Prologis Meadowvale Distribution Centre

Functional Servicing & SWM Report

Project Location:
7564 Tenth Line West, Mississauga, ON

Prepared for:
Petroff Partnership Architects
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August 8, 2025

MTE File No.: 60549_001

Engineers, Scientists, Surveyors.

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1.0 Introduction

1.1 Overview

MTE Consultants Inc. were retained by Petroff Partnership Architects to complete a functional servicing and stormwater management report for a proposed industrial development consisting of two (2) large industrial buildings (DC4 & DC5) along with a Data Centre and Substation, located at 7564 Tenth Line West in Mississauga, Ontario (see Figure 1 for location plan).

The site is bound by Highway 401 to the northwest, Tenth Line West to the northeast, an existing industrial distribution centre to the southeast, and a landscaped area to the southwest. The proposed development has a total area of 16.1 ha. Under existing conditions, the site consists of a vegetated field previously used for agricultural purposes.

The proponent plans to develop directly on the previously used agricultural land, removing any existing vegetation.

This report will outline a functional grading, servicing and stormwater management strategy for the proposed development in support Site Plan Approval. Please refer to MTE Drawings along with the site plan prepared by Petroff Partnership Architects for more details.

1.2 Background Information

The following documents were referenced in the preparation of this report:

Ref. 1: *Stormwater Management Practices Planning and Design Manual* (Ministry of Environment, March 2003).

Ref. 2: *Erosion & Sediment Control Guideline for Urban Construction* (December, 2006).

Ref. 3: *Design Guidelines for Drinking-Water Systems*, Ministry of the Environment and Climate Change (2008).

Ref. 4: *Design Guidelines for Sewage Works*, Ministry of the Environment and Climate Change (2008).

Ref. 5: *Low Impact Development Stormwater Management Planning and Design Guideline, Credit Valley Conservation & Toronto and Region Conservation for the Living City, Version 1.0* (2010).

Ref. 6: *Region of Peel Public Works Design, Specifications & Procedures Manual Linear Infrastructure* (June 2010)

Ref. 7: *Region of Peel Watermain Design Criteria* (June 2010)

Ref. 8: *Ontario Building Code* (2020).

Ref. 9: *Water Supply for Public Fire Protection*, Fire Underwriters Survey (2020).

Ref. 10: *City of Mississauga Transportation and Works Development Requirements Manual* (November 2021)

Ref. 11: *Region of Peel Linear Wastewater Standards* (November 2022)

Figure 1

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LOCATION PLAN

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1.3 Geotechnical Investigation

A geotechnical investigation was completed by Pinchin Ltd., dated October 30, 2024 and thirty (30) boreholes were advanced throughout the site, along with the installation of two (2) groundwater monitoring wells within the boreholes. Soil conditions encountered at the site generally consisted of topsoil, with a layer of sandy silt, and glacial till deposits comprised of silty clay or sandy silt and clay.

The topsoil layer encountered typically ranged in thickness from 100mm to 300mm. Underlying the topsoil, sandy silt was encountered up to 0.8 metres in depth. The native soils below consisted of silty clay to sandy silty clay till between 4.2m and 6.7m depth.

Groundwater levels were measured upon completion of drilling and generally ranged from 5.0m to 6.7m below the existing ground surface. Groundwater levels were not yet measured from the monitoring wells for this investigation at the time of this report. Refer to the Geotechnical Investigation by Pinchin in Appendix D for additional details.

1.4 Hydrogeological Investigation

A preliminary hydrogeological investigation was completed by MTE Consultants Inc., dated April 30, 2025. Based on manual measurements collected, groundwater elevations at the site range from 208.4 to 207.6 mAMSL (2.7m to 4.9m BGS). Additionally, grain size analysis was conducted to provide preliminary infiltration rate estimates ranging from 10mm/hr to 30mm/hr. Refer to Appendix D for additional details.

2.0 Stormwater Management

The following sections will describe the proposed stormwater management (SWM) plan for the site.

2.1 Stormwater Management Criteria

As provided by the City of Mississauga, the following stormwater management (SWM) criteria will be applied to the site:

- **Quantity Control:** Attenuation of the proposed conditions 2-year to 100-year peak flows to Tenth Line for the City of Mississauga design storm events to the existing levels for all storms.
  As per the Meadowvale Business Park District Stormwater Management Report by AECOM, the site in the proposed conditions will be controlled to a maximum allowable flow of 1.3 m^3/s to the Lisgar Channel Southeast of the Development.

- **Quality Control:** An enhanced (Level 1) water quality treatment (80% TSS Removal) is required for all impacted surface runoff prior to discharging to the receiving system.

- **Water Balance:** 5mm of rainfall to be retained on-site through infiltration (maximum 72-hour drawdown), re-use or evapotranspiration. The total volume to be retained is calculated as impervious site area multiplied by 5 mm.

2.2 Existing Conditions

Under existing conditions, the site is entirely landscaped with sporadic vegetation and is currently unoccupied. There is an existing 825mm diameter storm sewer flowing southeast at 0.3% in the southern corner of the site, which connects to a downstream SWM Facility. Existing catchbasins along the southeast property line capture storm runoff, meanwhile stormwater that flows northwest is captured by a drainage swale parallel to the Tenth Line ROW. There also exists a steep embankment along the southwest property line in which connects to the Lisgar Channel. The site currently slopes from east to west with a berm at the northwest portion of the site discharging storm runoff northeast.

There are no known stormwater management quantity or quality control existing on the site.

The existing site can be delineated by two (2) sub-catchment areas. Table 2.1 provides a brief description of the sub-catchment areas as well as their size and impervious cover. Figure 2 provides an illustration of the existing conditions catchment areas.

Table 2.1 – Existing Conditions Catchment Area

Catchment ID	Catchment Description	Area (ha)	Runoff Coefficient 'C'
101	Existing Drainage to Lisgar Channel	12.15	0.25
102	Existing drainage to Tenth Line Swale	4.02	0.25
	Total	**16.17**	**0.25**

The allowable release rate for the proposed development is governed by the AECOM Stormwater Management Report for the Meadowvale Business Park District – Phase 1 (May, 2012) which allocated an allowable release rate for the site of 1.3 m^3/s. Refer to Appendix D for the AECOM SWM Report.

For discharge directed to the drainage swale at the northeast of the site, the allowable release rate must also be attenuated such that the 2 to 100-year pre-development peak flow rates are not exceeded. The allowable release rates for discharge directed towards the Tenth Line swale were assessed using the SWMHYMO hydrologic modelling program developed by J.F. Sabourin & Associates for the 2 to 100-year City of Mississauga 24-hour SCS Type II design storm distribution. Appendix A contains detailed hydrologic modelling parameters and input/output printouts for the existing conditions.

Table 2.2 – Allowable Site Discharge to Tenth Line Swale (Catchment 102)

Storm Event	Allowable Peak Discharge Rate (m^3/s) [A]
2-Year	0.044
5-Year	0.084
10-Year	0.128
25-Year	0.167
50-Year	0.206
100-Year	0.251
[A] Discharge rate taken from SWMHYMO Output (see Appendix A)	

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THE KING'S HIGHWAY No. 401

TENTH LINE WEST

101
12.150
0%
0.25

102
4.022
0%
0.25

LEGEND

- SITE BOUNDARY
- EXISTING CONTOURS (326.00)
- EXISTING DIRECTION OF DRAINAGE
- EXISTING STORM SEWER
- CATCHMENT AREA
- 101 / 12.160 / 0% / 0.25 — CATCHMENT ID / AREA (ha.) / % of IMP / RUNOFF COEFFICIENT

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PROJECT
PROLOGIS MEADOWVALE DISTRIBUTION CENTER

TITLE
EXISTING CONDITIONS CATCHMENT AREA PLAN

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2.3 Proposed Conditions

The proposed development for the site will consist of two 1-storey industrial buildings and a 2-storey data centre, complete with asphalt parking, driveways, walkways, landscaped areas, and loading docks. No underground levels are proposed.

The proposed drainage pattern under post-development conditions is delineated by six (6) sub-catchment areas. Stormwater runoff from the site will be collected by newly proposed storm sewer networks and will convey flows to various outlet locations across the site.

A significant portion of the stormwater generated from the areas surrounding the distribution centres will be captured via catch basins and routed to a 400mm diameter orifice tube located at the southern property line. This flow will be attenuated in a quantity control stormwater management (SWM) tank wrapped in an impermeable liner, with additional storage volume provided by the pipes and structures within the storm sewer network.

Roof runoff from Distribution Centres 4 and 5 (DC4 and DC5) will be directed to flow control roof drains (FCRDs), then conveyed to underground infiltration tanks. After temporary storage and infiltration, excess flow will be discharged to the SWM facility bypass storm network located south of the site.

Stormwater collected from the Data Center and its immediate surroundings will be conveyed to a dry pond located at the eastern corner of the site. This facility will attenuate stormwater via an orifice-controlled outlet pipe, ultimately discharging to the Tenth Line swale.

Due to grading constraints, portions of the perimeter area along the property line will drain uncontrolled towards the adjacent rights-of-way (ROWs). Table 2.3 provides a brief description of each catchment area as well as the size and impervious cover associated with each. Figure 3 provides an illustration of the post-development catchment areas. Detailed information pertaining to the stormwater management model can be found in Appendix A.

Table 2.3 - Proposed Conditions Catchment Areas

Catchment ID	Catchment Description	Area (ha)	Runoff Coefficient 'C'
201	Site Drainage to SWM Facility SE of Site	7.00	0.73
202A	Distribution Centre 4 Roof (controlled)	2.68	0.90
202B	Distribution Centre 5 Roof (controlled)	3.05	0.90
203	Site Drainage to Tenth Line Swale (controlled)	3.08	0.74
204	Perimeter Discharge to Tenth Line Swale (uncontrolled)	0.18	0.25
205	Uncontrolled Perimeter Discharge to Lisgar Channel (uncontrolled)	0.17	0.25
	Total	**16.17**	**0.70**

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THE KING'S HIGHWAY No. 401

TENTH LINE WEST

202A
2.68
0.90

PROPOSED 1-STOREY
INDUSTRIAL BUILDING DC4

201
7.00
0.73

202B
3.05
0.90

PROPOSED 1-STOREY
INDUSTRIAL BUILDING DC5

205
0.17
0.25

PROPOSED 2-STOREY
DATA CENTER

203
3.08
0.74

204
0.18
0.25

LEGEND

- SITE BOUNDARY
- 326.00 EXISTING CONTOURS
- EXISTING STORM SEWER
- PROPOSED STORM SEWER
- CATCHMENT AREA
- 201 / 7.00 / 0.73 — CATCHMENT ID / AREA (ha.) / RUNOFF COEFFICIENT

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PROLOGIS MEADOWVALE DISTRIBUTION CENTER

TITLE
PROPOSED CONDITIONS CATCHMENT AREA PLAN

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2.3.1 Water Quantity Control

As described above, stormwater management quantity control for the site will be provided using a total of three underground storm tanks, orifice controls, a dry pond, pipes and structures volume, and rooftop FCRDs for both industrial buildings. The following tables summarize the stage-storage discharge characteristics for the underground storm tanks, dry pond, and rooftop FCRDs.

The proposed conditions were assessed using the SWMHYMO hydrologic modelling program developed by J.F. Sabourin & Associates for the 2 to 100-year City of Mississauga 24-hour SCS Type II design storm distribution. Appendix A contains detailed hydrologic modelling parameters and input/output printouts for the proposed conditions.

2.3.1.1. Discharge to SWM Facility Southeast of Development

Table 2.4 - Stage-Storage Discharge Calculations for Proposed Storm Quantity Control Tank + Pipes & Structures (Catchment 201)

Stage (m)	Head (m)	Storage Volume (m^3)[A]	Discharge, Q (m^3/s)[A B]	Remarks
207.70	0.000	0.00	0.0000	Orifice Invert
207.72	0.000	0.00	0.0000	Tank outlet Invert
210.08	2.180	1984.05	0.6575	Top of Tank
210.38	2.480	2127.35	0.7013	Top of Stone
210.75	2.850	2204.17	0.7517	Top of All Pipes
210.95	3.050	2216.51	0.7777	Overflow Point Southwest to Lisgar Channel

[A] Refer to Appendix A for detailed volume and discharge calculations.
[B] Discharge based on Orifice Discharge Equation with 200mm orifice size.

2.3.1.2. SWM Facility Bypass Network to Lisgar Channel

Table 2.5 - Stage-Storage Discharge Calculations for Proposed DC4 FCRDs (Catchment 202A)

Depth (m)	Storage Volume (m^3) [A]	Discharge, Q (m^3/s)[B]	Comments
0.000	0.00	0.000	Building Roof
0.050	142.50	0.042	0.050m (2 inches) ponding on roof
0.100	855.00	0.085	0.100m (4 inches) ponding on roof
0.150	2028.50	0.127	0.150m (6 inches) ponding on roof

[A] Refer to Appendix A for detailed volume calculations. Roof slope assumed to be 1%.
[B] Discharge based on ***57 roof drains*** with a rating of 0.378 L/s per inch of head (per notch per drain). Note that these FCRDs are to have **one (1) notch each**. (See Appendix A)

Table 2.6 - Stage-Storage Discharge Calculations for Proposed DC5 FCRDs (Catchment 202B)

Depth (m)	Storage Volume (m^3) [A]	Discharge, Q (m^3/s)[B]	Comments
0.000	0.00	0.000	Building Roof
0.050	152.50	0.045	0.050m (2 inches) ponding on roof
0.100	915.00	0.091	0.100m (4 inches) ponding on roof
0.150	2211.30	0.136	0.150m (6 inches) ponding on roof

[A] Refer to Appendix A for detailed volume calculations. Roof slope assumed to be 1%.
[B] Discharge based on ***61 roof drains*** with a rating of 0.378 L/s per inch of head (per notch per drain). Note that these FCRDs are to have **one (1) notch each**. (See Appendix A)

2.3.1.3. Drainage to Tenth Line Swale

Table 2.7 - Stage-Storage Discharge Calculations for Proposed Dry Pond (Catchment 203)

Stage (m)	Storage Volume (m^3)[A]	Orifice 1 Discharge (m^3/s) [B]	Orifice 2 Discharge (m^3/s) [C]	Total Discharge (m^3/s) [D]	Remarks
208.40	0	0.0000	-	0.0000	Invert of Orifice 1 & Bottom of Pond
208.48	45	0.0000	-	0.0000	Centerline of Orifice 1
209.25	661	0.0551	0.0000	0.0551	
209.49	903	0.0631	0.0196	0.0827	Centerline of Orifice 2
209.65	1080	0.0679	0.1578	0.2256	
209.78	1234	0.0715	0.2117	0.2832	Top of Pond

[A] Refer to Appendix A for detailed volume and discharge calculations.
[B] From orifice equation $Q = CA(2gH)^{0.5}$ for a **150mm** diameter orifice tube **[invert = 208.40]**
Where: C = 0.80, A = cross sectional area, g = 9.81, H = pressure head
[C] From orifice equation $Q = CA(2gH)^{0.5}$ for a **375mm** diameter orifice tube **[invert = 209.30]**
Where: C = 0.80, A = cross sectional area, g = 9.81, H = pressure head
[D] Total Discharge = Orifice 1 Flow + Orifice 2 Flow

Table 2.8 and 2.9 summarizes the existing and proposed conditions peak flow rates from the site. Refer to Appendix A for detailed calculations.

Table 2.8 - Proposed vs Allowable Peak Flow Rate (To Lisgar Channel)

100-Year Site Allowable Release Rate(m^3/s) [A]	Proposed Conditions 100-Year Peak Discharge Rates (m^3/s) [B]			
	Catchment 201 (controlled to SWM Facility Downstream) (m^3/s)	Catchment 202 (controlled to SWM Facility Bypass) (m^3/s)	Catchment 205 (uncontrolled) (m^3/s)	Total Proposed (m^3/s)
1.300	0.717	0.198	0.027	**0.942**

[A] Per AECOM Stormwater Management Report for the Meadowvale Business Park District – Phase 1 (May, 2012)
[B] Refer to Appendix A for detailed calculations.

Table 2.9 – Proposed vs Existing Peak Flow Rate (To Tenth Line)

Storm Event	Allowable Peak Discharge Rate to Tenth Line (m^3/s) [A]	Proposed Peak Discharge Rate to Tenth Line (Catchment 203 + 204) [A]
2-Year	0.044	0.042
5-Year	0.084	0.061
10-Year	0.128	0.081
25-Year	0.167	0.134
50-Year	0.206	0.196
100-Year	0.251	0.250

[A] Discharge rate taken from SWMHYMO Output (see Appendix A)

The analysis indicates the following:

- The total proposed 100-year peak discharge rate for the site does not exceed the allowable release rate as illustrated in Table 2.8.
- For the 2-year to 100-year events, the total proposed conditions peak discharge rate discharging to Tenth Line from the site does not exceed the allowable release rate as illustrated in Table 2.9. This satisfies the stormwater management quantity control requirement set by the City of Mississauga.
- Sufficient storage volume is provided on the distribution center rooftops as well as within the storm tanks, dry pond, and pipes and structures volume to contain the stormwater as illustrated above and in Appendix A.
- The maximum roof release rates of 102 L/s for DC4, and 105 L/s for DC5 are less than the allowable roof release rates of 112 L/s (for DC4) and 128 L/s (for DC5).

2.3.2 Water Quality Control

As mentioned above, Level 1 (Enhanced) water quality treatment (80% TSS removal) is required for the site. Due to the nature of the development being mostly impervious and the constraints with regards to groundwater levels and grading, there are limited opportunities to provide water quality controls via low impact development surface and underground features.

Therefore, stormwater quality control for the site will be provided via three Stormceptor (or approved equivalent) oil/grit separator (OGS) units. One OGS unit (OGS1) will treat runoff from the area surrounding the distribution centers, the second OGS unit (OGS2) will treat runoff from the northwest Data Centre driveway, and the third OGS unit (OGS3) will treat runoff from the southeast Data Centre driveway. As mentioned previously, drainage from the building roofs will bypass the OGS units as the clean water from the building roofs do not require treatment (Refer to MTE Drawing C2.2 for details). The following catchment parameters were used to size the oil/grit separator devices:

Catchment 201 – Distribution Centre Driveway Area

- Catchment Area = 5.103 ha
- Runoff Coefficient 'C' = 0.73
- Particle Distribution = CA ETV

Catchment 203 – Northwest Data Center Driveway

- Catchment Area = 1.93 ha
- Runoff Coefficient 'C' = 0.59
- Particle Distribution = CA ETV

Catchment 203 – Southeast Data Center Driveway

- Catchment Area = 0.26 ha
- Runoff Coefficient 'C' = 0.50
- Particle Distribution = CA ETV

The analysis indicates that the Stormceptor EFO12, EFO8, and EFO4 OGS units will provide 61%, 60%, and 65% TSS removal, respectively, and capture more than 90% of annual runoff volume.

Stormwater runoff generated from catchment areas 204 and 205 will continue to drain uncontrolled to the Lisgar channel and Tenth Line swale respectively, similar to existing conditions. These catchments are comprised entirely of landscaped areas and are therefore considered to be clean. Therefore, no water quality controls will be provided for this area.

Table 2.10 below outlines the cumulative TSS removal efficiency of the site and shows that the site meets the requirements for a "Enhanced" (Level 1, or 80% TSS removal) level of water quality protection. Best management practices have been used to achieve the highest level of water quality control feasible due to site constraints and the extent of new development on the site.

Table 2.10 – *TSS Removal Efficiencies*

Catchment ID	Area (ha)	% of Total Area	Treatment Process	%TSS Removal for Treatment Process	Weighted % TSS Removal
201	7.00	43.2%	Oil/Grit Separator + Downstream SWM Facility [C]	80%	34.6%
202A	2.68	16.6%	Roof Area inherently clean	100%	16.6%
202B	3.05	18.9%	Roof Area inherently clean	100%	18.9%
203	1.01	6.2%	Roof Area inherently clean	100%	6.2%
	2.08	12.9%	Oil/Grit Separator	50%	6.5%
204	0.18	1.1%	Clean Landscape Areas	100%	1.1%
205	0.17	1.0%	Clean Landscape Areas	100%	1.0%
Total Property Boundary	**16.17**	**100%**	**Total Weighted %TSS Removal Efficiency:**		**84.9%**

[A] %TSS removal for treatment process from Table 4.4.3 of the LID SWM Design Manual.
[B] Weighted % TSS removal = (% of total area) x (% TSS removal for treatment process)
[C] TSS Removal = 50 + 60 - (50x60) / 100 = 80%

2.3.3 Water Retention

As per City of Mississauga requirements, the site is required to provide 5mm of on-site retention via infiltration, reuse, or evapotranspiration. Based on the development site area, the volume of water required to be retained on-site is calculated as follows:

Volume = Impervious Site Area (m^2) x Depth of Rainfall (m)

= 111, 573m^2 x 0.005m

= 558.0 m^3

The required retention volume is being provided via dead storage in the two (2) proposed storm tanks within the loading docks. The total retention volume provided on site can be summarized in Table 2.11 below.

Table 2.11 – *Summary of Retention Storage Volumes*

Stormwater Management Tank	Retention Volume Provided (m^3) [A]
DC4 Tank	239.70
DC5 Tank	336.00
Total	**575.70 m^3**

[A] Refer to Appendix A for detailed calculations on Tank sizing.

The proposed retention tanks will be an open-bottom Brentwood ST-18 system with system footprints of 951.60m^2 (DC4) and 1306.81m^2 (DC5) respectively, and a total water storage volume of 1213.82m^3

The estimated infiltration rate within the tank area was established based on a weighted average of percolation rate data based on grain size analysis. Manual measurements closest to the tank

location of 30mm/hr and 15mm/hr were averaged and multiplied by a 2.5x factor of safety per conservation authority guidelines. The retention tanks will be able to infiltrate the required 5mm retention volume of 558.0 m^3 in less than 72hrs.

The following drawdown time was calculated:

- 69.96 hrs for an infiltration volume of 239.7m^3
- 71.42 hrs for an infiltration volume of 336.0m^3

Therefore, sufficient retention volume and drawdown time can be provided within the retention tank to meet City of Mississauga requirements for water balance. Refer to Appendix A for detailed calculations.

3.0 Sediment and Erosion Control

Sediment and erosion control measures will be implemented on site during construction. These measures will include:

- Installation of sediment control fencing at strategic locations around the perimeter of the site.
- Preventing silt or sediment laden water from entering inlets (catchbasins / catchbasin manholes) by wrapping the inlet grates with filter fabric or installing silt sacks.
- The Contractor shall clean up and remove any mud or debris tracked onto the surrounding rights-of-way, on a regular basis.
- Maintaining sediment and erosion control structures in good repair (including periodic cleaning as required) until such time that the Engineer approves their removal. Erosion control measures to be inspected weekly and after any rainfall event.

4.0 Sanitary Sewer Servicing

4.1 Existing Conditions

An existing sanitary service pipe has been installed for this development as part of the Meadowvale Business Park District Phase 1 Development. An existing 250mm diameter sanitary service sloped at 1.0% conveys flows south at the south corner of the site. The full flow capacity of this sewer is approximately 62.04 L/s.

4.2 Sanitary Demand

The anticipated sanitary discharge from the proposed development was calculated using Region of Peel design criteria. Populations have been estimated based on the population densities provided in the Region of Peels standards. Table 4.1 provides an estimate of the population for the proposed site. Detailed calculations are found in Appendix B.

Table 4.1 - Population Estimate

Land-Use	Site Area (ha) [A]	Population Density (Persons per ha) [B]	Population (people)
Industrial	16.17	70	1132
		Total Population	**1132**

Table 4.2 summarizes the sanitary sewer discharge rates from the proposed site to the existing sanitary service.

Table 4.2 - Sanitary Discharge Rates

Land Use	Area (ha)	Population (persons) [A]	Peaking Factor [B]	Average Flow (L/s) [C]	Infiltration Allowance (L/s) [D]	Peak Flow (L/s) [E]
Industrial	16.17 [F]	1132	3.76	3.54	4.21	13.32
				Total Sanitary Demand from Site [G] =		**17.52**

[A] Population Estimate: See Table 4.1
[B] Peaking factor based on Harmon's Equation (PF) = $1+14/(4+(P/1000)^{0.5})$ where, $2.0 \leq PF \leq 4.0$
[C] Average flow based on 270 L/c/day see Appendix B)
[D] Infiltration allowance based on 0.26 L/s/ha
[E] Peak Flow = (Avg. Flow) x (PF).
[F] Area reflects site area.
[G] Total Sanitary Demand = Sum of Peak Flows + Infiltration Allowance

Please refer to Appendix B for detailed calculations. As summarized in Table 4.2, the total peak sanitary discharge from the site under proposed conditions is 17.52 L/s.

4.3 Proposed Sanitary Servicing Plan

The proposed expansion will be serviced by the existing 250mm diameter sanitary service at 1.0% that discharges south of the site. 250mm diameter sanitary services will be provided to each building within the proposed development and will convey drainage to the existing 250mm sanitary lateral on-site. The 250mm diameter sanitary lateral will then convey flows to the existing 300mm diameter sanitary sewer located within the neighboring site south of the proposed development. The sites lateral will be at 28.2% capacity based on the calculated peak demand. The proposed 250mm lateral will be connected via a 250mm diameter pipe extension and sanitary control manhole (Refer to MTE Drawing C2.2A for details).

5.0 Domestic and Fire Water Supply Servicing

5.1 Existing Conditions

There is an existing 300mm diameter watermain along Tenth Line West within the road fronting the site. There are no existing hydrants within the site limits or fronting the site.

5.2 Domestic Water Demands

The expected domestic water demand for the proposed development was estimated using the Region of Peel design criteria. Table 5.1 summarizes the domestic water demand requirements for the Average Day, Maximum Day and Peak Hour demand scenarios. Detailed calculations are found in Appendix C.

Table 5.1 - Water Demand

Industrial Usage		
Population:	1132 people (see Table 4.1)	
Average Day Demand [A]:	300 L/c/d x 1132 people =	**3.93 L/s**
Max. Day Peaking Factor [B]:	1.4	
Peak Hour Peaking Factor [B]:	3.0	
Maximum Day Demand:	1.4 x 3.93 L/s =	**5.50 L/s**
Peak Hour Demand:	3.0 x 3.93 L/s =	**11.79 L/s**
[A] Water Demands based on Region of Peel Design Criteria [B] Peaking factors based on Region of Peel Design Criteria		

5.3 Fire Flow Demand

Fire flow demands for the proposed development were determined using the methodology outlined in *Water Supply for Public Fire Protection* (Fire Underwriters Survey (FUS, 2020)). A sprinkler system designed to NFPA13 is proposed for the building. As the water supply for both the sprinkler system and fire hose lines will be provided by the municipal system, a total sprinkler reduction of 40% will be applied to the calculated fire flow demand. This is based on a 30% reduction for a sprinkler system adequately designed per NFPA13 and an additional 10% reduction if the water supply for the system and fire hose lines is standard (i.e. supplied by a municipal water main). The fire demand for the building is summarized in Table 5.2. Detailed calculations are provided in Appendix C.

Table 5.2 - Fire Flow Requirements

Building	Fire Underwriters Survey (FUS) Flow Rate
Building DC4	336.7 L/s
Building DC5	358.3 L/s
Data Center	251.7 L/s

The maximum day + largest fire flow demand is therefore 363.84 L/s (358.33 + 5.50 L/s).

5.4 Proposed Water Servicing Plan

The site will be serviced by two new 300mm diameter fire services and a 250mm diameter domestic water service connecting to the existing 300mm diameter watermain on Tenth Line West. Each building within the proposed development will be provided its own 250mm domestic water service and 300mm fire water service per Region of Peel standards. Refer to mechanical plans for details on the internal plumbing, water metering and back flow prevention devices.

New private hydrants will be installed throughout the site to provide sufficient coverage. The proposed hydrants will be within 90m of the proposed building's primary entrances. Refer to MTE Drawing C2.2 and the site plan by Petroff Partnership Architects.

A hydrant flow test was completed December 18, 2024 by Superior Sprinkler. Using the lowest residual pressure to analyze the available flow, the water distribution system is able to maintain a minimum residual pressure of 140 kPa (20 psi) when subject to Maximum Day + Fire Flow demands. Refer to Appendix C for flow analysis and hydrant flow test results.

6.0 Conclusions and Recommendations

Based on the information provided herein, it is concluded that the development can be constructed to meet the requirements of the City of Mississauga. Therefore, it is recommended that:

i. Stormwater quantity control criteria can be achieved using on-site orifice controls, with storage provided in three stormwater tanks, a dry pond, FCRDs, and pipes and structures volume as described in Section 2.3.

ii. Quality control for the site can be provided using three OGS units as described in Section 2.3.

iii. Erosion and sediment controls be installed as described in Section 3.0 of this report.

iv. Sanitary servicing for the development be installed as described in Section 4.3 of this report.

v. Water servicing for the development be installed as described in Section 5.4 of this report to meet OBC minimum water supply requirements.

vi. The proposed stormwater management plan presented in this report and the site servicing works described in this report and as shown on Drawings C2.1 and C2.2 be accepted in support of the site plan approval process.

We trust the information enclosed herein is satisfactory. Should you have any questions please do not hesitate to contact our office.

All of which is respectfully submitted,

MTE Consultants Inc.

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https://mte85.sharepoint.com/sites/60549_001/Shared Documents/02 - Reports/MTE/FSR+SWM Report/60549-001- Functional Servicing & Stormwater Management Report.docx

Appendix A

Stormwater Management

PROLOGIS MEADOWVALE DISTRIBUTION CENTRE
7564 TENTH LINE WEST, MISSISSAUGA
STORMWATER MANAGEMENT - HYDROLOGIC PARAMETERS

EXISTING DEVELOPMENT CONDITIONS HYDROLOGIC MODELING PARAMETERS

Catchment ID	Catchment Description	Hydrograph Method	Area (ha)	Perv. CN	Perv. Ia (mm)	Impervious (%) TIMP	Impervious (%) XIMP	Flow Length (m) Perv.	Flow Length (m) Imperv.	Manning "n" Perv.	Manning "n" Imperv.	Slope (%) Perv.	Slope (%) Imperv.	Time to Peak Tp (hrs)
101	Existing drainage to Lisgar Channel	NASHYD	12.15	70	5.0	0	0							0.83
102	Existing drainage to Tenth Line Swale	NASHYD	4.02	70	5.0	0	0							0.38
		TOTAL	**16.17**			**0**								

PROPOSED DEVELOPMENT CONDITIONS HYDROLOGIC MODELING PARAMETERS

Catchment ID	Catchment Description	Hydrograph Method	Area (ha)	Perv. CN	Perv. Ia (mm)	Impervious (%) TIMP	Impervious (%) XIMP	Flow Length (m) Perv.	Flow Length (m) Imperv.	Manning "n" Perv.	Manning "n" Imperv.	Slope (%) Perv.	Slope (%) Imperv.	Time to Peak Tp (hrs)
201	Site Drainage to SWM Facility SE of Site	STANDHYD	7.00	70	5.0	76	76	20	30	0.250	0.013	2.0	1.5	
202A	Distribution Centre 4 Roof	STANDHYD	2.68	70	5.0	99	99	0	262	0.250	0.013	0.0	1.0	
202B	Distribution Centre 5 Roof	STANDHYD	3.05	70	5.0	99	99	0	282	0.250	0.013	0.0	1.0	
203	Site Drainage to Tenth Line Swale	STANDHYD	3.08	70	5.0	72	72	32	53	0.250	0.013	5.0	1.0	
204	Uncontrolled Perimeter Discharge to Tenth Line Swale	NASHYD	0.18	70	5.0	0	0							0.05
205	Uncontrolled Perimeter Discharge to Lisgar Channel	NASHYD	0.19	70	5.0	0	0							0.07
		TOTAL	**16.17**			**69**								

Notes: For NASHYD Commands:
- DT=1
- DWF=0
- N=3

PROLOGIS MEADOWVALE DISTRIBUTION CENTRE
7564 TENTH LINE WEST, MISSISSAUGA
STORMWATER MANAGEMENT

Time to Peak Calculations - Existing Conditions

Time to peak (Tp) values derived from time of concentration (Tc) calculations based on the Airport Method Equation:

$$T_c = \frac{3.26(1.1-C)L^{0.5}}{S_w^{0.33}}$$ *(MTO Drainage Manual Design Chart 1.12)*

T_c = Overland flow time of concentration (min)
L = Flow travel length (m)
S = Basin slope (%)
C = Runoff coefficient

From this, **Time-to-peak (Tp) = 0.67 Tc**

The time to peak values used in the NASHYD command for the existing conditions hydrologic modeling are shown below.

Catchment ID	Area (ha)	Length (m)	"C"	Slope (m/m)	Tc (min)	Tp	
						(min)	(hrs)
101	12.15	492.6	0.25	0.006	74.37	49.83	0.83
102	4.02	237.0	0.25	0.019	34.45	23.08	0.38

PROLOGIS MEADOWVALE DISTRIBUTION CENTRE
7564 TENTH LINE WEST, MISSISSAUGA
STORMWATER MANAGEMENT

Time to Peak Calculations - Proposed Conditions

Time to peak (Tp) values derived from time of concentration (Tc) calculations based on the Airport Method Equation:

$$T_c = \frac{3.26(1.1-C)L^{0.5}}{S_w^{0.33}}$$ *(MTO Drainage Manual Design Chart 1.12)*

T_c = Overland flow time of concentration (min)
L = Flow travel length (m)
S = Basin slope (%)
C = Runoff coefficient

From this, **Time-to-peak (Tp) = 0.67 Tc**

The time to peak values used in the NASHYD command for the existing conditions hydrologic modeling are shown below.

Catchment ID	Area (ha)	Length (m)	"C"	Slope (m/m)	Tc (min)	Tp	
						(min)	(hrs)
204	0.19	10	0.25	0.100	4.10	2.75	0.05
205	0.19	15	0.25	0.050	6.31	4.23	0.07

PROLOGIS MEADOWVALE DISTRIBUTON CENTRE
7564 Tenth Line West
STORMWATER MANAGEMENT

Stage-Storage-Discharge Relationship Rooftop Flow Controls (DC4 Roof)

Proposed Building

Total Roof Area = 26823 m^2
Total Roof Area Avail for Ponding= 24140.7 m^2
Number of roof drains = 57 (min. # drains = 1 per 900m^2)
Drain discharge = 0.0149 l/s/mm head (0.378 l/s per inch of head per notch) - 1 Notch

Head (mm)	Area (m^2)	Incremental Volume (m^3)	Cumulative Volume (m^3)	Total Discharge (m^3/s)
0	0	0	0.0	0
50	5700	142.5	142.5	0.042
100	22800	712.5	855.0	0.085
150	24141	1173.5	2028.5	0.127

Notes:
-1% roof slope was assumed

Contributing Area per Drain: 423.521 m^2
Side Length of Square Catchment Area (per Drain) 20.5796 m

PROLOGIS MEADOWVALE DISTRIBUTON CENTRE
7564 Tenth Line West
STORMWATER MANAGEMENT

Stage-Storage-Discharge Relationship Rooftop Flow Controls (DC5 Roof)

Proposed Building

Total Roof Area = 30503 m^2
Total Roof Area Avail for Ponding= 27452.7 m^2
Number of roof drains = 61 (min. # drains = 1 per 900m^2)
Drain discharge = 0.0149 l/s/mm head (0.315l/s per inch of head per notch) - 1 Notch

Head (mm)	Area (m^2)	Incremental Volume (m^3)	Cumulative Volume (m^3)	Total Discharge (m^3/s)
0	0	0	0.0	0
50	6100	152.5	152.5	0.045
100	24400	762.5	915.0	0.091
150	27453	1296.3	2211.3	0.136

Notes:
-1% roof slope was assumed

Contributing Area per Drain: 450.044 m^2
Side Length of Square Catchment Area (per Drain) 21.2142 m

PROLOGIS MEADOWVALE DISTRIBUTION CENTRE
7564 TENTH LINE WEST, MISSISSAUGA
STORMWATER MANAGEMENT
TANK VOLUME CALCULATIONS

Quantity Control Tank (Catchment 201)		
6 Layers of StormSmart		
Height	2.4	m
Void Space Volume	96.0%	
Module Footprint	645.18	sq.m
System Footprint	675.08	sq.m
Module Unit Footprint	0.56	sq.m
Volume per unit	0.42912	m^3
Total Number of Tanks	3464	Units
Storage Volume (Net)	1486.47	m^3
Volume of Top Stone	81.01	m^3
Volume of Side Stone	28.704	m^3
Volume of Bottom Stone	27.003	m^3
Total Volume Provided	1623.19	m^3
Bottom of Tank Elevation	207.68	m
Top of Dead Storage/Outlet Invert	207.72	m
Top of Tank Elevation	210.08	m
Top of Stone	210.38	m
Dead Storage	52.3	m^3
Active Storage	**1570.9**	m^3

Total Active Storage	**1570.93**	**m^3**
	1623.2	

PROLOGIS MEADOWVALE DISTRIBUTION CENTRE
7564 TENTH LINE WEST, MISSISSAUGA
STORMWATER MANAGEMENT
Stage Storage Discharge Curve - Catchment 201

Outlet Device No. 1 (Quantity)	
Type:	Orifice Tube
Diameter (mm)	400
Area (m^2)	0.12566
Invert Elev. (m)	207.70
C/L Elev. (m)	207.90
Disch. Coeff. (C_d)	0.8
Discharge (Q) =	$C_d A (2 g H)^{0.5}$
Number of Orifices:	1

		SWM Storage Volumes			Outlet No. 1		Total
Description	Elevation m	Area m^2	Increm. Volume m^3	Cumulative Volume m^3	Head m	Discharge m^3/s	Discharge m^3/s
Orifice Invert	207.70	-	0	0.00	0.000	0.0000	0.0000
Tank Outlet	207.72	-	0	0.00	0.000	0.0000	0.0000
Top of Tank	210.08	-	1984	1984.05	2.180	0.6575	0.6575
Tank Top of Stone	210.38	-	143	2127.35	2.480	0.7013	0.7013
Top of All Pipes	210.75	-	77	2204.17	2.850	0.7517	0.7517
Overflow Point Southwest to Lisgar Channel	210.95	-	12.34	2216.51	3.050	0.7777	0.7777

PROLOGIS MEADOWVALE DISTRIBUTION CENTRE
7564 TENTH LINE WEST, MISSISSAUGA
STORMWATER MANAGEMENT
STORM PIPES AND STRUCTURES VOLUME CALCULATIONS

Pipe Volumes		
Diameter (m)	Length (m)	Volume (m^3)
Southeast (To SWM Facility)		
0.250	359.70	17.66
0.300	77.80	5.50
0.450	74.00	11.77
0.525	275.60	59.66
0.600	266.60	75.38
0.675	694.60	248.56
0.900	133.10	84.67
	Total	**503.20**

Structure Volumes						
Structure ID	Diameter (m)	Area (m2)	Outlet Invert (m)	Max Water Level (m)	Height (m)	Volume (m^3)
MH1	2.4	4.52	207.70	210.95	3.25	14.70
MH2	1.8	2.54	207.78	210.95	3.17	8.07
MH3	1.8	2.54	207.89	210.95	3.06	7.79
MH4	2.4	4.52	208.10	210.95	2.85	12.89
MH5	1.5	1.77	208.68	210.95	2.27	4.01
MH6	1.8	2.54	208.83	210.95	2.12	5.39
MH7	1.2	1.13	209.13	210.95	1.82	2.06
MH8	1.2	1.13	209.43	210.95	1.52	1.72
MH9	1.2	1.13	209.67	210.95	1.28	1.45
MH10	1.2	1.13	209.97	210.95	0.98	1.11
CBMH11	1.2	1.13	210.27	210.95	0.68	0.77
MH12	1.5	1.77	208.54	210.95	2.41	4.26
MH13	1.5	1.77	208.83	210.95	2.12	3.75
MH14	1.2	1.13	209.12	210.95	1.83	2.07
MH15	1.5	1.77	208.02	210.95	2.93	5.18
MH16	1.5	1.77	208.27	210.95	2.68	4.74
MH17	1.5	1.77	208.53	210.95	2.42	4.28
MH18	1.5	1.77	208.78	210.95	2.17	3.83
MH19	1.8	2.54	209.02	210.95	1.93	4.91
MH20	1.5	1.77	209.25	210.95	1.70	3.00
MH21	1.5	1.77	209.42	210.95	1.53	2.70
MH22	1.5	1.77	209.63	210.95	1.32	2.33
MH23	1.5	1.77	209.93	210.95	1.02	1.80
CBMH24	1.2	1.13	210.28	210.95	0.67	0.76
CB1.1	-	0.36	208.80	210.95	2.15	0.77
CB1.2	-	0.36	209.34	210.95	1.61	0.58
CB2.1	-	0.36	208.79	210.95	2.16	0.78
CB3.1	-	0.36	208.85	210.95	2.10	0.76
CB3.2	-	0.36	208.96	210.95	1.99	0.72
CB3.3	-	0.36	209.00	210.95	1.95	0.70
CB4.1	-	0.36	209.09	210.95	1.86	0.67
CB4.2	-	0.36	209.27	210.95	1.68	0.60
CB4.3	-	0.36	209.45	210.95	1.50	0.54
CB5.1	-	0.36	209.52	210.95	1.43	0.51
CB6.1	-	0.36	209.50	210.95	1.45	0.52
CB6.2	-	0.36	209.48	210.95	1.47	0.53
CB7.1	-	0.36	209.50	210.95	1.45	0.52
CB7.2	-	0.36	209.59	210.95	1.36	0.49
CB8.1	-	0.36	209.72	210.95	1.23	0.44
CB8.2	-	0.36	209.83	210.95	1.12	0.40
CB9.1	-	0.36	210.10	210.95	0.85	0.31
CB10.1	-	0.36	210.20	210.95	0.75	0.27
CB11.1	-	0.36	210.50	210.95	0.45	0.16
DCB12.1	-	0.72	208.83	210.95	2.12	1.53
DCB12.2	-	0.72	208.96	210.95	1.99	1.43
DCB13.1	-	0.72	209.07	210.95	1.88	1.35
DCB13.2	-	0.72	209.18	210.95	1.77	1.27
DCB14.1	-	0.72	209.24	210.95	1.71	1.23
CB14.2	-	0.36	209.32	210.95	1.63	0.59
CB15.1	-	0.36	209.45	210.95	1.50	0.54
CB16.1	-	0.36	209.45	210.95	1.50	0.54
CB16.2	-	0.36	209.45	210.95	1.50	0.54
CB17.1	-	0.36	209.45	210.95	1.50	0.54
CB18.1	-	0.36	209.39	210.95	1.56	0.56
CB19.1	-	0.36	209.09	210.95	1.86	0.67
CB19.2	-	0.36	209.20	210.95	1.75	0.63
CB19.3	-	0.36	209.35	210.95	1.60	0.58
CB19.4	-	0.36	209.47	210.95	1.48	0.53
CB20.1	-	0.36	209.47	210.95	1.48	0.53
CB20.2	-	0.36	209.61	210.95	1.34	0.48
CB20.3	-	0.36	209.67	210.95	1.28	0.46
CB20.4	-	0.36	209.65	210.95	1.30	0.47
CB21.1	-	0.36	209.73	210.95	1.22	0.44
CB22.1	-	0.36	209.90	210.95	1.05	0.38
CB23.1	-	0.36	210.22	210.95	0.73	0.26
CB23.2	-	0.36	210.29	210.95	0.66	0.24
CB23.3	-	0.36	210.39	210.95	0.56	0.20
CB24.1	-	0.36	210.44	210.95	0.51	0.18
					Total	**130.03**

Total Volume (m^3)	
Southeast (To SWM Facility)	**633.23**

PROLOGIS MEADOWVALE DISTRIBUTON CENTRE
7564 Tenth Line West
STORMWATER MANAGEMENT

STAGE-STORAGE-DISCHARGE CALCULATIONS FOR PROPOSED DRY POND SWM FACILITY

Outlet Device No. 1

Type:	Orifice Tube
Diameter (mm)	150
Area (m^2)	0.01767
Invert Elev. (m)	208.40
C/L Elev. (m)	208.48
Disch. Coeff. (C_d)	0.8
Discharge (Q) =	C_d A (2 g H)$^{0.5}$
Number of Orifices:	1

Outlet No. 2

Type:	Orifice Tube
Diameter (mm)	375
Area (m^2)	0.11045
Invert Elev. (m)	209.30
C/L Elev. (m)	209.49
Disch. Coeff. (C_d)	0.8
Discharge (Q) =	C_d A (2 g H)$^{0.5}$
Number of Orifices:	1

		SWM Pond Volumes				Outlet No. 1		Outlet No. 2		
	Elevation m	Area m^2	Incremental Volume m^3	Cumulative Volume m^3	Active Storage Volume m^3	H m	Discharge m^3/s	H m	Discharge m^3/s	Total Discharge m^3/s
Invert of Orifice/Bottom of Pond	208.40	569.58	0	0	0	0.000	0.0000			0.0000
CL Orifice 1	208.48	640.14	45	45	45	0.000	0.0000			0.0000
	209.25	947.79	615	661	661	0.775	0.0551	0.000	0.0000	0.0551
CL Orifice 2	209.49	1067.51	242	903	903	1.015	0.0631	0.002	0.0196	0.0827
	209.65	1150.54	177	1080	1080	1.175	0.0679	0.162	0.1578	0.2256
Top of Pond	209.78	1217.20	154	1234	1234	1.305	0.0715	0.292	0.2117	0.2832

PROLOGIS MEADOWVALE DISTRIBUTION CENTRE
7564 TENTH LINE WEST, MISSISSAUGA
STORMWATER MANAGEMENT
TANK VOLUME CALCULATIONS

Tank-1 (Catchment 202A) - DC4 Roof		
Single Stack of Brentwood ST-18		
Height	0.457	m
Void Space Volume	95.5%	
System Footprint	951.59	sq.m
Module Footprint	859.08	sq.m
Module Unit Footprint	0.42	sq.m
Volume per unit	0.182378	m^3
Total Number of Tanks	2055	Units
Storage Volume (Net)	374.79	m^3
Volume of Top Stone	114.19	m^3
Volume of Side Stone	16.911	m^3
*Void Ratio = 0.4, exclude bottom stone		
Total Volume Provided	505.89	m^3
Estimated GW Elev @ Tank Location	207.80	m
Bottom of Tank Elevation	208.80	m
Top of Dead Storage	209.26	m
Top of Tank Elevation	209.26	m
Top of Stone	209.56	m
Dead Storage	394.27	m^3
Active Storage	**111.62**	m^3

Tank-2 (Catchment 202B) - DC5 Roof		
Single Stack of Brentwood ST-18		
Height	0.457	m
Void Space Volume	96.0%	
System Footprint	1306.81	sq.m
Module Footprint	1220.46	sq.m
Module Unit Footprint	0.42	sq.m
Volume per unit	0.183332665	m^3
Total Number of Tanks	2920	Units
Storage Volume (Net)	535.33	m^3
Volume of Top Stone	156.8172	m^3
Volume of Side Stone	15.78478	m^3
*Void Ratio = 0.4, exclude bottom stone		
Total Volume Provided	707.93	m^3
Estimated GW Elev @ Tank Location	207.80	m
Bottom of Tank Elevation	208.80	m
Top of Dead Storage	209.26	m
Top of Tank Elevation	209.26	m
Top of Stone	209.56	m
Dead Storage	554.73	m^3
Active Storage	**153.20**	m^3

Total Active Storage	**111.62**	**m^3**

Total Active Storage	**153.20**	**m^3**

PROLOGIS MEADOWVALE DISTRIBUTION CENTRE
7564 TENTH LINE WEST, MISSISSAUGA
Tank Retention Draw Down Calculations

Project Number: 60549-001
Date: August 8, 2025
Design By: NZR
File: Q:\60549_001\SWM\60549-001-SWM Calcs.xls

Infiltration Volume (5mm Event) (m3)
560

Storage Provided in Retention Tank 1 - DC4 Roof

951.6 m^2 Area (System Footprint)
0.28 m Depth
239.7 m^3 Volume provided

NOTE: Depth based on elevation required to provide suffient storage for the 5mm event. **(209.08m)**

DRAWDOWN TIME

Note: drawdown time calculated based on equation 4.3 from MOE SWM Manual (2003)

Surface Area (m^2)	Volume of Water (m^3)	Percolation Rate [1] (mm/hr)	Void Ratio	Drawdown Time [2] (hrs)
951.6	239.65	9	0.40	69.96

Note 1: Weighted average determined from provided percolation rate data based on grain size analysis by MTE Consultants. 2.5x Factor of Safety Applied.
Note 2: Drawdown Time = (1000V)/(P*n*A) where V is the volume of water, P is the percolation rate, n is the void ratio of the storage media (stone + tank), and A is the surface area. Drawdown time to be maximum 72 hours as required by City of Mississauga.

