in Southern Ontario ELC Field Guide.*

- Study Area
- Participating Properties
- Non-participating Properties
- Ecological Land Classification
- Watercourse (MNRF LIO)

HDF Management Recommendations

- Conservation
- Protection
- Mitigation
- No Management Required
- Conservation - Non-participating Ownership
- Protection - Non-participating Ownership
- Mitigation - Non-participating Ownership

NOTES:

1. Coordinate System: NAD 1983 UTM Zone 17N.
2. Base features produced under license with the Ontario Ministry of Natural Resources and Forestry © Queen's Printer for Ontario, 2025.
3. Orthoimagery © First Base Solutions, 2025. Imagery taken in 2022.

Project 1901485

Humber Station, Town of Caledon, ON

Figure 4b
Observed Natural Heritage Features - Aquatic

0 100 Meters

1:8,000

N

GEI Consultants

ELC Legend

CUM1-1	Dry Moist Old Field Meadow
CUP	Coniferous Plantation
CUT	Cultural Thicket
CUT1	Mineral Cultural Thicket
CUT1-1	Sumac Cultural Thicket
CUT1-7*	Buckthorn Cultural Thicket
FOD	Deciduous Forest
FOD7-6*	Fresh-Moist Manitoba Maple Lowland Deciduous Forest
FOD8-3*	Fresh-Moist Basswood Deciduous Forest
MAM	Meadow Marsh
MAM2	Mineral Meadow Marsh
MAM2-2	Reed-canary Grass Mineral Meadow Marsh
MAM2-10	Forb Mineral Meadow Marsh
MAS	Shallow Marsh
MAS2	Mineral Shallow Marsh
MAS2-1	Cattail Mineral Shallow Marsh
OA	Open Aquatic
SAS1-1	Pondweed Submerged Shallow Aquatic
SWT2-2	Willow Mineral Thicket Swamp

AG	Agricultural
DIST	Disturbed
H	Hedgerow
IND	Industrial
Lawn	Lawn
Pond	Pond
RES	Residential

**Not included in Southern Ontario ELC Field Guide.*

- Study Area
- Participating Properties
- Non-participating Properties
- Significant Wetland (GEI Consultants Ltd.)
- Drainage (Suitable for Realignment)
- Drainage (Suitable for Realignment Non-participating Owner)
- Conceptual Drainage Realignment
- Long Term Stable Top of Slope (PNJ)
- Creek Bank (Staked on October 19, 2021 by TRCA and GEI)
- Dripline (Staked on October 19, 2021 by TRCA and GEI)
- Hydrologic Edge of Wetland (Staked on October 19, 2021 by TRCA and GEI)
- Wetland (Staked on October 19, 2021 by TRCA and GEI)
- Long Term Stable Top of Slope (PNJ) + 10 m
- Significant Wetland + 30 m
- Top of Bank Estimate Based on LiDAR + 10 m
- Wetland + 10 m
- Floodplain (Schaeffers 2023) + 10 m
- Top of Bank + 10 m (Staked on October 19, 2021 by TRCA and GEI)
- Significant Woodland + 10 m
- Warm Water Fish Habitat + 15 m
- Preliminary Natural Heritage System Limit
- Preliminary Natural Heritage System Limit (Potential for Realignment)
- Proposed MAS2-1 Wetland Removal (0.077 ha)
- Proposed MAS2-1 Wetland Compensation (0.077 ha)
- Proposed MAM2-2 Wetland Removal (0.098 ha)
- Proposed MAM2-2 Wetland Compensation (0.098 ha)
- Conceptual Wetland Compensation (0.35 ha)
- Approximate Highway 413 Alignment

Staked Features East Of Subject Lands (A.M. Candaras)

- Top of Bank Line

Humber Station, Town of Caledon, ON

Figure 6
Opportunities and Constraints

0 100 Meters

GEI Consultants

Orthoimagery: First Base Solutions, 2023. Imagery taken in 2021.

ELC Legend

CUM1	Mineral Cultural Meadow
CUM1-1	Dry Moist Old Field Meadow
CUP	Plantation
CUP3	Coniferous Plantation
CUT	Cultural Thicket
CUT1	Mineral Cultural Thicket
CUT1-1	Sumac Cultural Thicket
CUT1-7*	Buckthorn Cultural Thicket
FOD	Deciduous Forest
FOD7-6*	Fresh-Moist Manitoba Maple Lowland Deciduous Forest
FOD8-3*	Fresh-Moist Basswood Deciduous Forest
MAM	Meadow Marsh
MAM2	Mineral Meadow Marsh
MAM2-2	Reed-canary Grass Mineral Meadow Marsh
MAM2-10	Forb Mineral Meadow Marsh
MAS	Shallow Marsh
MAS2	Mineral Shallow Marsh
MAS2-1	Cattail Mineral Shallow Marsh
OA	Open Aquatic
SAS1-1	Pondweed Submerged Shallow Aquatic
SWD	Deciduous Swamp
SWT2-2	Willow Mineral Thicket Swamp

AG	Agricultural
DIST	Disturbed
H	Hedgerow
IND	Industrial
Lawn	Lawn
Pond	Pond
RES	Residential

**Not included in Southern Ontario ELC Field Guide.*

- Study Area
- 120 m Adjacent Lands
- Watercourse/Drainage
- Significant Woodland
- Significant Wetland (GEI Consultants Ltd.)
- Assumed Significant Wetland (GEI Consultants Ltd.)
- Snapping Turtle Observation
- Terrestrial Crayfish Chimney Observation
- Creek Bank (Staked on October 19, 2021 by TRCA and GEI)
- Dripline (Staked on October 19, 2021 by TRCA and GEI)
- Hydrologic Edge of Wetland (Staked on October 19, 2021 by TRCA and GEI)
- Top of Bank (Staked on October 19, 2021 by TRCA and GEI)
- Wetland (Staked on October 19, 2021 by TRCA and GEI)
- Terrestrial Crayfish Significant Wildlife Habitat
- Top of Bank Estimate Based on LiDAR (GEI)
- Monarch Butterfly Significant Wildlife Habitat
- Yellow Banded Bumblebee Significant Wildlife Habitat
- Eastern Wood Peewee Significant Wildlife Habitat
- Snapping Turtle Significant Wildlife Habitat
- Candidate Seeps and Springs Significant Wildlife Habitat
- Candidate Bat Maternity Colonies Significant Wildlife Habitat
- Feature Proposed for Realignment

NOTES:

1. Coordinate System: NAD 1983 UTM Zone 17N.
2. Base features produced under license with the Ontario Ministry of Natural Resources and Forestry © Queen's Printer for Ontario, 2023.
3. Orthoimagery © First Base Solutions, 2023. Imagery taken in 2022.

Project 1901485

Humber Station, Town of Caledon, ON

Figure 4a
Observed Natural Heritage Features - Terrestrial

0 100 Meters

1:8,500

GEI Consultants

Humber Station Road

Mayfield Road

Parkway Drive

Orthoimagery: First Base Solutions, 2023. Imagery taken in 2022.



LEGEND

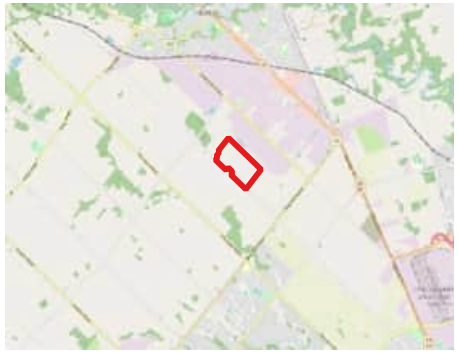
Site Boundary

Monitoring Points

Monitoring Well

Test Pit

GW Level Contour



120 120 240 m

North American Datum 1983, UTM Zone 17N (EPSG: 26917)

Scale: 1:7,000
Page Size: Letter (11 x 8.5 inches)

Drawn: FL
Checked: JC
Date: Feb 2025
Source Notes:
Basemap - Google Satellite (2020)
Topo Contour - Peel Region (Spring 2021)

CLIENT

Prologis

PROJECT

12519 & 12713 Humber Station Road, Bolton, Ontario

TITLE

Recommended Groundwater Table Contour for Infiltration Tank Design

SLR

REF. NO. 2008102

Figure 10

PRE-DEVELOPMENT CN VALUES

Design Chart 1.09: Soil/Land Use Curve Numbers

Land Use	Treatment or Practice	Hydrologic Condition[4]	Hydrologic Soil Group			
			A	B	C	D
Fallow	Straight row	---	77	86	91	94
Row crops	"	Poor	72	81	88	91
	"	Good	67	78	85	89
	Contoured	Poor	70	79	84	88
	"	Good	65	75	82	86
	" and terraced	Poor	66	74	8	82
	" " "	Good	62	71	78	81
Small grain	Straight row	Poor	65	76	84	88
		Good	63	75	83	87
	Contoured	Poor	63	74	82	85
		Good	61	73	81	84
	" and terraced	Poor	61	72	79	82
		Good	59	70	78	81
Close-seeded legumes[2] or rotation meadow	Straight row	Poor	66	77	85	89
	" "	Good	58	72	81	85
	Contoured	Poor	64	75	83	85
	"	Good	55	69	78	83
	" and terraced	Poor	63	73	80	83
	" and terraced	Good	51	67	76	80
Pasture or range		Poor	68	79	86	89
		Fair	49	69	79	84
	Contoured	Good	39	61	74	80
	"	Poor	47	67	81	88
	"	Fair	25	59	75	83
		Good	6	35	70	79
Meadow		Good	30	58	71	78
Woods		Poor	45	66	77	83
		Fair	36	60	73	79
		Good	25	55	70	77
Farmsteads		---	59	74	82	86
		---	72	82	87	89
		---	74	84	90	92

For average anticedent soil moisture condition (AMC II)

[2] Close-drilled or broadcast.

[4] The hydrologic condition of cropland is good if a good crop rotation practice is used; it is poor if one crop is grown continuously.

Source: U.S. Department of Agriculture (1972)

Design Chart 1.09: Soil/Land Use Curve Numbers (Continued)

Land Use or Surface	Hydrologic Soil Group						
	A	AB	B	BC	C	CD	D
Fallow (special cases only)	77	82	86	89	91	93	94
Crop and other improved land	66** (62)	70** (68)	74	78	82	84	86 AMC I
Pasture & other unimproved land	58* (38)	62* (51)	65	71	76	79	81
Woodlots and forest	50* (30)	54* (44)	58	65	71	74	77
Impervious areas (paved)							98
Bare bedrock draining directly to stream by surface flow							98
Bare bedrock draining indirectly to stream as groundwater (usual case)							70
Lakes and wetlands							50

Notes

(i) All values are based on AMC II except those marked by * (AMC III) or ** (mean of AMC II and AMC III).

(ii) Values in brackets are AMC II and are to be used only for special cases.

(iii) Table is not applicable to frozen soils or to periods in which snowmelt contributes to runoff.

POST-DEVELOPMENT CN VALUES

Table 2-1 – CN Values

Land use (TRCACode)	TIMP	Cover Type	Hydrologic Soil Group			
			A	B	C	D
Cemetery	35	35% Impervious + 65% Lawns	71	81	88	90
Commercial	95	95% Impervious + 5% Lawns	98	99	99	99
Conservation Lands	0	80% Woods + 20% Meadows	38	61	74	80
Estate Residential	40	40% Impervious + 60% Lawns	74	83	89	91
Farm	0	Cultivated	66	74	82	86
Golf Course	0	Lawns	56	71	81	85
Hydro Corridor	10	10% Impervious + 90% Meadows	51	69	79	84
Industrial	95	95% Impervious + 5% Lawns	98	99	99	99
Institutional	80	80% Impervious + 20% Lawns	91	94	96	97
Open Space	0	50% Woods + 50% Meadows	41	63	75	81
Park	10	10% Impervious + 45% Woods + 45% Meadows	47	67	78	82
Recreational	20	20% Impervious + 80% Lawns	65	77	85	88
Residential High	80	80% Impervious + 20% Lawns	91	94	96	97
Residential LowMed	60	60% Impervious + 40% Lawns	82	88	92	94
Road (ROW)	90	90% Impervious + 10% Lawns	96	97	98	99
Rural Residential	20	20% Impervious + 80% Lawns	65	77	85	88
Transportation	60	60% Impervious + 40% Lawns	82	88	92	94
Water	100	Impervious	100	100	100	100
Natural	0	50% Woods + 50% Meadows	41	63	75	81

Table 2-1 – CN Values

Land use (TRCACode)	TIMP	Cover Type	Hydrologic Soil Group			
			A	B	C	D
Cemetery	35	35% Impervious + 65% Lawns	71	81	88	90
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Transportation	60	60% Impervious + 40% Lawns	82	88	92	94
Water	100	Impervious	100	100	100	100
Natural	0	50% Woods + 50% Meadows	41	63	75	81

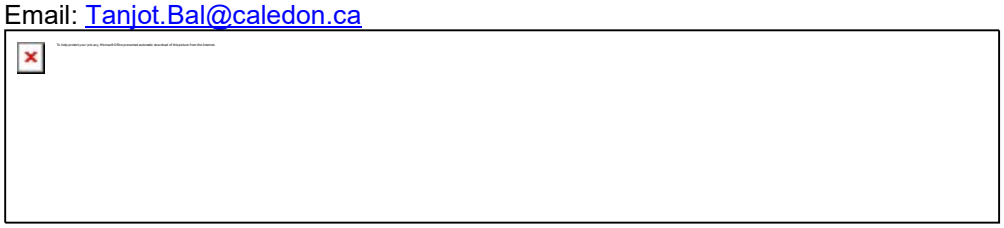
Maggie Findlay

From: Tanjot Bal <Tanjot.Bal@caledon.ca>
Sent: May 21, 2026 12:29 PM
To: James Davidson; Canejo, Carlos
Subject: FW: Humber Station Employment CEISMP third submission- POPA 2024-0002

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FYI

Tanjot Bal
Senior Planner Development and Design
Planning Development
Office: 905-584-2272 Extn: 4418
Email: Tanjot.Bal@caledon.ca



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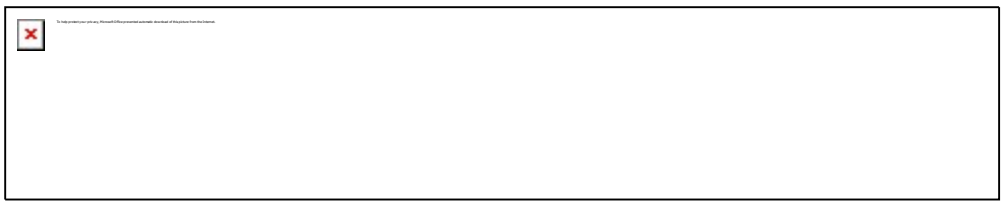
From: Cassie Schembri <Cassie.Schembri@caledon.ca>
Sent: Thursday, May 21, 2026 12:17 PM
To: Tanjot Bal <Tanjot.Bal@caledon.ca>; Maxim Zemlyanoy <mzemlyanoy@schaeffers.com>; Hadiseh Bolkhari <Hadiseh.Bolkhari@caledon.ca>
Cc: Koryun Shahbikian <kshahbikian@schaeffers.com>; Debebe Yilak <dyilak@schaeffers.com>; Max Maddigan <maxm@deltaurban.com>
Subject: RE: Humber Station Employment CEISMP third submission- POPA 2024-0002

Hi Tanjot,

Yes, I can confirm that Blocks 1, 6 , 7, 8 and 15 can proceed in advance of considering climate change. The Town will find opportunity to mitigate impacts through external of these Blocks.

Thanks,
Cassie

Cassie Schembri
Manager Water Resources
Engineering Public Works & Transportation
Office: 905-584-2272 Extn: 4811
Email: Cassie.Schembri@caledon.ca



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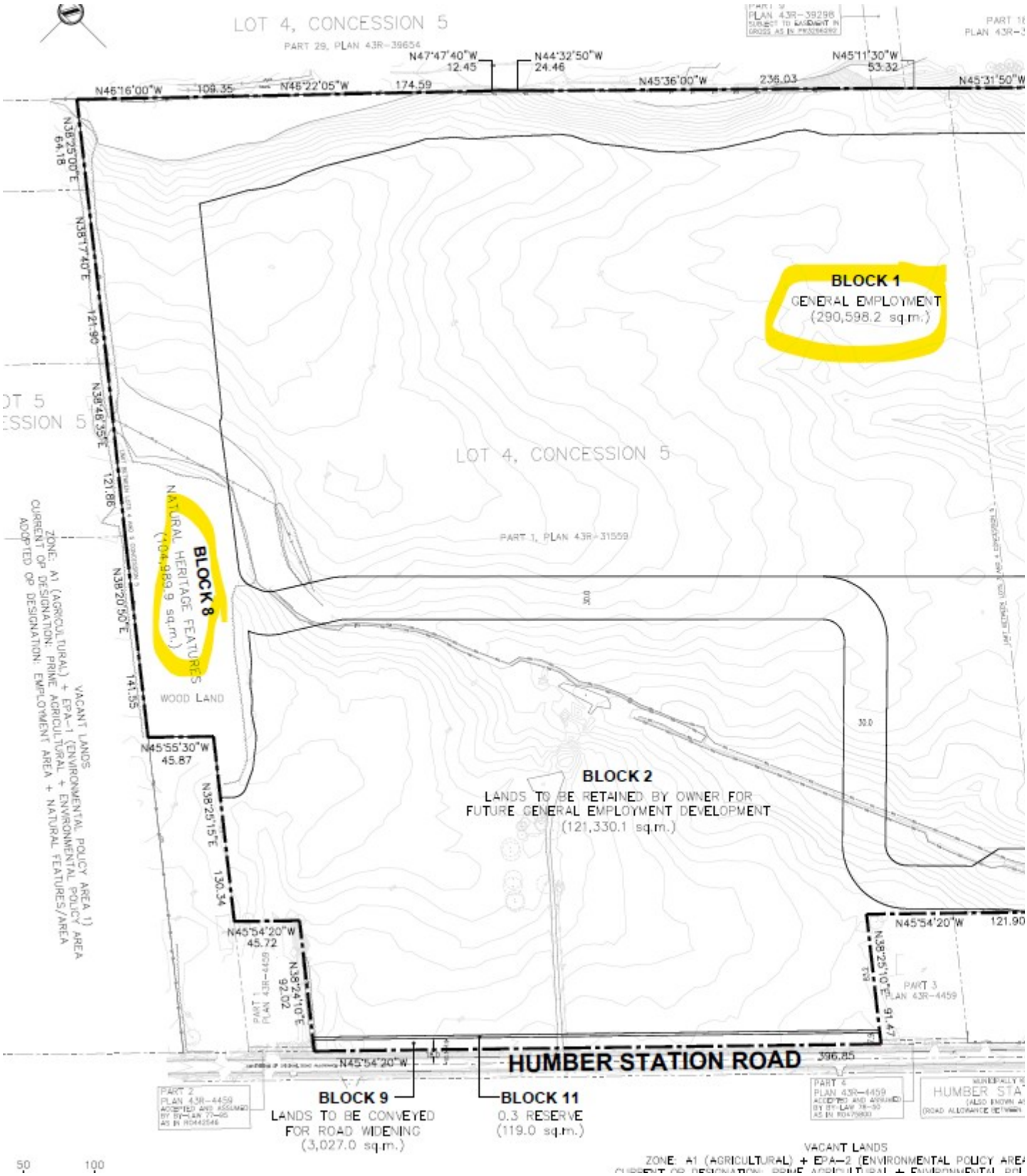
From: Tanjot Bal <Tanjot.Bal@caledon.ca>
Sent: Thursday, May 7, 2026 3:43 PM
To: Cassie Schembri <Cassie.Schembri@caledon.ca>; Maxim Zemlyanoy <mzemlyanoy@schaeffers.com>; Hadiseh Bolkhari <Hadiseh.Bolkhari@caledon.ca>
Cc: Koryun Shahbikian <kshahbikian@schaeffers.com>; Debebe Yilak <dyilak@schaeffers.com>; Max Maddigan <maxm@deltaurban.com>
Subject: RE: Humber Station Employment CEISMP third submission- POPA 2024-0002

Hi Cassie,

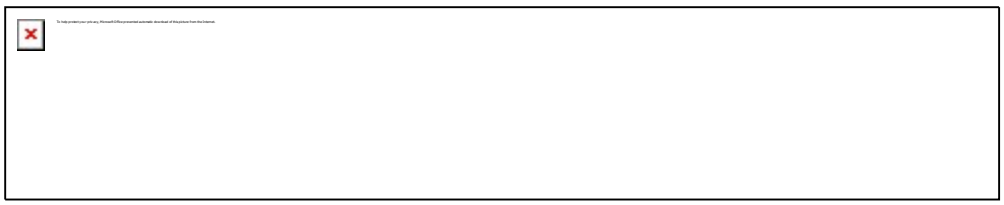
Can you please confirm that the blocks identifies in yellow below, all part of phase 1, are exempt from climate change response considerations? Prologis understands that this exemption does not apply to any future building. Thank you!

Note: any road widening and reserves taken through the first phase would also be exempt.

Block/Lot	Part of Phase 1
Block 1	Industrial
Block 6	Interim SWM Pond
Block 7	George Bolton Extension
Block 8	Natural heritage features
Block 15	SWM Tank



Tanjot Bal
Senior Planner Development and Design
Planning Development
Office: 905-584-2272 Extn: 4418
Email: Tanjot.Bal@caledon.ca



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From: Cassie Schembri <Cassie.Schembri@caledon.ca>
Sent: Wednesday, March 11, 2026 9:06 PM
To: Maxim Zemlyanoy <mzemlyanoy@schaeffers.com>; Hadiseh Bolkhari <Hadiseh.Bolkhari@caledon.ca>
Cc: Koryun Shahbikian <kshahbikian@schaeffers.com>; Debebe Yilak <dyilak@schaeffers.com>; Tanjot Bal <Tanjot.Bal@caledon.ca>; Max Maddigan <maxm@deltaurban.com>
Subject: Re: Humber Station Employment CEISMP third submission- POPA 2024-0002

Hi Maxim,

Sorry for the confusion. To be clear, if you have not collected the data, the Town will collect the data ourselves and will use it as part of our updated modelling work being undertaking for West Humber. If the updated models that the Town completes and has approved by the TRCA exhibit different results, we will require an addendum to the CEISMP in the future to account for the differences. We will not hold up the current process. We just want to be transparent about our expectations with the LOG and how we will move forward if you have not completed the work yourself.

I hope this is more clear. If it isn't, let's please arrange a quick call to clarify.

Thanks,
Cassie

Cassie Schembri
Manager, Water Resources
Engineering, Public Works & Transportation

6311 Old Church Road
Caledon, ON L7C 1J6
Cell: 647.327.0060
Office: 905.584.2272

From: Maxim Zemlyanoy <mzemlyanoy@schaeffers.com>
Sent: Wednesday, March 11, 2026 6:06 PM
To: Cassie Schembri <Cassie.Schembri@caledon.ca>; Hadiseh Bolkhari <Hadiseh.Bolkhari@caledon.ca>
Cc: Koryun Shahbikian <kshahbikian@schaeffers.com>; Debebe Yilak <dyilak@schaeffers.com>; Tanjot Bal <Tanjot.Bal@caledon.ca>; Max Maddigan <maxm@deltaurban.com>
Subject: RE: Humber Station Employment CEISMP third submission- POPA 2024-0002

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Hi Cassie and Hadiseh,

You mentioned that the Town is undertaking its own survey. Could you please advise on the timeline of this work? If the Humber Station Landowners Group completes this work ahead of the Town, will the collected information be used for the Town's modelling and records? Could the LOG be reimbursed for this work? Prologis is advancing their application and, based on your feedback below, will need the survey data fairly soon.

Thank you,
Maxim Zemlyanoy, M.EngCEM, P.Eng.
Junior Associate

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From: Maxim Zemlyanoy
Sent: Thursday, March 5, 2026 3:42 PM
To: 'Cassie Schembri' <Cassie.Schembri@caledon.ca>; Hadiseh Bolkhari <Hadiseh.Bolkhari@caledon.ca>
Cc: Koryun Shahbikian <kshahbikian@schaeffers.com>; Debebe Yilak <dyilak@schaeffers.com>; Tanjot Bal <Tanjot.Bal@caledon.ca>
Subject: RE: Humber Station Employment CEISMP third submission- POPA 2024-0002

Hi Cassie and Hadiseh,

Thank you for the detailed response. We appreciate your cooperation with respect to the submission requirements. We will provide the photos and survey sheets in the upcoming submission.

Thank you,
Maxim Zemlyanoy, M.EngCEM, P.Eng.
Junior Associate

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From: Cassie Schembri <Cassie.Schembri@caledon.ca>
Sent: Thursday, March 5, 2026 9:44 AM
To: Maxim Zemlyanoy <mzemlyanoy@schaeffers.com>; Hadiseh Bolkhari <Hadiseh.Bolkhari@caledon.ca>
Cc: Koryun Shahbikian <kshahbikian@schaeffers.com>; Debebe Yilak <dyilak@schaeffers.com>; Tanjot Bal <Tanjot.Bal@caledon.ca>
Subject: RE: Humber Station Employment CEISMP third submission- POPA 2024-0002

Hi Maxim,

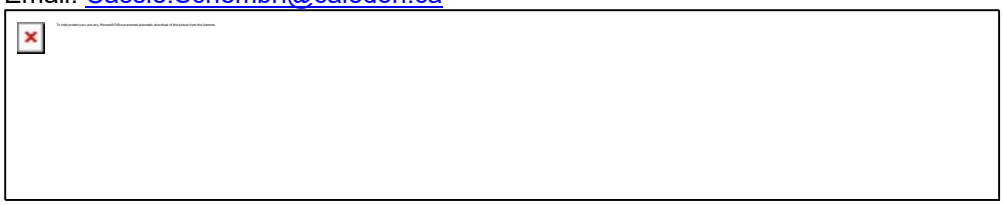
Hadiseh and I have touched base on your question below.
Our concern is that LiDAR data does not provide sufficient accuracy for capturing detailed channel geometry and culvert openings, particularly within and immediately upstream and downstream of structures.
We understand that the collected survey data was done by in-house surveyors and cannot be certified. If this data is being relied on, we do require the survey sheets be provided. Further, you have asked whether photos are required. Our preference is that photos be provided and assume photos would have been collected as part of the condition assessment of the structures. If this wasn't done please advise if this can be done asap as this is a priority project for the Town.
As a note, to meet Town requirements, surveyed cross-sections upstream and downstream of each structure, along with complete hydraulic structure inventory sheets performed by a Registered Ontario Land Surveyor, are required to support hydraulic modelling updates. Given that this wasn't done, the Town can accept the use of the available LiDAR and existing structure information for the current phase of modelling, with the understanding that:

- This approach does not replace the Town's requirement for surveyed cross-sections and verified hydraulic structure information (we are not setting precedence here, this is a basic requirement of the Town and expect this as a minimum of the information that must be collected);

- The Town is undertaking survey work as part of its broader hydraulic modelling and data collection program; and
- Once the Town's survey is completed and the hydraulic models are updated, any adjustments identified through the refined data will need to be addressed through future planning and development submissions, as applicable.

If you want to discuss this further, I urge you to reach out to Hadiseh as she can help as needed from a Water Resource perspective on this file.
Thanks,
Cassie

Cassie Schembri
Manager, Water Resources
Engineering Public Works & Transportation
Office: 905-584-2272, 4811
Email: Cassie.Schembri@caledon.ca



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From: Maxim Zemlyanoy <mzemlyanoy@schaeffers.com>
Sent: Thursday, February 26, 2026 5:26 PM
To: Hadiseh Bolkhari <Hadiseh.Bolkhari@caledon.ca>; Cassie Schembri <Cassie.Schembri@caledon.ca>
Cc: Koryun Shahbikian <kshahbikian@schaeffers.com>; Debebe Yilak <dyilak@schaeffers.com>
Subject: RE: Humber Station Employment CEISMP third submission- POPA 2024-0002

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Hi Cassie,

I left you a voicemail a few days ago and wanted to follow up on my question. We received the Town's comments on the interim Humber Station CEISMP submission. There is a comment that requests surveyed data for the existing culverts, including the cross-sections upstream and downstream of the structures. The history of the comment is presented below. Could you please advise if the latest Lidar information that we received from TRCA, as advised by you in the email below, is sufficient for creating the cross-sections or if the areas need to be surveyed? We do have the survey data for the culvert sizes and invert elevations, although it was collected by our in-house surveyor and cannot be certified. Can you please also confirm if photos of the structures are required?

Town Water Resource comment (2025)	HSV LOG Response (2026)

Table D1-1 - Undersized Structures within Secondary Plan Area in Appendix D provides the structure shape and size and the major roads. To meet Town and TRCA standards and the MNRF Technical Bulletin on Flood Hazard Data Surveying and Mapping Guidance (2023), the report must include detailed hydraulic structure inventory sheets and associated cross-sections for each crossing. These must document: Exact structural dimensions (span, rise, length), Inlet and outlet elevations, Material specifications (e.g., concrete, corrugated steel), Condition assessments (structural integrity, blockages, sedimentation), Relevant hydraulic controls (headwalls, aprons, energy dissipation), and Surveyed cross-sections upstream and downstream of each crossing to capture channel geometry and flood conveyance capacity. These detailed inventories and cross-sections are necessary for accurate model calibration, flood hazard delineation, and to support assessments of existing and future (including climate change) conditions. The following comments summarize issues identified in the submitted HEC-RAS model and supporting review sheets. The intent is to ensure the model is technically sound, defensible, and consistent with Town/CA requirements, MNRF Technical Bulletins, and HEC-RAS guidance. Consultant responses and corrective actions are required for each item below.	Comment Noted. Details of Hydraulic structures are on the MNRF Guideline and provided in Table 2-3 o report. Location map of the crossing structures h prepared and shown in Figure 4. Missing information Survey datum information) will be provided for culve the subject area.

Thank you,
Maxim Zemlyanoy, M.EngCEM, P.Eng.
Junior Associate

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From: Hadiseh Bolkhari <Hadiseh.Bolkhari@caledon.ca>
Sent: Wednesday, December 10, 2025 12:45 PM
To: Cassie Schembri <Cassie.Schembri@caledon.ca>; Maxim Zemlyanoy <mzemlyanoy@schaeffers.com>

Cc: Koryun Shahbikian <kshahbikian@schaeffers.com>; Debebe Yilak <dyilak@schaeffers.com>
Subject: RE: Humber Station Employment CEISMP third submission- POPA 2024-0002

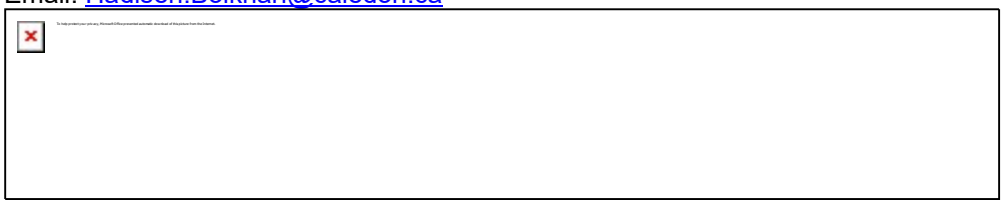
You don't often get email from hadiseh.bolkhari@caledon.ca. Learn why this is important

Hi,

Thanks for your email. Please reach out Mike Todd (mike.todd@trca.cafrom) from TRCA to get 2023 LiDAR. TRCA LiDAR is in 1928 datum and appropriate to use. Please note that the provincial LiDAR datum is 2013 and is not consistent with TRCA LiDAR and models.

Regards,

Hadiseh Bolkhari
Senior Project Manager Stormwater A
Engineering Public Works & Transportation
Office:
Email: Hadiseh.Bolkhari@caledon.ca



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From: Cassie Schembri <Cassie.Schembri@caledon.ca>
Sent: Wednesday, December 10, 2025 12:37 PM
To: Maxim Zemlyanoy <mzemlyanoy@schaeffers.com>; Hadiseh Bolkhari <Hadiseh.Bolkhari@caledon.ca>
Cc: Koryun Shahbikian <kshahbikian@schaeffers.com>; Debebe Yilak <dyilak@schaeffers.com>
Subject: RE: Humber Station Employment CEISMP third submission- POPA 2024-0002

Hi Maxim,

Thank you for your email.

I've included Hadiseh on this email. She is leading the Humber Station review and is more familiar with the specifics of this project.

@Hadiseh Bolkhari please see below.

Thanks,
Cassie

Cassie Schembri
Manager, Water Resources
Engineering Public Works & Transportation
Office: 905-584-2272, 4811
Email: Cassie.Schembri@caledon.ca

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From: Maxim Zemlyanoy <mzemlyanoy@schaeffers.com>
Sent: Wednesday, December 10, 2025 11:46 AM
To: Cassie Schembri <Cassie.Schembri@caledon.ca>
Cc: Koryun Shahbikian <kshahbikian@schaeffers.com>; Debebe Yilak <dyilak@schaeffers.com>
Subject: Humber Station Employment CEISMP third submission- POPA 2024-0002

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Hi Cassie,

Hope you are well.

We are working on the comments on the Humber Station Villages CEISMP, and wanted to confirm the requirements for the Lidar information, as discussed on the first page of the attachment. We have reached out to the provider of the Lidar dataset (First Base Solutions) to request the 2023 Lidar, as indicated in the comments. Their Lidar for this area is from 2019, but it reflects the current conditions of the Clarkway Tributary, such as the constructed industrial developments along the east side of the valley. They can also prepare a DTM based on the 2025 imagery with a +/- 50cm accuracy, which is less accurate than the 2019 data. Another option is the open-source 2023 Lidar surface of this area available on the Ontario GeoHub website.

Could you please advise if any of the above-mentioned data sources would be acceptable to address the comment? If there are alternative sources acceptable to the Town, could you please inform us of them as well?

Thank you,
Maxim Zemlyanoy, M.EngCEM, P.Eng.
Junior Associate

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CONSULTING ENGINEERS

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APPENDIX B

Stormwater Management Calculations (Ultimate Condition)

Project Name: Prologis Humber Station
Project No: 0624-6777
Date: 2024-11-04
Updated: 06-17-26
Designed by: HL/MF
Reviewed by: RA

Humber River Unitary Flow Rates Summary - Ultimate Conditions
Outlet to SWM Pond 3 - Blocks 1, 5 & 6

CEISMP Area **65.02** ha

Stormwater Management Report - Humber Station Villages Phase 2 (Schaeffers, March 2026)

Humber River Watershed Sub-Basin 36	
Return Period	**Controlled Release Rate** (L/s/ha)
2-Year	6.50
5-Year	9.91
10-Year	12.23
25-Year	15.37
50-Year	17.87
100-Year	20.24

NOTE:
1) Q - unit flow (L/s/ha - litres per second per hectare)
2) A - area in hectares (ha).
3) Pre-development unit flow rate area
4) Equation: 29.912-2.316*LN(Area)
5) The controlled release rates are calculated with 64.22 ha, and consistent with Table 4.12 in the CEISMP Phase 2 Report (Schaeffers, July 2025).

Sub-Basin ID **36**
Existing Contributing Area **39.11** ha

Blocks 1, 5 & 6
(Catchments 101A, 101B, 101C, 101D, 102A, 102C & 103A)

Return Period	**Calculated Unit Flow Rate**	
	L/s	(m^3/s)
2-Year	254.4	0.254
5-Year	387.6	0.388
10-Year	478.1	0.478
25-Year	601.2	0.601
50-Year	699.1	0.699
100-Year	791.7	0.792

NOTE:
1) Existing contributing areas are based on Drawing C150: Pre-development Drainage Plan.

Regional Flow Criteria

Humber River Catchment ID	**Colour (Outlet)**	**Regional Release Rate** (L/s/ha)
43.10	Blue (HDF-6)	145.1
43.03	Orange (HDF-8)	71.1
43.06	Green (HDF-14)	102.5

Stormwater Management Report - Humber Station Villages Phase 2 (Schaeffers, March 2026)

Description	**Pre-development Catchment**	**Existing Contributing Area** (ha)	**Humber River Catchment ID**	**Colour (Outlet)**	**Regional Release Rate** (L/s)	**Total Regional Release Rate** (m^3/s)
Block 1, 5 & 6	102A & 102C	4.02	43.10	Green (HDF-14)	412.1	3.017
	101A, 101B, 101C & 101D	33.60	43.03	Orange (HDF-8)	2389.0	
	103A	1.49	43.06	Blue (HDF-6)	216.2	
Block 7 (Street A)	109	0.43	43.10	Green (HDF-14)	44.1	0.103
	110	0.83	43.03	Orange (HDF-8)	59.0	

NOTE:
1) Street A will be George Bolton Parkway in the ultimate condition.

Project Name: Prologis Humber Station
Project No: 0624-6777
Date: 2024-11-04
Updated: 06-17-26
Designed by: HL/MF
Reviewed by: RA

Humber River Unitary Flow Rates Summary - Ultimate Conditions
Block 1 Outlet to SWM Pond 3 - Block 1

CEISMP Area **65.02** ha

Stormwater Management Report - Humber Station Villages Phase 2 (Schaeffers, March 2026) - Target Area for SWM Pond 3

Humber River Watershed Sub-Basin 36	
Return Period	**Controlled Release Rate** (L/s/ha)
2-Year	6.50
5-Year	9.91
10-Year	12.23
25-Year	15.37
50-Year	17.87
100-Year	20.24

NOTE:
1) Q - unit flow (L/s/ha - litres per second per hectare)
2) A - area in hectares (ha).
3) Pre-development unit flow rate area
4) Equation: 29.912-2.316*LN(Area)
5) The controlled release rates are calculated with 64.22 ha, and consistent with Table 4.12 in the CEISMP Phase 2 Report (Schaeffers, July 2025).

Sub-Basin ID **36**
Block 1 **30.53** ha (Catchments 101A, 101B, 102A, 103A)

Return Period	**Calculated Unit Flow Rate**	
	L/s	(m^3/s)
2-Year	198.6	0.199
5-Year	302.5	0.303
10-Year	373.2	0.373
25-Year	469.3	0.469
50-Year	545.7	0.546
100-Year	618.0	0.618

NOTES:
1) Existing contributing areas are based on Drawing C150: Pre-development Drainage Plan.
2) Target flow rates are calculated by multipying the area for Bock 1 by the unit flow ratesfrom the CEISMP (see table at the top of this page)

Regional Flow Criteria

Humber River Catchment ID	**Colour (Outlet)**	**Regional Release Rate** (L/s/ha)
43.06	Green (HDF-14)	102.5
43.03	Orange (HDF-8)	71.1
43.10	Blue (HDF-6)	145.1

Stormwater Management Report - Humber Station Villages Phase 2 (Schaeffers, March 2026)

Description	**Pre-development Catchment**	**Existing Contributing Area** (ha)	**Humber River Catchment ID**	**Colour (Outlet)**	**Regional Release Rate** (L/s)	**Total Regional Release Rate** (m^3/s)
Block 1	102A	2.33	43.10	Green (HDF-14)	238.8	2.354
	101A, 101B	26.71	43.03	Orange (HDF-8)	1899.1	
	103A	1.49	43.06	Blue (HDF-6)	216.2	

NOTE:
1) Street A will be George Bolton Parkway in the ultimate condition.

Project Name: Prologis Humber Station
Project No: 0624-6777
Date: 2024-11-04
Updated: 06-17-26
Designed by: HL/MF
Reviewed by: RA

Humber River Unitary Flow Rates Summary - Ultimate Conditions
Outlet to SWM Pond 3 - Block 5 & 6

CEISMP Area **65.02** ha

Stormwater Management Report - Humber Station Villages Phase 2 (Schaeffers, March 2026)

Humber River Watershed Sub-Basin 36	
Return Period	**Controlled Release Rate** (L/s/ha)
2-Year	6.50
5-Year	9.91
10-Year	12.23
25-Year	15.37
50-Year	17.87
100-Year	20.24

NOTE:
1) Q - unit flow (L/s/ha - litres per second per hectare)
2) A - area in hectares (ha).
3) Pre-development unit flow rate area
4) Equation: 29.912-2.316*LN(Area)
5) The controlled release rates are calculated with 64.22 ha, and consistent with Table 4.12 in the CEISMP Phase 2 Report (Schaeffers, July 2025).

Sub-Basin ID **36**
Blocks 5 & 6 **8.58** ha (Catchments 101C, 101D, 102C)

Return Period	Calculated Unit Flow Rate	
	L/s	(m^3/s)
2-Year	55.8	0.056
5-Year	85.0	0.085
10-Year	104.9	0.105
25-Year	131.9	0.132
50-Year	153.4	0.153
100-Year	173.7	0.174

NOTE:
1) Existing contributing areas are based on Drawing C150: Pre-development Drainage Plan.

Regional Flow Criteria

Humber River Catchment ID	Colour (Outlet)	Regional Release Rate (L/s/ha)
43.06	Green (HDF-14)	102.5
43.03	Orange (HDF-8)	71.1
43.10	Blue (HDF-6)	145.1

Stormwater Management Report - Humber Station Villages Phase 2 (Schaeffers, March 2026)

Description	Pre-development Catchment	Existing Contributing Area (ha)	Humber River Catchment ID	Colour (Outlet)	Regional Release Rate (L/s)	Total Regional Release Rate (m^3/s)
Block 5 & 6	102C	1.69	43.10	Green (HDF-14)	173.2	0.663
	101C, 101D	6.89	43.03	Orange (HDF-8)	489.9	

Project Name: Prologis Humber Station
Project No: 0624-6777
Date: 2024-11-04
Updated: 2026-06-17
Designed by: HL/MF
Reviewed by: RA

Humber River Unitary Flow Rates Summary
Outlet to Goreway Road Tributary Reach 1 - Blocks 2 & 4

Existing Contributing Area **22.44** ha

Humber River Watershed Sub-Basin 36		
Return Period	**Controlled Release Rate** (L/s/ha)	**Calculated Unit Flow Rate** (m3/s)
2-Year	7.3	0.16
5-Year	11.1	0.25
10-Year	13.7	0.31
25-Year	17.2	0.39
50-Year	20.1	0.45
100-Year	22.7	0.51

NOTE:
1) Q - unit flow (L/s/ha - litres per second per hectare)
2) A - area in hectares (ha).
3) Pre-development unit flow rate area
4) Equation: 29.912-2.316*LN(Area)
1) Existing contributing areas are based on Drawing C150: Pre-development Drainage Plan

Sub-Basin ID **36**
Block 2 **11.01** (Catchment 104B & 105A)
Block 4 **11.43** (Catchment 104A, 104C, 106A & 106B)

Return Period	**Block 2 Calculated Unit Flow Rate**		**Block 4 Calculated Unit Flow Rate**	
	L/s	(m^3/s)	L/s	(m^3/s)
2-Year	80.0	0.080	83.1	0.083
5-Year	122.4	0.122	127.1	0.127
10-Year	150.7	0.151	156.4	0.156
25-Year	189.6	0.190	196.9	0.197
50-Year	221.2	0.221	229.6	0.230
100-Year	250.0	0.250	259.5	0.260

NOTE:
1) Regional outlet control is not required for Goreway Road Tributary Reach 1.

Project Name: Prologis Humber Station
Project No: 0624-6777
Date: 2024-11-04
Updated: 2026-06-17
Designed by: HL/MF
Reviewed by: RA

Humber River Unitary Flow Rates Summary - Interim Conditions
Outlet to Clarkway Drive Tributary

Clarway Trib Area = **9.56** ha

Per TRCA Interim Conditions Letter dated August 2025

Humber River Watershed Sub-Basin 36	
Return Period	**Controlled Release Rate** (L/s/ha)
2-Year	7.9
5-Year	12.1
10-Year	14.9
25-Year	18.7
50-Year	21.9
100-Year	24.7

NOTE:
1) Q - unit flow (L/s/ha - litres per second per hectare)
2) A - area in hectares (ha).
3) Pre-development unit flow rate area
4) Equation: 29.912-2.316*LN(Area)

Sub-Basin ID **36**

Return Period	Calculated Unit Flow Rate	
	L/s	(m^3/s)
2-Year	75.4	0.075
5-Year	115.6	0.116
10-Year	142.0	0.142
25-Year	178.9	0.179
50-Year	209.0	0.209
100-Year	236.0	0.236

Project Name: Prologis Humber Station
Project No: 0624-6777
Date: 2024-11-04
Updated: 2026-06-17
Designed by: HL/MF
Reviewed by: RA

VO Result Summary - Ultimate Conditions
Outlet to SWM Pond 3

Storm Events	**Target Release Rates** (m^3/s)
2-Year	0.254
5-Year	0.388
10-Year	0.478
25-Year	0.601
50-Year	0.699
100-Year	0.792
48hr Hazel	3.017

VO Storm	**Peak Flow** (m^3/s) (NHYD 7706)	**Difference**
2yr 24hr 15min Chicago	0.242	-5%
5yr 24hr 15min Chicago	0.364	-6%
10yr 24hr 15min Chicago	0.444	-7%
25yr 24hr 15min Chicago	0.556	-8%
50yr 24hr 15min Chicago	0.649	-7%
100yr 24hr 15min Chicago	0.734	-7%
2yr 4hr 15min Chicago	0.217	-15%
5yr 4hr 15min Chicago	0.325	-16%
10yr 4hr 15min Chicago	0.396	-17%
25yr 4hr 15min Chicago	0.512	-15%
50yr 4hr 15min Chicago	0.596	-15%
100yr 4hr 15min Chicago	0.691	-13%
2yr 24hr 15min SCS Type II	0.229	-10%
5yr 24hr 15min SCS Type II	0.344	-11%
10yr 24hr 15min SCS Type II	0.400	-16%
25yr 24hr 15min SCS Type II	0.495	-18%
50yr 24hr 15min SCS Type II	0.553	-21%
100yr 24hr 15min SCS Type II	0.630	-20%
2 Year 6 Hour AES (Bloor, TRCA)	0.226	-11%
5 Year 6 Hour AES (Bloor, TRCA)	0.308	-21%
10 Year 6 Hour AES (Bloor, TRCA)	0.363	-24%
25 Year 6 Hour AES (Bloor, TRCA)	0.453	-25%
50 Year 6 Hour AES (Bloor, TRCA)	0.517	-26%
100 Year 6 Hour AES (Bloor, TRCA)	0.587	-26%
2 Year 12 Hour AES (Bloor, TRCA)	0.252	-1%
5 Year 12 Hour AES (Bloor, TRCA)	0.336	-13%
10 Year 12 Hour AES (Bloor, TRCA)	0.402	-16%
25 Year 12 Hour AES (Bloor, TRCA)	0.494	-18%
50 Year 12 Hour AES (Bloor, TRCA)	0.558	-20%
100 Year 12 Hour AES (Bloor, TRCA)	0.634	-20%
48 hour Hazel	3.001	-1%

Note: Peak flows are extracted from NHYD 7706, downstream from Block 1 and Block 5.

Project Name: Prologis Humber Station
Project No: 0624-6777
Date: 2024-11-04
Updated: 2026-06-17
Designed by: HL/MF
Reviewed by: RA

VO Result Summary - Block 2 & 4
Outlet to Goreway Road Tributary Reach 1

Storm Events	Block 2
	Target Release Rates (m^3/s)
2-Year	0.080
5-Year	0.122
10-Year	0.151
25-Year	0.190
50-Year	0.221
100-Year	0.250
48hr Hazel	-

Regional control is not required for Goreway Road Tributary Reach 1.