Storage Provided in Retention Tank 2 - DC5 Roof

1306.8 m^2 Area (System Footprint)
0.28 m Depth
336.0 m^3 Volume provided

NOTE: Depth based on elevation required to provide suffient storage for the 5mm event. **(209.08m)**

DRAWDOWN TIME

Note: drawdown time calculated based on equation 4.3 from MOE SWM Manual (2003)

Surface Area (m^2)	Volume of Water (m^3)	Percolation Rate [1] (mm/hr)	Void Ratio	Drawdown Time [2] (hrs)
1306.8	336.00	9	0.40	71.42

Note 1: Weighted average determined from provided percolation rate data based on grain size analysis by MTE Consultants. 2.5x Factor of Safety Applied.
Note 2: Drawdown Time = (1000V)/(P*n*A) where V is the volume of water, P is the percolation rate, n is the void ratio of the storage media (stone + tank), and A is the surface area. Drawdown time to be maximum 72

PROLOGIS MEADOWVALE DISTRIBUTION CENTRE
7564 TENTH LINE WEST, MISSISSAUGA
STORMWATER MANAGEMENT

Dualhyd Input

Soil Percolation Rate	22.5	mm/hr
Factor of Safety	2.5	
Design percolation rate	9.000	mm/hr
	0.009	m3/hr
	2.50E-06	m3/s

DC4 Tank

Area at bottom of Tank=	859.08	m2	(taken from CAD)
depth =	460.00	mm	
Dead Storage =	**394.27**	m3	*SWMHYMO INPUT
Average inlet capacity =	**0.00215**	m3/s	*SWMHYMO INPUT

DC5 Tank

Area at bottom of Pond=	1306.81	m2	(taken from CAD)
Area at top of Dead Storage=	0.00	m2	
depth =	460.00	mm	
Dead Storage =	**554.73**	m3	*SWMHYMO INPUT
Average inlet capacity =	**0.00327**	m3/s	*SWMHYMO INPUT

Project No. 60549-001
Sheet No. 1 of 1
Checked by: RDZ
Designed by: NZR
Date: August 8, 2025

CITY OF MISSISSAUGA
ON-SITE STORM SEWER DESIGN
PROLOGIS MEADOWVALE DISTRIBUTION CENTRE

DESIGN PARAMETERS

Min Velocity: 0.75 m/s
Max Velocity: 4 m/s
Manning's "n" 0.013
Year Storm *FACTOR 1

$$i = \frac{A}{(Tc + B)^C}$$

A = 1010.0
B = 4.6
C = 0.78

Initial Tc = 15 min
Pipe capacity limit = 85%
10 YEAR

AREA No.	DESCRIPTION	FROM	TO	AREA A (ha.)	RUNOFF COEFF "C"	* A x C	CUMMUL A x C	TIME OF CONCEN (min.)	RAIN INTENSITY (mm/hr)	PEAK FLOW "Q" (m^3/sec)	PIPE SIZE (mm)	SLOPE (%)	LENGTH (m)	CAPACITY (m^3/sec)	VELOCITY (m/sec)	TIME IN PIPE (min.)	% Pipe FULL	REMARKS
DISCHARGE TO POND SE DEVELOPMENT				0.0000	0.00	0.000	0.000	15.00	99.2	0.000	100	1.0%	1.0	0.005	0.66	0.025	0.0	(Starter Row)
13	N Distribution Centre 4	CB11.1	CBMH11	0.113	0.25	0.028	0.028	15.00	99.2	0.008	250	0.4%	37.4	0.038	0.77	0.814	21%	
12		CBMH11	MH10	0.186	0.66	0.123	0.151	15.81	96.1	0.041	300	0.4%	38.1	0.061	0.87	0.734	66%	
11	NW Distribution Centre 4	CB10.1	MH10	0.191	0.46	0.088	0.116	15.00	99.2	0.032	250	1.0%	3.0	0.059	1.21	0.041	54%	
10		MH10	MH9	0.255	0.50	0.128	0.395	16.55	93.5	0.103	450	0.3%	72.1	0.156	0.98	1.224	66%	
9		MH9	MH8	0.345	0.55	0.190	0.584	17.77	89.4	0.146	525	0.3%	74.0	0.235	1.09	1.133	62%	
8		MH8	MH7	0.253	0.59	0.149	0.734	18.90	86.1	0.177	525	0.3%	74.0	0.235	1.09	1.133	75%	
7		MH7	MH6	0.310	0.58	0.180	0.913	20.04	83.0	0.212	600	0.3%	74.0	0.336	1.19	1.037	63%	
6	SW Distribution Centre 4	MH6	MH5	0.137	0.73	0.100	1.013	21.08	80.3	0.228	675	0.3%	42.8	0.460	1.29	0.554	50%	
5		MH5	MH4	0.421	0.80	0.337	1.350	21.63	79.0	0.299	675	0.3%	88.1	0.460	1.29	1.141	65%	
18	DC4/5 Loading Docks	CB14.2	MH14	0.141	0.83	0.117	0.117	15.00	99.2	0.032	250	0.5%	31.0	0.042	0.86	0.603	77%	
17		DCB14.1	MH14	0.252	0.90	0.227	0.344	15.00	99.2	0.095	300	1.4%	3.1	0.114	1.62	0.032	83%	
16	DC4/5 Loading Docks	MH14	MH13	0.484	0.90	0.436	0.896	15.60	96.8	0.243	600	0.3%	89.8	0.336	1.19	1.258	72%	
15		MH13	MH12	0.484	0.90	0.436	1.332	16.86	92.4	0.345	675	0.3%	90.0	0.460	1.29	1.166	75%	
14		MH12	MH4	0.292	0.77	0.225	1.557	18.03	88.7	0.386	675	0.3%	87.4	0.460	1.29	1.132	84%	
4		MH4	MH3	0.234	0.83	0.194	3.101	22.77	76.4	0.664	900	0.3%	63.0	0.991	1.56	0.674	67%	
3		CB3.1	MH3	0.161	0.77	0.124	0.124	15.00	99.2	0.034	250	1.0%	20.8	0.059	1.21	0.286	58%	
-		MH3	MH2	0.000	0.00	0.000	3.225	23.44	75.0	0.677	900	0.3%	31.0	0.991	1.56	0.331	68%	
2		CB2.1	MH2	0.160	0.87	0.139	0.139	15.00	99.2	0.039	250	2.0%	20.5	0.084	1.71	0.199	46%	
-		MH2	TANK	0.000	0.00	0.000	3.365	23.78	74.3	0.700	900	0.3%	2.7	0.991	1.56	0.029	71%	
1		CB1.1	TANK	0.120	0.75	0.090	0.139	15.00	99.2	0.039	250	2.0%	20.3	0.084	1.71	0.197	46%	
-		TANK	MH1	0.000	0.00	0.000	3.504	23.80	74.2	0.728	900	0.3%	5.5	0.991	1.56	0.059	73%	
33		CB24.1	CBMH24	0.069	0.72	0.050	0.050	15.00	99.2	0.014	250	0.4%	27.4	0.038	0.77	0.596	37%	
31		CBMH24	MH23	0.070	0.88	0.062	0.111	15.60	96.9	0.030	300	0.5%	24.7	0.068	0.97	0.426	44%	
32		CB23.3	MH23	0.048	0.88	0.042	0.042	15.00	99.2	0.012	250	0.4%	35.8	0.038	0.77	0.779	31%	
30		CB22.2	MH23	0.212	0.56	0.119	0.119	15.00	99.2	0.033	250	0.5%	20.0	0.042	0.86	0.389	78%	
29		CB22.1	MH23	0.105	0.84	0.088	0.088	15.00	99.2	0.024	250	0.4%	3.0	0.038	0.77	0.065	65%	
28		MH23	MH22	0.421	0.46	0.194	0.554	16.02	95.3	0.148	525	0.3%	82.1	0.235	1.09	1.258	63%	
27		MH22	MH21	0.206	0.50	0.103	0.657	17.28	91.0	0.167	525	0.3%	44.9	0.235	1.09	0.688	71%	
26		MH21	MH20	0.327	0.73	0.239	0.896	17.97	88.8	0.223	600	0.3%	51.7	0.336	1.19	0.724	66%	
25		MH20	MH19	0.156	0.72	0.112	1.008	18.69	86.7	0.245	600	0.3%	51.3	0.336	1.19	0.719	73%	
42		CB19.2	MH19	0.182	0.51	0.093	0.093	15.00	99.2	0.026	250	0.4%	30.0	0.038	0.77	0.653	69%	
24		CB19.1	MH19	0.054	0.65	0.035	0.035	15.00	99.2	0.010	250	1.0%	4.0	0.059	1.21	0.055	16%	
23		MH19	MH18	0.081	0.78	0.063	1.199	19.41	84.6	0.284	675	0.3%	71.4	0.460	1.29	0.925	62%	
22		MH18	MH17	0.100	0.88	0.088	1.287	20.33	82.2	0.296	675	0.3%	78.3	0.460	1.29	1.014	64%	
21		MH17	MH16	0.200	0.86	0.172	1.459	21.35	79.7	0.326	675	0.3%	79.0	0.460	1.29	1.023	71%	
20		MH16	MH15	0.105	0.85	0.089	1.548	22.37	77.3	0.335	675	0.3%	79.0	0.460	1.29	1.023	73%	
19		MH15	MH1	0.084	0.84	0.071	1.619	23.40	75.1	0.340	675	0.3%	79.0	0.460	1.29	1.023	74%	
-	SW Distribution Centre 5	MH1	OGS1	0.000	0.00	0.000	5.123	24.42	73.0	0.476	400	0.0%	1.0	-	-	-	100%	PEAK FLOW RATE DISCHARGING THROUGH ORIFICE TUBE (10-YR SWMHYMO OUTPUT)
DISCHARGE FROM DC4/5 TO LISGAR BYPASS				0.0000	0.00	0.000	0.000	15.00	99.2	0.000	100	1.0%	1.0	0.005	0.66	0.025	0%	(Starter Row)
45	Distribution Centre 4 Roof	STM STUB	DC4 TANK	2.6820	0.90	2.414	2.414	15.00	99.2	0.085	375	0.5%	18.5	0.124	1.12	0.275	69%	WORST CASE PEAK FLOW RATE FROM ROOF (FROM 10-YR SWMHYMO OUTPUT)
44	Distribution Centre 5 Roof	STM STUB	DC5 TANK	3.0500	0.90	2.745	2.745	15.00	99.2	0.088	375	0.5%	18.5	0.124	1.12	0.275	71%	WORST CASE PEAK FLOW RATE FROM ROOF (FROM 10-YR SWMHYMO OUTPUT)
-		DC4/5 TANK	MH37	0.000	0.00	0.000	5.159	15.27	98.1	0.165	450	1.0%	77.6	0.285	1.79	0.721	58%	10-YR PEAK FLOW RATE DISCHARGING TANKS COMIBINED (SWMHYMO OUTPUT)
-		MH37	MH36	0.000	0.00	0.000	5.159	16.00	95.4	0.165	450	1.0%	72.3	0.285	1.79	0.672	58%	
-		MH36	OUTLET	0.000	0.00	0.000	5.159	16.67	93.0	0.165	450	1.0%	73.5	0.285	1.79	0.683	58%	
DISCHARGE TO DRY POND NE OF DATA CENTRE				0.0000	0.00	0.000	0.000	15.00	99.2	0.000	100	1.0%	1.0	0.005	0.66	0.025	0%	(Starter Row)
34	NW Data Centre	CB30.1	CBMH30	0.135	0.57	0.077	0.077	15.00	99.2	0.021	250	0.50%	26.3	0.042	0.86	0.512	51%	
35		CBMH30	MH29	0.387	0.57	0.221	0.298	15.51	97.2	0.081	375	0.30%	7.3	0.096	0.87	0.140	84%	
36		MH29	MH28	0.425	0.57	0.242	0.540	15.65	96.7	0.146	600	0.30%	58.1	0.336	1.19	0.814	43%	
37	N Data Centre	MH28	MH27	0.3780	0.65	0.246	0.785	16.47	93.7	0.206	600	0.30%	65.0	0.336	1.19	0.911	61%	
38		MH27	MH26	0.130	0.69	0.090	0.875	17.38	90.7	0.222	600	0.30%	43.8	0.336	1.19	0.614	66%	
39		MH26	MH25 (OGS2)	0.069	0.49	0.034	0.909	17.99	88.8	0.226	600	0.30%	47.3	0.336	1.19	0.663	67%	
40		CB25.1	MH25 (OGS2)	0.148	0.65	0.096	0.096	15.00	99.2	0.027	250	0.40%	9.6	0.038	0.77	0.209	71%	
-		MH25 (OGS2)	DRY POND	0.000	0.00	0.000	1.005	18.65	86.8	0.244	600	0.40%	8.6	0.388	1.37	0.104	63%	
43	SE Data Centre	CB34.1	CBMH34	0.096	0.46	0.044	0.044	15.00	99.2	0.012	250	0.4%	50.0	0.038	0.77	1.088	33%	
42		CBMH34	CBMH33 (OGS3)	0.087	0.49	0.043	0.087	16.09	95.1	0.023	250	0.4%	51.0	0.038	0.77	1.109	61%	
41		CBMH33 (OGS3)	DRY POND	0.074	0.57	0.042	0.129	17.20	91.3	0.033	300	0.5%	28.1	0.068	0.97	0.484	48%	
45	Data Centre Roof	STM STUB	MH32	1.013	0.90	0.912	0.912	15.00	99.2	0.253	525	0.5%	11.5	0.304	1.40	0.136	83%	
-		MH30	DRY POND	0.0000	0.00	0.000	0.912	15.14	98.6	0.252	525	0.7%	18.1	0.352	1.63	0.186	72%	
-		DRY POND	CSP CULVERT	0.0000	0.00	0.000	2.046	18.76	86.5	0.077	375	0.3%	2.6	0.096	0.87	0.050	80%	PEAK FLOW RATE BASED ON 10-YR SWMHYMO OUTPUT FOR DRY POND

CAD: P:\P\60549_001\60549_001-ST1.DWG

THE KING'S HIGHWAY No. 401

PROPOSED 1-STOREY INDUSTRIAL BUILDING DC4

PROPOSED 1-STOREY INDUSTRIAL BUILDING DC5

PROPOSED 2-STOREY DATA CENTER

TENTH LINE WEST

1	0.12	0.75
2	0.16	0.87
3	0.161	0.77
4	0.234	0.83
5	0.421	0.80
6	0.137	0.73
7	0.310	0.58
8	0.253	0.59
9	0.345	0.55
10	0.255	0.50
11	0.191	0.46
12	0.186	0.66
13	0.113	0.25
14	0.292	0.77
15	0.484	0.90
16	0.484	0.90
17	0.252	0.90
18	0.141	0.83
19	0.084	0.84
20	0.105	0.85
21	0.200	0.86
22	0.100	0.88
23	0.081	0.78
24	0.054	0.65
25	0.156	0.72
26	0.327	0.73
27	0.206	0.50
28	0.421	0.46
29	0.105	0.84
30	0.212	0.56
31	0.07	0.88
32	0.048	0.88
33	0.069	0.72
34	0.135	0.57
35	0.387	0.57
36	0.425	0.57
37	0.378	0.65
38	0.130	0.69
39	0.069	0.49
40	0.148	0.65
41	0.074	0.57
42	0.087	0.49
43	0.096	0.46
44	0.182	0.51
45	1.013	0.90
46	3.050	0.90
47	2.682	0.90

LEGEND

- SITE BOUNDARY
- CATCHMENT AREA
- 326.00 EXISTING CONTOURS
- EXISTING STORM SEWER
- PROPOSED STORM SEWER
- 35 / 0.202 / 0.62 — CATCHMENT ID / AREA (ha.) / RUNOFF COEFFICIENT

Plot Date: August 8, 2025 - 11:39 AM

MTE
Engineers, Scientists, Surveyors

PROJECT
PROLOGIS MEADOWVALE DISTRIBUTION CENTER

TITLE
PROPOSED STORM CATCHMENT AREAS

Drawn: AXG	Scale: 1:1750	Figure: **ST1.1**
Checked: NZR	Project No.: 60549_001	
Date (yyyy-mm-dd): 2025-08-08	Rev No.: 1	

```
2     Metric units
*#**************************************************************************|
*#  Project Name: PROLOGIS MEADOWVALE DISTRIBUTION CENTRE
*#  JOB NUMBER  : 60549-001
*#       Date   : JULY 2025
*#  Modeller    : NZR
*#    Company   : MTE CONSULTANTS INC.
*#       File   : 60549.DAT
*%-----------------|---------------------------------------------------------|
START               TZERO=[0.0],  METOUT=[2],  NSTORM=[1],  NRUN=[002]
                    ["MISSG002.stm"]
READ STORM          STORM_FILENAME=["STORM.001"]
*
*#########################################################################|
*#
*#                    EXISTING CONDITIONS HYDROLOGIC MODELING
*#
*#                  ===================================================
*#
*#########################################################################|
*#**************************************************************************|
*AREA 101 - EXISTING DRAINAGE SE TO LISGAR CHANNEL
*#**************************************************************************|
CALIB NASHYD        ID=[1], NHYD=["101"], DT=[1]min, AREA=[12.15](ha),
                    DWF=[0](cms),  CN/C=[70], IA=[5.0](mm),
                    N=[3], TP=[0.83]hrs,
                    RAINFALL=[ ,  ,  ,  , ](mm/hr),  END=-1
*#**************************************************************************|
*AREA 102 - EXISTING DRAINAGE NE TO TENTH LINE SWALE
*#**************************************************************************|
CALIB NASHYD        ID=[2], NHYD=["102"], DT=[1]min, AREA=[4.02](ha),
                    DWF=[0](cms),  CN/C=[70], IA=[5.0](mm),
                    N=[3], TP=[0.38]hrs,
                    RAINFALL=[ ,  ,  ,  , ](mm/hr),  END=-1
*#**************************************************************************|
*#########################################################################|
*#
*#                    PROPOSED CONDITIONS HYDROLOGIC MODELING
*#
*#                  ===================================================
*#
*#########################################################################|
*#**************************************************************************|
*AREA 201 - SITE DRAINAGE TO SWM FACILITY SE OF SITE
*#**************************************************************************|
CALIB STANDHYD      ID=[1], NHYD=["201"], DT=[5.0](min), AREA=[7.00](ha),
                    XIMP=[0.76], TIMP=[0.76], DWF=[0](cms), LOSS=[2],
                    SCS curve number CN=[70],
                    Pervious   surfaces: IAper=[5.0](mm), SLPP=[2.0](%),
                                         LGP=[20](m), MNP=[0.25], SCP=[0](min),
                    Impervious surfaces: IAimp=[1.0](mm), SLPI=[1.5](%),
                                         LGI=[30](m), MNI=[0.013], SCI=[0](min),
                    RAINFALL=[ ,  ,  ,  , ](mm/hr) ,  END=-1
*#**************************************************************************|
*ORIFICE PIPE PLACED DOWNSTREAM OF MH1
*%-----------------|---------------------------------------------------------|
ROUTE RESERVOIR     IDout=[2],   NHYD=["Orifice"],  IDin=[1],
                    RDT=[1](min),
                          TABLE of ( OUTFLOW-STORAGE ) values
                                     (cms) - (ha-m)
 0.0000     0.0000
 0.0000     0.0000
 0.6575     0.1978
 0.7013     0.2120
 0.7517     0.2196
 0.7777     0.2208
                                     -1       -1   (max twenty pts)
                          IDovf=[3], NHYDovf=["OVF"]
*#**************************************************************************|
*FLOW CHECK - SITE DISCHARGE TO DOWNSTREAM SWM FACILITY
ADD HYD             IDsum=[10], NHYD=["TOPOND"], IDs to add=[2,3]
*#**************************************************************************|
*AREA 202A - DISTRIBUTION CENTRE 4 ROOF
*#**************************************************************************|
CALIB STANDHYD      ID=[1], NHYD=["202A"], DT=[5.0](min), AREA=[2.68](ha),
                    XIMP=[0.99], TIMP=[0.99], DWF=[0](cms), LOSS=[2],
                    SCS curve number CN=[70],
                    Pervious   surfaces: IAper=[5.0](mm), SLPP=[1.0](%),
                                         LGP=[5.0](m), MNP=[0.25], SCP=[0](min),
                    Impervious surfaces: IAimp=[1.0](mm), SLPI=[1.0](%),
                                         LGI=[262](m), MNI=[0.013], SCI=[0](min)
                    RAINFALL=[ ,  ,  ,  , ](mm/hr) ,  END=-1
*#**************************************************************************|
*FLOW CONTROL ROOF DRAINS DC4
*%-----------------|---------------------------------------------------------|
ROUTE RESERVOIR     IDout=[2],   NHYD=["FCRD"],  IDin=[1],
                    RDT=[1](min),
                          TABLE of ( OUTFLOW-STORAGE ) values
                                     (cms) - (ha-m)
 0.0000     0.0000
 0.0425     0.0143
 0.0850     0.0855
 0.1275     0.2029

                                     -1       -1   (max twenty pts)
                          IDovf=[3], NHYDovf=["OVF"]
*#**************************************************************************|
*DC4 INFILTRATION TANK
*#**************************************************************************|
COMPUTE DUALHYD     IDin=[2], CINLET=[0.00216](cms), NINLET=[1],
                    MAJID=[3], MajNHYD=["TO-LISGAR"],
                    MINID=[4], MinNHYD=["INFIL"],
                    TMJSTO=[394.27](cu-m)
*%-----------------|---------------------------------------------------------|
*AREA 202B - DISTRIBUTION CENTRE 5 ROOF
*#**************************************************************************|
CALIB STANDHYD      ID=[5], NHYD=["202B"], DT=[5.0](min), AREA=[3.05](ha),
                    XIMP=[0.99], TIMP=[0.99], DWF=[0](cms), LOSS=[2],
                    SCS curve number CN=[70],
                    Pervious   surfaces: IAper=[5.0](mm), SLPP=[1.0](%),
                                         LGP=[5.0](m), MNP=[0.25], SCP=[0](min),
                    Impervious surfaces: IAimp=[1.0](mm), SLPI=[1.0](%),
                                         LGI=[282](m), MNI=[0.013], SCI=[0](min)
                    RAINFALL=[ ,  ,  ,  , ](mm/hr) ,  END=-1
*#**************************************************************************|
*FLOW CONTROL ROOF DRAINS DC5
*%-----------------|---------------------------------------------------------|
ROUTE RESERVOIR     IDout=[5],   NHYD=["FCRD"],  IDin=[1],
                    RDT=[1](min),
                          TABLE of ( OUTFLOW-STORAGE ) values
                                     (cms) - (ha-m)
 0.0000     0.0000
 0.0455     0.0153
 0.0910     0.0915
 0.1364     0.2211
                                     -1       -1   (max twenty pts)
                          IDovf=[6], NHYDovf=["OVF"]
*#**************************************************************************|
*DC5 INFILTRATION TANK
*#**************************************************************************|
COMPUTE DUALHYD     IDin=[5], CINLET=[0.00327](cms), NINLET=[1],
                    MAJID=[6], MajNHYD=["TO-LISGAR"],
                    MINID=[7], MinNHYD=["INFIL"],
                    TMJSTO=[554.73](cu-m)
*%-----------------|---------------------------------------------------------|
*FLOW CHECK - DC4/5 DISCHARGING TO LISGAR BYPASS NETWORK SE OF SITE
ADD HYD             IDsum=[9], NHYD=["BYPASS"], IDs to add=[3,6]
*#**************************************************************************|
*AREA 203 - SITE DRAINING TO TENTH LINE SWALE
*#**************************************************************************|
CALIB STANDHYD      ID=[1], NHYD=["203"], DT=[5.0](min), AREA=[3.09](ha),
                    XIMP=[0.72], TIMP=[0.72], DWF=[0](cms), LOSS=[2],
                    SCS curve number CN=[70],
                    Pervious   surfaces: IAper=[5.0](mm), SLPP=[5.0](%),
                                         LGP=[32.0](m), MNP=[0.25], SCP=[0](min)
                    Impervious surfaces: IAimp=[1.0](mm), SLPI=[1.0](%),
                                         LGI=[53.0](m), MNI=[0.013], SCI=[0](min
                    RAINFALL=[ ,  ,  ,  , ](mm/hr) ,  END=-1
*#**************************************************************************|
*DRY POND
*%-----------------|---------------------------------------------------------|
ROUTE RESERVOIR     IDout=[2],   NHYD=["POND"],  IDin=[1],
                    RDT=[1](min),
                          TABLE of ( OUTFLOW-STORAGE ) values
                                     (cms) - (ha-m)
 0.0000 0.0000
 0.0000 0.0045
 0.0551 0.0661
 0.0827 0.0903
 0.2256 0.1080
 0.2832 0.1234
                                     -1       -1   (max twenty pts)
                          IDovf=[3], NHYDovf=["OVF"]
*#**************************************************************************|
*AREA 205A - UNCONTROLLED SITE DISCHARGE TO TENTH LINE SWALE
*#**************************************************************************|
CALIB NASHYD        ID=[4], NHYD=["205A"], DT=[1]min, AREA=[0.19](ha),
                    DWF=[0](cms),  CN/C=[70], IA=[5.0](mm),
                    N=[3], TP=[0.05]hrs,
                    RAINFALL=[ ,  ,  ,  , ](mm/hr),  END=-1
*#**************************************************************************|
*COMBINE TOTAL FLOW TO SWALE
ADD HYD             IDsum=[8], NHYD=["SWALE"], IDs to add=[2,3,4]
*#**************************************************************************|
*AREA 205B - UNCONTROLLED SITE DISCHARGE TO ADJACENT LAND
*#**************************************************************************|
CALIB NASHYD        ID=[1], NHYD=["205B"], DT=[1]min, AREA=[0.17](ha),
                    DWF=[0](cms),  CN/C=[70], IA=[5.0](mm),
                    N=[3], TP=[0.07]hrs,
                    RAINFALL=[ ,  ,  ,  , ](mm/hr),  END=-1
*#**************************************************************************|
*FLOW CHECK - TOTAL SITE DISCHARGE
ADD HYD             IDsum=[2], NHYD=["TOTAL"], IDs to add=[1,8,9,10]
*#**************************************************************************|
*%-----------------|---------------------------------------------------------|
START               TZERO=[0.0],  METOUT=[2],  NSTORM=[1],  NRUN=[005]
                    MISSG005.stm
*
START               TZERO=[0.0],  METOUT=[2],  NSTORM=[1],  NRUN=[010]
                    MISSG010.stm
*
START               TZERO=[0.0],  METOUT=[2],  NSTORM=[1],  NRUN=[025]
                    MISSG025.stm
*
START               TZERO=[0.0],  METOUT=[2],  NSTORM=[1],  NRUN=[050]
                    MISSG050.stm
*
START               TZERO=[0.0],  METOUT=[2],  NSTORM=[1],  NRUN=[100]
                    MISSG100.stm
*
*%-----------------|---------------------------------------------------------|
FINISH
```

```
00001> ================================================================================
00002>
00003>    SSSSS  W   W  M   M  H   H  Y   Y  M   M   OOO        999    999    =========
00004>    S      W W W  MM MM  H   H   Y Y   MM MM  O   O      9   9  9   9
00005>    SSSSS  W W W  M M M  HHHHH    Y    M M M  O   O  ##  9   9  9   9   Ver  4.05
00006>        S  W W W  M   M  H   H    Y    M   M  O   O       9999   9999   Sept 2011
00007>    SSSSS   W W   M   M  H   H    Y    M   M   OOO           9      9   =========
00008>                                                           9   9  9   9   # 3053466
00009>          StormWater Management HYdrologic Model            999    999    =========
00010>
00011>  ********************************************************************************
00012>  ***************************** SWMHYMO Ver/4.05  ********************************
00013>  *********  A single event and continuous hydrologic simulation model  *********
00014>  *********     based on the principles of HYMO and its successors      *********
00015>  *********                   OTTHYMO-83 and OTTHYMO-89.                *********
00016>  ********************************************************************************
00017>  ******** Distributed by:  J.F. Sabourin and Associates Inc.          *********
00018>  *********                  Ottawa,  Ontario: (613) 836-3884          *********
00019>  *********                  Gatineau, Quebec: (819) 243-6858          *********
00020>  *********                  E-Mail: swmhymo@jfsa.com                  *********
00021>  ********************************************************************************
00022>
00023>  ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
00024>  +++++++++ Licensed user: MTE Consultants Inc.                          +++++++++
00025>  +++++++++                Burlington          SERIAL#:3053466         +++++++++
00026>  ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
00027>
00028>  ********************************************************************************
00029>  *********           ++++++ PROGRAM ARRAY DIMENSIONS ++++++             *********
00030>  *********           Maximum value for ID numbers  :     10            *********
00031>  *********           Max. number of rainfall points: 105408            *********
00032>  *********           Max. number of flow points    : 105408            *********
00033>  ********************************************************************************
00034>
00035>
00036>  **********************   D E T A I L E D   O U T P U T   **********************
00037>  ********************************************************************************
00038>  *         DATE: 2025-08-08     TIME: 09:07:17     RUN COUNTER: 000176         *
00039>  ********************************************************************************
00040>  * Input   filename: Q:\60549_~1\SWM\SWMHYMO\60549.dat                           *
00041>  * Output  filename: Q:\60549_~1\SWM\SWMHYMO\60549.out                           *
00042>  * Summary filename: Q:\60549_~1\SWM\SWMHYMO\60549.sum                           *
00043>  * User comments:                                                               *
00044>  * 1:_____________________________________________________________________     *
00045>  * 2:_____________________________________________________________________     *
00046>  * 3:_____________________________________________________________________     *
00047>  ********************************************************************************
00048>
00049> --------------------------------------------------------------------------------
00050> 001:0001--------------------------------------------------------------------------
00051> *#*****************************************************************************|
00052> *#  Project Name: PROLOGIS MEADOWVALE DISTRIBUTION CENTRE
00053> *#  JOB NUMBER  : 60549-001
00054> *#       Date   : JULY 2025
00055> *#  Modeller    : NZR
00056> *#    Company   : MTE CONSULTANTS INC.
00057> *#       File   : 60549.DAT
00058>  ** END OF RUN :   1
00059>
00060> ********************************************************************************
00061>
00062>
00063>
00064>
00065>
00066> --------------------
00067> | START            |  Project  dir.: Q:\60549_~1\SWM\SWMHYMO\
00068> --------------------  Rainfall dir.: Q:\60549_~1\SWM\SWMHYMO\
00069>     TZERO =   .00 hrs on      0
00070>     METOUT=   2 (output = METRIC)
00071>     NRUN  = 002
00072>     NSTORM=   1
00073>               #  1=MISSG002.stm
00074> --------------------------------------------------------------------------------
00075> 002:0002--------------------------------------------------------------------------
00076> *#*****************************************************************************|
00077> *#  Project Name: PROLOGIS MEADOWVALE DISTRIBUTION CENTRE
00078> *#  JOB NUMBER  : 60549-001
00079> *#       Date   : JULY 2025
00080> *#  Modeller    : NZR
00081> *#    Company   : MTE CONSULTANTS INC.
00082> *#       File   : 60549.DAT
00083> --------------------------------------------------------------------------------
00084> 002:0002--------------------------------------------------------------------------
00085> --------------------
00086> | READ STORM       |    Filename: MISSISSAUGA 2-YR CHICAGO (A=610 B=4.6 C=
00087> | Ptotal=  33.44 mm|    Comments: MISSISSAUGA 2-YR CHICAGO (A=610 B=4.6 C=
00088> --------------------
00089>                TIME    RAIN |   TIME    RAIN |   TIME    RAIN |   TIME    RAIN
00090>                 hrs   mm/hr |    hrs   mm/hr |    hrs   mm/hr |    hrs   mm/hr
00091>                 .17   2.222 |   1.17  16.858 |   2.17   5.202 |   3.17   2.661
00092>                 .33   2.538 |   1.33  75.359 |   2.33   4.443 |   3.33   2.476
00093>                 .50   2.979 |   1.50  22.169 |   2.50   3.894 |   3.50   2.317
00094>                 .67   3.641 |   1.67  11.770 |   2.67   3.476 |   3.67   2.180
00095>                 .83   4.766 |   1.83   8.163 |   2.83   3.148 |   3.83   2.060
00096>                1.00   7.163 |   2.00   6.323 |   3.00   2.882 |   4.00   1.954
00097>
00098> --------------------------------------------------------------------------------
00099> 002:0003--------------------------------------------------------------------------
00100> *
00101> *#############################################################################|
00102> *#
00103> *#                     EXISTING CONDITIONS HYDROLOGIC MODELING
00104> *#
00105> *#                  ================================================
00106> *#
00107> *#############################################################################|
00108> *#*****************************************************************************|
00109> *AREA 101 - EXISTING DRAINAGE SE TO LISGAR CHANNEL
00110> *#*****************************************************************************|
00111> ----------------------
00112> | CALIB NASHYD       |   Area    (ha)=   12.15   Curve Number   (CN)=70.00
00113> | 01:101    DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
00114> ----------------------   U.H. Tp(hrs)=    .830
00115>
00116>      Unit Hyd Qpeak  (cms)=     .559
00117>
00118>      PEAK FLOW       (cms)=     .082 (i)
00119>      TIME TO PEAK    (hrs)=    2.483
00120>      RUNOFF VOLUME    (mm)=    5.891
00121>      TOTAL RAINFALL   (mm)=   33.441
00122>      RUNOFF COEFFICIENT   =     .176
00123>
00124>      (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
00125>
00126> --------------------------------------------------------------------------------
00127> 002:0004--------------------------------------------------------------------------
00128> *#*****************************************************************************|
00129> *AREA 102 - EXISTING DRAINAGE NE TO TENTH LINE SWALE
00130> *#*****************************************************************************|
00131> ----------------------
00132> | CALIB NASHYD       |   Area    (ha)=    4.02   Curve Number   (CN)=70.00
00133> | 02:102    DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
00134> ----------------------   U.H. Tp(hrs)=    .380
00135>
00136>      Unit Hyd Qpeak  (cms)=     .404
00137>
00138>      PEAK FLOW       (cms)=     .044 (i)
00139>      TIME TO PEAK    (hrs)=    1.833
00140>      RUNOFF VOLUME    (mm)=    5.891
00141>      TOTAL RAINFALL   (mm)=   33.441
00142>      RUNOFF COEFFICIENT   =     .176
00143>
00144>      (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
00145>
00146> --------------------------------------------------------------------------------
00147> 002:0005--------------------------------------------------------------------------
00148> *#*****************************************************************************|
00149> *#############################################################################|
00150> *#
00151> *#                     PROPOSED CONDITIONS HYDROLOGIC MODELING
00152> *#
00153> *#                  ================================================
00154> *#
00155> *#############################################################################|
00156> *#*****************************************************************************|
00157> *AREA 201 - SITE DRAINAGE TO SWM FACILITY SE OF SITE
00158> *#*****************************************************************************|
00159> ----------------------
00160> | CALIB STANDHYD     |   Area    (ha)=    7.00
00161> | 01:201    DT= 5.00 |   Total Imp(%)=   76.00   Dir. Conn.(%)=   76.00
00162> ----------------------
00163>                              IMPERVIOUS    PERVIOUS (i)
00164>      Surface Area     (ha)=       5.32         1.68
00165>      Dep. Storage     (mm)=       1.00         5.00
00166>      Average Slope     (%)=       1.50         2.00
00167>      Length            (m)=      30.00        20.00
00168>      Mannings n            =       .013         .250
00169>
00170>      Max.eff.Inten.(mm/hr)=      75.36         8.20
00171>                 over (min)       5.00        15.00
00172>      Storage Coeff.  (min)=       1.23 (ii)   13.90 (ii)
00173>      Unit Hyd. Tpeak (min)=       5.00        15.00
00174>      Unit Hyd. peak  (cms)=        .33          .08
00175>                                                          *TOTALS*
00176>      PEAK FLOW       (cms)=       1.11          .02          1.123 (iii)
00177>      TIME TO PEAK    (hrs)=       1.33         1.50          1.333
00178>      RUNOFF VOLUME    (mm)=      32.44         5.89         26.069
00179>      TOTAL RAINFALL   (mm)=      33.44        33.44         33.441
00180>      RUNOFF COEFFICIENT   =        .97          .18           .780
00181>       *** WARNING: Storage Coefficient is smaller than DT!
00182>                    Use a smaller DT or a larger area.
00183>
00184>        (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
00185>            CN* =  70.0    Ia = Dep. Storage  (Above)
00186>       (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
00187>            THAN THE STORAGE COEFFICIENT.
00188>      (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
00189>
00190> --------------------------------------------------------------------------------
00191> 002:0006--------------------------------------------------------------------------
00192> *#*****************************************************************************|
00193> *ORIFICE PIPE PLACED DOWNSTREAM OF MH1
00194> ----------------------
00195> | ROUTE RESERVOIR    |    Requested routing time step =  1.0 min.
00196> |  IN>01:(201    )   |
00197> | OUT<02:(Orific)    |    =========  OUTFLOW STORAGE TABLE  =========
00198> ----------------------    OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
00199>                             (cms)     (ha.m.)   |    (cms)    (ha.m.)
00200>                              .000  .0000E+00    |     .701  .2120E+00
00201>                              .000  .0000E+00    |     .752  .2196E+00
00202>                              .658  .1978E+00    |     .778  .2208E+00
00203>
00204>      ROUTING RESULTS            AREA     QPEAK     TPEAK       R.V.
00205>      ---------------------      (ha)     (cms)     (hrs)       (mm)
00206>      INFLOW >01: (201   )       7.00     1.123     1.333     26.069
00207>      OUTFLOW<02: (Orific)       7.00      .279     1.533     26.069
00208>     OVERFLOW<03: (OVF   )        .00      .000      .000       .000
00209>
00210>                    TOTAL NUMBER OF SIMULATED OVERFLOWS  =        0
00211>                    CUMULATIVE TIME OF OVERFLOWS  (hours)=       .00
00212>                    PERCENTAGE OF TIME OVERFLOWING    (%)=       .00
00213>
00214>
00215>                    PEAK   FLOW   REDUCTION [Qout/Qin](%)=   24.804
00216>                    TIME SHIFT OF PEAK FLOW         (min)=    12.00
00217>                    MAXIMUM  STORAGE   USED       (ha.m.)=.8384E-01
00218>
00219> --------------------------------------------------------------------------------
00220> 002:0007--------------------------------------------------------------------------
00221> *#*****************************************************************************|
00222> *FLOW CHECK - SITE DISCHARGE TO DOWNSTREAM SWM FACILITY
00223> ----------------------
00224> | ADD HYD (TOPOND    ) | ID: NHYD         AREA     QPEAK   TPEAK   R.V.    DWF
00225> ----------------------                   (ha)     (cms)   (hrs)   (mm)    (cms)
00226>                         ID1 02:Orifice     7.00     .279    1.53  26.07    .000
00227>                        +ID2 03:OVF         .00      .000     .00    .00    .000
00228>                         ========================================================
00229>                         SUM 10:TOPOND      7.00     .279    1.53  26.07    .000
00230>
00231>    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
00232>
00233> --------------------------------------------------------------------------------
00234> 002:0008--------------------------------------------------------------------------
00235> *#*****************************************************************************|
00236> *AREA 202A - DISTRIBUTION CENTRE 4 ROOF
00237> *#*****************************************************************************|
00238> ----------------------
00239> | CALIB STANDHYD     |   Area    (ha)=    2.68
00240> | 01:202A   DT= 5.00 |   Total Imp(%)=   99.00   Dir. Conn.(%)=   99.00
00241> ----------------------
00242>                              IMPERVIOUS    PERVIOUS (i)
00243>      Surface Area     (ha)=       2.65          .03
00244>      Dep. Storage     (mm)=       1.00         5.00
00245>      Average Slope     (%)=       1.00         1.00
00246>      Length            (m)=     262.00         5.00
00247>      Mannings n            =       .013         .250
00248>
00249>      Max.eff.Inten.(mm/hr)=      75.36         9.75
00250>                 over (min)       5.00        10.00
00251>      Storage Coeff.  (min)=       5.10 (ii)   11.43 (ii)
00252>      Unit Hyd. Tpeak (min)=       5.00        10.00
00253>      Unit Hyd. peak  (cms)=        .21          .10
00254>                                                          *TOTALS*
00255>      PEAK FLOW       (cms)=        .49          .00           .494 (iii)
00256>      TIME TO PEAK    (hrs)=       1.33         1.42          1.333
00257>      RUNOFF VOLUME    (mm)=      32.44         5.89         32.175
00258>      TOTAL RAINFALL   (mm)=      33.44        33.44         33.441
00259>      RUNOFF COEFFICIENT   =        .97          .18           .962
00260>
00261>        (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
00262>            CN* =  70.0    Ia = Dep. Storage  (Above)
00263>       (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
00264>            THAN THE STORAGE COEFFICIENT.
00265>      (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
00266>
00267> --------------------------------------------------------------------------------
00268> 002:0009--------------------------------------------------------------------------
00269> *#*****************************************************************************|
00270> *FLOW CONTROL ROOF DRAINS DC4
```

```
00271> ---------------------
00272> | ROUTE RESERVOIR   |    Requested routing time step =  1.0 min.
00273> |  IN>01:(202A  )   |
00274> | OUT<02:(FCRD  )   |    =========  OUTLFOW STORAGE TABLE  =========
00275> ---------------------    OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
00276>                            (cms)    (ha.m.)   |    (cms)    (ha.m.)
00277>                            .000  .0000E+00   |     .085  .8550E-01
00278>                            .043  .1430E-01   |     .127  .2029E+00
00279>
00280>     ROUTING RESULTS            AREA     QPEAK     TPEAK       R.V.
00281>     ---------------------       (ha)     (cms)     (hrs)       (mm)
00282>     INFLOW >01: (202A  )       2.68      .494     1.333     32.175
00283>     OUTFLOW<02: (FCRD  )       2.68      .063     1.850     32.175
00284>    OVERFLOW<03: (OVF   )        .00      .000      .000       .000
00285>
00286>                    TOTAL NUMBER OF SIMULATED OVERFLOWS  =        0
00287>                    CUMULATIVE TIME OF OVERFLOWS  (hours)=      .00
00288>                    PERCENTAGE OF TIME OVERFLOWING    (%)=      .00
00289>
00290>
00291>                    PEAK   FLOW   REDUCTION [Qout/Qin](%)=   12.843
00292>                    TIME SHIFT OF PEAK FLOW         (min)=   31.00
00293>                    MAXIMUM  STORAGE   USED       (ha.m.)=.4930E-01
00294>
00295> ------------------------------------------------------------------------------
00296> 002:0010--------------------------------------------------------------------
00297> *#*****************************************************************************|
00298> *DC4 INFILTRATION TANK
00299> *#*****************************************************************************|
00300> ---------------------
00301> | COMPUTE DUALHYD    |   Average inlet capacities   [CINLET] =    .002  (cms)
00302> | TotalHyd 02:FCRD   |   Number of inlets in system [NINLET] =      1
00303> ---------------------   Total minor system capacity           =    .002  (cms)
00304>                         Total major system storage [TMJSTO] =    394.(cu.m.)
00305>
00306>                   ID: NHYD        AREA     QPEAK     TPEAK     R.V.      DWF
00307>                                    (ha)     (cms)     (hrs)     (mm)    (cms)
00308>     TOTAL HYD.   02:FCRD         2.68      .063     1.850   32.175     .000
00309>     ==========================================================================
00310>     MAJOR SYST   03:TO-LIS        1.26      .054     3.033   32.175     .000
00311>     MINOR SYST   04:INFIL        1.42      .002    59.133   32.181     .000
00312>
00313>     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
00314>
00315>     Maximum MAJOR SYSTEM storage used =     394.(cu.m.)
00316>
00317> ------------------------------------------------------------------------------
00318> 002:0011--------------------------------------------------------------------
00319> *AREA 202B - DISTRIBUTION CENTRE 5 ROOF
00320> *#*****************************************************************************|
00321> ---------------------
00322> | CALIB STANDHYD     |   Area    (ha)=    3.05
00323> | 05:202B   DT= 5.00 |   Total Imp(%)=   99.00   Dir. Conn.(%)=   99.00
00324> ---------------------
00325>                                IMPERVIOUS    PERVIOUS (i)
00326>     Surface Area     (ha)=       3.02          .03
00327>     Dep. Storage     (mm)=       1.00         5.00
00328>     Average Slope     (%)=       1.00         1.00
00329>     Length            (m)=     282.00         5.00
00330>     Mannings n             =      .013         .250
00331>
00332>     Max.eff.Inten.(mm/hr)=      75.36         9.75
00333>                   over (min)       5.00        10.00
00334>     Storage Coeff.  (min)=       5.33 (ii)   11.66 (ii)
00335>     Unit Hyd. Tpeak (min)=       5.00        10.00
00336>     Unit Hyd. peak  (cms)=        .21          .10
00337>                                                      *TOTALS*
00338>     PEAK FLOW       (cms)=        .55          .00          .555 (iii)
00339>     TIME TO PEAK    (hrs)=       1.33         1.42         1.333
00340>     RUNOFF VOLUME    (mm)=      32.44         5.89        32.175
00341>     TOTAL RAINFALL   (mm)=      33.44        33.44        33.441
00342>     RUNOFF COEFFICIENT   =        .97          .18          .962
00343>
00344>       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
00345>           CN* =  70.0    Ia = Dep. Storage  (Above)
00346>      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
00347>           THAN THE STORAGE COEFFICIENT.
00348>     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
00349>
00350> ------------------------------------------------------------------------------
00351> 002:0012--------------------------------------------------------------------
00352> *#*****************************************************************************|
00353> *FLOW CONTROL ROOF DRAINS DC5
00354> ---------------------
00355> | ROUTE RESERVOIR   |    Requested routing time step =  1.0 min.
00356> |  IN>01:(202A  )   |
00357> | OUT<05:(FCRD  )   |    =========  OUTLFOW STORAGE TABLE  =========
00358> ---------------------    OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
00359>                            (cms)    (ha.m.)   |    (cms)    (ha.m.)
00360>                            .000  .0000E+00   |     .091  .9150E-01
00361>                            .045  .1530E-01   |     .136  .2211E+00
00362>
00363>     ROUTING RESULTS            AREA     QPEAK     TPEAK       R.V.
00364>     ---------------------       (ha)     (cms)     (hrs)       (mm)
00365>     INFLOW >01: (202A  )       2.68      .494     1.333     32.175
00366>     OUTFLOW<05: (FCRD  )       2.68      .066     1.833     32.175
00367>    OVERFLOW<06: (OVF   )        .00      .000      .000       .000
00368>
00369>                    TOTAL NUMBER OF SIMULATED OVERFLOWS  =        0
00370>                    CUMULATIVE TIME OF OVERFLOWS  (hours)=      .00
00371>                    PERCENTAGE OF TIME OVERFLOWING    (%)=      .00
00372>
00373>
00374>                    PEAK   FLOW   REDUCTION [Qout/Qin](%)=   13.272
00375>                    TIME SHIFT OF PEAK FLOW         (min)=   30.00
00376>                    MAXIMUM  STORAGE   USED       (ha.m.)=.4881E-01
00377>
00378> ------------------------------------------------------------------------------
00379> 002:0013--------------------------------------------------------------------
00380> *#*****************************************************************************|
00381> *DC5 INFILTRATION TANK
00382> *#*****************************************************************************|
00383> ---------------------
00384> | COMPUTE DUALHYD    |   Average inlet capacities   [CINLET] =    .003  (cms)
00385> | TotalHyd 05:FCRD   |   Number of inlets in system [NINLET] =      1
00386> ---------------------   Total minor system capacity           =    .003  (cms)
00387>                         Total major system storage [TMJSTO] =    555.(cu.m.)
00388>
00389>                   ID: NHYD        AREA     QPEAK     TPEAK     R.V.      DWF
00390>                                    (ha)     (cms)     (hrs)     (mm)    (cms)
00391>     TOTAL HYD.   05:FCRD         2.68      .066     1.833   32.175     .000
00392>     ==========================================================================
00393>     MAJOR SYST   06:TO-LIS         .69      .048     3.867   32.175     .000
00394>     MINOR SYST   07:INFIL        1.99      .003    55.033   32.183     .000
00395>
00396>     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
00397>
00398>     Maximum MAJOR SYSTEM storage used =     555.(cu.m.)
00399>
00400> ------------------------------------------------------------------------------
00401> 002:0014--------------------------------------------------------------------
00402> *FLOW CHECK - DC4/5 DISCHARGING TO LISGAR BYPASS NETWORK SE OF SITE
00403> ------------------------
00404> | ADD HYD (BYPASS     ) | ID: NHYD          AREA     QPEAK   TPEAK   R.V.    DWF
00405> ------------------------                     (ha)     (cms)   (hrs)   (mm)   (cms)
00406>                          ID1 03:TO-LISGAR      1.26     .054    3.03  32.18    .000
00407>                        +ID2 06:TO-LISGAR       .69     .048    3.87  32.18    .000
00408>                         ========================================================
00409>                         SUM 09:BYPASS          1.95     .096    3.87  32.18    .000
00410>
00411>    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
00412>
00413> ------------------------------------------------------------------------------
00414> 002:0015--------------------------------------------------------------------
00415> *#*****************************************************************************|
00416> *AREA 203 - SITE DRAINING TO TENTH LINE SWALE
00417> *#*****************************************************************************|
00418> ---------------------
00419> | CALIB STANDHYD     |   Area    (ha)=    3.09
00420> | 01:203    DT= 5.00 |   Total Imp(%)=   72.00   Dir. Conn.(%)=   72.00
00421> ---------------------
00422>                                IMPERVIOUS    PERVIOUS (i)
00423>     Surface Area     (ha)=       2.22          .87
00424>     Dep. Storage     (mm)=       1.00         5.00
00425>     Average Slope     (%)=       1.00         5.00
00426>     Length            (m)=      53.00        32.00
00427>     Mannings n             =      .013         .250
00428>
00429>     Max.eff.Inten.(mm/hr)=      75.36         8.20
00430>                   over (min)       5.00        15.00
00431>     Storage Coeff.  (min)=       1.95 (ii)   14.71 (ii)
00432>     Unit Hyd. Tpeak (min)=       5.00        15.00
00433>     Unit Hyd. peak  (cms)=        .31          .08
00434>                                                      *TOTALS*
00435>     PEAK FLOW       (cms)=        .46          .01          .468 (iii)
00436>     TIME TO PEAK    (hrs)=       1.33         1.50         1.333
00437>     RUNOFF VOLUME    (mm)=      32.44         5.89        25.007
00438>     TOTAL RAINFALL   (mm)=      33.44        33.44        33.441
00439>     RUNOFF COEFFICIENT   =        .97          .18          .748
00440>      *** WARNING: Storage Coefficient is smaller than DT!
00441>                   Use a smaller DT or a larger area.
00442>
00443>       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
00444>           CN* =  70.0    Ia = Dep. Storage  (Above)
00445>      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
00446>           THAN THE STORAGE COEFFICIENT.
00447>     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
00448>
00449> ------------------------------------------------------------------------------
00450> 002:0016--------------------------------------------------------------------
00451> *#*****************************************************************************|
00452> *DRY POND
00453> ---------------------
00454> | ROUTE RESERVOIR   |    Requested routing time step =  1.0 min.
00455> |  IN>01:(203   )   |
00456> | OUT<02:(POND  )   |    =========  OUTLFOW STORAGE TABLE  =========
00457> ---------------------    OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
00458>                            (cms)    (ha.m.)   |    (cms)    (ha.m.)
00459>                            .000  .0000E+00   |     .083  .9030E-01
00460>                            .000  .4500E-02   |     .226  .1080E+00
00461>                            .055  .6610E-01   |     .283  .1234E+00
00462>
00463>     ROUTING RESULTS            AREA     QPEAK     TPEAK       R.V.
00464>     ---------------------       (ha)     (cms)     (hrs)       (mm)
00465>     INFLOW >01: (203   )       3.09      .468     1.333     25.007
00466>     OUTFLOW<02: (POND  )       3.09      .041     2.067     23.550
00467>    OVERFLOW<03: (OVF   )        .00      .000      .000       .000
00468>
00469>                    TOTAL NUMBER OF SIMULATED OVERFLOWS  =        0
00470>                    CUMULATIVE TIME OF OVERFLOWS  (hours)=      .00
00471>                    PERCENTAGE OF TIME OVERFLOWING    (%)=      .00
00472>
00473>
00474>                    PEAK   FLOW   REDUCTION [Qout/Qin](%)=    8.776
00475>                    TIME SHIFT OF PEAK FLOW         (min)=   44.00
00476>                    MAXIMUM  STORAGE   USED       (ha.m.)=.5045E-01
00477>
00478>       *** WARNING: Outflow volume is less than inflow volume.
00479> ------------------------------------------------------------------------------
00480> 002:0017--------------------------------------------------------------------
00481> *#*****************************************************************************|
00482> *AREA 205A - UNCONTROLLED SITE DISCHARGE TO TENTH LINE SWALE
00483> *#*****************************************************************************|
00484> ---------------------
00485> | CALIB NASHYD       |   Area    (ha)=     .19   Curve Number   (CN)=70.00
00486> | 04:205A   DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
00487> ---------------------   U.H. Tp(hrs)=     .050
00488>
00489>     Unit Hyd Qpeak  (cms)=     .145
00490>
00491>     PEAK FLOW       (cms)=     .006 (i)
00492>     TIME TO PEAK    (hrs)=    1.350
00493>     RUNOFF VOLUME    (mm)=    5.891
00494>     TOTAL RAINFALL   (mm)=   33.441
00495>     RUNOFF COEFFICIENT   =     .176
00496>
00497>     (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
00498>
00499> ------------------------------------------------------------------------------
00500> 002:0018--------------------------------------------------------------------
00501> *#*****************************************************************************|
00502> *COMBINE TOTAL FLOW TO SWALE
00503> ------------------------
00504> | ADD HYD (SWALE     ) | ID: NHYD          AREA     QPEAK   TPEAK   R.V.    DWF
00505> ------------------------                     (ha)     (cms)   (hrs)   (mm)   (cms)
00506>                          ID1 02:POND           3.09     .041    2.07  23.55    .000
00507>                        +ID2 03:OVF              .00     .000     .00    .00    .000
00508>                        +ID3 04:205A             .19     .006    1.35   5.89    .000
00509>                         ========================================================
00510>                         SUM 08:SWALE          3.28     .042    2.02  22.53    .000
00511>
00512>    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
00513>
00514> ------------------------------------------------------------------------------
00515> 002:0019--------------------------------------------------------------------
00516> *#*****************************************************************************|
00517> *AREA 205B - UNCONTROLLED SITE DISCHARGE TO ADJACENT LAND
00518> *#*****************************************************************************|
00519> ---------------------
00520> | CALIB NASHYD       |   Area    (ha)=     .17   Curve Number   (CN)=70.00
00521> | 01:205B   DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
00522> ---------------------   U.H. Tp(hrs)=     .070
00523>
00524>     Unit Hyd Qpeak  (cms)=     .093
00525>
00526>     PEAK FLOW       (cms)=     .005 (i)
00527>     TIME TO PEAK    (hrs)=    1.367
00528>     RUNOFF VOLUME    (mm)=    5.891
00529>     TOTAL RAINFALL   (mm)=   33.441
00530>     RUNOFF COEFFICIENT   =     .176
00531>
00532>     (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
00533>
00534> ------------------------------------------------------------------------------
00535> 002:0020--------------------------------------------------------------------
00536> *#*****************************************************************************|
00537> *FLOW CHECK - TOTAL SITE DISCHARGE
00538> ------------------------
00539> | ADD HYD (TOTAL     ) | ID: NHYD          AREA     QPEAK   TPEAK   R.V.    DWF
00540> ------------------------                     (ha)     (cms)   (hrs)   (mm)   (cms)
```

```
                    ID1 01:205B          .17     .005    1.37   5.89    .000
                   +ID2 08:SWALE         3.28    .042    2.02  22.53    .000
                   +ID3 09:BYPASS        1.95    .096    3.87  32.18    .000
                   +ID4 10:TOPOND        7.00    .279    1.53  26.07    .000
                    ==========================================================
                    SUM 02:TOTAL        12.40    .320    1.53  25.82    .000

   NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------
002:0021--------------------------------------------------------------------------
*#*****************************************************************************|
  ** END OF RUN :   4

*****************************************************************************


--------------------
| START            |  Project  dir.: Q:\60549_~1\SWM\SWMHYMO\
--------------------  Rainfall dir.: Q:\60549_~1\SWM\SWMHYMO\
    TZERO =   .00 hrs on        0
    METOUT=   2 (output = METRIC)
    NRUN  = 005
    NSTORM=   1
           #  1=MISSG005.stm
--------------------------------------------------------------------------------
005:0002--------------------------------------------------------------------------
*#*****************************************************************************|
*#  Project Name: PROLOGIS MEADOWVALE DISTRIBUTION CENTRE
*#  JOB NUMBER  : 60549-001
*#       Date   : JULY 2025
*#  Modeller    : NZR
*#    Company   : MTE CONSULTANTS INC.
*#       File   : 60549.DAT
--------------------------------------------------------------------------------
005:0002--------------------------------------------------------------------------
--------------------
| READ STORM       |    Filename: MISSISSAUGA 5-YR CHICAGO (A=820 B=4.6 C=
| Ptotal=  44.95 mm|    Comments: MISSISSAUGA 5-YR CHICAGO (A=820 B=4.6 C=
--------------------
              TIME    RAIN |   TIME    RAIN |   TIME    RAIN |   TIME    RAIN
               hrs   mm/hr |    hrs   mm/hr |    hrs   mm/hr |    hrs   mm/hr
               .17   2.987 |   1.17  22.661 |   2.17   6.992 |   3.17   3.578
               .33   3.412 |   1.33 101.302 |   2.33   5.973 |   3.33   3.328
               .50   4.004 |   1.50  29.801 |   2.50   5.234 |   3.50   3.115
               .67   4.895 |   1.67  15.822 |   2.67   4.673 |   3.67   2.931
               .83   6.407 |   1.83  10.974 |   2.83   4.231 |   3.83   2.769
              1.00   9.629 |   2.00   8.500 |   3.00   3.874 |   4.00   2.626

--------------------------------------------------------------------------------
005:0003--------------------------------------------------------------------------
*
*###############################################################################|
*#
*#                      EXISTING CONDITIONS HYDROLOGIC MODELING
*#
*#                  ========================================================
*#
*###############################################################################|
*#*****************************************************************************|
*AREA 101 - EXISTING DRAINAGE SE TO LISGAR CHANNEL
*#*****************************************************************************|
----------------------
| CALIB NASHYD       |   Area    (ha)=   12.15   Curve Number   (CN)=70.00
| 01:101    DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
----------------------  U.H. Tp(hrs)=    .830

     Unit Hyd Qpeak  (cms)=     .559

     PEAK FLOW       (cms)=     .152 (i)
     TIME TO PEAK    (hrs)=    2.433
     RUNOFF VOLUME    (mm)=   10.727
     TOTAL RAINFALL   (mm)=   44.953
     RUNOFF COEFFICIENT   =     .239

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

--------------------------------------------------------------------------------
005:0004--------------------------------------------------------------------------
*#*****************************************************************************|
*AREA 102 - EXISTING DRAINAGE NE TO TENTH LINE SWALE
*#*****************************************************************************|
----------------------
| CALIB NASHYD       |   Area    (ha)=    4.02   Curve Number   (CN)=70.00
| 02:102    DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
----------------------  U.H. Tp(hrs)=    .380

     Unit Hyd Qpeak  (cms)=     .404

     PEAK FLOW       (cms)=     .084 (i)
     TIME TO PEAK    (hrs)=    1.800
     RUNOFF VOLUME    (mm)=   10.727
     TOTAL RAINFALL   (mm)=   44.953
     RUNOFF COEFFICIENT   =     .239

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

--------------------------------------------------------------------------------
005:0005--------------------------------------------------------------------------
*#*****************************************************************************|
*###############################################################################|
*#
*#                      PROPOSED CONDITIONS HYDROLOGIC MODELING
*#
*#                  ========================================================
*#
*###############################################################################|
*#*****************************************************************************|
*AREA 201 - SITE DRAINAGE TO SWM FACILITY SE OF SITE
*#*****************************************************************************|
----------------------
| CALIB STANDHYD     |   Area    (ha)=    7.00
| 01:201    DT= 5.00 |   Total Imp(%)=   76.00   Dir. Conn.(%)=   76.00
----------------------
                               IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       5.32         1.68
     Dep. Storage     (mm)=       1.00         5.00
     Average Slope     (%)=       1.50         2.00
     Length            (m)=      30.00        20.00
     Mannings n           =       .013         .250

     Max.eff.Inten.(mm/hr)=     101.30        19.32
                   over (min)       5.00        10.00
     Storage Coeff.  (min)=     1.09 (ii)   10.08 (ii)
     Unit Hyd. Tpeak (min)=       5.00        10.00
     Unit Hyd. peak  (cms)=        .34          .11
                                                          *TOTALS*
     PEAK FLOW       (cms)=       1.50          .06         1.538 (iii)
     TIME TO PEAK    (hrs)=       1.33         1.42         1.333
     RUNOFF VOLUME    (mm)=      43.95        10.73        35.979
     TOTAL RAINFALL   (mm)=      44.95        44.95        44.953
     RUNOFF COEFFICIENT   =        .98          .24          .800

      *** WARNING: Storage Coefficient is smaller than DT!
                   Use a smaller DT or a larger area.

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN* =  70.0    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.

--------------------------------------------------------------------------------
005:0006--------------------------------------------------------------------------
*#*****************************************************************************|
*ORIFICE PIPE PLACED DOWNSTREAM OF MH1
----------------------
| ROUTE RESERVOIR    |    Requested routing time step =  1.0 min.
|  IN>01:(201    )   |
| OUT<02:(Orifice)   |    =========  OUTFLOW STORAGE TABLE  =========
----------------------    OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
                            (cms)     (ha.m.)   |    (cms)    (ha.m.)
                            .000  .0000E+00   |     .701  .2120E+00
                            .000  .0000E+00   |     .752  .2196E+00
                            .658  .1978E+00   |     .778  .2208E+00

     ROUTING RESULTS            AREA     QPEAK     TPEAK       R.V.
     ---------------            (ha)     (cms)     (hrs)       (mm)
     INFLOW >01: (201   )       7.00     1.538     1.333     35.979
     OUTFLOW<02: (Orific)       7.00      .384     1.550     35.979
    OVERFLOW<03: (OVF   )        .00      .000      .000       .000

                   TOTAL NUMBER OF SIMULATED OVERFLOWS  =        0
                   CUMULATIVE TIME OF OVERFLOWS  (hours)=      .00
                   PERCENTAGE OF TIME OVERFLOWING    (%)=      .00

                   PEAK   FLOW   REDUCTION [Qout/Qin](%)=   24.949
                   TIME SHIFT OF PEAK FLOW         (min)=    13.00
                   MAXIMUM  STORAGE   USED       (ha.m.)=.1155E+00

--------------------------------------------------------------------------------
005:0007--------------------------------------------------------------------------
*#*****************************************************************************|
*FLOW CHECK - SITE DISCHARGE TO DOWNSTREAM SWM FACILITY
------------------------
| ADD HYD (TOPOND    ) | ID: NHYD         AREA     QPEAK   TPEAK   R.V.    DWF
------------------------                   (ha)     (cms)   (hrs)   (mm)    (cms)
                          ID1 02:Orifice     7.00     .384    1.55  35.98    .000
                         +ID2 03:OVF         .00      .000     .00    .00    .000
                          ==========================================================
                          SUM 10:TOPOND      7.00     .384    1.55  35.98    .000

   NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------
005:0008--------------------------------------------------------------------------
*#*****************************************************************************|
*AREA 202A - DISTRIBUTION CENTRE 4 ROOF
*#*****************************************************************************|
----------------------
| CALIB STANDHYD     |   Area    (ha)=    2.68
| 01:202A   DT= 5.00 |   Total Imp(%)=   99.00   Dir. Conn.(%)=   99.00
----------------------
                               IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       2.65         .03
     Dep. Storage     (mm)=       1.00        5.00
     Average Slope     (%)=       1.00        1.00
     Length            (m)=     262.00        5.00
     Mannings n           =       .013         .250

     Max.eff.Inten.(mm/hr)=     101.30       19.32
                   over (min)       5.00       10.00
     Storage Coeff.  (min)=      4.53 (ii)    9.35 (ii)
     Unit Hyd. Tpeak (min)=       5.00       10.00
     Unit Hyd. peak  (cms)=        .23         .12
                                                          *TOTALS*
     PEAK FLOW       (cms)=        .68         .00          .682 (iii)
     TIME TO PEAK    (hrs)=       1.33        1.42         1.333
     RUNOFF VOLUME    (mm)=      43.95       10.73        43.621
     TOTAL RAINFALL   (mm)=      44.95       44.95        44.953
     RUNOFF COEFFICIENT   =        .98         .24          .970

      *** WARNING: Storage Coefficient is smaller than DT!
                   Use a smaller DT or a larger area.

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN* =  70.0    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.

--------------------------------------------------------------------------------
005:0009--------------------------------------------------------------------------
*#*****************************************************************************|
*FLOW CONTROL ROOF DRAINS DC4
----------------------
| ROUTE RESERVOIR    |    Requested routing time step =  1.0 min.
|  IN>01:(202A  )    |
| OUT<02:(FCRD  )    |    =========  OUTFLOW STORAGE TABLE  =========
----------------------    OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
                            (cms)     (ha.m.)   |    (cms)    (ha.m.)
                            .000  .0000E+00   |     .085  .8550E-01
                            .043  .1430E-01   |     .127  .2029E+00

     ROUTING RESULTS            AREA     QPEAK     TPEAK       R.V.
     ---------------            (ha)     (cms)     (hrs)       (mm)
     INFLOW >01: (202A  )       2.68      .682     1.333     43.621
     OUTFLOW<02: (FCRD  )       2.68      .075     1.900     43.621
    OVERFLOW<03: (OVF   )        .00      .000      .000       .000

                   TOTAL NUMBER OF SIMULATED OVERFLOWS  =        0
                   CUMULATIVE TIME OF OVERFLOWS  (hours)=      .00
                   PERCENTAGE OF TIME OVERFLOWING    (%)=      .00

                   PEAK   FLOW   REDUCTION [Qout/Qin](%)=   11.044
                   TIME SHIFT OF PEAK FLOW         (min)=    34.00
                   MAXIMUM  STORAGE   USED       (ha.m.)=.6935E-01

--------------------------------------------------------------------------------
005:0010--------------------------------------------------------------------------
*#*****************************************************************************|
*DC4 INFILTRATION TANK
*#*****************************************************************************|
----------------------
| COMPUTE DUALHYD    |   Average inlet capacities   [CINLET] =    .002  (cms)
| TotalHyd 02:FCRD   |   Number of inlets in system [NINLET] =       1
----------------------   Total minor system capacity          =    .002  (cms)
                         Total major system storage [TMJSTO] =     394.(cu.m.)

                   ID: NHYD        AREA     QPEAK     TPEAK     R.V.       DWF
                                    (ha)     (cms)     (hrs)     (mm)     (cms)
     TOTAL HYD.   02:FCRD          2.68      .075     1.900   43.621     .000
     ==========================================================================
     MAJOR SYST   03:TO-LIS        1.62      .069     2.667   43.621     .000
     MINOR SYST   04:INFIL         1.06      .002    60.033   43.623     .000

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

```
00811>
00812>      Maximum MAJOR SYSTEM storage used =     394.(cu.m.)
00813>
00814> ----------------------------------------------------------------------------
00815> 005:0011----------------------------------------------------------------------
00816> *AREA 202B - DISTRIBUTION CENTRE 5 ROOF
00817> *#*************************************************************************|
00818> ----------------------
00819> | CALIB STANDHYD     |   Area    (ha)=    3.05
00820> | 05:202B   DT= 5.00 |   Total Imp(%)=   99.00   Dir. Conn.(%)=   99.00
00821> ----------------------
00822>                              IMPERVIOUS    PERVIOUS (i)
00823>      Surface Area     (ha)=       3.02         .03
00824>      Dep. Storage     (mm)=       1.00        5.00
00825>      Average Slope     (%)=       1.00        1.00
00826>      Length            (m)=     282.00        5.00
00827>      Mannings n             =       .013        .250
00828>
00829>      Max.eff.Inten.(mm/hr)=     101.30       19.32
00830>                   over (min)       5.00       10.00
00831>      Storage Coeff.  (min)=       4.73 (ii)    9.55 (ii)
00832>      Unit Hyd. Tpeak (min)=       5.00       10.00
00833>      Unit Hyd. peak  (cms)=        .22         .12
00834>                                                          *TOTALS*
00835>      PEAK FLOW       (cms)=        .77         .00          .769 (iii)
00836>      TIME TO PEAK    (hrs)=       1.33        1.42         1.333
00837>      RUNOFF VOLUME    (mm)=      43.95       10.73        43.621
00838>      TOTAL RAINFALL   (mm)=      44.95       44.95        44.953
00839>      RUNOFF COEFFICIENT   =        .98         .24          .970
00840>       *** WARNING: Storage Coefficient is smaller than DT!
00841>                    Use a smaller DT or a larger area.
00842>
00843>        (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
00844>            CN* =  70.0     Ia = Dep. Storage  (Above)
00845>       (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
00846>            THAN THE STORAGE COEFFICIENT.
00847>      (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
00848>
00849> ----------------------------------------------------------------------------
00850> 005:0012----------------------------------------------------------------------
00851> *#*************************************************************************|
00852> *FLOW CONTROL ROOF DRAINS DC5
00853> ----------------------
00854> | ROUTE RESERVOIR    |    Requested routing time step =  1.0 min.
00855> |  IN>01:(202A  )    |
00856> | OUT<05:(FCRD  )    |    =========  OUTLFOW STORAGE TABLE  =========
00857> ----------------------    OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
00858>                             (cms)     (ha.m.)  |     (cms)    (ha.m.)
00859>                              .000  .0000E+00   |     .091  .9150E-01
00860>                              .045  .1530E-01   |     .136  .2211E+00
00861>
00862>      ROUTING RESULTS            AREA     QPEAK     TPEAK       R.V.
00863>      --------------------       (ha)     (cms)     (hrs)        (mm)
00864>      INFLOW >01: (202A  )       2.68      .682     1.333      43.621
00865>      OUTFLOW<05: (FCRD  )       2.68      .077     1.883      43.621
00866>     OVERFLOW<06: (OVF   )        .00      .000      .000        .000
00867>
00868>                    TOTAL NUMBER OF SIMULATED OVERFLOWS  =        0
00869>                    CUMULATIVE TIME OF OVERFLOWS  (hours)=      .00
00870>                    PERCENTAGE OF TIME OVERFLOWING    (%)=      .00
00871>
00872>
00873>                    PEAK   FLOW   REDUCTION [Qout/Qin](%)=   11.348
00874>                    TIME SHIFT OF PEAK FLOW         (min)=    33.00
00875>                    MAXIMUM  STORAGE   USED       (ha.m.)=.6879E-01
00876>
00877> ----------------------------------------------------------------------------
00878> 005:0013----------------------------------------------------------------------
00879> *#*************************************************************************|
00880> *DC5 INFILTRATION TANK
00881> *#*************************************************************************|
00882> ----------------------
00883> | COMPUTE DUALHYD    |   Average inlet capacities   [CINLET] =    .003  (cms)
00884> | TotalHyd 05:FCRD   |   Number of inlets in system [NINLET] =       1
00885> ----------------------   Total minor system capacity          =    .003  (cms)
00886>                          Total major system storage [TMJSTO] =     555.(cu.m.)
00887>
00888>                   ID: NHYD        AREA     QPEAK     TPEAK     R.V.      DWF
00889>                                   (ha)     (cms)     (hrs)     (mm)     (cms)
00890>      TOTAL HYD.   05:FCRD         2.68      .077     1.883   43.621     .000
00891>      ============================================================================
00892>      MAJOR SYST   06:TO-LIS       1.18      .064     3.317   43.621     .000
00893>      MINOR SYST   07:INFIL        1.50      .003    55.917   43.630     .000
00894>
00895>      NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
00896>
00897>      Maximum MAJOR SYSTEM storage used =     555.(cu.m.)
00898>
00899> ----------------------------------------------------------------------------
00900> 005:0014----------------------------------------------------------------------
00901> *FLOW CHECK - DC4/5 DISCHARGING TO LISGAR BYPASS NETWORK SE OF SITE
00902> ------------------------
00903> | ADD HYD (BYPASS     ) | ID: NHYD          AREA     QPEAK   TPEAK   R.V.    DWF
00904> ------------------------                    (ha)     (cms)   (hrs)   (mm)   (cms)
00905>                      ID1 03:TO-LISGAR      1.62      .069    2.67  43.62    .000
00906>                     +ID2 06:TO-LISGAR      1.18      .064    3.32  43.62    .000
00907>                      ========================================================
00908>                      SUM 09:BYPASS         2.80      .128    3.32  43.62    .000
00909>
00910>    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
00911>
00912> ----------------------------------------------------------------------------
00913> 005:0015----------------------------------------------------------------------
00914> *#*************************************************************************|
00915> *AREA 203 - SITE DRAINING TO TENTH LINE SWALE
00916> *#*************************************************************************|
00917> ----------------------
00918> | CALIB STANDHYD     |   Area    (ha)=    3.09
00919> | 01:203    DT= 5.00 |   Total Imp(%)=   72.00   Dir. Conn.(%)=   72.00
00920> ----------------------
00921>                              IMPERVIOUS    PERVIOUS (i)
00922>      Surface Area     (ha)=       2.22         .87
00923>      Dep. Storage     (mm)=       1.00        5.00
00924>      Average Slope     (%)=       1.00        5.00
00925>      Length            (m)=      53.00       32.00
00926>      Mannings n             =       .013        .250
00927>
00928>      Max.eff.Inten.(mm/hr)=     101.30       19.32
00929>                   over (min)       5.00       10.00
00930>      Storage Coeff.  (min)=       1.74 (ii)   10.79 (ii)
00931>      Unit Hyd. Tpeak (min)=       5.00       10.00
00932>      Unit Hyd. peak  (cms)=        .32         .11
00933>                                                          *TOTALS*
00934>      PEAK FLOW       (cms)=        .62         .03          .645 (iii)
00935>      TIME TO PEAK    (hrs)=       1.33        1.42         1.333
00936>      RUNOFF VOLUME    (mm)=      43.95       10.73        34.650
00937>      TOTAL RAINFALL   (mm)=      44.95       44.95        44.953
00938>      RUNOFF COEFFICIENT   =        .98         .24          .771
00939>       *** WARNING: Storage Coefficient is smaller than DT!
00940>                    Use a smaller DT or a larger area.
00941>
00942>        (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
00943>            CN* =  70.0     Ia = Dep. Storage  (Above)
00944>       (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
00945>            THAN THE STORAGE COEFFICIENT.
00946>      (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
00947>
00948> ----------------------------------------------------------------------------
00949> 005:0016----------------------------------------------------------------------
00950> *#*************************************************************************|
00951> *DRY POND
00952> ----------------------
00953> | ROUTE RESERVOIR    |    Requested routing time step =  1.0 min.
00954> |  IN>01:(203    )   |
00955> | OUT<02:(POND  )    |    =========  OUTLFOW STORAGE TABLE  =========
00956> ----------------------    OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
00957>                             (cms)     (ha.m.)  |     (cms)    (ha.m.)
00958>                              .000  .0000E+00   |     .083  .9030E-01
00959>                              .000  .4500E-02   |     .226  .1080E+00
00960>                              .055  .6610E-01   |     .283  .1234E+00
00961>
00962>      ROUTING RESULTS            AREA     QPEAK     TPEAK       R.V.
00963>      --------------------       (ha)     (cms)     (hrs)        (mm)
00964>      INFLOW >01: (203   )       3.09      .645     1.333      34.650
00965>      OUTFLOW<02: (POND  )       3.09      .059     2.033      33.193
00966>     OVERFLOW<03: (OVF   )        .00      .000      .000        .000
00967>
00968>                    TOTAL NUMBER OF SIMULATED OVERFLOWS  =        0
00969>                    CUMULATIVE TIME OF OVERFLOWS  (hours)=      .00
00970>                    PERCENTAGE OF TIME OVERFLOWING    (%)=      .00
00971>
00972>
00973>                    PEAK   FLOW   REDUCTION [Qout/Qin](%)=    9.137
00974>                    TIME SHIFT OF PEAK FLOW         (min)=    42.00
00975>                    MAXIMUM  STORAGE   USED       (ha.m.)=.6945E-01
00976>
00977>       *** WARNING: Outflow volume is less than inflow volume.
00978> ----------------------------------------------------------------------------
00979> 005:0017----------------------------------------------------------------------
00980> *#*************************************************************************|
00981> *AREA 205A - UNCONTROLLED SITE DISCHARGE TO TENTH LINE SWALE
00982> *#*************************************************************************|
00983> ----------------------
00984> | CALIB NASHYD       |   Area    (ha)=     .19   Curve Number   (CN)=70.00
00985> | 04:205A   DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
00986> ----------------------   U.H. Tp(hrs)=     .050
00987>
00988>      Unit Hyd Qpeak  (cms)=     .145
00989>
00990>      PEAK FLOW       (cms)=     .012 (i)
00991>      TIME TO PEAK    (hrs)=    1.350
00992>      RUNOFF VOLUME    (mm)=   10.726
00993>      TOTAL RAINFALL   (mm)=   44.953
00994>      RUNOFF COEFFICIENT   =     .239
00995>
00996>      (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
00997>
00998> ----------------------------------------------------------------------------
00999> 005:0018----------------------------------------------------------------------
01000> *#*************************************************************************|
01001> *COMBINE TOTAL FLOW TO SWALE
01002> ------------------------
01003> | ADD HYD (SWALE     ) | ID: NHYD          AREA     QPEAK   TPEAK   R.V.    DWF
01004> ------------------------                    (ha)     (cms)   (hrs)   (mm)   (cms)
01005>                       ID1 02:POND           3.09      .059    2.03  33.19    .000
01006>                      +ID2 03:OVF            .00      .000     .00    .00    .000
01007>                      +ID3 04:205A           .19      .012    1.35  10.73    .000
01008>                       ========================================================
01009>                       SUM 08:SWALE          3.28      .061    2.00  31.89    .000
01010>
01011>    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
01012>
01013> ----------------------------------------------------------------------------
01014> 005:0019----------------------------------------------------------------------
01015> *#*************************************************************************|
01016> *AREA 205B - UNCONTROLLED SITE DISCHARGE TO ADJACENT LAND
01017> *#*************************************************************************|
01018> ----------------------
01019> | CALIB NASHYD       |   Area    (ha)=     .17   Curve Number   (CN)=70.00
01020> | 01:205B   DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
01021> ----------------------   U.H. Tp(hrs)=     .070
01022>
01023>      Unit Hyd Qpeak  (cms)=     .093
01024>
01025>      PEAK FLOW       (cms)=     .009 (i)
01026>      TIME TO PEAK    (hrs)=    1.367
01027>      RUNOFF VOLUME    (mm)=   10.726
01028>      TOTAL RAINFALL   (mm)=   44.953
01029>      RUNOFF COEFFICIENT   =     .239
01030>
01031>      (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
01032>
01033> ----------------------------------------------------------------------------
01034> 005:0020----------------------------------------------------------------------
01035> *#*************************************************************************|
01036> *FLOW CHECK - TOTAL SITE DISCHARGE
01037> ------------------------
01038> | ADD HYD (TOTAL     ) | ID: NHYD          AREA     QPEAK   TPEAK   R.V.    DWF
01039> ------------------------                    (ha)     (cms)   (hrs)   (mm)   (cms)
01040>                       ID1 01:205B           .17      .009    1.37  10.73    .000
01041>                      +ID2 08:SWALE         3.28      .061    2.00  31.89    .000
01042>                      +ID3 09:BYPASS        2.80      .128    3.32  43.62    .000
01043>                      +ID4 10:TOPOND        7.00      .384    1.55  35.98    .000
01044>                       ========================================================
01045>                       SUM 02:TOTAL         13.25      .445    1.53  36.26    .000
01046>
01047>    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
01048>
01049> ----------------------------------------------------------------------------
01050> 005:0021----------------------------------------------------------------------
01051> *#*************************************************************************|
01052> ----------------------------------------------------------------------------
01053> 005:0002----------------------------------------------------------------------
01054> *
01055>   ** END OF RUN :   9
01056>
01057> ****************************************************************************
01058>
01059>
01060>
01061>
01062>
01063> --------------------
01064> | START            |  Project  dir.: Q:\60549_~1\SWM\SWMHYMO\
01065> --------------------  Rainfall dir.: Q:\60549_~1\SWM\SWMHYMO\
01066>     TZERO =   .00 hrs on        0
01067>     METOUT=   2 (output = METRIC)
01068>     NRUN  = 010
01069>     NSTORM=   1
01070>               #  1=MISSG010.stm
01071> ----------------------------------------------------------------------------
01072> 010:0002----------------------------------------------------------------------
01073> *#*************************************************************************|
01074> *#  Project Name: PROLOGIS MEADOWVALE DISTRIBUTION CENTRE
01075> *#  JOB NUMBER  : 60549-001
01076> *#       Date   : JULY 2025
01077> *#  Modeller    : NZR
01078> *#    Company   : MTE CONSULTANTS INC.
01079> *#       File   : 60549.DAT
01080> ----------------------------------------------------------------------------
```

```
01081> 010:0002----------------------------------------------------------------------------
01082> --------------------
01083> | READ STORM       |    Filename: MISSISSAUGA 10-YR CHICAGO (A=1010 B=4.6
01084> | Ptotal=  55.37 mm|    Comments: MISSISSAUGA 10-YR CHICAGO (A=1010 B=4.6
01085> --------------------
01086>               TIME    RAIN |   TIME    RAIN |   TIME    RAIN |   TIME    RAIN
01087>                hrs   mm/hr |    hrs   mm/hr |    hrs   mm/hr |    hrs   mm/hr
01088>                .17   3.679 |   1.17  27.912 |   2.17   8.613 |   3.17   4.407
01089>                .33   4.203 |   1.33 124.775 |   2.33   7.356 |   3.33   4.100
01090>                .50   4.932 |   1.50  36.707 |   2.50   6.447 |   3.50   3.837
01091>                .67   6.029 |   1.67  19.488 |   2.67   5.756 |   3.67   3.610
01092>                .83   7.891 |   1.83  13.516 |   2.83   5.212 |   3.83   3.411
01093>               1.00  11.860 |   2.00  10.470 |   3.00   4.771 |   4.00   3.235
01094>
01095> ----------------------------------------------------------------------------
01096> 010:0003----------------------------------------------------------------------------
01097> *
01098> *##############################################################################|
01099> *#
01100> *#                     EXISTING CONDITIONS HYDROLOGIC MODELING
01101> *#
01102> *#                  ================================================
01103> *#
01104> *##############################################################################|
01105> *#****************************************************************************|
01106> *AREA 101 - EXISTING DRAINAGE SE TO LISGAR CHANNEL
01107> *#****************************************************************************|
01108> ----------------------
01109> | CALIB NASHYD       |   Area    (ha)=   12.15   Curve Number   (CN)=70.00
01110> | 01:101    DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
01111> ----------------------   U.H. Tp(hrs)=    .830
01112>
01113>      Unit Hyd Qpeak  (cms)=     .559
01114>
01115>      PEAK FLOW       (cms)=     .230 (i)
01116>      TIME TO PEAK    (hrs)=    2.417
01117>      RUNOFF VOLUME    (mm)=   15.934
01118>      TOTAL RAINFALL   (mm)=   55.369
01119>      RUNOFF COEFFICIENT   =     .288
01120>
01121>      (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
01122>
01123> ----------------------------------------------------------------------------
01124> 010:0004----------------------------------------------------------------------------
01125> *#****************************************************************************|
01126> *AREA 102 - EXISTING DRAINAGE NE TO TENTH LINE SWALE
01127> *#****************************************************************************|
01128> ----------------------
01129> | CALIB NASHYD       |   Area    (ha)=    4.02   Curve Number   (CN)=70.00
01130> | 02:102    DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
01131> ----------------------   U.H. Tp(hrs)=    .380
01132>
01133>      Unit Hyd Qpeak  (cms)=     .404
01134>
01135>      PEAK FLOW       (cms)=     .128 (i)
01136>      TIME TO PEAK    (hrs)=    1.800
01137>      RUNOFF VOLUME    (mm)=   15.934
01138>      TOTAL RAINFALL   (mm)=   55.369
01139>      RUNOFF COEFFICIENT   =     .288
01140>
01141>      (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
01142>
01143> ----------------------------------------------------------------------------
01144> 010:0005----------------------------------------------------------------------------
01145> *#****************************************************************************|
01146> *##############################################################################|
01147> *#
01148> *#                     PROPOSED CONDITIONS HYDROLOGIC MODELING
01149> *#
01150> *#                  ================================================
01151> *#
01152> *##############################################################################|
01153> *#****************************************************************************|
01154> *AREA 201 - SITE DRAINAGE TO SWM FACILITY SE OF SITE
01155> *#****************************************************************************|
01156> ----------------------
01157> | CALIB STANDHYD     |   Area    (ha)=    7.00
01158> | 01:201    DT= 5.00 |   Total Imp(%)=   76.00   Dir. Conn.(%)=   76.00
01159> ----------------------
01160>                            IMPERVIOUS    PERVIOUS (i)
01161>      Surface Area     (ha)=       5.32         1.68
01162>      Dep. Storage     (mm)=       1.00         5.00
01163>      Average Slope     (%)=       1.50         2.00
01164>      Length            (m)=      30.00        20.00
01165>      Mannings n            =       .013         .250
01166>
01167>      Max.eff.Inten.(mm/hr)=     124.77        30.01
01168>                 over (min)        5.00        10.00
01169>      Storage Coeff.  (min)=       1.01 (ii)    8.54 (ii)
01170>      Unit Hyd. Tpeak (min)=       5.00        10.00
01171>      Unit Hyd. peak  (cms)=        .34          .12
01172>                                                          *TOTALS*
01173>      PEAK FLOW       (cms)=       1.84          .10         1.916 (iii)
01174>      TIME TO PEAK    (hrs)=       1.33         1.42         1.333
01175>      RUNOFF VOLUME    (mm)=      54.37        15.93        45.145
01176>      TOTAL RAINFALL   (mm)=      55.37        55.37        55.369
01177>      RUNOFF COEFFICIENT   =        .98          .29          .815
01178>       *** WARNING: Storage Coefficient is smaller than DT!
01179>                   Use a smaller DT or a larger area.
01180>
01181>        (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
01182>            CN* =  70.0    Ia = Dep. Storage  (Above)
01183>         (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
01184>              THAN THE STORAGE COEFFICIENT.
01185>       (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
01186>
01187> ----------------------------------------------------------------------------
01188> 010:0006----------------------------------------------------------------------------
01189> *#****************************************************************************|
01190> *ORIFICE PIPE PLACED DOWNSTREAM OF MH1
01191> ----------------------
01192> | ROUTE RESERVOIR    |    Requested routing time step =  1.0 min.
01193> |  IN>01:(201   )    |
01194> | OUT<02:(Orific)    |    =========  OUTLFOW STORAGE TABLE  =========
01195> ----------------------    OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
01196>                             (cms)    (ha.m.)   |    (cms)    (ha.m.)
01197>                              .000  .0000E+00    |     .701  .2120E+00
01198>                              .000  .0000E+00    |     .752  .2196E+00
01199>                              .658  .1978E+00    |     .778  .2208E+00
01200>
01201>      ROUTING RESULTS            AREA     QPEAK     TPEAK       R.V.
01202>      ---------------------       (ha)     (cms)     (hrs)       (mm)
01203>      INFLOW >01: (201   )       7.00     1.916     1.333     45.145
01204>      OUTFLOW<02: (Orific)       7.00      .480     1.550     45.145
01205>     OVERFLOW<03: (OVF   )        .00      .000      .000       .000
01206>
01207>                    TOTAL NUMBER OF SIMULATED OVERFLOWS  =        0
01208>                    CUMULATIVE TIME OF OVERFLOWS  (hours)=      .00
01209>                    PERCENTAGE OF TIME OVERFLOWING    (%)=      .00
01210>
01211>
01212>                    PEAK   FLOW   REDUCTION [Qout/Qin](%)=   25.054
01213>                    TIME SHIFT OF PEAK FLOW         (min)=    13.00
01214>                    MAXIMUM  STORAGE   USED       (ha.m.)=.1445E+00
01215>
01216> ----------------------------------------------------------------------------
01217> 010:0007----------------------------------------------------------------------------
01218> *#****************************************************************************|
01219> *FLOW CHECK - SITE DISCHARGE TO DOWNSTREAM SWM FACILITY
01220> ----------------------
01221> | ADD HYD (TOPOND    ) | ID: NHYD         AREA     QPEAK   TPEAK   R.V.    DWF
01222> ----------------------                    (ha)     (cms)   (hrs)   (mm)    (cms)
01223>                       ID1 02:Orifice       7.00     .480    1.55  45.14    .000
01224>                      +ID2 03:OVF           .00      .000     .00    .00    .000
01225>                       ================================================================
01226>                       SUM 10:TOPOND        7.00     .480    1.55  45.14    .000
01227>
01228>    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
01229>
01230> ----------------------------------------------------------------------------
01231> 010:0008----------------------------------------------------------------------------
01232> *#****************************************************************************|
01233> *AREA 202A - DISTRIBUTION CENTRE 4 ROOF
01234> *#****************************************************************************|
01235> ----------------------
01236> | CALIB STANDHYD     |   Area    (ha)=    2.68
01237> | 01:202A   DT= 5.00 |   Total Imp(%)=   99.00   Dir. Conn.(%)=   99.00
01238> ----------------------
01239>                            IMPERVIOUS    PERVIOUS (i)
01240>      Surface Area     (ha)=       2.65         .03
01241>      Dep. Storage     (mm)=       1.00         5.00
01242>      Average Slope     (%)=       1.00         1.00
01243>      Length            (m)=     262.00         5.00
01244>      Mannings n            =       .013         .250
01245>
01246>      Max.eff.Inten.(mm/hr)=     124.77        30.01
01247>                 over (min)        5.00        10.00
01248>      Storage Coeff.  (min)=       4.17 (ii)    8.21 (ii)
01249>      Unit Hyd. Tpeak (min)=       5.00        10.00
01250>      Unit Hyd. peak  (cms)=        .24          .13
01251>                                                          *TOTALS*
01252>      PEAK FLOW       (cms)=        .85          .00          .855 (iii)
01253>      TIME TO PEAK    (hrs)=       1.33         1.42         1.333
01254>      RUNOFF VOLUME    (mm)=      54.37        15.93        53.985
01255>      TOTAL RAINFALL   (mm)=      55.37        55.37        55.369
01256>      RUNOFF COEFFICIENT   =        .98          .29          .975
01257>       *** WARNING: Storage Coefficient is smaller than DT!
01258>                   Use a smaller DT or a larger area.
01259>
01260>        (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
01261>            CN* =  70.0    Ia = Dep. Storage  (Above)
01262>         (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
01263>              THAN THE STORAGE COEFFICIENT.
01264>       (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
01265>
01266> ----------------------------------------------------------------------------
01267> 010:0009----------------------------------------------------------------------------
01268> *#****************************************************************************|
01269> *FLOW CONTROL ROOF DRAINS DC4
01270> ----------------------
01271> | ROUTE RESERVOIR    |    Requested routing time step =  1.0 min.
01272> |  IN>01:(202A   )   |
01273> | OUT<02:(FCRD   )   |    =========  OUTLFOW STORAGE TABLE  =========
01274> ----------------------    OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
01275>                             (cms)    (ha.m.)   |    (cms)    (ha.m.)
01276>                              .000  .0000E+00    |     .085  .8550E-01
01277>                              .043  .1430E-01    |     .127  .2029E+00
01278>
01279>      ROUTING RESULTS            AREA     QPEAK     TPEAK       R.V.
01280>      ---------------------       (ha)     (cms)     (hrs)       (mm)
01281>      INFLOW >01: (202A  )       2.68      .855     1.333     53.985
01282>      OUTFLOW<02: (FCRD  )       2.68      .086     1.917     53.985
01283>     OVERFLOW<03: (OVF   )        .00      .000      .000       .000
01284>
01285>                    TOTAL NUMBER OF SIMULATED OVERFLOWS  =        0
01286>                    CUMULATIVE TIME OF OVERFLOWS  (hours)=      .00
01287>                    PERCENTAGE OF TIME OVERFLOWING    (%)=      .00
01288>
01289>
01290>                    PEAK   FLOW   REDUCTION [Qout/Qin](%)=   10.035
01291>                    TIME SHIFT OF PEAK FLOW         (min)=    35.00
01292>                    MAXIMUM  STORAGE   USED       (ha.m.)=.8771E-01
01293>
01294> ----------------------------------------------------------------------------
01295> 010:0010----------------------------------------------------------------------------
01296> *#****************************************************************************|
01297> *DC4 INFILTRATION TANK
01298> *#****************************************************************************|
01299> ----------------------
01300> | COMPUTE DUALHYD    |   Average inlet capacities   [CINLET] =    .002  (cms)
01301> | TotalHyd 02:FCRD   |   Number of inlets in system [NINLET] =       1
01302> ----------------------   Total minor system capacity         =    .002  (cms)
01303>                          Total major system storage [TMJSTO] =     394.(cu.m.)
01304>
01305>                  ID: NHYD        AREA      QPEAK     TPEAK     R.V.       DWF
01306>                                   (ha)      (cms)     (hrs)     (mm)     (cms)
01307>     TOTAL HYD.   02:FCRD         2.68      .086     1.917   53.985      .000
01308>     ==========================================================================
01309>     MAJOR SYST   03:TO-LIS        1.81      .082     2.450   53.985      .000
01310>     MINOR SYST   04:INFIL         .87      .002    60.733   53.990      .000
01311>
01312>      NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
01313>
01314>      Maximum MAJOR SYSTEM storage used =     394.(cu.m.)
01315>
01316> ----------------------------------------------------------------------------
01317> 010:0011----------------------------------------------------------------------------
01318> *AREA 202B - DISTRIBUTION CENTRE 5 ROOF
01319> *#****************************************************************************|
01320> ----------------------
01321> | CALIB STANDHYD     |   Area    (ha)=    3.05
01322> | 05:202B   DT= 5.00 |   Total Imp(%)=   99.00   Dir. Conn.(%)=   99.00
01323> ----------------------
01324>                            IMPERVIOUS    PERVIOUS (i)
01325>      Surface Area     (ha)=       3.02         .03
01326>      Dep. Storage     (mm)=       1.00         5.00
01327>      Average Slope     (%)=       1.00         1.00
01328>      Length            (m)=     282.00         5.00
01329>      Mannings n            =       .013         .250
01330>
01331>      Max.eff.Inten.(mm/hr)=     124.77        30.01
01332>                 over (min)        5.00        10.00
01333>      Storage Coeff.  (min)=       4.36 (ii)    8.39 (ii)
01334>      Unit Hyd. Tpeak (min)=       5.00        10.00
01335>      Unit Hyd. peak  (cms)=        .23          .12
01336>                                                          *TOTALS*
01337>      PEAK FLOW       (cms)=        .96          .00          .965 (iii)
01338>      TIME TO PEAK    (hrs)=       1.33         1.42         1.333
01339>      RUNOFF VOLUME    (mm)=      54.37        15.93        53.985
01340>      TOTAL RAINFALL   (mm)=      55.37        55.37        55.369
01341>      RUNOFF COEFFICIENT   =        .98          .29          .975
01342>       *** WARNING: Storage Coefficient is smaller than DT!
01343>                   Use a smaller DT or a larger area.
01344>
01345>        (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
01346>            CN* =  70.0    Ia = Dep. Storage  (Above)
01347>         (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
01348>              THAN THE STORAGE COEFFICIENT.
01349>       (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
01350>
```