VO Storm	**Peak Flow** (m^3/s) (NHYD 7593)	**Differences**
2yr 24hr 15min Chicago	0.080	0%
5yr 24hr 15min Chicago	0.122	0%
10yr 24hr 15min Chicago	0.151	0%
25yr 24hr 15min Chicago	0.190	0%
50yr 24hr 15min Chicago	0.221	0%
100yr 24hr 15min Chicago	0.250	0%
2yr 4hr 15min Chicago	0.072	-10%
5yr 4hr 15min Chicago	0.110	-10%
10yr 4hr 15min Chicago	0.137	-9%
25yr 4hr 15min Chicago	0.177	-7%
50yr 4hr 15min Chicago	0.206	-7%
100yr 4hr 15min Chicago	0.237	-5%
2yr 24hr 15min SCS Type II	0.073	-9%
5yr 24hr 15min SCS Type II	0.111	-9%
10yr 24hr 15min SCS Type II	0.128	-15%
25yr 24hr 15min SCS Type II	0.157	-17%
50yr 24hr 15min SCS Type II	0.175	-21%
100yr 24hr 15min SCS Type II	0.196	-22%
2 Year 6 Hour AES (Bloor, TRCA)	0.076	-5%
5 Year 6 Hour AES (Bloor, TRCA)	0.105	-14%
10 Year 6 Hour AES (Bloor, TRCA)	0.125	-17%
25 Year 6 Hour AES (Bloor, TRCA)	0.155	-18%
50 Year 6 Hour AES (Bloor, TRCA)	0.176	-20%
100 Year 6 Hour AES (Bloor, TRCA)	0.198	-21%
2 Year 12 Hour AES (Bloor, TRCA)	0.079	-1%
5 Year 12 Hour AES (Bloor, TRCA)	0.107	-13%
10 Year 12 Hour AES (Bloor, TRCA)	0.126	-16%
25 Year 12 Hour AES (Bloor, TRCA)	0.153	-19%
50 Year 12 Hour AES (Bloor, TRCA)	0.172	-22%
100 Year 12 Hour AES (Bloor, TRCA)	0.192	-23%
48 hour Hazel	-	-

Note: Peak flows are extracted from NHYD 7593, Storage node downstream of C202/Block 2.

Storm Events	Block 4
	Target Release Rates (m^3/s)
2-Year	0.083
5-Year	0.127
10-Year	0.156
25-Year	0.197
50-Year	0.230
100-Year	0.260
48hr Hazel	-

Regional control is not required for Goreway Road Tributary Reach 1.

VO Storm	**Peak Flow** (m^3/s) (NHYD 7685)	**Differences**
2yr 24hr 15min Chicago	0.083	0%
5yr 24hr 15min Chicago	0.127	0%
10yr 24hr 15min Chicago	0.156	0%
25yr 24hr 15min Chicago	0.197	0%
50yr 24hr 15min Chicago	0.230	0%
100yr 24hr 15min Chicago	0.260	0%
2yr 4hr 15min Chicago	0.075	-10%
5yr 4hr 15min Chicago	0.114	-10%
10yr 4hr 15min Chicago	0.142	-9%
25yr 4hr 15min Chicago	0.183	-7%
50yr 4hr 15min Chicago	0.214	-7%
100yr 4hr 15min Chicago	0.247	-5%
2yr 24hr 15min SCS Type II	0.075	-10%
5yr 24hr 15min SCS Type II	0.115	-10%
10yr 24hr 15min SCS Type II	0.132	-16%
25yr 24hr 15min SCS Type II	0.162	-18%
50yr 24hr 15min SCS Type II	0.180	-22%
100yr 24hr 15min SCS Type II	0.202	-22%
2 Year 6 Hour AES (Bloor, TRCA)	0.078	-6%
5 Year 6 Hour AES (Bloor, TRCA)	0.109	-14%
10 Year 6 Hour AES (Bloor, TRCA)	0.130	-17%
25 Year 6 Hour AES (Bloor, TRCA)	0.159	-19%
50 Year 6 Hour AES (Bloor, TRCA)	0.181	-21%
100 Year 6 Hour AES (Bloor, TRCA)	0.204	-21%
2 Year 12 Hour AES (Bloor, TRCA)	0.081	-3%
5 Year 12 Hour AES (Bloor, TRCA)	0.110	-13%
10 Year 12 Hour AES (Bloor, TRCA)	0.129	-18%
25 Year 12 Hour AES (Bloor, TRCA)	0.157	-20%
50 Year 12 Hour AES (Bloor, TRCA)	0.177	-23%
100 Year 12 Hour AES (Bloor, TRCA)	0.197	-24%
48 hour Hazel	-	-

Note: Peak flows are extracted from NHYD 7685, Storage node downstream of C203/Block 4.

Project Name: Prologis Humber Station
Project No: 0624-6777
Date: 2024-11-04
Updated: 2026-06-17
Designed by: HL/MF
Reviewed by: RA

VO Result Summary - Interim Conditions
Outlet to Clarkway Drive Tributary

Storm Events	**Target Release Rates** (m^3/s)*
2-Year	0.191
5-Year	0.291
10-Year	0.358
25-Year	0.451
50-Year	0.524
100-Year	0.594
48hr Hazel	1.697

**Target release rates from Temporary Stormwater Management Outlet TRCA letter (Crozier, August 2025)*

VO Storm	**Peak Flow** (m^3/s) (NHYD 7733)	**Differences**
2yr 24hr 15min Chicago	0.065	-66%
5yr 24hr 15min Chicago	0.086	-70%
10yr 24hr 15min Chicago	0.101	-72%
25yr 24hr 15min Chicago	0.151	-67%
50yr 24hr 15min Chicago	0.189	-64%
100yr 24hr 15min Chicago	0.240	-60%
2yr 4hr 15min Chicago	0.054	-72%
5yr 4hr 15min Chicago	0.073	-75%
10yr 4hr 15min Chicago	0.083	-77%
25yr 4hr 15min Chicago	0.104	-77%
50yr 4hr 15min Chicago	0.136	-74%
100yr 4hr 15min Chicago	0.183	-69%
2yr 24hr 15min SCS Type II	0.065	-66%
5yr 24hr 15min SCS Type II	0.087	-70%
10yr 24hr 15min SCS Type II	0.101	-72%
25yr 24hr 15min SCS Type II	0.151	-67%
50yr 24hr 15min SCS Type II	0.188	-64%
100yr 24hr 15min SCS Type II	0.237	-60%
2 Year 6 Hour AES (Bloor, TRCA)	0.057	-70%
5 Year 6 Hour AES (Bloor, TRCA)	0.071	-76%
10 Year 6 Hour AES (Bloor, TRCA)	0.080	-78%
25 Year 6 Hour AES (Bloor, TRCA)	0.089	-80%
50 Year 6 Hour AES (Bloor, TRCA)	0.109	-79%
100 Year 6 Hour AES (Bloor, TRCA)	0.136	-77%
2 Year 12 Hour AES (Bloor, TRCA)	0.064	-66%
5 Year 12 Hour AES (Bloor, TRCA)	0.078	-73%
10 Year 12 Hour AES (Bloor, TRCA)	0.087	-76%
25 Year 12 Hour AES (Bloor, TRCA)	0.109	-76%
50 Year 12 Hour AES (Bloor, TRCA)	0.139	-73%
100 Year 12 Hour AES (Bloor, TRCA)	0.177	-70%
48 hour Hazel	1.697	0%

Note: Peak flows are extracted from NHYD 7733, at the Interim SWM Pond.

APPENDIX C

Stormwater Management Calculations (Interim Condition)

Project: Prologis Humber Station
Project No.: 0624-6777
Created By: HL/MF
Checked By: RA
Date: 2026.05.04

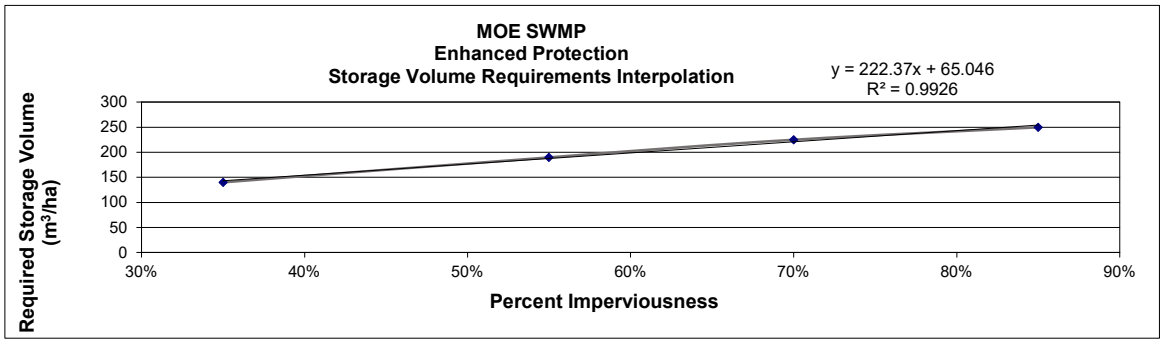
Interim SWM Pond - Water Quality Volume Calculations (MECP)

Area to Ponds (Block 1 + George Bolton (C209A))	34.04	ha	Area includes Block 1, 6 & 7 (East)
Vpermanent pool =	7,892	m^3	
VExtended Detention (MECP) =	1,266	m^3	
Percent Impervious:	93.0%		
Percent Pervious:	7.0%		
Storage Volume:	272	m^3 / ha	Interporlated bsed on the Table 3.2 from MOE 2003 SWM
Extended Detention:	40	m^3 / ha	Manual.
Permanent Pool:	232	m^3 / ha	

therefore, require extended detention storage of 1,266 m^3
and permanent pool volume of 7,892 m^3

MOE 2003 SWMP Manual: Water Quality Storage Requirements based on Receiving Waters *						
PROTECTION LEVEL	SWMP Type	STORAGE VOLUME (m^3 / ha) FOR IMPERVIOUS LEVEL				
		35%	55%	70%	85%	93%
Enhanced	Wet Pond	140	190	225	250	272
Normal	Wet Pond	90	110	130	150	-
Basic	Wet Pond	60	75	85	95	-

* Table 3.2 from the MOE SWMP Planning & Design Manual, 2004, pg 3-10



Project Name: Prologis Humber Station
Project No: 0624-6777
Design By: HL/MF
Check By: RA
Date 2026.05.04

EXTENDED DETENTION SPECIFICATIONS - SWM POND DESIGN

25 mm Storm - Extended Detention Calculation

Area = 34.04 ha Area includes Block 1, 6 & 7 (East)

Extended Detention = 6,925 m^3 From PCSWMM model 25 mm storm

Total storage required = Permanent pool + Extended detention
= 14,817 m^3

Extended Detention Volume	6925	m^3
Mimimum Drawdown time	48	hrs
Mimimum Drawdown time	172800	s

Calculation for minimum orifice size

$$t = \frac{0.66 * C2 * h^{1.5} + 2 * C3 * h^{0.5}}{2.75 * A0}$$

Equation 4.11
MOE SWM Planning & Design Manual (2003)

A_0	Cross sectional area of the orifice (m^2)	
h	Maximum water elevation above the orifice (m)	0.50 m
C2	Slope coefficient for the area-depth Linear regression	4630.80
C3	Intercept for the area-depth linear regression	18054.00

Ao = 0.0560 m^2 dmax = 267 mm

Extended Detention Orifice Diameter (as designed) d = **230** mm (Iterate until drawdown time is 48 hrs)

Extended Detention Orifice Area (as designed) Ao = 0.0415 m^2

Calculated Drawdown time t = 48 hrs

Maximum Head Above Centroid h = 0.29 m

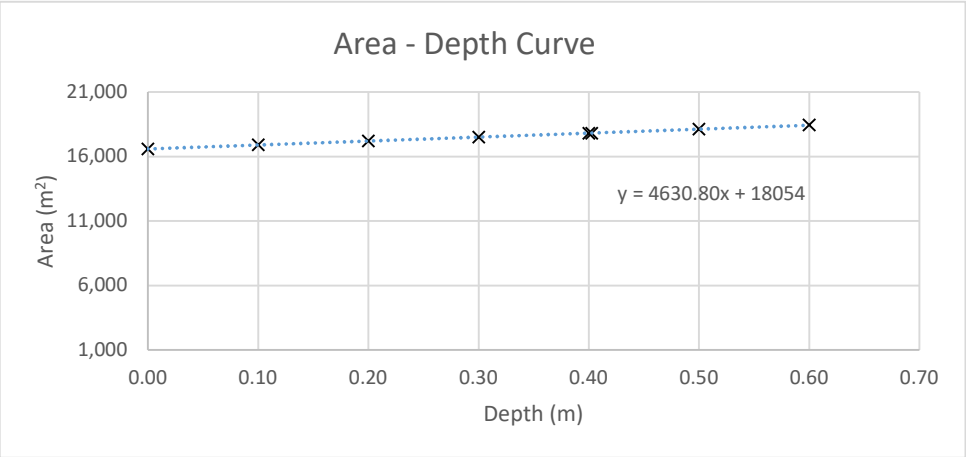
Calculated Peak Flow Q_{max} = 0.061 cms

Project Name: Prologis Humber Station
Project No: 0624-6777
Design By: HL/MF
Check By: RA
Date 2026.05.04

EXTENDED DETENTION SPECIFICATIONS - SWM POND DESIGN

Active Storage at 230.60 m

Elevation (m)	Depth (m)	Area (m^2)	Volume (m^3)	
230.60	0.00	16582	0	
230.70	0.10	16884	1673	
230.80	0.20	17187	3377	
230.90	0.30	17491	5111	
231.00	0.40	17798	6875	
231.003	**0.403**	**17807**	**6925**	**ED**
231.10	0.50	18109	8671	
231.20	0.60	18424	10497	



Project: Prologis Humber Station
Project No.: 0624-6777
Created By: HL/MF
Checked By: RA
Date: 2026.05.04

Interim SWM Pond Forebay Sizing Calculations

Method #1 - Settling Calculations

Distance = $((rQ_p)/V_s)^{0.5}$ — Equation 4.5 (MOECP, 2003)

r =	2.14		Length (92) to Width (43 m) Ratio of Forebay > 2:1
Q_p =	0.042	m^3/s	Peak flow from facility in quality storm in m^3/s (25mm event)
V_s =	0.0003	m/s	Settling Velocity in m/s (MOECP, 2003)

Distance = 17.3 m < 135 m

Method #2 - Dispersion Length

Distance = $(8Q/dV_f)$ — Equation 4.6 (MOECP, 2003)

Q =	0.84	m^3/s	Inlet flowrate in m^3/s (10-year 24hr 15 min Chicago)
d =	1.50	m	Depth of permanent pool in forebay in m
V_f =	0.50	m/s	Desired velocity in forebay in m/s (MOECP, 2003)

Distance = 9.0 m < 135 m

Minimum Bottom Width Calculations

Bottom Width = Dist / 8 — Equation 4.7 (MOECP, 2003)

Bottom Width = 2.2 m < 42 m

Check - Forebay Area Method

Ensure cross sectional forebay velocity is < 0.15m/s

Forebay width =	42	m	
Forebay depth =	1.5	m	
Side slopes (H:V) =	3		
Bottom width =	32.0	m	
Cross sectional area =	55.5	m^2	
Inlet flow rate	0.84	m^3/s	Inlet flowrate in m^3/s (10-year 24hr 15 min Chicago)

Average Velocity 0.02 m/s < 0.15 m/s

As per MOECP Guidelines (March 2003) average velocity is to be less than, or equal to, 0.15m/s, therefore forebay sizing is appropriate.

CROZIER CONSULTING ENGINEERS

Project Name: Prologis Humber Station
Project No.: 0624-6777

Design: MF/RA
Date: 2024-11-19

Interim SWM Pond Operation Levels

ED Orifice

ED Orifice Coefficient:	0.62
ED Orifice Diameter:	0.235 m
ED Orifice Invert Elevation:	230.60 m
ED Orifice Centroid Elevation:	230.72 m

Weir 1

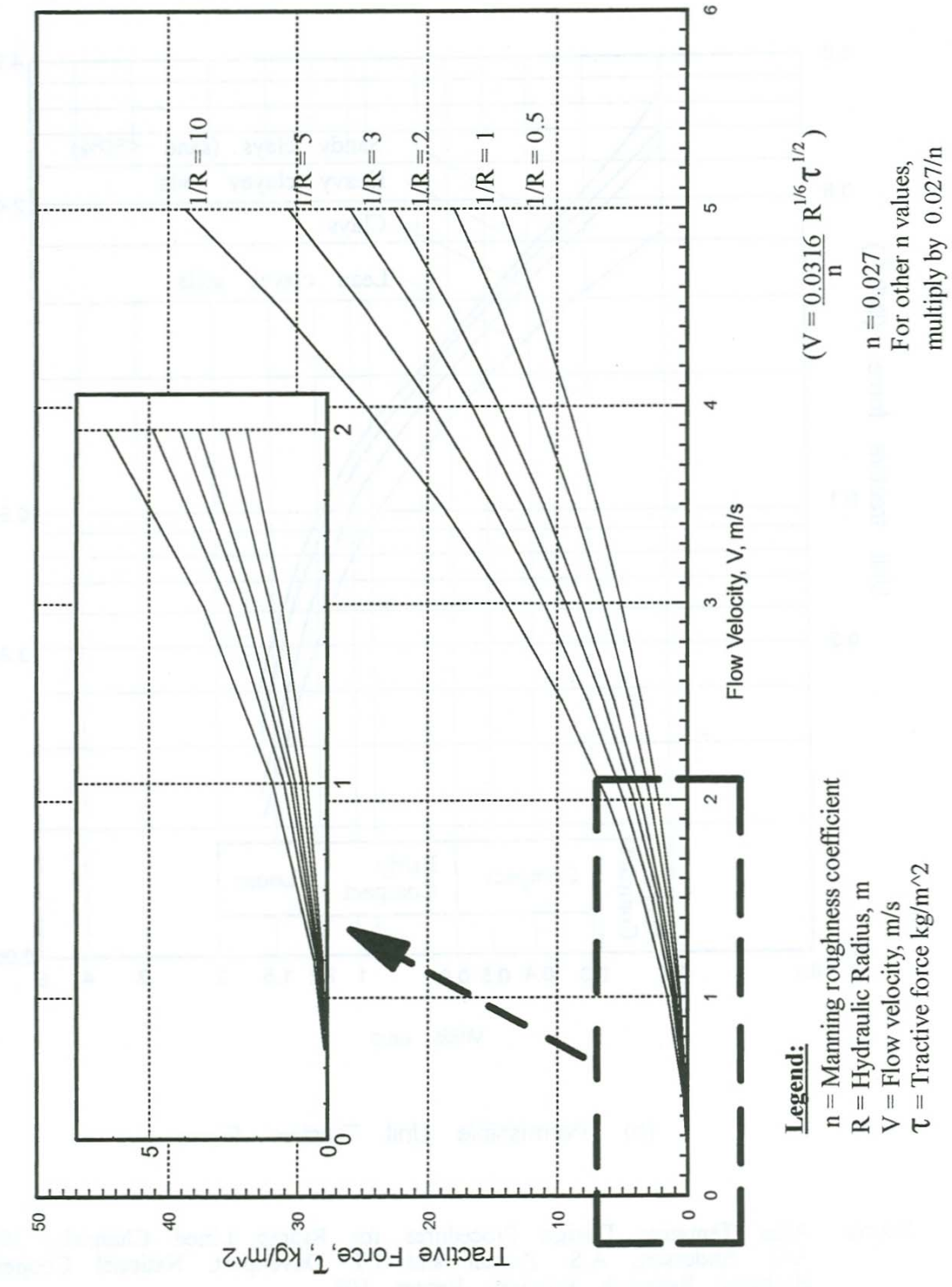
Weir 1 Coefficient:	1.84
Weir 1 Width:	0.70
Weir 1 Invert Elevation:	231.33
Number of Contractions:	2
Top of weir 1:	232.45

Emergency Weir

Weir Coefficient:	1.68
Emergency Spill Elev:	232.50 m
Em. Spill Bot. Width:	10 m
Trap. Side Slopes:	10.0 :1 H:V

Operating Level	Elev.	Depth Above Bottom of Pond	Depth Above PP / ED Orifice	Area	Total Storage Volume	Storage Volume Above PP	Discharge ED Orifice	Discharge Weir 1	Emerg. Weir Avg. Width	Emerg. Weir Discharge	Total Discharge	Storage
	(m)	(m)	(m)	(sq.m)	(cu.m)	(cu.m)	(cu.m/s)	(cu.m/s)	(m)	(cu.m/s)	(cu.m/s)	(ha-m)
Bottom of Pond	229.10	0.00	0.00	2,902	0	**0**	0.000	0.000	0.00	0.000	**0.000**	**0.000**
Top of Permanent Pool	230.60	1.50	0.00	16,582	16,832	**0**	0.000	0.000	0.00	0.000	**0.000**	**0.000**
	230.70	1.60	0.10	16,884	18,506	**1673**	0.000	0.000	0.00	0.000	**0.000**	**0.167**
	230.80	1.70	0.20	17,187	20,209	**3377**	0.034	0.000	0.00	0.000	**0.034**	**0.338**
	230.90	1.80	0.30	17,491	21,943	**5111**	0.051	0.000	0.00	0.000	**0.051**	**0.511**
Top of Extended Detention (230.97 m)	231.00	1.90	0.40	17,798	23,708	**6875**	0.063	0.000	0.00	0.000	**0.063**	**0.688**
	231.10	2.00	0.50	18,109	25,503	**8671**	0.074	0.000	0.00	0.000	**0.074**	**0.867**
	231.20	2.10	0.60	18,424	27,330	**10497**	0.083	0.000	0.00	0.000	**0.083**	**1.050**
	231.30	2.20	0.70	19,071	29,204	**12372**	0.091	0.000	0.00	0.000	**0.091**	**1.237**
	231.40	2.30	0.80	19,245	31,120	**14288**	0.098	0.024	0.00	0.000	**0.122**	**1.429**
	231.50	2.40	0.90	19,419	33,053	**16221**	0.105	0.090	0.00	0.000	**0.196**	**1.622**
100-year (231.55 m)	231.60	2.50	1.00	19,594	35,004	**18172**	0.112	0.181	0.00	0.000	**0.293**	**1.817**
	231.70	2.60	1.10	19,770	36,972	**20140**	0.118	0.290	0.00	0.000	**0.408**	**2.014**
	231.80	2.70	1.20	19,947	38,958	**22126**	0.124	0.415	0.00	0.000	**0.539**	**2.213**
	231.90	2.80	1.30	20,126	40,962	**24129**	0.130	0.554	0.00	0.000	**0.684**	**2.413**
	232.00	2.90	1.40	20,307	42,984	**26151**	0.135	0.706	0.00	0.000	**0.841**	**2.615**
	232.10	3.00	1.50	20,488	45,023	**28191**	0.140	0.870	0.00	0.000	**1.010**	**2.819**
	232.20	3.10	1.60	20,671	47,081	**30249**	0.145	1.045	0.00	0.000	**1.190**	**3.025**
	232.30	3.20	1.70	20,854	49,157	**32325**	0.150	1.230	0.00	0.000	**1.380**	**3.232**
	232.40	3.30	1.80	21,038	51,252	**34420**	0.155	1.426	0.00	0.000	**1.580**	**3.442**
Regional, Emergency Spillway (232.50 m)	232.50	3.40	1.90	21,225	53,365	**36533**	0.159	1.527	10.00	0.000	**1.686**	**3.653**
	232.60	3.50	2.00	21,424	55,498	**38665**	0.163	1.527	11.00	0.584	**2.274**	**3.867**
	232.70	3.60	2.10	21,691	57,653	**40821**	0.168	1.527	12.00	1.803	**3.498**	**4.082**
	232.80	3.70	2.20	21,934	59,835	**43002**	0.172	1.527	13.00	3.589	**5.287**	**4.300**
Top of Pond	232.90	3.80	2.30	22,180	62,040	**45208**	0.176	1.527	14.00	5.950	**7.653**	**4.521**

Design Chart 2.24: Tractive Force - Velocity Relationships



Project: Prologis Humber Station
Project No.: 0624-6777
Created By: HL
Checked By: RA
Date: 2024.11.22
Updated: 2026-06-17

Prologis Humber Station - Stone Sizing Calculations - Overland Spillway

Actual Shear Stress based on Velocity

Input:

Flow Rate (Q)	=	12.46	m^3/s	(100-year uncontrolled flow from VO)
Average Stone Width	=	40.00	m	
Flow Area	=	13.07	m^2	(From FlowMaster Model)
Wetted Perimeter	=	40.66	m	(From FlowMaster Model)
Hydraulic Radius (R)	=	0.32	m	
Velocity	=	0.96	m/s	

Output:

1/R	=	3.11		
Tractive Force (T)	=	0.98	kg/m^2	(From MTO Design Chart 2.24)

Critical Shear Stress Resistance of Stone

Input:

Stone Size (D_{50})	=	150	mm	
Min. Stone Thickness	=	225	mm	(MTO Design Manual, Chapter 5)

Output:

Critical Shear Stress Resistance (T_{cb})	=	0.0642 x D_{50}		(MTO Equation 5.31)
	=	9.63	kg/m^2	

Conclusion: Since the critical shear stress capacity of the stone is greater than the tractive force of the flow, the proposed stone size is appropriate

APPENDIX D

Visual Otthymo Model

CROZIER

Project: Prologis Humber Station
Project No.: 624-6777
Created By: MF
Checked By: RA
Date: March 13, 2026
Updated: June 17, 2026

NASHYD - CN & IA Values

Parameter	Hydrologic Soil Group	Soil Category	Landuse							
			Woodland	SWMF / Wetland	Meadow	Cultivated/ Crops	Lawn / Landscape	Gravel	Paved / Concrete	Building
CN Values	C	Clay Loam/Clay	71	50	71	82	76	98	98	98
	N/A									
	N/A									
	N/A									
IA Values			10	10	8	7	5	2	2	2

*Note these values are taken from the MTO manual, check against municipal standards for CN values to be used

Catchment ID	Hydrologic Soil Group	Soil Category	Area (ha) for each land use and soil group								Subtotal Area (ha)	Weighted CN	Weighted IA
			Woodland	SWMF / Wetland	Meadow	Cultivated/ Crops	Lawn / Landscape	Gravel	Paved / Concrete	Building			
UC01	C	Clay Loam/Clay					0.11		0.00		0.11	76.0	5.0
	N/A										0.00		
	N/A										0.00		
	N/A										0.00		
	Total		***0.00***	***0.00***	***0.00***	***0.00***	***0.11***	***0.00***	***0.00***	***0.00***	***0.11***		
UC02	C	Clay Loam/Clay					0.24		0.03		0.27	78.4	4.7
	N/A										0.00		
	N/A										0.00		
	N/A										0.00		
	Total		***0.00***	***0.00***	***0.00***	***0.00***	***0.24***	***0.00***	***0.03***	***0.00***	***0.27***		
UC03	C	Clay Loam/Clay					0.12		0.00		0.12	76.0	5.0
	N/A										0.00		
	N/A										0.00		
	N/A										0.00		
	Total		***0.00***	***0.00***	***0.00***	***0.00***	***0.12***	***0.00***	***0.00***	***0.00***	***0.12***		
C205A	C	Clay Loam/Clay					0.74		0.00		0.74	76.0	5.0
	N/A										0.00		
	N/A										0.00		
	N/A										0.00		
	Total		***0.00***	***0.00***	***0.00***	***0.00***	***0.74***	***0.00***	***0.00***	***0.00***	***0.74***		

CROZIER

Project: Prologis Humber Station
Project No.: 624-6777
Created By: MF
Checked By: RA
Date: March 13, 2026
Updated: June 17, 2026

Time to Peak - Bransby Williams & Airport Methods

Airport Method

$$T_c = \frac{3.26 * (1.1 - C) * L^{0.5}}{S_w^{0.33}}$$

Bransby William

$$Tc = \frac{0.057 * L}{S_w^{0.2} * A^{0.1}}$$

Equation from MTO Drainage Management Manual 1997

Catchment ID	Subtotal Area (ha)	Runoff Coefficient	Method	Flow Path Length (m)	US Elev	DS Elev	Flow Path Drop (m)	Slope (%)	Tc (hr)	Tp (hr)
UC01	0.11	0.35	AIRPORT	3.30	236.67	235.76	0.91	27.58	0.025	**0.17**
UC02	0.27	0.42	BRANSBY WILLIAMS	6.20	237.97	236.55	1.42	22.90	0.004	**0.17**
UC03	0.12	0.35	AIRPORT	8.50	237.61	236.24	1.37	16.12	0.047	**0.17**
C205A	0.74	0.35	AIRPORT	139.00	236.61	232.29	4.32	3.11	0.330	**0.22**

*Note: A minimum Tp of 0.17hrs (10 minutes) has been applied as per Town Standards

Catchment ID	Hydrologic Soil Group	Catchment Slope	RC by Landuse								Weighted RC by Soil Group	Overall Weighted RC Value
			Woodland	SWMF/Wetland	Meadow	Cultivated /Crops	Lawn / Landscape	Gravel (loose)	Paved / Concrete	Building		
UC01	Clay Loam/Clay	10-30%	0.52	0.05	0.55	0.7	0.35	0.6	0.95	0.95	0.35	**0.35**
			0	0	0	0	0.11	0	0	0		
		10-30%	0	0	0	0	0	0	0	0	0.00	
			0	0	0	0	0	0	0	0		
		10-30%	0	0	0	0	0	0	0	0	0.00	
			0	0	0	0	0	0	0	0		
		10-30%	0	0	0	0	0	0	0	0	0.00	
			0	0	0	0	0	0	0	0		
UC02	Clay Loam/Clay	10-30%	0.52	0.05	0.55	0.7	0.35	0.6	0.95	0.95	0.42	**0.42**
			0	0	0	0	0.24	0	0.03	0		
		10-30%	0	0	0	0	0	0	0	0	0.00	
			0	0	0	0	0	0	0	0		
		10-30%	0	0	0	0	0	0	0	0	0.00	
			0	0	0	0	0	0	0	0		
		10-30%	0	0	0	0	0	0	0	0	0.00	
			0	0	0	0	0	0	0	0		
UC03	Clay Loam/Clay	10-30%	0.52	0.05	0.55	0.7	0.35	0.6	0.95	0.95	0.35	**0.35**
			0	0	0	0	0.12	0	0	0		
		10-30%	0	0	0	0	0	0	0	0	0.00	
			0	0	0	0	0	0	0	0		
		10-30%	0	0	0	0	0	0	0	0	0.00	
			0	0	0	0	0	0	0	0		
		10-30%	0	0	0	0	0	0	0	0	0.00	
			0	0	0	0	0	0	0	0		
C205A	Clay Loam/Clay	10-30%	0.52	0.05	0.55	0.7	0.35	0.6	0.95	0.95	0.35	**0.35**
			0	0	0	0	0.74	0	0	0		
		10-30%	0	0	0	0	0	0	0	0	0.00	
			0	0	0	0	0	0	0	0		
		10-30%	0	0	0	0	0	0	0	0	0.00	
			0	0	0	0	0	0	0	0		
		10-30%	0	0	0	0	0	0	0	0	0.00	
			0	0	0	0	0	0	0	0		

Project: Prologis Humber Station
Project No.: 624-6777
Created By: MF
Checked By: RA
Date: March 13, 2026
Updated: June 17, 2026

NASHYD Summary

Catchment ID	Area (ha)	DT (min)	CN Value	CN Used [1]	CN*	CN(III)	IA (mm)	N	Tp (hr)
UC01	0.11	5	76	81	81	91	5.0	3	0.17
UC02	0.27	5	78	81	81	90	4.7	3	0.17
UC03	0.12	5	76	81	81	91	5.0	3	0.17
C205A	0.74	5	76	81	81	91	5.0	3	0.22

1. CN Value per meeting with TRCA on June 25, 2025 and Humber River Hydrology Report dated April 2018

CROZIER

Project: Prologis Humber Station
Project No.: 624-6777
Created By: MF
Checked By: RA
Date: March 13, 2026
Updated: June 17, 2026

STANDHYD - TIMP, XIMP & CN Values

Parameter	Hydrologic Soil Group	Landuse				
		Woodland	SWMF / Wetland	Meadow	Cultivated/ Crops	Lawn / Landscape
CN Values	C	71	50	71	82	76
	N/A					
	N/A					
	N/A					
IA Values		10	10	8	7	5

*Note these values are taken from the MTO manual, check against municipal standards for CN values to be used

Catchment ID	Hydrologic Soil Group	Pervious Areas (ha)						Impervious Areas (ha)								Results					
		Woodland	SWMF (Landscaped)	Meadow	Crops	Lawn / Landscape	Pervious Total Area (ha)	Gravel		Paved / Concrete		Building		SWMF (Permanent pool)	Impervious Total Area (ha)	Subtotal Area (ha)	Hydrograph in VO Model	TIMP (Fraction)	XIMP (Fraction)	Weighted CN	Weighted IA
		N/A	N/A	N/A	N/A	N/A		To Outlet	To Pervious	To Outlet	To Pervious	To Outlet	To Pervious	To Outlet							
C201	C					2.07	2.07			13.83					13.83	15.90	STANDHYD	0.87	0.87	**76**	**5**
	N/A						0.00								0.00	0.00					
	N/A						0.00								0.00	0.00					
	N/A						0.00								0.00	0.00					
	Total	***0.00***	***0.00***	***0.00***	***0.00***	***2.07***	2.07	***0.00***	***0.00***	***13.83***	***0.00***	***0.00***	***0.00***	***0.00***	13.83	**15.90**					
C201R	C					0.00	0.00					12.04			12.04	12.04	STANDHYD	0.99	0.99	**76**	**5**
	N/A						0.00								0.00	0.00					
	N/A						0.00								0.00	0.00					
	N/A						0.00								0.00	0.00					
	Total	***0.00***	***0.00***	***0.00***	***0.00***	***0.00***	0.00	***0.00***	***0.00***	***0.00***	***0.00***	***12.04***	***0.00***	***0.00***	12.04	**12.04**					
C202	C					0.28	0.28			10.73					10.73	11.01	STANDHYD	0.97	0.97	**76**	**5**
	N/A						0.00								0.00	0.00					
	N/A						0.00								0.00	0.00					
	N/A						0.00								0.00	0.00					
	Total	***0.00***	***0.00***	***0.00***	***0.00***	***0.28***	0.28	***0.00***	***0.00***	***10.73***	***0.00***	***0.00***	***0.00***	***0.00***	10.73	**11.01**					
C203	C					1.01	1.01			9.61					9.61	10.62	STANDHYD	0.90	0.90	**76**	**5**
	N/A						0.00								0.00	0.00					
	N/A						0.00								0.00	0.00					
	N/A						0.00								0.00	0.00					
	Total	***0.00***	***0.00***	***0.00***	***0.00***	***1.01***	1.01	***0.00***	***0.00***	***9.61***	***0.00***	***0.00***	***0.00***	***0.00***	9.61	**10.62**					
C204	C						0.00							3.77	3.77	3.77	STANDHYD	0.50	0.50	**50**	**5**
	N/A						0.00								0.00	0.00					
	N/A						0.00								0.00	0.00					
	N/A						0.00								0.00	0.00					
	Total	***0.00***	***0.00***	***0.00***	***0.00***	***0.00***	0.00	***0.00***	***0.00***	***0.00***	***0.00***	***0.00***	***0.00***	***3.77***	3.77	**3.77**					
C205	C					0.34	0.34			0.40					0.40	0.74	STANDHYD	0.54	0.54	**76**	**5**
	N/A						0.00								0.00	0.00					
	N/A						0.00								0.00	0.00					
	N/A						0.00								0.00	0.00					
	Total	***0.00***	***0.00***	***0.00***	***0.00***	***0.34***	0.34	***0.00***	***0.00***	***0.40***	***0.00***	***0.00***	***0.00***	***0.00***	0.40	**0.74**					
C206	C					0.57	0.57			11.14					11.14	11.71	STANDHYD	0.95	0.95	**76**	**5**
	N/A						0.00								0.00	0.00					
	N/A						0.00								0.00	0.00					
	N/A						0.00								0.00	0.00					
	Total	***0.00***	***0.00***	***0.00***	***0.00***	***0.57***	0.57	***0.00***	***0.00***	***11.14***	***0.00***	***0.00***	***0.00***	***0.00***	11.14	**11.71**					
C209A	C					0.11	0.11			1.15					1.15	1.26	STANDHYD	0.91	0.91	**76**	**5**
	N/A						0.00								0.00	0.00					
	N/A						0.00								0.00	0.00					
	N/A						0.00								0.00	0.00					
	Total	***0.00***	***0.00***	***0.00***	***0.00***	***0.11***	0.11	***0.00***	***0.00***	***1.15***	***0.00***	***0.00***	***0.00***	***0.00***	1.15	**1.26**					
C209B	C					0.13	0.13			0.63					0.63	0.76	STANDHYD	0.83	0.83	**76**	**5**
	N/A						0.00								0.00	0.00					
	N/A						0.00								0.00	0.00					
	N/A						0.00								0.00	0.00					
	Total	***0.00***	***0.00***	***0.00***	***0.00***	***0.13***	0.13	***0.00***	***0.00***	***0.63***	***0.00***	***0.00***	***0.00***	***0.00***	0.63	**0.76**					

CROZIER

Project: Prologis Humber Station
Project No.: 624-6777
Created By: MF
Checked By: RA
Date: March 13, 2026
Updated: June 17, 2026

STANDHYD Summary

Catchment ID	Area (ha)	DT (min)	TIMP	XIMP	*Pervious Area*								*Impervious Area*			
					CN Value	CN Used [1]	CN*	CN(III)	IA (mm)	SLPP (%)	LGP (m)	MNI	DPSI	SLPI (%)	LGI (m)	MNI
C201	15.90	5	0.87	0.87	76	81	81	91	5	2.0	40	0.25	2	1	AUTO	0.013
C201R	12.04	5	0.99	0.99	76	81	81	91	5	2.0	40	0.25	1	2	AUTO	0.013
C202	11.01	5	0.97	0.97	76	81	81	91	5	2.0	40	0.25	2	2	AUTO	0.013
C203	10.62	5	0.90	0.90	76	81	81	91	5	2.0	40	0.25	2	2	AUTO	0.013
C204	3.77	5	0.50	0.50	76	81	81	91	5	2.0	40	0.25	2	2	AUTO	0.013
C205	0.74	5	0.54	0.54	0	81	81	91	5	2.0	40	0.25	2	2	AUTO	1.013
C206	11.71	5	0.95	0.95	76	81	81	91	5	2.0	40	0.25	2	2	AUTO	0.013
C209A	1.26	5	0.91	0.91	76	81	81	91	5	2.0	40	0.25	2	2	AUTO	0.013
C209B	0.76	5	0.83	0.83	76	81	81	91	5	2.0	40	0.25	2	2	AUTO	0.013

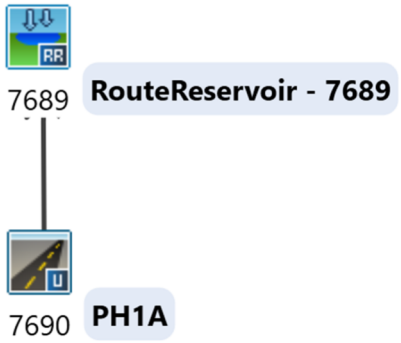
1. CN Value per meeting with TRCA on June 25, 2025 and Humber River Hydrology Report dated April 2018

Project #: 0624-6777
Project Name: Humber Station

Proposed Conditions (Preliminary)
100-Year, 24-Hour and 4-Hour Chicago Design Storms
100-Year, 24-Hour SCS Type II Design Storm
100-Year, 12-Hour and 6-Hour AES Design Storms

November 20, 2024

VO Model Schematic



CROZIER CONSULTING ENGINEERS

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================================================================================================================
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       V    V   I    SSSSS  U   U    A    L              (v 6.2.2015)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M   M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
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                  *****  D E T A I L E D   O U T P U T *****


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DATE: 11-20-2024                          TIME: 03:21:29

USER:


COMMENTS: _____________________________________________________


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  ************************************************
  ** SIMULATION : A - 100yr 24hr 15min Chicago  **
  ************************************************

--------------------
| CHICAGO STORM    |
| Ptotal=101.55 mm |
--------------------

                      IDF curve parameters: A=4688.000
                                            B=  17.000
                                            C=   0.962
                      used in:   INTENSITY =  A / (t + B)^C

                      Duration of storm  = 24.00 hrs
                      Storm time step    = 15.00 min
                      Time to peak ratio =  0.33

                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                  hrs   mm/hr |    hrs   mm/hr |'    hrs   mm/hr |    hrs   mm/hr
                0.00    0.22 |  6.00    1.58 |  12.00    1.14 |  18.00    0.35
                0.25    0.22 |  6.25    2.00 |  12.25    1.05 |  18.25    0.34
                0.50    0.23 |  6.50    2.65 |  12.50    0.98 |  18.50    0.33
                0.75    0.24 |  6.75    3.77 |  12.75    0.91 |  18.75    0.32
                1.00    0.25 |  7.00    6.01 |  13.00    0.85 |  19.00    0.31
                1.25    0.27 |  7.25   11.82 |  13.25    0.80 |  19.25    0.31
                1.50    0.28 |  7.50   39.93 |  13.50    0.75 |  19.50    0.30
                1.75    0.29 |  7.75  166.89 |  13.75    0.71 |  19.75    0.29
                2.00    0.31 |  8.00   55.37 |  14.00    0.67 |  20.00    0.28
                2.25    0.33 |  8.25   24.55 |  14.25    0.64 |  20.25    0.28
                2.50    0.35 |  8.50   14.23 |  14.50    0.61 |  20.50    0.27
                2.75    0.37 |  8.75    9.45 |  14.75    0.58 |  20.75    0.26
                3.00    0.39 |  9.00    6.83 |  15.00    0.55 |  21.00    0.26
                3.25    0.42 |  9.25    5.22 |  15.25    0.53 |  21.25    0.25
                3.50    0.46 |  9.50    4.15 |  15.50    0.51 |  21.50    0.25
                3.75    0.49 |  9.75    3.41 |  15.75    0.48 |  21.75    0.24
                4.00    0.54 | 10.00    2.86 |  16.00    0.47 |  22.00    0.24
                4.25    0.59 | 10.25    2.45 |  16.25    0.45 |  22.25    0.23
                4.50    0.65 | 10.50    2.13 |  16.50    0.43 |  22.50    0.23
                4.75    0.73 | 10.75    1.88 |  16.75    0.42 |  22.75    0.22
                5.00    0.82 | 11.00    1.67 |  17.00    0.40 |  23.00    0.22
                5.25    0.94 | 11.25    1.50 |  17.25    0.39 |  23.25    0.21
                5.50    1.09 | 11.50    1.36 |  17.50    0.38 |  23.50    0.21
                5.75    1.30 | 11.75    1.24 |  17.75    0.36 |  23.75    0.21

--------------------------------------------------------------------------------
--------------------
| CALIB            |
| STANDHYD (  7690)|   Area     (ha)=  26.06
|ID= 1 DT= 5.0 min |   Total Imp(%)=  99.00   Dir. Conn.(%)=  99.00
--------------------

                                  IMPERVIOUS    PERVIOUS (i)
     Surface Area      (ha)=         25.80          0.26
     Dep. Storage      (mm)=          1.00          5.00
     Average Slope     (%)=           1.00          2.00
     Length            (m)=         416.81         40.00
     Mannings n          =           0.013         0.250

        NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.