```
01351> ----------------------------------------------------------------------------
01352> 010:0012----------------------------------------------------------------------
01353> *#*************************************************************************|
01354> *FLOW CONTROL ROOF DRAINS DC5
01355> ---------------------
01356> | ROUTE RESERVOIR   |    Requested routing time step =  1.0 min.
01357> |  IN>01:(202A  )   |
01358> | OUT<05:(FCRD  )   |    =========  OUTLFOW STORAGE TABLE  =========
01359> ---------------------    OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
01360>                            (cms)    (ha.m.)   |    (cms)    (ha.m.)
01361>                             .000  .0000E+00   |     .091  .9150E-01
01362>                             .045  .1530E-01   |     .136  .2211E+00
01363>
01364>     ROUTING RESULTS            AREA     QPEAK     TPEAK       R.V.
01365>     ---------------------       (ha)     (cms)     (hrs)       (mm)
01366>     INFLOW >01: (202A  )       2.68      .855     1.333     53.985
01367>     OUTFLOW<05: (FCRD  )       2.68      .088     1.900     53.985
01368>    OVERFLOW<06: (OVF   )        .00      .000      .000       .000
01369>
01370>                    TOTAL NUMBER OF SIMULATED OVERFLOWS  =        0
01371>                    CUMULATIVE TIME OF OVERFLOWS  (hours)=      .00
01372>                    PERCENTAGE OF TIME OVERFLOWING    (%)=      .00
01373>
01374>
01375>                    PEAK   FLOW   REDUCTION [Qout/Qin](%)=   10.333
01376>                    TIME SHIFT OF PEAK FLOW         (min)=    34.00
01377>                    MAXIMUM  STORAGE   USED       (ha.m.)=.8707E-01
01378>
01379> ----------------------------------------------------------------------------
01380> 010:0013----------------------------------------------------------------------
01381> *#*************************************************************************|
01382> *DC5 INFILTRATION TANK
01383> *#*************************************************************************|
01384> ---------------------
01385> | COMPUTE DUALHYD    |   Average inlet capacities   [CINLET] =    .003  (cms)
01386> | TotalHyd 05:FCRD   |   Number of inlets in system [NINLET] =      1
01387> ---------------------   Total minor system capacity           =    .003  (cms)
01388>                         Total major system storage [TMJSTO] =     555.(cu.m.)
01389>
01390>                  ID: NHYD        AREA     QPEAK     TPEAK     R.V.      DWF
01391>                                   (ha)     (cms)     (hrs)     (mm)    (cms)
01392>     TOTAL HYD.   05:FCRD         2.68      .088     1.900    53.985     .000
01393>     ============================================================
01394>     MAJOR SYST   06:TO-LIS       1.45      .078     3.000    53.985     .000
01395>     MINOR SYST   07:INFIL        1.23      .003    56.600    53.999     .000
01396>
01397>     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
01398>
01399>     Maximum MAJOR SYSTEM storage used =     555.(cu.m.)
01400>
01401> ----------------------------------------------------------------------------
01402> 010:0014----------------------------------------------------------------------
01403> *FLOW CHECK - DC4/5 DISCHARGING TO LISGAR BYPASS NETWORK SE OF SITE
01404> ------------------------
01405> | ADD HYD (BYPASS    ) | ID: NHYD         AREA     QPEAK   TPEAK   R.V.    DWF
01406> ------------------------                   (ha)     (cms)   (hrs)   (mm)   (cms)
01407>                     ID1 03:TO-LISGAR      1.81      .082    2.45  53.98    .000
01408>                    +ID2 06:TO-LISGAR      1.45      .078    3.00  53.98    .000
01409>                     ============================================================
01410>                     SUM 09:BYPASS         3.26      .155    3.00  53.98    .000
01411>
01412>    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
01413>
01414> ----------------------------------------------------------------------------
01415> 010:0015----------------------------------------------------------------------
01416> *#*************************************************************************|
01417> *AREA 203 - SITE DRAINING TO TENTH LINE SWALE
01418> *#*************************************************************************|
01419> ---------------------
01420> | CALIB STANDHYD     |   Area    (ha)=    3.09
01421> | 01:203    DT= 5.00 |   Total Imp(%)=   72.00   Dir. Conn.(%)=   72.00
01422> ---------------------
01423>                              IMPERVIOUS    PERVIOUS (i)
01424>     Surface Area     (ha)=       2.22          .87
01425>     Dep. Storage     (mm)=       1.00         5.00
01426>     Average Slope     (%)=       1.00         5.00
01427>     Length            (m)=      53.00        32.00
01428>     Mannings n           =       .013         .250
01429>
01430>     Max.eff.Inten.(mm/hr)=     124.77        30.01
01431>                 over (min)        5.00        10.00
01432>     Storage Coeff.  (min)=       1.60 (ii)    9.19 (ii)
01433>     Unit Hyd. Tpeak (min)=       5.00        10.00
01434>     Unit Hyd. peak  (cms)=        .32          .12
01435>                                                        *TOTALS*
01436>     PEAK FLOW       (cms)=        .77          .05          .806 (iii)
01437>     TIME TO PEAK    (hrs)=       1.33         1.42         1.333
01438>     RUNOFF VOLUME    (mm)=      54.37        15.93        43.607
01439>     TOTAL RAINFALL   (mm)=      55.37        55.37        55.369
01440>     RUNOFF COEFFICIENT   =        .98          .29          .788
01441>      *** WARNING: Storage Coefficient is smaller than DT!
01442>                   Use a smaller DT or a larger area.
01443>
01444>       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
01445>           CN* =  70.0    Ia = Dep. Storage  (Above)
01446>      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
01447>           THAN THE STORAGE COEFFICIENT.
01448>     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
01449>
01450> ----------------------------------------------------------------------------
01451> 010:0016----------------------------------------------------------------------
01452> *#*************************************************************************|
01453> *DRY POND
01454> ---------------------
01455> | ROUTE RESERVOIR   |    Requested routing time step =  1.0 min.
01456> |  IN>01:(203   )   |
01457> | OUT<02:(POND  )   |    =========  OUTLFOW STORAGE TABLE  =========
01458> ---------------------    OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
01459>                            (cms)    (ha.m.)   |    (cms)    (ha.m.)
01460>                             .000  .0000E+00   |     .083  .9030E-01
01461>                             .000  .4500E-02   |     .226  .1080E+00
01462>                             .055  .6610E-01   |     .283  .1234E+00
01463>
01464>     ROUTING RESULTS            AREA     QPEAK     TPEAK       R.V.
01465>     ---------------------       (ha)     (cms)     (hrs)       (mm)
01466>     INFLOW >01: (203   )       3.09      .806     1.333     43.607
01467>     OUTFLOW<02: (POND  )       3.09      .078     2.017     42.151
01468>    OVERFLOW<03: (OVF   )        .00      .000      .000       .000
01469>
01470>                    TOTAL NUMBER OF SIMULATED OVERFLOWS  =        0
01471>                    CUMULATIVE TIME OF OVERFLOWS  (hours)=      .00
01472>                    PERCENTAGE OF TIME OVERFLOWING    (%)=      .00
01473>
01474>
01475>                    PEAK   FLOW   REDUCTION [Qout/Qin](%)=    9.701
01476>                    TIME SHIFT OF PEAK FLOW         (min)=    41.00
01477>                    MAXIMUM  STORAGE   USED       (ha.m.)=.8633E-01
01478>
01479>      *** WARNING: Outflow volume is less than inflow volume.
01480> ----------------------------------------------------------------------------
01481> 010:0017----------------------------------------------------------------------
01482> *#*************************************************************************|
01483> *AREA 205A - UNCONTROLLED SITE DISCHARGE TO TENTH LINE SWALE
01484> *#*************************************************************************|
01485> ---------------------
01486> | CALIB NASHYD       |   Area    (ha)=     .19   Curve Number   (CN)=70.00
01487> | 04:205A   DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
01488> ---------------------   U.H. Tp(hrs)=    .050
01489>
01490>      Unit Hyd Qpeak  (cms)=     .145
01491>
01492>      PEAK FLOW       (cms)=     .018 (i)
01493>      TIME TO PEAK    (hrs)=    1.350
01494>      RUNOFF VOLUME    (mm)=   15.933
01495>      TOTAL RAINFALL   (mm)=   55.369
01496>      RUNOFF COEFFICIENT   =     .288
01497>
01498>      (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
01499>
01500> ----------------------------------------------------------------------------
01501> 010:0018----------------------------------------------------------------------
01502> *#*************************************************************************|
01503> *COMBINE TOTAL FLOW TO SWALE
01504> ------------------------
01505> | ADD HYD (SWALE     ) | ID: NHYD         AREA     QPEAK   TPEAK   R.V.    DWF
01506> ------------------------                   (ha)     (cms)   (hrs)   (mm)   (cms)
01507>                     ID1 02:POND           3.09      .078    2.02  42.15    .000
01508>                    +ID2 03:OVF             .00      .000     .00    .00    .000
01509>                    +ID3 04:205A            .19      .018    1.35  15.93    .000
01510>                     ============================================================
01511>                     SUM 08:SWALE          3.28      .081    1.87  40.63    .000
01512>
01513>    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
01514>
01515> ----------------------------------------------------------------------------
01516> 010:0019----------------------------------------------------------------------
01517> *#*************************************************************************|
01518> *AREA 205B - UNCONTROLLED SITE DISCHARGE TO ADJACENT LAND
01519> *#*************************************************************************|
01520> ---------------------
01521> | CALIB NASHYD       |   Area    (ha)=     .17   Curve Number   (CN)=70.00
01522> | 01:205B   DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
01523> ---------------------   U.H. Tp(hrs)=    .070
01524>
01525>      Unit Hyd Qpeak  (cms)=     .093
01526>
01527>      PEAK FLOW       (cms)=     .014 (i)
01528>      TIME TO PEAK    (hrs)=    1.367
01529>      RUNOFF VOLUME    (mm)=   15.933
01530>      TOTAL RAINFALL   (mm)=   55.369
01531>      RUNOFF COEFFICIENT   =     .288
01532>
01533>      (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
01534>
01535> ----------------------------------------------------------------------------
01536> 010:0020----------------------------------------------------------------------
01537> *#*************************************************************************|
01538> *FLOW CHECK - TOTAL SITE DISCHARGE
01539> ------------------------
01540> | ADD HYD (TOTAL     ) | ID: NHYD         AREA     QPEAK   TPEAK   R.V.    DWF
01541> ------------------------                   (ha)     (cms)   (hrs)   (mm)   (cms)
01542>                     ID1 01:205B            .17      .014    1.37  15.93    .000
01543>                    +ID2 08:SWALE          3.28      .081    1.87  40.63    .000
01544>                    +ID3 09:BYPASS         3.26      .155    3.00  53.98    .000
01545>                    +ID4 10:TOPOND         7.00      .480    1.55  45.14    .000
01546>                     ============================================================
01547>                     SUM 02:TOTAL          13.71      .563    1.55  45.81    .000
01548>
01549>    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
01550>
01551> ----------------------------------------------------------------------------
01552> 010:0021----------------------------------------------------------------------
01553> *#*************************************************************************|
01554> ----------------------------------------------------------------------------
01555> 010:0002----------------------------------------------------------------------
01556> *
01557> ----------------------------------------------------------------------------
01558> 010:0002----------------------------------------------------------------------
01559> *
01560>   ** END OF RUN :  24
01561>
01562> ****************************************************************************
01563>
01564>
01565>
01566>
01567>
01568> --------------------
01569> | START            |  Project  dir.: Q:\60549_~1\SWM\SWMHYMO\
01570> --------------------  Rainfall dir.: Q:\60549_~1\SWM\SWMHYMO\
01571>     TZERO =   .00 hrs on        0
01572>     METOUT=   2 (output = METRIC)
01573>     NRUN  = 025
01574>     NSTORM=   1
01575>               #  1=MISSG025.stm
01576> ----------------------------------------------------------------------------
01577> 025:0002----------------------------------------------------------------------
01578> *#*************************************************************************|
01579> *#  Project Name: PROLOGIS MEADOWVALE DISTRIBUTION CENTRE
01580> *#  JOB NUMBER  : 60549-001
01581> *#       Date   : JULY 2025
01582> *#  Modeller    : NZR
01583> *#    Company   : MTE CONSULTANTS INC.
01584> *#       File   : 60549.DAT
01585> ----------------------------------------------------------------------------
01586> 025:0002----------------------------------------------------------------------
01587> ---------------------
01588> | READ STORM         |    Filename: MISSISSAUGA 25-YR CHICAGO (A=1160 B=4.6
01589> | Ptotal=  63.59 mm|    Comments: MISSISSAUGA 25-YR CHICAGO (A=1160 B=4.6
01590> ---------------------
01591>                 TIME    RAIN |   TIME    RAIN |   TIME    RAIN |   TIME    RAIN
01592>                  hrs   mm/hr |    hrs   mm/hr |    hrs   mm/hr |    hrs   mm/hr
01593>                  .17   4.226 |   1.17  32.057 |   2.17   9.892 |   3.17   5.061
01594>                  .33   4.827 |   1.33 143.305 |   2.33   8.449 |   3.33   4.708
01595>                  .50   5.665 |   1.50  42.158 |   2.50   7.404 |   3.50   4.407
01596>                  .67   6.925 |   1.67  22.382 |   2.67   6.611 |   3.67   4.146
01597>                  .83   9.063 |   1.83  15.524 |   2.83   5.986 |   3.83   3.917
01598>                 1.00  13.621 |   2.00  12.025 |   3.00   5.480 |   4.00   3.716
01599>
01600> ----------------------------------------------------------------------------
01601> 025:0003----------------------------------------------------------------------
01602> *
01603> *#########################################################################|
01604> *#
01605> *#                     EXISTING CONDITIONS HYDROLOGIC MODELING
01606> *#
01607> *#                ================================================
01608> *#
01609> *#########################################################################|
01610> *#*************************************************************************|
01611> *AREA 101 - EXISTING DRAINAGE SE TO LISGAR CHANNEL
01612> *#*************************************************************************|
01613> ---------------------
01614> | CALIB NASHYD       |   Area    (ha)=   12.15   Curve Number   (CN)=70.00
01615> | 01:101    DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
01616> ---------------------   U.H. Tp(hrs)=    .830
01617>
01618>      Unit Hyd Qpeak  (cms)=     .559
01619>
01620>      PEAK FLOW       (cms)=     .298 (i)
```

```
      TIME TO PEAK    (hrs)=    2.400
      RUNOFF VOLUME    (mm)=   20.502
      TOTAL RAINFALL   (mm)=   63.592
      RUNOFF COEFFICIENT   =     .322

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

------------------------------------------------------------------------------
025:0004------------------------------------------------------------------------
*#*****************************************************************************|
*AREA 102 - EXISTING DRAINAGE NE TO TENTH LINE SWALE
*#*****************************************************************************|
----------------------
| CALIB NASHYD       |   Area    (ha)=    4.02   Curve Number    (CN)=70.00
| 02:102    DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
----------------------   U.H. Tp(hrs)=    .380

      Unit Hyd Qpeak  (cms)=     .404

      PEAK FLOW       (cms)=     .167 (i)
      TIME TO PEAK    (hrs)=    1.783
      RUNOFF VOLUME    (mm)=   20.502
      TOTAL RAINFALL   (mm)=   63.592
      RUNOFF COEFFICIENT   =     .322

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

------------------------------------------------------------------------------
025:0005------------------------------------------------------------------------
*#*****************************************************************************|
*###############################################################################|
*#
*#                    PROPOSED CONDITIONS HYDROLOGIC MODELING
*#
*#                  ====================================================
*#
*###############################################################################|
*#*****************************************************************************|
*AREA 201 - SITE DRAINAGE TO SWM FACILITY SE OF SITE
*#*****************************************************************************|
----------------------
| CALIB STANDHYD     |   Area    (ha)=    7.00
| 01:201    DT= 5.00 |   Total Imp(%)=   76.00   Dir. Conn.(%)=   76.00
----------------------

                           IMPERVIOUS    PERVIOUS (i)
      Surface Area     (ha)=       5.32         1.68
      Dep. Storage     (mm)=       1.00         5.00
      Average Slope     (%)=       1.50         2.00
      Length            (m)=      30.00        20.00
      Mannings n             =       .013         .250

      Max.eff.Inten.(mm/hr)=     143.31        49.25
                  over (min)        5.00         5.00
      Storage Coeff.  (min)=        .95 (ii)    7.13 (ii)
      Unit Hyd. Tpeak (min)=        5.00         5.00
      Unit Hyd. peak  (cms)=        .34          .17
                                                          *TOTALS*
      PEAK FLOW       (cms)=       2.12          .15         2.271 (iii)
      TIME TO PEAK    (hrs)=       1.33         1.33         1.333
      RUNOFF VOLUME    (mm)=      62.59        20.50        52.491
      TOTAL RAINFALL   (mm)=      63.59        63.59        63.592
      RUNOFF COEFFICIENT   =        .98          .32          .825
       *** WARNING: Storage Coefficient is smaller than DT!
                   Use a smaller DT or a larger area.

        (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN* =  70.0    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.

------------------------------------------------------------------------------
025:0006------------------------------------------------------------------------
*#*****************************************************************************|
*ORIFICE PIPE PLACED DOWNSTREAM OF MH1
----------------------
| ROUTE RESERVOIR    |    Requested routing time step =  1.0 min.
|  IN>01:(201    )   |
| OUT<02:(Orific)    |    =========  OUTLFOW STORAGE TABLE  =========
----------------------    OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
                            (cms)     (ha.m.)   |    (cms)    (ha.m.)
                            .000  .0000E+00   |     .701  .2120E+00
                            .000  .0000E+00   |     .752  .2196E+00
                            .658  .1978E+00   |     .778  .2208E+00

      ROUTING RESULTS            AREA     QPEAK     TPEAK       R.V.
      ---------------------       (ha)     (cms)     (hrs)       (mm)
      INFLOW >01: (201   )       7.00     2.271     1.333     52.491
      OUTFLOW<02: (Orific)       7.00      .562     1.550     52.490
     OVERFLOW<03: (OVF   )        .00      .000      .000      .000

                    TOTAL NUMBER OF SIMULATED OVERFLOWS  =        0
                    CUMULATIVE TIME OF OVERFLOWS  (hours)=      .00
                    PERCENTAGE OF TIME OVERFLOWING    (%)=      .00


                    PEAK   FLOW   REDUCTION [Qout/Qin](%)=   24.753
                    TIME SHIFT OF PEAK FLOW          (min)=    13.00
                    MAXIMUM  STORAGE   USED       (ha.m.)=.1692E+00

------------------------------------------------------------------------------
025:0007------------------------------------------------------------------------
*#*****************************************************************************|
*FLOW CHECK - SITE DISCHARGE TO DOWNSTREAM SWM FACILITY
----------------------
| ADD HYD (TOPOND    ) | ID: NHYD         AREA     QPEAK   TPEAK   R.V.    DWF
------------------------                   (ha)     (cms)   (hrs)   (mm)    (cms)
                     ID1 02:Orifice        7.00      .562    1.55  52.49    .000
                    +ID2 03:OVF             .00      .000     .00    .00    .000
                     ==========================================================
                     SUM 10:TOPOND         7.00      .562    1.55  52.49    .000

   NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

------------------------------------------------------------------------------
025:0008------------------------------------------------------------------------
*#*****************************************************************************|
*AREA 202A - DISTRIBUTION CENTRE 4 ROOF
*#*****************************************************************************|
----------------------
| CALIB STANDHYD     |   Area    (ha)=    2.68
| 01:202A   DT= 5.00 |   Total Imp(%)=   99.00   Dir. Conn.(%)=   99.00
----------------------

                           IMPERVIOUS    PERVIOUS (i)
      Surface Area     (ha)=       2.65          .03
      Dep. Storage     (mm)=       1.00         5.00
      Average Slope     (%)=       1.00         1.00
      Length            (m)=     262.00         5.00
      Mannings n             =       .013         .250

      Max.eff.Inten.(mm/hr)=     143.31        49.25
                  over (min)        5.00         5.00
      Storage Coeff.  (min)=       3.94 (ii)    7.26 (ii)
      Unit Hyd. Tpeak (min)=       5.00         5.00
      Unit Hyd. peak  (cms)=        .24          .17

                                                          *TOTALS*
      PEAK FLOW       (cms)=        .99          .00          .993 (iii)
      TIME TO PEAK    (hrs)=       1.33         1.33         1.333
      RUNOFF VOLUME    (mm)=      62.59        20.50        62.171
      TOTAL RAINFALL   (mm)=      63.59        63.59        63.592
      RUNOFF COEFFICIENT   =        .98          .32          .978
       *** WARNING: Storage Coefficient is smaller than DT!
                   Use a smaller DT or a larger area.

        (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN* =  70.0    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.

------------------------------------------------------------------------------
025:0009------------------------------------------------------------------------
*#*****************************************************************************|
*FLOW CONTROL ROOF DRAINS DC4
----------------------
| ROUTE RESERVOIR    |    Requested routing time step =  1.0 min.
|  IN>01:(202A   )   |
| OUT<02:(FCRD   )   |    =========  OUTLFOW STORAGE TABLE  =========
----------------------    OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
                            (cms)     (ha.m.)   |    (cms)    (ha.m.)
                            .000  .0000E+00   |     .085  .8550E-01
                            .043  .1430E-01   |     .127  .2029E+00

      ROUTING RESULTS            AREA     QPEAK     TPEAK       R.V.
      ---------------------       (ha)     (cms)     (hrs)       (mm)
      INFLOW >01: (202A  )       2.68      .993     1.333     62.171
      OUTFLOW<02: (FCRD  )       2.68      .091     2.000     62.171
     OVERFLOW<03: (OVF   )        .00      .000      .000      .000

                    TOTAL NUMBER OF SIMULATED OVERFLOWS  =        0
                    CUMULATIVE TIME OF OVERFLOWS  (hours)=      .00
                    PERCENTAGE OF TIME OVERFLOWING    (%)=      .00


                    PEAK   FLOW   REDUCTION [Qout/Qin](%)=    9.194
                    TIME SHIFT OF PEAK FLOW          (min)=    40.00
                    MAXIMUM  STORAGE   USED       (ha.m.)=.1028E+00

------------------------------------------------------------------------------
025:0010------------------------------------------------------------------------
*#*****************************************************************************|
*DC4 INFILTRATION TANK
*#*****************************************************************************|
----------------------
| COMPUTE DUALHYD    |   Average inlet capacities   [CINLET] =    .002  (cms)
| TotalHyd 02:FCRD   |   Number of inlets in system [NINLET] =      1
----------------------   Total minor system capacity         =    .002  (cms)
                         Total major system storage [TMJSTO] =     394.(cu.m.)

                  ID: NHYD        AREA     QPEAK     TPEAK     R.V.      DWF
                                   (ha)     (cms)     (hrs)     (mm)     (cms)
    TOTAL HYD.   02:FCRD          2.68      .091     2.000   62.171     .000
    ==========================================================================
    MAJOR SYST   03:TO-LIS        1.92      .088     2.350   62.171     .000
    MINOR SYST   04:INFIL          .76      .002    61.267   62.183     .000

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

     Maximum MAJOR SYSTEM storage used =     394.(cu.m.)

------------------------------------------------------------------------------
025:0011------------------------------------------------------------------------
*AREA 202B - DISTRIBUTION CENTRE 5 ROOF
*#*****************************************************************************|
----------------------
| CALIB STANDHYD     |   Area    (ha)=    3.05
| 05:202B   DT= 5.00 |   Total Imp(%)=   99.00   Dir. Conn.(%)=   99.00
----------------------

                           IMPERVIOUS    PERVIOUS (i)
      Surface Area     (ha)=       3.02          .03
      Dep. Storage     (mm)=       1.00         5.00
      Average Slope     (%)=       1.00         1.00
      Length            (m)=     282.00         5.00
      Mannings n             =       .013         .250

      Max.eff.Inten.(mm/hr)=     143.31        39.62
                  over (min)        5.00        10.00
      Storage Coeff.  (min)=       4.12 (ii)    7.73 (ii)
      Unit Hyd. Tpeak (min)=       5.00        10.00
      Unit Hyd. peak  (cms)=        .24          .13

                                                          *TOTALS*
      PEAK FLOW       (cms)=       1.12          .00         1.120 (iii)
      TIME TO PEAK    (hrs)=       1.33         1.42         1.333
      RUNOFF VOLUME    (mm)=      62.59        20.50        62.171
      TOTAL RAINFALL   (mm)=      63.59        63.59        63.592
      RUNOFF COEFFICIENT   =        .98          .32          .978
       *** WARNING: Storage Coefficient is smaller than DT!
                   Use a smaller DT or a larger area.

        (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN* =  70.0    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.

------------------------------------------------------------------------------
025:0012------------------------------------------------------------------------
*#*****************************************************************************|
*FLOW CONTROL ROOF DRAINS DC5
----------------------
| ROUTE RESERVOIR    |    Requested routing time step =  1.0 min.
|  IN>01:(202A   )   |
| OUT<05:(FCRD   )   |    =========  OUTLFOW STORAGE TABLE  =========
----------------------    OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
                            (cms)     (ha.m.)   |    (cms)    (ha.m.)
                            .000  .0000E+00   |     .091  .9150E-01
                            .045  .1530E-01   |     .136  .2211E+00

      ROUTING RESULTS            AREA     QPEAK     TPEAK       R.V.
      ---------------------       (ha)     (cms)     (hrs)       (mm)
      INFLOW >01: (202A  )       2.68      .993     1.333     62.171
      OUTFLOW<05: (FCRD  )       2.68      .095     1.967     62.171
     OVERFLOW<06: (OVF   )        .00      .000      .000      .000

                    TOTAL NUMBER OF SIMULATED OVERFLOWS  =        0
                    CUMULATIVE TIME OF OVERFLOWS  (hours)=      .00
                    PERCENTAGE OF TIME OVERFLOWING    (%)=      .00


                    PEAK   FLOW   REDUCTION [Qout/Qin](%)=    9.533
                    TIME SHIFT OF PEAK FLOW          (min)=    38.00
                    MAXIMUM  STORAGE   USED       (ha.m.)=.1019E+00

------------------------------------------------------------------------------
025:0013------------------------------------------------------------------------
*#*****************************************************************************|
*DC5 INFILTRATION TANK
*#*****************************************************************************|
----------------------
| COMPUTE DUALHYD    |   Average inlet capacities   [CINLET] =    .003  (cms)
```

```
| TotalHyd 05:FCRD   |   Number of inlets in system [NINLET] =       1
 ----------------------   Total minor system capacity          =    .003  (cms)
                          Total major system storage [TMJSTO] =     555.(cu.m.)

                    ID: NHYD        AREA     QPEAK     TPEAK     R.V.      DWF
                                     (ha)     (cms)     (hrs)     (mm)    (cms)
     TOTAL HYD.   05:FCRD         2.68      .095     1.967   62.171     .000
     ==========================================================================
     MAJOR SYST   06:TO-LIS       1.61      .088     2.817   62.171     .000
     MINOR SYST   07:INFIL        1.07      .003    57.083   62.174     .000


     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

     Maximum MAJOR SYSTEM storage used =     555.(cu.m.)

--------------------------------------------------------------------------------
025:0014--------------------------------------------------------------------------
*FLOW CHECK - DC4/5 DISCHARGING TO LISGAR BYPASS NETWORK SE OF SITE
------------------------
| ADD HYD (BYPASS    ) | ID: NHYD         AREA     QPEAK   TPEAK   R.V.    DWF
 ------------------------                   (ha)     (cms)   (hrs)   (mm)   (cms)
                      ID1 03:TO-LISGAR      1.92     .088    2.35  62.17    .000
                     +ID2 06:TO-LISGAR      1.61     .088    2.82  62.17    .000
                      ========================================================
                      SUM 09:BYPASS         3.52     .174    2.82  62.17    .000


   NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------
025:0015--------------------------------------------------------------------------
*#*************************************************************************|
*AREA 203 - SITE DRAINING TO TENTH LINE SWALE
*#*************************************************************************|
----------------------
| CALIB STANDHYD     |   Area    (ha)=    3.09
| 01:203    DT= 5.00 |   Total Imp(%)=   72.00   Dir. Conn.(%)=   72.00
----------------------
                              IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       2.22          .87
     Dep. Storage     (mm)=       1.00         5.00
     Average Slope     (%)=       1.00         5.00
     Length            (m)=      53.00        32.00
     Mannings n           =       .013         .250

     Max.eff.Inten.(mm/hr)=     143.31        39.62
                    over (min)     5.00        10.00
     Storage Coeff.  (min)=       1.51 (ii)    8.30 (ii)
     Unit Hyd. Tpeak (min)=       5.00        10.00
     Unit Hyd. peak  (cms)=        .33          .13
                                                        *TOTALS*
     PEAK FLOW       (cms)=        .88          .07          .935 (iii)
     TIME TO PEAK    (hrs)=       1.33         1.42         1.333
     RUNOFF VOLUME    (mm)=      62.59        20.50        50.807
     TOTAL RAINFALL   (mm)=      63.59        63.59        63.592
     RUNOFF COEFFICIENT   =        .98          .32          .799
      *** WARNING: Storage Coefficient is smaller than DT!
                   Use a smaller DT or a larger area.

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN* =  70.0    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.

--------------------------------------------------------------------------------
025:0016--------------------------------------------------------------------------
*#*************************************************************************|
*DRY POND
----------------------
| ROUTE RESERVOIR    |    Requested routing time step =  1.0 min.
|  IN>01:(203    )   |
| OUT<02:(POND   )   |    =========  OUTLFOW STORAGE TABLE  =========
 ----------------------   OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
                            (cms)     (ha.m.)  |    (cms)    (ha.m.)
                            .000  .0000E+00    |     .083  .9030E-01
                            .000  .4500E-02    |     .226  .1080E+00
                            .055  .6610E-01    |     .283  .1234E+00

     ROUTING RESULTS            AREA     QPEAK     TPEAK       R.V.
     ---------------------       (ha)     (cms)     (hrs)       (mm)
     INFLOW >01: (203   )       3.09      .935     1.333     50.807
     OUTFLOW<02: (POND  )       3.09      .130     1.750     49.350
    OVERFLOW<03: (OVF   )        .00      .000      .000       .000

                    TOTAL NUMBER OF SIMULATED OVERFLOWS  =        0
                    CUMULATIVE TIME OF OVERFLOWS  (hours)=      .00
                    PERCENTAGE OF TIME OVERFLOWING    (%)=      .00

                    PEAK   FLOW   REDUCTION [Qout/Qin](%)=   13.871
                    TIME SHIFT OF PEAK FLOW          (min)=    25.00
                    MAXIMUM  STORAGE   USED       (ha.m.)=.9613E-01

      *** WARNING: Outflow volume is less than inflow volume.

--------------------------------------------------------------------------------
025:0017--------------------------------------------------------------------------
*#*************************************************************************|
*AREA 205A - UNCONTROLLED SITE DISCHARGE TO TENTH LINE SWALE
*#*************************************************************************|
----------------------
| CALIB NASHYD       |   Area    (ha)=     .19   Curve Number   (CN)=70.00
| 04:205A   DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
 ----------------------   U.H. Tp(hrs)=    .050

     Unit Hyd Qpeak  (cms)=     .145

     PEAK FLOW       (cms)=     .023 (i)
     TIME TO PEAK    (hrs)=    1.350
     RUNOFF VOLUME    (mm)=   20.502
     TOTAL RAINFALL   (mm)=   63.592
     RUNOFF COEFFICIENT   =     .322

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

--------------------------------------------------------------------------------
025:0018--------------------------------------------------------------------------
*#*************************************************************************|
*COMBINE TOTAL FLOW TO SWALE
----------------------
| ADD HYD (SWALE     ) | ID: NHYD         AREA     QPEAK   TPEAK   R.V.    DWF
 ------------------------                   (ha)     (cms)   (hrs)   (mm)   (cms)
                      ID1 02:POND           3.09     .130    1.75  49.35    .000
                     +ID2 03:OVF             .00     .000     .00    .00    .000
                     +ID3 04:205A            .19     .023    1.35  20.50    .000
                      ========================================================
                      SUM 08:SWALE          3.28     .134    1.73  47.68    .000

   NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------
025:0019--------------------------------------------------------------------------
*#*************************************************************************|
*AREA 205B - UNCONTROLLED SITE DISCHARGE TO ADJACENT LAND
*#*************************************************************************|
----------------------
| CALIB NASHYD       |   Area    (ha)=     .17   Curve Number   (CN)=70.00
| 01:205B   DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
 ----------------------   U.H. Tp(hrs)=    .070

     Unit Hyd Qpeak  (cms)=     .093

     PEAK FLOW       (cms)=     .018 (i)
     TIME TO PEAK    (hrs)=    1.367
     RUNOFF VOLUME    (mm)=   20.501
     TOTAL RAINFALL   (mm)=   63.592
     RUNOFF COEFFICIENT   =     .322

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

--------------------------------------------------------------------------------
025:0020--------------------------------------------------------------------------
*#*************************************************************************|
*FLOW CHECK - TOTAL SITE DISCHARGE
------------------------
| ADD HYD (TOTAL     ) | ID: NHYD         AREA     QPEAK   TPEAK   R.V.    DWF
 ------------------------                   (ha)     (cms)   (hrs)   (mm)   (cms)
                      ID1 01:205B            .17      .018    1.37  20.50    .000
                     +ID2 08:SWALE          3.28      .134    1.73  47.68    .000
                     +ID3 09:BYPASS         3.52      .174    2.82  62.17    .000
                     +ID4 10:TOPOND         7.00      .562    1.55  52.49    .000
                      ========================================================
                      SUM 02:TOTAL         13.97      .680    1.58  53.41    .000

   NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------
025:0021--------------------------------------------------------------------------
*#*************************************************************************|
--------------------------------------------------------------------------------
025:0002--------------------------------------------------------------------------
*
--------------------------------------------------------------------------------
025:0002--------------------------------------------------------------------------
*
--------------------------------------------------------------------------------
025:0002--------------------------------------------------------------------------
*
  ** END OF RUN :  49

**************************************************************************



----------------------
| START            |  Project  dir.: Q:\60549_~1\SWM\SWMHYMO\
 ----------------------  Rainfall dir.: Q:\60549_~1\SWM\SWMHYMO\
    TZERO =   .00 hrs on        0
    METOUT=   2 (output = METRIC)
    NRUN  = 050
    NSTORM=   1
                #  1=MISSG050.stm
--------------------------------------------------------------------------------
050:0002--------------------------------------------------------------------------
*#*************************************************************************|
*#  Project Name: PROLOGIS MEADOWVALE DISTRIBUTION CENTRE
*#  JOB NUMBER  : 60549-001
*#       Date   : JULY 2025
*#  Modeller    : NZR
*#    Company   : MTE CONSULTANTS INC.
*#       File   : 60549.DAT
--------------------------------------------------------------------------------
050:0002--------------------------------------------------------------------------
----------------------
| READ STORM       |    Filename: MISSISSAUGA 50-YR CHICAGO (A=1300 B=4.7
| Ptotal=  71.24 mm|    Comments: MISSISSAUGA 50-YR CHICAGO (A=1300 B=4.7
----------------------
              TIME    RAIN |   TIME    RAIN |   TIME    RAIN |   TIME    RAIN
               hrs   mm/hr |    hrs   mm/hr |    hrs   mm/hr |    hrs   mm/hr
               .17   4.741 |   1.17  36.053 |   2.17  11.113 |   3.17   5.680
               .33   5.417 |   1.33 159.748 |   2.33   9.489 |   3.33   5.283
               .50   6.358 |   1.50  47.410 |   2.50   8.314 |   3.50   4.945
               .67   7.775 |   1.67  25.176 |   2.67   7.422 |   3.67   4.651
               .83  10.181 |   1.83  17.454 |   2.83   6.719 |   3.83   4.395
              1.00  15.311 |   2.00  13.514 |   3.00   6.150 |   4.00   4.168

--------------------------------------------------------------------------------
050:0003--------------------------------------------------------------------------
*
*###########################################################################|
*#
*#                     EXISTING CONDITIONS HYDROLOGIC MODELING
*#
*#                ================================================
*#
*###########################################################################|
*#*************************************************************************|
*AREA 101 - EXISTING DRAINAGE SE TO LISGAR CHANNEL
*#*************************************************************************|
----------------------
| CALIB NASHYD       |   Area    (ha)=   12.15   Curve Number   (CN)=70.00
| 01:101    DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
 ----------------------   U.H. Tp(hrs)=    .830

     Unit Hyd Qpeak  (cms)=     .559

     PEAK FLOW       (cms)=     .367 (i)
     TIME TO PEAK    (hrs)=    2.383
     RUNOFF VOLUME    (mm)=   25.062
     TOTAL RAINFALL   (mm)=   71.244
     RUNOFF COEFFICIENT   =     .352

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

--------------------------------------------------------------------------------
050:0004--------------------------------------------------------------------------
*#*************************************************************************|
*AREA 102 - EXISTING DRAINAGE NE TO TENTH LINE SWALE
*#*************************************************************************|
----------------------
| CALIB NASHYD       |   Area    (ha)=    4.02   Curve Number   (CN)=70.00
| 02:102    DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
 ----------------------   U.H. Tp(hrs)=    .380

     Unit Hyd Qpeak  (cms)=     .404

     PEAK FLOW       (cms)=     .206 (i)
     TIME TO PEAK    (hrs)=    1.783
     RUNOFF VOLUME    (mm)=   25.062
     TOTAL RAINFALL   (mm)=   71.244
     RUNOFF COEFFICIENT   =     .352

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

--------------------------------------------------------------------------------
050:0005--------------------------------------------------------------------------
*#*************************************************************************|
*###########################################################################|
*#
```

```
02161> *#                     PROPOSED CONDITIONS HYDROLOGIC MODELING
02162> *#
02163> *#                  ============================================================
02164> *#
02165> *#########################################################################|
02166> *#*************************************************************************|
02167> *AREA 201 - SITE DRAINAGE TO SWM FACILITY SE OF SITE
02168> *#*************************************************************************|
02169> ----------------------
02170> | CALIB STANDHYD     |   Area    (ha)=    7.00
02171> | 01:201     DT= 5.00 |   Total Imp(%)=   76.00   Dir. Conn.(%)=   76.00
02172> ----------------------
02173>                              IMPERVIOUS    PERVIOUS (i)
02174>      Surface Area     (ha)=       5.32         1.68
02175>      Dep. Storage     (mm)=       1.00         5.00
02176>      Average Slope     (%)=       1.50         2.00
02177>      Length            (m)=      30.00        20.00
02178>      Mannings n            =       .013         .250
02179>
02180>      Max.eff.Inten.(mm/hr)=     159.75        60.31
02181>                 over (min)        5.00         5.00
02182>      Storage Coeff.  (min)=        .91 (ii)    6.61 (ii)
02183>      Unit Hyd. Tpeak (min)=       5.00         5.00
02184>      Unit Hyd. peak  (cms)=        .34          .18
02185>                                                          *TOTALS*
02186>      PEAK FLOW       (cms)=       2.36          .20         2.558 (iii)
02187>      TIME TO PEAK    (hrs)=       1.33         1.33         1.333
02188>      RUNOFF VOLUME    (mm)=      70.24        25.06        59.400
02189>      TOTAL RAINFALL   (mm)=      71.24        71.24        71.244
02190>      RUNOFF COEFFICIENT   =         .99          .35          .834
02191>       *** WARNING: Storage Coefficient is smaller than DT!
02192>                    Use a smaller DT or a larger area.
02193>
02194>        (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
02195>            CN* =  70.0    Ia = Dep. Storage  (Above)
02196>       (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
02197>            THAN THE STORAGE COEFFICIENT.
02198>      (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
02199>
02200> -------------------------------------------------------------------------------
02201> 050:0006----------------------------------------------------------------------
02202> *#*************************************************************************|
02203> *ORIFICE PIPE PLACED DOWNSTREAM OF MH1
02204> ----------------------
02205> | ROUTE RESERVOIR    |    Requested routing time step =  1.0 min.
02206> |  IN>01:(201    )   |
02207> | OUT<02:(Orific)    |    =========  OUTLFOW STORAGE TABLE  =========
02208> ----------------------    OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
02209>                             (cms)    (ha.m.)   |    (cms)    (ha.m.)
02210>                              .000  .0000E+00    |     .701  .2120E+00
02211>                              .000  .0000E+00    |     .752  .2196E+00
02212>                              .658  .1978E+00    |     .778  .2208E+00
02213>
02214>      ROUTING RESULTS             AREA     QPEAK     TPEAK       R.V.
02215>      --------------------        (ha)     (cms)     (hrs)       (mm)
02216>      INFLOW >01: (201    )       7.00     2.558     1.333     59.400
02217>      OUTFLOW<02: (Orific)        7.00      .635     1.550     59.400
02218>     OVERFLOW<03: (OVF    )        .00      .000      .000       .000
02219>
02220>                     TOTAL NUMBER OF SIMULATED OVERFLOWS  =        0
02221>                     CUMULATIVE TIME OF OVERFLOWS  (hours)=      .00
02222>                     PERCENTAGE OF TIME OVERFLOWING    (%)=      .00
02223>
02224>
02225>                     PEAK   FLOW   REDUCTION [Qout/Qin](%)=   24.830
02226>                     TIME SHIFT OF PEAK FLOW         (min)=    13.00
02227>                     MAXIMUM  STORAGE   USED       (ha.m.)=.1911E+00
02228>
02229> -------------------------------------------------------------------------------
02230> 050:0007----------------------------------------------------------------------
02231> *#*************************************************************************|
02232> *FLOW CHECK - SITE DISCHARGE TO DOWNSTREAM SWM FACILITY
02233> ----------------------
02234> | ADD HYD (TOPOND    ) | ID: NHYD         AREA     QPEAK   TPEAK   R.V.    DWF
02235> ----------------------                    (ha)     (cms)   (hrs)   (mm)   (cms)
02236>                        ID1 02:Orifice       7.00     .635    1.55  59.40    .000
02237>                       +ID2 03:OVF           .00      .000     .00    .00    .000
02238>                        ========================================================
02239>                        SUM 10:TOPOND        7.00     .635    1.55  59.40    .000
02240>
02241>    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
02242>
02243> -------------------------------------------------------------------------------
02244> 050:0008----------------------------------------------------------------------
02245> *#*************************************************************************|
02246> *AREA 202A - DISTRIBUTION CENTRE 4 ROOF
02247> *#*************************************************************************|
02248> ----------------------
02249> | CALIB STANDHYD     |   Area    (ha)=    2.68
02250> | 01:202A    DT= 5.00 |   Total Imp(%)=   99.00   Dir. Conn.(%)=   99.00
02251> ----------------------
02252>                              IMPERVIOUS    PERVIOUS (i)
02253>      Surface Area     (ha)=       2.65         .03
02254>      Dep. Storage     (mm)=       1.00         5.00
02255>      Average Slope     (%)=       1.00         1.00
02256>      Length            (m)=     262.00         5.00
02257>      Mannings n            =       .013         .250
02258>
02259>      Max.eff.Inten.(mm/hr)=     159.75        60.31
02260>                 over (min)        5.00         5.00
02261>      Storage Coeff.  (min)=       3.78 (ii)    6.83 (ii)
02262>      Unit Hyd. Tpeak (min)=       5.00         5.00
02263>      Unit Hyd. peak  (cms)=        .25          .18
02264>                                                          *TOTALS*
02265>      PEAK FLOW       (cms)=       1.11          .00         1.115 (iii)
02266>      TIME TO PEAK    (hrs)=       1.33         1.33         1.333
02267>      RUNOFF VOLUME    (mm)=      70.24        25.06        69.792
02268>      TOTAL RAINFALL   (mm)=      71.24        71.24        71.244
02269>      RUNOFF COEFFICIENT   =         .99          .35          .980
02270>       *** WARNING: Storage Coefficient is smaller than DT!
02271>                    Use a smaller DT or a larger area.
02272>
02273>        (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
02274>            CN* = 70.0     Ia = Dep. Storage  (Above)
02275>       (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
02276>            THAN THE STORAGE COEFFICIENT.
02277>      (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
02278>
02279> -------------------------------------------------------------------------------
02280> 050:0009----------------------------------------------------------------------
02281> *#*************************************************************************|
02282> *FLOW CONTROL ROOF DRAINS DC4
02283> ----------------------
02284> | ROUTE RESERVOIR    |    Requested routing time step =  1.0 min.
02285> |  IN>01:(202A   )   |
02286> | OUT<02:(FCRD   )   |    =========  OUTLFOW STORAGE TABLE  =========
02287> ----------------------    OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
02288>                             (cms)    (ha.m.)   |    (cms)    (ha.m.)
02289>                              .000  .0000E+00    |     .085  .8550E-01
02290>                              .043  .1430E-01    |     .127  .2029E+00
02291>
02292>      ROUTING RESULTS             AREA     QPEAK     TPEAK       R.V.
02293>      --------------------        (ha)     (cms)     (hrs)       (mm)
02294>      INFLOW >01: (202A  )        2.68     1.115     1.333     69.792
02295>      OUTFLOW<02: (FCRD  )        2.68      .096     2.033     69.792
02296>     OVERFLOW<03: (OVF   )         .00      .000      .000       .000
02297>
02298>                     TOTAL NUMBER OF SIMULATED OVERFLOWS  =        0
02299>                     CUMULATIVE TIME OF OVERFLOWS  (hours)=      .00
02300>                     PERCENTAGE OF TIME OVERFLOWING    (%)=      .00
02301>
02302>
02303>                     PEAK   FLOW   REDUCTION [Qout/Qin](%)=    8.649
02304>                     TIME SHIFT OF PEAK FLOW         (min)=    42.00
02305>                     MAXIMUM  STORAGE   USED       (ha.m.)=.1171E+00
02306>
02307> -------------------------------------------------------------------------------
02308> 050:0010----------------------------------------------------------------------
02309> *#*************************************************************************|
02310> *DC4 INFILTRATION TANK
02311> *#*************************************************************************|
02312> ----------------------
02313> | COMPUTE DUALHYD    |   Average inlet capacities   [CINLET] =    .002  (cms)
02314> | TotalHyd 02:FCRD   |   Number of inlets in system [NINLET] =       1
02315> ----------------------   Total minor system capacity          =    .002  (cms)
02316>                          Total major system storage [TMJSTO] =     394.(cu.m.)
02317>
02318>                    ID: NHYD        AREA     QPEAK     TPEAK      R.V.      DWF
02319>                                    (ha)     (cms)     (hrs)      (mm)     (cms)
02320>      TOTAL HYD.   02:FCRD         2.68      .096     2.033     69.792     .000
02321>      ================================================================================
02322>      MAJOR SYST   03:TO-LIS       2.00      .094     2.267     69.792     .000
02323>      MINOR SYST   04:INFIL         .68      .002    61.733     69.796     .000
02324>
02325>      NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
02326>
02327>      Maximum MAJOR SYSTEM storage used =     394.(cu.m.)
02328>
02329> -------------------------------------------------------------------------------
02330> 050:0011----------------------------------------------------------------------
02331> *AREA 202B - DISTRIBUTION CENTRE 5 ROOF
02332> *#*************************************************************************|
02333> ----------------------
02334> | CALIB STANDHYD     |   Area    (ha)=    3.05
02335> | 05:202B    DT= 5.00 |   Total Imp(%)=   99.00   Dir. Conn.(%)=   99.00
02336> ----------------------
02337>                              IMPERVIOUS    PERVIOUS (i)
02338>      Surface Area     (ha)=       3.02         .03
02339>      Dep. Storage     (mm)=       1.00         5.00
02340>      Average Slope     (%)=       1.00         1.00
02341>      Length            (m)=     282.00         5.00
02342>      Mannings n            =       .013         .250
02343>
02344>      Max.eff.Inten.(mm/hr)=     159.75        60.31
02345>                 over (min)        5.00         5.00
02346>      Storage Coeff.  (min)=       3.95 (ii)    7.00 (ii)
02347>      Unit Hyd. Tpeak (min)=       5.00         5.00
02348>      Unit Hyd. peak  (cms)=        .24          .17
02349>                                                          *TOTALS*
02350>      PEAK FLOW       (cms)=       1.26          .00         1.260 (iii)
02351>      TIME TO PEAK    (hrs)=       1.33         1.33         1.333
02352>      RUNOFF VOLUME    (mm)=      70.24        25.06        69.792
02353>      TOTAL RAINFALL   (mm)=      71.24        71.24        71.244
02354>      RUNOFF COEFFICIENT   =         .99          .35          .980
02355>       *** WARNING: Storage Coefficient is smaller than DT!
02356>                    Use a smaller DT or a larger area.
02357>
02358>        (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
02359>            CN* =  70.0    Ia = Dep. Storage  (Above)
02360>       (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
02361>            THAN THE STORAGE COEFFICIENT.
02362>      (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
02363>
02364> -------------------------------------------------------------------------------
02365> 050:0012----------------------------------------------------------------------
02366> *#*************************************************************************|
02367> *FLOW CONTROL ROOF DRAINS DC5
02368> ----------------------
02369> | ROUTE RESERVOIR    |    Requested routing time step =  1.0 min.
02370> |  IN>01:(202A   )   |
02371> | OUT<05:(FCRD   )   |    =========  OUTLFOW STORAGE TABLE  =========
02372> ----------------------    OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
02373>                             (cms)    (ha.m.)   |    (cms)    (ha.m.)
02374>                              .000  .0000E+00    |     .091  .9150E-01
02375>                              .045  .1530E-01    |     .136  .2211E+00
02376>
02377>      ROUTING RESULTS             AREA     QPEAK     TPEAK       R.V.
02378>      --------------------        (ha)     (cms)     (hrs)       (mm)
02379>      INFLOW >01: (202A  )        2.68     1.115     1.333     69.792
02380>      OUTFLOW<05: (FCRD  )        2.68      .100     2.017     69.792
02381>     OVERFLOW<06: (OVF   )         .00      .000      .000       .000
02382>
02383>                     TOTAL NUMBER OF SIMULATED OVERFLOWS  =        0
02384>                     CUMULATIVE TIME OF OVERFLOWS  (hours)=      .00
02385>                     PERCENTAGE OF TIME OVERFLOWING    (%)=      .00
02386>
02387>
02388>                     PEAK   FLOW   REDUCTION [Qout/Qin](%)=    8.932
02389>                     TIME SHIFT OF PEAK FLOW         (min)=    41.00
02390>                     MAXIMUM  STORAGE   USED       (ha.m.)=.1161E+00
02391>
02392> -------------------------------------------------------------------------------
02393> 050:0013----------------------------------------------------------------------
02394> *#*************************************************************************|
02395> *DC5 INFILTRATION TANK
02396> *#*************************************************************************|
02397> ----------------------
02398> | COMPUTE DUALHYD    |   Average inlet capacities   [CINLET] =    .003  (cms)
02399> | TotalHyd 05:FCRD   |   Number of inlets in system [NINLET] =       1
02400> ----------------------   Total minor system capacity          =    .003  (cms)
02401>                          Total major system storage [TMJSTO] =     555.(cu.m.)
02402>
02403>                    ID: NHYD        AREA     QPEAK     TPEAK      R.V.      DWF
02404>                                    (ha)     (cms)     (hrs)      (mm)     (cms)
02405>      TOTAL HYD.   05:FCRD         2.68      .100     2.017     69.792     .000
02406>      ================================================================================
02407>      MAJOR SYST   06:TO-LIS       1.71      .094     2.717     69.792     .000
02408>      MINOR SYST   07:INFIL         .97      .003    57.550     69.809     .000
02409>
02410>      NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
02411>
02412>      Maximum MAJOR SYSTEM storage used =     555.(cu.m.)
02413>
02414> -------------------------------------------------------------------------------
02415> 050:0014----------------------------------------------------------------------
02416> *FLOW CHECK - DC4/5 DISCHARGING TO LISGAR BYPASS NETWORK SE OF SITE
02417> ------------------------
02418> | ADD HYD (BYPASS    ) | ID: NHYD         AREA     QPEAK   TPEAK   R.V.    DWF
02419> ------------------------                  (ha)     (cms)   (hrs)   (mm)   (cms)
02420>                        ID1 03:TO-LISGAR     2.00     .094    2.27  69.79    .000
02421>                       +ID2 06:TO-LISGAR     1.71     .094    2.72  69.79    .000
02422>                        ========================================================
02423>                        SUM 09:BYPASS        3.71     .186    2.72  69.79    .000
02424>
02425>    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
02426>
02427> -------------------------------------------------------------------------------
02428> 050:0015----------------------------------------------------------------------
02429> *#*************************************************************************|
02430> *AREA 203 - SITE DRAINING TO TENTH LINE SWALE
```