                                  ---- TRANSFORMED HYETOGRAPH ----
      TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
       hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
     0.083    0.22 | 6.083    1.58 | 12.083    1.14 | 18.08    0.35
     0.167    0.22 | 6.167    1.58 | 12.167    1.14 | 18.17    0.35
     0.250    0.22 | 6.250    1.58 | 12.250    1.14 | 18.25    0.35
     0.333    0.22 | 6.333    2.00 | 12.333    1.05 | 18.33    0.34
     0.417    0.22 | 6.417    2.00 | 12.417    1.05 | 18.42    0.34
     0.500    0.22 | 6.500    2.00 | 12.500    1.05 | 18.50    0.34
     0.583    0.23 | 6.583    2.65 | 12.583    0.98 | 18.58    0.33
     0.667    0.23 | 6.667    2.65 | 12.667    0.98 | 18.67    0.33
     0.750    0.23 | 6.750    2.65 | 12.750    0.98 | 18.75    0.33
     0.833    0.24 | 6.833    3.77 | 12.833    0.91 | 18.83    0.32
     0.917    0.24 | 6.917    3.77 | 12.917    0.91 | 18.92    0.32
     1.000    0.24 | 7.000    3.77 | 13.000    0.91 | 19.00    0.32
     1.083    0.25 | 7.083    6.01 | 13.083    0.85 | 19.08    0.31
     1.167    0.25 | 7.167    6.01 | 13.167    0.85 | 19.17    0.31
     1.250    0.25 | 7.250    6.01 | 13.250    0.85 | 19.25    0.31
     1.333    0.27 | 7.333   11.82 | 13.333    0.80 | 19.33    0.31
     1.417    0.27 | 7.417   11.82 | 13.417    0.80 | 19.42    0.31
     1.500    0.27 | 7.500   11.82 | 13.500    0.80 | 19.50    0.31
     1.583    0.28 | 7.583   39.93 | 13.583    0.75 | 19.58    0.30
     1.667    0.28 | 7.667   39.93 | 13.667    0.75 | 19.67    0.30
     1.750    0.28 | 7.750   39.94 | 13.750    0.75 | 19.75    0.30
     1.833    0.29 | 7.833  166.89 | 13.833    0.71 | 19.83    0.29
     1.917    0.29 | 7.917  166.89 | 13.917    0.71 | 19.92    0.29
     2.000    0.29 | 8.000  166.88 | 14.000    0.71 | 20.00    0.29
     2.083    0.31 | 8.083   55.37 | 14.083    0.67 | 20.08    0.28
     2.167    0.31 | 8.167   55.37 | 14.167    0.67 | 20.17    0.28
     2.250    0.31 | 8.250   55.37 | 14.250    0.67 | 20.25    0.28
     2.333    0.33 | 8.333   24.55 | 14.333    0.64 | 20.33    0.28
     2.417    0.33 | 8.417   24.55 | 14.417    0.64 | 20.42    0.28
     2.500    0.33 | 8.500   24.55 | 14.500    0.64 | 20.50    0.28
     2.583    0.35 | 8.583   14.23 | 14.583    0.61 | 20.58    0.27
     2.667    0.35 | 8.667   14.23 | 14.667    0.61 | 20.67    0.27
     2.750    0.35 | 8.750   14.23 | 14.750    0.61 | 20.75    0.27
     2.833    0.37 | 8.833    9.45 | 14.833    0.58 | 20.83    0.26
     2.917    0.37 | 8.917    9.45 | 14.917    0.58 | 20.92    0.26
     3.000    0.37 | 9.000    9.45 | 15.000    0.58 | 21.00    0.26
     3.083    0.39 | 9.083    6.83 | 15.083    0.55 | 21.08    0.26
     3.167    0.39 | 9.167    6.83 | 15.167    0.55 | 21.17    0.26
     3.250    0.39 | 9.250    6.83 | 15.250    0.55 | 21.25    0.26
     3.333    0.42 | 9.333    5.22 | 15.333    0.53 | 21.33    0.25
     3.417    0.42 | 9.417    5.22 | 15.417    0.53 | 21.42    0.25
     3.500    0.42 | 9.500    5.22 | 15.500    0.53 | 21.50    0.25
     3.583    0.46 | 9.583    4.15 | 15.583    0.51 | 21.58    0.25
     3.667    0.46 | 9.667    4.15 | 15.667    0.51 | 21.67    0.25
     3.750    0.46 | 9.750    4.15 | 15.750    0.51 | 21.75    0.25
     3.833    0.49 | 9.833    3.41 | 15.833    0.48 | 21.83    0.24
     3.917    0.49 | 9.917    3.41 | 15.917    0.48 | 21.92    0.24
     4.000    0.49 |10.000    3.41 | 16.000    0.48 | 22.00    0.24
     4.083    0.54 |10.083    2.86 | 16.083    0.47 | 22.08    0.24
     4.167    0.54 |10.167    2.86 | 16.167    0.47 | 22.17    0.24
     4.250    0.54 |10.250    2.86 | 16.250    0.47 | 22.25    0.24
     4.333    0.59 |10.333    2.45 | 16.333    0.45 | 22.33    0.23
```

4.417	0.59	10.417	2.45	16.417	0.45	22.42	0.23
4.500	0.59	10.500	2.45	16.500	0.45	22.50	0.23
4.583	0.65	10.583	2.13	16.583	0.43	22.58	0.23
4.667	0.65	10.667	2.13	16.667	0.43	22.67	0.23
4.750	0.65	10.750	2.13	16.750	0.43	22.75	0.23
4.833	0.73	10.833	1.88	16.833	0.42	22.83	0.22
4.917	0.73	10.917	1.88	16.917	0.42	22.92	0.22
5.000	0.73	11.000	1.88	17.000	0.42	23.00	0.22
5.083	0.82	11.083	1.67	17.083	0.40	23.08	0.22
5.167	0.82	11.167	1.67	17.167	0.40	23.17	0.22
5.250	0.82	11.250	1.67	17.250	0.40	23.25	0.22
5.333	0.94	11.333	1.50	17.333	0.39	23.33	0.21
5.417	0.94	11.417	1.50	17.417	0.39	23.42	0.21
5.500	0.94	11.500	1.50	17.500	0.39	23.50	0.21
5.583	1.09	11.583	1.36	17.583	0.38	23.58	0.21
5.667	1.09	11.667	1.36	17.667	0.38	23.67	0.21
5.750	1.09	11.750	1.36	17.750	0.38	23.75	0.21
5.833	1.30	11.833	1.24	17.833	0.36	23.83	0.21
5.917	1.30	11.917	1.24	17.917	0.36	23.92	0.21
6.000	1.30	12.000	1.24	18.000	0.36	24.00	0.21

```
     Max.Eff.Inten.(mm/hr)=     166.89        89.69
                  over (min)       5.00        10.00
     Storage Coeff.  (min)=       4.90 (ii)    5.82 (ii)
     Unit Hyd. Tpeak (min)=       5.00        10.00
     Unit Hyd. peak  (cms)=       0.22         0.15
                                                          *TOTALS*
     PEAK FLOW       (cms)=      11.53         0.05        11.580 (iii)
     TIME TO PEAK    (hrs)=       8.00         8.08         8.00
     RUNOFF VOLUME     (mm)=     100.55        50.17       100.05
     TOTAL RAINFALL    (mm)=     101.55       101.55       101.55
     RUNOFF COEFFICIENT   =       0.99         0.49         0.99

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN*  =  74.0     Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------
--------------------
| RESERVOIR(  7689)|     OVERFLOW IS OFF
| IN= 2---> OUT= 1 |
| DT=  5.0 min     |     OUTFLOW    STORAGE    |  OUTFLOW    STORAGE
--------------------       (cms)     (ha.m.)    |    (cms)     (ha.m.)
                           0.0000     0.0000    |   0.5980      2.0000

                                  AREA     QPEAK     TPEAK       R.V.
                                  (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  7690)     26.060     11.580      8.00      100.05
   OUTFLOW: ID= 1 (  7689)     26.060      0.593      9.08      100.01

                  PEAK   FLOW   REDUCTION [Qout/Qin](%)=  5.12
                  TIME SHIFT OF PEAK FLOW          (min)= 65.00
                  MAXIMUM  STORAGE   USED       (ha.m.)=  1.9828

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================================================================================================================
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       V    V   I    SSSSS  U   U    A    L              (v 6.2.2015)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M   M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
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                  *****  D E T A I L E D   O U T P U T *****


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DATE: 11-20-2024                          TIME: 03:21:28

USER:


COMMENTS: _____________________________________________________

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------
  ************************************************
  ** SIMULATION : B - 100yr 4hr 15min Chicago   **
  ************************************************

--------------------
| CHICAGO STORM    |     IDF curve parameters: A=4688.000
| Ptotal= 89.76 mm |                           B=  17.000
--------------------                           C=   0.962
                        used in:   INTENSITY =  A / (t + B)^C

                        Duration of storm  =  4.00 hrs
                        Storm time step    = 15.00 min
                        Time to peak ratio =  0.33

                  TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                    hrs   mm/hr |    hrs   mm/hr |'    hrs   mm/hr |    hrs   mm/hr
                  0.00     3.77 |  1.00  166.89 |   2.00    9.45 |  3.00    3.41
                  0.25     6.01 |  1.25   55.37 |   2.25    6.83 |  3.25    2.86
                  0.50    11.82 |  1.50   24.55 |   2.50    5.22 |  3.50    2.45
                  0.75    39.93 |  1.75   14.23 |   2.75    4.15 |  3.75    2.13


--------------------------------------------------------------------------------
--------------------
| CALIB            |
| STANDHYD (  7690)|    Area     (ha)=  26.06
|ID= 1 DT= 5.0 min |    Total Imp(%)=  99.00   Dir. Conn.(%)=  99.00
--------------------
                              IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       25.80          0.26
     Dep. Storage     (mm)=        1.00          5.00
     Average Slope     (%)=        1.00          2.00
     Length            (m)=      416.81         40.00
     Mannings n             =     0.013         0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.
```

```
                                  ---- TRANSFORMED HYETOGRAPH ----
                  TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                    hrs   mm/hr |    hrs   mm/hr |'    hrs   mm/hr |    hrs   mm/hr
                  0.083    3.77 | 1.083  166.89 |  2.083    9.45 |  3.08    3.41
                  0.167    3.77 | 1.167  166.89 |  2.167    9.45 |  3.17    3.41
                  0.250    3.77 | 1.250  166.89 |  2.250    9.45 |  3.25    3.41
                  0.333    6.01 | 1.333   55.37 |  2.333    6.83 |  3.33    2.86
                  0.417    6.01 | 1.417   55.37 |  2.417    6.83 |  3.42    2.86
                  0.500    6.01 | 1.500   55.37 |  2.500    6.83 |  3.50    2.86
                  0.583   11.82 | 1.583   24.55 |  2.583    5.22 |  3.58    2.45
                  0.667   11.82 | 1.667   24.55 |  2.667    5.22 |  3.67    2.45
                  0.750   11.82 | 1.750   24.55 |  2.750    5.22 |  3.75    2.45
                  0.833   39.93 | 1.833   14.23 |  2.833    4.15 |  3.83    2.13
                  0.917   39.93 | 1.917   14.23 |  2.917    4.15 |  3.92    2.13
                  1.000   39.93 | 2.000   14.23 |  3.000    4.15 |  4.00    2.13

     Max.Eff.Inten.(mm/hr)=     166.89        84.06
                 over (min)        5.00        10.00
     Storage Coeff.  (min)=        4.90 (ii)    5.82 (ii)
     Unit Hyd. Tpeak (min)=        5.00        10.00
     Unit Hyd. peak  (cms)=        0.22         0.15
                                                          *TOTALS*
     PEAK FLOW       (cms)=       11.53         0.05       11.576 (iii)
     TIME TO PEAK    (hrs)=        1.25         1.33         1.25
     RUNOFF VOLUME    (mm)=       88.76        41.29        88.29
     TOTAL RAINFALL   (mm)=       89.76        89.76        89.76
     RUNOFF COEFFICIENT   =        0.99         0.46         0.98

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  74.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------
--------------------
| RESERVOIR(  7689)|     OVERFLOW IS OFF
| IN= 2---> OUT= 1 |
| DT=  5.0 min     |     OUTFLOW    STORAGE    |  OUTFLOW    STORAGE
--------------------      (cms)     (ha.m.)    |   (cms)     (ha.m.)
                          0.0000     0.0000    |  0.5980      2.0000

                                  AREA     QPEAK     TPEAK       R.V.
                                  (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  7690)      26.060    11.576      1.25       88.29
   OUTFLOW: ID= 1 (  7689)      26.060     0.567      2.33       88.26

                PEAK   FLOW   REDUCTION [Qout/Qin](%)=  4.90
                TIME SHIFT OF PEAK FLOW          (min)= 65.00
                MAXIMUM  STORAGE   USED        (ha.m.)=  1.8980

--------------------------------------------------------------------------------
```

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================================================================================================================
======

       V    V   I    SSSSS  U   U    A    L              (v 6.2.2015)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M M M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
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                  *****  D E T A I L E D   O U T P U T *****


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.2\VO2\voin.dat
  Output  filename: C:\Users\mhooper\AppData\Local\Civica\VH5\40fcb7f5-f544-4d5a-b245-
a4eb17eaad57\ee93cb4a-6664-42e1-bd47-2f15f2ab825e\scen
  Summary filename: C:\Users\mhooper\AppData\Local\Civica\VH5\40fcb7f5-f544-4d5a-b245-
a4eb17eaad57\ee93cb4a-6664-42e1-bd47-2f15f2ab825e\scen


DATE: 11-20-2024                          TIME: 03:21:29

USER:


COMMENTS: _____________________________________________________


----------------------------------------------------------------------------------------------------------------
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  ************************************************
  ** SIMULATION : C - 100yr 24hr 15min SCS Type **
  ************************************************


--------------------
|    READ STORM    |    Filename: C:\Users\mhooper\AppD
|                  |              ata\Local\Temp\
|                  |              d744cbd1-7b1b-4f6f-95f5-5ce8d028fa93\f3a89182
| Ptotal=101.55 mm |    Comments: 100yr 24hr 15min SCS Type II
--------------------
```

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	' TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.00	0.00	6.25	1.85	12.50	11.84	18.75	1.67
0.25	1.03	6.50	1.90	12.75	8.15	19.00	1.61
0.50	1.05	6.75	1.96	13.00	6.88	19.25	1.54
0.75	1.08	7.00	2.00	13.25	5.82	19.50	1.48
1.00	1.10	7.25	2.06	13.50	5.14	19.75	1.41
1.25	1.13	7.50	2.11	13.75	4.51	20.00	1.35
1.50	1.16	7.75	2.16	14.00	4.02	20.25	1.31
1.75	1.18	8.00	2.21	14.25	3.67	20.50	1.30
2.00	1.20	8.25	2.37	14.50	3.50	20.75	1.29
2.25	1.23	8.50	2.61	14.75	3.31	21.00	1.28
2.50	1.26	8.75	2.87	15.00	3.14	21.25	1.26
2.75	1.28	9.00	3.12	15.25	2.96	21.50	1.25
3.00	1.31	9.25	3.25	15.50	2.78	21.75	1.24
3.25	1.33	9.50	3.25	15.75	2.60	22.00	1.22
3.50	1.36	9.75	3.46	16.00	2.43	22.25	1.21
3.75	1.38	10.00	3.85	16.25	2.30	22.50	1.20
4.00	1.41	10.25	4.38	16.50	2.24	22.75	1.19
4.25	1.45	10.50	4.96	16.75	2.18	23.00	1.17
4.50	1.50	10.75	5.81	17.00	2.11	23.25	1.16
4.75	1.55	11.00	6.78	17.25	2.05	23.50	1.15
5.00	1.60	11.25	8.58	17.50	1.99	23.75	1.14
5.25	1.65	11.50	10.92	17.75	1.92	24.00	1.12
5.50	1.70	11.75	44.51	18.00	1.86		
5.75	1.75	12.00	109.85	18.25	1.80		
6.00	1.80	12.25	17.40	18.50	1.73		

```
----------------------------------------------------------------------------

--------------------
| CALIB            |
| STANDHYD (  7690)|   Area     (ha)=  26.06
|ID= 1 DT= 5.0 min |   Total Imp(%)=  99.00   Dir. Conn.(%)=  99.00
--------------------
                                IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=        25.80          0.26
     Dep. Storage     (mm)=         1.00          5.00
     Average Slope     (%)=         1.00          2.00
     Length            (m)=       416.81         40.00
     Mannings n           =        0.013         0.250

        NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.
```

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	' TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	0.00	6.167	1.80	12.250	109.85	18.33	1.80
0.167	0.00	6.250	1.80	12.333	17.41	18.42	1.80
0.250	0.00	6.333	1.85	12.417	17.40	18.50	1.80
0.333	1.03	6.417	1.85	12.500	17.40	18.58	1.73
0.417	1.03	6.500	1.85	12.583	11.85	18.67	1.73
0.500	1.03	6.583	1.90	12.667	11.84	18.75	1.73
0.583	1.05	6.667	1.90	12.750	11.84	18.83	1.67
0.667	1.05	6.750	1.90	12.833	8.15	18.92	1.67
0.750	1.05	6.833	1.96	12.917	8.15	19.00	1.67
0.833	1.08	6.917	1.96	13.000	8.15	19.08	1.61
0.917	1.08	7.000	1.96	13.083	6.88	19.17	1.61
1.000	1.08	7.083	2.00	13.167	6.88	19.25	1.61
1.083	1.10	7.167	2.00	13.250	6.88	19.33	1.54
1.167	1.10	7.250	2.00	13.333	5.83	19.42	1.54
1.250	1.10	7.333	2.06	13.417	5.82	19.50	1.54
1.333	1.13	7.417	2.06	13.500	5.82	19.58	1.48
1.417	1.13	7.500	2.06	13.583	5.14	19.67	1.48
1.500	1.13	7.583	2.11	13.667	5.14	19.75	1.48
1.583	1.16	7.667	2.11	13.750	5.14	19.83	1.41
1.667	1.16	7.750	2.11	13.833	4.51	19.92	1.41
1.750	1.16	7.833	2.16	13.917	4.51	20.00	1.41
1.833	1.18	7.917	2.16	14.000	4.51	20.08	1.35
1.917	1.18	8.000	2.16	14.083	4.02	20.17	1.35
2.000	1.18	8.083	2.21	14.167	4.02	20.25	1.35
2.083	1.20	8.167	2.21	14.250	4.02	20.33	1.31
2.167	1.20	8.250	2.21	14.333	3.67	20.42	1.31
2.250	1.20	8.333	2.37	14.417	3.67	20.50	1.31
2.333	1.23	8.417	2.37	14.500	3.67	20.58	1.30
2.417	1.23	8.500	2.37	14.583	3.50	20.67	1.30
2.500	1.23	8.583	2.61	14.667	3.50	20.75	1.30
2.583	1.26	8.667	2.61	14.750	3.50	20.83	1.29
2.667	1.26	8.750	2.61	14.833	3.31	20.92	1.29
2.750	1.26	8.833	2.87	14.917	3.31	21.00	1.29
2.833	1.28	8.917	2.87	15.000	3.31	21.08	1.28
2.917	1.28	9.000	2.87	15.083	3.14	21.17	1.28
3.000	1.28	9.083	3.12	15.167	3.14	21.25	1.28
3.083	1.31	9.167	3.12	15.250	3.14	21.33	1.26
3.167	1.31	9.250	3.12	15.333	2.96	21.42	1.26
3.250	1.31	9.333	3.25	15.417	2.96	21.50	1.26
3.333	1.33	9.417	3.25	15.500	2.96	21.58	1.25
3.417	1.33	9.500	3.25	15.583	2.78	21.67	1.25
3.500	1.33	9.583	3.25	15.667	2.78	21.75	1.25
3.583	1.36	9.667	3.25	15.750	2.78	21.83	1.24
3.667	1.36	9.750	3.25	15.833	2.60	21.92	1.24
3.750	1.36	9.833	3.46	15.917	2.60	22.00	1.24
3.833	1.38	9.917	3.46	16.000	2.60	22.08	1.22
3.917	1.38	10.000	3.46	16.083	2.43	22.17	1.22
4.000	1.38	10.083	3.85	16.167	2.43	22.25	1.22
4.083	1.41	10.167	3.85	16.250	2.43	22.33	1.21
4.167	1.41	10.250	3.85	16.333	2.30	22.42	1.21
4.250	1.41	10.333	4.38	16.417	2.30	22.50	1.21
4.333	1.45	10.417	4.38	16.500	2.30	22.58	1.20
4.417	1.45	10.500	4.38	16.583	2.24	22.67	1.20
4.500	1.45	10.583	4.96	16.667	2.24	22.75	1.20

```
                4.583    1.50 |10.667    4.96 |16.750    2.24 | 22.83    1.19
                4.667    1.50 |10.750    4.96 |16.833    2.18 | 22.92    1.19
                4.750    1.50 |10.833    5.81 |16.917    2.18 | 23.00    1.19
                4.833    1.55 |10.917    5.81 |17.000    2.18 | 23.08    1.17
                4.917    1.55 |11.000    5.81 |17.083    2.11 | 23.17    1.17
                5.000    1.55 |11.083    6.78 |17.167    2.11 | 23.25    1.17
                5.083    1.60 |11.167    6.78 |17.250    2.11 | 23.33    1.16
                5.167    1.60 |11.250    6.78 |17.333    2.05 | 23.42    1.16
                5.250    1.60 |11.333    8.58 |17.417    2.05 | 23.50    1.16
                5.333    1.65 |11.417    8.58 |17.500    2.05 | 23.58    1.15
                5.417    1.65 |11.500    8.58 |17.583    1.99 | 23.67    1.15
                5.500    1.65 |11.583   10.92 |17.667    1.99 | 23.75    1.15
                5.583    1.70 |11.667   10.92 |17.750    1.99 | 23.83    1.14
                5.667    1.70 |11.750   10.92 |17.833    1.92 | 23.92    1.14
                5.750    1.70 |11.833   44.51 |17.917    1.92 | 24.00    1.14
                5.833    1.75 |11.917   44.51 |18.000    1.92 | 24.08    1.12
                5.917    1.75 |12.000   44.51 |18.083    1.86 | 24.17    1.12
                6.000    1.75 |12.083  109.84 |18.167    1.86 | 24.25    1.12
                6.083    1.80 |12.167  109.85 |18.250    1.86 |

     Max.Eff.Inten.(mm/hr)=     109.85        66.53
                over (min)        5.00        10.00
     Storage Coeff.  (min)=       5.79 (ii)    6.88 (ii)
     Unit Hyd. Tpeak (min)=       5.00        10.00
     Unit Hyd. peak  (cms)=       0.20         0.14
                                                          *TOTALS*
     PEAK FLOW       (cms)=       7.51         0.04          7.547 (iii)
     TIME TO PEAK    (hrs)=      12.25        12.25          12.25
     RUNOFF VOLUME    (mm)=     100.55        50.17         100.05
     TOTAL RAINFALL   (mm)=     101.55       101.55         101.55
     RUNOFF COEFFICIENT   =       0.99         0.49           0.99


       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  74.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------
-------------------
| RESERVOIR(  7689)|     OVERFLOW IS OFF
| IN= 2---> OUT= 1 |
| DT=  5.0 min     |     OUTFLOW    STORAGE    |  OUTFLOW    STORAGE
-------------------      (cms)     (ha.m.)     |   (cms)     (ha.m.)
                         0.0000     0.0000     |   0.5980     2.0000

                                  AREA     QPEAK     TPEAK       R.V.
                                  (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  7690)     26.060     7.547     12.25      100.05
   OUTFLOW: ID= 1 (  7689)     26.060     0.476     13.33      100.01

                   PEAK   FLOW   REDUCTION [Qout/Qin](%)=  6.30
                   TIME SHIFT OF PEAK FLOW          (min)= 65.00
                   MAXIMUM  STORAGE   USED       (ha.m.)=  1.5915

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 FINISH
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       V    V   I    SSSSS  U   U    A    L              (v 6.2.2015)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M   M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
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                  *****  D E T A I L E D   O U T P U T *****


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.2\VO2\voin.dat
  Output  filename: C:\Users\mhooper\AppData\Local\Civica\VH5\40fcb7f5-f544-4d5a-b245-
a4eb17eaad57\a6afda8e-132e-493c-87dc-2d142f5868d9\scen
  Summary filename: C:\Users\mhooper\AppData\Local\Civica\VH5\40fcb7f5-f544-4d5a-b245-
a4eb17eaad57\a6afda8e-132e-493c-87dc-2d142f5868d9\scen


DATE: 11-20-2024                          TIME: 03:21:29

USER:


COMMENTS: _____________________________________________________

------------------------------------------------------------------------------------------------
------
  ***********************************************
  ** SIMULATION : D - 100 Year 12 Hour AES (Blo **
  ***********************************************


--------------------
|    READ STORM    |    Filename: C:\Users\mhooper\AppD
|                  |              ata\Local\Temp\
|                  |              d744cbd1-7b1b-4f6f-95f5-5ce8d028fa93\52278e53
| Ptotal= 88.54 mm |    Comments: 100 Year 12 Hour AES (Bloor, TRCA)
--------------------
```

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.00	0.00	3.25	15.05	6.50	6.20	9.75	0.89
0.25	0.89	3.50	15.05	6.75	6.20	10.00	0.89
0.50	0.89	3.75	15.05	7.00	6.20	10.25	0.89
0.75	0.89	4.00	15.05	7.25	3.54	10.50	0.89
1.00	0.89	4.25	40.71	7.50	3.54	10.75	0.89
1.25	0.89	4.50	40.71	7.75	3.54	11.00	0.89
1.50	0.89	4.75	40.71	8.00	3.54	11.25	0.89
1.75	0.89	5.00	40.71	8.25	1.77	11.50	0.89
2.00	0.89	5.25	11.51	8.50	1.77	11.75	0.89
2.25	5.31	5.50	11.51	8.75	1.77	12.00	0.89
2.50	5.31	5.75	11.51	9.00	1.77		
2.75	5.31	6.00	11.51	9.25	0.89		
3.00	5.31	6.25	6.20	9.50	0.89		

```
--------------------------------------------------------------------------------

--------------------
| CALIB            |
| STANDHYD (  7690)|   Area     (ha)=  26.06
|ID= 1 DT= 5.0 min |   Total Imp(%)=  99.00   Dir. Conn.(%)=  99.00
--------------------
                          IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=      25.80          0.26
     Dep. Storage     (mm)=       1.00          5.00
     Average Slope    (%)=       1.00          2.00
     Length           (m)=     416.81         40.00
     Mannings n         =      0.013         0.250

    NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.
```

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	0.00	3.167	5.31	6.250	11.51	9.33	0.89
0.167	0.00	3.250	5.31	6.333	6.20	9.42	0.89
0.250	0.00	3.333	15.05	6.417	6.20	9.50	0.89
0.333	0.89	3.417	15.05	6.500	6.20	9.58	0.89
0.417	0.89	3.500	15.05	6.583	6.20	9.67	0.89
0.500	0.89	3.583	15.05	6.667	6.20	9.75	0.89
0.583	0.89	3.667	15.05	6.750	6.20	9.83	0.89
0.667	0.89	3.750	15.05	6.833	6.20	9.92	0.89
0.750	0.89	3.833	15.05	6.917	6.20	10.00	0.89
0.833	0.89	3.917	15.05	7.000	6.20	10.08	0.89
0.917	0.89	4.000	15.05	7.083	6.20	10.17	0.89
1.000	0.89	4.083	15.05	7.167	6.20	10.25	0.89
1.083	0.89	4.167	15.05	7.250	6.20	10.33	0.89
1.167	0.89	4.250	15.05	7.333	3.54	10.42	0.89
1.250	0.89	4.333	40.71	7.417	3.54	10.50	0.89
1.333	0.89	4.417	40.71	7.500	3.54	10.58	0.89
1.417	0.89	4.500	40.71	7.583	3.54	10.67	0.89
1.500	0.89	4.583	40.71	7.667	3.54	10.75	0.89
1.583	0.89	4.667	40.71	7.750	3.54	10.83	0.89
1.667	0.89	4.750	40.71	7.833	3.54	10.92	0.89
1.750	0.89	4.833	40.71	7.917	3.54	11.00	0.89
1.833	0.89	4.917	40.71	8.000	3.54	11.08	0.89
1.917	0.89	5.000	40.71	8.083	3.54	11.17	0.89
2.000	0.89	5.083	40.71	8.167	3.54	11.25	0.89
2.083	0.89	5.167	40.71	8.250	3.54	11.33	0.89
2.167	0.89	5.250	40.71	8.333	1.77	11.42	0.89
2.250	0.89	5.333	11.51	8.417	1.77	11.50	0.89
2.333	5.31	5.417	11.51	8.500	1.77	11.58	0.89
2.417	5.31	5.500	11.51	8.583	1.77	11.67	0.89
2.500	5.31	5.583	11.51	8.667	1.77	11.75	0.89
2.583	5.31	5.667	11.51	8.750	1.77	11.83	0.89
2.667	5.31	5.750	11.51	8.833	1.77	11.92	0.89
2.750	5.31	5.833	11.51	8.917	1.77	12.00	0.89
2.833	5.31	5.917	11.51	9.000	1.77	12.08	0.89
2.917	5.31	6.000	11.51	9.083	1.77	12.17	0.89
3.000	5.31	6.083	11.51	9.167	1.77	12.25	0.89
3.083	5.31	6.167	11.51	9.250	1.77		

```
Max.Eff.Inten.(mm/hr)=      40.71         25.00
          over (min)        10.00         15.00
Storage Coeff.  (min)=       8.62 (ii)    10.23 (ii)
Unit Hyd. Tpeak (min)=      10.00         15.00
Unit Hyd. peak  (cms)=       0.12          0.09
                                                  *TOTALS*
PEAK FLOW       (cms)=       2.91          0.02      2.932 (iii)
TIME TO PEAK    (hrs)=       5.25          5.25        5.25
RUNOFF VOLUME    (mm)=      87.54         40.39       87.07
TOTAL RAINFALL   (mm)=      88.54         88.54       88.54
RUNOFF COEFFICIENT   =       0.99          0.46        0.98

  (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
      CN*  =  74.0    Ia = Dep. Storage  (Above)
 (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
      THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------

--------------------
| RESERVOIR(  7689)|    OVERFLOW IS OFF
| IN= 2---> OUT= 1 |
| DT=  5.0 min     |    OUTFLOW    STORAGE    |  OUTFLOW    STORAGE
--------------------      (cms)      (ha.m.)   |   (cms)      (ha.m.)
                         0.0000      0.0000    |  0.5980      2.0000

                              AREA     QPEAK     TPEAK       R.V.
```

```
                                (ha)      (cms)      (hrs)        (mm)
  INFLOW : ID= 2 (  7690)     26.060      2.932      5.25       87.07
  OUTFLOW: ID= 1 (  7689)     26.060      0.473      6.67       87.04

                PEAK   FLOW   REDUCTION [Qout/Qin](%)= 16.14
                TIME SHIFT OF PEAK FLOW         (min)= 85.00
                MAXIMUM  STORAGE   USED       (ha.m.)=  1.5822
```

```
================================================================================================================
======

       V    V   I    SSSSS  U   U    A    L              (v 6.2.2015)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M   M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
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                  *****  D E T A I L E D   O U T P U T *****


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.2\VO2\voin.dat
  Output  filename: C:\Users\mhooper\AppData\Local\Civica\VH5\40fcb7f5-f544-4d5a-b245-
a4eb17eaad57\defc4079-43b1-48ba-9a13-d27e69162820\scen
  Summary filename: C:\Users\mhooper\AppData\Local\Civica\VH5\40fcb7f5-f544-4d5a-b245-
a4eb17eaad57\defc4079-43b1-48ba-9a13-d27e69162820\scen


DATE: 11-20-2024                          TIME: 03:21:29

USER:



COMMENTS: _____________________________________________________

--------------------------------------------------------------------------------------------------------------
------
  ************************************************
  ** SIMULATION : E - 100 Year 6 Hour AES (Bloo **
  ************************************************


--------------------
|    READ STORM    |    Filename: C:\Users\mhooper\AppD
|                  |              ata\Local\Temp\
|                  |              d744cbd1-7b1b-4f6f-95f5-5ce8d028fa93\0dff70fd
| Ptotal= 80.31 mm |    Comments: 100 Year 6 Hour AES (Bloor, TRCA)
--------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.00    0.00 |  1.75   27.30 |'  3.50   11.24 |  5.25    1.61
                0.25    1.61 |  2.00   27.30 |'  3.75    6.42 |  5.50    1.61
                0.50    1.61 |  2.25   73.88 |'  4.00    6.42 |  5.75    1.61
                0.75    1.61 |  2.50   73.88 |'  4.25    3.21 |  6.00    1.61
                1.00    1.61 |  2.75   20.88 |'  4.50    3.21 |
                1.25    9.64 |  3.00   20.88 |'  4.75    1.61 |
                1.50    9.64 |  3.25   11.24 |'  5.00    1.61 |

--------------------------------------------------------------------------------

--------------------
| CALIB            |
| STANDHYD (  7690)|    Area     (ha)=  26.06
|ID= 1 DT= 5.0 min |    Total Imp(%)=  99.00   Dir. Conn.(%)=  99.00
--------------------
                          IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=      25.80          0.26
     Dep. Storage     (mm)=       1.00          5.00
     Average Slope     (%)=       1.00          2.00
     Length            (m)=     416.81         40.00
     Mannings n           =      0.013         0.250

        NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.
```

```
                                  ---- TRANSFORMED HYETOGRAPH ----
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.083    0.00 | 1.667    9.64 | 3.250   20.88 |  4.83    1.61
               0.167    0.00 | 1.750    9.64 | 3.333   11.24 |  4.92    1.61
               0.250    0.00 | 1.833   27.30 | 3.417   11.24 |  5.00    1.61
               0.333    1.61 | 1.917   27.30 | 3.500   11.24 |  5.08    1.61
               0.417    1.61 | 2.000   27.30 | 3.583   11.24 |  5.17    1.61
               0.500    1.61 | 2.083   27.30 | 3.667   11.24 |  5.25    1.61
               0.583    1.61 | 2.167   27.30 | 3.750   11.24 |  5.33    1.61
               0.667    1.61 | 2.250   27.30 | 3.833    6.42 |  5.42    1.61
               0.750    1.61 | 2.333   73.88 | 3.917    6.42 |  5.50    1.61
               0.833    1.61 | 2.417   73.88 | 4.000    6.42 |  5.58    1.61
               0.917    1.61 | 2.500   73.88 | 4.083    6.42 |  5.67    1.61
               1.000    1.61 | 2.583   73.88 | 4.167    6.42 |  5.75    1.61
               1.083    1.61 | 2.667   73.88 | 4.250    6.42 |  5.83    1.61
               1.167    1.61 | 2.750   73.88 | 4.333    3.21 |  5.92    1.61
               1.250    1.61 | 2.833   20.88 | 4.417    3.21 |  6.00    1.61
               1.333    9.64 | 2.917   20.88 | 4.500    3.21 |  6.08    1.61
               1.417    9.64 | 3.000   20.88 | 4.583    3.21 |  6.17    1.61
               1.500    9.64 | 3.083   20.88 | 4.667    3.21 |  6.25    1.61
               1.583    9.64 | 3.167   20.88 | 4.750    3.21 |

  Max.Eff.Inten.(mm/hr)=      73.88        41.58
            over (min)        5.00        10.00
  Storage Coeff.  (min)=      6.79 (ii)    8.06 (ii)
  Unit Hyd. Tpeak (min)=      5.00        10.00
  Unit Hyd. peak  (cms)=      0.18         0.13
                                                  *TOTALS*
  PEAK FLOW       (cms)=      5.25         0.03        5.281 (iii)
  TIME TO PEAK    (hrs)=      2.75         2.75        2.75
  RUNOFF VOLUME    (mm)=     79.31        34.47       78.86
  TOTAL RAINFALL   (mm)=     80.31        80.31       80.31
  RUNOFF COEFFICIENT   =      0.99         0.43        0.98

    (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
        CN*  =  74.0    Ia = Dep. Storage  (Above)
   (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
        THAN THE STORAGE COEFFICIENT.
  (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------
--------------------
| RESERVOIR(  7689)|    OVERFLOW IS OFF
| IN= 2---> OUT= 1 |
| DT=  5.0 min     |    OUTFLOW    STORAGE    |  OUTFLOW    STORAGE
--------------------     (cms)      (ha.m.)    |   (cms)      (ha.m.)
                         0.0000     0.0000     |  0.5980      2.0000

                                 AREA     QPEAK     TPEAK      R.V.
                                 (ha)     (cms)     (hrs)      (mm)
  INFLOW : ID= 2 (  7690)      26.060     5.281      2.75      78.86
  OUTFLOW: ID= 1 (  7689)      26.060     0.487      4.08      78.83

                PEAK   FLOW   REDUCTION [Qout/Qin](%)=  9.22
                TIME SHIFT OF PEAK FLOW          (min)= 80.00
                MAXIMUM  STORAGE   USED        (ha.m.)=  1.6282

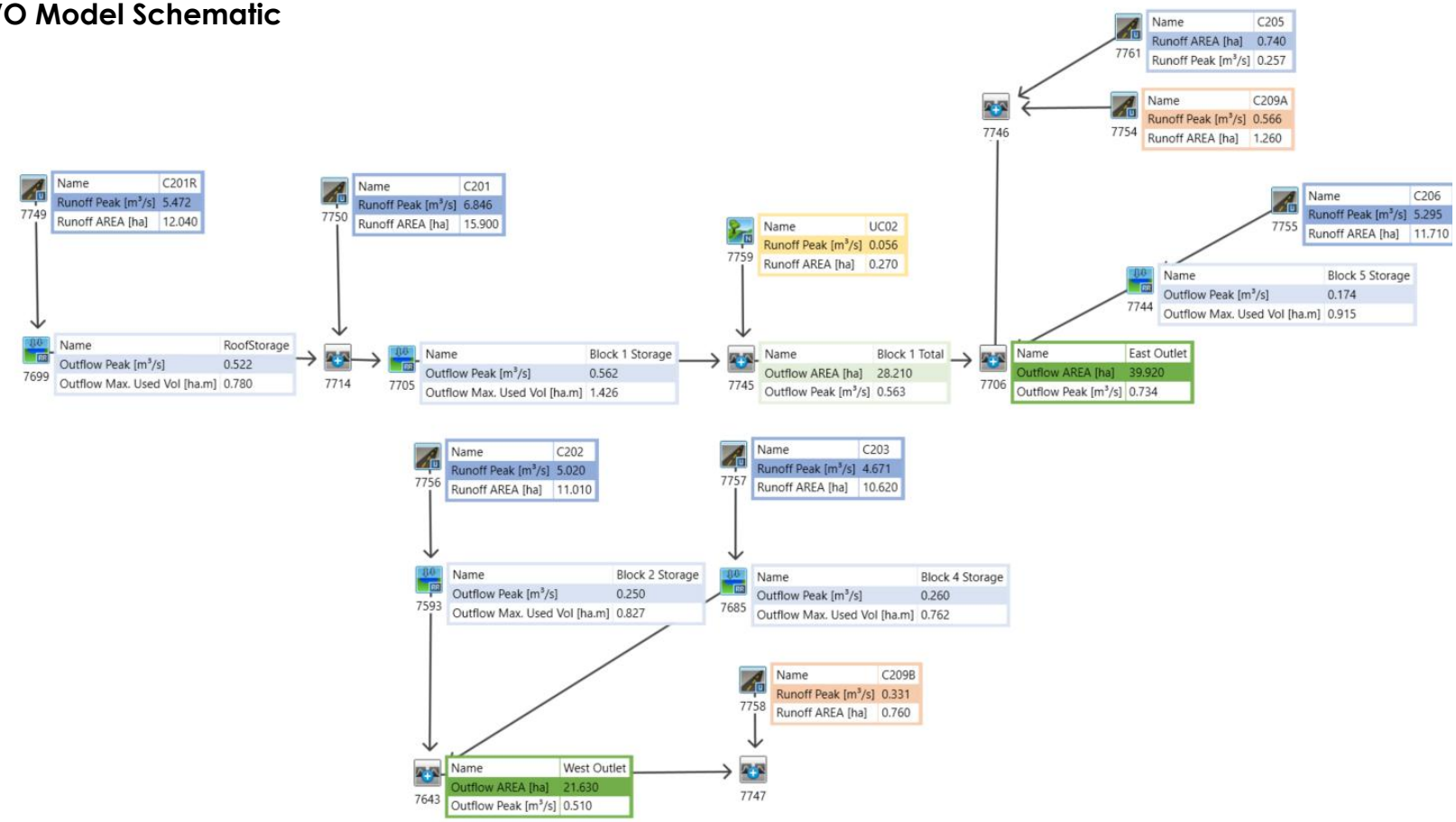
--------------------------------------------------------------------------------
```

Project #: 0624-6777
Project Name: Humber Station

Proposed Conditions - Ultimate

June 2026

VO Model Schematic



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================================================================================================================
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       V    V   I    SSSSS  U   U    A    L              (v 6.2.2020)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M M M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
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                  *****  D E T A I L E D   O U T P U T *****


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.2\VO2\voin.dat
  Output  filename: C:\Users\mfindlay\AppData\Local\Civica\VH5\40fcb7f5-f544-4d5a-b245-
a4eb17eaad57\2d32199e-da3c-4bb2-acd6-94aa32b85f09\sce
  Summary filename: C:\Users\mfindlay\AppData\Local\Civica\VH5\40fcb7f5-f544-4d5a-b245-
a4eb17eaad57\2d32199e-da3c-4bb2-acd6-94aa32b85f09\sce


DATE: 06-17-2026                          TIME: 03:37:07

USER:


COMMENTS: _____________________________________________________


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------
  ***********************************************
  ** SIMULATION : F - 100yr 24hr 15min Chicago  **
  ***********************************************

--------------------
| CHICAGO STORM    |    IDF curve parameters: A=4688.000
| Ptotal=101.55 mm |                          B=  17.000
--------------------                          C=   0.962
                       used in:   INTENSITY =  A / (t + B)^C

                       Duration of storm  = 24.00 hrs
                       Storm time step    = 15.00 min
                       Time to peak ratio =  0.33

                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                  hrs   mm/hr |    hrs   mm/hr |'    hrs   mm/hr |    hrs   mm/hr
                0.00    0.22 |  6.00    1.58 | 12.00    1.14 | 18.00    0.35
                0.25    0.22 |  6.25    2.00 | 12.25    1.05 | 18.25    0.34
                0.50    0.23 |  6.50    2.65 | 12.50    0.98 | 18.50    0.33
                0.75    0.24 |  6.75    3.77 | 12.75    0.91 | 18.75    0.32
                1.00    0.25 |  7.00    6.01 | 13.00    0.85 | 19.00    0.31
                1.25    0.27 |  7.25   11.82 | 13.25    0.80 | 19.25    0.31
                1.50    0.28 |  7.50   39.93 | 13.50    0.75 | 19.50    0.30
                1.75    0.29 |  7.75  166.89 | 13.75    0.71 | 19.75    0.29
                2.00    0.31 |  8.00   55.37 | 14.00    0.67 | 20.00    0.28
                2.25    0.33 |  8.25   24.55 | 14.25    0.64 | 20.25    0.28
                2.50    0.35 |  8.50   14.23 | 14.50    0.61 | 20.50    0.27
                2.75    0.37 |  8.75    9.45 | 14.75    0.58 | 20.75    0.26
                3.00    0.39 |  9.00    6.83 | 15.00    0.55 | 21.00    0.26
                3.25    0.42 |  9.25    5.22 | 15.25    0.53 | 21.25    0.25
                3.50    0.46 |  9.50    4.15 | 15.50    0.51 | 21.50    0.25
                3.75    0.49 |  9.75    3.41 | 15.75    0.48 | 21.75    0.24
                4.00    0.54 | 10.00    2.86 | 16.00    0.47 | 22.00    0.24
                4.25    0.59 | 10.25    2.45 | 16.25    0.45 | 22.25    0.23
                4.50    0.65 | 10.50    2.13 | 16.50    0.43 | 22.50    0.23
                4.75    0.73 | 10.75    1.88 | 16.75    0.42 | 22.75    0.22
                5.00    0.82 | 11.00    1.67 | 17.00    0.40 | 23.00    0.22
                5.25    0.94 | 11.25    1.50 | 17.25    0.39 | 23.25    0.21
                5.50    1.09 | 11.50    1.36 | 17.50    0.38 | 23.50    0.21
                5.75    1.30 | 11.75    1.24 | 17.75    0.36 | 23.75    0.21


--------------------------------------------------------------------------------
--------------------
| CALIB              |
| NASHYD   (  7759)| Area     (ha)=   0.27   Curve Number    (CN)= 81.0
|ID= 1 DT= 5.0 min | Ia       (mm)=   4.70   # of Linear Res.(N)= 3.00
--------------------  U.H. Tp(hrs)=   0.17

        NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                          ---- TRANSFORMED HYETOGRAPH ----
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                  hrs   mm/hr |    hrs   mm/hr |'    hrs   mm/hr |    hrs   mm/hr
               0.083    0.22 | 6.083    1.58 |12.083    1.14 | 18.08    0.35
               0.167    0.22 | 6.167    1.58 |12.167    1.14 | 18.17    0.35
               0.250    0.22 | 6.250    1.58 |12.250    1.14 | 18.25    0.35
               0.333    0.22 | 6.333    2.00 |12.333    1.05 | 18.33    0.34
               0.417    0.22 | 6.417    2.00 |12.417    1.05 | 18.42    0.34
               0.500    0.22 | 6.500    2.00 |12.500    1.05 | 18.50    0.34
               0.583    0.23 | 6.583    2.65 |12.583    0.98 | 18.58    0.33
               0.667    0.23 | 6.667    2.65 |12.667    0.98 | 18.67    0.33
               0.750    0.23 | 6.750    2.65 |12.750    0.98 | 18.75    0.33
               0.833    0.24 | 6.833    3.77 |12.833    0.91 | 18.83    0.32
               0.917    0.24 | 6.917    3.77 |12.917    0.91 | 18.92    0.32
               1.000    0.24 | 7.000    3.77 |13.000    0.91 | 19.00    0.32
               1.083    0.25 | 7.083    6.01 |13.083    0.85 | 19.08    0.31
               1.167    0.25 | 7.167    6.01 |13.167    0.85 | 19.17    0.31
               1.250    0.25 | 7.250    6.01 |13.250    0.85 | 19.25    0.31
               1.333    0.27 | 7.333   11.82 |13.333    0.80 | 19.33    0.31
               1.417    0.27 | 7.417   11.82 |13.417    0.80 | 19.42    0.31
               1.500    0.27 | 7.500   11.82 |13.500    0.80 | 19.50    0.31
               1.583    0.28 | 7.583   39.93 |13.583    0.75 | 19.58    0.30
               1.667    0.28 | 7.667   39.93 |13.667    0.75 | 19.67    0.30
               1.750    0.28 | 7.750   39.94 |13.750    0.75 | 19.75    0.30
               1.833    0.29 | 7.833  166.89 |13.833    0.71 | 19.83    0.29
               1.917    0.29 | 7.917  166.89 |13.917    0.71 | 19.92    0.29
               2.000    0.29 | 8.000  166.88 |14.000    0.71 | 20.00    0.29
               2.083    0.31 | 8.083   55.37 |14.083    0.67 | 20.08    0.28
               2.167    0.31 | 8.167   55.37 |14.167    0.67 | 20.17    0.28
               2.250    0.31 | 8.250   55.37 |14.250    0.67 | 20.25    0.28
               2.333    0.33 | 8.333   24.55 |14.333    0.64 | 20.33    0.28
               2.417    0.33 | 8.417   24.55 |14.417    0.64 | 20.42    0.28
               2.500    0.33 | 8.500   24.55 |14.500    0.64 | 20.50    0.28
               2.583    0.35 | 8.583   14.23 |14.583    0.61 | 20.58    0.27
               2.667    0.35 | 8.667   14.23 |14.667    0.61 | 20.67    0.27
               2.750    0.35 | 8.750   14.23 |14.750    0.61 | 20.75    0.27
               2.833    0.37 | 8.833    9.45 |14.833    0.58 | 20.83    0.26
               2.917    0.37 | 8.917    9.45 |14.917    0.58 | 20.92    0.26
               3.000    0.37 | 9.000    9.45 |15.000    0.58 | 21.00    0.26
               3.083    0.39 | 9.083    6.83 |15.083    0.55 | 21.08    0.26
               3.167    0.39 | 9.167    6.83 |15.167    0.55 | 21.17    0.26
               3.250    0.39 | 9.250    6.83 |15.250    0.55 | 21.25    0.26
               3.333    0.42 | 9.333    5.22 |15.333    0.53 | 21.33    0.25
               3.417    0.42 | 9.417    5.22 |15.417    0.53 | 21.42    0.25
               3.500    0.42 | 9.500    5.22 |15.500    0.53 | 21.50    0.25
               3.583    0.46 | 9.583    4.15 |15.583    0.51 | 21.58    0.25
               3.667    0.46 | 9.667    4.15 |15.667    0.51 | 21.67    0.25
               3.750    0.46 | 9.750    4.15 |15.750    0.51 | 21.75    0.25
               3.833    0.49 | 9.833    3.41 |15.833    0.48 | 21.83    0.24
               3.917    0.49 | 9.917    3.41 |15.917    0.48 | 21.92    0.24
               4.000    0.49 |10.000    3.41 |16.000    0.48 | 22.00    0.24
               4.083    0.54 |10.083    2.86 |16.083    0.47 | 22.08    0.24
               4.167    0.54 |10.167    2.86 |16.167    0.47 | 22.17    0.24
               4.250    0.54 |10.250    2.86 |16.250    0.47 | 22.25    0.24
               4.333    0.59 |10.333    2.45 |16.333    0.45 | 22.33    0.23
               4.417    0.59 |10.417    2.45 |16.417    0.45 | 22.42    0.23
               4.500    0.59 |10.500    2.45 |16.500    0.45 | 22.50    0.23
               4.583    0.65 |10.583    2.13 |16.583    0.43 | 22.58    0.23
               4.667    0.65 |10.667    2.13 |16.667    0.43 | 22.67    0.23
               4.750    0.65 |10.750    2.13 |16.750    0.43 | 22.75    0.23
               4.833    0.73 |10.833    1.88 |16.833    0.42 | 22.83    0.22
```

4.917	0.73	10.917	1.88	16.917	0.42	22.92	0.22
5.000	0.73	11.000	1.88	17.000	0.42	23.00	0.22
5.083	0.82	11.083	1.67	17.083	0.40	23.08	0.22
5.167	0.82	11.167	1.67	17.167	0.40	23.17	0.22
5.250	0.82	11.250	1.67	17.250	0.40	23.25	0.22
5.333	0.94	11.333	1.50	17.333	0.39	23.33	0.21
5.417	0.94	11.417	1.50	17.417	0.39	23.42	0.21
5.500	0.94	11.500	1.50	17.500	0.39	23.50	0.21
5.583	1.09	11.583	1.36	17.583	0.38	23.58	0.21
5.667	1.09	11.667	1.36	17.667	0.38	23.67	0.21
5.750	1.09	11.750	1.36	17.750	0.38	23.75	0.21
5.833	1.30	11.833	1.24	17.833	0.36	23.83	0.21
5.917	1.30	11.917	1.24	17.917	0.36	23.92	0.21
6.000	1.30	12.000	1.24	18.000	0.36	24.00	0.21

Unit Hyd Qpeak (cms)= 0.061

PEAK FLOW (cms)= 0.056 (i)
TIME TO PEAK (hrs)= 8.083
RUNOFF VOLUME (mm)= 59.748
TOTAL RAINFALL (mm)= 101.551
RUNOFF COEFFICIENT = 0.588

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

CALIB	
STANDHYD (7749)	Area (ha)= 12.04
ID= 1 DT= 5.0 min	Total Imp(%)= 99.00 Dir. Conn.(%)= 99.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	11.92	0.12
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	283.31	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	0.22	6.083	1.58	12.083	1.14	18.08	0.35
0.167	0.22	6.167	1.58	12.167	1.14	18.17	0.35
0.250	0.22	6.250	1.58	12.250	1.14	18.25	0.35
0.333	0.22	6.333	2.00	12.333	1.05	18.33	0.34
0.417	0.22	6.417	2.00	12.417	1.05	18.42	0.34
0.500	0.22	6.500	2.00	12.500	1.05	18.50	0.34
0.583	0.23	6.583	2.65	12.583	0.98	18.58	0.33
0.667	0.23	6.667	2.65	12.667	0.98	18.67	0.33
0.750	0.23	6.750	2.65	12.750	0.98	18.75	0.33
0.833	0.24	6.833	3.77	12.833	0.91	18.83	0.32
0.917	0.24	6.917	3.77	12.917	0.91	18.92	0.32
1.000	0.24	7.000	3.77	13.000	0.91	19.00	0.32
1.083	0.25	7.083	6.01	13.083	0.85	19.08	0.31
1.167	0.25	7.167	6.01	13.167	0.85	19.17	0.31
1.250	0.25	7.250	6.01	13.250	0.85	19.25	0.31
1.333	0.27	7.333	11.82	13.333	0.80	19.33	0.31
1.417	0.27	7.417	11.82	13.417	0.80	19.42	0.31
1.500	0.27	7.500	11.82	13.500	0.80	19.50	0.31
1.583	0.28	7.583	39.93	13.583	0.75	19.58	0.30
1.667	0.28	7.667	39.93	13.667	0.75	19.67	0.30
1.750	0.28	7.750	39.94	13.750	0.75	19.75	0.30
1.833	0.29	7.833	166.89	13.833	0.71	19.83	0.29
1.917	0.29	7.917	166.89	13.917	0.71	19.92	0.29
2.000	0.29	8.000	166.88	14.000	0.71	20.00	0.29
2.083	0.31	8.083	55.37	14.083	0.67	20.08	0.28
2.167	0.31	8.167	55.37	14.167	0.67	20.17	0.28
2.250	0.31	8.250	55.37	14.250	0.67	20.25	0.28
2.333	0.33	8.333	24.55	14.333	0.64	20.33	0.28
2.417	0.33	8.417	24.55	14.417	0.64	20.42	0.28
2.500	0.33	8.500	24.55	14.500	0.64	20.50	0.28
2.583	0.35	8.583	14.23	14.583	0.61	20.58	0.27
2.667	0.35	8.667	14.23	14.667	0.61	20.67	0.27
2.750	0.35	8.750	14.23	14.750	0.61	20.75	0.27
2.833	0.37	8.833	9.45	14.833	0.58	20.83	0.26
2.917	0.37	8.917	9.45	14.917	0.58	20.92	0.26
3.000	0.37	9.000	9.45	15.000	0.58	21.00	0.26
3.083	0.39	9.083	6.83	15.083	0.55	21.08	0.26
3.167	0.39	9.167	6.83	15.167	0.55	21.17	0.26
3.250	0.39	9.250	6.83	15.250	0.55	21.25	0.26
3.333	0.42	9.333	5.22	15.333	0.53	21.33	0.25
3.417	0.42	9.417	5.22	15.417	0.53	21.42	0.25
3.500	0.42	9.500	5.22	15.500	0.53	21.50	0.25
3.583	0.46	9.583	4.15	15.583	0.51	21.58	0.25
3.667	0.46	9.667	4.15	15.667	0.51	21.67	0.25
3.750	0.46	9.750	4.15	15.750	0.51	21.75	0.25
3.833	0.49	9.833	3.41	15.833	0.48	21.83	0.24
3.917	0.49	9.917	3.41	15.917	0.48	21.92	0.24
4.000	0.49	10.000	3.41	16.000	0.48	22.00	0.24
4.083	0.54	10.083	2.86	16.083	0.47	22.08	0.24
4.167	0.54	10.167	2.86	16.167	0.47	22.17	0.24
4.250	0.54	10.250	2.86	16.250	0.47	22.25	0.24
4.333	0.59	10.333	2.45	16.333	0.45	22.33	0.23
4.417	0.59	10.417	2.45	16.417	0.45	22.42	0.23
4.500	0.59	10.500	2.45	16.500	0.45	22.50	0.23
4.583	0.65	10.583	2.13	16.583	0.43	22.58	0.23
4.667	0.65	10.667	2.13	16.667	0.43	22.67	0.23
4.750	0.65	10.750	2.13	16.750	0.43	22.75	0.23
4.833	0.73	10.833	1.88	16.833	0.42	22.83	0.22
4.917	0.73	10.917	1.88	16.917	0.42	22.92	0.22
5.000	0.73	11.000	1.88	17.000	0.42	23.00	0.22
5.083	0.82	11.083	1.67	17.083	0.40	23.08	0.22
5.167	0.82	11.167	1.67	17.167	0.40	23.17	0.22
5.250	0.82	11.250	1.67	17.250	0.40	23.25	0.22
5.333	0.94	11.333	1.50	17.333	0.39	23.33	0.21
5.417	0.94	11.417	1.50	17.417	0.39	23.42	0.21
5.500	0.94	11.500	1.50	17.500	0.39	23.50	0.21
5.583	1.09	11.583	1.36	17.583	0.38	23.58	0.21
5.667	1.09	11.667	1.36	17.667	0.38	23.67	0.21
5.750	1.09	11.750	1.36	17.750	0.38	23.75	0.21
5.833	1.30	11.833	1.24	17.833	0.36	23.83	0.21
5.917	1.30	11.917	1.24	17.917	0.36	23.92	0.21
6.000	1.30	12.000	1.24	18.000	0.36	24.00	0.21

				TOTALS
Max.Eff.Inten.(mm/hr)=		166.89	109.20	
over (min)		5.00	5.00	
Storage Coeff. (min)=		3.89 (ii)	4.80 (ii)	
Unit Hyd. Tpeak (min)=		5.00	5.00	
Unit Hyd. peak (cms)=		0.25	0.22	
PEAK FLOW	(cms)=	5.44	0.04	5.472 (iii)
TIME TO PEAK	(hrs)=	8.00	8.00	8.00
RUNOFF VOLUME	(mm)=	100.55	59.71	100.14
TOTAL RAINFALL	(mm)=	101.55	101.55	101.55
RUNOFF COEFFICIENT	=	0.99	0.59	0.99

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 81.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

RESERVOIR(7699)	OVERFLOW IS OFF			
IN= 2---> OUT= 1				
DT= 5.0 min	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
	0.0000	0.0000	0.3525	0.3271
	0.1763	0.0854	0.5288	0.7985

		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (	7749)	12.040	5.472	8.00	100.14
OUTFLOW: ID= 1 (	7699)	12.040	0.522	8.67	100.13

PEAK FLOW REDUCTION [Qout/Qin](%)= 9.54

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TIME SHIFT OF PEAK FLOW (min)= 40.00
MAXIMUM STORAGE USED (ha.m.)= 0.7804

CALIB	
STANDHYD (7750)	Area (ha)= 15.90
ID= 1 DT= 5.0 min	Total Imp(%)= 87.00 Dir. Conn.(%)= 87.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	13.83	2.07
Dep. Storage	(mm)=	2.00	5.00
Average Slope	(%)=	2.00	2.00
Length	(m)=	325.58	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	0.22	6.083	1.58	12.083	1.14	18.08	0.35
0.167	0.22	6.167	1.58	12.167	1.14	18.17	0.35
0.250	0.22	6.250	1.58	12.250	1.14	18.25	0.35
0.333	0.22	6.333	2.00	12.333	1.05	18.33	0.34
0.417	0.22	6.417	2.00	12.417	1.05	18.42	0.34
0.500	0.22	6.500	2.00	12.500	1.05	18.50	0.34
0.583	0.23	6.583	2.65	12.583	0.98	18.58	0.33
0.667	0.23	6.667	2.65	12.667	0.98	18.67	0.33
0.750	0.23	6.750	2.65	12.750	0.98	18.75	0.33
0.833	0.24	6.833	3.77	12.833	0.91	18.83	0.32
0.917	0.24	6.917	3.77	12.917	0.91	18.92	0.32
1.000	0.24	7.000	3.77	13.000	0.91	19.00	0.32
1.083	0.25	7.083	6.01	13.083	0.85	19.08	0.31
1.167	0.25	7.167	6.01	13.167	0.85	19.17	0.31
1.250	0.25	7.250	6.01	13.250	0.85	19.25	0.31
1.333	0.27	7.333	11.82	13.333	0.80	19.33	0.31
1.417	0.27	7.417	11.82	13.417	0.80	19.42	0.31
1.500	0.27	7.500	11.82	13.500	0.80	19.50	0.31
1.583	0.28	7.583	39.93	13.583	0.75	19.58	0.30
1.667	0.28	7.667	39.93	13.667	0.75	19.67	0.30
1.750	0.28	7.750	39.94	13.750	0.75	19.75	0.30
1.833	0.29	7.833	166.89	13.833	0.71	19.83	0.29
1.917	0.29	7.917	166.89	13.917	0.71	19.92	0.29
2.000	0.29	8.000	166.88	14.000	0.71	20.00	0.29
2.083	0.31	8.083	55.37	14.083	0.67	20.08	0.28
2.167	0.31	8.167	55.37	14.167	0.67	20.17	0.28
2.250	0.31	8.250	55.37	14.250	0.67	20.25	0.28
2.333	0.33	8.333	24.55	14.333	0.64	20.33	0.28
2.417	0.33	8.417	24.55	14.417	0.64	20.42	0.28
2.500	0.33	8.500	24.55	14.500	0.64	20.50	0.28
2.583	0.35	8.583	14.23	14.583	0.61	20.58	0.27
2.667	0.35	8.667	14.23	14.667	0.61	20.67	0.27
2.750	0.35	8.750	14.23	14.750	0.61	20.75	0.27
2.833	0.37	8.833	9.45	14.833	0.58	20.83	0.26
2.917	0.37	8.917	9.45	14.917	0.58	20.92	0.26
3.000	0.37	9.000	9.45	15.000	0.58	21.00	0.26
3.083	0.39	9.083	6.83	15.083	0.55	21.08	0.26
3.167	0.39	9.167	6.83	15.167	0.55	21.17	0.26
3.250	0.39	9.250	6.83	15.250	0.55	21.25	0.26
3.333	0.42	9.333	5.22	15.333	0.53	21.33	0.25
3.417	0.42	9.417	5.22	15.417	0.53	21.42	0.25
3.500	0.42	9.500	5.22	15.500	0.53	21.50	0.25
3.583	0.46	9.583	4.15	15.583	0.51	21.58	0.25
3.667	0.46	9.667	4.15	15.667	0.51	21.67	0.25
3.750	0.46	9.750	4.15	15.750	0.51	21.75	0.25
3.833	0.49	9.833	3.41	15.833	0.48	21.83	0.24
3.917	0.49	9.917	3.41	15.917	0.48	21.92	0.24
4.000	0.49	10.000	3.41	16.000	0.48	22.00	0.24
4.083	0.54	10.083	2.86	16.083	0.47	22.08	0.24
4.167	0.54	10.167	2.86	16.167	0.47	22.17	0.24
4.250	0.54	10.250	2.86	16.250	0.47	22.25	0.24
4.333	0.59	10.333	2.45	16.333	0.45	22.33	0.23
4.417	0.59	10.417	2.45	16.417	0.45	22.42	0.23
4.500	0.59	10.500	2.45	16.500	0.45	22.50	0.23
4.583	0.65	10.583	2.13	16.583	0.43	22.58	0.23
4.667	0.65	10.667	2.13	16.667	0.43	22.67	0.23
4.750	0.65	10.750	2.13	16.750	0.43	22.75	0.23
4.833	0.73	10.833	1.88	16.833	0.42	22.83	0.22
4.917	0.73	10.917	1.88	16.917	0.42	22.92	0.22
5.000	0.73	11.000	1.88	17.000	0.42	23.00	0.22
5.083	0.82	11.083	1.67	17.083	0.40	23.08	0.22
5.167	0.82	11.167	1.67	17.167	0.40	23.17	0.22
5.250	0.82	11.250	1.67	17.250	0.40	23.25	0.22
5.333	0.94	11.333	1.50	17.333	0.39	23.33	0.21
5.417	0.94	11.417	1.50	17.417	0.39	23.42	0.21
5.500	0.94	11.500	1.50	17.500	0.39	23.50	0.21
5.583	1.09	11.583	1.36	17.583	0.38	23.58	0.21
5.667	1.09	11.667	1.36	17.667	0.38	23.67	0.21
5.750	1.09	11.750	1.36	17.750	0.38	23.75	0.21
5.833	1.30	11.833	1.24	17.833	0.36	23.83	0.21
5.917	1.30	11.917	1.24	17.917	0.36	23.92	0.21
6.000	1.30	12.000	1.24	18.000	0.36	24.00	0.21

Max.Eff.Inten.(mm/hr)=	166.89	109.20		
over (min)	5.00	10.00		
Storage Coeff. (min)=	3.43 (ii)	6.12 (ii)		
Unit Hyd. Tpeak (min)=	5.00	10.00		
Unit Hyd. peak (cms)=	0.26	0.15		
				TOTALS
PEAK FLOW (cms)=	6.35	0.50		6.846 (iii)
TIME TO PEAK (hrs)=	8.00	8.08		8.00
RUNOFF VOLUME (mm)=	99.55	59.71		94.37
TOTAL RAINFALL (mm)=	101.55	101.55		101.55
RUNOFF COEFFICIENT =	0.98	0.59		0.93

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 81.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

ADD HYD (7714)				
1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (7699):	12.04	0.522	8.67	100.13
+ ID2= 2 (7750):	15.90	6.846	8.00	94.37
ID = 3 (7714):	27.94	7.263	8.00	96.85

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

RESERVOIR(7705)	OVERFLOW IS OFF			
IN= 2---> OUT= 1				
DT= 5.0 min	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
	0.0000	0.0000	0.4290	1.2223
	0.1870	0.6737	0.4990	1.3145
	0.2810	0.9444	0.5620	1.4265
	0.3430	1.0623	0.0000	0.0000

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (7714)	27.940	7.263	8.00	96.85
OUTFLOW: ID= 1 (7705)	27.940	0.562	10.42	96.82

PEAK FLOW REDUCTION [Qout/Qin](%)= 7.73
TIME SHIFT OF PEAK FLOW (min)=145.00
MAXIMUM STORAGE USED (ha.m.)= 1.4260

ADD HYD (7745)				
1 + 2 = 3	AREA	QPEAK	TPEAK	R.V.

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--------------------          (ha)     (cms)     (hrs)      (mm)
        ID1= 1 (  7705):    27.94    0.562     10.42     96.82
      + ID2= 2 (  7759):     0.27    0.056      8.08     59.75
        ==================================================
        ID = 3 (  7745):    28.21    0.563     10.33     96.47

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
------------------------------------------------------------------------------
--------------------
| CALIB            |
| STANDHYD (  7755)|   Area    (ha)=  11.71
|ID= 1 DT= 5.0 min |   Total Imp(%)=  95.00   Dir. Conn.(%)=  95.00
--------------------
                          IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=      11.12          0.59
     Dep. Storage     (mm)=       2.00          5.00
     Average Slope     (%)=       2.00          2.00
     Length            (m)=     279.40         40.00
     Mannings n           =      0.013         0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.
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---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	0.22	6.083	1.58	12.083	1.14	18.08	0.35
0.167	0.22	6.167	1.58	12.167	1.14	18.17	0.35
0.250	0.22	6.250	1.58	12.250	1.14	18.25	0.35
0.333	0.22	6.333	2.00	12.333	1.05	18.33	0.34
0.417	0.22	6.417	2.00	12.417	1.05	18.42	0.34
0.500	0.22	6.500	2.00	12.500	1.05	18.50	0.34
0.583	0.23	6.583	2.65	12.583	0.98	18.58	0.33
0.667	0.23	6.667	2.65	12.667	0.98	18.67	0.33
0.750	0.23	6.750	2.65	12.750	0.98	18.75	0.33
0.833	0.24	6.833	3.77	12.833	0.91	18.83	0.32
0.917	0.24	6.917	3.77	12.917	0.91	18.92	0.32
1.000	0.24	7.000	3.77	13.000	0.91	19.00	0.32
1.083	0.25	7.083	6.01	13.083	0.85	19.08	0.31
1.167	0.25	7.167	6.01	13.167	0.85	19.17	0.31
1.250	0.25	7.250	6.01	13.250	0.85	19.25	0.31
1.333	0.27	7.333	11.82	13.333	0.80	19.33	0.31
1.417	0.27	7.417	11.82	13.417	0.80	19.42	0.31
1.500	0.27	7.500	11.82	13.500	0.80	19.50	0.31
1.583	0.28	7.583	39.93	13.583	0.75	19.58	0.30
1.667	0.28	7.667	39.93	13.667	0.75	19.67	0.30
1.750	0.28	7.750	39.94	13.750	0.75	19.75	0.30
1.833	0.29	7.833	166.89	13.833	0.71	19.83	0.29
1.917	0.29	7.917	166.89	13.917	0.71	19.92	0.29
2.000	0.29	8.000	166.88	14.000	0.71	20.00	0.29
2.083	0.31	8.083	55.37	14.083	0.67	20.08	0.28
2.167	0.31	8.167	55.37	14.167	0.67	20.17	0.28
2.250	0.31	8.250	55.37	14.250	0.67	20.25	0.28
2.333	0.33	8.333	24.55	14.333	0.64	20.33	0.28
2.417	0.33	8.417	24.55	14.417	0.64	20.42	0.28
2.500	0.33	8.500	24.55	14.500	0.64	20.50	0.28
2.583	0.35	8.583	14.23	14.583	0.61	20.58	0.27
2.667	0.35	8.667	14.23	14.667	0.61	20.67	0.27
2.750	0.35	8.750	14.23	14.750	0.61	20.75	0.27
2.833	0.37	8.833	9.45	14.833	0.58	20.83	0.26
2.917	0.37	8.917	9.45	14.917	0.58	20.92	0.26
3.000	0.37	9.000	9.45	15.000	0.58	21.00	0.26
3.083	0.39	9.083	6.83	15.083	0.55	21.08	0.26
3.167	0.39	9.167	6.83	15.167	0.55	21.17	0.26
3.250	0.39	9.250	6.83	15.250	0.55	21.25	0.26
3.333	0.42	9.333	5.22	15.333	0.53	21.33	0.25
3.417	0.42	9.417	5.22	15.417	0.53	21.42	0.25
3.500	0.42	9.500	5.22	15.500	0.53	21.50	0.25
3.583	0.46	9.583	4.15	15.583	0.51	21.58	0.25
3.667	0.46	9.667	4.15	15.667	0.51	21.67	0.25
3.750	0.46	9.750	4.15	15.750	0.51	21.75	0.25
3.833	0.49	9.833	3.41	15.833	0.48	21.83	0.24
3.917	0.49	9.917	3.41	15.917	0.48	21.92	0.24
4.000	0.49	10.000	3.41	16.000	0.48	22.00	0.24
4.083	0.54	10.083	2.86	16.083	0.47	22.08	0.24
4.167	0.54	10.167	2.86	16.167	0.47	22.17	0.24
4.250	0.54	10.250	2.86	16.250	0.47	22.25	0.24
4.333	0.59	10.333	2.45	16.333	0.45	22.33	0.23
4.417	0.59	10.417	2.45	16.417	0.45	22.42	0.23
4.500	0.59	10.500	2.45	16.500	0.45	22.50	0.23
4.583	0.65	10.583	2.13	16.583	0.43	22.58	0.23
4.667	0.65	10.667	2.13	16.667	0.43	22.67	0.23
4.750	0.65	10.750	2.13	16.750	0.43	22.75	0.23
4.833	0.73	10.833	1.88	16.833	0.42	22.83	0.22
4.917	0.73	10.917	1.88	16.917	0.42	22.92	0.22
5.000	0.73	11.000	1.88	17.000	0.42	23.00	0.22
5.083	0.82	11.083	1.67	17.083	0.40	23.08	0.22
5.167	0.82	11.167	1.67	17.167	0.40	23.17	0.22
5.250	0.82	11.250	1.67	17.250	0.40	23.25	0.22
5.333	0.94	11.333	1.50	17.333	0.39	23.33	0.21
5.417	0.94	11.417	1.50	17.417	0.39	23.42	0.21
5.500	0.94	11.500	1.50	17.500	0.39	23.50	0.21
5.583	1.09	11.583	1.36	17.583	0.38	23.58	0.21
5.667	1.09	11.667	1.36	17.667	0.38	23.67	0.21
5.750	1.09	11.750	1.36	17.750	0.38	23.75	0.21
5.833	1.30	11.833	1.24	17.833	0.36	23.83	0.21
5.917	1.30	11.917	1.24	17.917	0.36	23.92	0.21
6.000	1.30	12.000	1.24	18.000	0.36	24.00	0.21

```
     Max.Eff.Inten.(mm/hr)=     166.89       109.20
               over (min)         5.00         5.00
     Storage Coeff.  (min)=       3.13 (ii)    4.90 (ii)
     Unit Hyd. Tpeak (min)=       5.00         5.00
     Unit Hyd. peak  (cms)=       0.27         0.22
                                                      *TOTALS*
     PEAK FLOW       (cms)=       5.12         0.17      5.295 (iii)
     TIME TO PEAK    (hrs)=       8.00         8.00       8.00
     RUNOFF VOLUME    (mm)=      99.55        59.71      97.56
     TOTAL RAINFALL   (mm)=     101.55       101.55     101.55
     RUNOFF COEFFICIENT   =       0.98         0.59       0.96

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN*  =  81.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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--------------------
| RESERVOIR(  7744)|     OVERFLOW IS OFF
| IN= 2---> OUT= 1 |
| DT=  5.0 min     |     OUTFLOW    STORAGE    |  OUTFLOW    STORAGE
--------------------       (cms)     (ha.m.)    |    (cms)     (ha.m.)
                           0.0000      0.0000    |    0.1320      0.7330
                           0.0560      0.3485    |    0.1530      0.8194
                           0.0850      0.5140    |    0.1740      0.9149
                           0.1050      0.6026    |    0.0000      0.0000

                                 AREA     QPEAK     TPEAK        R.V.
                                 (ha)     (cms)     (hrs)        (mm)
   INFLOW : ID= 2 (  7755)     11.710     5.295      8.00       97.56
   OUTFLOW: ID= 1 (  7744)     11.710     0.174      9.42       97.42

                    PEAK   FLOW   REDUCTION [Qout/Qin](%)=  3.29
                    TIME SHIFT OF PEAK FLOW          (min)= 85.00
                    MAXIMUM  STORAGE   USED       (ha.m.)=  0.9148

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--------------------
| ADD HYD  (  7706)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  7744):    11.71    0.174     9.42     97.42
      + ID2= 2 (  7745):    28.21    0.563    10.33     96.47
        ==================================================
        ID = 3 (  7706):    39.92    0.734    10.08     96.75

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
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CROZIER
CONSULTING ENGINEERS

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| CALIB            |
| STANDHYD (  7754)|   Area     (ha)=   1.26
|ID= 1 DT= 5.0 min |   Total Imp(%)=  91.00   Dir. Conn.(%)=  91.00
--------------------
                          IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=      1.15         0.11
     Dep. Storage     (mm)=      2.00         5.00
     Average Slope     (%)=      2.00         2.00
     Length            (m)=     91.65        40.00
     Mannings n           =     0.013        0.250

        NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.
```

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	0.22	6.083	1.58	12.083	1.14	18.08	0.35
0.167	0.22	6.167	1.58	12.167	1.14	18.17	0.35
0.250	0.22	6.250	1.58	12.250	1.14	18.25	0.35
0.333	0.22	6.333	2.00	12.333	1.05	18.33	0.34
0.417	0.22	6.417	2.00	12.417	1.05	18.42	0.34
0.500	0.22	6.500	2.00	12.500	1.05	18.50	0.34
0.583	0.23	6.583	2.65	12.583	0.98	18.58	0.33
0.667	0.23	6.667	2.65	12.667	0.98	18.67	0.33
0.750	0.23	6.750	2.65	12.750	0.98	18.75	0.33
0.833	0.24	6.833	3.77	12.833	0.91	18.83	0.32
0.917	0.24	6.917	3.77	12.917	0.91	18.92	0.32
1.000	0.24	7.000	3.77	13.000	0.91	19.00	0.32
1.083	0.25	7.083	6.01	13.083	0.85	19.08	0.31
1.167	0.25	7.167	6.01	13.167	0.85	19.17	0.31
1.250	0.25	7.250	6.01	13.250	0.85	19.25	0.31
1.333	0.27	7.333	11.82	13.333	0.80	19.33	0.31
1.417	0.27	7.417	11.82	13.417	0.80	19.42	0.31
1.500	0.27	7.500	11.82	13.500	0.80	19.50	0.31
1.583	0.28	7.583	39.93	13.583	0.75	19.58	0.30
1.667	0.28	7.667	39.93	13.667	0.75	19.67	0.30
1.750	0.28	7.750	39.94	13.750	0.75	19.75	0.30
1.833	0.29	7.833	166.89	13.833	0.71	19.83	0.29
1.917	0.29	7.917	166.89	13.917	0.71	19.92	0.29
2.000	0.29	8.000	166.88	14.000	0.71	20.00	0.29
2.083	0.31	8.083	55.37	14.083	0.67	20.08	0.28
2.167	0.31	8.167	55.37	14.167	0.67	20.17	0.28
2.250	0.31	8.250	55.37	14.250	0.67	20.25	0.28
2.333	0.33	8.333	24.55	14.333	0.64	20.33	0.28
2.417	0.33	8.417	24.55	14.417	0.64	20.42	0.28
2.500	0.33	8.500	24.55	14.500	0.64	20.50	0.28
2.583	0.35	8.583	14.23	14.583	0.61	20.58	0.27
2.667	0.35	8.667	14.23	14.667	0.61	20.67	0.27
2.750	0.35	8.750	14.23	14.750	0.61	20.75	0.27
2.833	0.37	8.833	9.45	14.833	0.58	20.83	0.26
2.917	0.37	8.917	9.45	14.917	0.58	20.92	0.26
3.000	0.37	9.000	9.45	15.000	0.58	21.00	0.26
3.083	0.39	9.083	6.83	15.083	0.55	21.08	0.26
3.167	0.39	9.167	6.83	15.167	0.55	21.17	0.26
3.250	0.39	9.250	6.83	15.250	0.55	21.25	0.26
3.333	0.42	9.333	5.22	15.333	0.53	21.33	0.25
3.417	0.42	9.417	5.22	15.417	0.53	21.42	0.25
3.500	0.42	9.500	5.22	15.500	0.53	21.50	0.25
3.583	0.46	9.583	4.15	15.583	0.51	21.58	0.25
3.667	0.46	9.667	4.15	15.667	0.51	21.67	0.25
3.750	0.46	9.750	4.15	15.750	0.51	21.75	0.25
3.833	0.49	9.833	3.41	15.833	0.48	21.83	0.24
3.917	0.49	9.917	3.41	15.917	0.48	21.92	0.24
4.000	0.49	10.000	3.41	16.000	0.48	22.00	0.24
4.083	0.54	10.083	2.86	16.083	0.47	22.08	0.24
4.167	0.54	10.167	2.86	16.167	0.47	22.17	0.24
4.250	0.54	10.250	2.86	16.250	0.47	22.25	0.24
4.333	0.59	10.333	2.45	16.333	0.45	22.33	0.23
4.417	0.59	10.417	2.45	16.417	0.45	22.42	0.23
4.500	0.59	10.500	2.45	16.500	0.45	22.50	0.23
4.583	0.65	10.583	2.13	16.583	0.43	22.58	0.23
4.667	0.65	10.667	2.13	16.667	0.43	22.67	0.23
4.750	0.65	10.750	2.13	16.750	0.43	22.75	0.23
4.833	0.73	10.833	1.88	16.833	0.42	22.83	0.22
4.917	0.73	10.917	1.88	16.917	0.42	22.92	0.22
5.000	0.73	11.000	1.88	17.000	0.42	23.00	0.22
5.083	0.82	11.083	1.67	17.083	0.40	23.08	0.22
5.167	0.82	11.167	1.67	17.167	0.40	23.17	0.22
5.250	0.82	11.250	1.67	17.250	0.40	23.25	0.22
5.333	0.94	11.333	1.50	17.333	0.39	23.33	0.21
5.417	0.94	11.417	1.50	17.417	0.39	23.42	0.21
5.500	0.94	11.500	1.50	17.500	0.39	23.50	0.21
5.583	1.09	11.583	1.36	17.583	0.38	23.58	0.21
5.667	1.09	11.667	1.36	17.667	0.38	23.67	0.21
5.750	1.09	11.750	1.36	17.750	0.38	23.75	0.21
5.833	1.30	11.833	1.24	17.833	0.36	23.83	0.21
5.917	1.30	11.917	1.24	17.917	0.36	23.92	0.21
6.000	1.30	12.000	1.24	18.000	0.36	24.00	0.21

```
     Max.Eff.Inten.(mm/hr)=     166.89       109.20
                over (min)         5.00         5.00
     Storage Coeff.  (min)=        1.60 (ii)    3.88 (ii)
     Unit Hyd. Tpeak (min)=        5.00         5.00
     Unit Hyd. peak  (cms)=        0.32         0.25
                                                      *TOTALS*
     PEAK FLOW       (cms)=        0.53         0.03          0.566 (iii)
     TIME TO PEAK    (hrs)=        8.00         8.00            8.00
     RUNOFF VOLUME    (mm)=       99.55        59.71           95.96
     TOTAL RAINFALL   (mm)=      101.55       101.55          101.55
     RUNOFF COEFFICIENT   =        0.98         0.59            0.94

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
             CN*  =  81.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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--------------------
| CALIB            |
| STANDHYD (  7761)|   Area     (ha)=   0.74
|ID= 1 DT= 5.0 min |   Total Imp(%)=  54.00   Dir. Conn.(%)=  54.00
--------------------
                          IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=      0.40         0.34
     Dep. Storage     (mm)=      1.00         5.00
     Average Slope     (%)=      1.00         2.00
     Length            (m)=     70.24        40.00
     Mannings n           =     0.013        0.250

        NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.
```

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	0.22	6.083	1.58	12.083	1.14	18.08	0.35
0.167	0.22	6.167	1.58	12.167	1.14	18.17	0.35
0.250	0.22	6.250	1.58	12.250	1.14	18.25	0.35
0.333	0.22	6.333	2.00	12.333	1.05	18.33	0.34
0.417	0.22	6.417	2.00	12.417	1.05	18.42	0.34
0.500	0.22	6.500	2.00	12.500	1.05	18.50	0.34
0.583	0.23	6.583	2.65	12.583	0.98	18.58	0.33
0.667	0.23	6.667	2.65	12.667	0.98	18.67	0.33
0.750	0.23	6.750	2.65	12.750	0.98	18.75	0.33
0.833	0.24	6.833	3.77	12.833	0.91	18.83	0.32
0.917	0.24	6.917	3.77	12.917	0.91	18.92	0.32
1.000	0.24	7.000	3.77	13.000	0.91	19.00	0.32
1.083	0.25	7.083	6.01	13.083	0.85	19.08	0.31
1.167	0.25	7.167	6.01	13.167	0.85	19.17	0.31
1.250	0.25	7.250	6.01	13.250	0.85	19.25	0.31
1.333	0.27	7.333	11.82	13.333	0.80	19.33	0.31
1.417	0.27	7.417	11.82	13.417	0.80	19.42	0.31
1.500	0.27	7.500	11.82	13.500	0.80	19.50	0.31
1.583	0.28	7.583	39.93	13.583	0.75	19.58	0.30
1.667	0.28	7.667	39.93	13.667	0.75	19.67	0.30
1.750	0.28	7.750	39.94	13.750	0.75	19.75	0.30
1.833	0.29	7.833	166.89	13.833	0.71	19.83	0.29

1.917	0.29	7.917	166.89	13.917	0.71	19.92	0.29
2.000	0.29	8.000	166.88	14.000	0.71	20.00	0.29
2.083	0.31	8.083	55.37	14.083	0.67	20.08	0.28
2.167	0.31	8.167	55.37	14.167	0.67	20.17	0.28
2.250	0.31	8.250	55.37	14.250	0.67	20.25	0.28
2.333	0.33	8.333	24.55	14.333	0.64	20.33	0.28
2.417	0.33	8.417	24.55	14.417	0.64	20.42	0.28
2.500	0.33	8.500	24.55	14.500	0.64	20.50	0.28
2.583	0.35	8.583	14.23	14.583	0.61	20.58	0.27
2.667	0.35	8.667	14.23	14.667	0.61	20.67	0.27
2.750	0.35	8.750	14.23	14.750	0.61	20.75	0.27
2.833	0.37	8.833	9.45	14.833	0.58	20.83	0.26
2.917	0.37	8.917	9.45	14.917	0.58	20.92	0.26
3.000	0.37	9.000	9.45	15.000	0.58	21.00	0.26
3.083	0.39	9.083	6.83	15.083	0.55	21.08	0.26
3.167	0.39	9.167	6.83	15.167	0.55	21.17	0.26
3.250	0.39	9.250	6.83	15.250	0.55	21.25	0.26
3.333	0.42	9.333	5.22	15.333	0.53	21.33	0.25
3.417	0.42	9.417	5.22	15.417	0.53	21.42	0.25
3.500	0.42	9.500	5.22	15.500	0.53	21.50	0.25
3.583	0.46	9.583	4.15	15.583	0.51	21.58	0.25
3.667	0.46	9.667	4.15	15.667	0.51	21.67	0.25
3.750	0.46	9.750	4.15	15.750	0.51	21.75	0.25
3.833	0.49	9.833	3.41	15.833	0.48	21.83	0.24
3.917	0.49	9.917	3.41	15.917	0.48	21.92	0.24
4.000	0.49	10.000	3.41	16.000	0.48	22.00	0.24
4.083	0.54	10.083	2.86	16.083	0.47	22.08	0.24
4.167	0.54	10.167	2.86	16.167	0.47	22.17	0.24
4.250	0.54	10.250	2.86	16.250	0.47	22.25	0.24
4.333	0.59	10.333	2.45	16.333	0.45	22.33	0.23
4.417	0.59	10.417	2.45	16.417	0.45	22.42	0.23
4.500	0.59	10.500	2.45	16.500	0.45	22.50	0.23
4.583	0.65	10.583	2.13	16.583	0.43	22.58	0.23
4.667	0.65	10.667	2.13	16.667	0.43	22.67	0.23
4.750	0.65	10.750	2.13	16.750	0.43	22.75	0.23
4.833	0.73	10.833	1.88	16.833	0.42	22.83	0.22
4.917	0.73	10.917	1.88	16.917	0.42	22.92	0.22
5.000	0.73	11.000	1.88	17.000	0.42	23.00	0.22
5.083	0.82	11.083	1.67	17.083	0.40	23.08	0.22
5.167	0.82	11.167	1.67	17.167	0.40	23.17	0.22
5.250	0.82	11.250	1.67	17.250	0.40	23.25	0.22
5.333	0.94	11.333	1.50	17.333	0.39	23.33	0.21
5.417	0.94	11.417	1.50	17.417	0.39	23.42	0.21
5.500	0.94	11.500	1.50	17.500	0.39	23.50	0.21
5.583	1.09	11.583	1.36	17.583	0.38	23.58	0.21
5.667	1.09	11.667	1.36	17.667	0.38	23.67	0.21
5.750	1.09	11.750	1.36	17.750	0.38	23.75	0.21
5.833	1.30	11.833	1.24	17.833	0.36	23.83	0.21
5.917	1.30	11.917	1.24	17.917	0.36	23.92	0.21
6.000	1.30	12.000	1.24	18.000	0.36	24.00	0.21

Max.Eff.Inten.(mm/hr)=	166.89	109.20	
over (min)	5.00	10.00	
Storage Coeff. (min)=	1.68 (ii)	8.50 (ii)	
Unit Hyd. Tpeak (min)=	5.00	10.00	
Unit Hyd. peak (cms)=	0.32	0.12	
			TOTALS
PEAK FLOW (cms)=	0.19	0.08	0.257 (iii)
TIME TO PEAK (hrs)=	8.00	8.08	8.00
RUNOFF VOLUME (mm)=	100.55	59.71	81.76
TOTAL RAINFALL (mm)=	101.55	101.55	101.55
RUNOFF COEFFICIENT =	0.99	0.59	0.81

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 81.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

ADD HYD (7746)				
1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (7706):	39.92	0.734	10.08	96.75
+ ID2= 2 (7754):	1.26	0.566	8.00	95.96
ID = 3 (7746):	41.18	0.925	8.00	96.72

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (7746)				
3 + 2 = 1	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (7746):	41.18	0.925	8.00	96.72
+ ID2= 2 (7761):	0.74	0.257	8.00	81.76
ID = 1 (7746):	41.92	1.182	8.00	96.46

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB			
STANDHYD (7756)	Area (ha)= 11.01		
ID= 1 DT= 5.0 min	Total Imp(%)= 97.00	Dir. Conn.(%)= 97.00	
	IMPERVIOUS	PERVIOUS (i)	
Surface Area (ha)=	10.68	0.33	
Dep. Storage (mm)=	2.00	5.00	
Average Slope (%)=	2.00	2.00	
Length (m)=	270.92	40.00	
Mannings n =	0.013	0.250	

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	0.22	6.083	1.58	12.083	1.14	18.08	0.35
0.167	0.22	6.167	1.58	12.167	1.14	18.17	0.35
0.250	0.22	6.250	1.58	12.250	1.14	18.25	0.35
0.333	0.22	6.333	2.00	12.333	1.05	18.33	0.34
0.417	0.22	6.417	2.00	12.417	1.05	18.42	0.34
0.500	0.22	6.500	2.00	12.500	1.05	18.50	0.34
0.583	0.23	6.583	2.65	12.583	0.98	18.58	0.33
0.667	0.23	6.667	2.65	12.667	0.98	18.67	0.33
0.750	0.23	6.750	2.65	12.750	0.98	18.75	0.33
0.833	0.24	6.833	3.77	12.833	0.91	18.83	0.32
0.917	0.24	6.917	3.77	12.917	0.91	18.92	0.32
1.000	0.24	7.000	3.77	13.000	0.91	19.00	0.32
1.083	0.25	7.083	6.01	13.083	0.85	19.08	0.31
1.167	0.25	7.167	6.01	13.167	0.85	19.17	0.31
1.250	0.25	7.250	6.01	13.250	0.85	19.25	0.31
1.333	0.27	7.333	11.82	13.333	0.80	19.33	0.31
1.417	0.27	7.417	11.82	13.417	0.80	19.42	0.31
1.500	0.27	7.500	11.82	13.500	0.80	19.50	0.31
1.583	0.28	7.583	39.93	13.583	0.75	19.58	0.30
1.667	0.28	7.667	39.93	13.667	0.75	19.67	0.30
1.750	0.28	7.750	39.94	13.750	0.75	19.75	0.30
1.833	0.29	7.833	166.89	13.833	0.71	19.83	0.29
1.917	0.29	7.917	166.89	13.917	0.71	19.92	0.29
2.000	0.29	8.000	166.88	14.000	0.71	20.00	0.29
2.083	0.31	8.083	55.37	14.083	0.67	20.08	0.28
2.167	0.31	8.167	55.37	14.167	0.67	20.17	0.28
2.250	0.31	8.250	55.37	14.250	0.67	20.25	0.28
2.333	0.33	8.333	24.55	14.333	0.64	20.33	0.28
2.417	0.33	8.417	24.55	14.417	0.64	20.42	0.28
2.500	0.33	8.500	24.55	14.500	0.64	20.50	0.28
2.583	0.35	8.583	14.23	14.583	0.61	20.58	0.27
2.667	0.35	8.667	14.23	14.667	0.61	20.67	0.27
2.750	0.35	8.750	14.23	14.750	0.61	20.75	0.27
2.833	0.37	8.833	9.45	14.833	0.58	20.83	0.26
2.917	0.37	8.917	9.45	14.917	0.58	20.92	0.26
3.000	0.37	9.000	9.45	15.000	0.58	21.00	0.26
3.083	0.39	9.083	6.83	15.083	0.55	21.08	0.26
3.167	0.39	9.167	6.83	15.167	0.55	21.17	0.26

3.250	0.39	9.250	6.83	15.250	0.55	21.25	0.26
3.333	0.42	9.333	5.22	15.333	0.53	21.33	0.25
3.417	0.42	9.417	5.22	15.417	0.53	21.42	0.25
3.500	0.42	9.500	5.22	15.500	0.53	21.50	0.25
3.583	0.46	9.583	4.15	15.583	0.51	21.58	0.25
3.667	0.46	9.667	4.15	15.667	0.51	21.67	0.25
3.750	0.46	9.750	4.15	15.750	0.51	21.75	0.25
3.833	0.49	9.833	3.41	15.833	0.48	21.83	0.24
3.917	0.49	9.917	3.41	15.917	0.48	21.92	0.24
4.000	0.49	10.000	3.41	16.000	0.48	22.00	0.24
4.083	0.54	10.083	2.86	16.083	0.47	22.08	0.24
4.167	0.54	10.167	2.86	16.167	0.47	22.17	0.24
4.250	0.54	10.250	2.86	16.250	0.47	22.25	0.24
4.333	0.59	10.333	2.45	16.333	0.45	22.33	0.23
4.417	0.59	10.417	2.45	16.417	0.45	22.42	0.23
4.500	0.59	10.500	2.45	16.500	0.45	22.50	0.23
4.583	0.65	10.583	2.13	16.583	0.43	22.58	0.23
4.667	0.65	10.667	2.13	16.667	0.43	22.67	0.23
4.750	0.65	10.750	2.13	16.750	0.43	22.75	0.23
4.833	0.73	10.833	1.88	16.833	0.42	22.83	0.22
4.917	0.73	10.917	1.88	16.917	0.42	22.92	0.22
5.000	0.73	11.000	1.88	17.000	0.42	23.00	0.22
5.083	0.82	11.083	1.67	17.083	0.40	23.08	0.22
5.167	0.82	11.167	1.67	17.167	0.40	23.17	0.22
5.250	0.82	11.250	1.67	17.250	0.40	23.25	0.22
5.333	0.94	11.333	1.50	17.333	0.39	23.33	0.21
5.417	0.94	11.417	1.50	17.417	0.39	23.42	0.21
5.500	0.94	11.500	1.50	17.500	0.39	23.50	0.21
5.583	1.09	11.583	1.36	17.583	0.38	23.58	0.21
5.667	1.09	11.667	1.36	17.667	0.38	23.67	0.21
5.750	1.09	11.750	1.36	17.750	0.38	23.75	0.21
5.833	1.30	11.833	1.24	17.833	0.36	23.83	0.21
5.917	1.30	11.917	1.24	17.917	0.36	23.92	0.21
6.000	1.30	12.000	1.24	18.000	0.36	24.00	0.21

Max.Eff.Inten.(mm/hr)=	166.89	109.20	
over (min)	5.00	5.00	
Storage Coeff. (min)=	3.07 (ii)	4.51 (ii)	
Unit Hyd. Tpeak (min)=	5.00	5.00	
Unit Hyd. peak (cms)=	0.27	0.23	
			TOTALS
PEAK FLOW (cms)=	4.92	0.10	5.020 (iii)
TIME TO PEAK (hrs)=	8.00	8.00	8.00
RUNOFF VOLUME (mm)=	99.55	59.71	98.36
TOTAL RAINFALL (mm)=	101.55	101.55	101.55
RUNOFF COEFFICIENT =	0.98	0.59	0.97

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 81.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

RESERVOIR(7593)	OVERFLOW IS OFF			
IN= 2---> OUT= 1				
DT= 5.0 min	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
	0.0000	0.0000	0.1900	0.6613
	0.0800	0.3153	0.2210	0.7403
	0.1220	0.4616	0.2500	0.8272
	0.1510	0.5436	0.0000	0.0000

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (7756)	11.010	5.020	8.00	98.36
OUTFLOW: ID= 1 (7593)	11.010	0.250	9.08	98.26

PEAK FLOW REDUCTION [Qout/Qin](%)= 4.98
TIME SHIFT OF PEAK FLOW (min)= 65.00
MAXIMUM STORAGE USED (ha.m.)= 0.8272

CALIB		
STANDHYD (7757)	Area (ha)= 10.62	
ID= 1 DT= 5.0 min	Total Imp(%)= 90.00	Dir. Conn.(%)= 90.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	9.56	1.06
Dep. Storage	(mm)=	2.00	5.00
Average Slope	(%)=	2.00	2.00
Length	(m)=	266.08	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	0.22	6.083	1.58	12.083	1.14	18.08	0.35
0.167	0.22	6.167	1.58	12.167	1.14	18.17	0.35
0.250	0.22	6.250	1.58	12.250	1.14	18.25	0.35
0.333	0.22	6.333	2.00	12.333	1.05	18.33	0.34
0.417	0.22	6.417	2.00	12.417	1.05	18.42	0.34
0.500	0.22	6.500	2.00	12.500	1.05	18.50	0.34
0.583	0.23	6.583	2.65	12.583	0.98	18.58	0.33
0.667	0.23	6.667	2.65	12.667	0.98	18.67	0.33
0.750	0.23	6.750	2.65	12.750	0.98	18.75	0.33
0.833	0.24	6.833	3.77	12.833	0.91	18.83	0.32
0.917	0.24	6.917	3.77	12.917	0.91	18.92	0.32
1.000	0.24	7.000	3.77	13.000	0.91	19.00	0.32
1.083	0.25	7.083	6.01	13.083	0.85	19.08	0.31
1.167	0.25	7.167	6.01	13.167	0.85	19.17	0.31
1.250	0.25	7.250	6.01	13.250	0.85	19.25	0.31
1.333	0.27	7.333	11.82	13.333	0.80	19.33	0.31
1.417	0.27	7.417	11.82	13.417	0.80	19.42	0.31
1.500	0.27	7.500	11.82	13.500	0.80	19.50	0.31
1.583	0.28	7.583	39.93	13.583	0.75	19.58	0.30
1.667	0.28	7.667	39.93	13.667	0.75	19.67	0.30
1.750	0.28	7.750	39.94	13.750	0.75	19.75	0.30
1.833	0.29	7.833	166.89	13.833	0.71	19.83	0.29
1.917	0.29	7.917	166.89	13.917	0.71	19.92	0.29
2.000	0.29	8.000	166.88	14.000	0.71	20.00	0.29
2.083	0.31	8.083	55.37	14.083	0.67	20.08	0.28
2.167	0.31	8.167	55.37	14.167	0.67	20.17	0.28
2.250	0.31	8.250	55.37	14.250	0.67	20.25	0.28
2.333	0.33	8.333	24.55	14.333	0.64	20.33	0.28
2.417	0.33	8.417	24.55	14.417	0.64	20.42	0.28
2.500	0.33	8.500	24.55	14.500	0.64	20.50	0.28
2.583	0.35	8.583	14.23	14.583	0.61	20.58	0.27
2.667	0.35	8.667	14.23	14.667	0.61	20.67	0.27
2.750	0.35	8.750	14.23	14.750	0.61	20.75	0.27
2.833	0.37	8.833	9.45	14.833	0.58	20.83	0.26
2.917	0.37	8.917	9.45	14.917	0.58	20.92	0.26
3.000	0.37	9.000	9.45	15.000	0.58	21.00	0.26
3.083	0.39	9.083	6.83	15.083	0.55	21.08	0.26
3.167	0.39	9.167	6.83	15.167	0.55	21.17	0.26
3.250	0.39	9.250	6.83	15.250	0.55	21.25	0.26
3.333	0.42	9.333	5.22	15.333	0.53	21.33	0.25
3.417	0.42	9.417	5.22	15.417	0.53	21.42	0.25
3.500	0.42	9.500	5.22	15.500	0.53	21.50	0.25
3.583	0.46	9.583	4.15	15.583	0.51	21.58	0.25
3.667	0.46	9.667	4.15	15.667	0.51	21.67	0.25
3.750	0.46	9.750	4.15	15.750	0.51	21.75	0.25
3.833	0.49	9.833	3.41	15.833	0.48	21.83	0.24
3.917	0.49	9.917	3.41	15.917	0.48	21.92	0.24
4.000	0.49	10.000	3.41	16.000	0.48	22.00	0.24
4.083	0.54	10.083	2.86	16.083	0.47	22.08	0.24
4.167	0.54	10.167	2.86	16.167	0.47	22.17	0.24
4.250	0.54	10.250	2.86	16.250	0.47	22.25	0.24
4.333	0.59	10.333	2.45	16.333	0.45	22.33	0.23
4.417	0.59	10.417	2.45	16.417	0.45	22.42	0.23
4.500	0.59	10.500	2.45	16.500	0.45	22.50	0.23
4.583	0.65	10.583	2.13	16.583	0.43	22.58	0.23
4.667	0.65	10.667	2.13	16.667	0.43	22.67	0.23
4.750	0.65	10.750	2.13	16.750	0.43	22.75	0.23
4.833	0.73	10.833	1.88	16.833	0.42	22.83	0.22

4.917	0.73	10.917	1.88	16.917	0.42	22.92	0.22
5.000	0.73	11.000	1.88	17.000	0.42	23.00	0.22
5.083	0.82	11.083	1.67	17.083	0.40	23.08	0.22
5.167	0.82	11.167	1.67	17.167	0.40	23.17	0.22
5.250	0.82	11.250	1.67	17.250	0.40	23.25	0.22
5.333	0.94	11.333	1.50	17.333	0.39	23.33	0.21
5.417	0.94	11.417	1.50	17.417	0.39	23.42	0.21
5.500	0.94	11.500	1.50	17.500	0.39	23.50	0.21
5.583	1.09	11.583	1.36	17.583	0.38	23.58	0.21
5.667	1.09	11.667	1.36	17.667	0.38	23.67	0.21
5.750	1.09	11.750	1.36	17.750	0.38	23.75	0.21
5.833	1.30	11.833	1.24	17.833	0.36	23.83	0.21
5.917	1.30	11.917	1.24	17.917	0.36	23.92	0.21
6.000	1.30	12.000	1.24	18.000	0.36	24.00	0.21

Max.Eff.Inten.(mm/hr)=	166.89	109.20	
over (min)	5.00	10.00	
Storage Coeff. (min)=	3.04 (ii)	5.43 (ii)	
Unit Hyd. Tpeak (min)=	5.00	10.00	
Unit Hyd. peak (cms)=	0.27	0.16	
			TOTALS
PEAK FLOW (cms)=	4.41	0.26	4.671 (iii)
TIME TO PEAK (hrs)=	8.00	8.00	8.00
RUNOFF VOLUME (mm)=	99.55	59.71	95.57
TOTAL RAINFALL (mm)=	101.55	101.55	101.55
RUNOFF COEFFICIENT =	0.98	0.59	0.94

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 81.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

RESERVOIR(7685)	OVERFLOW IS OFF			
IN= 2---> OUT= 1				
DT= 5.0 min	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
	0.0000	0.0000	0.1970	0.6064
	0.0830	0.2840	0.2300	0.6802
	0.1270	0.4187	0.2600	0.7618
	0.1560	0.4961	0.0000	0.0000

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (7757)	10.620	4.671	8.00	95.57
OUTFLOW: ID= 1 (7685)	10.620	0.260	9.00	95.48

PEAK FLOW REDUCTION [Qout/Qin](%)= 5.56
TIME SHIFT OF PEAK FLOW (min)= 60.00
MAXIMUM STORAGE USED (ha.m.)= 0.7618

ADD HYD (7643)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3				
ID1= 1 (7593):	11.01	0.250	9.08	98.26
+ ID2= 2 (7685):	10.62	0.260	9.00	95.48
ID = 3 (7643):	21.63	0.510	9.00	96.90

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB				
STANDHYD (7758)	Area (ha)= 0.76			
ID= 1 DT= 5.0 min	Total Imp(%)= 83.00	Dir. Conn.(%)= 83.00		

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	0.63	0.13
Dep. Storage (mm)=	2.00	5.00

Average Slope (%)=	2.00	2.00
Length (m)=	71.18	40.00
Mannings n =	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	0.22	6.083	1.58	12.083	1.14	18.08	0.35
0.167	0.22	6.167	1.58	12.167	1.14	18.17	0.35
0.250	0.22	6.250	1.58	12.250	1.14	18.25	0.35
0.333	0.22	6.333	2.00	12.333	1.05	18.33	0.34
0.417	0.22	6.417	2.00	12.417	1.05	18.42	0.34
0.500	0.22	6.500	2.00	12.500	1.05	18.50	0.34
0.583	0.23	6.583	2.65	12.583	0.98	18.58	0.33
0.667	0.23	6.667	2.65	12.667	0.98	18.67	0.33
0.750	0.23	6.750	2.65	12.750	0.98	18.75	0.33
0.833	0.24	6.833	3.77	12.833	0.91	18.83	0.32
0.917	0.24	6.917	3.77	12.917	0.91	18.92	0.32
1.000	0.24	7.000	3.77	13.000	0.91	19.00	0.32
1.083	0.25	7.083	6.01	13.083	0.85	19.08	0.31
1.167	0.25	7.167	6.01	13.167	0.85	19.17	0.31
1.250	0.25	7.250	6.01	13.250	0.85	19.25	0.31
1.333	0.27	7.333	11.82	13.333	0.80	19.33	0.31
1.417	0.27	7.417	11.82	13.417	0.80	19.42	0.31
1.500	0.27	7.500	11.82	13.500	0.80	19.50	0.31
1.583	0.28	7.583	39.93	13.583	0.75	19.58	0.30
1.667	0.28	7.667	39.93	13.667	0.75	19.67	0.30
1.750	0.28	7.750	39.94	13.750	0.75	19.75	0.30
1.833	0.29	7.833	166.89	13.833	0.71	19.83	0.29
1.917	0.29	7.917	166.89	13.917	0.71	19.92	0.29
2.000	0.29	8.000	166.88	14.000	0.71	20.00	0.29
2.083	0.31	8.083	55.37	14.083	0.67	20.08	0.28
2.167	0.31	8.167	55.37	14.167	0.67	20.17	0.28
2.250	0.31	8.250	55.37	14.250	0.67	20.25	0.28
2.333	0.33	8.333	24.55	14.333	0.64	20.33	0.28
2.417	0.33	8.417	24.55	14.417	0.64	20.42	0.28
2.500	0.33	8.500	24.55	14.500	0.64	20.50	0.28
2.583	0.35	8.583	14.23	14.583	0.61	20.58	0.27
2.667	0.35	8.667	14.23	14.667	0.61	20.67	0.27
2.750	0.35	8.750	14.23	14.750	0.61	20.75	0.27
2.833	0.37	8.833	9.45	14.833	0.58	20.83	0.26
2.917	0.37	8.917	9.45	14.917	0.58	20.92	0.26
3.000	0.37	9.000	9.45	15.000	0.58	21.00	0.26
3.083	0.39	9.083	6.83	15.083	0.55	21.08	0.26
3.167	0.39	9.167	6.83	15.167	0.55	21.17	0.26
3.250	0.39	9.250	6.83	15.250	0.55	21.25	0.26
3.333	0.42	9.333	5.22	15.333	0.53	21.33	0.25
3.417	0.42	9.417	5.22	15.417	0.53	21.42	0.25
3.500	0.42	9.500	5.22	15.500	0.53	21.50	0.25
3.583	0.46	9.583	4.15	15.583	0.51	21.58	0.25
3.667	0.46	9.667	4.15	15.667	0.51	21.67	0.25
3.750	0.46	9.750	4.15	15.750	0.51	21.75	0.25
3.833	0.49	9.833	3.41	15.833	0.48	21.83	0.24
3.917	0.49	9.917	3.41	15.917	0.48	21.92	0.24
4.000	0.49	10.000	3.41	16.000	0.48	22.00	0.24
4.083	0.54	10.083	2.86	16.083	0.47	22.08	0.24
4.167	0.54	10.167	2.86	16.167	0.47	22.17	0.24
4.250	0.54	10.250	2.86	16.250	0.47	22.25	0.24
4.333	0.59	10.333	2.45	16.333	0.45	22.33	0.23
4.417	0.59	10.417	2.45	16.417	0.45	22.42	0.23
4.500	0.59	10.500	2.45	16.500	0.45	22.50	0.23
4.583	0.65	10.583	2.13	16.583	0.43	22.58	0.23
4.667	0.65	10.667	2.13	16.667	0.43	22.67	0.23
4.750	0.65	10.750	2.13	16.750	0.43	22.75	0.23
4.833	0.73	10.833	1.88	16.833	0.42	22.83	0.22
4.917	0.73	10.917	1.88	16.917	0.42	22.92	0.22
5.000	0.73	11.000	1.88	17.000	0.42	23.00	0.22
5.083	0.82	11.083	1.67	17.083	0.40	23.08	0.22
5.167	0.82	11.167	1.67	17.167	0.40	23.17	0.22
5.250	0.82	11.250	1.67	17.250	0.40	23.25	0.22
5.333	0.94	11.333	1.50	17.333	0.39	23.33	0.21
5.417	0.94	11.417	1.50	17.417	0.39	23.42	0.21
5.500	0.94	11.500	1.50	17.500	0.39	23.50	0.21