```
02431> *#*************************************************************************|
02432> ----------------------
02433> | CALIB STANDHYD     |   Area    (ha)=    3.09
02434> | 01:203    DT= 5.00 |   Total Imp(%)=   72.00   Dir. Conn.(%)=   72.00
02435> ----------------------
02436>                            IMPERVIOUS    PERVIOUS (i)
02437>      Surface Area     (ha)=       2.22         .87
02438>      Dep. Storage     (mm)=       1.00        5.00
02439>      Average Slope     (%)=       1.00        5.00
02440>      Length            (m)=      53.00       32.00
02441>      Mannings n             =       .013        .250
02442>
02443>      Max.eff.Inten.(mm/hr)=     159.75       60.31
02444>                 over (min)        5.00        5.00
02445>      Storage Coeff.  (min)=       1.45 (ii)    7.19 (ii)
02446>      Unit Hyd. Tpeak (min)=       5.00        5.00
02447>      Unit Hyd. peak  (cms)=        .33         .17
02448>                                                          *TOTALS*
02449>      PEAK FLOW       (cms)=        .99         .10          1.084 (iii)
02450>      TIME TO PEAK    (hrs)=       1.33        1.33          1.333
02451>      RUNOFF VOLUME    (mm)=      70.24       25.06         57.593
02452>      TOTAL RAINFALL   (mm)=      71.24       71.24         71.244
02453>      RUNOFF COEFFICIENT   =        .99         .35           .808
02454>       *** WARNING: Storage Coefficient is smaller than DT!
02455>                   Use a smaller DT or a larger area.
02456>
02457>        (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
02458>            CN* =  70.0    Ia = Dep. Storage  (Above)
02459>       (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
02460>            THAN THE STORAGE COEFFICIENT.
02461>      (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
02462>
02463> -------------------------------------------------------------------------------
02464> 050:0016-------------------------------------------------------------------------
02465> *#*************************************************************************|
02466> *DRY POND
02467> ----------------------
02468> | ROUTE RESERVOIR    |    Requested routing time step =  1.0 min.
02469> |  IN>01:(203    )   |
02470> | OUT<02:(POND   )   |    =========  OUTFLOW STORAGE TABLE  =========
02471> ----------------------    OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
02472>                             (cms)     (ha.m.)   |    (cms)    (ha.m.)
02473>                              .000  .0000E+00    |     .083  .9030E-01
02474>                              .000  .4500E-02    |     .226  .1080E+00
02475>                              .055  .6610E-01    |     .283  .1234E+00
02476>
02477>      ROUTING RESULTS            AREA     QPEAK     TPEAK       R.V.
02478>      --------------------       (ha)     (cms)     (hrs)       (mm)
02479>      INFLOW >01: (203   )       3.09     1.084     1.333     57.593
02480>      OUTFLOW<02: (POND  )       3.09      .189     1.683     56.137
02481>     OVERFLOW<03: (OVF   )        .00      .000      .000       .000
02482>
02483>                    TOTAL NUMBER OF SIMULATED OVERFLOWS  =        0
02484>                    CUMULATIVE TIME OF OVERFLOWS  (hours)=      .00
02485>                    PERCENTAGE OF TIME OVERFLOWING    (%)=      .00
02486>
02487>
02488>                    PEAK   FLOW   REDUCTION [Qout/Qin](%)=   17.441
02489>                    TIME SHIFT OF PEAK FLOW          (min)=    21.00
02490>                    MAXIMUM  STORAGE   USED       (ha.m.)=.1035E+00
02491>
02492>       *** WARNING: Outflow volume is less than inflow volume.
02493> -------------------------------------------------------------------------------
02494> 050:0017-------------------------------------------------------------------------
02495> *#*************************************************************************|
02496> *AREA 205A - UNCONTROLLED SITE DISCHARGE TO TENTH LINE SWALE
02497> *#*************************************************************************|
02498> ----------------------
02499> | CALIB NASHYD       |   Area    (ha)=     .19   Curve Number   (CN)=70.00
02500> | 04:205A   DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
02501> ----------------------   U.H. Tp(hrs)=    .050
02502>
02503>      Unit Hyd Qpeak  (cms)=     .145
02504>
02505>      PEAK FLOW       (cms)=     .028 (i)
02506>      TIME TO PEAK    (hrs)=    1.350
02507>      RUNOFF VOLUME    (mm)=   25.061
02508>      TOTAL RAINFALL   (mm)=   71.244
02509>      RUNOFF COEFFICIENT   =     .352
02510>
02511>      (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
02512>
02513> -------------------------------------------------------------------------------
02514> 050:0018-------------------------------------------------------------------------
02515> *#*************************************************************************|
02516> *COMBINE TOTAL FLOW TO SWALE
02517> ----------------------
02518> | ADD HYD (SWALE     ) | ID: NHYD         AREA     QPEAK   TPEAK   R.V.    DWF
02519> ----------------------                    (ha)     (cms)   (hrs)   (mm)   (cms)
02520>                       ID1 02:POND          3.09     .189    1.68  56.14    .000
02521>                      +ID2 03:OVF           .00      .000     .00    .00    .000
02522>                      +ID3 04:205A          .19      .028    1.35  25.06    .000
02523>                       ========================================================
02524>                       SUM 08:SWALE         3.28     .196    1.67  54.34    .000
02525>
02526>    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
02527>
02528> -------------------------------------------------------------------------------
02529> 050:0019-------------------------------------------------------------------------
02530> *#*************************************************************************|
02531> *AREA 205B - UNCONTROLLED SITE DISCHARGE TO ADJACENT LAND
02532> *#*************************************************************************|
02533> ----------------------
02534> | CALIB NASHYD       |   Area    (ha)=     .17   Curve Number   (CN)=70.00
02535> | 01:205B   DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
02536> ----------------------   U.H. Tp(hrs)=    .070
02537>
02538>      Unit Hyd Qpeak  (cms)=     .093
02539>
02540>      PEAK FLOW       (cms)=     .022 (i)
02541>      TIME TO PEAK    (hrs)=    1.367
02542>      RUNOFF VOLUME    (mm)=   25.061
02543>      TOTAL RAINFALL   (mm)=   71.244
02544>      RUNOFF COEFFICIENT   =     .352
02545>
02546>      (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
02547>
02548> -------------------------------------------------------------------------------
02549> 050:0020-------------------------------------------------------------------------
02550> *#*************************************************************************|
02551> *FLOW CHECK - TOTAL SITE DISCHARGE
02552> ----------------------
02553> | ADD HYD (TOTAL     ) | ID: NHYD         AREA     QPEAK   TPEAK   R.V.    DWF
02554> ----------------------                    (ha)     (cms)   (hrs)   (mm)   (cms)
02555>                       ID1 01:205B          .17     .022    1.37  25.06    .000
02556>                      +ID2 08:SWALE         3.28    .196    1.67  54.34    .000
02557>                      +ID3 09:BYPASS        3.71    .186    2.72  69.79    .000
02558>                      +ID4 10:TOPOND        7.00    .635    1.55  59.40    .000
02559>                       ========================================================
02560>                       SUM 02:TOTAL         14.16    .836    1.57  60.54    .000
02561>
02562>    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
02563>
02564> -------------------------------------------------------------------------------
02565> 050:0021-------------------------------------------------------------------------
02566> *#*************************************************************************|
02567> -------------------------------------------------------------------------------
02568> 050:0002-------------------------------------------------------------------------
02569> *
02570> -------------------------------------------------------------------------------
02571> 050:0002-------------------------------------------------------------------------
02572> *
02573> -------------------------------------------------------------------------------
02574> 050:0002-------------------------------------------------------------------------
02575> *
02576> -------------------------------------------------------------------------------
02577> 050:0002-------------------------------------------------------------------------
02578> *
02579>   ** END OF RUN :  99
02580>
02581> ********************************************************************************
02582>
02583>
02584>
02585>
02586>
02587> --------------------
02588> | START              |  Project  dir.: Q:\60549_~1\SWM\SWMHYMO\
02589> --------------------  Rainfall dir.: Q:\60549_~1\SWM\SWMHYMO\
02590>     TZERO =   .00 hrs on      0
02591>     METOUT=   2 (output = METRIC)
02592>     NRUN  = 100
02593>     NSTORM=   1
02594>            #  1=MISSG100.stm
02595> -------------------------------------------------------------------------------
02596> 100:0002-------------------------------------------------------------------------
02597> *#*************************************************************************|
02598> *#  Project Name: PROLOGIS MEADOWVALE DISTRIBUTION CENTRE
02599> *#  JOB NUMBER  : 60549-001
02600> *#       Date   : JULY 2025
02601> *#  Modeller    : NZR
02602> *#    Company   : MTE CONSULTANTS INC.
02603> *#       File   : 60549.DAT
02604> -------------------------------------------------------------------------------
02605> 100:0002-------------------------------------------------------------------------
02606> ----------------------
02607> | READ STORM       |    Filename: MISSISSAUGA 100-YR CHICAGO (A=1450 B=4.9
02608> | Ptotal=  79.41 mm|    Comments: MISSISSAUGA 100-YR CHICAGO (A=1450 B=4.9
02609> ----------------------
02610>               TIME    RAIN |   TIME    RAIN |   TIME    RAIN |   TIME    RAIN
02611>               hrs   mm/hr |    hrs   mm/hr |    hrs   mm/hr |    hrs   mm/hr
02612>               .17   5.300 |   1.17  40.488 |   2.17  12.455 |   3.17   6.353
02613>               .33   6.057 |   1.33 176.312 |   2.33  10.630 |   3.33   5.908
02614>               .50   7.114 |   1.50  53.230 |   2.50   9.310 |   3.50   5.528
02615>               .67   8.704 |   1.67  28.284 |   2.67   8.307 |   3.67   5.200
02616>               .83  11.407 |   1.83  19.591 |   2.83   7.518 |   3.83   4.912
02617>              1.00  17.180 |   2.00  15.157 |   3.00   6.880 |   4.00   4.658
02618>
02619> -------------------------------------------------------------------------------
02620> 100:0003-------------------------------------------------------------------------
02621> *
02622> *#########################################################################|
02623> *#
02624> *#                      EXISTING CONDITIONS HYDROLOGIC MODELING
02625> *#
02626> *#                 ================================================
02627> *#
02628> *#########################################################################|
02629> *#*************************************************************************|
02630> *AREA 101 - EXISTING DRAINAGE SE TO LISGAR CHANNEL
02631> *#*************************************************************************|
02632> ----------------------
02633> | CALIB NASHYD       |   Area    (ha)=   12.15   Curve Number   (CN)=70.00
02634> | 01:101    DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
02635> ----------------------   U.H. Tp(hrs)=    .830
02636>
02637>      Unit Hyd Qpeak  (cms)=     .559
02638>
02639>      PEAK FLOW       (cms)=     .444 (i)
02640>      TIME TO PEAK    (hrs)=    2.383
02641>      RUNOFF VOLUME    (mm)=   30.215
02642>      TOTAL RAINFALL   (mm)=   79.414
02643>      RUNOFF COEFFICIENT   =     .380
02644>
02645>      (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
02646>
02647> -------------------------------------------------------------------------------
02648> 100:0004-------------------------------------------------------------------------
02649> *#*************************************************************************|
02650> *AREA 102 - EXISTING DRAINAGE NE TO TENTH LINE SWALE
02651> *#*************************************************************************|
02652> ----------------------
02653> | CALIB NASHYD       |   Area    (ha)=    4.02   Curve Number   (CN)=70.00
02654> | 02:102    DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
02655> ----------------------   U.H. Tp(hrs)=    .380
02656>
02657>      Unit Hyd Qpeak  (cms)=     .404
02658>
02659>      PEAK FLOW       (cms)=     .251 (i)
02660>      TIME TO PEAK    (hrs)=    1.783
02661>      RUNOFF VOLUME    (mm)=   30.215
02662>      TOTAL RAINFALL   (mm)=   79.414
02663>      RUNOFF COEFFICIENT   =     .380
02664>
02665>      (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
02666>
02667> -------------------------------------------------------------------------------
02668> 100:0005-------------------------------------------------------------------------
02669> *#*************************************************************************|
02670> *#########################################################################|
02671> *#
02672> *#                      PROPOSED CONDITIONS HYDROLOGIC MODELING
02673> *#
02674> *#                 ================================================
02675> *#
02676> *#########################################################################|
02677> *#*************************************************************************|
02678> *AREA 201 - SITE DRAINAGE TO SWM FACILITY SE OF SITE
02679> *#*************************************************************************|
02680> ----------------------
02681> | CALIB STANDHYD     |   Area    (ha)=    7.00
02682> | 01:201    DT= 5.00 |   Total Imp(%)=   76.00   Dir. Conn.(%)=   76.00
02683> ----------------------
02684>                            IMPERVIOUS    PERVIOUS (i)
02685>      Surface Area     (ha)=       5.32        1.68
02686>      Dep. Storage     (mm)=       1.00        5.00
02687>      Average Slope     (%)=       1.50        2.00
02688>      Length            (m)=      30.00       20.00
02689>      Mannings n             =       .013        .250
02690>
02691>      Max.eff.Inten.(mm/hr)=     176.31       72.33
02692>                 over (min)        5.00        5.00
02693>      Storage Coeff.  (min)=        .88 (ii)    6.18 (ii)
02694>      Unit Hyd. Tpeak (min)=       5.00        5.00
02695>      Unit Hyd. peak  (cms)=        .34         .19
02696>                                                          *TOTALS*
02697>      PEAK FLOW       (cms)=       2.61         .25          2.851 (iii)
02698>      TIME TO PEAK    (hrs)=       1.33        1.33          1.333
02699>      RUNOFF VOLUME    (mm)=      78.41       30.21         66.846
02700>      TOTAL RAINFALL   (mm)=      79.41       79.41         79.414
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02701>      RUNOFF COEFFICIENT   =        .99          .38          .842
02702>       *** WARNING: Storage Coefficient is smaller than DT!
02703>                   Use a smaller DT or a larger area.
02704>
02705>         (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
02706>             CN* =  70.0    Ia = Dep. Storage  (Above)
02707>        (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
02708>             THAN THE STORAGE COEFFICIENT.
02709>       (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
02710>
02711> ----------------------------------------------------------------------------
02712> 100:0006----------------------------------------------------------------------
02713> *#*********************************************************************|
02714> *ORIFICE PIPE PLACED DOWNSTREAM OF MH1
02715> ---------------------
02716> | ROUTE RESERVOIR   |    Requested routing time step =  1.0 min.
02717> |  IN>01:(201   )   |
02718> | OUT<02:(Orific)   |    =========  OUTLFOW STORAGE TABLE  =========
02719> ---------------------    OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
02720>                            (cms)    (ha.m.)   |    (cms)    (ha.m.)
02721>                             .000  .0000E+00   |     .701  .2120E+00
02722>                             .000  .0000E+00   |     .752  .2196E+00
02723>                             .658  .1978E+00   |     .778  .2208E+00
02724>
02725>      ROUTING RESULTS            AREA     QPEAK     TPEAK       R.V.
02726>      ---------------------       (ha)     (cms)     (hrs)       (mm)
02727>      INFLOW >01: (201   )       7.00     2.851     1.333     66.846
02728>      OUTFLOW<02: (Orific)       7.00      .717     1.550     66.846
02729>     OVERFLOW<03: (OVF   )        .00      .000      .000       .000
02730>
02731>                    TOTAL NUMBER OF SIMULATED OVERFLOWS  =        0
02732>                    CUMULATIVE TIME OF OVERFLOWS  (hours)=      .00
02733>                    PERCENTAGE OF TIME OVERFLOWING    (%)=      .00
02734>
02735>
02736>                    PEAK   FLOW   REDUCTION [Qout/Qin](%)=   25.141
02737>                    TIME SHIFT OF PEAK FLOW          (min)=    13.00
02738>                    MAXIMUM  STORAGE   USED       (ha.m.)=.2144E+00
02739>
02740> ----------------------------------------------------------------------------
02741> 100:0007----------------------------------------------------------------------
02742> *#*********************************************************************|
02743> *FLOW CHECK - SITE DISCHARGE TO DOWNSTREAM SWM FACILITY
02744> ----------------------
02745> | ADD HYD (TOPOND    ) | ID: NHYD         AREA     QPEAK   TPEAK   R.V.    DWF
02746> ----------------------                    (ha)     (cms)   (hrs)   (mm)   (cms)
02747>                      ID1 02:Orifice        7.00      .717    1.55  66.85    .000
02748>                     +ID2 03:OVF            .00      .000     .00    .00    .000
02749>                      ========================================================
02750>                      SUM 10:TOPOND         7.00      .717    1.55  66.85    .000
02751>
02752>    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
02753>
02754> ----------------------------------------------------------------------------
02755> 100:0008----------------------------------------------------------------------
02756> *#*********************************************************************|
02757> *AREA 202A - DISTRIBUTION CENTRE 4 ROOF
02758> *#*********************************************************************|
02759> ----------------------
02760> | CALIB STANDHYD     |   Area    (ha)=    2.68
02761> | 01:202A   DT= 5.00 |   Total Imp(%)=   99.00   Dir. Conn.(%)=   99.00
02762> ----------------------
02763>                              IMPERVIOUS    PERVIOUS (i)
02764>      Surface Area     (ha)=       2.65          .03
02765>      Dep. Storage     (mm)=       1.00         5.00
02766>      Average Slope     (%)=       1.00         1.00
02767>      Length            (m)=     262.00         5.00
02768>      Mannings n             =      .013         .250
02769>
02770>      Max.eff.Inten.(mm/hr)=     176.31        72.33
02771>                  over (min)        5.00         5.00
02772>      Storage Coeff.  (min)=       3.63 (ii)    6.47 (ii)
02773>      Unit Hyd. Tpeak (min)=       5.00         5.00
02774>      Unit Hyd. peak  (cms)=        .25          .18
02775>                                                          *TOTALS*
02776>      PEAK FLOW       (cms)=       1.24          .00         1.239 (iii)
02777>      TIME TO PEAK    (hrs)=       1.33         1.33         1.333
02778>      RUNOFF VOLUME    (mm)=      78.41        30.21        77.932
02779>      TOTAL RAINFALL   (mm)=      79.41        79.41        79.414
02780>      RUNOFF COEFFICIENT   =        .99          .38          .981
02781>       *** WARNING: Storage Coefficient is smaller than DT!
02782>                   Use a smaller DT or a larger area.
02783>
02784>         (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
02785>             CN* =  70.0    Ia = Dep. Storage  (Above)
02786>        (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
02787>             THAN THE STORAGE COEFFICIENT.
02788>       (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
02789>
02790> ----------------------------------------------------------------------------
02791> 100:0009----------------------------------------------------------------------
02792> *#*********************************************************************|
02793> *FLOW CONTROL ROOF DRAINS DC4
02794> ---------------------
02795> | ROUTE RESERVOIR   |    Requested routing time step =  1.0 min.
02796> |  IN>01:(202A  )   |
02797> | OUT<02:(FCRD  )   |    =========  OUTLFOW STORAGE TABLE  =========
02798> ---------------------    OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
02799>                            (cms)    (ha.m.)   |    (cms)    (ha.m.)
02800>                             .000  .0000E+00   |     .085  .8550E-01
02801>                             .043  .1430E-01   |     .127  .2029E+00
02802>
02803>      ROUTING RESULTS            AREA     QPEAK     TPEAK       R.V.
02804>      ---------------------       (ha)     (cms)     (hrs)       (mm)
02805>      INFLOW >01: (202A  )       2.68     1.239     1.333     77.932
02806>      OUTFLOW<02: (FCRD  )       2.68      .102     2.067     77.932
02807>     OVERFLOW<03: (OVF   )        .00      .000      .000       .000
02808>
02809>                    TOTAL NUMBER OF SIMULATED OVERFLOWS  =        0
02810>                    CUMULATIVE TIME OF OVERFLOWS  (hours)=      .00
02811>                    PERCENTAGE OF TIME OVERFLOWING    (%)=      .00
02812>
02813>
02814>                    PEAK   FLOW   REDUCTION [Qout/Qin](%)=    8.232
02815>                    TIME SHIFT OF PEAK FLOW          (min)=    44.00
02816>                    MAXIMUM  STORAGE   USED       (ha.m.)=.1324E+00
02817>
02818> ----------------------------------------------------------------------------
02819> 100:0010----------------------------------------------------------------------
02820> *#*********************************************************************|
02821> *DC4 INFILTRATION TANK
02822> *#*********************************************************************|
02823> ----------------------
02824> | COMPUTE DUALHYD    |   Average inlet capacities   [CINLET] =    .002  (cms)
02825> | TotalHyd 02:FCRD   |   Number of inlets in system [NINLET] =       1
02826> ----------------------   Total minor system capacity          =    .002  (cms)
02827>                          Total major system storage [TMJSTO] =     394.(cu.m.)
02828>
02829>                   ID: NHYD        AREA     QPEAK     TPEAK     R.V.      DWF
02830>                                    (ha)     (cms)     (hrs)     (mm)    (cms)
02831>      TOTAL HYD.   02:FCRD         2.68      .102     2.067   77.932     .000
02832>      ==========================================================================
02833>      MAJOR SYST   03:TO-LIS       2.06      .100     2.183   77.932     .000
02834>      MINOR SYST   04:INFIL         .62      .002    62.217   77.934     .000
02835>
02836>      NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
02837>
02838>      Maximum MAJOR SYSTEM storage used =     394.(cu.m.)
02839>
02840> ----------------------------------------------------------------------------
02841> 100:0011----------------------------------------------------------------------
02842> *AREA 202B - DISTRIBUTION CENTRE 5 ROOF
02843> *#*********************************************************************|
02844> ----------------------
02845> | CALIB STANDHYD     |   Area    (ha)=    3.05
02846> | 05:202B   DT= 5.00 |   Total Imp(%)=   99.00   Dir. Conn.(%)=   99.00
02847> ----------------------
02848>                              IMPERVIOUS    PERVIOUS (i)
02849>      Surface Area     (ha)=       3.02          .03
02850>      Dep. Storage     (mm)=       1.00         5.00
02851>      Average Slope     (%)=       1.00         1.00
02852>      Length            (m)=     282.00         5.00
02853>      Mannings n             =      .013         .250
02854>
02855>      Max.eff.Inten.(mm/hr)=     176.31        72.33
02856>                  over (min)        5.00         5.00
02857>      Storage Coeff.  (min)=       3.79 (ii)    6.63 (ii)
02858>      Unit Hyd. Tpeak (min)=       5.00         5.00
02859>      Unit Hyd. peak  (cms)=        .25          .18
02860>                                                          *TOTALS*
02861>      PEAK FLOW       (cms)=       1.40          .00         1.401 (iii)
02862>      TIME TO PEAK    (hrs)=       1.33         1.33         1.333
02863>      RUNOFF VOLUME    (mm)=      78.41        30.21        77.932
02864>      TOTAL RAINFALL   (mm)=      79.41        79.41        79.414
02865>      RUNOFF COEFFICIENT   =        .99          .38          .981
02866>       *** WARNING: Storage Coefficient is smaller than DT!
02867>                   Use a smaller DT or a larger area.
02868>
02869>         (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
02870>             CN* =  70.0    Ia = Dep. Storage  (Above)
02871>        (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
02872>             THAN THE STORAGE COEFFICIENT.
02873>       (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
02874>
02875> ----------------------------------------------------------------------------
02876> 100:0012----------------------------------------------------------------------
02877> *#*********************************************************************|
02878> *FLOW CONTROL ROOF DRAINS DC5
02879> ---------------------
02880> | ROUTE RESERVOIR   |    Requested routing time step =  1.0 min.
02881> |  IN>01:(202A  )   |
02882> | OUT<05:(FCRD  )   |    =========  OUTLFOW STORAGE TABLE  =========
02883> ---------------------    OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
02884>                            (cms)    (ha.m.)   |    (cms)    (ha.m.)
02885>                             .000  .0000E+00   |     .091  .9150E-01
02886>                             .045  .1530E-01   |     .136  .2211E+00
02887>
02888>      ROUTING RESULTS            AREA     QPEAK     TPEAK       R.V.
02889>      ---------------------       (ha)     (cms)     (hrs)       (mm)
02890>      INFLOW >01: (202A  )       2.68     1.239     1.333     77.932
02891>      OUTFLOW<05: (FCRD  )       2.68      .105     2.050     77.932
02892>     OVERFLOW<06: (OVF   )        .00      .000      .000       .000
02893>
02894>                    TOTAL NUMBER OF SIMULATED OVERFLOWS  =        0
02895>                    CUMULATIVE TIME OF OVERFLOWS  (hours)=      .00
02896>                    PERCENTAGE OF TIME OVERFLOWING    (%)=      .00
02897>
02898>
02899>                    PEAK   FLOW   REDUCTION [Qout/Qin](%)=    8.472
02900>                    TIME SHIFT OF PEAK FLOW          (min)=    43.00
02901>                    MAXIMUM  STORAGE   USED       (ha.m.)=.1313E+00
02902>
02903> ----------------------------------------------------------------------------
02904> 100:0013----------------------------------------------------------------------
02905> *#*********************************************************************|
02906> *DC5 INFILTRATION TANK
02907> *#*********************************************************************|
02908> ----------------------
02909> | COMPUTE DUALHYD    |   Average inlet capacities   [CINLET] =    .003  (cms)
02910> | TotalHyd 05:FCRD   |   Number of inlets in system [NINLET] =       1
02911> ----------------------   Total minor system capacity          =    .003  (cms)
02912>                          Total major system storage [TMJSTO] =     555.(cu.m.)
02913>
02914>                   ID: NHYD        AREA     QPEAK     TPEAK     R.V.      DWF
02915>                                    (ha)     (cms)     (hrs)     (mm)    (cms)
02916>      TOTAL HYD.   05:FCRD         2.68      .105     2.050   77.932     .000
02917>      ==========================================================================
02918>      MAJOR SYST   06:TO-LIS       1.81      .100     2.617   77.932     .000
02919>      MINOR SYST   07:INFIL         .87      .003    58.017   77.943     .000
02920>
02921>      NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
02922>
02923>      Maximum MAJOR SYSTEM storage used =     555.(cu.m.)
02924>
02925> ----------------------------------------------------------------------------
02926> 100:0014----------------------------------------------------------------------
02927> *FLOW CHECK - DC4/5 DISCHARGING TO LISGAR BYPASS NETWORK SE OF SITE
02928> ----------------------
02929> | ADD HYD (BYPASS    ) | ID: NHYD         AREA     QPEAK   TPEAK   R.V.    DWF
02930> ----------------------                    (ha)     (cms)   (hrs)   (mm)   (cms)
02931>                      ID1 03:TO-LISGAR      2.06      .100    2.18  77.93    .000
02932>                     +ID2 06:TO-LISGAR      1.81      .100    2.62  77.93    .000
02933>                      ========================================================
02934>                      SUM 09:BYPASS         3.87      .198    2.62  77.93    .000
02935>
02936>    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
02937>
02938> ----------------------------------------------------------------------------
02939> 100:0015----------------------------------------------------------------------
02940> *#*********************************************************************|
02941> *AREA 203 - SITE DRAINING TO TENTH LINE SWALE
02942> *#*********************************************************************|
02943> ----------------------
02944> | CALIB STANDHYD     |   Area    (ha)=    3.09
02945> | 01:203    DT= 5.00 |   Total Imp(%)=   72.00   Dir. Conn.(%)=   72.00
02946> ----------------------
02947>                              IMPERVIOUS    PERVIOUS (i)
02948>      Surface Area     (ha)=       2.22          .87
02949>      Dep. Storage     (mm)=       1.00         5.00
02950>      Average Slope     (%)=       1.00         5.00
02951>      Length            (m)=      53.00        32.00
02952>      Mannings n             =      .013         .250
02953>
02954>      Max.eff.Inten.(mm/hr)=     176.31        72.33
02955>                  over (min)        5.00         5.00
02956>      Storage Coeff.  (min)=       1.39 (ii)    6.73 (ii)
02957>      Unit Hyd. Tpeak (min)=       5.00         5.00
02958>      Unit Hyd. peak  (cms)=        .33          .18
02959>                                                          *TOTALS*
02960>      PEAK FLOW       (cms)=       1.09          .12         1.211 (iii)
02961>      TIME TO PEAK    (hrs)=       1.33         1.33         1.333
02962>      RUNOFF VOLUME    (mm)=      78.41        30.21        64.918
02963>      TOTAL RAINFALL   (mm)=      79.41        79.41        79.414
02964>      RUNOFF COEFFICIENT   =        .99          .38          .817
02965>       *** WARNING: Storage Coefficient is smaller than DT!
02966>                   Use a smaller DT or a larger area.
02967>
02968>         (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
02969>             CN* =  70.0    Ia = Dep. Storage  (Above)
02970>        (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
```