```
               5.583    1.09 |11.583    1.36 |17.583    0.38 | 23.58    0.21
               5.667    1.09 |11.667    1.36 |17.667    0.38 | 23.67    0.21
               5.750    1.09 |11.750    1.36 |17.750    0.38 | 23.75    0.21
               5.833    1.30 |11.833    1.24 |17.833    0.36 | 23.83    0.21
               5.917    1.30 |11.917    1.24 |17.917    0.36 | 23.92    0.21
               6.000    1.30 |12.000    1.24 |18.000    0.36 | 24.00    0.21

     Max.Eff.Inten.(mm/hr)=     166.89       109.20
                over (min)        5.00         5.00
     Storage Coeff.  (min)=       1.38 (ii)    4.43 (ii)
     Unit Hyd. Tpeak (min)=       5.00         5.00
     Unit Hyd. peak  (cms)=       0.33         0.23
                                                          *TOTALS*
     PEAK FLOW       (cms)=       0.29         0.04          0.331 (iii)
     TIME TO PEAK    (hrs)=       8.00         8.00           8.00
     RUNOFF VOLUME    (mm)=      99.55        59.71          92.78
     TOTAL RAINFALL   (mm)=     101.55       101.55         101.55
     RUNOFF COEFFICIENT   =       0.98         0.59           0.91

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  81.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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-------------------
| ADD HYD  (  7747)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
-------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  7643):    21.63   0.510     9.00    96.90
      + ID2= 2 (  7758):     0.76   0.331     8.00    92.78
        ================================================
        ID = 3 (  7747):    22.39   0.620     8.00    96.76

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
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       V    V   I    SSSSS  U   U    A    L              (v 6.2.2020)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M   M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
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                  *****  D E T A I L E D   O U T P U T *****


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.2\VO2\voin.dat
  Output  filename: C:\Users\mfindlay\AppData\Local\Civica\VH5\40fcb7f5-f544-4d5a-b245-
a4eb17eaad57\d65c6dab-d510-4045-adf8-2767abdb584a\sce
  Summary filename: C:\Users\mfindlay\AppData\Local\Civica\VH5\40fcb7f5-f544-4d5a-b245-
a4eb17eaad57\d65c6dab-d510-4045-adf8-2767abdb584a\sce


DATE: 06-17-2026                          TIME: 03:36:21

USER:


COMMENTS: _____________________________________________________

----------------------------------------------------------------------------------------------------------------
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  ************************************************
  ** SIMULATION : Hazel                         **
  ************************************************


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|    READ STORM    |    Filename: C:\Users\mfindlay\AppD
|                  |              ata\Local\Temp\
|                  |              7bc6389a-2ab3-4aab-ada4-07120d11d287\7f43a485
| Ptotal=212.00 mm |    Comments: Hazel
--------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.00    6.00 |  3.00   13.00 |  6.00   23.00 |  9.00   53.00
               1.00    4.00 |  4.00   17.00 |  7.00   13.00 | 10.00   38.00
               2.00    6.00 |  5.00   13.00 |  8.00   13.00 | 11.00   13.00

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| CALIB            |
| NASHYD   (  7759)|   Area     (ha)=   0.27   Curve Number    (CN)= 90.0
|ID= 1 DT= 5.0 min |   Ia       (mm)=   4.30   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.17

        NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                        ---- TRANSFORMED HYETOGRAPH ----
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.083    6.00 | 3.083   13.00 | 6.083   23.00 |  9.08   53.00
               0.167    6.00 | 3.167   13.00 | 6.167   23.00 |  9.17   53.00
               0.250    6.00 | 3.250   13.00 | 6.250   23.00 |  9.25   53.00
               0.333    6.00 | 3.333   13.00 | 6.333   23.00 |  9.33   53.00
               0.417    6.00 | 3.417   13.00 | 6.417   23.00 |  9.42   53.00
               0.500    6.00 | 3.500   13.00 | 6.500   23.00 |  9.50   53.00
               0.583    6.00 | 3.583   13.00 | 6.583   23.00 |  9.58   53.00
               0.667    6.00 | 3.667   13.00 | 6.667   23.00 |  9.67   53.00
               0.750    6.00 | 3.750   13.00 | 6.750   23.00 |  9.75   53.00
               0.833    6.00 | 3.833   13.00 | 6.833   23.00 |  9.83   53.00
               0.917    6.00 | 3.917   13.00 | 6.917   23.00 |  9.92   53.00
               1.000    6.00 | 4.000   13.00 | 7.000   23.00 | 10.00   53.00
               1.083    4.00 | 4.083   17.00 | 7.083   13.00 | 10.08   38.00
               1.167    4.00 | 4.167   17.00 | 7.167   13.00 | 10.17   38.00
               1.250    4.00 | 4.250   17.00 | 7.250   13.00 | 10.25   38.00
               1.333    4.00 | 4.333   17.00 | 7.333   13.00 | 10.33   38.00
               1.417    4.00 | 4.417   17.00 | 7.417   13.00 | 10.42   38.00
               1.500    4.00 | 4.500   17.00 | 7.500   13.00 | 10.50   38.00
               1.583    4.00 | 4.583   17.00 | 7.583   13.00 | 10.58   38.00
               1.667    4.00 | 4.667   17.00 | 7.667   13.00 | 10.67   38.00
               1.750    4.00 | 4.750   17.00 | 7.750   13.00 | 10.75   38.00
               1.833    4.00 | 4.833   17.00 | 7.833   13.00 | 10.83   38.00
               1.917    4.00 | 4.917   17.00 | 7.917   13.00 | 10.92   38.00
               2.000    4.00 | 5.000   17.00 | 8.000   13.00 | 11.00   38.00
               2.083    6.00 | 5.083   13.00 | 8.083   13.00 | 11.08   13.00
               2.167    6.00 | 5.167   13.00 | 8.167   13.00 | 11.17   13.00
               2.250    6.00 | 5.250   13.00 | 8.250   13.00 | 11.25   13.00
               2.333    6.00 | 5.333   13.00 | 8.333   13.00 | 11.33   13.00
               2.417    6.00 | 5.417   13.00 | 8.417   13.00 | 11.42   13.00
               2.500    6.00 | 5.500   13.00 | 8.500   13.00 | 11.50   13.00
               2.583    6.00 | 5.583   13.00 | 8.583   13.00 | 11.58   13.00
               2.667    6.00 | 5.667   13.00 | 8.667   13.00 | 11.67   13.00
               2.750    6.00 | 5.750   13.00 | 8.750   13.00 | 11.75   13.00
               2.833    6.00 | 5.833   13.00 | 8.833   13.00 | 11.83   13.00
               2.917    6.00 | 5.917   13.00 | 8.917   13.00 | 11.92   13.00
               3.000    6.00 | 6.000   13.00 | 9.000   13.00 | 12.00   13.00

     Unit Hyd Qpeak  (cms)=   0.061

     PEAK FLOW       (cms)=   0.039 (i)
     TIME TO PEAK    (hrs)=  10.000
     RUNOFF VOLUME    (mm)= 182.199
     TOTAL RAINFALL   (mm)= 212.000
     RUNOFF COEFFICIENT   =   0.859

     (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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--------------------
| CALIB            |
| STANDHYD (  7750)|   Area     (ha)=  15.90
|ID= 1 DT= 5.0 min |   Total Imp(%)=  87.00   Dir. Conn.(%)=  87.00
--------------------

                             IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=      13.83         2.07
     Dep. Storage     (mm)=       2.00         5.00
     Average Slope     (%)=       2.00         2.00
     Length            (m)=     325.58        40.00
     Mannings n           =      0.013        0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                        ---- TRANSFORMED HYETOGRAPH ----
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.083    6.00 | 3.083   13.00 | 6.083   23.00 |  9.08   53.00
               0.167    6.00 | 3.167   13.00 | 6.167   23.00 |  9.17   53.00
               0.250    6.00 | 3.250   13.00 | 6.250   23.00 |  9.25   53.00
               0.333    6.00 | 3.333   13.00 | 6.333   23.00 |  9.33   53.00
               0.417    6.00 | 3.417   13.00 | 6.417   23.00 |  9.42   53.00
               0.500    6.00 | 3.500   13.00 | 6.500   23.00 |  9.50   53.00
               0.583    6.00 | 3.583   13.00 | 6.583   23.00 |  9.58   53.00
               0.667    6.00 | 3.667   13.00 | 6.667   23.00 |  9.67   53.00
               0.750    6.00 | 3.750   13.00 | 6.750   23.00 |  9.75   53.00
               0.833    6.00 | 3.833   13.00 | 6.833   23.00 |  9.83   53.00
               0.917    6.00 | 3.917   13.00 | 6.917   23.00 |  9.92   53.00
               1.000    6.00 | 4.000   13.00 | 7.000   23.00 | 10.00   53.00
               1.083    4.00 | 4.083   17.00 | 7.083   13.00 | 10.08   38.00
               1.167    4.00 | 4.167   17.00 | 7.167   13.00 | 10.17   38.00
               1.250    4.00 | 4.250   17.00 | 7.250   13.00 | 10.25   38.00
```

1.333	4.00	4.333	17.00	7.333	13.00	10.33	38.00
1.417	4.00	4.417	17.00	7.417	13.00	10.42	38.00
1.500	4.00	4.500	17.00	7.500	13.00	10.50	38.00
1.583	4.00	4.583	17.00	7.583	13.00	10.58	38.00
1.667	4.00	4.667	17.00	7.667	13.00	10.67	38.00
1.750	4.00	4.750	17.00	7.750	13.00	10.75	38.00
1.833	4.00	4.833	17.00	7.833	13.00	10.83	38.00
1.917	4.00	4.917	17.00	7.917	13.00	10.92	38.00
2.000	4.00	5.000	17.00	8.000	13.00	11.00	38.00
2.083	6.00	5.083	13.00	8.083	13.00	11.08	13.00
2.167	6.00	5.167	13.00	8.167	13.00	11.17	13.00
2.250	6.00	5.250	13.00	8.250	13.00	11.25	13.00
2.333	6.00	5.333	13.00	8.333	13.00	11.33	13.00
2.417	6.00	5.417	13.00	8.417	13.00	11.42	13.00
2.500	6.00	5.500	13.00	8.500	13.00	11.50	13.00
2.583	6.00	5.583	13.00	8.583	13.00	11.58	13.00
2.667	6.00	5.667	13.00	8.667	13.00	11.67	13.00
2.750	6.00	5.750	13.00	8.750	13.00	11.75	13.00
2.833	6.00	5.833	13.00	8.833	13.00	11.83	13.00
2.917	6.00	5.917	13.00	8.917	13.00	11.92	13.00
3.000	6.00	6.000	13.00	9.000	13.00	12.00	13.00

Max.Eff.Inten.(mm/hr)=	53.00	51.93	
over (min)	5.00	10.00	
Storage Coeff. (min)=	5.43 (ii)	9.68 (ii)	
Unit Hyd. Tpeak (min)=	5.00	10.00	
Unit Hyd. peak (cms)=	0.20	0.11	
			TOTALS
PEAK FLOW (cms)=	2.04	0.30	2.333 (iii)
TIME TO PEAK (hrs)=	10.00	10.00	10.00
RUNOFF VOLUME (mm)=	210.00	184.60	206.70
TOTAL RAINFALL (mm)=	212.00	212.00	212.00
RUNOFF COEFFICIENT =	0.99	0.87	0.97

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 91.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

CALIB			
STANDHYD (7749)	Area (ha)= 12.04		
ID= 1 DT= 5.0 min	Total Imp(%)= 99.00	Dir. Conn.(%)= 99.00	
	IMPERVIOUS	PERVIOUS (i)	
Surface Area (ha)=	11.92	0.12	
Dep. Storage (mm)=	1.00	5.00	
Average Slope (%)=	1.00	2.00	
Length (m)=	283.31	40.00	
Mannings n =	0.013	0.250	

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	6.00	3.083	13.00	6.083	23.00	9.08	53.00
0.167	6.00	3.167	13.00	6.167	23.00	9.17	53.00
0.250	6.00	3.250	13.00	6.250	23.00	9.25	53.00
0.333	6.00	3.333	13.00	6.333	23.00	9.33	53.00
0.417	6.00	3.417	13.00	6.417	23.00	9.42	53.00
0.500	6.00	3.500	13.00	6.500	23.00	9.50	53.00
0.583	6.00	3.583	13.00	6.583	23.00	9.58	53.00
0.667	6.00	3.667	13.00	6.667	23.00	9.67	53.00
0.750	6.00	3.750	13.00	6.750	23.00	9.75	53.00
0.833	6.00	3.833	13.00	6.833	23.00	9.83	53.00
0.917	6.00	3.917	13.00	6.917	23.00	9.92	53.00
1.000	6.00	4.000	13.00	7.000	23.00	10.00	53.00
1.083	4.00	4.083	17.00	7.083	13.00	10.08	38.00
1.167	4.00	4.167	17.00	7.167	13.00	10.17	38.00
1.250	4.00	4.250	17.00	7.250	13.00	10.25	38.00
1.333	4.00	4.333	17.00	7.333	13.00	10.33	38.00
1.417	4.00	4.417	17.00	7.417	13.00	10.42	38.00
1.500	4.00	4.500	17.00	7.500	13.00	10.50	38.00
1.583	4.00	4.583	17.00	7.583	13.00	10.58	38.00
1.667	4.00	4.667	17.00	7.667	13.00	10.67	38.00
1.750	4.00	4.750	17.00	7.750	13.00	10.75	38.00
1.833	4.00	4.833	17.00	7.833	13.00	10.83	38.00
1.917	4.00	4.917	17.00	7.917	13.00	10.92	38.00
2.000	4.00	5.000	17.00	8.000	13.00	11.00	38.00
2.083	6.00	5.083	13.00	8.083	13.00	11.08	13.00
2.167	6.00	5.167	13.00	8.167	13.00	11.17	13.00
2.250	6.00	5.250	13.00	8.250	13.00	11.25	13.00
2.333	6.00	5.333	13.00	8.333	13.00	11.33	13.00
2.417	6.00	5.417	13.00	8.417	13.00	11.42	13.00
2.500	6.00	5.500	13.00	8.500	13.00	11.50	13.00
2.583	6.00	5.583	13.00	8.583	13.00	11.58	13.00
2.667	6.00	5.667	13.00	8.667	13.00	11.67	13.00
2.750	6.00	5.750	13.00	8.750	13.00	11.75	13.00
2.833	6.00	5.833	13.00	8.833	13.00	11.83	13.00
2.917	6.00	5.917	13.00	8.917	13.00	11.92	13.00
3.000	6.00	6.000	13.00	9.000	13.00	12.00	13.00

Max.Eff.Inten.(mm/hr)=	53.00	51.93	
over (min)	5.00	10.00	
Storage Coeff. (min)=	6.15 (ii)	7.60 (ii)	
Unit Hyd. Tpeak (min)=	5.00	10.00	
Unit Hyd. peak (cms)=	0.19	0.13	
			TOTALS
PEAK FLOW (cms)=	1.75	0.02	1.772 (iii)
TIME TO PEAK (hrs)=	10.00	10.00	10.00
RUNOFF VOLUME (mm)=	211.00	184.60	210.74
TOTAL RAINFALL (mm)=	212.00	212.00	212.00
RUNOFF COEFFICIENT =	1.00	0.87	0.99

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 91.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

ADD HYD (7714)				
1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (7749):	12.04	1.772	10.00	210.74
+ ID2= 2 (7750):	15.90	2.333	10.00	206.70
ID = 3 (7714):	27.94	4.106	10.00	208.44

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

RESERVOIR(7705)	OVERFLOW IS OFF			
IN= 2---> OUT= 1				
DT= 5.0 min	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
**** WARNING : FIRST OUTFLOW IS NOT ZERO.				
	0.5620	0.0000	2.3150	1.6440

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (7714)	27.940	4.106	10.00	208.44
OUTFLOW: ID= 1 (7705)	27.940	2.314	11.08	208.53

PEAK FLOW REDUCTION [Qout/Qin](%)= 56.36
TIME SHIFT OF PEAK FLOW (min)= 65.00
MAXIMUM STORAGE USED (ha.m.)= 1.6493

ADD HYD (7745)				
1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)

```
       ID1= 1 (  7705):    27.94   2.314    11.08   208.53
     + ID2= 2 (  7759):     0.27   0.039    10.00   182.20
       ================================================
       ID = 3 (  7745):    28.21   2.338    11.08   208.28

    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
```

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-------------------
| CALIB             |
| STANDHYD (  7755)|   Area    (ha)=  11.71
|ID= 1 DT= 5.0 min |   Total Imp(%)=  95.00   Dir. Conn.(%)=  95.00
-------------------
                          IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=      11.12         0.59
     Dep. Storage     (mm)=       2.00         5.00
     Average Slope     (%)=       2.00         2.00
     Length            (m)=     279.40        40.00
     Mannings n           =      0.013        0.250

        NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.
```

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	6.00	3.083	13.00	6.083	23.00	9.08	53.00
0.167	6.00	3.167	13.00	6.167	23.00	9.17	53.00
0.250	6.00	3.250	13.00	6.250	23.00	9.25	53.00
0.333	6.00	3.333	13.00	6.333	23.00	9.33	53.00
0.417	6.00	3.417	13.00	6.417	23.00	9.42	53.00
0.500	6.00	3.500	13.00	6.500	23.00	9.50	53.00
0.583	6.00	3.583	13.00	6.583	23.00	9.58	53.00
0.667	6.00	3.667	13.00	6.667	23.00	9.67	53.00
0.750	6.00	3.750	13.00	6.750	23.00	9.75	53.00
0.833	6.00	3.833	13.00	6.833	23.00	9.83	53.00
0.917	6.00	3.917	13.00	6.917	23.00	9.92	53.00
1.000	6.00	4.000	13.00	7.000	23.00	10.00	53.00
1.083	4.00	4.083	17.00	7.083	13.00	10.08	38.00
1.167	4.00	4.167	17.00	7.167	13.00	10.17	38.00
1.250	4.00	4.250	17.00	7.250	13.00	10.25	38.00
1.333	4.00	4.333	17.00	7.333	13.00	10.33	38.00
1.417	4.00	4.417	17.00	7.417	13.00	10.42	38.00
1.500	4.00	4.500	17.00	7.500	13.00	10.50	38.00
1.583	4.00	4.583	17.00	7.583	13.00	10.58	38.00
1.667	4.00	4.667	17.00	7.667	13.00	10.67	38.00
1.750	4.00	4.750	17.00	7.750	13.00	10.75	38.00
1.833	4.00	4.833	17.00	7.833	13.00	10.83	38.00
1.917	4.00	4.917	17.00	7.917	13.00	10.92	38.00
2.000	4.00	5.000	17.00	8.000	13.00	11.00	38.00
2.083	6.00	5.083	13.00	8.083	13.00	11.08	13.00
2.167	6.00	5.167	13.00	8.167	13.00	11.17	13.00
2.250	6.00	5.250	13.00	8.250	13.00	11.25	13.00
2.333	6.00	5.333	13.00	8.333	13.00	11.33	13.00
2.417	6.00	5.417	13.00	8.417	13.00	11.42	13.00
2.500	6.00	5.500	13.00	8.500	13.00	11.50	13.00
2.583	6.00	5.583	13.00	8.583	13.00	11.58	13.00
2.667	6.00	5.667	13.00	8.667	13.00	11.67	13.00
2.750	6.00	5.750	13.00	8.750	13.00	11.75	13.00
2.833	6.00	5.833	13.00	8.833	13.00	11.83	13.00
2.917	6.00	5.917	13.00	8.917	13.00	11.92	13.00
3.000	6.00	6.000	13.00	9.000	13.00	12.00	13.00

```
     Max.Eff.Inten.(mm/hr)=      53.00        51.93
               over (min)         5.00        10.00
     Storage Coeff.  (min)=       4.96 (ii)    7.76 (ii)
     Unit Hyd. Tpeak (min)=       5.00        10.00
     Unit Hyd. peak  (cms)=       0.22         0.13
                                                  *TOTALS*
     PEAK FLOW       (cms)=       1.64         0.08          1.722 (iii)
     TIME TO PEAK    (hrs)=      10.00        10.00         10.00
     RUNOFF VOLUME    (mm)=     210.00       184.60        208.73
     TOTAL RAINFALL   (mm)=     212.00       212.00        212.00
     RUNOFF COEFFICIENT   =       0.99         0.87          0.98

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!
```

```
        (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  91.0    Ia = Dep. Storage  (Above)
       (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
            THAN THE STORAGE COEFFICIENT.
      (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
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-------------------
| RESERVOIR(  7744)|     OVERFLOW IS OFF
| IN= 2---> OUT= 1 |
| DT=  5.0 min     |     OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
-------------------      (cms)     (ha.m.)    |   (cms)     (ha.m.)
     **** WARNING : FIRST OUTFLOW IS NOT ZERO.
                        0.1740      0.0000    |    0.6630      1.1099

                              AREA     QPEAK     TPEAK       R.V.
                              (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  7755)    11.710     1.722     10.00     208.73
   OUTFLOW: ID= 1 (  7744)    11.710     0.662     11.08     208.76

                  PEAK   FLOW   REDUCTION [Qout/Qin](%)= 38.46
                  TIME SHIFT OF PEAK FLOW          (min)= 65.00
                  MAXIMUM  STORAGE   USED       (ha.m.)=  1.1099
```

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-------------------
| ADD HYD  (  7706)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
-------------------           (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  7744):    11.71   0.662    11.08   208.76
     + ID2= 2 (  7745):    28.21   2.338    11.08   208.28
       ================================================
       ID = 3 (  7706):    39.92   3.001    11.08   208.42

    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
```

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-------------------
| CALIB             |
| STANDHYD (  7754)|   Area    (ha)=   1.26
|ID= 1 DT= 5.0 min |   Total Imp(%)=  91.00   Dir. Conn.(%)=  91.00
-------------------
                          IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       1.15         0.11
     Dep. Storage     (mm)=       2.00         5.00
     Average Slope     (%)=       2.00         2.00
     Length            (m)=      91.65        40.00
     Mannings n           =      0.013        0.250

        NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.
```

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	6.00	3.083	13.00	6.083	23.00	9.08	53.00
0.167	6.00	3.167	13.00	6.167	23.00	9.17	53.00
0.250	6.00	3.250	13.00	6.250	23.00	9.25	53.00
0.333	6.00	3.333	13.00	6.333	23.00	9.33	53.00
0.417	6.00	3.417	13.00	6.417	23.00	9.42	53.00
0.500	6.00	3.500	13.00	6.500	23.00	9.50	53.00
0.583	6.00	3.583	13.00	6.583	23.00	9.58	53.00
0.667	6.00	3.667	13.00	6.667	23.00	9.67	53.00
0.750	6.00	3.750	13.00	6.750	23.00	9.75	53.00
0.833	6.00	3.833	13.00	6.833	23.00	9.83	53.00
0.917	6.00	3.917	13.00	6.917	23.00	9.92	53.00
1.000	6.00	4.000	13.00	7.000	23.00	10.00	53.00
1.083	4.00	4.083	17.00	7.083	13.00	10.08	38.00
1.167	4.00	4.167	17.00	7.167	13.00	10.17	38.00
1.250	4.00	4.250	17.00	7.250	13.00	10.25	38.00
1.333	4.00	4.333	17.00	7.333	13.00	10.33	38.00
1.417	4.00	4.417	17.00	7.417	13.00	10.42	38.00
1.500	4.00	4.500	17.00	7.500	13.00	10.50	38.00
1.583	4.00	4.583	17.00	7.583	13.00	10.58	38.00
1.667	4.00	4.667	17.00	7.667	13.00	10.67	38.00
1.750	4.00	4.750	17.00	7.750	13.00	10.75	38.00

1.833	4.00	4.833	17.00	7.833	13.00	10.83	38.00
1.917	4.00	4.917	17.00	7.917	13.00	10.92	38.00
2.000	4.00	5.000	17.00	8.000	13.00	11.00	38.00
2.083	6.00	5.083	13.00	8.083	13.00	11.08	13.00
2.167	6.00	5.167	13.00	8.167	13.00	11.17	13.00
2.250	6.00	5.250	13.00	8.250	13.00	11.25	13.00
2.333	6.00	5.333	13.00	8.333	13.00	11.33	13.00
2.417	6.00	5.417	13.00	8.417	13.00	11.42	13.00
2.500	6.00	5.500	13.00	8.500	13.00	11.50	13.00
2.583	6.00	5.583	13.00	8.583	13.00	11.58	13.00
2.667	6.00	5.667	13.00	8.667	13.00	11.67	13.00
2.750	6.00	5.750	13.00	8.750	13.00	11.75	13.00
2.833	6.00	5.833	13.00	8.833	13.00	11.83	13.00
2.917	6.00	5.917	13.00	8.917	13.00	11.92	13.00
3.000	6.00	6.000	13.00	9.000	13.00	12.00	13.00

Max.Eff.Inten.(mm/hr)=	53.00	51.93		
over (min)	5.00	10.00		
Storage Coeff. (min)=	2.54 (ii)	6.14 (ii)		
Unit Hyd. Tpeak (min)=	5.00	10.00		
Unit Hyd. peak (cms)=	0.29	0.15		
			TOTALS	
PEAK FLOW (cms)=	0.17	0.02	0.185 (iii)	
TIME TO PEAK (hrs)=	9.67	10.00	10.00	
RUNOFF VOLUME (mm)=	210.00	184.60	207.71	
TOTAL RAINFALL (mm)=	212.00	212.00	212.00	
RUNOFF COEFFICIENT =	0.99	0.87	0.98	

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 91.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

CALIB			
STANDHYD (7761)	Area (ha)= 0.74		
ID= 1 DT= 5.0 min	Total Imp(%)= 54.00	Dir. Conn.(%)= 54.00	
	IMPERVIOUS	PERVIOUS (i)	
Surface Area (ha)=	0.40	0.34	
Dep. Storage (mm)=	1.00	5.00	
Average Slope (%)=	1.00	2.00	
Length (m)=	70.24	40.00	
Mannings n =	0.013	0.250	

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	6.00	3.083	13.00	6.083	23.00	9.08	53.00
0.167	6.00	3.167	13.00	6.167	23.00	9.17	53.00
0.250	6.00	3.250	13.00	6.250	23.00	9.25	53.00
0.333	6.00	3.333	13.00	6.333	23.00	9.33	53.00
0.417	6.00	3.417	13.00	6.417	23.00	9.42	53.00
0.500	6.00	3.500	13.00	6.500	23.00	9.50	53.00
0.583	6.00	3.583	13.00	6.583	23.00	9.58	53.00
0.667	6.00	3.667	13.00	6.667	23.00	9.67	53.00
0.750	6.00	3.750	13.00	6.750	23.00	9.75	53.00
0.833	6.00	3.833	13.00	6.833	23.00	9.83	53.00
0.917	6.00	3.917	13.00	6.917	23.00	9.92	53.00
1.000	6.00	4.000	13.00	7.000	23.00	10.00	53.00
1.083	4.00	4.083	17.00	7.083	13.00	10.08	38.00
1.167	4.00	4.167	17.00	7.167	13.00	10.17	38.00
1.250	4.00	4.250	17.00	7.250	13.00	10.25	38.00
1.333	4.00	4.333	17.00	7.333	13.00	10.33	38.00
1.417	4.00	4.417	17.00	7.417	13.00	10.42	38.00
1.500	4.00	4.500	17.00	7.500	13.00	10.50	38.00
1.583	4.00	4.583	17.00	7.583	13.00	10.58	38.00
1.667	4.00	4.667	17.00	7.667	13.00	10.67	38.00
1.750	4.00	4.750	17.00	7.750	13.00	10.75	38.00

1.833	4.00	4.833	17.00	7.833	13.00	10.83	38.00
1.917	4.00	4.917	17.00	7.917	13.00	10.92	38.00
2.000	4.00	5.000	17.00	8.000	13.00	11.00	38.00
2.083	6.00	5.083	13.00	8.083	13.00	11.08	13.00
2.167	6.00	5.167	13.00	8.167	13.00	11.17	13.00
2.250	6.00	5.250	13.00	8.250	13.00	11.25	13.00
2.333	6.00	5.333	13.00	8.333	13.00	11.33	13.00
2.417	6.00	5.417	13.00	8.417	13.00	11.42	13.00
2.500	6.00	5.500	13.00	8.500	13.00	11.50	13.00
2.583	6.00	5.583	13.00	8.583	13.00	11.58	13.00
2.667	6.00	5.667	13.00	8.667	13.00	11.67	13.00
2.750	6.00	5.750	13.00	8.750	13.00	11.75	13.00
2.833	6.00	5.833	13.00	8.833	13.00	11.83	13.00
2.917	6.00	5.917	13.00	8.917	13.00	11.92	13.00
3.000	6.00	6.000	13.00	9.000	13.00	12.00	13.00

Max.Eff.Inten.(mm/hr)=	53.00	51.93		
over (min)	5.00	15.00		
Storage Coeff. (min)=	2.66 (ii)	11.84 (ii)		
Unit Hyd. Tpeak (min)=	5.00	15.00		
Unit Hyd. peak (cms)=	0.29	0.09		
			TOTALS	
PEAK FLOW (cms)=	0.06	0.05	0.107 (iii)	
TIME TO PEAK (hrs)=	9.67	10.00	10.00	
RUNOFF VOLUME (mm)=	211.00	184.60	198.85	
TOTAL RAINFALL (mm)=	212.00	212.00	212.00	
RUNOFF COEFFICIENT =	1.00	0.87	0.94	

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 91.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

ADD HYD (7746)				
1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (7706):	39.92	3.001	11.08	208.42
+ ID2= 2 (7754):	1.26	0.185	10.00	207.71
ID = 3 (7746):	41.18	3.129	11.00	208.40

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (7746)				
3 + 2 = 1	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (7746):	41.18	3.129	11.00	208.40
+ ID2= 2 (7761):	0.74	0.107	10.00	198.85
ID = 1 (7746):	41.92	3.207	11.00	208.23

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB			
STANDHYD (7756)	Area (ha)= 11.01		
ID= 1 DT= 5.0 min	Total Imp(%)= 97.00	Dir. Conn.(%)= 97.00	
	IMPERVIOUS	PERVIOUS (i)	
Surface Area (ha)=	10.68	0.33	
Dep. Storage (mm)=	2.00	5.00	
Average Slope (%)=	2.00	2.00	
Length (m)=	270.92	40.00	
Mannings n =	0.013	0.250	

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	6.00	3.083	13.00	6.083	23.00	9.08	53.00
0.167	6.00	3.167	13.00	6.167	23.00	9.17	53.00
0.250	6.00	3.250	13.00	6.250	23.00	9.25	53.00
0.333	6.00	3.333	13.00	6.333	23.00	9.33	53.00
0.417	6.00	3.417	13.00	6.417	23.00	9.42	53.00
0.500	6.00	3.500	13.00	6.500	23.00	9.50	53.00
0.583	6.00	3.583	13.00	6.583	23.00	9.58	53.00
0.667	6.00	3.667	13.00	6.667	23.00	9.67	53.00
0.750	6.00	3.750	13.00	6.750	23.00	9.75	53.00
0.833	6.00	3.833	13.00	6.833	23.00	9.83	53.00
0.917	6.00	3.917	13.00	6.917	23.00	9.92	53.00
1.000	6.00	4.000	13.00	7.000	23.00	10.00	53.00
1.083	4.00	4.083	17.00	7.083	13.00	10.08	38.00
1.167	4.00	4.167	17.00	7.167	13.00	10.17	38.00
1.250	4.00	4.250	17.00	7.250	13.00	10.25	38.00
1.333	4.00	4.333	17.00	7.333	13.00	10.33	38.00
1.417	4.00	4.417	17.00	7.417	13.00	10.42	38.00
1.500	4.00	4.500	17.00	7.500	13.00	10.50	38.00
1.583	4.00	4.583	17.00	7.583	13.00	10.58	38.00
1.667	4.00	4.667	17.00	7.667	13.00	10.67	38.00
1.750	4.00	4.750	17.00	7.750	13.00	10.75	38.00
1.833	4.00	4.833	17.00	7.833	13.00	10.83	38.00
1.917	4.00	4.917	17.00	7.917	13.00	10.92	38.00
2.000	4.00	5.000	17.00	8.000	13.00	11.00	38.00
2.083	6.00	5.083	13.00	8.083	13.00	11.08	13.00
2.167	6.00	5.167	13.00	8.167	13.00	11.17	13.00
2.250	6.00	5.250	13.00	8.250	13.00	11.25	13.00
2.333	6.00	5.333	13.00	8.333	13.00	11.33	13.00
2.417	6.00	5.417	13.00	8.417	13.00	11.42	13.00
2.500	6.00	5.500	13.00	8.500	13.00	11.50	13.00
2.583	6.00	5.583	13.00	8.583	13.00	11.58	13.00
2.667	6.00	5.667	13.00	8.667	13.00	11.67	13.00
2.750	6.00	5.750	13.00	8.750	13.00	11.75	13.00
2.833	6.00	5.833	13.00	8.833	13.00	11.83	13.00
2.917	6.00	5.917	13.00	8.917	13.00	11.92	13.00
3.000	6.00	6.000	13.00	9.000	13.00	12.00	13.00

			TOTALS
Max.Eff.Inten.(mm/hr)=	53.00	51.93	
over (min)	5.00	10.00	
Storage Coeff. (min)=	4.86 (ii)	7.13 (ii)	
Unit Hyd. Tpeak (min)=	5.00	10.00	
Unit Hyd. peak (cms)=	0.22	0.14	
PEAK FLOW (cms)=	1.57	0.05	1.620 (iii)
TIME TO PEAK (hrs)=	10.00	10.00	10.00
RUNOFF VOLUME (mm)=	210.00	184.60	209.24
TOTAL RAINFALL (mm)=	212.00	212.00	212.00
RUNOFF COEFFICIENT =	0.99	0.87	0.99

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 91.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

CALIB	
STANDHYD (7757)	Area (ha)= 10.62
ID= 1 DT= 5.0 min	Total Imp(%)= 90.00 Dir. Conn.(%)= 90.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	9.56	1.06
Dep. Storage	(mm)=	2.00	5.00
Average Slope	(%)=	2.00	2.00
Length	(m)=	266.08	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	6.00	3.083	13.00	6.083	23.00	9.08	53.00
0.167	6.00	3.167	13.00	6.167	23.00	9.17	53.00
0.250	6.00	3.250	13.00	6.250	23.00	9.25	53.00
0.333	6.00	3.333	13.00	6.333	23.00	9.33	53.00
0.417	6.00	3.417	13.00	6.417	23.00	9.42	53.00
0.500	6.00	3.500	13.00	6.500	23.00	9.50	53.00
0.583	6.00	3.583	13.00	6.583	23.00	9.58	53.00
0.667	6.00	3.667	13.00	6.667	23.00	9.67	53.00
0.750	6.00	3.750	13.00	6.750	23.00	9.75	53.00
0.833	6.00	3.833	13.00	6.833	23.00	9.83	53.00
0.917	6.00	3.917	13.00	6.917	23.00	9.92	53.00
1.000	6.00	4.000	13.00	7.000	23.00	10.00	53.00
1.083	4.00	4.083	17.00	7.083	13.00	10.08	38.00
1.167	4.00	4.167	17.00	7.167	13.00	10.17	38.00
1.250	4.00	4.250	17.00	7.250	13.00	10.25	38.00
1.333	4.00	4.333	17.00	7.333	13.00	10.33	38.00
1.417	4.00	4.417	17.00	7.417	13.00	10.42	38.00
1.500	4.00	4.500	17.00	7.500	13.00	10.50	38.00
1.583	4.00	4.583	17.00	7.583	13.00	10.58	38.00
1.667	4.00	4.667	17.00	7.667	13.00	10.67	38.00
1.750	4.00	4.750	17.00	7.750	13.00	10.75	38.00
1.833	4.00	4.833	17.00	7.833	13.00	10.83	38.00
1.917	4.00	4.917	17.00	7.917	13.00	10.92	38.00
2.000	4.00	5.000	17.00	8.000	13.00	11.00	38.00
2.083	6.00	5.083	13.00	8.083	13.00	11.08	13.00
2.167	6.00	5.167	13.00	8.167	13.00	11.17	13.00
2.250	6.00	5.250	13.00	8.250	13.00	11.25	13.00
2.333	6.00	5.333	13.00	8.333	13.00	11.33	13.00
2.417	6.00	5.417	13.00	8.417	13.00	11.42	13.00
2.500	6.00	5.500	13.00	8.500	13.00	11.50	13.00
2.583	6.00	5.583	13.00	8.583	13.00	11.58	13.00
2.667	6.00	5.667	13.00	8.667	13.00	11.67	13.00
2.750	6.00	5.750	13.00	8.750	13.00	11.75	13.00
2.833	6.00	5.833	13.00	8.833	13.00	11.83	13.00
2.917	6.00	5.917	13.00	8.917	13.00	11.92	13.00
3.000	6.00	6.000	13.00	9.000	13.00	12.00	13.00

			TOTALS
Max.Eff.Inten.(mm/hr)=	53.00	51.93	
over (min)	5.00	10.00	
Storage Coeff. (min)=	4.81 (ii)	8.59 (ii)	
Unit Hyd. Tpeak (min)=	5.00	10.00	
Unit Hyd. peak (cms)=	0.22	0.12	
PEAK FLOW (cms)=	1.41	0.15	1.560 (iii)
TIME TO PEAK (hrs)=	10.00	10.00	10.00
RUNOFF VOLUME (mm)=	210.00	184.60	207.46
TOTAL RAINFALL (mm)=	212.00	212.00	212.00
RUNOFF COEFFICIENT =	0.99	0.87	0.98

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 91.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

ADD HYD (7643)				
1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (7756):	11.01	1.620	10.00	209.24
+ ID2= 2 (7757):	10.62	1.560	10.00	207.46
ID = 3 (7643):	21.63	3.180	10.00	208.36

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB	
STANDHYD (7758)	Area (ha)= 0.76