```
02971>           THAN THE STORAGE COEFFICIENT.
02972>      (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
02973>
02974> ------------------------------------------------------------------------------
02975> 100:0016------------------------------------------------------------------------
02976> *#*************************************************************************|
02977> *DRY POND
02978> ----------------------
02979> | ROUTE RESERVOIR   |    Requested routing time step =  1.0 min.
02980> |  IN>01:(203   )   |
02981> | OUT<02:(POND  )   |    =========  OUTLFOW STORAGE TABLE  =========
02982> ----------------------    OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
02983>                             (cms)    (ha.m.)   |     (cms)    (ha.m.)
02984>                              .000  .0000E+00   |     .083  .9030E-01
02985>                              .000  .4500E-02   |     .226  .1080E+00
02986>                              .055  .6610E-01   |     .283  .1234E+00
02987>
02988>      ROUTING RESULTS            AREA     QPEAK     TPEAK       R.V.
02989>      ---------------------       (ha)     (cms)     (hrs)       (mm)
02990>      INFLOW >01: (203   )       3.09     1.211     1.333     64.918
02991>      OUTFLOW<02: (POND  )       3.09      .239     1.583     63.462
02992>     OVERFLOW<03: (OVF   )        .00      .000      .000       .000
02993>
02994>                     TOTAL NUMBER OF SIMULATED OVERFLOWS  =        0
02995>                     CUMULATIVE TIME OF OVERFLOWS  (hours)=      .00
02996>                     PERCENTAGE OF TIME OVERFLOWING    (%)=      .00
02997>
02998>
02999>                     PEAK   FLOW   REDUCTION [Qout/Qin](%)=   19.780
03000>                     TIME SHIFT OF PEAK FLOW         (min)=    15.00
03001>                     MAXIMUM  STORAGE   USED       (ha.m.)=.1117E+00
03002>
03003>       *** WARNING: Outflow volume is less than inflow volume.
03004> ------------------------------------------------------------------------------
03005> 100:0017------------------------------------------------------------------------
03006> *#*************************************************************************|
03007> *AREA 205A - UNCONTROLLED SITE DISCHARGE TO TENTH LINE SWALE
03008> *#*************************************************************************|
03009> ----------------------
03010> | CALIB NASHYD       |   Area    (ha)=     .19   Curve Number   (CN)=70.00
03011> | 04:205A   DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
03012> ----------------------   U.H. Tp(hrs)=    .050
03013>
03014>      Unit Hyd Qpeak  (cms)=     .145
03015>
03016>      PEAK FLOW       (cms)=     .034 (i)
03017>      TIME TO PEAK    (hrs)=    1.350
03018>      RUNOFF VOLUME    (mm)=   30.214
03019>      TOTAL RAINFALL   (mm)=   79.414
03020>      RUNOFF COEFFICIENT   =     .380
03021>
03022>      (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
03023>
03024> ------------------------------------------------------------------------------
03025> 100:0018------------------------------------------------------------------------
03026> *#*************************************************************************|
03027> *COMBINE TOTAL FLOW TO SWALE
03028> ------------------------
03029> | ADD HYD (SWALE     ) | ID: NHYD         AREA     QPEAK   TPEAK   R.V.    DWF
03030> ------------------------                  (ha)     (cms)   (hrs)   (mm)   (cms)
03031>                       ID1 02:POND          3.09     .239    1.58  63.46    .000
03032>                      +ID2 03:OVF           .00      .000     .00    .00    .000
03033>                      +ID3 04:205A          .19      .034    1.35  30.21    .000
03034>                       ============================================================
03035>                       SUM 08:SWALE         3.28     .250    1.55  61.54    .000
03036>
03037>    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
03038>
03039> ------------------------------------------------------------------------------
03040> 100:0019------------------------------------------------------------------------
03041> *#*************************************************************************|
03042> *AREA 205B - UNCONTROLLED SITE DISCHARGE TO ADJACENT LAND
03043> *#*************************************************************************|
03044> ----------------------
03045> | CALIB NASHYD       |   Area    (ha)=     .17   Curve Number   (CN)=70.00
03046> | 01:205B   DT= 1.00 |   Ia      (mm)=   5.000   # of Linear Res.(N)= 3.00
03047> ----------------------   U.H. Tp(hrs)=    .070
03048>
03049>      Unit Hyd Qpeak  (cms)=     .093
03050>
03051>      PEAK FLOW       (cms)=     .027 (i)
03052>      TIME TO PEAK    (hrs)=    1.350
03053>      RUNOFF VOLUME    (mm)=   30.214
03054>      TOTAL RAINFALL   (mm)=   79.414
03055>      RUNOFF COEFFICIENT   =     .380
03056>
03057>      (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
03058>
03059> ------------------------------------------------------------------------------
03060> 100:0020------------------------------------------------------------------------
03061> *#*************************************************************************|
03062> *FLOW CHECK - TOTAL SITE DISCHARGE
03063> ------------------------
03064> | ADD HYD (TOTAL     ) | ID: NHYD         AREA     QPEAK   TPEAK   R.V.    DWF
03065> ------------------------                  (ha)     (cms)   (hrs)   (mm)   (cms)
03066>                       ID1 01:205B          .17      .027    1.35  30.21    .000
03067>                      +ID2 08:SWALE         3.28     .250    1.55  61.54    .000
03068>                      +ID3 09:BYPASS        3.87     .198    2.62  77.93    .000
03069>                      +ID4 10:TOPOND        7.00     .717    1.55  66.85    .000
03070>                       ============================================================
03071>                       SUM 02:TOTAL         14.32     .979    1.55  68.19    .000
03072>
03073>    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
03074>
03075> ------------------------------------------------------------------------------
03076> 100:0021------------------------------------------------------------------------
03077> *#*************************************************************************|
03078> ------------------------------------------------------------------------------
03079> 100:0002------------------------------------------------------------------------
03080> *
03081> ------------------------------------------------------------------------------
03082> 100:0002------------------------------------------------------------------------
03083> *
03084> ------------------------------------------------------------------------------
03085> 100:0002------------------------------------------------------------------------
03086> *
03087> ------------------------------------------------------------------------------
03088> 100:0002------------------------------------------------------------------------
03089> *
03090> ------------------------------------------------------------------------------
03091> 100:0002------------------------------------------------------------------------
03092> *
03093>       FINISH
03094> ------------------------------------------------------------------------------
03095> ******************************************************************************
03096>      WARNINGS / ERRORS / NOTES
03097>      -------------------------
03098>  002:0005 CALIB STANDHYD
03099>       *** WARNING: Storage Coefficient is smaller than DT!
03100>                    Use a smaller DT or a larger area.
03101>  002:0015 CALIB STANDHYD
03102>       *** WARNING: Storage Coefficient is smaller than DT!
03103>                    Use a smaller DT or a larger area.
03104>  002:0016 ROUTE RESERVOIR
03105>       *** WARNING: Outflow volume is less than inflow volume.
03106>  005:0005 CALIB STANDHYD
03107>       *** WARNING: Storage Coefficient is smaller than DT!
03108>                    Use a smaller DT or a larger area.
03109>  005:0008 CALIB STANDHYD
03110>       *** WARNING: Storage Coefficient is smaller than DT!
03111>                    Use a smaller DT or a larger area.
03112>  005:0011 CALIB STANDHYD
03113>       *** WARNING: Storage Coefficient is smaller than DT!
03114>                    Use a smaller DT or a larger area.
03115>  005:0015 CALIB STANDHYD
03116>       *** WARNING: Storage Coefficient is smaller than DT!
03117>                    Use a smaller DT or a larger area.
03118>  005:0016 ROUTE RESERVOIR
03119>       *** WARNING: Outflow volume is less than inflow volume.
03120>  010:0005 CALIB STANDHYD
03121>       *** WARNING: Storage Coefficient is smaller than DT!
03122>                    Use a smaller DT or a larger area.
03123>  010:0008 CALIB STANDHYD
03124>       *** WARNING: Storage Coefficient is smaller than DT!
03125>                    Use a smaller DT or a larger area.
03126>  010:0011 CALIB STANDHYD
03127>       *** WARNING: Storage Coefficient is smaller than DT!
03128>                    Use a smaller DT or a larger area.
03129>  010:0015 CALIB STANDHYD
03130>       *** WARNING: Storage Coefficient is smaller than DT!
03131>                    Use a smaller DT or a larger area.
03132>  010:0016 ROUTE RESERVOIR
03133>       *** WARNING: Outflow volume is less than inflow volume.
03134>  025:0005 CALIB STANDHYD
03135>       *** WARNING: Storage Coefficient is smaller than DT!
03136>                    Use a smaller DT or a larger area.
03137>  025:0008 CALIB STANDHYD
03138>       *** WARNING: Storage Coefficient is smaller than DT!
03139>                    Use a smaller DT or a larger area.
03140>  025:0011 CALIB STANDHYD
03141>       *** WARNING: Storage Coefficient is smaller than DT!
03142>                    Use a smaller DT or a larger area.
03143>  025:0015 CALIB STANDHYD
03144>       *** WARNING: Storage Coefficient is smaller than DT!
03145>                    Use a smaller DT or a larger area.
03146>  025:0016 ROUTE RESERVOIR
03147>       *** WARNING: Outflow volume is less than inflow volume.
03148>  050:0005 CALIB STANDHYD
03149>       *** WARNING: Storage Coefficient is smaller than DT!
03150>                    Use a smaller DT or a larger area.
03151>  050:0008 CALIB STANDHYD
03152>       *** WARNING: Storage Coefficient is smaller than DT!
03153>                    Use a smaller DT or a larger area.
03154>  050:0011 CALIB STANDHYD
03155>       *** WARNING: Storage Coefficient is smaller than DT!
03156>                    Use a smaller DT or a larger area.
03157>  050:0015 CALIB STANDHYD
03158>       *** WARNING: Storage Coefficient is smaller than DT!
03159>                    Use a smaller DT or a larger area.
03160>  050:0016 ROUTE RESERVOIR
03161>       *** WARNING: Outflow volume is less than inflow volume.
03162>  100:0005 CALIB STANDHYD
03163>       *** WARNING: Storage Coefficient is smaller than DT!
03164>                    Use a smaller DT or a larger area.
03165>  100:0008 CALIB STANDHYD
03166>       *** WARNING: Storage Coefficient is smaller than DT!
03167>                    Use a smaller DT or a larger area.
03168>  100:0011 CALIB STANDHYD
03169>       *** WARNING: Storage Coefficient is smaller than DT!
03170>                    Use a smaller DT or a larger area.
03171>  100:0015 CALIB STANDHYD
03172>       *** WARNING: Storage Coefficient is smaller than DT!
03173>                    Use a smaller DT or a larger area.
03174>  100:0016 ROUTE RESERVOIR
03175>       *** WARNING: Outflow volume is less than inflow volume.
03176>    Simulation ended on 2025-08-08     at 09:07:21
03177> ==============================================================================
03178>
03179>
```

Appendix B

Sanitary

Prologis Meadowvale Distribution Centre

City of Mississauga
Project No: 60549_001
Date: July 2025
By: NZR

Sanitary Demand Calculations

	Light Industrial				Total		
Location	Site Area (ha)	Population Density (persons/ha) [1]	Population (persons)	Demand (L/s)	Total Average Demand (L/s)	Total Peaked Demand (L/s)	Total Peaked Demand + Infiltration (L/s)
Total Site Area (DC4 + DC5 + Data Centre)	16.17	70	1132	3.538	3.538	13.317	
Totals			**1132**	**3.538**	**3.538**	**13.317**	**17.52**

Sanitary Demand		
Average Daily Demands [2]	270	L/ca/day
	0.0031	L/ca/sec
Harmon Peaking Factor [3]	3.76	
Site Area	16.172	ha
Infiltration Allowance [4]	0.26	L/s/ha
	4.205	L/s

Note 1: Population Density based on Region of Peel Linear Wastewater Standards
Note 2: Average Daily Demand based on Region of Peel Linear Wastewater Standards
Note 3: Harmon Peaking Factor = $1 + (14/(4+(P/1000)^{½}))$, (4.0 max)
Note 4: Infiltration allowance based on Region of Peel Linear Wastewater Standards

Appendix C

Fire and Domestic Water

Prologis Meadowvale Distribution Centre

City of Mississauga
Project No: 60549_001
Date: July 2025
By: NZR

Peaking Factors[1]:	
	Industrial
Avg. Day	1.0
Max. Day	1.4
Peak Hour	3.0

Water Demand Calculations

	Light Industrial				Final Demand		
Location	Site Area (ha)	Population Density [2] (persons/ha)	Population (persons)	Demand (L/s)	Avg Day Demand Qavg (L/s)	Max Day Demand Qmax.day (L/s)	Peak Hour Demand Qpeak (L/s)
Total Site Area (DC4 + DC5 + Data Centre)	16.17	70	1132	3.931	3.931	5.503	11.792
Totals			**1132**	**3.931**	**3.931**	**5.503**	**11.792**

Water Demand [3]		
Average Daily Demands	300	L/d/person
	0.0035	L/s/person

Max Day + Fire Flow Demand		
Qmax.day+fire	363.84	L/s

Fire Flow [4]		
Fire Flow	21,500	L/min
	358.33	L/s

Note 1: Peaking factors based on Region of Peel Watermain Design Criteria
Note 2: Population Density based on Region of Peel Watermain Design Criteria
Note 3: Water Demands based on Region of Peel Watermain Design Criteria
Note 4: Fire flows from FUS (2020) - See attached worksheet

Prologis Meadowvale Distribution Centre
City of Mississauga
Project No: 60549_001
Date: July 2025
By: NZR

FIRE FLOW DEMAND REQUIREMENTS - FIRE UNDERWRITERS SURVEY (FUS GUIDELINES)

Fire flow demands for the FUS method is based on information and guidance provided in "Water Supply for Public Protection" (Fire Underwriters Survey, 2020).

An estimate of the fire flow required is given by the following formula:

$$RFF = 220C\sqrt{A}$$

where:

RFF = the required fire flow in litres per minute
C = coefficient related to the type of construction
= 1.5 for **Type V** Wood Frame Construction
= 0.8 for **Type IV-A** Mass Timber Construction
= 0.9 for **Type IV-B** Mass Timber Construction
= 1.0 for **Type IV-C** Mass Timber Construction
= 1.5 for **Type IV-D** Mass Timber Construction
= 1.0 for **Type III** Ordinary Construction
= 0.8 for **Type II** Noncombustible Costruction
= 0.6 for **Type I** Fire Resistive Construction
A = Total floor area in square metres from Site Plan
(for Type II Noncombustible Costruction,
A = Gross Floor Area in Square Meters (Refer to Siteplan by NEUF Architects)

Adjustments to the calculated fire flow can be made based on occupancy, sprinkler protection and exposure to other structures. The table below summarizes the adjustments made to the basic fire flow demand.

			(1)		(2)		(3)		(4)		**Final Adjusted**		
Building	Area "A"	C	Fire Flow "RFF"		Occupancy		Sprinkler		Exposure		**Fire Flow**		
	(m^2)	(Type II)	(l/min)	(l/s)	%	Adjusted Fire Flow (L/min)	%	Adjustment (L/min)	%	Adjustment (L/min)	**(L/min)**	**Rounded(L/min)**	**(L/s)**
Building DC4	26,823.0	0.8	28,800	480.0	0	28,800	-40	-11,520	10	2,880	20,160	20,200	**336.7**
Building DC5	30,503.0	0.8	30,700	511.7	0	30,700	-40	-12,280	10	3,070	21,490	21,500	**358.3**
Data Center	20,338.0	0.8	25,100	418.3	0	25,100	-40	-10,040	0	0	15,060	15,100	**251.7**

(2) Occupancy

Non-Combustible	-25%
Limited Combustible	-15%
Combustible	No charge
Free Burning	15%
Rapid Burning	25%

(3) Sprinkler

30% - Automatic sprinkler protection designed and installed in accordance with NFPA 13
+10% - Water supply is standard for both the system and Fire Department hose line

(4) Exposure

0 to 3m	25%	
3.1 to 10m	20%	Calculate for all
10.1 to 20m	15%	sides. Maximum
20.1 to 30m	10%	charge shall not
>30	0%	exceed 75%

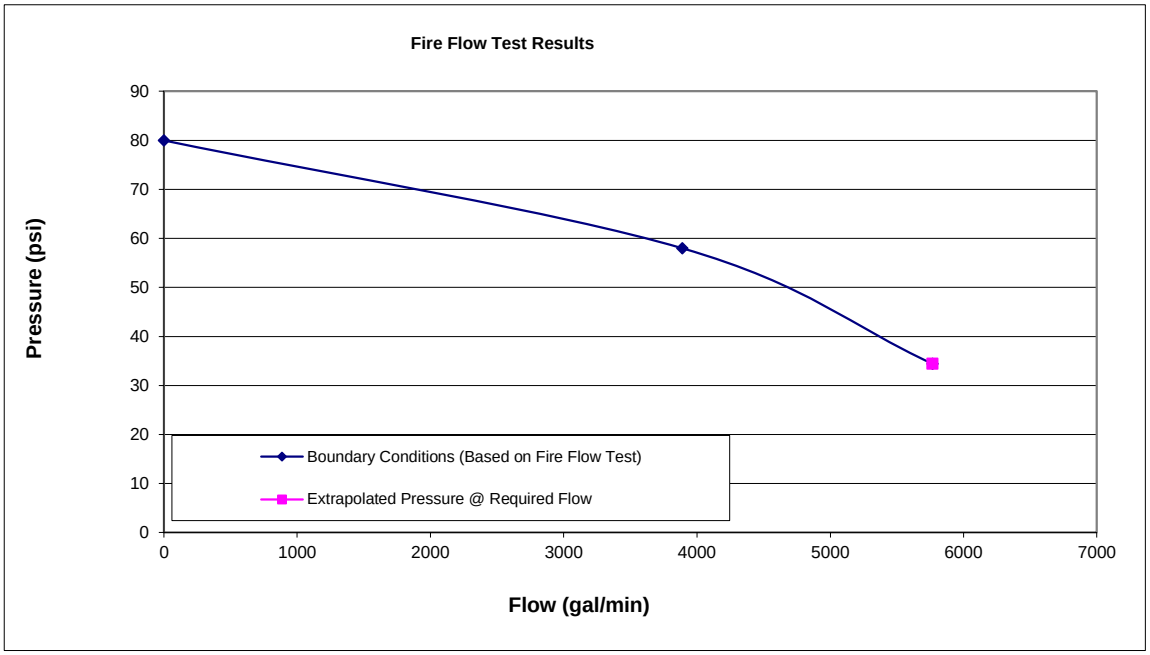
Prologis Meadowvale Distribution Centre

City of Mississauga
Project No: 60549_001
Date: July 2025
By: NZR

File: Q:\60549_001\WTM\60549_001 Water Calculations (Fire Flow).xlsx

CALCULATION OF RESIDUAL PRESSURE AT EXISTING HYDRANT (Residual 4)

1. Boundary Conditions (Based on Fire Flow Test Results):			
	Metric	**Imperial**	
P0 - Starting Pressure	56.26 *m*	80 *psi*	
P1 - Pressure at Q1	40.79 *m*	58 *psi*	
Q1 - From Fire Flow Test	14725 *L/min*	3890 *U.S. gal/min*	
Q2 - Required Flow	21830 *L/min*	5767 *U.S. gal/min*	From: Water Demand calculations by MTE
P-loss 1	15.47 *m*	22 *psi*	
P-loss 2	32.08 *m*	46 *psi*	
P2 - Residual Pressure	**24.18 *m***	**34 *psi***	Extrapolated from Fire Flow Test Results



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Mobile : 647.224.5795
tchaykowsky@superiorsprinkler.ca

HYDRANT FLOW TEST

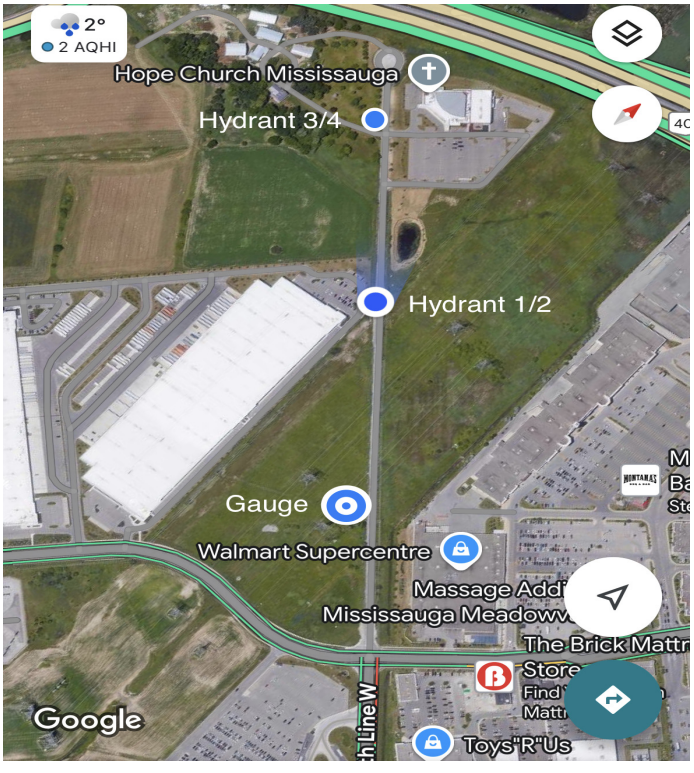
Summary:

Technicians:	Duane Dobbs, Cory Beacom and Chris Bayton
Date:	December 18, 2024
Time:	1:00pm
Weather:	2°C
Location/Address:	7564 Tenth Line West, Mississauga Ontario
Main Size:	300mm PVC

Results:

Static:	80 psi
Residual 1:	1 - 2-1/2 @ 1325 GPM @ 74 psi
Residual 2:	2 - 2-1/2 @ 2040 GPM @ 76 psi
Residual 3:	3 – 2-1/2" @ 2776 GPM @ 63 psi
Residual 4:	4 – 2-1/2" @ 3239 GPM @ 58 psi

Map: https://maps.app.goo.gl/10th Line Mississauga, ON



Hydrant type:
Coefficient 0.9 smooth bore / rounded outlet

Authorized Signature:

Tyson Chaykowsky
Sales & Contract Manager
SuperiorSprinkler.ca

Date: March 19, 2025

Appendix D

Reference Material

Nicholas Rendulic

From: Nicholas Rendulic
Sent: Friday, July 11, 2025 3:04 PM
To: Rui Zhou
Subject: FW: 61720_001_7564 10th Line W, Mississauga, Ontario
Attachments: Master Site Plan - Scheme 10 - September 24, 2024 - MW Markup-UPDATED.pdf; 61720_001_Drafted Borehole Logs_2025-07-07_BGH.pdf

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From: Usman Arshad <UArshad@mte85.com>
Sent: Friday, July 11, 2025 3:02 PM
To: Nicholas Rendulic <NRendulic@mte85.com>
Subject: 61720_001_7564 10th Line W, Mississauga, Ontario

Hi Nicholas,

- Based on manual measurements collected on April 30, 2024, groundwater elevations at the site range from 208.4 m amsl to 207.6 m amsl (2.7 m bgs to 4.9 m bgs). These levels may not be stabilized water levels and could still be recovering. We are scheduled to visit the site next month to download the data loggers/monitoring data. Preliminary plan attached indicating location of monitoring wells.

Table: Groundwater Measurements (April 30, 2024)

Monitoring Well ID	Depth (m bgs)	Elevation (m amsl)
MW101	4.3	208.2
MW102	4.9	208.1
MW103	3.9	207.8
MW104	3.3	207.6
MW105	2.7	208.0
BH6	3.8	207.6
BH7	4.7	208.4

- Infiltration rates are estimated based on 3 grain size samples analyzed as below: (borehole logs attached for soil conditions review)

Table: Infiltration Rate Estimate from GSD

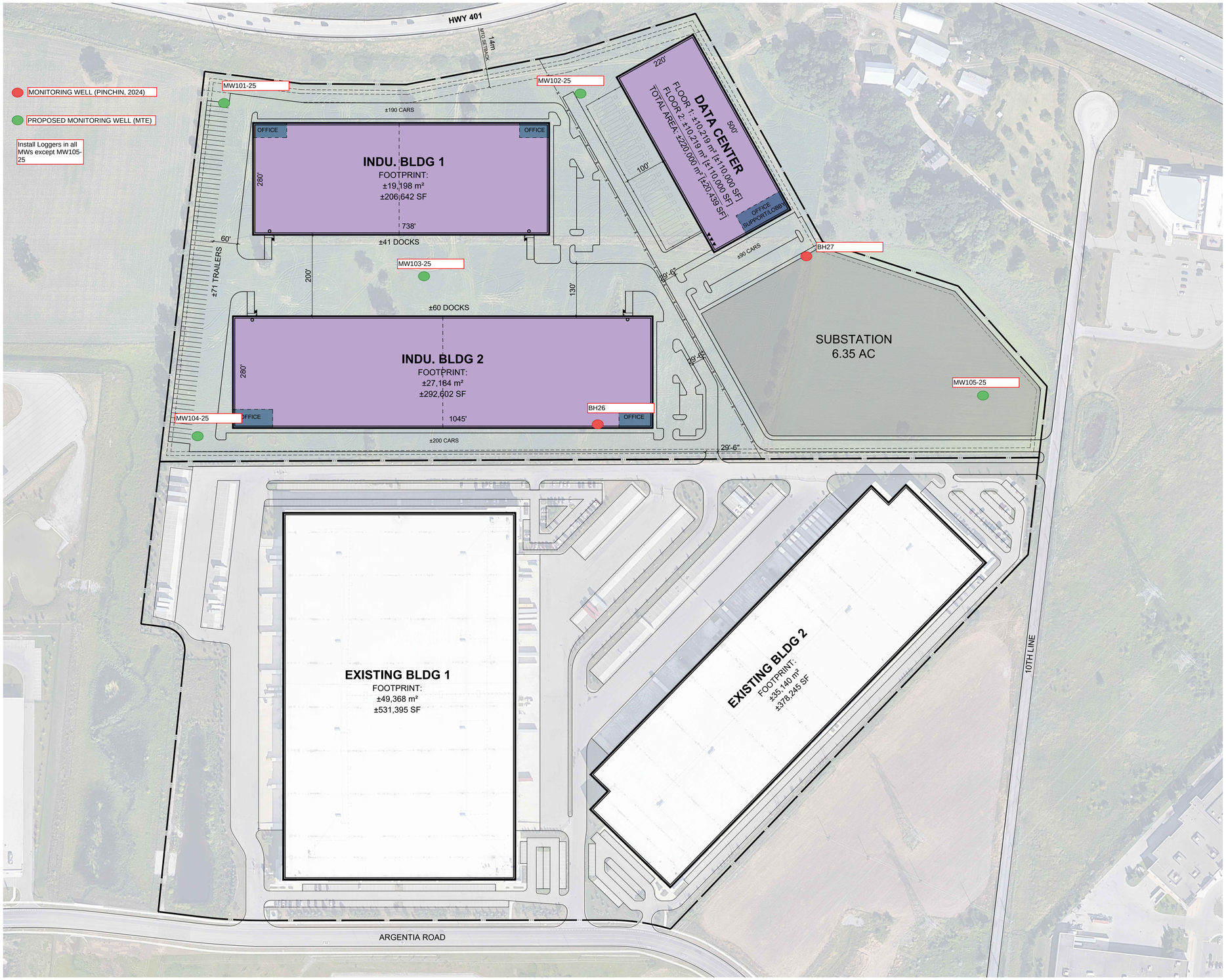
Sample ID	Depth Range (m bgs)	Soil Type	Infiltration Rate (mm/hr.)
MW101-25	4.6 - 5.2	Silty SAND, trace Clay and Gravel	30
MW102-25	6.1 - 6.6	Silty SAND, some Clay, trace Gravel	10

MW104-25	6.1 - 6.7	Silty SAND, some Clay, trace Gravel	15

Let me know if you need anything else.

Thanks,
Usman

Usman Arshad, M.Eng., P.Eng., PMP | **Project Manager**
MTE Consultants Inc.
T: 905-639-2552 | UArshad@mte85.com



SCALE: 1" = 100'-0"

0' 100' 200' 500'

PROJECT NORTH

PROLOGIS

MISSISSAUGA, ONTARIO, CAN

SITE PLAN | SCHEME 08

PROJECT DATA:

SITE AREA:		
GROSS:	39.94 AC	16.16 HA
	1,739,872 SF	161,639 m²
SUBSTATION:	6.35 AC	25,716 m²
NET:	33.59 AC	13.59 HA
	1,463,068 SF	135,923 m²
BUILDING AREA:		
BUILDING 1	206,642 SF	19,198 m²
BUILDING 2	292,602 SF	27,184 m²
DATA CENTER		
LEVEL 1	110,000 SF	10,219 m²
LEVEL 2	110,000 SF	10,219 m²
	220,000 SF	20,439 m²
TOTAL:	609,244 SF	56,601 m²
PARKING REQUIREMENTS:		
WAREHOUSE		
<6,975 m²		11/1000 m²
>6,975 m²		3/500 m²
FAR:		
GROSS:		0.35
NET:		0.41
COVERAGE:		
GROSS:		35%
NET:		41%
BUILDING 1		
▲ DOCK-HIGH DOORS		41
O GRADE-LEVEL DOORS		2
PARKING REQUIRED:		
<6,975 m²	6,975 m²	77 STALLS
>6,975 m²	12,223 m²	73 STALLS
TOTAL		150 STALLS
PARKING PROVIDED:		190 STALLS
	@0.92/1000 SF	@0.99/100 m²
REQ. ACCESSIBLE		*To be confirmed by City*
TRAILER PARKING		*35 STALLS*
BUILDING 2		
▲ DOCK-HIGH DOORS		60
O GRADE-LEVEL DOORS		2
PARKING REQUIRED:		
<6,975 m²	6,975 m²	77 STALLS
>6,975 m²	20,209 m²	121 STALLS
TOTAL		198 STALLS
PARKING PROVIDED:		200 STALLS
	@0.68/1000 SF	@0.74/100 m²
REQ. ACCESSIBLE		*To be confirmed by City*
TRAILER PARKING		*36 STALLS*
DATA CENTER		
▲ DOCK-HIGH DOORS		3
PARKING PROVIDED:		80 STALLS
	@0.36/1000 SF	@0.39/100 m²
REQ. ACCESSIBLE		*To be confirmed by City*

LEGEND:

- PROPOSED BUILDING AREA
- OFFICE AREA
- DETENTION POND AREA
- ▲ DOCK DOOR
- △ FUTURE DOCK DOOR (KNOCK OUT)
- O DRIVE IN DOOR

NOTE:
THIS CONCEPTUAL PLAN IS FOR MARKETING PURPOSES ONLY, AND HAS BEEN PREPARED BASED ON PRELIMINARY AVAILABLE SITE INFORMATION DEEMED RELIABLE. ALL DIMENSIONS AND AREA CALCULATIONS ARE SUBJECT TO VERIFICATION BY A PROFESSIONAL ENGINEER FOR COMPLIANCE WITH ALL NATIONAL, STATE AND LOCAL REGULATIONS.

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WARE MALCOMB

SEPTEMBER 24, 2024 TOR24-0098-00

Prologis Canada

Meadowvale Business Park District - Block 1
Argentia Road Extension – Phase 1

Stormwater Management Report

Prepared by:

AECOM
410 – 250 York Street, Citi Plaza 519 673 0510 tel
London, ON, Canada N6A 6K2 519 673 5975 fax
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Project Number:

60142982

Date:

May, 2012

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Revision Log

Revision #	Revised By	Date	Issue / Revision Description
0		November 23, 2011	Original Report
1	tc	January 23, 2012	Update SWM strategy to include external lands to the north
2	dpg	February 17, 2012	Update to reflect City meeting comments
3	dpg	May 22, 2012	Updated to reflect Conservation Halton comments

AECOM Signatures

Report Prepared By:

David Gough, EIT

Report Reviewed By:

Brian Richert, P.Eng.

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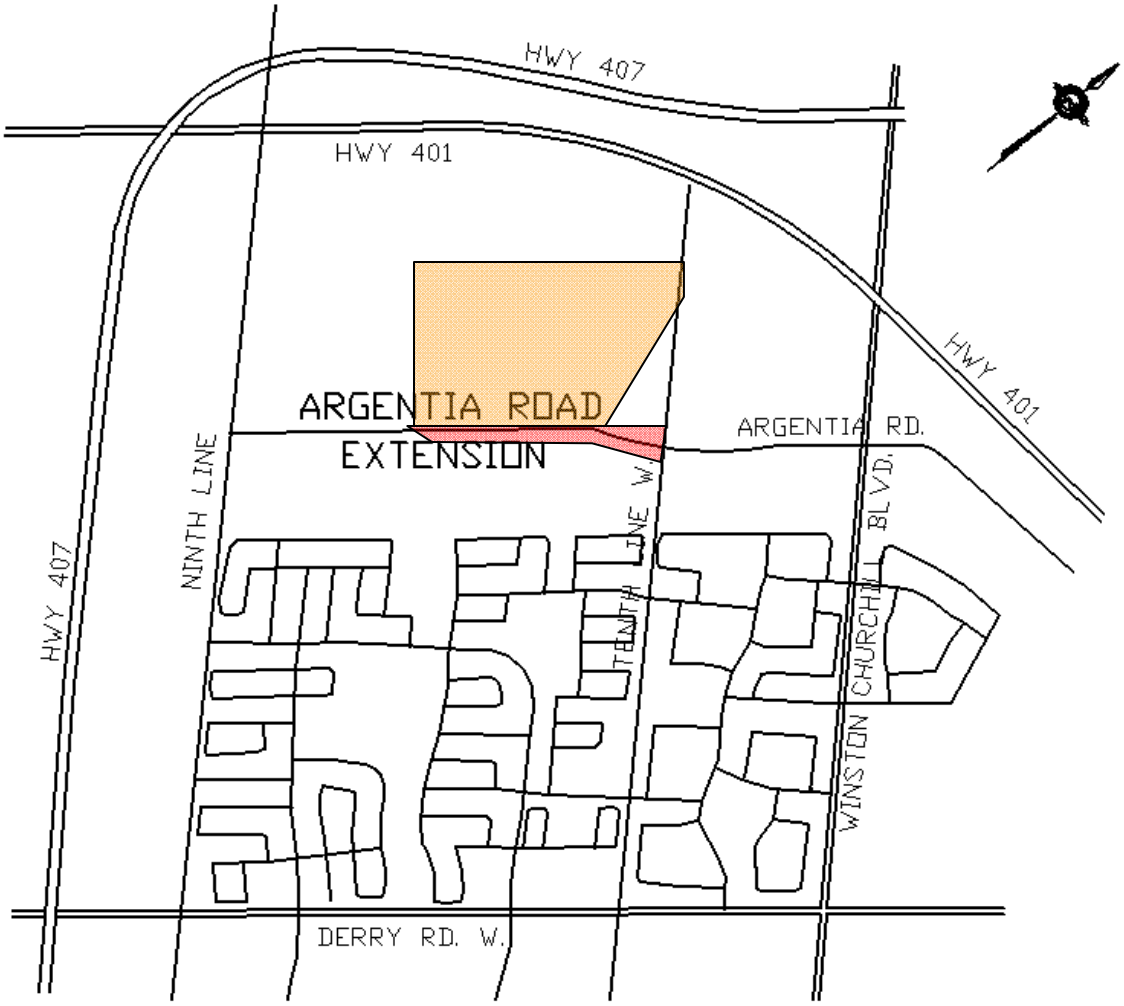
Appendices

1. Introduction

Prologis Canada proposes to develop Block 1 of the Meadowvale Business Park District in concert with Phase 1 of the Argentia Road extension works from 10th Line to the proposed Lisgar channel crossing.

The subject site is located within North Sixteen District (NSD) in the northwest corner of the City of Mississauga and within the Meadowvale Business Park District. It is bound by 10th Line to the north east, the proposed Argentia Road extension to the south east, the realigned Lisgar channel to the south west and undeveloped lands to the north west, refer Diagram 1 below. The site is part of the Sixteen Mile Creek watershed, within Conservation Halton's jurisdiction. It is also within the City of Mississauga and the Region of Peel.

Diagram 1 Subject Site



AECOM has been retained by Prologis Canada to prepare a stormwater management (SWM) strategy for the proposed development. The strategy includes preliminary design details for the construction of a SWM facility that provides water quality control for the 2-year storm event and on-site storage controls providing additional 5-year storm event peak flow control.

1.1 Background

A number of subwatershed studies have been completed for the study area. The most recent and relevant is the *North Sixteen District Scoped Subwatershed Study and Ninth Line District Floodplain Mapping* (Philips Engineering Ltd., December 2004) (NSDSSS). This study identified a master plan approach to provide a single central watercourse, the Lisgar channel, for conveyance of drainage within the NSD lands. The Lisgar channel replaces multiple small watercourses. The study accounts for all contributing areas as part of the design of the centralized channel including the subject site.

The Detailed Design Sanitary, Water and Storm Services Mississauga Fire and Emergency Services Training Centre City of Mississauga (Sernas Associates, August 2008, revised July 2009) refined the storm drainage and stormwater management plan provided in the NSDSSS. This detailed design includes the requirements of the centralized drainage channel to provide form and function to convey post development flows from areas which include the subject site. This report also identified three offline stormwater facilities within the study area to provide quality control. In addition, an online quantity control storage component is provided within the centralized channel extending from upstream of the utility corridor to the northeast corner of the Mississauga Fire and Emergency Services Training Centre site. The centralized channel is designed to provide peak flow control for storms up to the 100-year storm event and conveyance of the Regional storm with 0.3 m of freeboard provided.

The subject site is located in the Pond Q2 catchment area on the Sernas drawings. Pond Q2 is required to provide quality control for the 2-year storm event. The future development lands to the north of the subject site are also identified in the catchment area of Pond Q2 and as such are accommodated in the SWM strategy. In addition to the development sites must also provide on-site storage of 75 l/s/ha for the 5-year storm event

Preliminary plans for site development were submitted to Conservation Halton on August 24, 2011 for preliminary review. Comments were received from Conservation Halton on October 3, 2011 and identified the following to be addressed in the submission of the SWM report:

- Provide thermal mitigation measures at the pond outlet such as a cooling trench and/or bottom draw outlet.
- Outfalls should be situated such that the discharge flow is in the same direction as the flow in the main creek.
- Provide additional details of the emergency overflow weir.
- Provide additional details of the riprap spillway.
- The outlet invert will require mitigation measures to prevent backwater if the outlet is lower than the 2-year water mark.
- Verify that the SWM facility performance will not be negatively impacted by predicted flood elevations in the watercourse channel.

Conservation Halton also requested that sufficient information be provided to size a single span culvert at the Lisgar channel crossing. This crossing is requested to be able to convey the Regional storm with 0.3 m of freeboard, in addition to ensuring fish passage is maintained as well as preventing negative impacts on stream erosion/migration and sediment transport. It is not proposed to detail this crossing as part of this submission. The details of the crossing will be provided in subsequent applications.

2. Pre-Development Conditions

2.1 Receiving Watercourse

The receiving watercourse for the subject site is the Lisgar channel. The accepted detailed design of the Lisgar channel is contained in the Detailed Design Sanitary, Water and Storm Services Mississauga Fire and Emergency Services Training Centre City of Mississauga (Sernas Associates, August 2008, revised July 2009). This study includes hydraulic, hydrologic, and geomorphologic investigations to provide a dynamically stable channel within a naturalized corridor. The channel is designed and constructed to accommodate uncontrolled post development treated flows, up to the 100-year event, from the subject site.

The post development flood levels estimated by Sernas Associates in the Lisgar channel adjacent to the subject site are provided in Table 1 below.

Table 1: Lisgar Channel Flood Levels (m)

Location	Regional	100-year	50-year	25-year	10-year	5-year
Upstream of Argentia Road Crossing	206.97	206.50	206.42	206.34	206.22	205.70
Downstream of Argentia Road Crossing	206.67	206.45	206.38	206.32	206.21	205.70

2.2 Soils

The subject site consists mainly of Chinguacousy clay loam with pockets of Jeddo clay loam, as identified in Report No. 43 of the Ontario Soil Survey, *The Soils of Halton County*. Table 2 provides a description for each of the soil types found within the SWM facility contributing area.

Table 2: Soil Descriptions

Soils Association Name	Soil Material Description	Soil Type[1]
Chinguacousy	Clay Loam	C
Jeddo	Clay Loam	C

1 Chart H2-5 – Hydrologic Soil Groups for Soil Associations in Southern Ontario

2.3 Pre-development Land Use

The pre-development land use in the subject site is generally agricultural. The land generally drains to a number of low depressions as it flows north to south through the subject site. The low depressions either discharge into the recently constructed Lisgar channel directly or via a drainage ditch through the utility corridor.

3. Post Development Conditions

3.1 Stormwater Management Criteria

The following stormwater management criteria are required for the proposed development:

SWM Facility

- Water quality sizing criteria for the development is based on MOE values for Level 2 (normal) protection as outlined in the 2003 MOE Guidelines.
- Extended detention of 40 m^3/ha based on the 2003 MOE Guidelines.
- Temperature mitigation is to be provided via a bottom draw outlet.

5-year Quantity Control

- Quantity control criteria of 75 l/s/ha for the 5-year storm event based on the requirements of Sernas Associates report.

Conveyance

- Storm sewers are to be sized for the 10-year storm event.
- Bypass structures are to be incorporated into the storm sewer system upstream of the pond. This is to allow flows up to the 2-year event to be directed to the pond. Flows greater than the 2-year event are to be directly discharged to the Lisgar Channel.
- A separate storm sewer system is to be utilized for the discharge of the rooftop diversions directly into the Lisgar channel, bypassing the SWM facility.
- The rooftop diversion sewer is to be tied into the 10-year bypass pipe north of the SWM facility. This is to limit the number of outlets into the Lisgar Channel.
- The depth of major flows at the crown of the road must not exceed 0.15 m.
- The product of the depth and velocity of water at the gutter must not exceed 0.65 m^2/s.

Rooftop Discharge

- Rainwater will be detained on the rooftops up to the 100-year event and discharged at controlled rates directly into the Lisgar channel via a separate storm sewer system.
- The roof drain sewer will be a perforated pipe contained in a gravel trench wrapped in geofabric. Where applicable, some sections of this pipe may be non-perforated in order to accommodate vehicle loading concerns through some areas of the site.

Argentia Road Drainage Culvert Crossing

- A culvert crossing of Argentia Road is to be provided to maintain the minor drainage ditch adjacent to the GO Transit Station entrance. The design criteria and design parameters used are based on the MTO Drainage Management Technical Guidelines and the City of Mississauga design requirements. The City of Mississauga requires culvert crossings to be designed for the 50-year event for urban local and collector road classifications.

3.2 Catchment Characteristics

The catchment draining to the SWM facility is 29.4 ha of developed area. This area includes the Block 1 development (catchment 101), lands north of the Block 1 development (catchment 102), and the Argentia Road Phase 1 extension (catchment 103). The 29.4 ha catchment excludes the Block 1 rooftop areas totalling 8.5 ha (catchment 104 and 105). Drainage from the Block 1 rooftop areas will be stored on the roofs and released directly to the Lisgar channel. Table 3 and Table 4 provide a summary of the SWM facility catchment characteristics used in the SWMHYMO modeling of the site. Figure 1 of Appendix A provides an overview of these catchments.

Table 3: Developed Catchment Characteristics to SWM Facility (STANDHYD)

Catchment ID	Area	XIMP	TIMP	CN	Pervious				Impervious			
					IA	Slope	Length	Manning's n	IA	Slope	Length	Manning's n
	(ha)	(%)	(%)		(mm)	(%)	(m)		(mm)	(%)	(m)	
101	10.8	89	89	70	5	2.0	50	0.250	2	0.5	260	0.013
102	1.3	85	85	70	5	2.0	50	0.250	2	0.5	90	0.013
103	17.3	90	90	70	5	2.0	50	0.250	2	0.5	340	0.013

Table 4: Rooftop Characteristics to Lisgar Channel (STANDHYD)

Catchment ID	Area	XIMP	TIMP	CN	Impervious				Controlled Flow (m^3/s) / Required Storage for 100-yr event (m^3)
					IA	Slope	Length	Manning's n	
	(ha)	(%)	(%)		(mm)	(%)	(m)		
104	5.0	99	99	99	2.0	0.5	180	0.013	0.078 / 3900
105	3.5	99	99	99	2.0	0.5	150	0.013	0.057 / 2700

4. SWM Facility

The proposed SWM facility is designed as a wet pond providing normal (level 2) water quality control and extended detention for the total development minus the 8.5 ha rooftop area. Table 5 provides a general summary of the requirements for the SWM facility. Figure 2 of Appendix A provides an overview of the SWM facility layout.

Table 5: SWM Facility General Requirement Information

Characteristics	Value
Level of Water Quality Protection	Level 2
Developed Impervious Level (%)	90
Water Quality Protection Volume (m^3/ha)	154
Developed Area Discharged to the Pond (areas: 101, 102, 103) (ha)	29.4
Permanent Pool Volume (m^3/ha)	114