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|ID= 1 DT= 5.0 min |   Total Imp(%)=  83.00   Dir. Conn.(%)=  83.00
-------------------
                              IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.63         0.13
     Dep. Storage     (mm)=       2.00         5.00
     Average Slope     (%)=       2.00         2.00
     Length            (m)=      71.18        40.00
     Mannings n             =    0.013        0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                          ---- TRANSFORMED HYETOGRAPH ----
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                  hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.083    6.00 | 3.083   13.00 | 6.083   23.00 |  9.08   53.00
               0.167    6.00 | 3.167   13.00 | 6.167   23.00 |  9.17   53.00
               0.250    6.00 | 3.250   13.00 | 6.250   23.00 |  9.25   53.00
               0.333    6.00 | 3.333   13.00 | 6.333   23.00 |  9.33   53.00
               0.417    6.00 | 3.417   13.00 | 6.417   23.00 |  9.42   53.00
               0.500    6.00 | 3.500   13.00 | 6.500   23.00 |  9.50   53.00
               0.583    6.00 | 3.583   13.00 | 6.583   23.00 |  9.58   53.00
               0.667    6.00 | 3.667   13.00 | 6.667   23.00 |  9.67   53.00
               0.750    6.00 | 3.750   13.00 | 6.750   23.00 |  9.75   53.00
               0.833    6.00 | 3.833   13.00 | 6.833   23.00 |  9.83   53.00
               0.917    6.00 | 3.917   13.00 | 6.917   23.00 |  9.92   53.00
               1.000    6.00 | 4.000   13.00 | 7.000   23.00 | 10.00   53.00
               1.083    4.00 | 4.083   17.00 | 7.083   13.00 | 10.08   38.00
               1.167    4.00 | 4.167   17.00 | 7.167   13.00 | 10.17   38.00
               1.250    4.00 | 4.250   17.00 | 7.250   13.00 | 10.25   38.00
               1.333    4.00 | 4.333   17.00 | 7.333   13.00 | 10.33   38.00
               1.417    4.00 | 4.417   17.00 | 7.417   13.00 | 10.42   38.00
               1.500    4.00 | 4.500   17.00 | 7.500   13.00 | 10.50   38.00
               1.583    4.00 | 4.583   17.00 | 7.583   13.00 | 10.58   38.00
               1.667    4.00 | 4.667   17.00 | 7.667   13.00 | 10.67   38.00
               1.750    4.00 | 4.750   17.00 | 7.750   13.00 | 10.75   38.00
               1.833    4.00 | 4.833   17.00 | 7.833   13.00 | 10.83   38.00
               1.917    4.00 | 4.917   17.00 | 7.917   13.00 | 10.92   38.00
               2.000    4.00 | 5.000   17.00 | 8.000   13.00 | 11.00   38.00
               2.083    6.00 | 5.083   13.00 | 8.083   13.00 | 11.08   13.00
               2.167    6.00 | 5.167   13.00 | 8.167   13.00 | 11.17   13.00
               2.250    6.00 | 5.250   13.00 | 8.250   13.00 | 11.25   13.00
               2.333    6.00 | 5.333   13.00 | 8.333   13.00 | 11.33   13.00
               2.417    6.00 | 5.417   13.00 | 8.417   13.00 | 11.42   13.00
               2.500    6.00 | 5.500   13.00 | 8.500   13.00 | 11.50   13.00
               2.583    6.00 | 5.583   13.00 | 8.583   13.00 | 11.58   13.00
               2.667    6.00 | 5.667   13.00 | 8.667   13.00 | 11.67   13.00
               2.750    6.00 | 5.750   13.00 | 8.750   13.00 | 11.75   13.00
               2.833    6.00 | 5.833   13.00 | 8.833   13.00 | 11.83   13.00
               2.917    6.00 | 5.917   13.00 | 8.917   13.00 | 11.92   13.00
               3.000    6.00 | 6.000   13.00 | 9.000   13.00 | 12.00   13.00

     Max.Eff.Inten.(mm/hr)=      53.00        51.93
               over (min)        5.00        10.00
     Storage Coeff.  (min)=       2.18 (ii)    7.01 (ii)
     Unit Hyd. Tpeak (min)=       5.00        10.00
     Unit Hyd. peak  (cms)=       0.31         0.14
                                                      *TOTALS*
     PEAK FLOW       (cms)=       0.09         0.02         0.111 (iii)
     TIME TO PEAK    (hrs)=       9.58        10.00          10.00
     RUNOFF VOLUME    (mm)=     210.00       184.60         205.68
     TOTAL RAINFALL   (mm)=     212.00       212.00         212.00
     RUNOFF COEFFICIENT   =       0.99         0.87           0.97

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN*  =  91.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT)  SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------

-------------------
| ADD HYD  (  7747)|

|   1 +  2 =  3    |          AREA    QPEAK    TPEAK      R.V.
-------------------           (ha)    (cms)    (hrs)      (mm)
        ID1= 1 (  7643):     21.63    3.180    10.00    208.36
      + ID2= 2 (  7758):      0.76    0.111    10.00    205.68
        ==========================================================
        ID = 3 (  7747):     22.39    3.291    10.00    208.27

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------

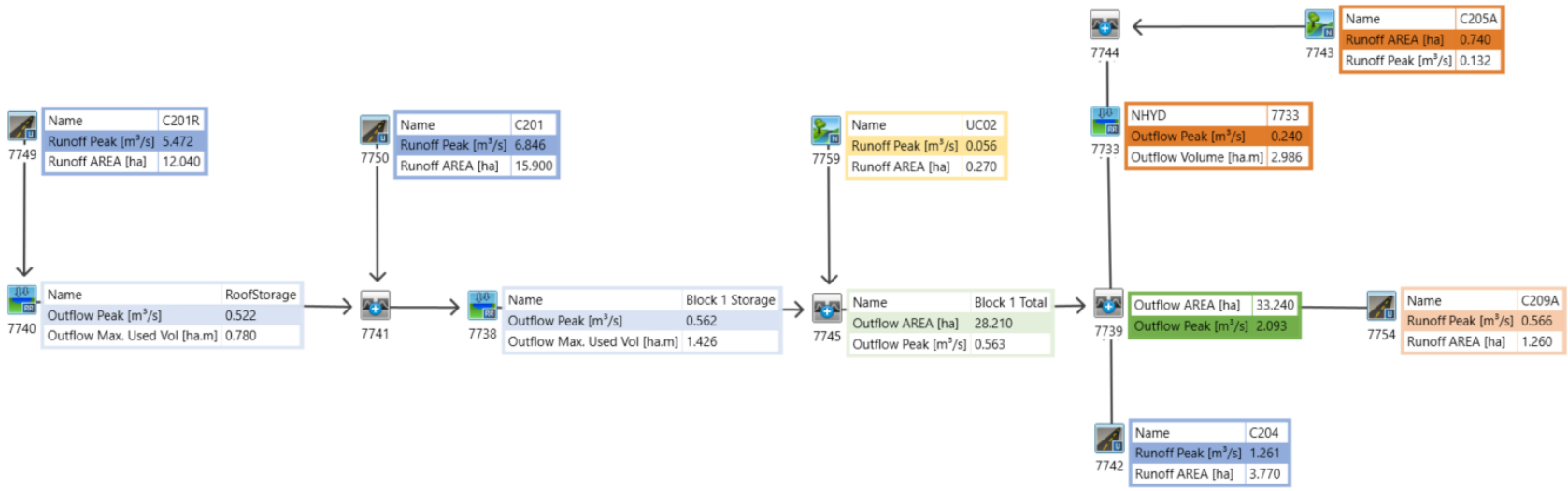
 FINISH
================================================================================================
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Project #: 0624-6777
Project Name: Humber Station

Proposed Conditions - Interim

June 2026

VO Model Schematic



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       V    V   I    SSSSS  U   U    A    L              (v 6.2.2020)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M M M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
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                  *****  D E T A I L E D   O U T P U T *****


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DATE: 06-17-2026                          TIME: 03:39:35

USER:


COMMENTS: _____________________________________________________


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  ************************************************
  ** SIMULATION : F - 100yr 24hr 15min Chicago  **
  ************************************************

--------------------
| CHICAGO STORM    |    IDF curve parameters: A=4688.000
| Ptotal=101.55 mm |                          B=  17.000
--------------------                          C=   0.962
                       used in:   INTENSITY =  A / (t + B)^C

                       Duration of storm  = 24.00 hrs
                       Storm time step    = 15.00 min
                       Time to peak ratio =  0.33

                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                  hrs   mm/hr |    hrs   mm/hr |'    hrs   mm/hr |    hrs   mm/hr
                0.00    0.22 |  6.00    1.58 | 12.00    1.14 | 18.00    0.35
                0.25    0.22 |  6.25    2.00 | 12.25    1.05 | 18.25    0.34
                0.50    0.23 |  6.50    2.65 | 12.50    0.98 | 18.50    0.33
                0.75    0.24 |  6.75    3.77 | 12.75    0.91 | 18.75    0.32
                1.00    0.25 |  7.00    6.01 | 13.00    0.85 | 19.00    0.31
                1.25    0.27 |  7.25   11.82 | 13.25    0.80 | 19.25    0.31
                1.50    0.28 |  7.50   39.93 | 13.50    0.75 | 19.50    0.30
                1.75    0.29 |  7.75  166.89 | 13.75    0.71 | 19.75    0.29
                2.00    0.31 |  8.00   55.37 | 14.00    0.67 | 20.00    0.28
                2.25    0.33 |  8.25   24.55 | 14.25    0.64 | 20.25    0.28
                2.50    0.35 |  8.50   14.23 | 14.50    0.61 | 20.50    0.27
                2.75    0.37 |  8.75    9.45 | 14.75    0.58 | 20.75    0.26
                3.00    0.39 |  9.00    6.83 | 15.00    0.55 | 21.00    0.26
                3.25    0.42 |  9.25    5.22 | 15.25    0.53 | 21.25    0.25
                3.50    0.46 |  9.50    4.15 | 15.50    0.51 | 21.50    0.25
                3.75    0.49 |  9.75    3.41 | 15.75    0.48 | 21.75    0.24
                4.00    0.54 | 10.00    2.86 | 16.00    0.47 | 22.00    0.24
                4.25    0.59 | 10.25    2.45 | 16.25    0.45 | 22.25    0.23
                4.50    0.65 | 10.50    2.13 | 16.50    0.43 | 22.50    0.23
                4.75    0.73 | 10.75    1.88 | 16.75    0.42 | 22.75    0.22
                5.00    0.82 | 11.00    1.67 | 17.00    0.40 | 23.00    0.22
                5.25    0.94 | 11.25    1.50 | 17.25    0.39 | 23.25    0.21
                5.50    1.09 | 11.50    1.36 | 17.50    0.38 | 23.50    0.21
                5.75    1.30 | 11.75    1.24 | 17.75    0.36 | 23.75    0.21

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--------------------
| CALIB            |
| NASHYD   (  7759)|   Area     (ha)=   0.27   Curve Number    (CN)= 81.0
|ID= 1 DT= 5.0 min |   Ia       (mm)=   4.70   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.17

        NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                          ---- TRANSFORMED HYETOGRAPH ----
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                  hrs   mm/hr |    hrs   mm/hr |'    hrs   mm/hr |    hrs   mm/hr
               0.083    0.22 | 6.083    1.58 |12.083    1.14 | 18.08    0.35
               0.167    0.22 | 6.167    1.58 |12.167    1.14 | 18.17    0.35
               0.250    0.22 | 6.250    1.58 |12.250    1.14 | 18.25    0.35
               0.333    0.22 | 6.333    2.00 |12.333    1.05 | 18.33    0.34
               0.417    0.22 | 6.417    2.00 |12.417    1.05 | 18.42    0.34
               0.500    0.22 | 6.500    2.00 |12.500    1.05 | 18.50    0.34
               0.583    0.23 | 6.583    2.65 |12.583    0.98 | 18.58    0.33
               0.667    0.23 | 6.667    2.65 |12.667    0.98 | 18.67    0.33
               0.750    0.23 | 6.750    2.65 |12.750    0.98 | 18.75    0.33
               0.833    0.24 | 6.833    3.77 |12.833    0.91 | 18.83    0.32
               0.917    0.24 | 6.917    3.77 |12.917    0.91 | 18.92    0.32
               1.000    0.24 | 7.000    3.77 |13.000    0.91 | 19.00    0.32
               1.083    0.25 | 7.083    6.01 |13.083    0.85 | 19.08    0.31
               1.167    0.25 | 7.167    6.01 |13.167    0.85 | 19.17    0.31
               1.250    0.25 | 7.250    6.01 |13.250    0.85 | 19.25    0.31
               1.333    0.27 | 7.333   11.82 |13.333    0.80 | 19.33    0.31
               1.417    0.27 | 7.417   11.82 |13.417    0.80 | 19.42    0.31
               1.500    0.27 | 7.500   11.82 |13.500    0.80 | 19.50    0.31
               1.583    0.28 | 7.583   39.93 |13.583    0.75 | 19.58    0.30
               1.667    0.28 | 7.667   39.93 |13.667    0.75 | 19.67    0.30
               1.750    0.28 | 7.750   39.94 |13.750    0.75 | 19.75    0.30
               1.833    0.29 | 7.833  166.89 |13.833    0.71 | 19.83    0.29
               1.917    0.29 | 7.917  166.89 |13.917    0.71 | 19.92    0.29
               2.000    0.29 | 8.000  166.88 |14.000    0.71 | 20.00    0.29
               2.083    0.31 | 8.083   55.37 |14.083    0.67 | 20.08    0.28
               2.167    0.31 | 8.167   55.37 |14.167    0.67 | 20.17    0.28
               2.250    0.31 | 8.250   55.37 |14.250    0.67 | 20.25    0.28
               2.333    0.33 | 8.333   24.55 |14.333    0.64 | 20.33    0.28
               2.417    0.33 | 8.417   24.55 |14.417    0.64 | 20.42    0.28
               2.500    0.33 | 8.500   24.55 |14.500    0.64 | 20.50    0.28
               2.583    0.35 | 8.583   14.23 |14.583    0.61 | 20.58    0.27
               2.667    0.35 | 8.667   14.23 |14.667    0.61 | 20.67    0.27
               2.750    0.35 | 8.750   14.23 |14.750    0.61 | 20.75    0.27
               2.833    0.37 | 8.833    9.45 |14.833    0.58 | 20.83    0.26
               2.917    0.37 | 8.917    9.45 |14.917    0.58 | 20.92    0.26
               3.000    0.37 | 9.000    9.45 |15.000    0.58 | 21.00    0.26
               3.083    0.39 | 9.083    6.83 |15.083    0.55 | 21.08    0.26
               3.167    0.39 | 9.167    6.83 |15.167    0.55 | 21.17    0.26
               3.250    0.39 | 9.250    6.83 |15.250    0.55 | 21.25    0.26
               3.333    0.42 | 9.333    5.22 |15.333    0.53 | 21.33    0.25
               3.417    0.42 | 9.417    5.22 |15.417    0.53 | 21.42    0.25
               3.500    0.42 | 9.500    5.22 |15.500    0.53 | 21.50    0.25
               3.583    0.46 | 9.583    4.15 |15.583    0.51 | 21.58    0.25
               3.667    0.46 | 9.667    4.15 |15.667    0.51 | 21.67    0.25
               3.750    0.46 | 9.750    4.15 |15.750    0.51 | 21.75    0.25
               3.833    0.49 | 9.833    3.41 |15.833    0.48 | 21.83    0.24
               3.917    0.49 | 9.917    3.41 |15.917    0.48 | 21.92    0.24
               4.000    0.49 |10.000    3.41 |16.000    0.48 | 22.00    0.24
               4.083    0.54 |10.083    2.86 |16.083    0.47 | 22.08    0.24
               4.167    0.54 |10.167    2.86 |16.167    0.47 | 22.17    0.24
               4.250    0.54 |10.250    2.86 |16.250    0.47 | 22.25    0.24
               4.333    0.59 |10.333    2.45 |16.333    0.45 | 22.33    0.23
               4.417    0.59 |10.417    2.45 |16.417    0.45 | 22.42    0.23
               4.500    0.59 |10.500    2.45 |16.500    0.45 | 22.50    0.23
               4.583    0.65 |10.583    2.13 |16.583    0.43 | 22.58    0.23
               4.667    0.65 |10.667    2.13 |16.667    0.43 | 22.67    0.23
               4.750    0.65 |10.750    2.13 |16.750    0.43 | 22.75    0.23
               4.833    0.73 |10.833    1.88 |16.833    0.42 | 22.83    0.22
```

4.917	0.73	10.917	1.88	16.917	0.42	22.92	0.22
5.000	0.73	11.000	1.88	17.000	0.42	23.00	0.22
5.083	0.82	11.083	1.67	17.083	0.40	23.08	0.22
5.167	0.82	11.167	1.67	17.167	0.40	23.17	0.22
5.250	0.82	11.250	1.67	17.250	0.40	23.25	0.22
5.333	0.94	11.333	1.50	17.333	0.39	23.33	0.21
5.417	0.94	11.417	1.50	17.417	0.39	23.42	0.21
5.500	0.94	11.500	1.50	17.500	0.39	23.50	0.21
5.583	1.09	11.583	1.36	17.583	0.38	23.58	0.21
5.667	1.09	11.667	1.36	17.667	0.38	23.67	0.21
5.750	1.09	11.750	1.36	17.750	0.38	23.75	0.21
5.833	1.30	11.833	1.24	17.833	0.36	23.83	0.21
5.917	1.30	11.917	1.24	17.917	0.36	23.92	0.21
6.000	1.30	12.000	1.24	18.000	0.36	24.00	0.21

Unit Hyd Qpeak (cms)= 0.061

PEAK FLOW (cms)= 0.056 (i)
TIME TO PEAK (hrs)= 8.083
RUNOFF VOLUME (mm)= 59.748
TOTAL RAINFALL (mm)= 101.551
RUNOFF COEFFICIENT = 0.588

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

CALIB	
STANDHYD (7749)	Area (ha)= 12.04
ID= 1 DT= 5.0 min	Total Imp(%)= 99.00 Dir. Conn.(%)= 99.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	11.92	0.12
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	283.31	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	0.22	6.083	1.58	12.083	1.14	18.08	0.35
0.167	0.22	6.167	1.58	12.167	1.14	18.17	0.35
0.250	0.22	6.250	1.58	12.250	1.14	18.25	0.35
0.333	0.22	6.333	2.00	12.333	1.05	18.33	0.34
0.417	0.22	6.417	2.00	12.417	1.05	18.42	0.34
0.500	0.22	6.500	2.00	12.500	1.05	18.50	0.34
0.583	0.23	6.583	2.65	12.583	0.98	18.58	0.33
0.667	0.23	6.667	2.65	12.667	0.98	18.67	0.33
0.750	0.23	6.750	2.65	12.750	0.98	18.75	0.33
0.833	0.24	6.833	3.77	12.833	0.91	18.83	0.32
0.917	0.24	6.917	3.77	12.917	0.91	18.92	0.32
1.000	0.24	7.000	3.77	13.000	0.91	19.00	0.32
1.083	0.25	7.083	6.01	13.083	0.85	19.08	0.31
1.167	0.25	7.167	6.01	13.167	0.85	19.17	0.31
1.250	0.25	7.250	6.01	13.250	0.85	19.25	0.31
1.333	0.27	7.333	11.82	13.333	0.80	19.33	0.31
1.417	0.27	7.417	11.82	13.417	0.80	19.42	0.31
1.500	0.27	7.500	11.82	13.500	0.80	19.50	0.31
1.583	0.28	7.583	39.93	13.583	0.75	19.58	0.30
1.667	0.28	7.667	39.93	13.667	0.75	19.67	0.30
1.750	0.28	7.750	39.94	13.750	0.75	19.75	0.30
1.833	0.29	7.833	166.89	13.833	0.71	19.83	0.29
1.917	0.29	7.917	166.89	13.917	0.71	19.92	0.29
2.000	0.29	8.000	166.88	14.000	0.71	20.00	0.29
2.083	0.31	8.083	55.37	14.083	0.67	20.08	0.28
2.167	0.31	8.167	55.37	14.167	0.67	20.17	0.28
2.250	0.31	8.250	55.37	14.250	0.67	20.25	0.28
2.333	0.33	8.333	24.55	14.333	0.64	20.33	0.28
2.417	0.33	8.417	24.55	14.417	0.64	20.42	0.28
2.500	0.33	8.500	24.55	14.500	0.64	20.50	0.28
2.583	0.35	8.583	14.23	14.583	0.61	20.58	0.27
2.667	0.35	8.667	14.23	14.667	0.61	20.67	0.27
2.750	0.35	8.750	14.23	14.750	0.61	20.75	0.27
2.833	0.37	8.833	9.45	14.833	0.58	20.83	0.26
2.917	0.37	8.917	9.45	14.917	0.58	20.92	0.26
3.000	0.37	9.000	9.45	15.000	0.58	21.00	0.26
3.083	0.39	9.083	6.83	15.083	0.55	21.08	0.26
3.167	0.39	9.167	6.83	15.167	0.55	21.17	0.26
3.250	0.39	9.250	6.83	15.250	0.55	21.25	0.26
3.333	0.42	9.333	5.22	15.333	0.53	21.33	0.25
3.417	0.42	9.417	5.22	15.417	0.53	21.42	0.25
3.500	0.42	9.500	5.22	15.500	0.53	21.50	0.25
3.583	0.46	9.583	4.15	15.583	0.51	21.58	0.25
3.667	0.46	9.667	4.15	15.667	0.51	21.67	0.25
3.750	0.46	9.750	4.15	15.750	0.51	21.75	0.25
3.833	0.49	9.833	3.41	15.833	0.48	21.83	0.24
3.917	0.49	9.917	3.41	15.917	0.48	21.92	0.24
4.000	0.49	10.000	3.41	16.000	0.48	22.00	0.24
4.083	0.54	10.083	2.86	16.083	0.47	22.08	0.24
4.167	0.54	10.167	2.86	16.167	0.47	22.17	0.24
4.250	0.54	10.250	2.86	16.250	0.47	22.25	0.24
4.333	0.59	10.333	2.45	16.333	0.45	22.33	0.23
4.417	0.59	10.417	2.45	16.417	0.45	22.42	0.23
4.500	0.59	10.500	2.45	16.500	0.45	22.50	0.23
4.583	0.65	10.583	2.13	16.583	0.43	22.58	0.23
4.667	0.65	10.667	2.13	16.667	0.43	22.67	0.23
4.750	0.65	10.750	2.13	16.750	0.43	22.75	0.23
4.833	0.73	10.833	1.88	16.833	0.42	22.83	0.22
4.917	0.73	10.917	1.88	16.917	0.42	22.92	0.22
5.000	0.73	11.000	1.88	17.000	0.42	23.00	0.22
5.083	0.82	11.083	1.67	17.083	0.40	23.08	0.22
5.167	0.82	11.167	1.67	17.167	0.40	23.17	0.22
5.250	0.82	11.250	1.67	17.250	0.40	23.25	0.22
5.333	0.94	11.333	1.50	17.333	0.39	23.33	0.21
5.417	0.94	11.417	1.50	17.417	0.39	23.42	0.21
5.500	0.94	11.500	1.50	17.500	0.39	23.50	0.21
5.583	1.09	11.583	1.36	17.583	0.38	23.58	0.21
5.667	1.09	11.667	1.36	17.667	0.38	23.67	0.21
5.750	1.09	11.750	1.36	17.750	0.38	23.75	0.21
5.833	1.30	11.833	1.24	17.833	0.36	23.83	0.21
5.917	1.30	11.917	1.24	17.917	0.36	23.92	0.21
6.000	1.30	12.000	1.24	18.000	0.36	24.00	0.21

				TOTALS
Max.Eff.Inten.(mm/hr)=		166.89	109.20	
over (min)		5.00	5.00	
Storage Coeff. (min)=		3.89 (ii)	4.80 (ii)	
Unit Hyd. Tpeak (min)=		5.00	5.00	
Unit Hyd. peak (cms)=		0.25	0.22	
PEAK FLOW	(cms)=	5.44	0.04	5.472 (iii)
TIME TO PEAK	(hrs)=	8.00	8.00	8.00
RUNOFF VOLUME	(mm)=	100.55	59.71	100.14
TOTAL RAINFALL	(mm)=	101.55	101.55	101.55
RUNOFF COEFFICIENT	=	0.99	0.59	0.99

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 81.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

RESERVOIR(7740)	OVERFLOW IS OFF			
IN= 2---> OUT= 1				
DT= 5.0 min	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
	0.0000	0.0000	0.3525	0.3271
	0.1763	0.0854	0.5288	0.7985

		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (7749)		12.040	5.472	8.00	100.14
OUTFLOW: ID= 1 (7740)		12.040	0.522	8.67	100.13
PEAK FLOW REDUCTION [Qout/Qin](%)=		9.54			

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TIME SHIFT OF PEAK FLOW (min)= 40.00
MAXIMUM STORAGE USED (ha.m.)= 0.7804

CALIB	
STANDHYD (7750)	Area (ha)= 15.90
ID= 1 DT= 5.0 min	Total Imp(%)= 87.00 Dir. Conn.(%)= 87.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	13.83	2.07
Dep. Storage	(mm)=	2.00	5.00
Average Slope	(%)=	2.00	2.00
Length	(m)=	325.58	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	0.22	6.083	1.58	12.083	1.14	18.08	0.35
0.167	0.22	6.167	1.58	12.167	1.14	18.17	0.35
0.250	0.22	6.250	1.58	12.250	1.14	18.25	0.35
0.333	0.22	6.333	2.00	12.333	1.05	18.33	0.34
0.417	0.22	6.417	2.00	12.417	1.05	18.42	0.34
0.500	0.22	6.500	2.00	12.500	1.05	18.50	0.34
0.583	0.23	6.583	2.65	12.583	0.98	18.58	0.33
0.667	0.23	6.667	2.65	12.667	0.98	18.67	0.33
0.750	0.23	6.750	2.65	12.750	0.98	18.75	0.33
0.833	0.24	6.833	3.77	12.833	0.91	18.83	0.32
0.917	0.24	6.917	3.77	12.917	0.91	18.92	0.32
1.000	0.24	7.000	3.77	13.000	0.91	19.00	0.32
1.083	0.25	7.083	6.01	13.083	0.85	19.08	0.31
1.167	0.25	7.167	6.01	13.167	0.85	19.17	0.31
1.250	0.25	7.250	6.01	13.250	0.85	19.25	0.31
1.333	0.27	7.333	11.82	13.333	0.80	19.33	0.31
1.417	0.27	7.417	11.82	13.417	0.80	19.42	0.31
1.500	0.27	7.500	11.82	13.500	0.80	19.50	0.31
1.583	0.28	7.583	39.93	13.583	0.75	19.58	0.30
1.667	0.28	7.667	39.93	13.667	0.75	19.67	0.30
1.750	0.28	7.750	39.94	13.750	0.75	19.75	0.30
1.833	0.29	7.833	166.89	13.833	0.71	19.83	0.29
1.917	0.29	7.917	166.89	13.917	0.71	19.92	0.29
2.000	0.29	8.000	166.88	14.000	0.71	20.00	0.29
2.083	0.31	8.083	55.37	14.083	0.67	20.08	0.28
2.167	0.31	8.167	55.37	14.167	0.67	20.17	0.28
2.250	0.31	8.250	55.37	14.250	0.67	20.25	0.28
2.333	0.33	8.333	24.55	14.333	0.64	20.33	0.28
2.417	0.33	8.417	24.55	14.417	0.64	20.42	0.28
2.500	0.33	8.500	24.55	14.500	0.64	20.50	0.28
2.583	0.35	8.583	14.23	14.583	0.61	20.58	0.27
2.667	0.35	8.667	14.23	14.667	0.61	20.67	0.27
2.750	0.35	8.750	14.23	14.750	0.61	20.75	0.27
2.833	0.37	8.833	9.45	14.833	0.58	20.83	0.26
2.917	0.37	8.917	9.45	14.917	0.58	20.92	0.26
3.000	0.37	9.000	9.45	15.000	0.58	21.00	0.26
3.083	0.39	9.083	6.83	15.083	0.55	21.08	0.26
3.167	0.39	9.167	6.83	15.167	0.55	21.17	0.26
3.250	0.39	9.250	6.83	15.250	0.55	21.25	0.26
3.333	0.42	9.333	5.22	15.333	0.53	21.33	0.25
3.417	0.42	9.417	5.22	15.417	0.53	21.42	0.25
3.500	0.42	9.500	5.22	15.500	0.53	21.50	0.25
3.583	0.46	9.583	4.15	15.583	0.51	21.58	0.25
3.667	0.46	9.667	4.15	15.667	0.51	21.67	0.25
3.750	0.46	9.750	4.15	15.750	0.51	21.75	0.25
3.833	0.49	9.833	3.41	15.833	0.48	21.83	0.24
3.917	0.49	9.917	3.41	15.917	0.48	21.92	0.24
4.000	0.49	10.000	3.41	16.000	0.48	22.00	0.24
4.083	0.54	10.083	2.86	16.083	0.47	22.08	0.24
4.167	0.54	10.167	2.86	16.167	0.47	22.17	0.24
4.250	0.54	10.250	2.86	16.250	0.47	22.25	0.24
4.333	0.59	10.333	2.45	16.333	0.45	22.33	0.23
4.417	0.59	10.417	2.45	16.417	0.45	22.42	0.23
4.500	0.59	10.500	2.45	16.500	0.45	22.50	0.23
4.583	0.65	10.583	2.13	16.583	0.43	22.58	0.23
4.667	0.65	10.667	2.13	16.667	0.43	22.67	0.23
4.750	0.65	10.750	2.13	16.750	0.43	22.75	0.23
4.833	0.73	10.833	1.88	16.833	0.42	22.83	0.22
4.917	0.73	10.917	1.88	16.917	0.42	22.92	0.22
5.000	0.73	11.000	1.88	17.000	0.42	23.00	0.22
5.083	0.82	11.083	1.67	17.083	0.40	23.08	0.22
5.167	0.82	11.167	1.67	17.167	0.40	23.17	0.22
5.250	0.82	11.250	1.67	17.250	0.40	23.25	0.22
5.333	0.94	11.333	1.50	17.333	0.39	23.33	0.21
5.417	0.94	11.417	1.50	17.417	0.39	23.42	0.21
5.500	0.94	11.500	1.50	17.500	0.39	23.50	0.21
5.583	1.09	11.583	1.36	17.583	0.38	23.58	0.21
5.667	1.09	11.667	1.36	17.667	0.38	23.67	0.21
5.750	1.09	11.750	1.36	17.750	0.38	23.75	0.21
5.833	1.30	11.833	1.24	17.833	0.36	23.83	0.21
5.917	1.30	11.917	1.24	17.917	0.36	23.92	0.21
6.000	1.30	12.000	1.24	18.000	0.36	24.00	0.21

Max.Eff.Inten.(mm/hr)=	166.89	109.20		
over (min)	5.00	10.00		
Storage Coeff. (min)=	3.43 (ii)	6.12 (ii)		
Unit Hyd. Tpeak (min)=	5.00	10.00		
Unit Hyd. peak (cms)=	0.26	0.15		
				TOTALS
PEAK FLOW (cms)=	6.35	0.50		6.846 (iii)
TIME TO PEAK (hrs)=	8.00	8.08		8.00
RUNOFF VOLUME (mm)=	99.55	59.71		94.37
TOTAL RAINFALL (mm)=	101.55	101.55		101.55
RUNOFF COEFFICIENT =	0.98	0.59		0.93

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 81.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

ADD HYD (7741)				
1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (7740):	12.04	0.522	8.67	100.13
+ ID2= 2 (7750):	15.90	6.846	8.00	94.37
ID = 3 (7741):	27.94	7.263	8.00	96.85

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

RESERVOIR(7738)	OVERFLOW IS OFF			
IN= 2---> OUT= 1				
DT= 5.0 min	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
	0.0000	0.0000	0.4290	1.2223
	0.1870	0.6737	0.4990	1.3145
	0.2810	0.9444	0.5620	1.4265
	0.3430	1.0623	0.0000	0.0000

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (7741)	27.940	7.263	8.00	96.85
OUTFLOW: ID= 1 (7738)	27.940	0.562	10.42	96.82

PEAK FLOW REDUCTION [Qout/Qin](%)= 7.73
TIME SHIFT OF PEAK FLOW (min)=145.00
MAXIMUM STORAGE USED (ha.m.)= 1.4260

ADD HYD (7745)				
1 + 2 = 3	AREA	QPEAK	TPEAK	R.V.

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--------------------          (ha)     (cms)     (hrs)      (mm)
        ID1= 1 (  7738):     27.94    0.562     10.42     96.82
      + ID2= 2 (  7759):      0.27    0.056      8.08     59.75
        ====================================================
        ID = 3 (  7745):     28.21    0.563     10.33     96.47

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
--------------------
| CALIB            |
| STANDHYD (  7754)|   Area    (ha)=   1.26
|ID= 1 DT= 5.0 min |   Total Imp(%)=  91.00   Dir. Conn.(%)=  91.00
--------------------
                          IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       1.15          0.11
     Dep. Storage     (mm)=       2.00          5.00
     Average Slope     (%)=       2.00          2.00
     Length            (m)=      91.65         40.00
     Mannings n           =      0.013         0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.
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---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	0.22	6.083	1.58	12.083	1.14	18.08	0.35
0.167	0.22	6.167	1.58	12.167	1.14	18.17	0.35
0.250	0.22	6.250	1.58	12.250	1.14	18.25	0.35
0.333	0.22	6.333	2.00	12.333	1.05	18.33	0.34
0.417	0.22	6.417	2.00	12.417	1.05	18.42	0.34
0.500	0.22	6.500	2.00	12.500	1.05	18.50	0.34
0.583	0.23	6.583	2.65	12.583	0.98	18.58	0.33
0.667	0.23	6.667	2.65	12.667	0.98	18.67	0.33
0.750	0.23	6.750	2.65	12.750	0.98	18.75	0.33
0.833	0.24	6.833	3.77	12.833	0.91	18.83	0.32
0.917	0.24	6.917	3.77	12.917	0.91	18.92	0.32
1.000	0.24	7.000	3.77	13.000	0.91	19.00	0.32
1.083	0.25	7.083	6.01	13.083	0.85	19.08	0.31
1.167	0.25	7.167	6.01	13.167	0.85	19.17	0.31
1.250	0.25	7.250	6.01	13.250	0.85	19.25	0.31
1.333	0.27	7.333	11.82	13.333	0.80	19.33	0.31
1.417	0.27	7.417	11.82	13.417	0.80	19.42	0.31
1.500	0.27	7.500	11.82	13.500	0.80	19.50	0.31
1.583	0.28	7.583	39.93	13.583	0.75	19.58	0.30
1.667	0.28	7.667	39.93	13.667	0.75	19.67	0.30
1.750	0.28	7.750	39.94	13.750	0.75	19.75	0.30
1.833	0.29	7.833	166.89	13.833	0.71	19.83	0.29
1.917	0.29	7.917	166.89	13.917	0.71	19.92	0.29
2.000	0.29	8.000	166.88	14.000	0.71	20.00	0.29
2.083	0.31	8.083	55.37	14.083	0.67	20.08	0.28
2.167	0.31	8.167	55.37	14.167	0.67	20.17	0.28
2.250	0.31	8.250	55.37	14.250	0.67	20.25	0.28
2.333	0.33	8.333	24.55	14.333	0.64	20.33	0.28
2.417	0.33	8.417	24.55	14.417	0.64	20.42	0.28
2.500	0.33	8.500	24.55	14.500	0.64	20.50	0.28
2.583	0.35	8.583	14.23	14.583	0.61	20.58	0.27
2.667	0.35	8.667	14.23	14.667	0.61	20.67	0.27
2.750	0.35	8.750	14.23	14.750	0.61	20.75	0.27
2.833	0.37	8.833	9.45	14.833	0.58	20.83	0.26
2.917	0.37	8.917	9.45	14.917	0.58	20.92	0.26
3.000	0.37	9.000	9.45	15.000	0.58	21.00	0.26
3.083	0.39	9.083	6.83	15.083	0.55	21.08	0.26
3.167	0.39	9.167	6.83	15.167	0.55	21.17	0.26
3.250	0.39	9.250	6.83	15.250	0.55	21.25	0.26
3.333	0.42	9.333	5.22	15.333	0.53	21.33	0.25
3.417	0.42	9.417	5.22	15.417	0.53	21.42	0.25
3.500	0.42	9.500	5.22	15.500	0.53	21.50	0.25
3.583	0.46	9.583	4.15	15.583	0.51	21.58	0.25
3.667	0.46	9.667	4.15	15.667	0.51	21.67	0.25
3.750	0.46	9.750	4.15	15.750	0.51	21.75	0.25
3.833	0.49	9.833	3.41	15.833	0.48	21.83	0.24
3.917	0.49	9.917	3.41	15.917	0.48	21.92	0.24
4.000	0.49	10.000	3.41	16.000	0.48	22.00	0.24
4.083	0.54	10.083	2.86	16.083	0.47	22.08	0.24
4.167	0.54	10.167	2.86	16.167	0.47	22.17	0.24
4.250	0.54	10.250	2.86	16.250	0.47	22.25	0.24
4.333	0.59	10.333	2.45	16.333	0.45	22.33	0.23
4.417	0.59	10.417	2.45	16.417	0.45	22.42	0.23
4.500	0.59	10.500	2.45	16.500	0.45	22.50	0.23
4.583	0.65	10.583	2.13	16.583	0.43	22.58	0.23
4.667	0.65	10.667	2.13	16.667	0.43	22.67	0.23
4.750	0.65	10.750	2.13	16.750	0.43	22.75	0.23
4.833	0.73	10.833	1.88	16.833	0.42	22.83	0.22
4.917	0.73	10.917	1.88	16.917	0.42	22.92	0.22
5.000	0.73	11.000	1.88	17.000	0.42	23.00	0.22
5.083	0.82	11.083	1.67	17.083	0.40	23.08	0.22
5.167	0.82	11.167	1.67	17.167	0.40	23.17	0.22
5.250	0.82	11.250	1.67	17.250	0.40	23.25	0.22
5.333	0.94	11.333	1.50	17.333	0.39	23.33	0.21
5.417	0.94	11.417	1.50	17.417	0.39	23.42	0.21
5.500	0.94	11.500	1.50	17.500	0.39	23.50	0.21
5.583	1.09	11.583	1.36	17.583	0.38	23.58	0.21
5.667	1.09	11.667	1.36	17.667	0.38	23.67	0.21
5.750	1.09	11.750	1.36	17.750	0.38	23.75	0.21
5.833	1.30	11.833	1.24	17.833	0.36	23.83	0.21
5.917	1.30	11.917	1.24	17.917	0.36	23.92	0.21
6.000	1.30	12.000	1.24	18.000	0.36	24.00	0.21

```
     Max.Eff.Inten.(mm/hr)=     166.89       109.20
               over (min)        5.00         5.00
     Storage Coeff.  (min)=      1.60 (ii)    3.88 (ii)
     Unit Hyd. Tpeak (min)=      5.00         5.00
     Unit Hyd. peak  (cms)=      0.32         0.25
                                                    *TOTALS*
     PEAK FLOW       (cms)=      0.53         0.03      0.566 (iii)
     TIME TO PEAK    (hrs)=      8.00         8.00       8.00
     RUNOFF VOLUME    (mm)=     99.55        59.71      95.96
     TOTAL RAINFALL   (mm)=    101.55       101.55     101.55
     RUNOFF COEFFICIENT   =      0.98         0.59       0.94

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN*  =  81.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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--------------------
| CALIB            |
| STANDHYD (  7742)|   Area    (ha)=   3.77
|ID= 1 DT= 5.0 min |   Total Imp(%)=  50.00   Dir. Conn.(%)=  50.00
--------------------
                          IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       1.88          1.88
     Dep. Storage     (mm)=       2.00          5.00
     Average Slope     (%)=       2.00          2.00
     Length            (m)=     158.53         40.00
     Mannings n           =      0.013         0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.
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---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	0.22	6.083	1.58	12.083	1.14	18.08	0.35
0.167	0.22	6.167	1.58	12.167	1.14	18.17	0.35
0.250	0.22	6.250	1.58	12.250	1.14	18.25	0.35
0.333	0.22	6.333	2.00	12.333	1.05	18.33	0.34
0.417	0.22	6.417	2.00	12.417	1.05	18.42	0.34
0.500	0.22	6.500	2.00	12.500	1.05	18.50	0.34
0.583	0.23	6.583	2.65	12.583	0.98	18.58	0.33
0.667	0.23	6.667	2.65	12.667	0.98	18.67	0.33
0.750	0.23	6.750	2.65	12.750	0.98	18.75	0.33
0.833	0.24	6.833	3.77	12.833	0.91	18.83	0.32
0.917	0.24	6.917	3.77	12.917	0.91	18.92	0.32
1.000	0.24	7.000	3.77	13.000	0.91	19.00	0.32
1.083	0.25	7.083	6.01	13.083	0.85	19.08	0.31
1.167	0.25	7.167	6.01	13.167	0.85	19.17	0.31

1.250	0.25	7.250	6.01	13.250	0.85	19.25	0.31
1.333	0.27	7.333	11.82	13.333	0.80	19.33	0.31
1.417	0.27	7.417	11.82	13.417	0.80	19.42	0.31
1.500	0.27	7.500	11.82	13.500	0.80	19.50	0.31
1.583	0.28	7.583	39.93	13.583	0.75	19.58	0.30
1.667	0.28	7.667	39.93	13.667	0.75	19.67	0.30
1.750	0.28	7.750	39.94	13.750	0.75	19.75	0.30
1.833	0.29	7.833	166.89	13.833	0.71	19.83	0.29
1.917	0.29	7.917	166.89	13.917	0.71	19.92	0.29
2.000	0.29	8.000	166.88	14.000	0.71	20.00	0.29
2.083	0.31	8.083	55.37	14.083	0.67	20.08	0.28
2.167	0.31	8.167	55.37	14.167	0.67	20.17	0.28
2.250	0.31	8.250	55.37	14.250	0.67	20.25	0.28
2.333	0.33	8.333	24.55	14.333	0.64	20.33	0.28
2.417	0.33	8.417	24.55	14.417	0.64	20.42	0.28
2.500	0.33	8.500	24.55	14.500	0.64	20.50	0.28
2.583	0.35	8.583	14.23	14.583	0.61	20.58	0.27
2.667	0.35	8.667	14.23	14.667	0.61	20.67	0.27
2.750	0.35	8.750	14.23	14.750	0.61	20.75	0.27
2.833	0.37	8.833	9.45	14.833	0.58	20.83	0.26
2.917	0.37	8.917	9.45	14.917	0.58	20.92	0.26
3.000	0.37	9.000	9.45	15.000	0.58	21.00	0.26
3.083	0.39	9.083	6.83	15.083	0.55	21.08	0.26
3.167	0.39	9.167	6.83	15.167	0.55	21.17	0.26
3.250	0.39	9.250	6.83	15.250	0.55	21.25	0.26
3.333	0.42	9.333	5.22	15.333	0.53	21.33	0.25
3.417	0.42	9.417	5.22	15.417	0.53	21.42	0.25
3.500	0.42	9.500	5.22	15.500	0.53	21.50	0.25
3.583	0.46	9.583	4.15	15.583	0.51	21.58	0.25
3.667	0.46	9.667	4.15	15.667	0.51	21.67	0.25
3.750	0.46	9.750	4.15	15.750	0.51	21.75	0.25
3.833	0.49	9.833	3.41	15.833	0.48	21.83	0.24
3.917	0.49	9.917	3.41	15.917	0.48	21.92	0.24
4.000	0.49	10.000	3.41	16.000	0.48	22.00	0.24
4.083	0.54	10.083	2.86	16.083	0.47	22.08	0.24
4.167	0.54	10.167	2.86	16.167	0.47	22.17	0.24
4.250	0.54	10.250	2.86	16.250	0.47	22.25	0.24
4.333	0.59	10.333	2.45	16.333	0.45	22.33	0.23
4.417	0.59	10.417	2.45	16.417	0.45	22.42	0.23
4.500	0.59	10.500	2.45	16.500	0.45	22.50	0.23
4.583	0.65	10.583	2.13	16.583	0.43	22.58	0.23
4.667	0.65	10.667	2.13	16.667	0.43	22.67	0.23
4.750	0.65	10.750	2.13	16.750	0.43	22.75	0.23
4.833	0.73	10.833	1.88	16.833	0.42	22.83	0.22
4.917	0.73	10.917	1.88	16.917	0.42	22.92	0.22
5.000	0.73	11.000	1.88	17.000	0.42	23.00	0.22
5.083	0.82	11.083	1.67	17.083	0.40	23.08	0.22
5.167	0.82	11.167	1.67	17.167	0.40	23.17	0.22
5.250	0.82	11.250	1.67	17.250	0.40	23.25	0.22
5.333	0.94	11.333	1.50	17.333	0.39	23.33	0.21
5.417	0.94	11.417	1.50	17.417	0.39	23.42	0.21
5.500	0.94	11.500	1.50	17.500	0.39	23.50	0.21
5.583	1.09	11.583	1.36	17.583	0.38	23.58	0.21
5.667	1.09	11.667	1.36	17.667	0.38	23.67	0.21
5.750	1.09	11.750	1.36	17.750	0.38	23.75	0.21
5.833	1.30	11.833	1.24	17.833	0.36	23.83	0.21
5.917	1.30	11.917	1.24	17.917	0.36	23.92	0.21
6.000	1.30	12.000	1.24	18.000	0.36	24.00	0.21

Max.Eff.Inten.(mm/hr)=	166.89	109.20	
over (min)	5.00	10.00	
Storage Coeff. (min)=	2.23 (ii)	9.04 (ii)	
Unit Hyd. Tpeak (min)=	5.00	10.00	
Unit Hyd. peak (cms)=	0.30	0.12	
			TOTALS
PEAK FLOW (cms)=	0.87	0.41	1.261 (iii)
TIME TO PEAK (hrs)=	8.00	8.08	8.00
RUNOFF VOLUME (mm)=	99.55	59.71	79.63
TOTAL RAINFALL (mm)=	101.55	101.55	101.55
RUNOFF COEFFICIENT =	0.98	0.59	0.78

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 81.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

ADD HYD (7739)				
1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (7742):	3.77	1.261	8.00	79.63
+ ID2= 2 (7745):	28.21	0.563	10.33	96.47
ID = 3 (7739):	31.98	1.527	8.00	94.48

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (7739)				
3 + 2 = 1	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (7739):	31.98	1.527	8.00	94.48
+ ID2= 2 (7754):	1.26	0.566	8.00	95.96
ID = 1 (7739):	33.24	2.093	8.00	94.54

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

RESERVOIR(7733)	OVERFLOW IS OFF			
IN= 2---> OUT= 1				
DT= 5.0 min	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
	0.0000	0.0000	0.1960	1.6220
	0.0010	0.1670	0.2930	1.8170
	0.0340	0.3380	0.5390	2.2130
	0.0510	0.5110	0.8410	2.6150
	0.0630	0.6880	1.1900	3.0250
	0.0740	0.8670	1.5800	3.4420
	0.0830	1.0500	2.2740	3.8670
	0.0910	1.2370	5.2870	4.3000
	0.1220	1.4290	7.6530	4.5210

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (7739)	33.240	2.093	8.00	94.54
OUTFLOW: ID= 1 (7733)	33.240	0.240	19.83	89.84

PEAK FLOW REDUCTION [Qout/Qin](%)= 11.45
TIME SHIFT OF PEAK FLOW (min)=710.00
MAXIMUM STORAGE USED (ha.m.)= 1.7098

CALIB					
NASHYD (7743)	Area	(ha)=	0.74	Curve Number	(CN)= 81.0
ID= 1 DT= 5.0 min	Ia	(mm)=	5.00	# of Linear Res.(N)=	3.00
	U.H. Tp(hrs)=		0.22		

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	0.22	6.083	1.58	12.083	1.14	18.08	0.35
0.167	0.22	6.167	1.58	12.167	1.14	18.17	0.35
0.250	0.22	6.250	1.58	12.250	1.14	18.25	0.35
0.333	0.22	6.333	2.00	12.333	1.05	18.33	0.34
0.417	0.22	6.417	2.00	12.417	1.05	18.42	0.34
0.500	0.22	6.500	2.00	12.500	1.05	18.50	0.34
0.583	0.23	6.583	2.65	12.583	0.98	18.58	0.33
0.667	0.23	6.667	2.65	12.667	0.98	18.67	0.33
0.750	0.23	6.750	2.65	12.750	0.98	18.75	0.33
0.833	0.24	6.833	3.77	12.833	0.91	18.83	0.32
0.917	0.24	6.917	3.77	12.917	0.91	18.92	0.32