Required Permanent Pool Volume (m^3)	3,360
Provided Permanent Pool Volume (m^3)	3,370
Extended Detention Volume (m^3/ha)	40
Required Extended Detention Volume (m^3)	1,180
Provided Extended Detention Volume (m^3)	1,190
Extended Detention Drawdown Time (hours)	24
Permanent Pool Depth (m)	2.7
Total Pond Depth (Permanent Pool + Extended Detention) (m)	3.1
SWM Block Size (ha)	0.75

4.1.1 Forebay and Inlet Design

The SWM facility is composed of a single cell within the SWM block. Appropriate forebay parameters are used in the design of the single cell facility and are provided in Appendix B.

The minor flow into the SWM facility consists of two storm sewer systems:

- A storm sewer from the north that will convey 2-year flows from the proposed Block 1 development and lands north of Block 1 bypass structure, and
- A storm sewer from the south that will convey 2-year flows from the Phase 1 Argentia Road extension bypass structure.

4.1.2 Outlet Design

The outlet of the SWM facility has a bottom draw reverse slope outlet with an orifice providing extended detention control (discharged over 24 hours). The inlet of the reverse slope pipe is to be installed 0.3 m above the facility invert to allow for sediment accumulation. An additional sump area will also be provided around the outlet location to further mitigate the chance of clogging. A spillway is provided for flows greater than the extended detention volume. Figure 3 in Appendix A provides details of the proposed outlet. Table 6 provides an outlet design summary.

Table 6: Outlet Design Summary

Component		Size	Upstream Elevation (m)	Downstream Elevation (m)
1	Reverse Slope Pipe	375 mm circular STM	204.00	206.40
2	Manhole	1200 mm	-	-
	Orifice	150 mm circular	206.40	
	Outlet Pipe	375 mm circular STM	206.40	206.34
3	Spillway / Overflow Weir	5 m long crest	206.80	

4.1.3 SWM Facility Lining

In November, 2007, Trow completed a geotechnical investigation with a number of boreholes on the Prologis site, including boreholes in the vicinity of the proposed SWM facility. Following that investigation Trow issued two letters, dated November 11, 2009 and February 25, 2010, that describe the overall site as comprised of sandy soils with an observed groundwater elevation of 206.0 m in the boreholes closest to the proposed SWM facility. The proposed invert of the SWM facility is 203.7 m, which is approximately 2.3 m below the observed groundwater level in the nearest boreholes.

Based on the identified sandy soils, AECOM recommends that the SWM facility should be lined to maintain the design permanent pool elevation. A borehole at the SWM facility location should be provided during detailed design, prior to tender, to confirm the sandy material at the pond location and confirm the lining requirements.

It may also be necessary to dewater the excavation during construction, which may be subject to a permit to take water application as described in Section 8.3.

4.1.4 Access Route

The access route to the SWM facility for maintenance is on the west side of the facility adjacent to the Lisgar channel. The access route is 3 m wide and has an 8% grade from the top of the freeboard down to the bottom of the facility. The access route also provides maintenance access to the storm sewer inlet, sediment drying area and spillway.

4.1.5 Sediment Drying Area

A 750 m^2 sediment drying area is provided at the north boundary of the SWM facility.

4.1.6 Spillway / Overflow Weir

A spillway is located at the west side of the SWM facility. The base of the spillway is set at an elevation of 206.8 m. When the water surface rises above this elevation stormwater will spill over the spillway into the Lisgar channel. Table 7 provides a summary of the SWM facility spillway parameters.

Table 7: Spillway Parameters

Parameter	Value
Base Width (m)	5
Side Slopes	10:1
Top Elevation (m)	208.0
Bottom Elevation (m)	206.8
Provide Turfstone / Slope Protection to (m)	207.5
Total Depth (m)	1.2

4.2 Post-development Model

The SWMHYMO input and output files for the design of the SWM facility are provided in Appendix C. Refer to Figure 1 of Appendix A for a corresponding overview of the catchment locations. Parameters used in the modeling of the post-development conditions are provided in Appendix B and summarized in Section 3.2.

Table 8 provides an overview of the discharge rate and associated peak facility storage volumes during various rainfall events.

Table 8: SWM Facility Peak Outflow Rate, Associated Peak Storage Volumes and Water Level Elevations

Design Storm	SWM Facility				Lisgar Channel
	Peak Outflow Rate (m^3/s)	Peak Storage Volume (m^3)	Water Level Elevation (m)	Freeboard (m)	Water Level Elevation (m)
25 mm	0.99	1,977	207.03	0.97	-
2 Year (24 hour)	1.80	2,401	207.14	0.86	204.92
5-year (24 hour)	2.24	2,616	207.19	0.81	205.70
10 Year (24 hour)	2.43	2,692	207.21	0.79	206.22
25-year (24 hour)	2.50	2,721	207.22	0.78	206.34
50 Year (24 hour)	2.55	2,746	207.23	0.77	206.42
100 Year (24 hour)	2.60	2,760	207.23	0.77	206.50
Hazel (60 hour)	2.67	2,790	207.27*	0.73	206.97

**Regional water level elevation in pond takes into account Lisgar Channel Regional water level elevation.*

4.3 Rip Rap Sizing Calculations

Calculations supporting the rock rip rap sizing are provided in Appendix B of this report. The calculations are also provided in the Civil drawing set.

5. Rooftop Discharge

Clean rooftop runoff will discharge directly to the Lisgar Channel, bypassing the SWM facility. The site rooftops are represented as catchments 104 & 105 on Figure 1 of Appendix B. The rooftop diversions have several benefits. These benefits include:

- Mitigation of thermal impacts.
  - This is achieved through the use of white roofs, removal of the initial runoff volume through the use of the perforated pipe in granular trenches, and reducing flows which pass through the SWM facility.
- Reduction in required permanent pool volumes.
- Provision of the required on-site storage.

5.1 Rooftop Storage

The rooftop storage volumes and peak outflow rates are sized to discharge the 5-year storm storage volume over approximately 24 hours and retain the 100-year storm event to a maximum ponding depth of less than 100 mm. This equates to the west rooftop having a 100-year peak outflow rate of 78 L/s with a storage volume of 3,900 m^3, and the east rooftop having a 100-year peak outflow rate of 20 L/s with a storage volume of 3,500 m^3. Table 9 provides a summary of the rooftop peak outflow rates, storage volumes and drawdown time.

Table 9: Rooftop Storage Volumes and Peak Outflow Rates

Development	Catchment ID	Peak Outflow Rate (L/s)		On-site Storage Volume (m^3)		Drawdown Time (hrs)	
		5-Year	100-Year	5-Year	100-Year	5-Year	100-Year
West Rooftop	104	44	78	2,140	3,900	27	42
East Rooftop	105	32	57	1,490	2,700	26	40

The drawdown times for the rooftop storage volumes are greater than the 24 hours requirement and provide adequate extended detention storage for catchments 104 and 105.

5.2 Roof Drainage Sewer System

It is proposed that the roof drainage sewer system will have sections comprising of perforated pipe in granular trenches. Some sections of the pipe may not be perforated and may incorporate normal pipe bedding in areas of vehicle loading concern. The granular trench will be sized to provide retention of 10 mm of runoff from the rooftops. This equates to a volume of 850 m^3 for the 8.5 ha roof top areas. Table 10 provides the peak flow rates.

Table 10: Third Pipe Peak Flow Rates

Development	Catchment ID	100- Year Peak Outflow Rate (L/s)
West Rooftop	104	44
East Rooftop	105	32
Combined	104 & 105	76

It is proposed that the pipe outlet is connected to the outlet pipe of 10-year bypass located north of the SWM facility. This will reduce the number of outlets discharging into the Lisgar Channel.

6. On-site Quantity Control

Quantity control of 75 l/s/ha for the 5-year storm event, based on the requirements of Sernas Associates report, is to be provided through on-site storage. It is proposed that the Block 1 development (catchments 101, 104 and 105), will achieve the required onsite quantity control through rooftop storage. The rooftop storage on catchments 104 & 105 will over control in order to compensate for uncontrolled portions of the paved area and catchment 101. Further details of the roof top ponding areas are provided in Section 5. The lands north of Block 1 (catchment 103), will require a separate on-site storage volume of approximately 3,000 m^3 to meet its flow target of 1.3 m^3/s. Overall the total development will be controlled to a 5-year discharge peak flow rate of 2.76 m^3/s. This is below the target peak discharge rate of 2.85 m^3/s. Table 11 provides a summary of the required on-site storage volumes. Table 12 provides a comparison of the 5-year site flow rate.

Table 11: Required Onsite Storage Volumes

Development	Catchment ID	On-site Storage Volume (m^3)
Block 1	101	-
Argentia Road Phase 1	102	-
Land North of Block 1	103	3,000
West Rooftop	104	3,900
East Rooftop	105	2,700

Table 12: 5-year Site Discharge Flow Rate

Development	Catchment	Area (ha)	Allowable Flow Rate (m^3/s)	Actual Flow Rate (m^3/s)
Total Site*	101, 102, 103, 104 & 105	37.9	2.85	2.76

*Total site includes Argentia Road Phase 1 extension, Block 1 and lands north of Block 1.

7. Culvert Crossing

A culvert crossing is required for the Argentia Road extension approximately 180 m west of Tenth Line West. The catchment was modeled in SWMHYMO using the parameters outlined in Table 13. The resulting 50-year flow rate for the 24 hour Chicago storm distribution is 0.23 m^3/s. A 600 mm circular concrete culvert will provide adequate flow capacity for the 50 year storm flow. Refer to Appendix B for the inlet control evaluation.

Table 13: Catchment Characteristics (NASHYD)

Catchment Number	Area	CN	IA	TP
	(ha)		(mm)	(hr)
100	4.8	70	8	0.7

8. Erosion and Sediment Control Plan

8.1 Erosion / Sediment Control Devices

The sediment and erosion control measures to be implemented as part of the site servicing will include the following:

- Heavy duty silt fencing
- Light duty silt fencing
- Rock check damns
- Strawbale filters
- Filter fabric under catchbasins frame and gates
- Mud mats

8.2 Implementation of Control Devices

Table 14 provides further information on each of the erosion and sediment control devices; while Table 15 provides site staging information.

Table 14: Control Devices

Control Device	Further Information
Heavy duty silt fencing	• Heavy duty silt fencing to be implemented as per OPSD 219.130. • Heavy duty silt fencing to be implemented around the down gradient western portion of the SWM block as indicated in drawing S1.
Light duty silt fencing	• Light duty silt fencing to be implemented as per OPSD 219.110. • Light duty silt fencing to be implemented at all remaining perimeter locations as indicated in drawing S1.
Rock check dams	• Rock check dams to be implemented as per OPSD 219.210.
Straw bale filters	• Straw bale filters to be implemented as per OPSD 219.180. • Straw bales to be implemented in localized areas as shown in the erosion and sediment control plan and as directed by the engineer during construction. • Straw bales to be terminated by rounding bales to contain and filter runoff.
Filter fabric under catchbasins frame and gates	• Protect all catchbasins / maintenance holes and pipe ends from sediment intrusion with geotextile as specified on drawings.
Mud mats	• Mud mats to be placed at all exit points of the site.

Table 15: Staging Information

Stage	Implementation of ESCP Devices
Pre Construction	All erosion and sediment control measures are to be in place before starting construction and remain in place until restoration is complete.
Construction	All erosion control and sediment control measures are to be inspected and maintained with site records kept.
Post Construction	Remove erosion and sediment control measures once area has stabilized; and complete final landscaping.

All topsoil stripping stockpiles will be located in strategic locations to allow for easy access for removal of excess topsoil while also ensuring that the stockpiles are protected with light duty silt fencing on the downward gradient sides of the stockpiles. All disturbed areas left inactive for 30 days or more shall be revegetated in order to minimize erosion.

Individual site servicing and grading plans for the development lands to the north will have to be prepared to ensure proper controls are in place to avoid unnecessary erosion or sediment release into the SWM facility. It will be the responsibility of the site owners to have the sediment and erosion control measures installed and maintained throughout the development period of the specific site.

8.3 Dewatering Requirements

The construction of the SWM facility will require some dewatering specifically with regards to the deeper excavated areas, or to address surface runoff. The contractor's proposed dewatering program will be reviewed by the Geotechnical Consultant to ensure that the dewatering will provide for adequate installation conditions and will not result in any detrimental effects to any local wells or aquifers. The contractor will determine if a Permit To Take Water (PTTW) will be required based upon the proposed dewatering program. The requirement to obtain a PTTW will be that of the contractor.

8.4 Seeding

All disturbed areas left inactive for 30 days or more shall be revegetated in accordance to OPSS 572 in order to minimize erosion. Where steeper grading is required, the use of a bonded fibre matrix (BFM) with hydroseed is recommended.

8.5 Contingency Plan

8.5.1 General Contingency Plan

The Contractor shall be responsible for the contingency plan and will prepare the following items:

- Create an emergency contact list for emergency situations.
- Workers shall be on call for emergency situations and for all aspects of the emergency from the design to construction of emergency sediment and erosion control measures.
    - Any associated health and safety issues are the responsibility of the Contractor.
- Heavy duty silt fence, straw bales and stakes, sandbags, appropriate sized rip-rap, clean gravel fill and robust silt fence shall be available for emergency installation.
- Gas powered pumps, hoses, filtration hose socks, and filter cloth shall be available for emergency dewatering events.
- Heavy equipment shall be on standby for emergency works.
- Fuel spill equipment – absorbent cloth shall be available for emergency spills of deleterious substances.
- A contact list for any further required equipment or materials shall be prepared and made available for emergency use.

8.5.2 Contingency Measures in Case of Failure

In cases where failure of Erosion and Sediment Control Devices (ESCDs) occurs the Contractor shall complete the following.

- Cease all construction work and focus on erosion and sediment control.
- Stabilize site of failure.
- Make report within a 2 hour period to MOE, Conservation Halton, DFO and the City of Mississauga if discharge of sediment to watercourse occurs.
- Establish a restoration plan if damage to fish habitat has occurred. Restoration plan to include:
    - Removal and disposal of sediment from flood plain
    - Restoration of flood plain
    - Restoration of any disturbed areas.

8.5.3 Severe Weather Contingency Plan

When severe weather is anticipated for the construction area, the Contractor shall complete the following.

- Ensure all erosion and sediment control devices are secure and in good working order.
- Backfill any open excavations.
- Remove all equipment and stockpiled materials outside of the 10 year flood boundary.
- Monitor measures during rainfall event.

8.6 Inspection Requirements

During the period when the contractor is onsite, and for the duration of the contract, the day to day maintenance of the sediment and erosion controls will be undertaken by the contractor. Once the contractor has left the site (i.e. work is complete), the day to day maintenance of the sediment and erosion controls will become the responsibility of the owner. The owner will be made aware of the need to maintain the sediment and erosion controls and be prepared to address any immediate needs caused by significant runoff events such as large rain storms or snow melt.

The owner's engineer will be required to ensure that the sediment and erosion controls are implemented during construction and are then subsequently decommissioned appropriately once the need for the sediment and erosion controls has lapsed.

8.7 Proposed Reporting System

A record of the sediment and erosion control implementation should be maintained from the initial stages during the municipal service stage to the day to day maintenance and monitoring of the sediment and erosion controls after the initial municipal servicing stage. Such record keeping would include a submission of a certificate certifying that the sediment and erosion controls were installed prior to construction and maintained during construction and then subsequent semi-annual submission of inspection reports detailing how the sediment and erosion controls have been maintained and replaced/repaired as necessary.

9. Operation and Maintenance

An operation and maintenance manual will be completed for the finished SWM facility. Calculations regarding clean out frequency for the SWM facility have been completed and are included in Appendix B. The calculations show that the main cell cleanout frequency will be approximately 9 years based on a maximum reduction in total suspended solids (TSS) removal efficiency of 5% from 70% to 65%.

To ensure that the bottom draw outlet continues to function as intended it has been elevated by 0.3 m from the base of the SWM facility. This will allow for the accumulation of sediment without blocking the outlet. The depth of sediment accumulation around the outlet will need to be monitored and maintenance of the pond completed as required.

10. Summary

The proposed stormwater management strategy will ensure that the objectives of the subwatershed study are achieved in the Phase 1 extension of Argentia Road and the Block 1 development of Meadowvale Business Park.

The proposed solution includes the following details:

- Rooftop storage will be implemented on buildings in the Block 1 area. The rooftop drainage will discharge directly to the Lisgar channel, bypassing the SWM facility.
- A SWM facility will be constructed, providing normal (Level 2) water quality control for the 2-year flow from Block 1, the external area north of Block 1, and Phase 1 of Argentia Road.
- Two diversion MH's are to be installed upstream of the SWM facility and will direct minor system flows larger than the 2-year flow directly to the channel. One diversion MH is for flows from Phase 1 of Argentia Road. The second diversion MH is for Block 1 and the lands north of Block 1.
- The quantity control target is met through the combined flow from the SWM facility, roof areas, controlled portions of the site (external area north of Block 1) and uncontrolled portions of the site (Block 1 and Phase 1 of Argentia Road) to no exceed 75 L/s/ha.
- The erosion control target is met with extended detention in the SWM facility exceeding 24 hours, in addition to the 5-year drawdown time for the roof areas exceeding 24 hours.

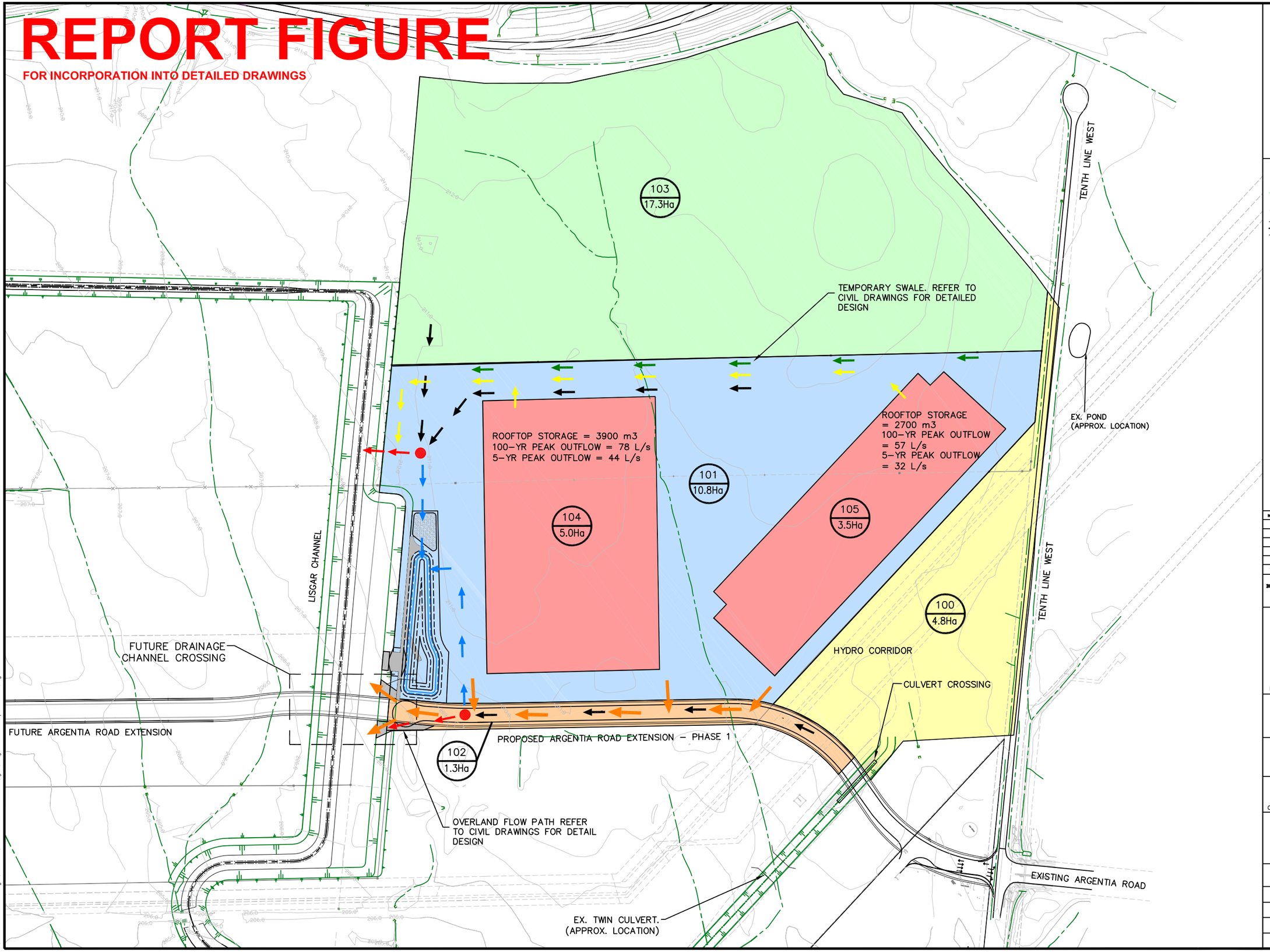
Table 5 provides a general summary of the SWM facility characteristics and parameters. Table 9 provides a summary of the required on-site storage volumes. A 600 mm circular concrete culvert will provide adequate flow capacity for the Argentia Road Phase 1 crossing.

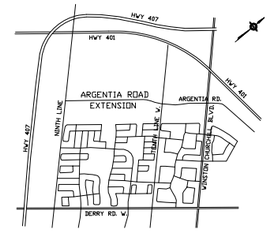
Appendix A

Report Figures

REPORT FIGURE

FOR INCORPORATION INTO DETAILED DRAWINGS





KEY PLAN
NOT TO SCALE

LEGEND

- EXISTING DITCH
- EXISTING CONTOUR
- PROPOSED DRAINAGE CHANNEL
- 100 / 37.2Ha — DRAINAGE AREA ID No. / APPROX. DRAINAGE AREA IN HECTARES
- MAJOR (> 10 YEAR) FLOW ARROW
- TEMPORARY SWALE FLOW ARROW
- STORM SEWER (10 YEAR) FLOW ARROW
- ROOFTOP SEWER FLOW ARROW TO CHANNEL
- STORM SEWER (2 YEAR) FLOW ARROW TO POND FOR QUALITY TREATMENT
- STORM SEWER POND BYPASS (> 2 YEAR) FLOW ARROW TO CHANNEL
- STORM SEWER POND BYPASS FLOW SPLIT REFER TO CIVIL DRAWINGS FOR DETAILS

No.	REVISIONS	Date	By	Approved
1	CATCHMENT PLAN	MAR/2011		

City of Mississauga Bench Mark
BM No.638 – Located on the West face at the South corner of the West end of a concrete box culvert across Tenth Line, 182.68m South of the Macdonald Cartier Freeway (Highway 401).
Elevation = 209.356m

Designed By:

P. Eng.
Approved By

AECOM

MISSISSAUGA
Transportation and Works

Region of Peel
Working for you

CITY FILE: T-XXXXX REGION No.T-XXXXX

SWM CATCHMENT PLAN

Scale:	NTS	Project No.	60142982
Drawn By:	D. GOUGH	Drawing No.	1
Designed By:	D. GOUGH		
Checked By:	C. MOON		
Date:	JAN 2012		

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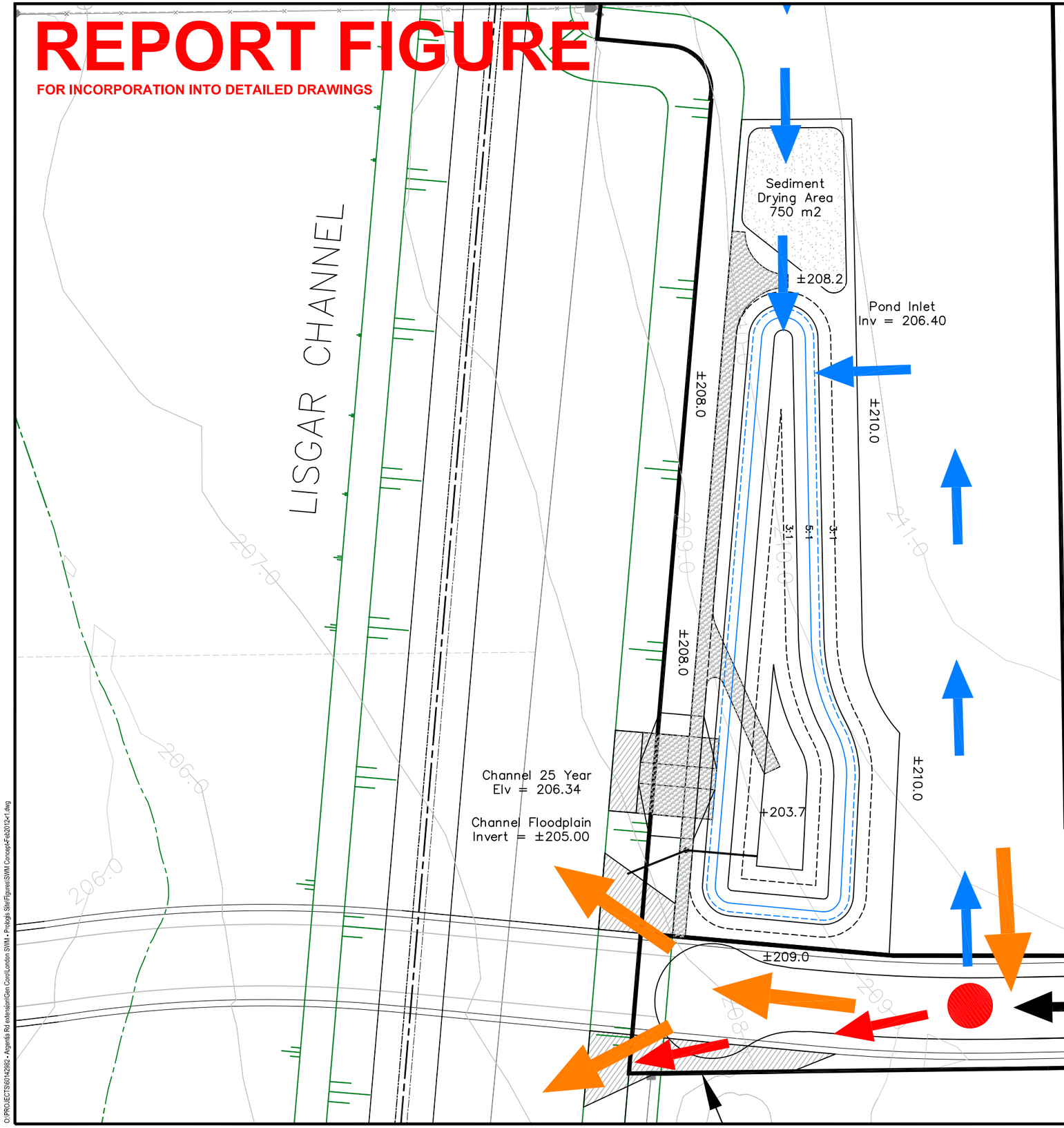
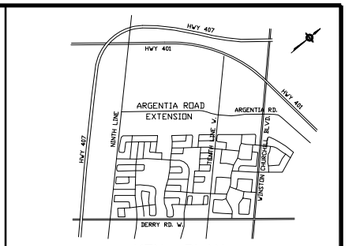
REPORT FIGURE

FOR INCORPORATION INTO DETAILED DRAWINGS





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No.	REVISIONS	Date	By	Approved
1	CATCHMENT PLAN	MM/2011		

City of Mississauga Bench Mark
BM No.638 – Located on the West face at the South corner of the West end of a concrete box culvert across Tenth Line, 182.88m South of the Macdonald Cartier Freeway (Highway 401).
Elevation = 209.356m

Designed By:

Approved By P. Eng.

AECOM

MISSISSAUGA Transportation and Works

Region of Peel Working for you

CITY FILE: T-XXXXX REGION No.T-XXXXX

SWM FACILITY

Scale:	NTS	Project No.	60142982
Drawn By:	D. GOUGH	Drawing No.	2
Designed By:	D. GOUGH		
Checked By:	C. MOON		
Date:	JAN 2012		

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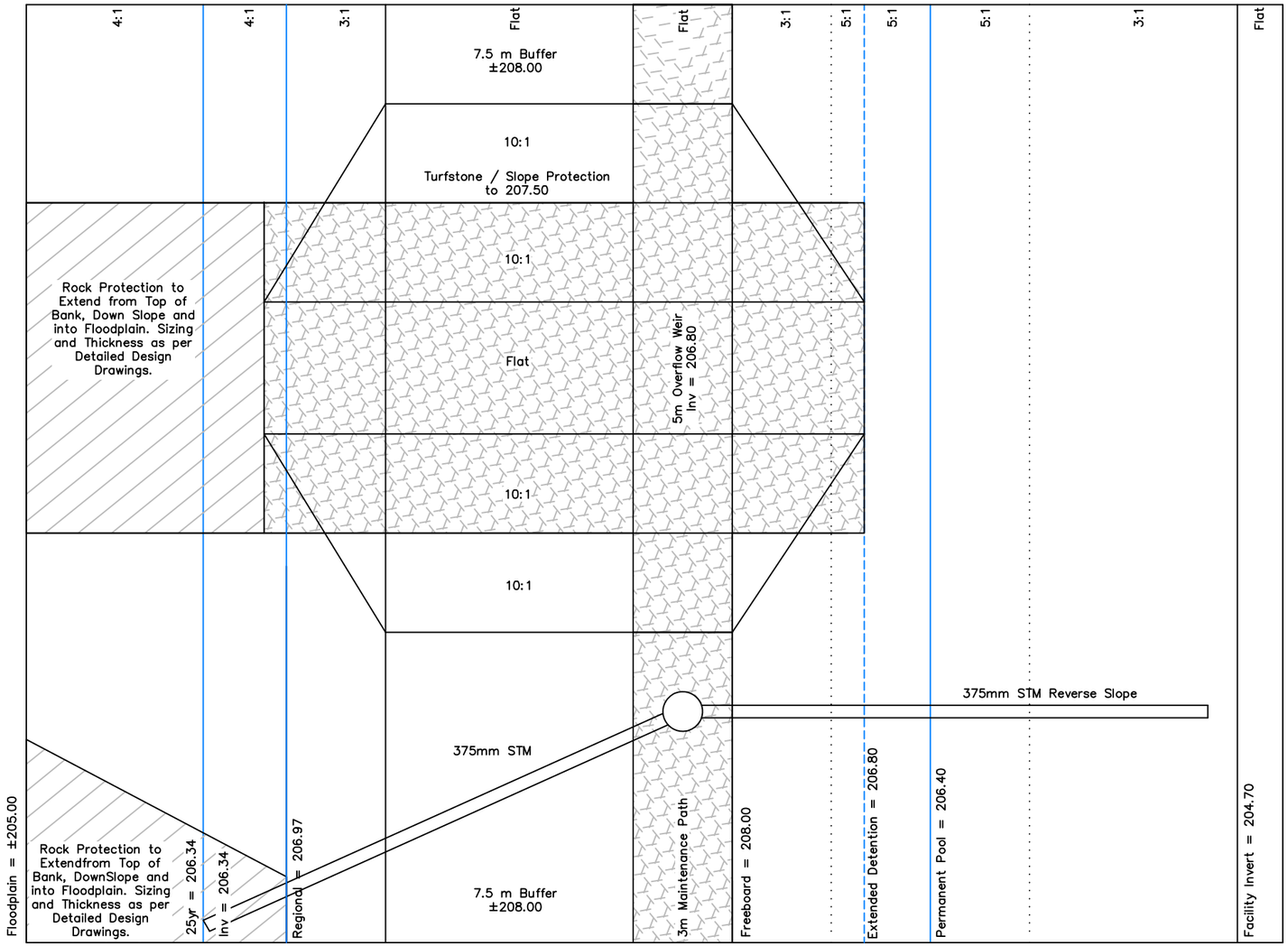
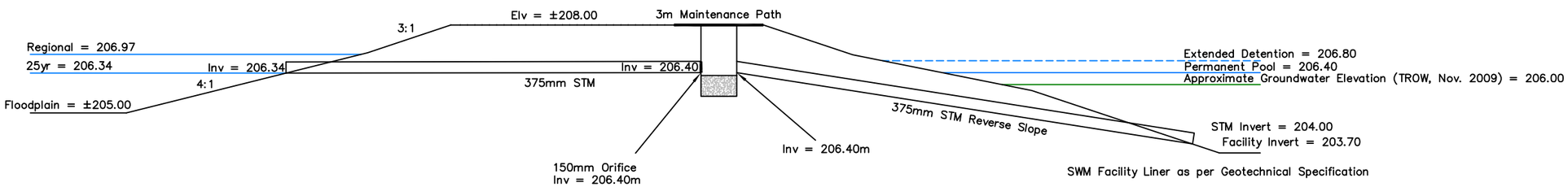
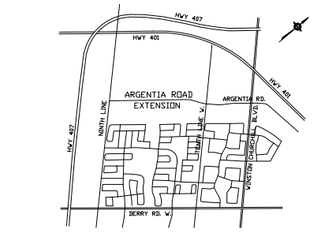
REPORT FIGURE (N.T.S.)

FOR INCORPORATION INTO DETAILED DRAWINGS







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No.	REVISIONS	Date	By	Approved
1	CATCHMENT PLAN	MM/2011		

City of Mississauga Bench Mark
BM No.638 – Located on the West face at the South corner of the West end of a concrete box culvert across Tenth Line, 182.58m South of the Macdonald Cartier Freeway (Highway 401).
Elevation = 209.356m

Designed By:

Approved By P. Eng.

AECOM

MISSISSAUGA Transportation and Works

Region of Peel

CITY FILE: T-XXXXX Working for you REGION No.T-XXXXX

OUTLET DETAIL

Scale: NTS	Project No. 60142982
Drawn By: D. GOUGH	Drawing No. 3
Designed By: D. GOUGH	
Checked By: C. MOON	
Date: JAN 2012	

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Appendix B

Design Calculations

Land Use										
Catchment Number	Total Area	Undeveloped	SWM	Road ROW	High Commercial	Parking	Roof	Net % XImp	Net % TImp	Drainage length
	(ha)	(ha)	(ha)	(ha)	(ha)	(ha)	(ha)			(m)
TIMP		0.00	0.80	0.85	0.90	0.90	0.99			
XIMP		0.00	0.80	0.85	0.90	0.90	0.99			
100	4.8	4.8						-	-	-
101	10.8		0.8			10.0		0.89	0.89	260
102	1.3			1.3				0.85	0.85	90
103	17.3				17.3			0.90	0.90	340
104	5.0						5.0	0.99	0.99	180
105	3.5						3.5	0.99	0.99	150
Totals	42.7	4.8	0.8	1.3	17.3	10.0	8.5			

Catchment to Pond			
Catchment Number	**Area** (ha)	**TIMP** (%)	**Area x TIMP**
101	10.8	0.90	9.72
102	1.3	0.85	1.11
103	17.3	0.90	15.57
Total	29.4		0.90

Parameters						
Catchment Number	Length	US Elevation	DS Elevation	Slope	CN	C
	(m)	(m)	(m)	(%)		100 yr
100	600			0.50%	70	0.45

SCS Method					
Catchment Number	Length	Slope	CN	Tc	Tp
	(m)	(%)		(min)	(hr)
100	600	0.50%	70	100	1.0

$$T_c = \frac{2.58L^{0.8}\left[(1000/CN)-9\right]^{0.7}}{1900S^{0.5}} \times 100$$

Airport Method					
Catchment Number	Length	Slope	C	Tc	Tp
	(m)	(m/m)	100 Yr	(min)	(hr)
100	600	0.50%	0.45	70	0.7

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

Uplands Method								
Catchment Number	Overland Flow			Channel Flow				
	Length	Slope	Velocity[1]	Length	Slope	Velocity[2]	Tc	Tp
	(m)	(%)	(m/s)	(m)	(%)	(m/s)	(min)	(hr)
100	600	0.50%	0.35				30	0.3

Catchment Number	Time of Concentration (min)				Time to Peak (hr)			
	SCS	Airport	UP-OL	Mean	SCS	Airport	UP-OL	Mean
100	100	70	30	67	1.0	0.7	0.3	0.7

Developed Area												
Catchment Number	Area	XIMP	TIMP	CN	Pervious				Impervious			
					IA	Slope	Length	Manning's n	IA	Slope	Length	Manning's n
	(ha)	(%)	(%)		(mm)	(%)	(m)		(mm)	(%)	(m)	
101	10.8	0.89	0.89	70	5	2.0	50	0.250	2	0.5	260	0.013
102	1.3	0.85	0.85	70	5	2.0	50	0.250	2	0.5	90	0.013
103	17.3	0.90	0.90	70	5	2.0	50	0.250	2	0.5	340	0.013
104	5.0	0.99	0.99	70	5	2.0	50	0.250	2	0.5	180	0.013
105	3.5	0.99	0.99	70	5	2.0	50	0.250	2	0.5	150	0.013

Un-Developed Area				
Catchment Number	Area	CN	IA	TP
	(ha)		(mm)	(hr)
100	4.8	70	8	0.7

SWM Facility Quality Requirement	
Permanent Pool	
Developed Area (ha) =	29.4
Developed Impervious Level (%) =	90%
Quality Protection :	Level 2
Water Quality Requirement (m^3/ha) =	154
Water Quality Volume (m^3) =	4,500
Permanent Pool Requirement (m^3/ha) =	114
Permanent Pool Volume (m^3) =	3,360
Extended Detention	
Developed Area (ha) =	29.4
Extended Detention Requirement (m^3/ha) =	40
Extended Detention Volume (m^3) =	1,180
5 Year Quantity Outlet For Total Development*	
Water Quantity Requirement (l/s/ha) =	75
Total Developed Area (ha) =	37.9
Water Quantity Requirement (l/s) =	2,843
Total Water Quantity Requirement (m^3/s) =	2.84
Granular Trench Roof Runoff Volume	
Roof Area (ha) =	8.5
Runoff Depth (mm) =	10
Runoff Volume (m^3) =	850
Granular Void Space (%) =	40
Granular Volume (m^3) =	2,125

Storm	**Total Site Discharge**	**SWM Pond**	
		Flow Rate Out	**Volume**
	(m^3/s)	(m^3/s)	(m^3)
25 mm (4 hour)	1.02	0.99	1,977
2 yr (24 hour)	1.85	1.80	2,401
5 yr (24 hour)	2.61	2.24	2,616
10 yr (24 hour)	5.74	2.43	2,692
25 yr (24 hour)	7.50	2.50	2,721
50 yr (24 hour)	9.25	2.55	2,746
100 yr (24 hour)	10.50	2.60	2,760
Hazel (60 hour)	5.50	2.67	2,790

**Includes North and South Commercial Site, Roof Tops and Treated Portion of Argentia Road*

SWM Facility Design												
Component	Elevation	Overall Pond Depth	Area	Stage Volume	Cumulative Storage Volume	Orifice 1 Plate Flow	Overflow Weir	Total Flow	Cumulative Storage volume	Drawdown Time		
										Stage	Cumulative	Cumulative
	(m)	(m)	(m^2)	(m^3)	(m^3)	(m^3/s)	(m^3/s)	(m^3/s)	(ha.m)	(min)	(min)	(hr)
Perm Pool	203.70	0.00	353	0	0							
	204.80	1.10	922	701	701							
	205.80	2.10	1,758	1,340	2,041							
	206.40	2.70	2,665	1,327	3,368							
Extended Detention	206.40	2.70	2,665	0	0	0.00		0.000	0.000	0	0	0.0
	206.80	3.10	3,301	1,193	1,193	0.03		0.028	0.119	1440	1,440	24.0
Freeboard	206.80	3.10	3,301	0	1,193	0.03	0.00	0.028	0.119	0	1,440	24.0
	206.90	3.20	3,464	338	1,531	0.03	0.28	0.311	0.153	33	1,473	24.6
	207.00	3.30	3,629	355	1,886	0.04	0.79	0.827	0.189	10	1,484	24.7
	207.10	3.40	3,728	368	2,254	0.04	1.45	1.492	0.225	5	1,489	24.8
	207.20	3.50	3,828	378	2,632	0.04	2.24	2.280	0.263	3	1,492	24.9
	207.45	3.75	4,081	989	3,620	0.05	4.64	4.686	0.362	5	1,497	24.9
	207.70	4.00	4,337	1,052	4,673	0.05	7.56	7.610	0.467	3	1,500	25.0
	208.00	4.30	4,649	1,348	6,021	0.06	11.63	11.693	0.602	2	1,502	25.0

	Required	Provided	Orifice 1 Size	Overflow Weir
Permanent Pool Volume (m^3)	3,360	3,368	Dia (m) = 0.149	Crest (m) = 5
Extended Detention Volume (m^3)	1,180	1,193	Area (m^2) = 0.02	Invert (m) = 206.80
			Invert (m) = 206.40	

Main Cell (Forebay) Sizing

1. Check Main Cell (Forebay) Settling Length

Qp	=	0.99	m^3/s	Peak release rate from forebay (25mm storm)
Vs	=	0.0003	m/s	Particle settling velocity
Length	=	125	m	Forebay flow path length
Avg. Width	=	29	m	Average width

$$\text{Distance} = \left| \frac{r}{Vs} * Qp \right|^{0.5} \qquad r = \frac{\text{Length (flow path)}}{\text{Average Width}}$$

$$\text{Distance} = \left| \frac{4.31}{0.0003} * 0.987 \right|^{0.5} \qquad r = \frac{125}{29}$$

Distance = 119.1 m r = 4.31

Actual Length = 125.0 m

Since actual length is larger than forebay settling length, length is ok.

2. Check Dispersion Settling Length

Vf	=	0.50	m/s	Desired velocity in the forebay
Q	=	2.31	m^3/s	Minor storm system inlet flowrate (2 year)
d	=	2.70	m	Depth of permanent pool in forebay

$$\text{Distance} = \frac{8}{d} * \frac{Q}{Vf}$$

$$\text{Distance} = \frac{8}{2.70} * \frac{2.31}{0.50}$$

Distance = 13.7 m

Actual Length = 125.0 m

Since actual length is larger than dispersion settling length, length is ok.

3. Check Main Cell (Forebay) Velocity

A	=	50.0	m^2	Average cross sectional area
Q	=	1.63	m^3/s	Inlet flow rate (25mm storm)

$$\text{Velocity} = \frac{Q}{A}$$

$$\text{Velocity} = \frac{1.63}{50.0}$$

Velocity = 0.033 m/s

Since the velocity is equal to or less than 0.15m/s, forebay velocity is ok.

4. Check Minimum Main Cell (Forebay) Bottom Width

Actual Width = 16.0 m Actual Bottom Width

$$\text{Width} = \frac{\text{Distance}}{8} = \frac{125}{8}$$

Width = 15.6 m

Actual Width = 16.0 m

Since the actual bottom width is more than the minimum width required, width is ok.

RIP RAP SIZING

525-ϕ	@	0.38 %	V =	1.25 m/sec.
375-ϕ	@	0.40 %	V =	1.01 m/sec.
450 ϕ	@	0.18 %	V =	0.79 m/sec.
1200 ϕ	@	0.24 %	V =	1.71 m/sec.
1350 ϕ	@	0.30 %	V =	2.06 m/sec.

Stone ϕ

$d_s = 0.25 \times D_o \times F_o$

d_s = rip rap ϕ (m)

D_o = pipe ϕ (m)

F_o = Froude number $= V/(g \times d_p)^{0.5}$ $\quad g = 9.8\ m/sec^2$

d_p = depth of flow in pipe (m)

V = velocity of flow in pipe (m/sec.)

$\therefore d_s = 0.25 \times 1.35 \times 0.566 = 0.191$ m $\quad F_o = \dfrac{V = 2.06\ m/sec.}{(9.8\ m/sec^2 \times 1.35)^{0.5}} = 0.56$

$\sqrt{13.23} = 3.637$

$0.191 < 0.30$ used

2 layers of 0.30 m Rip Rap used

Height of rip rap is 0.3 m above pipe obvert

- Also - in accordance with Table 5.1 Guide to Bridge Hydraulics, 'Class 1' rip rap is suitable for velocities < 3 m/s.
'Class 1' rip rap = nominal 300 mm

Length of outfall protection

$$La = Do\left(8 + \left[17 \times \text{Log } Fo\right]^{(0.566)}\right)$$

$$= 1.35\left(8 + \left[17 \times -0.247\right]\right)$$

$$= 1.35\left(8 + (-4.20)\right)$$

$$= 1.35\left(3.8\right)$$

$$= 5.13 \text{ m} \quad \text{use } 10.0 \text{ m}$$

Main Cell (Forebay) Cleanout Frequency

It is difficult to estimate the frequency of cleaning due to other influences, such as the efficiency of street sweepings, the intensity of building activities, effectiveness of at-source sediment and erosion control measures, etc. Table 1 below provides a theoretical approximation as to when the pond's ability to settle suspended solids is reduced by 5% as outlined in section 6.4.1 of the MOE SWM Planning & Design Manual. The accumulated sediments should theoretically be removed every 9 years based on a maximum reduction in TSS removal efficiency of 5% from 70% down to 65%. This will be subject to refinement as a result of on-going operational monitoring of the established benchmarks.

Table 1

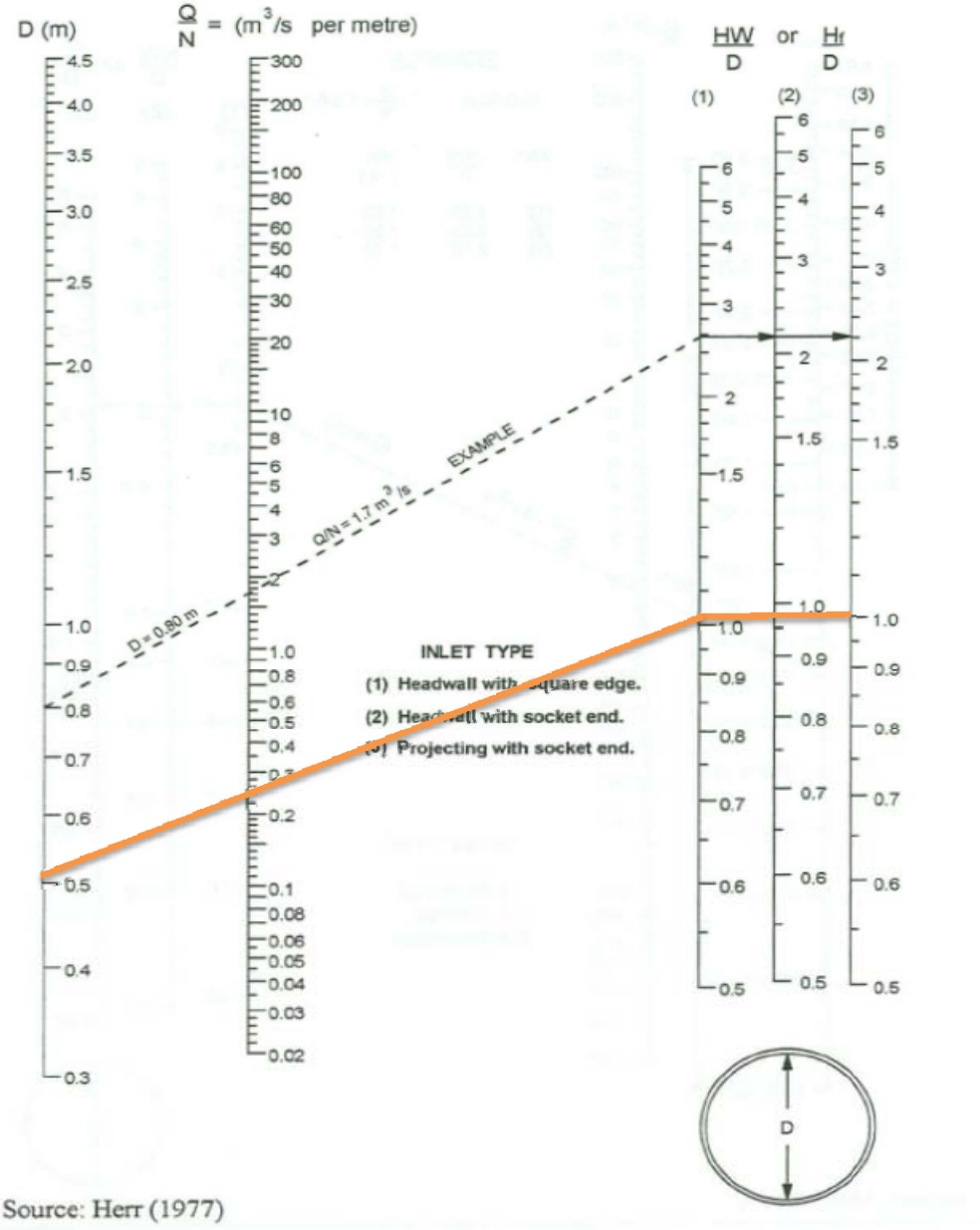
Year	%TSS Removal	Storage Volume	Erosion	Quality	Minor Area	Quality Volume	% Imp	Annual Loading*	Annual Loading	Retained Loading	Reduced Quality Volume
		(m^3/ha)	(m^3/ha)	(m^3/ha)	(ha)	(m^3)		(m^3/ha)	(m^3)	(m^3)	(m^3)
1	**70.0%**	154	40	114	29.4	3363	90	4.10	120	84.3	3279
2	69.5%	151	40	111	29.4	3269	90	4.10	120	83.7	3186
3	68.5%	146	40	106	29.4	3105	90	4.10	120	82.5	3022
4	67.5%	140	40	100	29.4	2940	90	4.10	120	81.3	2859
5	67.0%	137	40	97	29.4	2858	90	4.10	120	80.7	2777
6	66.5%	134	40	94	29.4	2775	90	4.10	120	80.1	2695
7	66.0%	132	40	92	29.4	2693	90	4.10	120	79.5	2614
8	65.5%	129	40	89	29.4	2611	90	4.10	120	78.9	2532
9	**65.0%**	126	40	86	29.4	2528	90	4.10	120	78.3	2450
10	64.5%	123	40	83	29.4	2446	90	4.10	120	77.7	2368
11	64.0%	120	40	80	29.4	2364	90	4.10	120	77.1	2287

*Table 6.3 - MOE SWM Planning & Design Manual

Storm Event	Flow (m^3/s)
50 Year (24 Hour)	0.23

Suggested Size	600 mm

Design Chart 2.31: Inlet Control: Circular Pipes



Source: Herr (1977)

Drainage Channel HEC-RAS Results - SERNAS ASSOCIATES - Mississauga Fire and Emergency Servies Training Center (July 2009)

HEC-RAS Plan: Prop 20090708 River: Channel Reach: Main (Continued)

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)	
Main	1500	2 yr	0.66	204.60	204.95	204.79	204.97	0.006025	0.74	0.89	2.75	0.41
Main	1500	5 yr	2.03	204.60	205.70	205.08	205.70	0.000134	0.24	9.44	55.80	0.07
Main	1500	10 yr	4.77	204.60	206.21	205.20	206.22	0.000141	0.32	15.58	59.89	0.08
Main	1500	25 yr	6.06	204.60	206.32	205.25	206.33	0.000174	0.37	16.88	60.76	0.09
Main	1500	50 yr	8.34	204.60	206.38	205.31	206.40	0.000284	0.49	17.66	61.28	0.12
Main	1500	100 yr	10.75	204.60	206.45	205.38	206.46	0.000413	0.60	18.39	61.76	0.14
Main	1500	Regional	24.14	204.60	206.67	205.67	206.74	0.001318	1.17	21.10	63.57	0.26
Main	1520		Culvert									
Main	1540	2 yr	0.66	204.72	204.92	204.92	205.01	0.039461	1.36	0.49	2.59	1.00
Main	1540	5 yr	2.03	204.72	205.70	205.20	205.71	0.000230	0.29	8.00	54.89	0.10
Main	1540	10 yr	4.77	204.72	206.22	205.32	206.23	0.000190	0.36	14.23	59.08	0.09
Main	1540	25 yr	6.06	204.72	206.34	205.37	206.35	0.000226	0.41	15.61	60.01	0.10
Main	1540	50 yr	8.34	204.72	206.42	205.43	206.43	0.000351	0.53	16.58	60.66	0.13
Main	1540	100 yr	10.75	204.72	206.50	205.49	206.52	0.000481	0.63	17.56	61.32	0.15
Main	1540	Regional	24.14	204.72	206.97	205.80	207.03	0.000957	1.05	23.22	65.13	0.22

Appendix C

SWMHYMO

Input Files