1.000	0.24	7.000	3.77	13.000	0.91	19.00	0.32
1.083	0.25	7.083	6.01	13.083	0.85	19.08	0.31
1.167	0.25	7.167	6.01	13.167	0.85	19.17	0.31
1.250	0.25	7.250	6.01	13.250	0.85	19.25	0.31
1.333	0.27	7.333	11.82	13.333	0.80	19.33	0.31
1.417	0.27	7.417	11.82	13.417	0.80	19.42	0.31
1.500	0.27	7.500	11.82	13.500	0.80	19.50	0.31
1.583	0.28	7.583	39.93	13.583	0.75	19.58	0.30
1.667	0.28	7.667	39.93	13.667	0.75	19.67	0.30
1.750	0.28	7.750	39.94	13.750	0.75	19.75	0.30
1.833	0.29	7.833	166.89	13.833	0.71	19.83	0.29
1.917	0.29	7.917	166.89	13.917	0.71	19.92	0.29
2.000	0.29	8.000	166.88	14.000	0.71	20.00	0.29
2.083	0.31	8.083	55.37	14.083	0.67	20.08	0.28
2.167	0.31	8.167	55.37	14.167	0.67	20.17	0.28
2.250	0.31	8.250	55.37	14.250	0.67	20.25	0.28
2.333	0.33	8.333	24.55	14.333	0.64	20.33	0.28
2.417	0.33	8.417	24.55	14.417	0.64	20.42	0.28
2.500	0.33	8.500	24.55	14.500	0.64	20.50	0.28
2.583	0.35	8.583	14.23	14.583	0.61	20.58	0.27
2.667	0.35	8.667	14.23	14.667	0.61	20.67	0.27
2.750	0.35	8.750	14.23	14.750	0.61	20.75	0.27
2.833	0.37	8.833	9.45	14.833	0.58	20.83	0.26
2.917	0.37	8.917	9.45	14.917	0.58	20.92	0.26
3.000	0.37	9.000	9.45	15.000	0.58	21.00	0.26
3.083	0.39	9.083	6.83	15.083	0.55	21.08	0.26
3.167	0.39	9.167	6.83	15.167	0.55	21.17	0.26
3.250	0.39	9.250	6.83	15.250	0.55	21.25	0.26
3.333	0.42	9.333	5.22	15.333	0.53	21.33	0.25
3.417	0.42	9.417	5.22	15.417	0.53	21.42	0.25
3.500	0.42	9.500	5.22	15.500	0.53	21.50	0.25
3.583	0.46	9.583	4.15	15.583	0.51	21.58	0.25
3.667	0.46	9.667	4.15	15.667	0.51	21.67	0.25
3.750	0.46	9.750	4.15	15.750	0.51	21.75	0.25
3.833	0.49	9.833	3.41	15.833	0.48	21.83	0.24
3.917	0.49	9.917	3.41	15.917	0.48	21.92	0.24
4.000	0.49	10.000	3.41	16.000	0.48	22.00	0.24
4.083	0.54	10.083	2.86	16.083	0.47	22.08	0.24
4.167	0.54	10.167	2.86	16.167	0.47	22.17	0.24
4.250	0.54	10.250	2.86	16.250	0.47	22.25	0.24
4.333	0.59	10.333	2.45	16.333	0.45	22.33	0.23
4.417	0.59	10.417	2.45	16.417	0.45	22.42	0.23
4.500	0.59	10.500	2.45	16.500	0.45	22.50	0.23
4.583	0.65	10.583	2.13	16.583	0.43	22.58	0.23
4.667	0.65	10.667	2.13	16.667	0.43	22.67	0.23
4.750	0.65	10.750	2.13	16.750	0.43	22.75	0.23
4.833	0.73	10.833	1.88	16.833	0.42	22.83	0.22
4.917	0.73	10.917	1.88	16.917	0.42	22.92	0.22
5.000	0.73	11.000	1.88	17.000	0.42	23.00	0.22
5.083	0.82	11.083	1.67	17.083	0.40	23.08	0.22
5.167	0.82	11.167	1.67	17.167	0.40	23.17	0.22
5.250	0.82	11.250	1.67	17.250	0.40	23.25	0.22
5.333	0.94	11.333	1.50	17.333	0.39	23.33	0.21
5.417	0.94	11.417	1.50	17.417	0.39	23.42	0.21
5.500	0.94	11.500	1.50	17.500	0.39	23.50	0.21
5.583	1.09	11.583	1.36	17.583	0.38	23.58	0.21
5.667	1.09	11.667	1.36	17.667	0.38	23.67	0.21
5.750	1.09	11.750	1.36	17.750	0.38	23.75	0.21
5.833	1.30	11.833	1.24	17.833	0.36	23.83	0.21
5.917	1.30	11.917	1.24	17.917	0.36	23.92	0.21
6.000	1.30	12.000	1.24	18.000	0.36	24.00	0.21

Unit Hyd Qpeak (cms)= 0.128

PEAK FLOW (cms)= 0.132 (i)
TIME TO PEAK (hrs)= 8.167
RUNOFF VOLUME (mm)= 59.627
TOTAL RAINFALL (mm)= 101.551
RUNOFF COEFFICIENT = 0.587

(i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

| ADD HYD (7744)|

1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (7733):	33.24	0.240	19.83	89.84
+ ID2= 2 (7743):	0.74	0.132	8.17	59.63
ID = 3 (7744):	33.98	0.240	19.75	89.18

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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================================================================================================================
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       V    V   I    SSSSS  U   U    A    L              (v 6.2.2020)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M M M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
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                  *****  D E T A I L E D   O U T P U T *****


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.2\VO2\voin.dat
  Output  filename: C:\Users\mfindlay\AppData\Local\Civica\VH5\40fcb7f5-f544-4d5a-b245-
a4eb17eaad57\1e1eac6f-d721-428f-a17d-e17e2c27d8cc\sce
  Summary filename: C:\Users\mfindlay\AppData\Local\Civica\VH5\40fcb7f5-f544-4d5a-b245-
a4eb17eaad57\1e1eac6f-d721-428f-a17d-e17e2c27d8cc\sce


DATE: 06-17-2026                          TIME: 03:25:39

USER:


COMMENTS: _____________________________________________________


----------------------------------------------------------------------------------------------------------------
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  ************************************************
  ** SIMULATION : Hazel                         **
  ************************************************


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|    READ STORM    |    Filename: C:\Users\mfindlay\AppD
|                  |              ata\Local\Temp\
|                  |              c756bb32-8603-4547-9968-8936eb93600f\7f43a485
| Ptotal=212.00 mm |    Comments: Hazel
--------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.00    6.00 |  3.00   13.00 |  6.00   23.00 |  9.00   53.00
                1.00    4.00 |  4.00   17.00 |  7.00   13.00 | 10.00   38.00
                2.00    6.00 |  5.00   13.00 |  8.00   13.00 | 11.00   13.00

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| CALIB            |
| NASHYD   (  7759)|   Area     (ha)=   0.27   Curve Number    (CN)= 90.0
|ID= 1 DT= 5.0 min |   Ia       (mm)=   4.70   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.17

        NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                          ---- TRANSFORMED HYETOGRAPH ----
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.083    6.00 | 3.083   13.00 | 6.083   23.00 |  9.08   53.00
               0.167    6.00 | 3.167   13.00 | 6.167   23.00 |  9.17   53.00
               0.250    6.00 | 3.250   13.00 | 6.250   23.00 |  9.25   53.00
               0.333    6.00 | 3.333   13.00 | 6.333   23.00 |  9.33   53.00
               0.417    6.00 | 3.417   13.00 | 6.417   23.00 |  9.42   53.00
               0.500    6.00 | 3.500   13.00 | 6.500   23.00 |  9.50   53.00
               0.583    6.00 | 3.583   13.00 | 6.583   23.00 |  9.58   53.00
               0.667    6.00 | 3.667   13.00 | 6.667   23.00 |  9.67   53.00
               0.750    6.00 | 3.750   13.00 | 6.750   23.00 |  9.75   53.00
               0.833    6.00 | 3.833   13.00 | 6.833   23.00 |  9.83   53.00
               0.917    6.00 | 3.917   13.00 | 6.917   23.00 |  9.92   53.00
               1.000    6.00 | 4.000   13.00 | 7.000   23.00 | 10.00   53.00
               1.083    4.00 | 4.083   17.00 | 7.083   13.00 | 10.08   38.00
               1.167    4.00 | 4.167   17.00 | 7.167   13.00 | 10.17   38.00
               1.250    4.00 | 4.250   17.00 | 7.250   13.00 | 10.25   38.00
               1.333    4.00 | 4.333   17.00 | 7.333   13.00 | 10.33   38.00
               1.417    4.00 | 4.417   17.00 | 7.417   13.00 | 10.42   38.00
               1.500    4.00 | 4.500   17.00 | 7.500   13.00 | 10.50   38.00
               1.583    4.00 | 4.583   17.00 | 7.583   13.00 | 10.58   38.00
               1.667    4.00 | 4.667   17.00 | 7.667   13.00 | 10.67   38.00
               1.750    4.00 | 4.750   17.00 | 7.750   13.00 | 10.75   38.00
               1.833    4.00 | 4.833   17.00 | 7.833   13.00 | 10.83   38.00
               1.917    4.00 | 4.917   17.00 | 7.917   13.00 | 10.92   38.00
               2.000    4.00 | 5.000   17.00 | 8.000   13.00 | 11.00   38.00
               2.083    6.00 | 5.083   13.00 | 8.083   13.00 | 11.08   13.00
               2.167    6.00 | 5.167   13.00 | 8.167   13.00 | 11.17   13.00
               2.250    6.00 | 5.250   13.00 | 8.250   13.00 | 11.25   13.00
               2.333    6.00 | 5.333   13.00 | 8.333   13.00 | 11.33   13.00
               2.417    6.00 | 5.417   13.00 | 8.417   13.00 | 11.42   13.00
               2.500    6.00 | 5.500   13.00 | 8.500   13.00 | 11.50   13.00
               2.583    6.00 | 5.583   13.00 | 8.583   13.00 | 11.58   13.00
               2.667    6.00 | 5.667   13.00 | 8.667   13.00 | 11.67   13.00
               2.750    6.00 | 5.750   13.00 | 8.750   13.00 | 11.75   13.00
               2.833    6.00 | 5.833   13.00 | 8.833   13.00 | 11.83   13.00
               2.917    6.00 | 5.917   13.00 | 8.917   13.00 | 11.92   13.00
               3.000    6.00 | 6.000   13.00 | 9.000   13.00 | 12.00   13.00

     Unit Hyd Qpeak  (cms)=   0.061

     PEAK FLOW       (cms)=   0.039 (i)
     TIME TO PEAK    (hrs)=  10.000
     RUNOFF VOLUME    (mm)= 181.806
     TOTAL RAINFALL   (mm)= 212.000
     RUNOFF COEFFICIENT   =   0.858

     (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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| CALIB            |
| STANDHYD (  7746)|   Area     (ha)=  15.90
|ID= 1 DT= 5.0 min |   Total Imp(%)=  87.00   Dir. Conn.(%)=  87.00
--------------------

                             IMPERVIOUS     PERVIOUS (i)
     Surface Area     (ha)=       13.83           2.07
     Dep. Storage     (mm)=        2.00           5.00
     Average Slope     (%)=        2.00           2.00
     Length            (m)=      325.58          40.00
     Mannings n             =     0.013          0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                          ---- TRANSFORMED HYETOGRAPH ----
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.083    6.00 | 3.083   13.00 | 6.083   23.00 |  9.08   53.00
               0.167    6.00 | 3.167   13.00 | 6.167   23.00 |  9.17   53.00
               0.250    6.00 | 3.250   13.00 | 6.250   23.00 |  9.25   53.00
               0.333    6.00 | 3.333   13.00 | 6.333   23.00 |  9.33   53.00
               0.417    6.00 | 3.417   13.00 | 6.417   23.00 |  9.42   53.00
               0.500    6.00 | 3.500   13.00 | 6.500   23.00 |  9.50   53.00
               0.583    6.00 | 3.583   13.00 | 6.583   23.00 |  9.58   53.00
               0.667    6.00 | 3.667   13.00 | 6.667   23.00 |  9.67   53.00
               0.750    6.00 | 3.750   13.00 | 6.750   23.00 |  9.75   53.00
               0.833    6.00 | 3.833   13.00 | 6.833   23.00 |  9.83   53.00
               0.917    6.00 | 3.917   13.00 | 6.917   23.00 |  9.92   53.00
```

1.000	6.00	4.000	13.00	7.000	23.00	10.00	53.00
1.083	4.00	4.083	17.00	7.083	13.00	10.08	38.00
1.167	4.00	4.167	17.00	7.167	13.00	10.17	38.00
1.250	4.00	4.250	17.00	7.250	13.00	10.25	38.00
1.333	4.00	4.333	17.00	7.333	13.00	10.33	38.00
1.417	4.00	4.417	17.00	7.417	13.00	10.42	38.00
1.500	4.00	4.500	17.00	7.500	13.00	10.50	38.00
1.583	4.00	4.583	17.00	7.583	13.00	10.58	38.00
1.667	4.00	4.667	17.00	7.667	13.00	10.67	38.00
1.750	4.00	4.750	17.00	7.750	13.00	10.75	38.00
1.833	4.00	4.833	17.00	7.833	13.00	10.83	38.00
1.917	4.00	4.917	17.00	7.917	13.00	10.92	38.00
2.000	4.00	5.000	17.00	8.000	13.00	11.00	38.00
2.083	6.00	5.083	13.00	8.083	13.00	11.08	13.00
2.167	6.00	5.167	13.00	8.167	13.00	11.17	13.00
2.250	6.00	5.250	13.00	8.250	13.00	11.25	13.00
2.333	6.00	5.333	13.00	8.333	13.00	11.33	13.00
2.417	6.00	5.417	13.00	8.417	13.00	11.42	13.00
2.500	6.00	5.500	13.00	8.500	13.00	11.50	13.00
2.583	6.00	5.583	13.00	8.583	13.00	11.58	13.00
2.667	6.00	5.667	13.00	8.667	13.00	11.67	13.00
2.750	6.00	5.750	13.00	8.750	13.00	11.75	13.00
2.833	6.00	5.833	13.00	8.833	13.00	11.83	13.00
2.917	6.00	5.917	13.00	8.917	13.00	11.92	13.00
3.000	6.00	6.000	13.00	9.000	13.00	12.00	13.00

Max.Eff.Inten.(mm/hr)=	53.00	51.93	
over (min)	5.00	10.00	
Storage Coeff. (min)=	5.43 (ii)	9.68 (ii)	
Unit Hyd. Tpeak (min)=	5.00	10.00	
Unit Hyd. peak (cms)=	0.20	0.11	
		TOTALS	
PEAK FLOW (cms)=	2.04	0.30	2.333 (iii)
TIME TO PEAK (hrs)=	10.00	10.00	10.00
RUNOFF VOLUME (mm)=	210.00	184.60	206.70
TOTAL RAINFALL (mm)=	212.00	212.00	212.00
RUNOFF COEFFICIENT =	0.99	0.87	0.97

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 91.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

CALIB			
STANDHYD (7749)	Area (ha)= 12.04		
ID= 1 DT= 5.0 min	Total Imp(%)= 99.00	Dir. Conn.(%)= 99.00	
	IMPERVIOUS	PERVIOUS (i)	
Surface Area (ha)=	11.92	0.12	
Dep. Storage (mm)=	1.00	5.00	
Average Slope (%)=	1.00	2.00	
Length (m)=	283.31	40.00	
Mannings n =	0.013	0.250	

NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	6.00	3.083	13.00	6.083	23.00	9.08	53.00
0.167	6.00	3.167	13.00	6.167	23.00	9.17	53.00
0.250	6.00	3.250	13.00	6.250	23.00	9.25	53.00
0.333	6.00	3.333	13.00	6.333	23.00	9.33	53.00
0.417	6.00	3.417	13.00	6.417	23.00	9.42	53.00
0.500	6.00	3.500	13.00	6.500	23.00	9.50	53.00
0.583	6.00	3.583	13.00	6.583	23.00	9.58	53.00
0.667	6.00	3.667	13.00	6.667	23.00	9.67	53.00
0.750	6.00	3.750	13.00	6.750	23.00	9.75	53.00
0.833	6.00	3.833	13.00	6.833	23.00	9.83	53.00
0.917	6.00	3.917	13.00	6.917	23.00	9.92	53.00
1.000	6.00	4.000	13.00	7.000	23.00	10.00	53.00

1.083	4.00	4.083	17.00	7.083	13.00	10.08	38.00
1.167	4.00	4.167	17.00	7.167	13.00	10.17	38.00
1.250	4.00	4.250	17.00	7.250	13.00	10.25	38.00
1.333	4.00	4.333	17.00	7.333	13.00	10.33	38.00
1.417	4.00	4.417	17.00	7.417	13.00	10.42	38.00
1.500	4.00	4.500	17.00	7.500	13.00	10.50	38.00
1.583	4.00	4.583	17.00	7.583	13.00	10.58	38.00
1.667	4.00	4.667	17.00	7.667	13.00	10.67	38.00
1.750	4.00	4.750	17.00	7.750	13.00	10.75	38.00
1.833	4.00	4.833	17.00	7.833	13.00	10.83	38.00
1.917	4.00	4.917	17.00	7.917	13.00	10.92	38.00
2.000	4.00	5.000	17.00	8.000	13.00	11.00	38.00
2.083	6.00	5.083	13.00	8.083	13.00	11.08	13.00
2.167	6.00	5.167	13.00	8.167	13.00	11.17	13.00
2.250	6.00	5.250	13.00	8.250	13.00	11.25	13.00
2.333	6.00	5.333	13.00	8.333	13.00	11.33	13.00
2.417	6.00	5.417	13.00	8.417	13.00	11.42	13.00
2.500	6.00	5.500	13.00	8.500	13.00	11.50	13.00
2.583	6.00	5.583	13.00	8.583	13.00	11.58	13.00
2.667	6.00	5.667	13.00	8.667	13.00	11.67	13.00
2.750	6.00	5.750	13.00	8.750	13.00	11.75	13.00
2.833	6.00	5.833	13.00	8.833	13.00	11.83	13.00
2.917	6.00	5.917	13.00	8.917	13.00	11.92	13.00
3.000	6.00	6.000	13.00	9.000	13.00	12.00	13.00

Max.Eff.Inten.(mm/hr)=	53.00	51.93	
over (min)	5.00	10.00	
Storage Coeff. (min)=	6.15 (ii)	7.60 (ii)	
Unit Hyd. Tpeak (min)=	5.00	10.00	
Unit Hyd. peak (cms)=	0.19	0.13	
		TOTALS	
PEAK FLOW (cms)=	1.75	0.02	1.772 (iii)
TIME TO PEAK (hrs)=	10.00	10.00	10.00
RUNOFF VOLUME (mm)=	211.00	184.60	210.74
TOTAL RAINFALL (mm)=	212.00	212.00	212.00
RUNOFF COEFFICIENT =	1.00	0.87	0.99

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 91.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

ADD HYD (7741)				
1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (7746):	15.90	2.333	10.00	206.70
+ ID2= 2 (7749):	12.04	1.772	10.00	210.74
ID = 3 (7741):	27.94	4.106	10.00	208.44

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

RESERVOIR(7738)	OVERFLOW IS OFF			
IN= 2---> OUT= 1				
DT= 5.0 min	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
**** WARNING : FIRST OUTFLOW IS NOT ZERO.				
	0.5620	0.0000	2.3150	1.6440

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (7741)	27.940	4.106	10.00	208.44
OUTFLOW: ID= 1 (7738)	27.940	2.314	11.08	208.53

PEAK FLOW REDUCTION [Qout/Qin](%)= 56.36
TIME SHIFT OF PEAK FLOW (min)= 65.00
MAXIMUM STORAGE USED (ha.m.)= 1.6493

CROZIER
CONSULTING ENGINEERS

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-------------------
| ADD HYD  (  7745)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
-------------------           (ha)     (cms)    (hrs)     (mm)
        ID1= 1 (  7738):    27.94    2.314    11.08    208.53
      + ID2= 2 (  7759):     0.27    0.039    10.00    181.81
        ====================================================
        ID = 3 (  7745):    28.21    2.338    11.08    208.27

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
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-------------------
| CALIB            |
| STANDHYD (  7754)|   Area    (ha)=   1.26
|ID= 1 DT= 5.0 min |   Total Imp(%)=  91.00   Dir. Conn.(%)=  91.00
-------------------
                          IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=      1.15          0.11
     Dep. Storage     (mm)=      2.00          5.00
     Average Slope     (%)=      2.00          2.00
     Length            (m)=     91.65         40.00
     Mannings n             =   0.013         0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.
```

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	6.00	3.083	13.00	6.083	23.00	9.08	53.00
0.167	6.00	3.167	13.00	6.167	23.00	9.17	53.00
0.250	6.00	3.250	13.00	6.250	23.00	9.25	53.00
0.333	6.00	3.333	13.00	6.333	23.00	9.33	53.00
0.417	6.00	3.417	13.00	6.417	23.00	9.42	53.00
0.500	6.00	3.500	13.00	6.500	23.00	9.50	53.00
0.583	6.00	3.583	13.00	6.583	23.00	9.58	53.00
0.667	6.00	3.667	13.00	6.667	23.00	9.67	53.00
0.750	6.00	3.750	13.00	6.750	23.00	9.75	53.00
0.833	6.00	3.833	13.00	6.833	23.00	9.83	53.00
0.917	6.00	3.917	13.00	6.917	23.00	9.92	53.00
1.000	6.00	4.000	13.00	7.000	23.00	10.00	53.00
1.083	4.00	4.083	17.00	7.083	13.00	10.08	38.00
1.167	4.00	4.167	17.00	7.167	13.00	10.17	38.00
1.250	4.00	4.250	17.00	7.250	13.00	10.25	38.00
1.333	4.00	4.333	17.00	7.333	13.00	10.33	38.00
1.417	4.00	4.417	17.00	7.417	13.00	10.42	38.00
1.500	4.00	4.500	17.00	7.500	13.00	10.50	38.00
1.583	4.00	4.583	17.00	7.583	13.00	10.58	38.00
1.667	4.00	4.667	17.00	7.667	13.00	10.67	38.00
1.750	4.00	4.750	17.00	7.750	13.00	10.75	38.00
1.833	4.00	4.833	17.00	7.833	13.00	10.83	38.00
1.917	4.00	4.917	17.00	7.917	13.00	10.92	38.00
2.000	4.00	5.000	17.00	8.000	13.00	11.00	38.00
2.083	6.00	5.083	13.00	8.083	13.00	11.08	13.00
2.167	6.00	5.167	13.00	8.167	13.00	11.17	13.00
2.250	6.00	5.250	13.00	8.250	13.00	11.25	13.00
2.333	6.00	5.333	13.00	8.333	13.00	11.33	13.00
2.417	6.00	5.417	13.00	8.417	13.00	11.42	13.00
2.500	6.00	5.500	13.00	8.500	13.00	11.50	13.00
2.583	6.00	5.583	13.00	8.583	13.00	11.58	13.00
2.667	6.00	5.667	13.00	8.667	13.00	11.67	13.00
2.750	6.00	5.750	13.00	8.750	13.00	11.75	13.00
2.833	6.00	5.833	13.00	8.833	13.00	11.83	13.00
2.917	6.00	5.917	13.00	8.917	13.00	11.92	13.00
3.000	6.00	6.000	13.00	9.000	13.00	12.00	13.00

Max.Eff.Inten.(mm/hr)=	53.00	51.93	
over (min)	5.00	10.00	
Storage Coeff. (min)=	2.54 (ii)	6.14 (ii)	
Unit Hyd. Tpeak (min)=	5.00	10.00	
Unit Hyd. peak (cms)=	0.29	0.15	
			TOTALS
PEAK FLOW (cms)=	0.17	0.02	0.185 (iii)
TIME TO PEAK (hrs)=	9.67	10.00	10.00
RUNOFF VOLUME (mm)=	210.00	184.60	207.71
TOTAL RAINFALL (mm)=	212.00	212.00	212.00

```
     RUNOFF COEFFICIENT   =       0.99         0.87          0.98

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN*  =  91.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
```

```
-------------------
| CALIB            |
| STANDHYD (  7742)|   Area    (ha)=   3.77
|ID= 1 DT= 5.0 min |   Total Imp(%)=  50.00   Dir. Conn.(%)=  50.00
-------------------
                          IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=      1.88          1.88
     Dep. Storage     (mm)=      2.00          5.00
     Average Slope     (%)=      2.00          2.00
     Length            (m)=    158.53         40.00
     Mannings n             =   0.013         0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.
```

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	6.00	3.083	13.00	6.083	23.00	9.08	53.00
0.167	6.00	3.167	13.00	6.167	23.00	9.17	53.00
0.250	6.00	3.250	13.00	6.250	23.00	9.25	53.00
0.333	6.00	3.333	13.00	6.333	23.00	9.33	53.00
0.417	6.00	3.417	13.00	6.417	23.00	9.42	53.00
0.500	6.00	3.500	13.00	6.500	23.00	9.50	53.00
0.583	6.00	3.583	13.00	6.583	23.00	9.58	53.00
0.667	6.00	3.667	13.00	6.667	23.00	9.67	53.00
0.750	6.00	3.750	13.00	6.750	23.00	9.75	53.00
0.833	6.00	3.833	13.00	6.833	23.00	9.83	53.00
0.917	6.00	3.917	13.00	6.917	23.00	9.92	53.00
1.000	6.00	4.000	13.00	7.000	23.00	10.00	53.00
1.083	4.00	4.083	17.00	7.083	13.00	10.08	38.00
1.167	4.00	4.167	17.00	7.167	13.00	10.17	38.00
1.250	4.00	4.250	17.00	7.250	13.00	10.25	38.00
1.333	4.00	4.333	17.00	7.333	13.00	10.33	38.00
1.417	4.00	4.417	17.00	7.417	13.00	10.42	38.00
1.500	4.00	4.500	17.00	7.500	13.00	10.50	38.00
1.583	4.00	4.583	17.00	7.583	13.00	10.58	38.00
1.667	4.00	4.667	17.00	7.667	13.00	10.67	38.00
1.750	4.00	4.750	17.00	7.750	13.00	10.75	38.00
1.833	4.00	4.833	17.00	7.833	13.00	10.83	38.00
1.917	4.00	4.917	17.00	7.917	13.00	10.92	38.00
2.000	4.00	5.000	17.00	8.000	13.00	11.00	38.00
2.083	6.00	5.083	13.00	8.083	13.00	11.08	13.00
2.167	6.00	5.167	13.00	8.167	13.00	11.17	13.00
2.250	6.00	5.250	13.00	8.250	13.00	11.25	13.00
2.333	6.00	5.333	13.00	8.333	13.00	11.33	13.00
2.417	6.00	5.417	13.00	8.417	13.00	11.42	13.00
2.500	6.00	5.500	13.00	8.500	13.00	11.50	13.00
2.583	6.00	5.583	13.00	8.583	13.00	11.58	13.00
2.667	6.00	5.667	13.00	8.667	13.00	11.67	13.00
2.750	6.00	5.750	13.00	8.750	13.00	11.75	13.00
2.833	6.00	5.833	13.00	8.833	13.00	11.83	13.00
2.917	6.00	5.917	13.00	8.917	13.00	11.92	13.00
3.000	6.00	6.000	13.00	9.000	13.00	12.00	13.00

Max.Eff.Inten.(mm/hr)=	53.00	51.93	
over (min)	5.00	15.00	
Storage Coeff. (min)=	3.53 (ii)	12.70 (ii)	
Unit Hyd. Tpeak (min)=	5.00	15.00	
Unit Hyd. peak (cms)=	0.26	0.08	
			TOTALS
PEAK FLOW (cms)=	0.28	0.27	0.546 (iii)
TIME TO PEAK (hrs)=	9.92	10.00	10.00
RUNOFF VOLUME (mm)=	210.00	184.60	197.30
TOTAL RAINFALL (mm)=	212.00	212.00	212.00

CROZIER
CONSULTING ENGINEERS

```
     RUNOFF COEFFICIENT   =       0.99         0.87          0.93

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN*  =  91.0     Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------

--------------------
| ADD HYD  (  7739)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)     (cms)    (hrs)      (mm)
        ID1= 1 (  7742):     3.77   0.546    10.00   197.30
      + ID2= 2 (  7745):    28.21   2.338    11.08   208.27
        ====================================================
        ID = 3 (  7739):    31.98   2.734    11.00   206.98

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------

--------------------
| ADD HYD  (  7739)|
|   3 +  2 =  1    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)     (cms)    (hrs)      (mm)
        ID1= 3 (  7739):    31.98   2.734    11.00   206.98
      + ID2= 2 (  7754):     1.26   0.185    10.00   207.71
        ====================================================
        ID = 1 (  7739):    33.24   2.867    11.00   207.01

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
--------------------
| RESERVOIR(  7733)|     OVERFLOW IS OFF
| IN= 2---> OUT= 1 |
| DT=  5.0 min     |     OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
--------------------      (cms)     (ha.m.)   |   (cms)     (ha.m.)
     **** WARNING : FIRST OUTFLOW IS NOT ZERO.
                          0.2470      0.0000   |    1.6970      2.4305

                               AREA     QPEAK     TPEAK       R.V.
                               (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  7739)     33.240      2.867     11.00     207.01
   OUTFLOW: ID= 1 (  7733)     33.240      1.697     12.42     207.09

                  PEAK   FLOW   REDUCTION [Qout/Qin](%)= 59.17
                  TIME SHIFT OF PEAK FLOW          (min)= 85.00
                  MAXIMUM  STORAGE   USED       (ha.m.)=  2.4300

--------------------------------------------------------------------------------
--------------------
| CALIB            |
| NASHYD   (  7743)|   Area     (ha)=   0.74   Curve Number    (CN)= 91.0
|ID= 1 DT= 5.0 min |   Ia       (mm)=   5.00   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.22

        NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.


                        ---- TRANSFORMED HYETOGRAPH ----
  TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
    hrs   mm/hr |    hrs   mm/hr |'    hrs   mm/hr |    hrs   mm/hr
 0.083    6.00 | 3.083   13.00 | 6.083   23.00 |  9.08   53.00
 0.167    6.00 | 3.167   13.00 | 6.167   23.00 |  9.17   53.00
 0.250    6.00 | 3.250   13.00 | 6.250   23.00 |  9.25   53.00
 0.333    6.00 | 3.333   13.00 | 6.333   23.00 |  9.33   53.00
 0.417    6.00 | 3.417   13.00 | 6.417   23.00 |  9.42   53.00
 0.500    6.00 | 3.500   13.00 | 6.500   23.00 |  9.50   53.00
 0.583    6.00 | 3.583   13.00 | 6.583   23.00 |  9.58   53.00
 0.667    6.00 | 3.667   13.00 | 6.667   23.00 |  9.67   53.00
 0.750    6.00 | 3.750   13.00 | 6.750   23.00 |  9.75   53.00
 0.833    6.00 | 3.833   13.00 | 6.833   23.00 |  9.83   53.00
 0.917    6.00 | 3.917   13.00 | 6.917   23.00 |  9.92   53.00
 1.000    6.00 | 4.000   13.00 | 7.000   23.00 | 10.00   53.00
 1.083    4.00 | 4.083   17.00 | 7.083   13.00 | 10.08   38.00
 1.167    4.00 | 4.167   17.00 | 7.167   13.00 | 10.17   38.00
 1.250    4.00 | 4.250   17.00 | 7.250   13.00 | 10.25   38.00
 1.333    4.00 | 4.333   17.00 | 7.333   13.00 | 10.33   38.00
 1.417    4.00 | 4.417   17.00 | 7.417   13.00 | 10.42   38.00
 1.500    4.00 | 4.500   17.00 | 7.500   13.00 | 10.50   38.00
 1.583    4.00 | 4.583   17.00 | 7.583   13.00 | 10.58   38.00
 1.667    4.00 | 4.667   17.00 | 7.667   13.00 | 10.67   38.00
 1.750    4.00 | 4.750   17.00 | 7.750   13.00 | 10.75   38.00
 1.833    4.00 | 4.833   17.00 | 7.833   13.00 | 10.83   38.00
 1.917    4.00 | 4.917   17.00 | 7.917   13.00 | 10.92   38.00
 2.000    4.00 | 5.000   17.00 | 8.000   13.00 | 11.00   38.00
 2.083    6.00 | 5.083   13.00 | 8.083   13.00 | 11.08   13.00
 2.167    6.00 | 5.167   13.00 | 8.167   13.00 | 11.17   13.00
 2.250    6.00 | 5.250   13.00 | 8.250   13.00 | 11.25   13.00
 2.333    6.00 | 5.333   13.00 | 8.333   13.00 | 11.33   13.00
 2.417    6.00 | 5.417   13.00 | 8.417   13.00 | 11.42   13.00
 2.500    6.00 | 5.500   13.00 | 8.500   13.00 | 11.50   13.00
 2.583    6.00 | 5.583   13.00 | 8.583   13.00 | 11.58   13.00
 2.667    6.00 | 5.667   13.00 | 8.667   13.00 | 11.67   13.00
 2.750    6.00 | 5.750   13.00 | 8.750   13.00 | 11.75   13.00
 2.833    6.00 | 5.833   13.00 | 8.833   13.00 | 11.83   13.00
 2.917    6.00 | 5.917   13.00 | 8.917   13.00 | 11.92   13.00
 3.000    6.00 | 6.000   13.00 | 9.000   13.00 | 12.00   13.00

     Unit Hyd Qpeak  (cms)=   0.128

     PEAK FLOW       (cms)=   0.106 (i)
     TIME TO PEAK    (hrs)=  10.000
     RUNOFF VOLUME    (mm)= 184.355
     TOTAL RAINFALL   (mm)= 212.000
     RUNOFF COEFFICIENT   =   0.870

     (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

--------------------------------------------------------------------------------

--------------------
| ADD HYD  (  7747)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)     (cms)    (hrs)      (mm)
        ID1= 1 (  7733):    33.24   1.697    12.42   207.09
      + ID2= 2 (  7743):     0.74   0.106    10.00   184.35
        ====================================================
        ID = 3 (  7747):    33.98   1.709    12.08   206.60

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------

 FINISH
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APPENDIX E

Water Balance and Infiltration

CROZIER CONSULTING ENGINEERS

Project: Prologis Humber Station
Project No: 0624-6777
Designed by: MF
Reviewed by: RA
Date: 2024.11.18
Updated: 2025.06.18

Humber Station Draft Plan Water Balance Summary

Water balance information per SLR dated June 2026:

Block	Area (ha)	Increased Runoff (m3)	Infiltration Deficit (m3)	Area Weighted Block 8 (NHS) Volume (m3)	Infiltration Deficit (m3)	Design Storm Selection Method		Water Balance Volume Requirement (m3)
						Water Balance Deficit (mm)	On-site Retention for Erosion (mm)	
Block 1	29.06	149,151	-26,669	1709	-24,960	6.5	13.0	1,565.2
Block 2	12.13	73,496	-14,166	713	-13,453	6.5	8.0	500.0
Block 3	0.13	0	0	-	-	-	-	-
Block 4	10.65	64664	-12,601	626	-11,975	7.0	9.5	468.8
Block 5	7.94	48,148	-9,331	467	-8,864	7.0	9.5	547.1
Block 6	3.77	22,861	-4,404	222	-4,182			
Block 7*	2.02	12,189	-2,324	119	-2,205	-	-	-
Block 8	10.52	-4,614	4,614	619	5,233	-	-	-
Block 9 & 10*	0.73	4,650	-1,058	43	-1,015	-	-	-
Block 11 & 12	0.013	-	-	-	-	-	-	-
Block 13*	0.74	4,525	-907	44	-863	-	-	-
Block 14*	0.23	1,397	-266	14	-252	-	-	-
Block 15*	0.53	0	0	31	-	-	-	-
Total	**78.46**	**376465**	**-67112**	**4606**	**-62,538**	**-**	-	**3,081.2**

** Water balance for Blocks 9 to 15 to be designed by others*

CROZIER CONSULTING ENGINEERS

Project Name: Prologis Humber Station
Project No: 0624-6777
Designed by: HL
Reviewed by: RA
Date: 2024.11.18

Climatic Water Budget - Thornthwaite Method
Project Name: Prologis Humber Station
ALBION FIELD CENTRE-Climate Normals 1981-2010 Station Data

	Degrees	Minutes	Seconds	
Insert Latitude:	**43**	**83**	**95**	***Only Applicable Between Latitudes 40° - 50°**

Month	Mean Temperature (◦C)	Heat index	" a "	PET - Potential Evapotranspiration (mm)	Daily Correction Value	Adjusted PET - Potential Evapotranspiration (mm)	Total Precipitation (mm)	Surplus (mm)	Deficit (mm)
January	3.1	0.5	0.50	58.4	0.76	44.4	51.8	7.4	0.0
February	2.5	0.4	0.50	52.0	0.87	45.1	47.7	2.6	0.0
March	2.2	0.3	0.50	48.5	0.99	47.8	49.8	2.0	0.0
April	1.6	0.2	0.50	40.8	1.12	45.6	68.5	22.9	0.0
May	2.0	0.2	0.50	46.0	1.24	56.9	74.3	17.4	0.0
June	1.3	0.1	0.49	36.4	1.30	47.3	71.5	24.2	0.0
July	1.4	0.1	0.49	37.9	1.27	48.3	75.7	27.4	0.0
August	1.5	0.2	0.50	39.4	1.18	46.3	78.1	31.8	0.0
September	1.0	0.1	0.49	31.6	1.05	33.1	74.5	41.4	0.0
October	1.6	0.2	0.50	40.8	0.92	37.4	61.1	23.7	0.0
November	1.2	0.1	0.49	34.9	0.80	27.9	75.1	47.2	0.0
December	3.1	0.5	0.50	58.4	0.74	43.0	57.9	14.9	0.0
Totals		**2.9**	**0.54**			**523.2**	**786.0**	**262.8**	**0.0**

TOTAL WATER DEFICIT = **0.0 mm**
TOTAL WATER SURPLUS (SURPLUS - DEFICIT) = **262.8 mm**
Precipitation Adjustment Factor : **none**

NOTES:
1. Water budget adjusted for latitude and daylight.
2. (◦C) - Represents calculated mean of daily temperatures for the month.
3. Precipitation and Temperature data from the *Albion Field Centre Environment Canada Station Data
4. Total Water Surplus (Thornthwaite, 1948) is calculated as total precipitation minus adjusted potential evapostranspiration.

Project Name: Prologis Humber Station
Project No: 0624-6777
Designed by: MF
Reviewed by: RA
Date: 2024.11.18
Updated: 2025.06.18

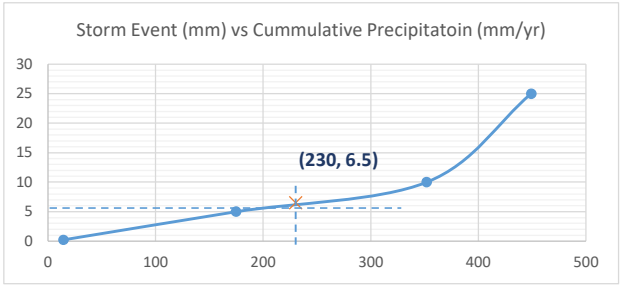
Design Storm Determination - Block 1
ALBION FIELD CENTRE-Climate Normals 1981-2010 Station Data
Water Balance/Water Budget Assessment

Days with Precipitation (From Climate Data)

	Apr	May	Jun	Jul	Aug	Sep	Oct	Total
>= 0.2 mm	10.8	10.3	10.2	9.0	9.8	10.8	11.3	**72**
>= 5 mm	4.5	5.0	4.4	4.9	4.5	4.5	4.3	**32**
>= 10 mm	2.1	2.3	2.9	2.6	2.8	2.5	2.5	**18**
>= 25 mm	0.4	0.5	0.6	0.7	0.6	0.7	0.4	**4**

Available Precipitation

Storm Event (mm)	**Total Days Per Year**	**Incremental Precipitation** (mm/yr)	**Cummulative Precipitation** (mm/yr)
0.2	72	14.4	14.4
5	32	160.5	174.9
10	18	177.0	351.9
25	4	97.3	449.2
Total	**126**	**449.2**	



Infiltration Deficit Target:	24,960	m^3/yr	Infiltration deficiet from Hydrogeological Assessment (SLR, June 2026)
Area contributing to mitigation (Block 1 Rooftop):	120,400	m^2	
Infiltration Deficit Target:	207	mm/yr	
Runoff Coefficient for Impervious Area:	0.90		
Design Precipitation:	230	mm/yr	(Design Infiltration / Contributing RC)
Therefore Design Storm:	6.5	mm	
Total Volume:	783	m^3	

Project: Prologis Humber Station
Project No: 0624-6777
Designed by: MF
Reviewed by: RA
Date: 2024.11.18
Updated: 2025.06.18

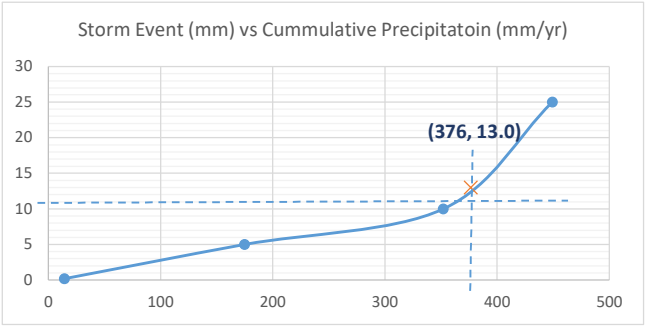
5 mm On-Site Retention - TRCA Erosion Criteria - Block 1
ALBION FIELD CENTRE-Climate Normals 1981-2010 Station Data
Water Balance/Water Budget Assessment

Days with Precipitation (From Climate Data)

	Apr	May	Jun	Jul	Aug	Sep	Oct	Total
>= 0.2 mm	10.8	10.3	10.2	9.0	9.8	10.8	11.3	**72**
>= 5 mm	4.5	5.0	4.4	4.9	4.5	4.5	4.3	**32**
>= 10 mm	2.1	2.3	2.9	2.6	2.8	2.5	2.5	**18**
>= 25 mm	0.4	0.5	0.6	0.7	0.6	0.7	0.4	**4**

Available Precipitation

Storm Event (mm)	**Total Days Per Year**	**Incremental Precipitation** (mm/yr)	**Cummulative Precipitation** (mm/yr)
0.2	72	14.4	14.4
5	32	160.5	174.9
10	18	177.0	351.9
25	4	97.3	449.2
Total	**126**	**449.2**	



Block 1 Impervious Area:	25.90	ha
TRCA Erosion Criteria:	5	mm
Equivalent Cummulative Precipitation:	175	mm/yr
Equivalent Cummulative Precipitation:	45314	m^3/yr
Area contributing to mitigation (Block 1 Rooftop):	120,400	m^2
Erosion Mitigation Target:	376	mm/yr
Therefore Design Storm:	13.0	mm
Total Volume:	1,565	m^3

Project Name: Prologis Humber Station
Project No: 0624-6777
Designed by: MF
Reviewed by: RA
Date: 2024.11.18
Updated: 2025.06.18

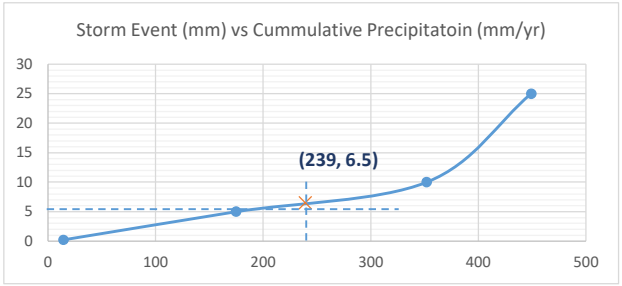
Design Storm Determination - Block 2
ALBION FIELD CENTRE-Climate Normals 1981-2010 Station Data
Water Balance/Water Budget Assessment

Days with Precipitation (From Climate Data)

	Apr	May	Jun	Jul	Aug	Sep	Oct	Total
>= 0.2 mm	10.8	10.3	10.2	9.0	9.8	10.8	11.3	**72**
>= 5 mm	4.5	5.0	4.4	4.9	4.5	4.5	4.3	**32**
>= 10 mm	2.1	2.3	2.9	2.6	2.8	2.5	2.5	**18**
>= 25 mm	0.4	0.5	0.6	0.7	0.6	0.7	0.4	**4**

Available Precipitation

Storm Event (mm)	**Total Days Per Year**	**Incremental Precipitation** (mm/yr)	**Cummulative Precipitation** (mm/yr)
0.2	72	14.4	14.4
5	32	160.5	174.9
10	18	177.0	351.9
25	4	97.3	449.2
Total	**126**	**449.2**	



Infiltration Deficit Target:	13,453	m^3/yr	Infiltration deficiet from Hydrogeological Assessment (SLR, March 2026)
Area contributing to mitigation (Block 2 Rooftop):	62,500	m^2	
Infiltration Deficit Target:	215	mm/yr	
Runoff Coefficient for Impervious Area:	0.90		
Design Precipitation:	239	mm/yr	(Design Infiltration / Contributing RC)
Therefore Design Storm:	6.5	mm	
Total Volume:	406	m^3	

Project: Prologis Humber Station
Project No: 0624-6777
Designed by: MF
Reviewed by: RA
Date: 2024.11.18
Updated: 2025.06.18

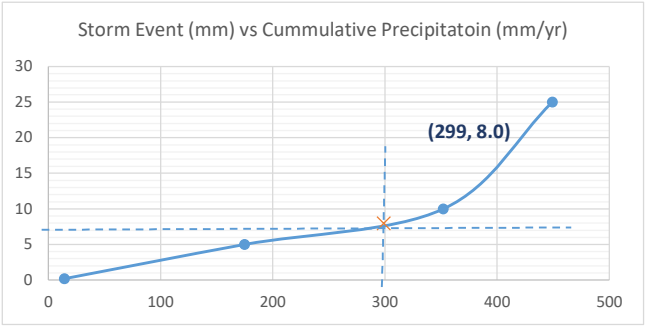
5 mm On-Site Retention - TRCA Erosion Criteria - Block 2
ALBION FIELD CENTRE-Climate Normals 1981-2010 Station Data
Water Balance/Water Budget Assessment

Days with Precipitation (From Climate Data)

	Apr	May	Jun	Jul	Aug	Sep	Oct	Total
>= 0.2 mm	10.8	10.3	10.2	9.0	9.8	10.8	11.3	**72**
>= 5 mm	4.5	5.0	4.4	4.9	4.5	4.5	4.3	**32**
>= 10 mm	2.1	2.3	2.9	2.6	2.8	2.5	2.5	**18**
>= 25 mm	0.4	0.5	0.6	0.7	0.6	0.7	0.4	**4**

Available Precipitation

Storm Event (mm)	**Total Days Per Year**	**Incremental Precipitation** (mm/yr)	**Cummulative Precipitation** (mm/yr)
0.2	72	14.4	14.4
5	32	160.5	174.9
10	18	177.0	351.9
25	4	97.3	449.2
Total	**126**	**449.2**	



Block 2 Impervious Area:	10.68	ha
TRCA Erosion Criteria:	5	mm
Equivalent Cummulative Precipitation:	175	mm/yr
Equivalent Cummulative Precipitation:	18683	m^3/yr
Area contributing to mitigation (Block 2 Rooftop):	62,500	m^2
Erosion Mitigation Target:	299	mm/yr
Therefore Design Storm:	8.0	mm
Total Volume:	500	m^3

Project Name: Prologis Humber Station
Project No: 0624-6777
Designed by: MF
Reviewed by: RA
Date: 2024.11.18
Updated: 2025.06.18

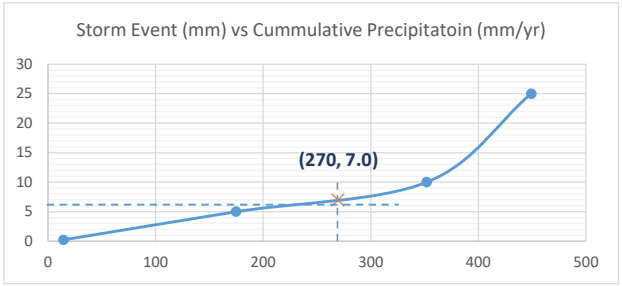
Design Storm Determination - Block 4
ALBION FIELD CENTRE-Climate Normals 1981-2010 Station Data
Water Balance/Water Budget Assessment

Days with Precipitation (From Climate Data)

	Apr	May	Jun	Jul	Aug	Sep	Oct	Total
>= 0.2 mm	10.8	10.3	10.2	9.0	9.8	10.8	11.3	**72**
>= 5 mm	4.5	5.0	4.4	4.9	4.5	4.5	4.3	**32**
>= 10 mm	2.1	2.3	2.9	2.6	2.8	2.5	2.5	**18**
>= 25 mm	0.4	0.5	0.6	0.7	0.6	0.7	0.4	**4**

Available Precipitation

Storm Event (mm)	**Total Days Per Year**	**Incremental Precipitation** (mm/yr)	**Cummulative Precipitation** (mm/yr)
0.2	72	14.4	14.4
5	32	160.5	174.9
10	18	177.0	351.9
25	4	97.3	449.2
Total	**126**	**449.2**	



Infiltration Deficit Target:	11,975	m^3/yr	Infiltration deficiet from Hydrogeological Assessment (SLR, March 2026)
Area contributing to mitigation (Block 4 Rooftop):	49,350	m^2	
Infiltration Deficit Target:	243	mm/yr	
Runoff Coefficient for Impervious Area:	0.90		
Design Precipitation:	270	mm/yr	(Design Infiltration / Contributing RC)
Therefore Design Storm:	7.0	mm	
Total Volume:	345	m^3	

Project: Prologis Humber Station
Project No: 0624-6777
Designed by: MF
Reviewed by: RA
Date: 2024.11.18
Updated: 2025.06.18

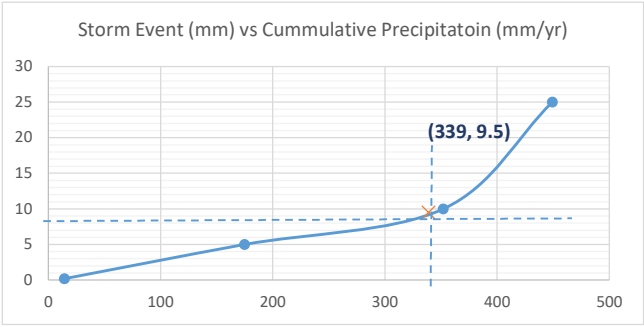
5 mm On-Site Retention - TRCA Erosion Criteria - Block 4
ALBION FIELD CENTRE-Climate Normals 1981-2010 Station Data
Water Balance/Water Budget Assessment

Days with Precipitation (From Climate Data)

	Apr	May	Jun	Jul	Aug	Sep	Oct	Total
>= 0.2 mm	10.8	10.3	10.2	9.0	9.8	10.8	11.3	**72**
>= 5 mm	4.5	5.0	4.4	4.9	4.5	4.5	4.3	**32**
>= 10 mm	2.1	2.3	2.9	2.6	2.8	2.5	2.5	**18**
>= 25 mm	0.4	0.5	0.6	0.7	0.6	0.7	0.4	**4**

Available Precipitation

Storm Event (mm)	**Total Days Per Year**	**Incremental Precipitation** (mm/yr)	**Cummulative Precipitation** (mm/yr)
0.2	72	14.4	14.4
5	32	160.5	174.9
10	18	177.0	351.9
25	4	97.3	449.2
Total	**126**	**449.2**	



Block 4 Impervious Area:	9.56	ha
TRCA Erosion Criteria:	5	mm
Equivalent Cummulative Precipitation:	175	mm/yr
Equivalent Cummulative Precipitation:	16721	m^3/yr
Area contributing to mitigation (Block 4 Rooftop):	49,350	m^2
Erosion Mitigation Target:	339	mm/yr
Therefore Design Storm:	9.5	mm
Total Volume:	469	m^3

Project Name: Prologis Humber Station
Project No: 0624-6777
Designed by: MF
Reviewed by: RA
Date: 2024.11.18
Updated: 2025.06.18

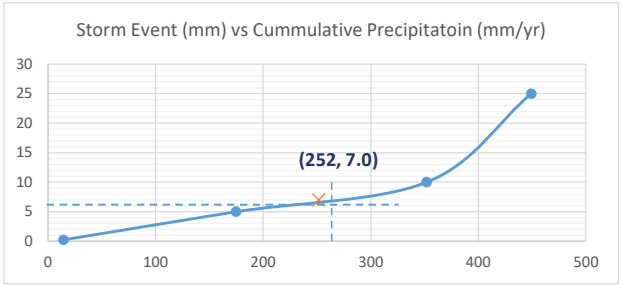
Design Storm Determination - Blocks 5 & 6
ALBION FIELD CENTRE-Climate Normals 1981-2010 Station Data
Water Balance/Water Budget Assessment

Days with Precipitation (From Climate Data)

	Apr	May	Jun	Jul	Aug	Sep	Oct	Total
>= 0.2 mm	10.8	10.3	10.2	9.0	9.8	10.8	11.3	**72**
>= 5 mm	4.5	5.0	4.4	4.9	4.5	4.5	4.3	**32**
>= 10 mm	2.1	2.3	2.9	2.6	2.8	2.5	2.5	**18**
>= 25 mm	0.4	0.5	0.6	0.7	0.6	0.7	0.4	**4**

Available Precipitation

Storm Event (mm)	**Total Days Per Year**	**Incremental Precipitation** (mm/yr)	**Cummulative Precipitation** (mm/yr)
0.2	72	14.4	14.4
5	32	160.5	174.9
10	18	177.0	351.9
25	4	97.3	449.2
Total	**126**	**449.2**	



Infiltration Deficit Target:	13,046	m^3/yr	Infiltration deficiet from Hydrogeological Assessment (SLR, March 2026)
Area contributing to mitigation (Block 5 & 6 Rooftop):	57,593	m^2	
Infiltration Deficit Target:	227	mm/yr	
Runoff Coefficient for Impervious Area:	0.90		
Design Precipitation:	252	mm/yr	(Design Infiltration / Contributing RC)
Therefore Design Storm:	7.0	mm	
Total Volume:	403	m^3	

Project: Prologis Humber Station
Project No: 0624-6777
Designed by: MF
Reviewed by: RA
Date: 2024.11.18
Updated: 2025.06.18

5 mm On-Site Retention - TRCA Erosion Criteria - Blocks 5 & 6

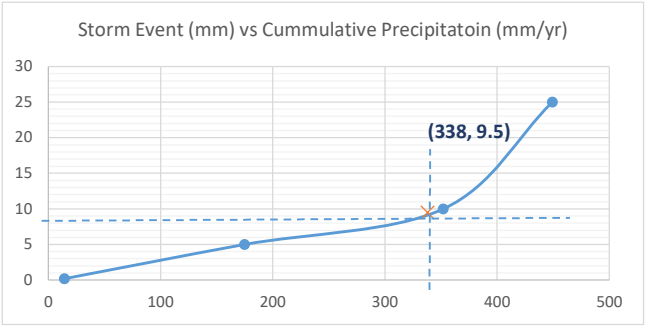
Water Balance/Water Budget Assessment

Days with Precipitation (From Climate Data)

	Apr	May	Jun	Jul	Aug	Sep	Oct	Total
>= 0.2 mm	10.8	10.3	10.2	9.0	9.8	10.8	11.3	**72**
>= 5 mm	4.5	5.0	4.4	4.9	4.5	4.5	4.3	**32**
>= 10 mm	2.1	2.3	2.9	2.6	2.8	2.5	2.5	**18**
>= 25 mm	0.4	0.5	0.6	0.7	0.6	0.7	0.4	**4**

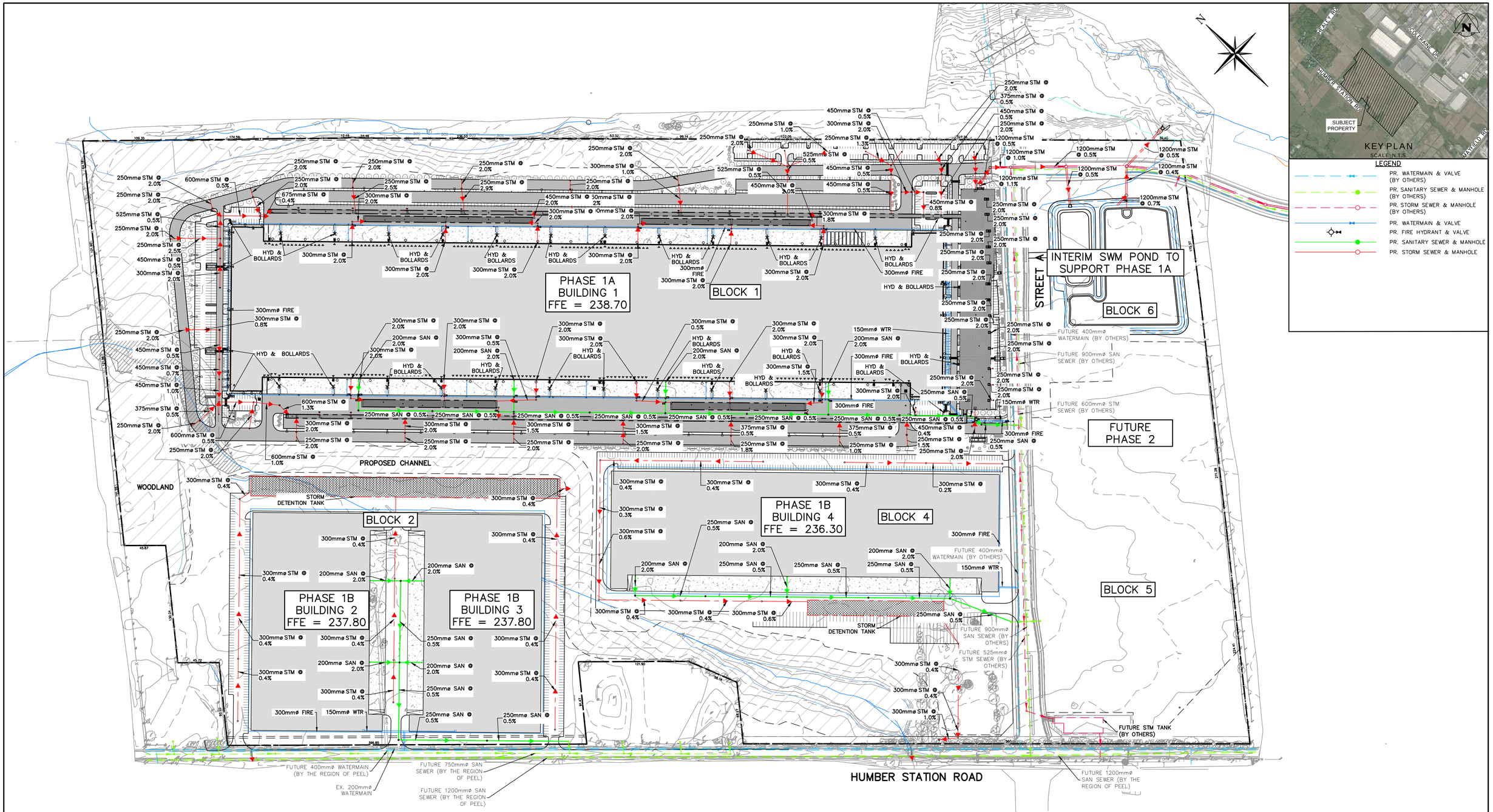
Available Precipitation

Storm Event (mm)	**Total Days Per Year**	**Incremental Precipitation** (mm/yr)	**Cummulative Precipitation** (mm/yr)
0.2	72	14.4	14.4
5	32	160.5	174.9
10	18	177.0	351.9
25	4	97.3	449.2
Total	**126**	**449.2**	



Block 5 & 6 Impervious Area:	11.12	ha
TRCA Erosion Criteria:	5	mm
Equivalent Cummulative Precipitation:	175	mm/yr
Equivalent Cummulative Precipitation:	19461	m^3/yr
Area contributing to mitigation (Block 5 & 6 Rooftop):	57,593	m^2
Erosion Mitigation Target:	338	mm/yr
Therefore Design Storm:	9.5	mm
Total Volume:	547	m^3

DRAWINGS & FIGURES



50 0m 50 100 150
SCALE: 1:2000

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TEMPORARY BENCHMARKS:

ELEVATION ARE REFERRED TO THE REGION OF PEEL BENCHMARK No. 40 LOCATED ON THE SOUTH FACE AT THE WEST CORNER OF SOUTH END OF A CONCRETE BOX CULVERT ACROSS MAYFIELD ROAD APPROXIMATELY 0.56 km EAST OF CLARKWAY DRIVE, HAVING AN ELEVATION OF 222.165 m. VERTICAL DATUM: CANADIAN GEODETIC DATUM, 1928 (1978 SOUTHERN ONTARIO READJUSTMENT)

SITE PLAN NOTES:

DESIGN ELEMENTS ARE BASED ON SITE PLAN PETROFF.
DRAWING No.: A100.0, DATED: 13/NOV/2025
PROJECT No.: 22095.00

Town

No.	ISSUE	DATE: MMM/DD/YYYY
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Engineer

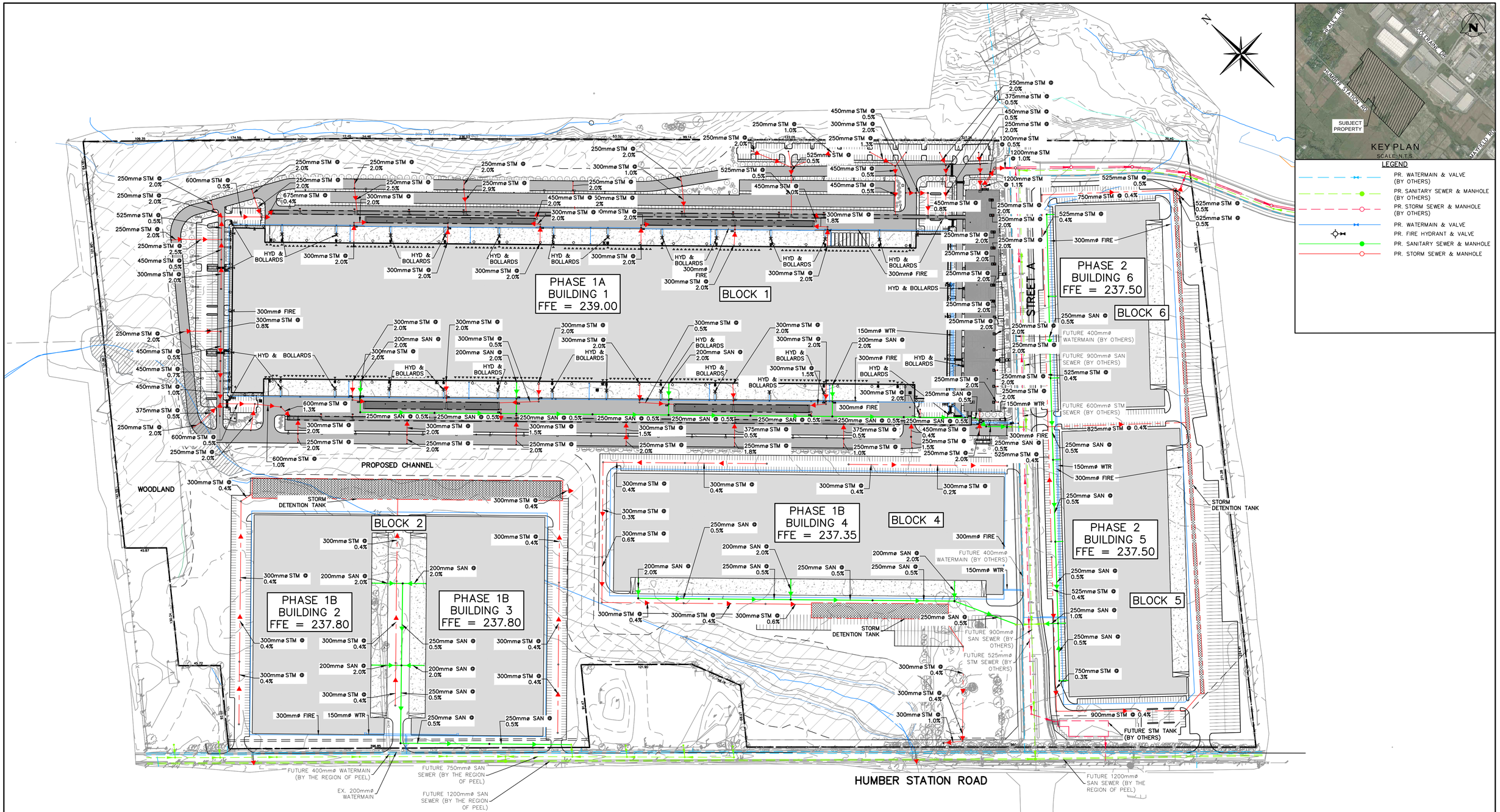
Engineer

Project
HUMBER STATION DISTRIBUTION CENTRE
TOWN OF CALEDON

Drawing
FUNCTIONAL SERVICING PLAN – INTERIM

CROZIER CONSULTING ENGINEERS

Drawn By	Design By	Project
S.C./D.G./M.P.H.	J.B./D.G./K.D./V.M.	624–6777
Check By R.A./M.I./J.F.	Check By R.A./M.I./J.F.	Drawing FIG 1



50 0m 50 100 150

SCALE: 1:2000

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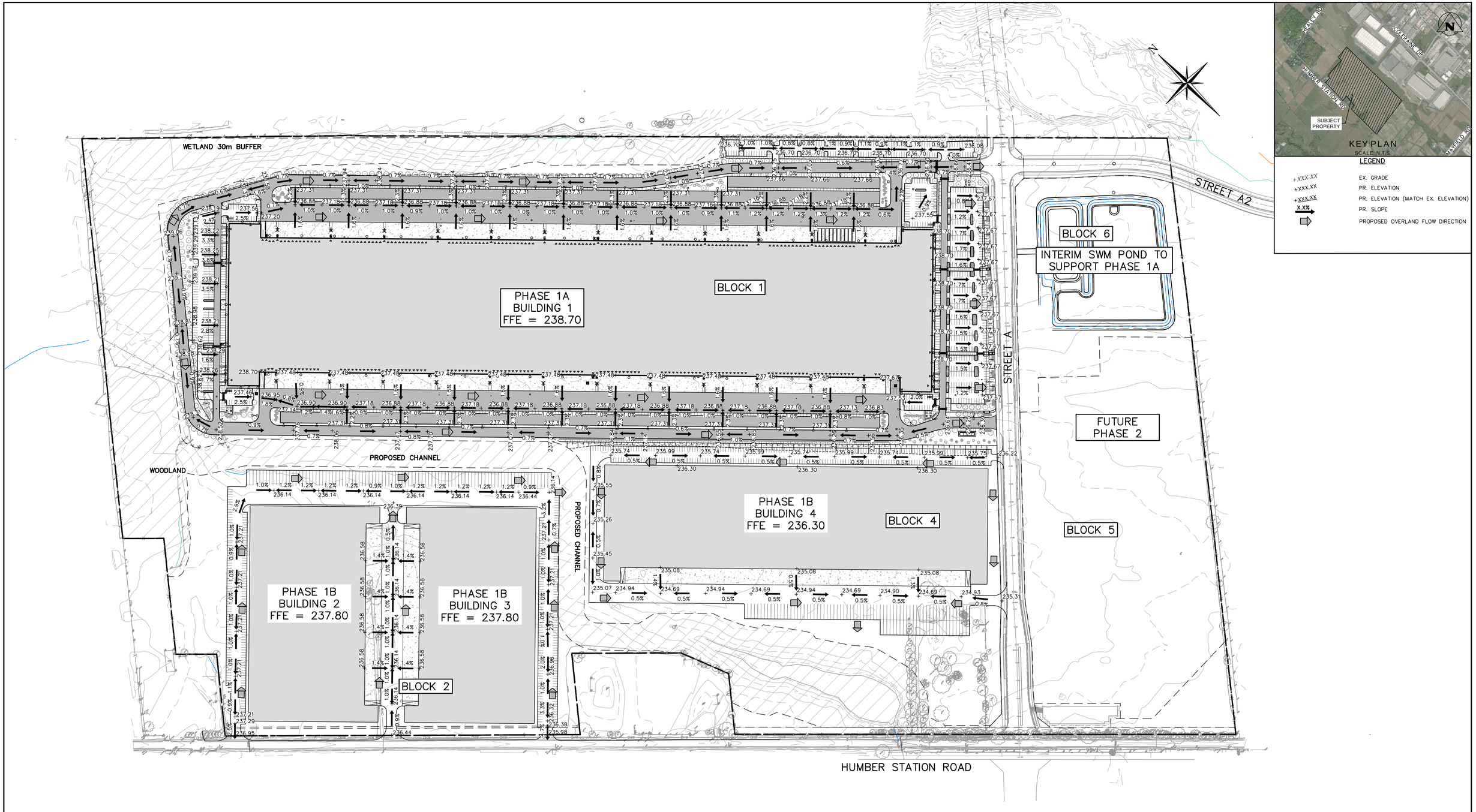
Engineer

Project: HUMBER STATION DISTRIBUTION CENTRE
TOWN OF CALEDON

Drawing: FUNCTIONAL SERVICING PLAN – ULTIMATE

CROZIER CONSULTING ENGINEERS

Drawn By	Design By	Project
S.C./D.G./M.P.H.	J.B./D.G./K.D./V.M.	624–6777
Check By R.A./M.I./J.F.	Check By R.A./M.I./J.F.	Drawing FIG 2



50 0m 50 100 150

SCALE: 1:2000

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SITE PLAN NOTES:

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DRAWING No.: A100.0, DATED: 13/NOV/2025
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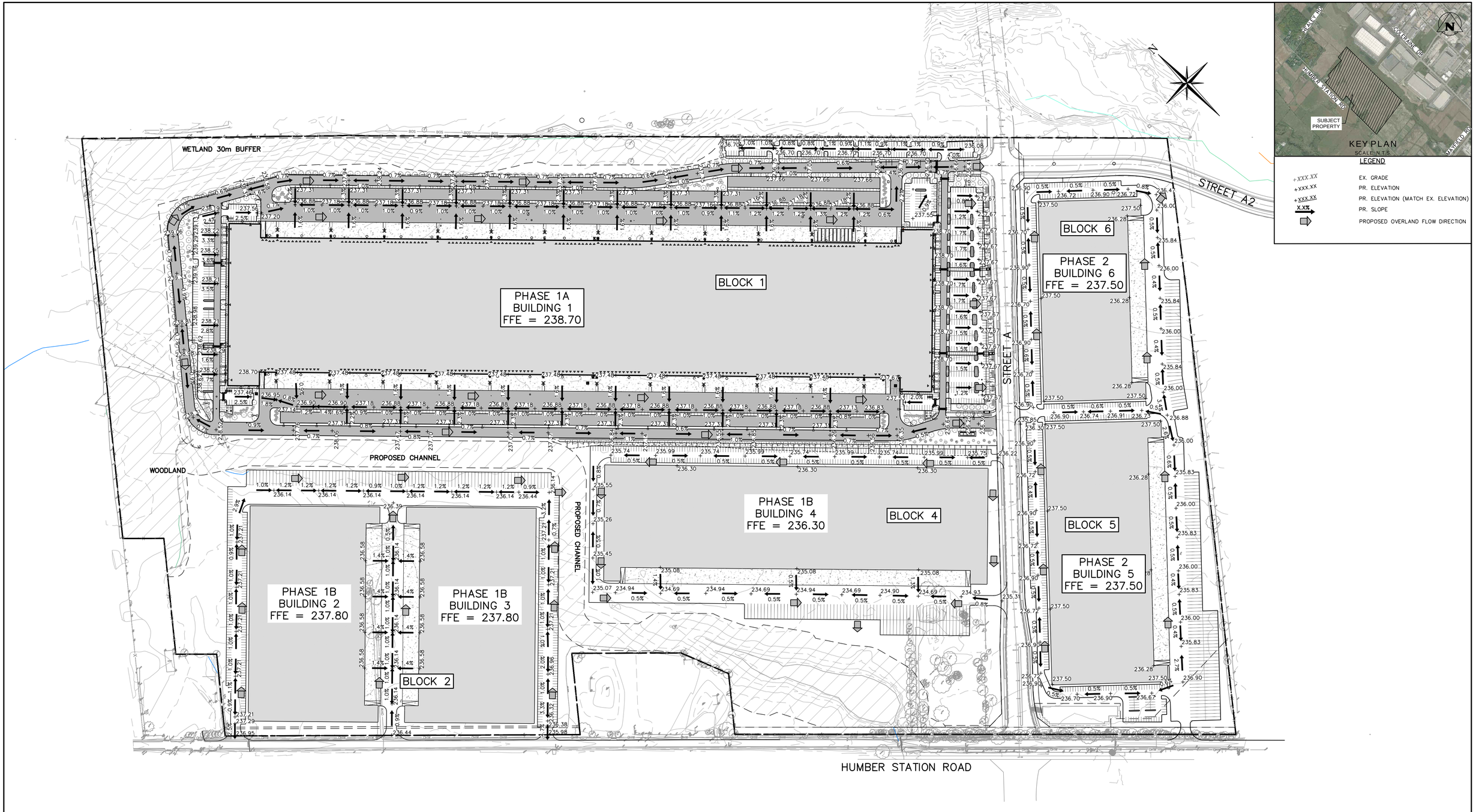
Engineer

Project
HUMBER STATION DISTRIBUTION CENTRE
TOWN OF CALEDON

Drawing
FUNCTIONAL GRADING PLAN – INTERIM

CROZIER CONSULTING ENGINEERS

Drawn By S.C./D.G./M.P.H. | Design By J.B./D.G./K.D./V.M. | Project 624-6777
Check By R.A./M.I./J.F. | Check By R.A./M.I./J.F. | Drawing FIG 3



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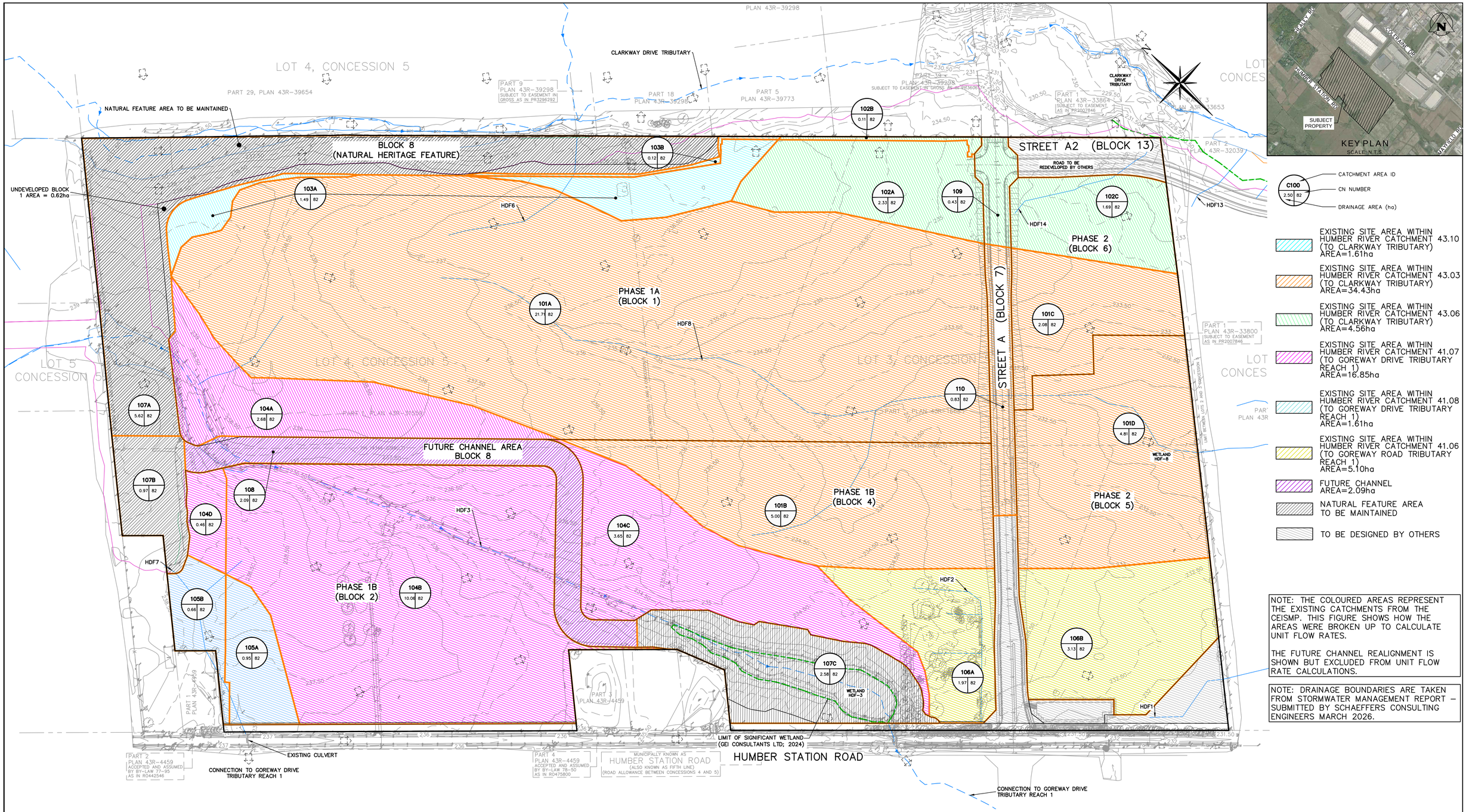
Engineer

Project
HUMBER STATION DISTRIBUTION CENTRE
TOWN OF CALEDON

Drawing
FUNCTIONAL GRADING PLAN – ULTIMATE

CROZIER CONSULTING ENGINEERS

Drawn By	Design By	Project
S.C./D.G./M.P.H.	J.B./D.G./K.D./V.M.	624–6777
Check By R.A./M.I./J.F.	Check By R.A./M.I./J.F.	Drawing FIG 4



NOTE: THE COLOURED AREAS REPRESENT THE EXISTING CATCHMENTS FROM THE CEISMP. THIS FIGURE SHOWS HOW THE AREAS WERE BROKEN UP TO CALCULATE UNIT FLOW RATES.

THE FUTURE CHANNEL REALIGNMENT IS SHOWN BUT EXCLUDED FROM UNIT FLOW RATE CALCULATIONS.

NOTE: DRAINAGE BOUNDARIES ARE TAKEN FROM STORMWATER MANAGEMENT REPORT – SUBMITTED BY SCHAEFFERS CONSULTING ENGINEERS MARCH 2026.

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SITE PLAN NOTES:

DESIGN ELEMENTS ARE BASED ON SITE PLAN PETROFF.
DRAWING No.: A100.0, DATED: 13/NOV/2025
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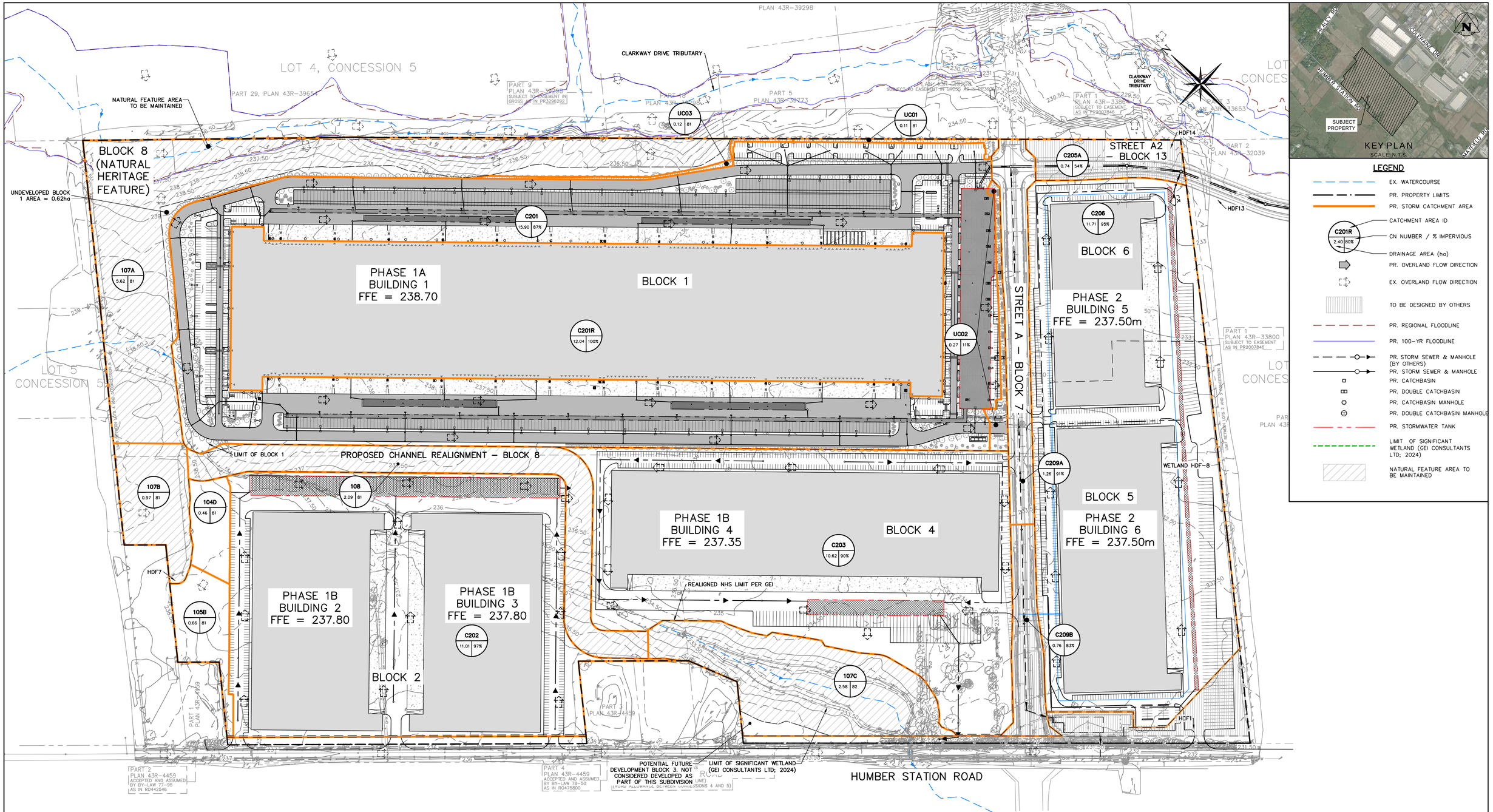
Engineer

Project: HUMBER STATION DISTRIBUTION CENTRE
TOWN OF CALEDON

Drawing: TARGET AREAS PER CEISMP DRAINAGE PLAN

CROZIER CONSULTING ENGINEERS

Drawn By	Design By	Project
S.C./D.G./M.P.H.	M.F.	624-6777
Check By R.A./M.I./J.F.	Check By R.A./M.I./J.F.	Drawing SWM-1



LEGEND

- EX. WATERCOURSE
- PR. PROPERTY LIMITS
- PR. STORM CATCHMENT AREA
- CATCHMENT AREA ID (C201R)
- CN NUMBER / % IMPERVIOUS (2.40 80%)
- DRAINAGE AREA (ha)
- PR. OVERLAND FLOW DIRECTION
- EX. OVERLAND FLOW DIRECTION
- TO BE DESIGNED BY OTHERS
- PR. REGIONAL FLOODLINE
- PR. 100-YR FLOODLINE
- PR. STORM SEWER & MANHOLE (BY OTHERS)
- PR. STORM SEWER & MANHOLE
- PR. CATCHBASIN
- PR. DOUBLE CATCHBASIN
- PR. CATCHBASIN MANHOLE
- PR. DOUBLE CATCHBASIN MANHOLE
- PR. STORMWATER TANK
- LIMIT OF SIGNIFICANT WETLAND (GEI CONSULTANTS LTD; 2024)
- NATURAL FEATURE AREA TO BE MAINTAINED

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TEMPORARY BENCHMARKS:

ELEVATION ARE REFERRED TO THE REGION OF PEEL BENCHMARK No. 40 LOCATED ON THE SOUTH FACE AT THE WEST CORNER OF SOUTH END OF A CONCRETE BOX CULVERT ACROSS MAYFIELD ROAD APPROXIMATELY 0.56 km EAST OF CLARKWAY DRIVE, HAVING AN ELEVATION OF 222.165 m. VERTICAL DATUM: CANADIAN GEODETIC DATUM, 1928 (1978 SOUTHERN ONTARIO READJUSTMENT)

SITE PLAN NOTES:

DESIGN ELEMENTS ARE BASED ON SITE PLAN PETROFF.
DRAWING No.: A100.0, DATED: 13/NOV/2025
PROJECT No.: 22095.00

Town

No.	ISSUE	DATE: MMM/DD/YYYY
1	ISSUED FOR DPOS & ZBA	APR/01/2026
2	ISSUED FOR DPOS & ZBA	JUN/24/2026

Engineer

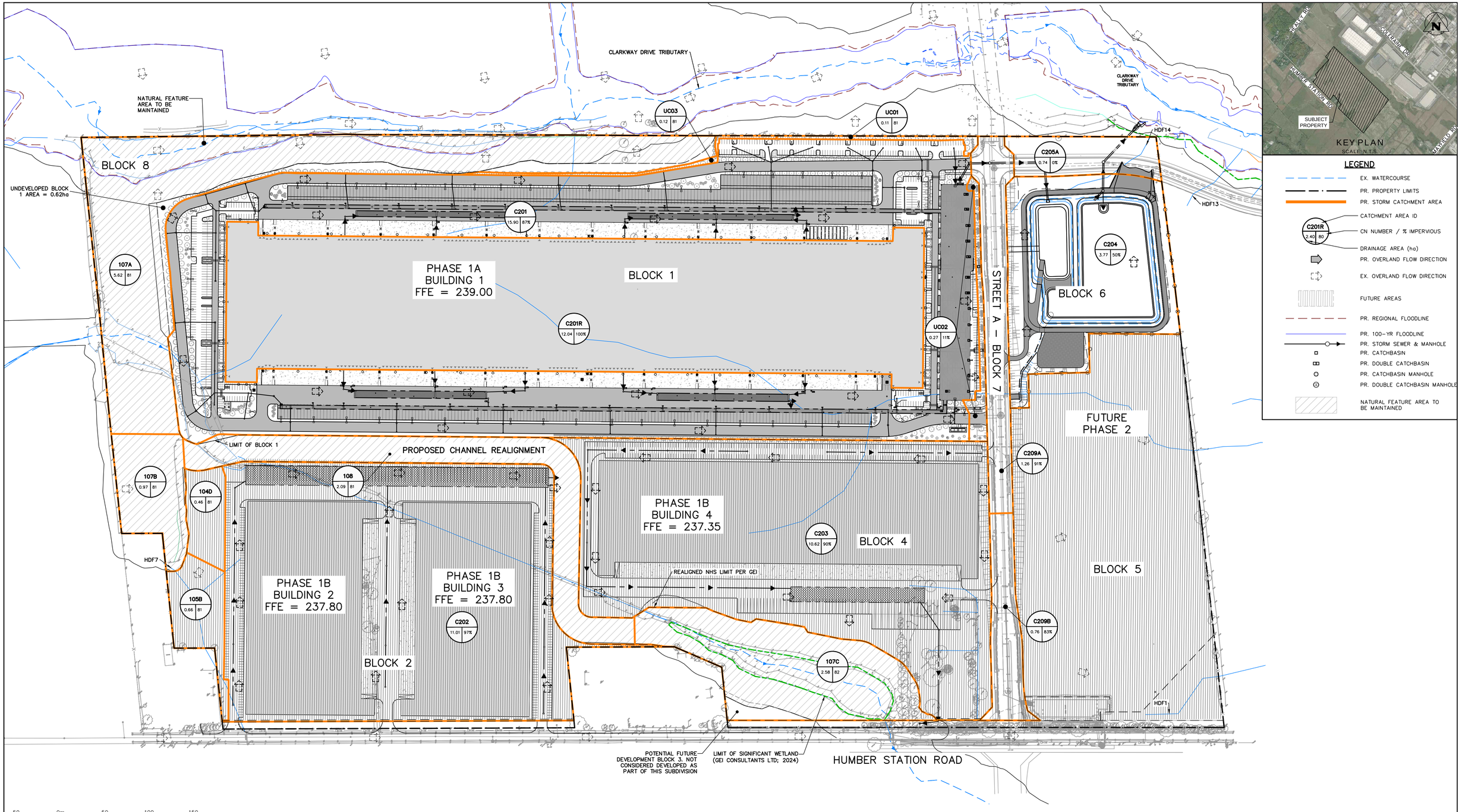
Engineer

Project: HUMBER STATION DISTRIBUTION CENTRE
TOWN OF CALEDON

Drawing: ULTIMATE POST-DEVELOPMENT DRAINAGE PLAN

CROZIER CONSULTING ENGINEERS

Drawn By	Design By	Project
S.C./D.G./M.P.H.	M.F.	624-6777
Check By	Check By	Drawing
R.A./M.I./J.F.	R.A./M.I./J.F.	SWM-2



LEGEND

- EX. WATERCOURSE
- PR. PROPERTY LIMITS
- PR. STORM CATCHMENT AREA
- CATCHMENT AREA ID (e.g. C201R)
- CN NUMBER / % IMPERVIOUS (e.g. 2.40 | 80)
- DRAINAGE AREA (ha)
- PR. OVERLAND FLOW DIRECTION
- EX. OVERLAND FLOW DIRECTION
- FUTURE AREAS
- PR. REGIONAL FLOODLINE
- PR. 100-YR FLOODLINE
- PR. STORM SEWER & MANHOLE
- PR. CATCHBASIN
- PR. DOUBLE CATCHBASIN
- PR. CATCHBASIN MANHOLE
- PR. DOUBLE CATCHBASIN MANHOLE
- NATURAL FEATURE AREA TO BE MAINTAINED

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SITE PLAN NOTES:

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DRAWING No.: A100.0, DATED: 13/NOV/2025
PROJECT No.: 22095.00

Town

No.	ISSUE	DATE: MMM/DD/YYYY
1	ISSUED FOR DPOS & ZBA	APR/01/2026
2	ISSUED FOR DPOS & ZBA	JUN/24/2026

Engineer

Engineer

Project: HUMBER STATION DISTRIBUTION CENTRE
TOWN OF CALEDON

Drawing: INTERIM CONDITIONS
POST-DEVELOPMENT DRAINAGE PLAN

CROZIER CONSULTING ENGINEERS

Drawn By	Design By	Project
Y.K.	M.F.	624-6777
Check By	Check By	Drawing
R.A.	R.A.	SWM-3

STREET A

NOTE:
STREET A GRADING & SERVICING BY SCHAEFFER SUBJECT TO CHANGE

20.8m–1200mmø STM @ 1.01%
STM MH23
T/G 236.65
NW INV 231.72
SE INV 231.57

1.8m SIDEWALK

6.0mWIDE INLET SPILLWAY

3:1 MAX

5.0m @ 2% SHELF

5.0m ACCESS ROAD

4:1

0.50m WIDE BOTTOM CHANNEL
0.5m HEIGHT & 0.30m BERM

SEDIMENT DRYING AREA

PR. PAGE WIRE FENCING

BOTTOM OF FOREBAY 229.10

FOREBAY BERM SPILL ELEV 230.30

PR. RIP RAP EROSION PROTECTION D50=150mm DIAMETER WITH DEPTH OF 225mm w/ FILTER CLOTH

EXT. DET. WL. 230.97

REGIONAL WL. 231.52

STM HW1
T/G 232.33
NE INV 230.60

42.4m–1350mmø STM @ 1.49%

STM MH24
T/G 234.15
NW INV 231.33
SW INV 231.23

FUT. STM SEWERS DESIGNED BY SCHAEFFERS

14.3m–1200mmø STM @ 0.70%

STM HW2
T/G 230.60
NE INV 229.60

DEEP POOL 229.10

STM MH28
T/G 232.94
NE INV 230.60
SW INV 230.60
W INV 230.60

STM MH29
T/G 232.83
SW INV 230.47
E INV 230.37

32.4m–1200mmø STM @ 0.40%

BOTTOM OF MAINCELL 229.60

REVERSED SLOPE
14.3m–300mmø STM @ 7.0%

40.0m WIDE BOTTOM EMERGENCY SPILLWAY

0.50m BERM

MATCH IN TO EXISTING EXISTING CONTOUR 232.20

56.3m–1200mmø STM @ 0.52%

25YR WL 230.05

REGIONAL FLOOD LINE

CLARKWAY DRIVE TRIBUTARY

59.5m–1350mmø

STM MH
T/G 231
W INV 230.08

STEP 4: SEWER TO BE PLUGGED UNTIL INTERIM POND IS DECOMISSIONED.

STEP 1: ROAD TO BE CONSTRUCTED TO LIMIT

STEP 3: INSTALL AND CONNECT STORM SEWER.

STEP 4: REMOVE SEWER CONNECTION AT POND OUTLET TO TRIBUTARY AND RESTORE VEGETATION.

STEP 1: ROAD TO BE CONSTRUCTED TO LIMIT

STEP 2: REMOVE SPILLWAY

DECOMISSIONING INTERIM SWM POND PHASING

STEP 1: CONSTRUCT ROAD AND INSTALL STORM SEWERS TO LIMITS.

STEP 2: REMOVE SPILLWAY

STEP 3: INSTALL REMAINING ROAD AND STORM SEWERS.

STEP 4: REMOVE SEWER CONNECTION TO POND. REMOVE SEWER CONNECTION AT POND OUTLET TO TRIBUTARY. RESTORE VEGETATION AT POND OUTLET.

STEP 5: REMOVE INFRUSTURE AND FILL POND.

NOTE: 300mm LAYER IN FOREBAY IS EXCLUDED AS OVER EXCAVATION OF POND BOTTOM IS NOT A CONCERN IS THE ENTIRE POND WILL ULTIMATELY REMOVE

NOTE: LIGHTING IS EXCLUDED AS THE POND WILL NOT BE ACCESSIBLE TO THE PUBLIC

NOTE: STANDARD SIGNAGE AND SAFETY EQUIPMENT WILL BE PROVIDED

CLAY LINER THICKNESS TO BE 150mm PER GEOTECHNICAL RECOMMENDATION (PINCHIN LTD, JUNE 2025)

KEY PLAN
SCALE: N.T.S.
SUBJECT PROPERTY
HUMBER STATION RD
COLERAINE DR
MAYFIELD RD

SCALE: 1:500

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SITE PLAN NOTES:

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DRAWING No.: A100.0, DATED: 30/MAY/2025
PROJECT No.: 22095.00

Town

No.	ISSUE	DATE: MMM/DD/YYYY
0	DRAFT ISSUED FOR PRELIM. TRCA REVIEW	MAY/08/2025
0A	ISSUED FOR COORDINATION	JULY/15/2025

Engineer

Engineer

Project
HUMBER STATION DISTRIBUTION CENTRE
TOWN OF CALEDON
NATURAL CHANNEL DESIGN

Drawing
INTERIM STORMWATER MANAGEMENT POND PLAN
(DECOMISSIONING CONSTRUCTION PHASING)

CROZIER CONSULTING ENGINEERS

Drawn By	Design By	Project
S.C./D.G./M.P.H.	J.B./D.G./K.D.	624–6777
Check By	Check By	Drawing
M.I./J.F.	M.I./J.F.	A - C607