```
2     Metric units
*#*************************************************************************
*#  Project Name: [PROLOGIS PARK MEADOWVALE]    Project Number: [60142982]
*#  Date        : 01-03-2012
*#  Modeller    : [DPG]
*#  Revision    : 02-15-2012
*#  Revised by  : [dpg]
*#  Company     : Earth Tech Canada
*#  License #   :  2649264
*#*************************************************************************
*%-----------------|-------------------------------------------------------|
* Phase 1
*%-----------------|-------------------------------------------------------|
START               TZERO=[0.0],  METOUT=[2],  NSTORM=[0],  NRUN=[0]
*%                   [  ] <--storm filename
*%-----------------|-------------------------------------------------------|
*#
*# 5-year design storm, City of Mississauga standards
*#
*%-----------------|-------------------------------------------------------|
CHICAGO STORM       IUNITS=[2],  TD=[24](hrs), TPRAT=[0.4],  CSDT=[10](min),
                    ICASEcs=[1],
                      A=[820],  B=[4.6], and C=[0.78],
*%-----------------|-------------------------------------------------------|
* Future North Site Development
*%-----------------|-------------------------------------------------------|
CALIB STANDHYD      ID=1 NHYD=103 DT=2.0 AREA=17.3
                    XIMP=0.90 TIMP=0.90 DWF=0.00 LOSS=2
                    CN=70.0
                    DPSP=5.0 mm SLPP=2.0 LGP=50   MNP=0.250 SCP=0
                    DPSI=2.0 mm SLPI=0.5 LGI=340  MNP=0.013 SCI=0
                    -1
*%-----------------|-------------------------------------------------------|
ROUTE RESERVOIR     IDout=[2],   NHYD=["NORTH"],  IDin=[1],
                    RDT=[2.0](min),
                          TABLE of ( OUTFLOW-STORAGE ) values
                                     (cms) - (ha-m)
                                   [   0.0 ,  0.00 ]
                                   [   1.3 ,  0.30 ]
                                   [   -1  ,   -1  ]  (max twenty pts)
                                IDovf=[3], NHYDovf=["OVRFLW"]
*%-----------------|-------------------------------------------------------|
ADD HYD             IDsum=[4], NHYD=["N1"], IDs to add=[2+3]
*%-----------------|-------------------------------------------------------|
*Split out 10 year flow
*%-----------------|-------------------------------------------------------|
COMPUTE DUALHYD     IDin=[4], CINLET=[3.649](cms), NINLET=[1],
                    MAJID=[5], MajNHYD=["103MJ"],
                    MINID=[6], MinNHYD=["103MN"],
                    TMJSTO=[0](cu-m)
*%-----------------|-------------------------------------------------------|
*Split out 2 year flow
*%-----------------|-------------------------------------------------------|
COMPUTE DUALHYD     IDin=[6], CINLET=[0.928](cms), NINLET=[1],
                    MAJID=[7], MajNHYD=["103CH"],
                    MINID=[8], MinNHYD=["103PD"],
                    TMJSTO=[0](cu-m)
*%-----------------|-------------------------------------------------------|
* Prologis Park Development
*%-----------------|-------------------------------------------------------|
CALIB STANDHYD      ID=9 NHYD=101 DT=2.0 AREA=10.8
                    XIMP=0.89 TIMP=0.89 DWF=0.00 LOSS=2
                    CN=70.0
                    DPSP=5.0 mm SLPP=2.0 LGP=50   MNP=0.250 SCP=0
                    DPSI=2.0 mm SLPI=0.5 LGI=260  MNP=0.013 SCI=0
                    -1
*%-----------------|-------------------------------------------------------|
*Route Reservoir placed as a holder if needed, otherwise leave empty
*%-----------------|-------------------------------------------------------|
ROUTE RESERVOIR     IDout=[10],   NHYD=["SOUTH"],  IDin=[9],
                    RDT=[2.0](min),
                          TABLE of ( OUTFLOW-STORAGE ) values
                                     (cms) - (ha-m)
                                   [   0.0 ,  0.0 ]
                                   [   0.0 ,  0.0 ]
                                   [   -1  ,   -1  ]  (max twenty pts)
                                IDovf=[1], NHYDovf=["OVRFLW"]
*%-----------------|-------------------------------------------------------|
ADD HYD             IDsum=[2], NHYD=["S1"], IDs to add=[10+1]
*%-----------------|-------------------------------------------------------|
*Split out 10 year flow
*%-----------------|-------------------------------------------------------|
COMPUTE DUALHYD     IDin=[2], CINLET=[2.762](cms), NINLET=[1],
                    MAJID=[3], MajNHYD=["101MJ"],
                    MINID=[4], MinNHYD=["101MN"],
                    TMJSTO=[0](cu-m)
*%-----------------|-------------------------------------------------------|
*Split out 2 year flow
*%-----------------|-------------------------------------------------------|
COMPUTE DUALHYD     IDin=[4], CINLET=[1.557](cms), NINLET=[1],
                    MAJID=[6], MajNHYD=["101CH"],
                    MINID=[9], MinNHYD=["101PD"],
                    TMJSTO=[0](cu-m)
*%-----------------|-------------------------------------------------------|
ADD HYD             IDsum=[10], NHYD=["MJ1"], IDs to add=[5+3]
*%-----------------|-------------------------------------------------------|
ADD HYD             IDsum=[1], NHYD=["CH1"], IDs to add=[7+6]
*%-----------------|-------------------------------------------------------|
ADD HYD             IDsum=[2], NHYD=["PD1"], IDs to add=[8+9]
*%-----------------|-------------------------------------------------------|
* East Roof
*%-----------------|-------------------------------------------------------|
CALIB STANDHYD      ID=3 NHYD=105 DT=2.0 AREA=3.5
                    XIMP=0.99 TIMP=0.99 DWF=0.00 LOSS=2
                    CN=99.0
                    DPSP=5.0 mm SLPP=2.0 LGP=50   MNP=0.250 SCP=0
                    DPSI=2.0 mm SLPI=0.5 LGI=150  MNP=0.013 SCI=0
                    -1
*%-----------------|-------------------------------------------------------|
ROUTE RESERVOIR     IDout=[4],   NHYD=["EASTRF"],  IDin=[3],
                    RDT=[2.0](min),
                          TABLE of ( OUTFLOW-STORAGE ) values
                                     (cms) - (ha-m)
                                   [   0.0 ,  0.0  ]
                                   [ 0.060 ,  0.28 ]
                                   [   -1  ,   -1  ]  (max twenty pts)
                                IDovf=[5], NHYDovf=["OVRFLW"]
*%-----------------|-------------------------------------------------------|
ADD HYD             IDsum=[6], NHYD=["E1"], IDs to add=[4+5]
*%-----------------|-------------------------------------------------------|
* West Roof
*%-----------------|-------------------------------------------------------|
CALIB STANDHYD      ID=7 NHYD=104 DT=2.0 AREA=5.0
                    XIMP=0.99 TIMP=0.99 DWF=0.00 LOSS=2
                    CN=99.0
                    DPSP=5.0 mm SLPP=2.0 LGP=50   MNP=0.250 SCP=0
                    DPSI=2.0 mm SLPI=0.5 LGI=180  MNP=0.013 SCI=0
                    -1
*%-----------------|-------------------------------------------------------|
ROUTE RESERVOIR     IDout=[8],   NHYD=["WESTRF"],  IDin=[7],
                    RDT=[2.0](min),
                          TABLE of ( OUTFLOW-STORAGE ) values
                                     (cms) - (ha-m)
                                   [   0.0 ,  0.0 ]
                                   [ 0.080 ,  0.39]
                                   [   -1  ,   -1  ]  (max twenty pts)
                                IDovf=[9], NHYDovf=["OVRFLW"]
*%-----------------|-------------------------------------------------------|
ADD HYD             IDsum=[3], NHYD=["W1"], IDs to add=[8+9]
*%-----------------|-------------------------------------------------------|
ADD HYD             IDsum=[4], NHYD=["EWROOF"], IDs to add=[6+3]
*%-----------------|-------------------------------------------------------|
* Argentia Road Extension
*%-----------------|-------------------------------------------------------|
CALIB STANDHYD      ID=5 NHYD=102 DT=2.0 AREA=1.3
                    XIMP=0.85 TIMP=0.85 DWF=0.00 LOSS=2
                    CN=70.0
                    DPSP=5.0 mm SLPP=2.0 LGP=50   MNP=0.250 SCP=0
                    DPSI=2.0 mm SLPI=0.5 LGI=90   MNP=0.013 SCI=0
                    -1
*%-----------------|-------------------------------------------------------|
*Split out 10 year flow
*%-----------------|-------------------------------------------------------|
COMPUTE DUALHYD     IDin=[5], CINLET=[0.383](cms), NINLET=[1],
                    MAJID=[6], MajNHYD=["102MJ"],
                    MINID=[7], MinNHYD=["102MN"],
                    TMJSTO=[0](cu-m)
*%-----------------|-------------------------------------------------------|
*Split out 2 year flow
*%-----------------|-------------------------------------------------------|
COMPUTE DUALHYD     IDin=[7], CINLET=[0.220](cms), NINLET=[1],
                    MAJID=[8], MajNHYD=["102CH"],
                    MINID=[9], MinNHYD=["102PD"],
                    TMJSTO=[0](cu-m)
*%-----------------|-------------------------------------------------------|
ADD HYD             IDsum=[3], NHYD=["MJ2"], IDs to add=[10+6]
*%-----------------|-------------------------------------------------------|
ADD HYD             IDsum=[5], NHYD=["CH2"], IDs to add=[1+4+8]
*%-----------------|-------------------------------------------------------|
ADD HYD             IDsum=[6], NHYD=["PD2"], IDs to add=[2+9]
*%-----------------|-------------------------------------------------------|
ROUTE RESERVOIR     IDout=[7],   NHYD=["POND"],  IDin=[6],
                    RDT=[2.0](min),
                          TABLE of ( OUTFLOW-STORAGE ) values
                                     (cms) - (ha-m)
                                   [   0.000,  0.000 ]
                                   [   0.028,  0.119 ]
                                   [   0.311,  0.153 ]
                                   [   0.827,  0.189 ]
                                   [   1.492,  0.225 ]
                                   [   2.280,  0.263 ]
                                   [   4.686,  0.362 ]
                                   [   7.610,  0.467 ]
                                   [  11.693,  0.602 ]
                                   [   -1   ,    -1  ]  (max twenty pts)
                                IDovf= [8], NHYDovf=["OVRFLW"]
*%-----------------|-------------------------------------------------------|
ADD HYD             IDsum=[9], NHYD=["PNDOUT"], IDs to add=[7+8]
*%-----------------|-------------------------------------------------------|
* 5YROUT must be 2.84 m3/s or less for 5 year event based on 75 l/s/ha for
* 37.9 total site hectares.
*%-----------------|-------------------------------------------------------|
ADD HYD             IDsum=[10], NHYD=["5YROUT"], IDs to add=[9+5]
*%-----------------|-------------------------------------------------------|
* TOTAL is all flows from development site and argentia road
*%-----------------|-------------------------------------------------------|
ADD HYD             IDsum=[1], NHYD=["TOTAL"], IDs to add=[3+10]
*%-----------------|-------------------------------------------------------|
CALIB NASHYD        ID=2 NHYD=["100"], DT=[2.0]min, AREA=[4.8](ha),
                    DWF=[0](cms),  CN/C=[70], IA=[8](mm),
                    N=[3], TP=[0.7]hrs,
                    RAINFALL=[ ,  ,  ,  , ](mm/hr),  END=-1
*%-----------------|-------------------------------------------------------|
FINISH
```

Output Files

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

 SSSSS  W   W  M   M  H   H  Y   Y  M   M   OOO        999    999  =========
 S      W W W  MM MM  H   H   Y Y   MM MM  O   O      9   9  9   9
 SSSSS  W W W  M M M  HHHHH    Y    M M M  O   O  ##  9   9  9   9  Ver. 4.02
     S  W W W  M   M  H   H    Y    M   M  O   O       9999   9999 July 1999
 SSSSS   W W   M   M  H   H    Y    M   M   OOO           9      9 =========
                                                       9   9  9   9 # 2649264
      StormWater Management HYdrologic Model            999    999  =========

 ****************************************************************************
 *************************** SWMHYMO-99 Ver/4.02 ****************************
 *******  A single event and continuous hydrologic simulation model  *******
 *******     based on the principles of HYMO and its successors      *******
 *******                OTTHYMO-83 and OTTHYMO-89.                   *******
 ****************************************************************************
 ******* Distributed by:  J.F. Sabourin and Associates Inc.          *******
 *******                  Ottawa,  Ontario: (613) 727-5199          *******
 *******                  Gatineau, Quebec: (819) 243-6858          *******
 *******                  E-Mail: swmhymo@jfsa.com                  *******
 ****************************************************************************

 ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
 +++++++ Licensed user: Earth Tech Canada                           +++++++
 +++++++               London              SERIAL#:2649264         +++++++
 ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

 ****************************************************************************
 *******           ++++++ PROGRAM ARRAY DIMENSIONS ++++++           *******
 *******           Maximum value for ID numbers  :     10          *******
 *******           Max. number of rainfall points:  15000          *******
 *******           Max. number of flow points    :  15000          *******
 ****************************************************************************


 ********************   D E T A I L E D   O U T P U T   ********************
 ****************************************************************************
 *       DATE: 2012-05-16       TIME: 14:53:59       RUN COUNTER: 002777     *
 ****************************************************************************
 * Input   filename: O:\PROJECTS\601429~1\GENCOR~1\LONDON~2\SWMHYMO\25mmHz.* 
 * Output  filename: O:\PROJECTS\601429~1\GENCOR~1\LONDON~2\SWMHYMO\25mmHz.* 
 * Summary filename: O:\PROJECTS\601429~1\GENCOR~1\LONDON~2\SWMHYMO\25mmHz.* 
 * User comments:                                                           * 
 * 1:_______________________________________________________________________* 
 * 2:_______________________________________________________________________* 
 * 3:_______________________________________________________________________* 
 ****************************************************************************


--------------------------------------------------------------------------------
001:0001--------------------------------------------------------------------------
*#**************************************************************************
*#  Project Name: [PROLOGIS PARK MEADOWVALE]    Project Number: [60142982]
*#  Date        : 01-03-2012
*#  Modeller    : [DPG]
*#  Revision    : 02-15-2012
*#  Revised by  : [dpg]
*#  Company     : Earth Tech Canada
*#  License #   :  2649264
*#**************************************************************************
* Phase 1
--------------------
| START              |  Project  dir.: O:\PROJECTS\601429~1\GENCOR~1\LONDON~2\SWMHYMO\
--------------------  Rainfall dir.: O:\PROJECTS\601429~1\GENCOR~1\LONDON~2\SWMHYMO\
    TZERO =   .00 hrs on        0
    METOUT=   2 (output = METRIC)
    NRUN  = 001
    NSTORM=   1
            #  1=25mm_4hr.stm
--------------------------------------------------------------------------------
001:0002--------------------------------------------------------------------------
--------------------
| READ STORM       |    Filename: O:\PROJECTS\601429~1\GENCOR~1\LONDON~2\S
| Ptotal=  25.00 mm|    Comments: 25 mm - derived from 4 hr Chicago distri
--------------------
            TIME   RAIN |   TIME    RAIN |   TIME    RAIN |   TIME    RAIN
             hrs   mm/hr |    hrs   mm/hr |    hrs   mm/hr |    hrs   mm/hr
              .08   1.400 |   1.08   4.100 |   2.08   5.700 |   3.08   2.000
              .17   1.400 |   1.17   4.100 |   2.17   5.700 |   3.17   2.000
              .25   1.600 |   1.25   6.300 |   2.25   4.300 |   3.25   1.900
              .33   1.600 |   1.33   6.300 |   2.33   4.300 |   3.33   1.900
              .42   1.800 |   1.42  14.500 |   2.42   3.500 |   3.42   1.700
              .50   1.800 |   1.50  14.500 |   2.50   3.500 |   3.50   1.700
              .58   2.100 |   1.58  55.900 |   2.58   3.000 |   3.58   1.600
              .67   2.100 |   1.67  55.900 |   2.67   3.000 |   3.67   1.600
              .75   2.400 |   1.75  17.100 |   2.75   2.500 |   3.75   1.500
              .83   2.400 |   1.83  17.100 |   2.83   2.500 |   3.83   1.500
              .92   3.000 |   1.92   8.500 |   2.92   2.200 |   3.92   1.400
             1.00   3.000 |   2.00   8.500 |   3.00   2.200 |   4.00   1.400

--------------------------------------------------------------------------------
001:0003--------------------------------------------------------------------------
* Future North Site Development
--------------------
| CALIB STANDHYD     |   Area    (ha)=   17.30
| 01:000103 DT= 2.00 |   Total Imp(%)=   90.00   Dir. Conn.(%)=   90.00
--------------------
                           IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=      15.57         1.73
     Dep. Storage     (mm)=       2.00         5.00
     Average Slope     (%)=        .50         2.00
     Length            (m)=     340.00        50.00
     Mannings n            =       .013         .250

     Max.eff.Inten.(mm/hr)=      55.90        2.85
          over (min)       =       7.50       42.50
     Storage Coeff.  (min)=       8.27 (ii)   41.77 (ii)
     Unit Hyd. Tpeak (min)=       7.50       42.50
     Unit Hyd. peak  (cms)=        .14         .03
                                                      *TOTALS*
     PEAK FLOW       (cms)=       1.69         .01      1.691 (iii)
     TIME TO PEAK    (hrs)=       1.71        2.46      1.708
     RUNOFF VOLUME    (mm)=      23.00        3.10     21.010
     TOTAL RAINFALL   (mm)=      25.00       25.00     25.000
     RUNOFF COEFFICIENT   =        .92         .12       .840

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN* =  70.0    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.

--------------------------------------------------------------------------------
001:0004--------------------------------------------------------------------------
--------------------
| ROUTE RESERVOIR   |    Requested routing time step =  2.0 min.
|  IN>01:(000103)   |
| OUT<02:(NORTH )   |    =========  OUTLFW STORAGE TABLE  =========
--------------------    OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
                          (cms)    (ha.m.)   |    (cms)    (ha.m.)
                           .000  .0000E+00   |    1.300  .3000E+00

     ROUTING RESULTS            AREA     QPEAK     TPEAK       R.V.
     -------------------         (ha)     (cms)     (hrs)       (mm)
     INFLOW >01: (000103)      17.30     1.691     1.708     21.010
     OUTFLOW<02: (NORTH )      17.30      .664     2.000     21.010
    OVERFLOW<03: (OVRFLW)        .00      .000      .000       .000

                  TOTAL NUMBER OF SIMULATED OVERFLOWS  =       0
                  CUMULATIVE TIME OF OVERFLOWS  (hours)=      .00
                  PERCENTAGE OF TIME OVERFLOWING    (%)=      .00


                  PEAK   FLOW   REDUCTION [Qout/Qin](%)=   39.263
                  TIME SHIFT OF PEAK FLOW         (min)=    17.50
                  MAXIMUM  STORAGE   USED       (ha.m.)=.1533E+00

--------------------------------------------------------------------------------
001:0005--------------------------------------------------------------------------
--------------------
| ADD HYD (N1    ) | ID: NHYD     AREA     QPEAK   TPEAK   R.V.    DWF
--------------------              (ha)     (cms)   (hrs)   (mm)   (cms)
                    ID1 02:NORTH    17.30     .664    2.00  21.01    .000
                   +ID2 03:OVRFLW     .00     .000     .00    .00    .000 **DRY**
                    ================================================
                    SUM 04:N1       17.30     .664    2.00  21.01    .000

   NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------
001:0006--------------------------------------------------------------------------
*Split out 10 year flow
----------------------
| COMPUTE DUALHYD    |   Average inlet capacities   [CINLET] =   3.649  (cms)
| TotalHyd 04:N1     |   Number of inlets in system [NINLET] =       1
---------------------   Total minor system capacity           =   3.649  (cms)
                        Total major system storage [TMJSTO] =       0.(cu.m.)

                    ID: NHYD        AREA     QPEAK     TPEAK      R.V.       DWF
                                     (ha)     (cms)     (hrs)      (mm)     (cms)
     TOTAL HYD.   04:N1          17.30      .664     2.000   21.010     .000
     ================================================================================
     MAJOR SYST   05:103MJ          .00      .000      .000     .000     .000
     MINOR SYST   06:103MN       17.30      .664     2.000   21.010     .000

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------
001:0007--------------------------------------------------------------------------
*Split out 2 year flow
----------------------
| COMPUTE DUALHYD    |   Average inlet capacities   [CINLET] =    .928  (cms)
| TotalHyd 06:103MN  |   Number of inlets in system [NINLET] =       1
---------------------   Total minor system capacity           =    .928  (cms)
                        Total major system storage [TMJSTO] =       0.(cu.m.)

                    ID: NHYD        AREA     QPEAK     TPEAK      R.V.       DWF
                                     (ha)     (cms)     (hrs)      (mm)     (cms)
     TOTAL HYD.   06:103MN       17.30      .664     2.000   21.010     .000
     ================================================================================
     MAJOR SYST   07:103CH          .00      .000      .000     .000     .000
     MINOR SYST   08:103PD       17.30      .664     2.000   21.010     .000

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------
001:0008--------------------------------------------------------------------------
* Prologis Park Development
--------------------
| CALIB STANDHYD     |   Area    (ha)=   10.80
| 09:000101 DT= 2.00 |   Total Imp(%)=   89.00   Dir. Conn.(%)=   89.00
--------------------
                           IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       9.61         1.19
     Dep. Storage     (mm)=       2.00         5.00
     Average Slope     (%)=        .50         2.00
     Length            (m)=     260.00        50.00
     Mannings n            =       .013         .250

     Max.eff.Inten.(mm/hr)=      55.90        2.96
          over (min)       =       7.50       40.00
     Storage Coeff.  (min)=       7.04 (ii)   40.02 (ii)
     Unit Hyd. Tpeak (min)=       7.50       40.00
     Unit Hyd. peak  (cms)=        .16         .03
                                                      *TOTALS*
     PEAK FLOW       (cms)=       1.10         .01      1.105 (iii)
     TIME TO PEAK    (hrs)=       1.71        2.42      1.708
     RUNOFF VOLUME    (mm)=      23.00        3.10     20.811
     TOTAL RAINFALL   (mm)=      25.00       25.00     25.000
     RUNOFF COEFFICIENT   =        .92         .12       .832

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN* =  70.0    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.

--------------------------------------------------------------------------------
001:0009--------------------------------------------------------------------------
*Route Reservoir placed as a holder if needed, otherwise leave empty
--------------------
| ROUTE RESERVOIR   |    Requested routing time step =  2.0 min.
|  IN>09:(000101)   |
| OUT<10:(SOUTH )   |    =========  OUTLFW STORAGE TABLE  =========
--------------------    OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
                          (cms)    (ha.m.)   |    (cms)    (ha.m.)
                           .000  .0000E+00   |    .000  .0000E+00

     ROUTING RESULTS            AREA     QPEAK     TPEAK       R.V.
     -------------------         (ha)     (cms)     (hrs)       (mm)
     INFLOW >09: (000101)      10.80     1.105     1.708     20.811
     OUTFLOW<10: (SOUTH )        .00      .000      .000       .000
    OVERFLOW<01: (OVRFLW)      10.80     1.079     1.708     20.811

                  TOTAL NUMBER OF SIMULATED OVERFLOWS  =       1
                  CUMULATIVE TIME OF OVERFLOWS  (hours)=     9.71
                  PERCENTAGE OF TIME OVERFLOWING    (%)=    82.92


                  PEAK   FLOW   REDUCTION [Qout/Qin](%)=     .000
                  TIME SHIFT OF PEAK FLOW         (min)=  -102.50
                  MAXIMUM  STORAGE   USED       (ha.m.)=.4874E-09

      *** WARNING: Outflow volume is less than inflow volume.
--------------------------------------------------------------------------------
001:0010--------------------------------------------------------------------------
--------------------
| ADD HYD (S1    ) | ID: NHYD     AREA     QPEAK   TPEAK   R.V.    DWF
--------------------              (ha)     (cms)   (hrs)   (mm)   (cms)
                    ID1 10:SOUTH      .00     .000     .00    .00    .000
                   +ID2 01:OVRFLW   10.80    1.079    1.71  20.81    .000
                    ================================================
                    SUM 02:S1       10.80    1.079    1.71  20.81    .000

   NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------
001:0011--------------------------------------------------------------------------
*Split out 10 year flow
----------------------
| COMPUTE DUALHYD    |   Average inlet capacities   [CINLET] =   2.762  (cms)
| TotalHyd 02:S1     |   Number of inlets in system [NINLET] =       1
---------------------   Total minor system capacity           =   2.762  (cms)
                        Total major system storage [TMJSTO] =       0.(cu.m.)

                    ID: NHYD        AREA     QPEAK     TPEAK      R.V.       DWF
                                     (ha)     (cms)     (hrs)      (mm)     (cms)
     TOTAL HYD.   02:S1          10.80     1.079     1.708   20.811     .000
     ================================================================================
     MAJOR SYST   03:101MJ          .00      .000      .000     .000     .000
     MINOR SYST   04:101MN       10.80     1.079     1.708   20.811     .000

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------
001:0012--------------------------------------------------------------------------
*Split out 2 year flow
```

```
----------------------
| COMPUTE DUALHYD    |   Average inlet capacities   [CINLET] =   1.557  (cms)
| TotalHyd 04:101MN  |   Number of inlets in system [NINLET] =     1
----------------------   Total minor system capacity          =   1.557  (cms)
                         Total major system storage [TMJSTO] =       0.(cu.m.)

                  ID: NHYD        AREA     QPEAK     TPEAK      R.V.       DWF
                                   (ha)     (cms)     (hrs)     (mm)     (cms)
     TOTAL HYD.   04:101MN        10.80     1.079     1.708    20.811     .000
     ==========================================================================
     MAJOR SYST   06:101CH          .00      .000      .000      .000      .000
     MINOR SYST   09:101PD        10.80     1.079     1.708    20.811     .000

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

------------------------------------------------------------------------------
001:0013----------------------------------------------------------------------
------------------
| ADD HYD (MJ1   ) | ID: NHYD     AREA     QPEAK   TPEAK   R.V.    DWF
------------------                (ha)     (cms)   (hrs)   (mm)   (cms)
                  ID1 05:103MJ      .00      .000     .00     .00    .000 **DRY**
                 +ID2 03:101MJ      .00      .000     .00     .00    .000 **DRY**
                  ========================================================
                  SUM 10:MJ1         .00      .000     .00     .00    .000 **DRY**
------------------------------------------------------------------------------
001:0014----------------------------------------------------------------------
------------------
| ADD HYD (CH1   ) | ID: NHYD     AREA     QPEAK   TPEAK   R.V.    DWF
------------------                (ha)     (cms)   (hrs)   (mm)   (cms)
                  ID1 07:103CH      .00      .000     .00     .00    .000 **DRY**
                 +ID2 06:101CH      .00      .000     .00     .00    .000 **DRY**
                  ========================================================
                  SUM 01:CH1         .00      .000     .00     .00    .000 **DRY**
------------------------------------------------------------------------------
001:0015----------------------------------------------------------------------
------------------
| ADD HYD (PD1   ) | ID: NHYD     AREA     QPEAK   TPEAK   R.V.    DWF
------------------                (ha)     (cms)   (hrs)   (mm)   (cms)
                  ID1 08:103PD     17.30      .664    2.00   21.01    .000
                 +ID2 09:101PD     10.80     1.079    1.71   20.81    .000
                  ========================================================
                  SUM 02:PD1       28.10    1.546    1.75  20.93    .000

   NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

------------------------------------------------------------------------------
001:0016----------------------------------------------------------------------
* East Roof
----------------------
| CALIB STANDHYD     |   Area    (ha)=    3.50
| 03:000105 DT= 2.00 |   Total Imp(%)=   99.00   Dir. Conn.(%)=   99.00
----------------------

                           IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       3.46         .03
     Dep. Storage     (mm)=       2.00        5.00
     Average Slope     (%)=        .50        2.00
     Length            (m)=     150.00       50.00
     Mannings n            =       .013        .250

     Max.eff.Inten.(mm/hr)=      55.90       34.76
               over (min)        5.00       17.50
     Storage Coeff.  (min)=      5.06 (ii)  17.38 (ii)
     Unit Hyd. Tpeak (min)=      5.00       17.50
     Unit Hyd. peak  (cms)=       .22         .07
                                                    *TOTALS*
     PEAK FLOW       (cms)=       .46         .00        .461 (iii)
     TIME TO PEAK    (hrs)=      1.67        1.92       1.667
     RUNOFF VOLUME    (mm)=     23.00       17.73      22.947
     TOTAL RAINFALL   (mm)=     25.00       25.00      25.000
     RUNOFF COEFFICIENT   =       .92         .71        .918

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN* =  99.0    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.

------------------------------------------------------------------------------
001:0017----------------------------------------------------------------------
----------------------
| ROUTE RESERVOIR    |    Requested routing time step =  2.0 min.
|  IN>03:(000105)    |
| OUT<04:(EASTRF)    |   =========  OUTLFW STORAGE TABLE  =========
----------------------   OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
                           (cms)    (ha.m.)   |    (cms)    (ha.m.)
                            .000  .0000E+00   |     .060  .2800E+00

     ROUTING RESULTS            AREA     QPEAK     TPEAK       R.V.
     --------------------       (ha)     (cms)     (hrs)       (mm)
     INFLOW >03: (000105)      3.50      .461     1.667     22.947
     OUTFLOW<04: (EASTRF)      3.50      .015     3.875     22.946
    OVERFLOW<05: (OVRFLW)       .00      .000      .000       .000

                  TOTAL NUMBER OF SIMULATED OVERFLOWS  =       0
                  CUMULATIVE TIME OF OVERFLOWS  (hours)=      .00
                  PERCENTAGE OF TIME OVERFLOWING    (%)=      .00


                  PEAK   FLOW   REDUCTION [Qout/Qin](%)=    3.168
                  TIME SHIFT OF PEAK FLOW         (min)=   132.50
                  MAXIMUM  STORAGE   USED       (ha.m.)=.6811E-01

------------------------------------------------------------------------------
001:0018----------------------------------------------------------------------
------------------
| ADD HYD (E1    ) | ID: NHYD     AREA     QPEAK   TPEAK   R.V.    DWF
------------------                (ha)     (cms)   (hrs)   (mm)   (cms)
                  ID1 04:EASTRF     3.50      .015    3.88  22.95    .000
                 +ID2 05:OVRFLW      .00      .000     .00    .00    .000 **DRY**
                  ========================================================
                  SUM 06:E1         3.50      .015    3.88  22.95    .000

   NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

------------------------------------------------------------------------------
001:0019----------------------------------------------------------------------
* West Roof
----------------------
| CALIB STANDHYD     |   Area    (ha)=    5.00
| 07:000104 DT= 2.00 |   Total Imp(%)=   99.00   Dir. Conn.(%)=   99.00
----------------------

                           IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       4.95         .05
     Dep. Storage     (mm)=       2.00        5.00
     Average Slope     (%)=        .50        2.00
     Length            (m)=     180.00       50.00
     Mannings n            =       .013        .250

     Max.eff.Inten.(mm/hr)=      55.90       34.76
               over (min)        5.00       17.50
     Storage Coeff.  (min)=      5.65 (ii)  17.96 (ii)
     Unit Hyd. Tpeak (min)=      5.00       17.50
     Unit Hyd. peak  (cms)=       .21         .06
                                                    *TOTALS*
     PEAK FLOW       (cms)=       .64         .00        .637 (iii)
     TIME TO PEAK    (hrs)=      1.67        1.92       1.667
     RUNOFF VOLUME    (mm)=     23.00       17.73      22.947
     TOTAL RAINFALL   (mm)=     25.00       25.00      25.000
     RUNOFF COEFFICIENT   =       .92         .71        .918

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN* =  99.0    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.

------------------------------------------------------------------------------
001:0020----------------------------------------------------------------------
----------------------
| ROUTE RESERVOIR    |    Requested routing time step =  2.0 min.
|  IN>07:(000104)    |
| OUT<08:(WESTRF)    |   =========  OUTLFW STORAGE TABLE  =========
----------------------   OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
                           (cms)    (ha.m.)   |    (cms)    (ha.m.)
                            .000  .0000E+00   |     .080  .3900E+00

     ROUTING RESULTS            AREA     QPEAK     TPEAK       R.V.
     --------------------       (ha)     (cms)     (hrs)       (mm)
     INFLOW >07: (000104)      5.00      .637     1.667     22.947
     OUTFLOW<08: (WESTRF)      5.00      .020     3.958     22.946
    OVERFLOW<09: (OVRFLW)       .00      .000      .000       .000

                  TOTAL NUMBER OF SIMULATED OVERFLOWS  =       0
                  CUMULATIVE TIME OF OVERFLOWS  (hours)=      .00
                  PERCENTAGE OF TIME OVERFLOWING    (%)=      .00


                  PEAK   FLOW   REDUCTION [Qout/Qin](%)=    3.153
                  TIME SHIFT OF PEAK FLOW         (min)=   137.50
                  MAXIMUM  STORAGE   USED       (ha.m.)=.9793E-01

------------------------------------------------------------------------------
001:0021----------------------------------------------------------------------
------------------
| ADD HYD (W1    ) | ID: NHYD     AREA     QPEAK   TPEAK   R.V.    DWF
------------------                (ha)     (cms)   (hrs)   (mm)   (cms)
                  ID1 08:WESTRF     5.00      .020    3.96  22.95    .000
                 +ID2 09:OVRFLW      .00      .000     .00    .00    .000 **DRY**
                  ========================================================
                  SUM 03:W1         5.00      .020    3.96  22.95    .000

   NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

------------------------------------------------------------------------------
001:0022----------------------------------------------------------------------
------------------
| ADD HYD (EWROOF) | ID: NHYD     AREA     QPEAK   TPEAK   R.V.    DWF
------------------                (ha)     (cms)   (hrs)   (mm)   (cms)
                  ID1 06:E1         3.50      .015    3.88  22.95    .000
                 +ID2 03:W1         5.00      .020    3.96  22.95    .000
                  ========================================================
                  SUM 04:EWROOF     8.50      .035    3.92  22.95    .000

   NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

------------------------------------------------------------------------------
001:0023----------------------------------------------------------------------
* Argentia Road Extension
----------------------
| CALIB STANDHYD     |   Area    (ha)=    1.30
| 05:000102 DT= 2.00 |   Total Imp(%)=   85.00   Dir. Conn.(%)=   85.00
----------------------

                           IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       1.11         .19
     Dep. Storage     (mm)=       2.00        5.00
     Average Slope     (%)=        .50        2.00
     Length            (m)=      90.00       50.00
     Mannings n            =       .013        .250

     Max.eff.Inten.(mm/hr)=      55.90        3.19
               over (min)        2.50       35.00
     Storage Coeff.  (min)=      3.73 (ii)  35.72 (ii)
     Unit Hyd. Tpeak (min)=      2.50       35.00
     Unit Hyd. peak  (cms)=       .33         .03
                                                    *TOTALS*
     PEAK FLOW       (cms)=       .16         .00        .163 (iii)
     TIME TO PEAK    (hrs)=      1.67        2.33       1.667
     RUNOFF VOLUME    (mm)=     23.00        3.10      20.016
     TOTAL RAINFALL   (mm)=     25.00       25.00      25.000
     RUNOFF COEFFICIENT   =       .92         .12        .801

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN* =  70.0    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.

------------------------------------------------------------------------------
001:0024----------------------------------------------------------------------
*Split out 10 year flow
----------------------
| COMPUTE DUALHYD    |   Average inlet capacities   [CINLET] =    .383  (cms)
| TotalHyd 05:000102 |   Number of inlets in system [NINLET] =      1
----------------------   Total minor system capacity          =    .383  (cms)
                         Total major system storage [TMJSTO] =       0.(cu.m.)

                  ID: NHYD        AREA     QPEAK     TPEAK      R.V.       DWF
                                   (ha)     (cms)     (hrs)     (mm)     (cms)
     TOTAL HYD.   05:000102        1.30      .163     1.667    20.016     .000
     ==========================================================================
     MAJOR SYST   06:102MJ          .00      .000      .000      .000      .000
     MINOR SYST   07:102MN         1.30      .163     1.667    20.016     .000

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

------------------------------------------------------------------------------
001:0025----------------------------------------------------------------------
*Split out 2 year flow
----------------------
| COMPUTE DUALHYD    |   Average inlet capacities   [CINLET] =    .220  (cms)
| TotalHyd 07:102MN  |   Number of inlets in system [NINLET] =      1
----------------------   Total minor system capacity          =    .220  (cms)
                         Total major system storage [TMJSTO] =       0.(cu.m.)

                  ID: NHYD        AREA     QPEAK     TPEAK      R.V.       DWF
                                   (ha)     (cms)     (hrs)     (mm)     (cms)
     TOTAL HYD.   07:102MN         1.30      .163     1.667    20.016     .000
     ==========================================================================
     MAJOR SYST   08:102CH          .00      .000      .000      .000      .000
     MINOR SYST   09:102PD         1.30      .163     1.667    20.016     .000

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

------------------------------------------------------------------------------
001:0026----------------------------------------------------------------------
------------------
| ADD HYD (MJ2   ) | ID: NHYD     AREA     QPEAK   TPEAK   R.V.    DWF
------------------                (ha)     (cms)   (hrs)   (mm)   (cms)
                  ID1 10:MJ1         .00      .000     .00     .00    .000 **DRY**
                 +ID2 06:102MJ       .00      .000     .00     .00    .000 **DRY**
                  ========================================================
                  SUM 03:MJ2         .00      .000     .00     .00    .000 **DRY**
------------------------------------------------------------------------------
001:0027----------------------------------------------------------------------
------------------
| ADD HYD (CH2   ) | ID: NHYD     AREA     QPEAK   TPEAK   R.V.    DWF
------------------                (ha)     (cms)   (hrs)   (mm)   (cms)
                  ID1 01:CH1         .00      .000     .00     .00    .000 **DRY**
                 +ID2 04:EWROOF     8.50      .035    3.92  22.95    .000
                 +ID3 08:102CH       .00      .000     .00     .00    .000 **DRY**
                  ========================================================
                  SUM 05:CH2        8.50      .035    3.92  22.95    .000

   NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

------------------------------------------------------------------------------
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001:0028----------------------------------------------------------------------
--------------------
| ADD HYD (PD2   ) | ID: NHYD     AREA     QPEAK   TPEAK   R.V.    DWF
--------------------                (ha)     (cms)   (hrs)   (mm)   (cms)
                ID1 02:PD1       28.10    1.546    1.75  20.93    .000
               +ID2 09:102PD      1.30     .163    1.67  20.02    .000
                ========================================================
                SUM 06:PD2       29.40    1.628    1.75  20.89    .000

   NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

------------------------------------------------------------------------------
001:0029----------------------------------------------------------------------
--------------------
| ROUTE RESERVOIR   |    Requested routing time step =  2.0 min.
| IN>06:(PD2   )    |
| OUT<07:(POND  )   |    =========  OUTFLOW STORAGE TABLE  =========
--------------------    OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
                          (cms)     (ha.m.)   |    (cms)    (ha.m.)
                           .000  .0000E+00    |    2.280  .2630E+00
                           .028  .1190E+00    |    4.686  .3620E+00
                           .311  .1530E+00    |    7.610  .4670E+00
                           .827  .1890E+00    |   11.693  .6020E+00
                          1.492  .2250E+00    |     .000  .0000E+00

     ROUTING RESULTS            AREA     QPEAK     TPEAK       R.V.
     -------------------         (ha)     (cms)     (hrs)       (mm)
     INFLOW >06: (PD2   )      29.40     1.628     1.750     20.893
     OUTFLOW<07: (POND  )      29.40      .987     2.083     20.893
    OVERFLOW<08: (OVRFLW)        .00      .000      .000       .000

                  TOTAL NUMBER OF SIMULATED OVERFLOWS  =       0
                  CUMULATIVE TIME OF OVERFLOWS  (hours)=      .00
                  PERCENTAGE OF TIME OVERFLOWING    (%)=      .00


                  PEAK   FLOW   REDUCTION [Qout/Qin](%)=   60.613
                  TIME SHIFT OF PEAK FLOW         (min)=    20.00
                  MAXIMUM  STORAGE   USED       (ha.m.)=.1977E+00

------------------------------------------------------------------------------
001:0030----------------------------------------------------------------------
--------------------
| ADD HYD (PNDOUT) | ID: NHYD     AREA     QPEAK   TPEAK   R.V.    DWF
--------------------                (ha)     (cms)   (hrs)   (mm)   (cms)
                ID1 07:POND      29.40     .987    2.08  20.89    .000
               +ID2 08:OVRFLW     .00      .000     .00    .00    .000 **DRY**
                ========================================================
                SUM 09:PNDOUT    29.40     .987    2.08  20.89    .000

   NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

------------------------------------------------------------------------------
001:0031----------------------------------------------------------------------
* 5YROUT must be 2.84 m3/s or less for 5 year event based on 75 l/s/ha for
* 37.9 total site hectares.
--------------------
| ADD HYD (5YROUT) | ID: NHYD     AREA     QPEAK   TPEAK   R.V.    DWF
--------------------                (ha)     (cms)   (hrs)   (mm)   (cms)
                ID1 09:PNDOUT    29.40     .987    2.08  20.89    .000
               +ID2 05:CH2       8.50     .035    3.92  22.95    .000
                ========================================================
                SUM 10:5YROUT    37.90    1.016    2.08  21.35    .000

   NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

------------------------------------------------------------------------------
001:0032----------------------------------------------------------------------
* TOTAL is all flows from development site and argentia road
--------------------
| ADD HYD (TOTAL ) | ID: NHYD     AREA     QPEAK   TPEAK   R.V.    DWF
--------------------                (ha)     (cms)   (hrs)   (mm)   (cms)
                ID1 03:MJ2        .00      .000     .00    .00    .000 **DRY**
               +ID2 10:5YROUT   37.90    1.016    2.08  21.35    .000
                ========================================================
                SUM 01:TOTAL     37.90    1.016    2.08  21.35    .000

   NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

------------------------------------------------------------------------------
001:0033----------------------------------------------------------------------
--------------------
| CALIB NASHYD     |   Area    (ha)=    4.80   Curve Number   (CN)=70.00
| 02:100    DT= 2.00 |   Ia      (mm)=   8.000   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=    .700

     Unit Hyd Qpeak  (cms)=     .262

     PEAK FLOW       (cms)=     .014 (i)
     TIME TO PEAK    (hrs)=    2.708
     RUNOFF VOLUME    (mm)=    2.296
     TOTAL RAINFALL   (mm)=   25.000
     RUNOFF COEFFICIENT   =     .092

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

------------------------------------------------------------------------------
001:0034----------------------------------------------------------------------
  ** END OF RUN : 100

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--------------------
| START            |  Project  dir.: O:\PROJECTS\601429~1\GENCOR~1\LONDON~2\SWMHYMO\
--------------------  Rainfall dir.: O:\PROJECTS\601429~1\GENCOR~1\LONDON~2\SWMHYMO\
    TZERO =   .00 hrs on       0
    METOUT=  2 (output = METRIC)
    NRUN  = 101
    NSTORM=  1
           #  1=HAZEL.stm
------------------------------------------------------------------------------
101:0002----------------------------------------------------------------------
*#*****************************************************************************
*#  Project Name: [PROLOGIS PARK MEADOWVALE]    Project Number: [60142982]
*#  Date        : 01-03-2012
*#  Modeller    : [DPG]
*#  Revision    : 02-15-2012
*#  Revised by  : [dpg]
*#  Company     : Earth Tech Canada
*#  License #   :  2649264
*#*****************************************************************************
* Phase 1
------------------------------------------------------------------------------
101:0002----------------------------------------------------------------------
--------------------
| READ STORM       |    Filename: O:\PROJECTS\601429~1\GENCOR~1\LONDON~2\S
| Ptotal= 308.00 mm|    Comments: Hurrican Hazel - 1 hour time step (10 mi
--------------------
            TIME    RAIN |   TIME    RAIN |   TIME    RAIN |   TIME    RAIN
             hrs   mm/hr |    hrs   mm/hr |    hrs   mm/hr |    hrs   mm/hr
             .17   2.000 |  15.17   2.000 |  30.17   2.000 |  45.17   2.000
             .33   2.000 |  15.33   2.000 |  30.33   2.000 |  45.33   2.000
             .50   2.000 |  15.50   2.000 |  30.50   2.000 |  45.50   2.000
             .67   2.000 |  15.67   2.000 |  30.67   2.000 |  45.67   2.000
             .83   2.000 |  15.83   2.000 |  30.83   2.000 |  45.83   2.000
            1.00   2.000 |  16.00   2.000 |  31.00   2.000 |  46.00   2.000
            1.17   2.000 |  16.17   2.000 |  31.17   2.000 |  46.17   2.000
            1.33   2.000 |  16.33   2.000 |  31.33   2.000 |  46.33   2.000
            1.50   2.000 |  16.50   2.000 |  31.50   2.000 |  46.50   2.000
            1.67   2.000 |  16.67   2.000 |  31.67   2.000 |  46.67   2.000
            1.83   2.000 |  16.83   2.000 |  31.83   2.000 |  46.83   2.000
            2.00   2.000 |  17.00   2.000 |  32.00   2.000 |  47.00   2.000
            2.17   2.000 |  17.17   2.000 |  32.17   2.000 |  47.17   2.000
            2.33   2.000 |  17.33   2.000 |  32.33   2.000 |  47.33   2.000
            2.50   2.000 |  17.50   2.000 |  32.50   2.000 |  47.50   2.000
            2.67   2.000 |  17.67   2.000 |  32.67   2.000 |  47.67   2.000
            2.83   2.000 |  17.83   2.000 |  32.83   2.000 |  47.83   2.000
            3.00   2.000 |  18.00   2.000 |  33.00   2.000 |  48.00   2.000
            3.17   2.000 |  18.17   2.000 |  33.17   2.000 |  48.17   6.000
            3.33   2.000 |  18.33   2.000 |  33.33   2.000 |  48.33   6.000
            3.50   2.000 |  18.50   2.000 |  33.50   2.000 |  48.50   6.000
            3.67   2.000 |  18.67   2.000 |  33.67   2.000 |  48.67   6.000
            3.83   2.000 |  18.83   2.000 |  33.83   2.000 |  48.83   6.000
            4.00   2.000 |  19.00   2.000 |  34.00   2.000 |  49.00   6.000
            4.17   2.000 |  19.17   2.000 |  34.17   2.000 |  49.17   4.000
            4.33   2.000 |  19.33   2.000 |  34.33   2.000 |  49.33   4.000
            4.50   2.000 |  19.50   2.000 |  34.50   2.000 |  49.50   4.000
            4.67   2.000 |  19.67   2.000 |  34.67   2.000 |  49.67   4.000
            4.83   2.000 |  19.83   2.000 |  34.83   2.000 |  49.83   4.000
            5.00   2.000 |  20.00   2.000 |  35.00   2.000 |  50.00   4.000
            5.17   2.000 |  20.17   2.000 |  35.17   2.000 |  50.17   6.000
            5.33   2.000 |  20.33   2.000 |  35.33   2.000 |  50.33   6.000
            5.50   2.000 |  20.50   2.000 |  35.50   2.000 |  50.50   6.000
            5.67   2.000 |  20.67   2.000 |  35.67   2.000 |  50.67   6.000
            5.83   2.000 |  20.83   2.000 |  35.83   2.000 |  50.83   6.000
            6.00   2.000 |  21.00   2.000 |  36.00   2.000 |  51.00   6.000
            6.17   2.000 |  21.17   2.000 |  36.17   2.000 |  51.17  13.000
            6.33   2.000 |  21.33   2.000 |  36.33   2.000 |  51.33  13.000
            6.50   2.000 |  21.50   2.000 |  36.50   2.000 |  51.50  13.000
            6.67   2.000 |  21.67   2.000 |  36.67   2.000 |  51.67  13.000
            6.83   2.000 |  21.83   2.000 |  36.83   2.000 |  51.83  13.000
            7.00   2.000 |  22.00   2.000 |  37.00   2.000 |  52.00  13.000
            7.17   2.000 |  22.17   2.000 |  37.17   2.000 |  52.17  17.000
            7.33   2.000 |  22.33   2.000 |  37.33   2.000 |  52.33  17.000
            7.50   2.000 |  22.50   2.000 |  37.50   2.000 |  52.50  17.000
            7.67   2.000 |  22.67   2.000 |  37.67   2.000 |  52.67  17.000
            7.83   2.000 |  22.83   2.000 |  37.83   2.000 |  52.83  17.000
            8.00   2.000 |  23.00   2.000 |  38.00   2.000 |  53.00  17.000
            8.17   2.000 |  23.17   2.000 |  38.17   2.000 |  53.17  13.000
            8.33   2.000 |  23.33   2.000 |  38.33   2.000 |  53.33  13.000
            8.50   2.000 |  23.50   2.000 |  38.50   2.000 |  53.50  13.000
            8.67   2.000 |  23.67   2.000 |  38.67   2.000 |  53.67  13.000
            8.83   2.000 |  23.83   2.000 |  38.83   2.000 |  53.83  13.000
            9.00   2.000 |  24.00   2.000 |  39.00   2.000 |  54.00  13.000
            9.17   2.000 |  24.17   2.000 |  39.17   2.000 |  54.17  23.000
            9.33   2.000 |  24.33   2.000 |  39.33   2.000 |  54.33  23.000
            9.50   2.000 |  24.50   2.000 |  39.50   2.000 |  54.50  23.000
            9.67   2.000 |  24.67   2.000 |  39.67   2.000 |  54.67  23.000
            9.83   2.000 |  24.83   2.000 |  39.83   2.000 |  54.83  23.000
           10.00   2.000 |  25.00   2.000 |  40.00   2.000 |  55.00  23.000
           10.17   2.000 |  25.17   2.000 |  40.17   2.000 |  55.17  13.000
           10.33   2.000 |  25.33   2.000 |  40.33   2.000 |  55.33  13.000
           10.50   2.000 |  25.50   2.000 |  40.50   2.000 |  55.50  13.000
           10.67   2.000 |  25.67   2.000 |  40.67   2.000 |  55.67  13.000
           10.83   2.000 |  25.83   2.000 |  40.83   2.000 |  55.83  13.000
           11.00   2.000 |  26.00   2.000 |  41.00   2.000 |  56.00  13.000
           11.17   2.000 |  26.17   2.000 |  41.17   2.000 |  56.17  13.000
           11.33   2.000 |  26.33   2.000 |  41.33   2.000 |  56.33  13.000
           11.50   2.000 |  26.50   2.000 |  41.50   2.000 |  56.50  13.000
           11.67   2.000 |  26.67   2.000 |  41.67   2.000 |  56.67  13.000
           11.83   2.000 |  26.83   2.000 |  41.83   2.000 |  56.83  13.000
           12.00   2.000 |  27.00   2.000 |  42.00   2.000 |  57.00  13.000
           12.17   2.000 |  27.17   2.000 |  42.17   2.000 |  57.17  53.000
           12.33   2.000 |  27.33   2.000 |  42.33   2.000 |  57.33  53.000
           12.50   2.000 |  27.50   2.000 |  42.50   2.000 |  57.50  53.000
           12.67   2.000 |  27.67   2.000 |  42.67   2.000 |  57.67  53.000
           12.83   2.000 |  27.83   2.000 |  42.83   2.000 |  57.83  53.000
           13.00   2.000 |  28.00   2.000 |  43.00   2.000 |  58.00  53.000
           13.17   2.000 |  28.17   2.000 |  43.17   2.000 |  58.17  38.000
           13.33   2.000 |  28.33   2.000 |  43.33   2.000 |  58.33  38.000
           13.50   2.000 |  28.50   2.000 |  43.50   2.000 |  58.50  38.000
           13.67   2.000 |  28.67   2.000 |  43.67   2.000 |  58.67  38.000
           13.83   2.000 |  28.83   2.000 |  43.83   2.000 |  58.83  38.000
           14.00   2.000 |  29.00   2.000 |  44.00   2.000 |  59.00  38.000
           14.17   2.000 |  29.17   2.000 |  44.17   2.000 |  59.17  13.000
           14.33   2.000 |  29.33   2.000 |  44.33   2.000 |  59.33  13.000
           14.50   2.000 |  29.50   2.000 |  44.50   2.000 |  59.50  13.000
           14.67   2.000 |  29.67   2.000 |  44.67   2.000 |  59.67  13.000
           14.83   2.000 |  29.83   2.000 |  44.83   2.000 |  59.83  13.000
           15.00   2.000 |  30.00   2.000 |  45.00   2.000 |  60.00  13.000

------------------------------------------------------------------------------
101:0003----------------------------------------------------------------------
* Future North Site Development
--------------------
| CALIB STANDHYD     |   Area    (ha)=   17.30
| 01:000103 DT= 2.00 |   Total Imp(%)=   90.00   Dir. Conn.(%)=   90.00
--------------------

                         IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=      15.57         1.73
     Dep. Storage     (mm)=       2.00         5.00
     Average Slope     (%)=        .50         2.00
     Length            (m)=     340.00        50.00
     Mannings n           =       .013         .250

     Max.eff.Inten.(mm/hr)=      53.00        47.93
           over (min)            8.00        20.00
     Storage Coeff.  (min)=       8.45 (ii)   19.28 (ii)
     Unit Hyd. Tpeak (min)=       8.00        20.00
     Unit Hyd. peak  (cms)=        .14          .06
                                                      *TOTALS*
     PEAK FLOW       (cms)=       2.29          .22         2.505 (iii)
     TIME TO PEAK    (hrs)=      58.00        58.07        58.000
     RUNOFF VOLUME    (mm)=     305.99       222.90       297.692
     TOTAL RAINFALL   (mm)=     308.00       308.00       308.000
     RUNOFF COEFFICIENT   =        .99          .72          .967

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN* =  70.0    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.

------------------------------------------------------------------------------
101:0004----------------------------------------------------------------------
--------------------
| ROUTE RESERVOIR   |    Requested routing time step =  2.0 min.
| IN>01:(000103)    |
| OUT<02:(NORTH )   |    =========  OUTFLOW STORAGE TABLE  =========
--------------------    OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
                          (cms)     (ha.m.)   |    (cms)    (ha.m.)
                           .000  .0000E+00    |   1.300  .3000E+00

     ROUTING RESULTS            AREA     QPEAK     TPEAK       R.V.
     -------------------         (ha)     (cms)     (hrs)       (mm)
     INFLOW >01: (000103)      17.30     2.505    58.000     297.692
     OUTFLOW<02: (NORTH )      15.74     1.300    57.533     297.692
    OVERFLOW<03: (OVRFLW)       1.56     1.204    58.000     297.692

                  TOTAL NUMBER OF SIMULATED OVERFLOWS  =       1
                  CUMULATIVE TIME OF OVERFLOWS  (hours)=     1.63
                  PERCENTAGE OF TIME OVERFLOWING    (%)=     2.37


                  PEAK   FLOW   REDUCTION [Qout/Qin](%)=   51.902
                  TIME SHIFT OF PEAK FLOW         (min)=   -28.00
                  MAXIMUM  STORAGE   USED       (ha.m.)=.2992E+00

------------------------------------------------------------------------------
101:0005----------------------------------------------------------------------
--------------------
| ADD HYD (N1    ) | ID: NHYD     AREA     QPEAK   TPEAK   R.V.    DWF
```

```
--------------------                (ha)     (cms)   (hrs)   (mm)   (cms)
                ID1 02:NORTH       15.74    1.300   57.53 297.69    .000
               +ID2 03:OVRFLW      1.56     1.204   58.00 297.69    .000
                ========================================================
                SUM 04:N1          17.30    2.504   58.00 297.69    .000

   NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------
101:0006----------------------------------------------------------------------
*Split out 10 year flow
---------------------
| COMPUTE DUALHYD    |   Average inlet capacities   [CINLET] =   3.649  (cms)
| TotalHyd 04:N1     |   Number of inlets in system [NINLET] =       1
---------------------   Total minor system capacity          =   3.649  (cms)
                        Total major system storage [TMJSTO] =       0.(cu.m.)

                  ID: NHYD        AREA     QPEAK     TPEAK     R.V.       DWF
                                   (ha)     (cms)     (hrs)     (mm)    (cms)
    TOTAL HYD.   04:N1           17.30     2.504    58.000  297.692     .000
    ========================================================================
    MAJOR SYST   05:103MJ          .00      .000      .000     .000     .000
    MINOR SYST   06:103MN        17.30     2.504    58.000  297.692     .000

    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------
101:0007----------------------------------------------------------------------
*Split out 2 year flow
---------------------
| COMPUTE DUALHYD    |   Average inlet capacities   [CINLET] =    .928  (cms)
| TotalHyd 06:103MN  |   Number of inlets in system [NINLET] =       1
---------------------   Total minor system capacity          =    .928  (cms)
                        Total major system storage [TMJSTO] =       0.(cu.m.)

                  ID: NHYD        AREA     QPEAK     TPEAK     R.V.       DWF
                                   (ha)     (cms)     (hrs)     (mm)    (cms)
    TOTAL HYD.   06:103MN        17.30     2.504    58.000  297.692     .000
    ========================================================================
    MAJOR SYST   07:103CH         2.53     1.576    58.000  297.692     .000
    MINOR SYST   08:103PD        14.77      .928    54.933  297.691     .000

    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------
101:0008----------------------------------------------------------------------
* Prologis Park Development
---------------------
| CALIB STANDHYD     |   Area    (ha)=   10.80
| 09:000101 DT= 2.00 |   Total Imp(%)=   89.00   Dir. Conn.(%)=   89.00
---------------------
                          IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       9.61         1.19
     Dep. Storage     (mm)=       2.00         5.00
     Average Slope     (%)=        .50         2.00
     Length             (m)=     260.00        50.00
     Mannings n            =       .013         .250

     Max.eff.Inten.(mm/hr)=      53.00        47.95
               over (min)        8.00        18.00
     Storage Coeff.  (min)=      7.19 (ii)   18.02 (ii)
     Unit Hyd. Tpeak (min)=      8.00        18.00
     Unit Hyd. peak  (cms)=       .15          .06
                                                      *TOTALS*
     PEAK FLOW       (cms)=      1.41          .15        1.564 (iii)
     TIME TO PEAK    (hrs)=     58.00        58.07       58.000
     RUNOFF VOLUME    (mm)=    305.98       222.90      296.861
     TOTAL RAINFALL   (mm)=    308.00       308.00      308.000
     RUNOFF COEFFICIENT   =       .99          .72         .964

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN* =  70.0    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.

--------------------------------------------------------------------------------
101:0009----------------------------------------------------------------------
*Route Reservoir placed as a holder if needed, otherwise leave empty
---------------------
| ROUTE RESERVOIR    |    Requested routing time step =  2.0 min.
|  IN>09:(000101)    |
| OUT<10:(SOUTH )    |    =========  OUTLFW STORAGE TABLE  =========
--------------------    OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
                          (cms)    (ha.m.)   |    (cms)    (ha.m.)
                           .000  .0000E+00   |     .000  .0000E+00

     ROUTING RESULTS            AREA     QPEAK     TPEAK       R.V.
     --------------------        (ha)     (cms)     (hrs)       (mm)
     INFLOW >09: (000101)      10.80     1.564    58.000    296.861
     OUTFLOW<10: (SOUTH )        .00      .000      .000       .000
    OVERFLOW<01: (OVRFLW)      10.80     1.564    58.000    296.861

                  TOTAL NUMBER OF SIMULATED OVERFLOWS  =       1
                  CUMULATIVE TIME OF OVERFLOWS  (hours)=    63.03
                  PERCENTAGE OF TIME OVERFLOWING    (%)=    98.44


                  PEAK   FLOW   REDUCTION [Qout/Qin](%)=     .000
                  TIME SHIFT OF PEAK FLOW         (min)= -3480.00
                  MAXIMUM  STORAGE   USED       (ha.m.)=.4061E-08

      *** WARNING: Outflow volume is less than inflow volume.
--------------------------------------------------------------------------------
101:0010----------------------------------------------------------------------
--------------------
| ADD HYD (S1    ) | ID: NHYD     AREA     QPEAK   TPEAK   R.V.    DWF
--------------------                (ha)     (cms)   (hrs)   (mm)   (cms)
                ID1 10:SOUTH        .00      .000     .00    .00    .000
               +ID2 01:OVRFLW     10.80     1.564   58.00 296.86    .000
                ========================================================
                SUM 02:S1          10.80     1.564   58.00 296.86    .000

   NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------
101:0011----------------------------------------------------------------------
*Split out 10 year flow
---------------------
| COMPUTE DUALHYD    |   Average inlet capacities   [CINLET] =   2.762  (cms)
| TotalHyd 02:S1     |   Number of inlets in system [NINLET] =       1
---------------------   Total minor system capacity          =   2.762  (cms)
                        Total major system storage [TMJSTO] =       0.(cu.m.)

                  ID: NHYD        AREA     QPEAK     TPEAK     R.V.       DWF
                                   (ha)     (cms)     (hrs)     (mm)    (cms)
    TOTAL HYD.   02:S1           10.80     1.564    58.000  296.861     .000
    ========================================================================
    MAJOR SYST   03:101MJ          .00      .000      .000     .000     .000
    MINOR SYST   04:101MN        10.80     1.564    58.000  296.861     .000

    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------
101:0012----------------------------------------------------------------------
*Split out 2 year flow
---------------------
| COMPUTE DUALHYD    |   Average inlet capacities   [CINLET] =   1.557  (cms)
| TotalHyd 04:101MN  |   Number of inlets in system [NINLET] =       1
---------------------   Total minor system capacity          =   1.557  (cms)
                        Total major system storage [TMJSTO] =       0.(cu.m.)

                  ID: NHYD        AREA     QPEAK     TPEAK     R.V.       DWF
                                   (ha)     (cms)     (hrs)     (mm)    (cms)
    TOTAL HYD.   04:101MN        10.80     1.564    58.000  296.861     .000
    ========================================================================
    MAJOR SYST   06:101CH          .00      .007    58.000  296.861     .000
    MINOR SYST   09:101PD        10.80     1.557    57.867  296.861     .000

    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------
101:0013----------------------------------------------------------------------
--------------------
| ADD HYD (MJ1   ) | ID: NHYD     AREA     QPEAK   TPEAK   R.V.    DWF
--------------------                (ha)     (cms)   (hrs)   (mm)   (cms)
                ID1 05:103MJ        .00      .000     .00    .00    .000 **DRY**
               +ID2 03:101MJ        .00      .000     .00    .00    .000 **DRY**
                ========================================================
                SUM 10:MJ1           .00      .000     .00    .00    .000 **DRY**
--------------------------------------------------------------------------------
101:0014----------------------------------------------------------------------
--------------------
| ADD HYD (CH1   ) | ID: NHYD     AREA     QPEAK   TPEAK   R.V.    DWF
--------------------                (ha)     (cms)   (hrs)   (mm)   (cms)
                ID1 07:103CH       2.53     1.576   58.00 297.69    .000
               +ID2 06:101CH        .00      .007   58.00 296.86    .000
                ========================================================
                SUM 01:CH1         2.53     1.582   58.00 297.69    .000

   NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------
101:0015----------------------------------------------------------------------
--------------------
| ADD HYD (PD1   ) | ID: NHYD     AREA     QPEAK   TPEAK   R.V.    DWF
--------------------                (ha)     (cms)   (hrs)   (mm)   (cms)
                ID1 08:103PD       14.77     .928   54.93 297.69    .000
               +ID2 09:101PD       10.80    1.557   57.87 296.86    .000
                ========================================================
                SUM 02:PD1         25.57    2.485   57.87 297.34    .000

   NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------
101:0016----------------------------------------------------------------------
* East Roof
---------------------
| CALIB STANDHYD     |   Area    (ha)=    3.50
| 03:000105 DT= 2.00 |   Total Imp(%)=   99.00   Dir. Conn.(%)=   99.00
---------------------
                          IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       3.46          .03
     Dep. Storage     (mm)=       2.00         5.00
     Average Slope     (%)=        .50         2.00
     Length             (m)=     150.00        50.00
     Mannings n            =       .013         .250

     Max.eff.Inten.(mm/hr)=      53.00        52.99
               over (min)        6.00        16.00
     Storage Coeff.  (min)=      5.17 (ii)   15.57 (ii)
     Unit Hyd. Tpeak (min)=      6.00        16.00
     Unit Hyd. peak  (cms)=       .21          .07
                                                      *TOTALS*
     PEAK FLOW       (cms)=       .51          .01         .515 (iii)
     TIME TO PEAK    (hrs)=     58.00        58.03       58.000
     RUNOFF VOLUME    (mm)=    306.00       300.44      305.948
     TOTAL RAINFALL   (mm)=    308.00       308.00      308.000
     RUNOFF COEFFICIENT   =       .99          .98         .993

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN* =  99.0    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.

--------------------------------------------------------------------------------
101:0017----------------------------------------------------------------------
---------------------
| ROUTE RESERVOIR    |    Requested routing time step =  2.0 min.
|  IN>03:(000105)    |
| OUT<04:(EASTRF)    |    =========  OUTLFW STORAGE TABLE  =========
--------------------    OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
                          (cms)    (ha.m.)   |    (cms)    (ha.m.)
                           .000  .0000E+00   |     .060  .2800E+00

     ROUTING RESULTS            AREA     QPEAK     TPEAK       R.V.
     --------------------        (ha)     (cms)     (hrs)       (mm)
     INFLOW >03: (000105)       3.50      .515    58.000    305.948
     OUTFLOW<04: (EASTRF)       2.34      .060    54.967    305.938
    OVERFLOW<05: (OVRFLW)       1.16      .455    58.000    305.948

                  TOTAL NUMBER OF SIMULATED OVERFLOWS  =       2
                  CUMULATIVE TIME OF OVERFLOWS  (hours)=     5.13
                  PERCENTAGE OF TIME OVERFLOWING    (%)=     2.53


                  PEAK   FLOW   REDUCTION [Qout/Qin](%)=   11.648
                  TIME SHIFT OF PEAK FLOW         (min)=  -182.00
                  MAXIMUM  STORAGE   USED       (ha.m.)=.2799E+00

--------------------------------------------------------------------------------
101:0018----------------------------------------------------------------------
--------------------
| ADD HYD (E1    ) | ID: NHYD     AREA     QPEAK   TPEAK   R.V.    DWF
--------------------                (ha)     (cms)   (hrs)   (mm)   (cms)
                ID1 04:EASTRF      2.34     .060   54.97 305.94    .000
               +ID2 05:OVRFLW      1.16     .455   58.00 305.95    .000
                ========================================================
                SUM 06:E1          3.50     .515   58.00 305.94    .000

   NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------
101:0019----------------------------------------------------------------------
* West Roof
---------------------
| CALIB STANDHYD     |   Area    (ha)=    5.00
| 07:000104 DT= 2.00 |   Total Imp(%)=   99.00   Dir. Conn.(%)=   99.00
---------------------
                          IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       4.95          .05
     Dep. Storage     (mm)=       2.00         5.00
     Average Slope     (%)=        .50         2.00
     Length             (m)=     180.00        50.00
     Mannings n            =       .013         .250

     Max.eff.Inten.(mm/hr)=      53.00        52.99
               over (min)        6.00        16.00
     Storage Coeff.  (min)=      5.77 (ii)   16.17 (ii)
     Unit Hyd. Tpeak (min)=      6.00        16.00
     Unit Hyd. peak  (cms)=       .19          .07
                                                      *TOTALS*
     PEAK FLOW       (cms)=       .73          .01         .736 (iii)
     TIME TO PEAK    (hrs)=     58.00        58.03       58.000
     RUNOFF VOLUME    (mm)=    305.99       300.44      305.948
     TOTAL RAINFALL   (mm)=    308.00       308.00      308.000
     RUNOFF COEFFICIENT   =       .99          .98         .993

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN* =  99.0    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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101:0020-------------------------------------------------------------------------
--------------------
| ROUTE RESERVOIR   |    Requested routing time step =  2.0 min.
|  IN>07:(000104)   |
| OUT<08:(WESTRF)   |    =========  OUTFLOW STORAGE TABLE  =========
--------------------    OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
                          (cms)    (ha.m.)   |    (cms)    (ha.m.)
                           .000  .0000E+00   |     .080  .3900E+00

     ROUTING RESULTS            AREA     QPEAK     TPEAK       R.V.
     -------------------        (ha)     (cms)     (hrs)       (mm)
     INFLOW >07: (000104)       5.00      .736    58.000    305.948
     OUTFLOW<08: (WESTRF)       3.25      .080    54.767    305.941
    OVERFLOW<09: (OVRFLW)       1.75      .656    58.000    305.948

                    TOTAL NUMBER OF SIMULATED OVERFLOWS  =        2
                    CUMULATIVE TIME OF OVERFLOWS  (hours)=     5.37
                    PERCENTAGE OF TIME OVERFLOWING    (%)=     2.52


                    PEAK   FLOW   REDUCTION [Qout/Qin](%)=   10.872
                    TIME SHIFT OF PEAK FLOW         (min)=  -194.00
                    MAXIMUM  STORAGE   USED       (ha.m.)=.3899E+00

-------------------------------------------------------------------------------
101:0021-------------------------------------------------------------------------
--------------------
| ADD HYD (W1    ) | ID: NHYD     AREA     QPEAK   TPEAK   R.V.    DWF
--------------------               (ha)     (cms)   (hrs)   (mm)   (cms)
                  ID1 08:WESTRF     3.25     .080   54.77 305.94    .000
                 +ID2 09:OVRFLW     1.75     .656   58.00 305.95    .000
                  ================================================
                  SUM 03:W1          5.00     .736   58.00 305.94    .000

   NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

-------------------------------------------------------------------------------
101:0022-------------------------------------------------------------------------
--------------------
| ADD HYD (EWROOF) | ID: NHYD     AREA     QPEAK   TPEAK   R.V.    DWF
--------------------               (ha)     (cms)   (hrs)   (mm)   (cms)
                  ID1 06:E1         3.50     .515   58.00 305.94    .000
                 +ID2 03:W1         5.00     .736   58.00 305.94    .000
                  ================================================
                  SUM 04:EWROOF     8.50    1.251   58.00 305.94    .000

   NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

-------------------------------------------------------------------------------
101:0023-------------------------------------------------------------------------
* Argentia Road Extension
----------------------
| CALIB STANDHYD    |   Area    (ha)=    1.30
| 05:000102 DT= 2.00 |   Total Imp(%)=   85.00   Dir. Conn.(%)=   85.00
---------------------
                          IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       1.11         .19
     Dep. Storage     (mm)=       2.00        5.00
     Average Slope     (%)=        .50        2.00
     Length            (m)=      90.00       50.00
     Mannings n           =       .013        .250

     Max.eff.Inten.(mm/hr)=      53.00       48.01
               over (min)        4.00       14.00
     Storage Coeff.  (min)=       3.81 (ii)  14.63 (ii)
     Unit Hyd. Tpeak (min)=       4.00       14.00
     Unit Hyd. peak  (cms)=        .29         .08
                                                     *TOTALS*
     PEAK FLOW       (cms)=        .16         .03         .188 (iii)
     TIME TO PEAK    (hrs)=      57.97       58.00        58.000
     RUNOFF VOLUME    (mm)=     305.99      222.91       293.537
     TOTAL RAINFALL   (mm)=     308.00      308.00       308.000
     RUNOFF COEFFICIENT   =        .99         .72          .953

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN* =  70.0    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.

-------------------------------------------------------------------------------
101:0024-------------------------------------------------------------------------
*Split out 10 year flow
----------------------
| COMPUTE DUALHYD    |   Average inlet capacities   [CINLET] =    .383  (cms)
| TotalHyd 05:000102 |   Number of inlets in system [NINLET] =       1
---------------------   Total minor system capacity          =    .383  (cms)
                        Total major system storage [TMJSTO] =       0.(cu.m.)

                  ID: NHYD        AREA     QPEAK     TPEAK     R.V.      DWF
                                  (ha)     (cms)     (hrs)     (mm)    (cms)
     TOTAL HYD.   05:000102       1.30      .188    58.000  293.537     .000
     ================================================================
     MAJOR SYST   06:102MJ         .00      .000      .000     .000     .000
     MINOR SYST   07:102MN        1.30      .188    58.000  293.537     .000

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

-------------------------------------------------------------------------------
101:0025-------------------------------------------------------------------------
*Split out 2 year flow
----------------------
| COMPUTE DUALHYD    |   Average inlet capacities   [CINLET] =    .220  (cms)
| TotalHyd 07:102MN  |   Number of inlets in system [NINLET] =       1
---------------------   Total minor system capacity          =    .220  (cms)
                        Total major system storage [TMJSTO] =       0.(cu.m.)

                  ID: NHYD        AREA     QPEAK     TPEAK     R.V.      DWF
                                  (ha)     (cms)     (hrs)     (mm)    (cms)
     TOTAL HYD.   07:102MN        1.30      .188    58.000  293.537     .000
     ================================================================
     MAJOR SYST   08:102CH         .00      .000      .000     .000     .000
     MINOR SYST   09:102PD        1.30      .188    58.000  293.537     .000

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

-------------------------------------------------------------------------------
101:0026-------------------------------------------------------------------------
--------------------
| ADD HYD (MJ2   ) | ID: NHYD     AREA     QPEAK   TPEAK   R.V.    DWF
--------------------               (ha)     (cms)   (hrs)   (mm)   (cms)
                  ID1 10:MJ1         .00      .000     .00    .00    .000 **DRY**
                 +ID2 06:102MJ       .00      .000     .00    .00    .000 **DRY**
                  ================================================
                  SUM 03:MJ2          .00      .000     .00    .00    .000 **DRY**
-------------------------------------------------------------------------------
101:0027-------------------------------------------------------------------------
--------------------
| ADD HYD (CH2   ) | ID: NHYD     AREA     QPEAK   TPEAK   R.V.    DWF
--------------------               (ha)     (cms)   (hrs)   (mm)   (cms)
                  ID1 01:CH1        2.53    1.582   58.00 297.69    .000
                 +ID2 04:EWROOF     8.50    1.251   58.00 305.94    .000
                 +ID3 08:102CH       .00      .000     .00    .00    .000 **DRY**
                  ================================================
                  SUM 05:CH2       11.03    2.833   58.00 304.05    .000

   NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

-------------------------------------------------------------------------------
101:0028-------------------------------------------------------------------------
--------------------
| ADD HYD (PD2   ) | ID: NHYD     AREA     QPEAK   TPEAK   R.V.    DWF
--------------------               (ha)     (cms)   (hrs)   (mm)   (cms)
                  ID1 02:PD1       25.57    2.485   57.87 297.34    .000
                 +ID2 09:102PPD     1.30     .188   58.00 293.54    .000
                  ================================================
                  SUM 06:PD2       26.87    2.673   58.00 297.16    .000

   NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

-------------------------------------------------------------------------------
101:0029-------------------------------------------------------------------------
--------------------
| ROUTE RESERVOIR   |    Requested routing time step =  2.0 min.
|  IN>06:(PD2   )   |
| OUT<07:(POND  )   |    =========  OUTFLOW STORAGE TABLE  =========
--------------------    OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
                          (cms)    (ha.m.)   |    (cms)    (ha.m.)
                           .000  .0000E+00   |    2.280  .2630E+00
                           .028  .1190E+00   |    4.686  .3620E+00
                           .311  .1530E+00   |    7.610  .4670E+00
                           .827  .1890E+00   |   11.693  .6020E+00
                          1.492  .2250E+00   |     .000  .0000E+00

     ROUTING RESULTS            AREA     QPEAK     TPEAK       R.V.
     -------------------        (ha)     (cms)     (hrs)       (mm)
     INFLOW >06: (PD2   )      26.87     2.673    58.000    297.157
     OUTFLOW<07: (POND  )      26.87     2.667    58.033    297.154
    OVERFLOW<08: (OVRFLW)        .00      .000      .000       .000

                    TOTAL NUMBER OF SIMULATED OVERFLOWS  =        0
                    CUMULATIVE TIME OF OVERFLOWS  (hours)=      .00
                    PERCENTAGE OF TIME OVERFLOWING    (%)=      .00


                    PEAK   FLOW   REDUCTION [Qout/Qin](%)=   99.788
                    TIME SHIFT OF PEAK FLOW         (min)=     2.00
                    MAXIMUM  STORAGE   USED       (ha.m.)=.2790E+00

-------------------------------------------------------------------------------
101:0030-------------------------------------------------------------------------
--------------------
| ADD HYD (PNDOUT) | ID: NHYD     AREA     QPEAK   TPEAK   R.V.    DWF
--------------------               (ha)     (cms)   (hrs)   (mm)   (cms)
                  ID1 07:POND      26.87    2.667   58.03 297.15    .000
                 +ID2 08:OVRFLW      .00      .000     .00    .00    .000 **DRY**
                  ================================================
                  SUM 09:PNDOUT    26.87    2.667   58.03 297.15    .000

   NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

-------------------------------------------------------------------------------
101:0031-------------------------------------------------------------------------
* 5YROUT must be 2.84 m3/s or less for 5 year event based on 75 l/s/ha for
* 37.9 total site hectares.
--------------------
| ADD HYD (5YROUT) | ID: NHYD     AREA     QPEAK   TPEAK   R.V.    DWF
--------------------               (ha)     (cms)   (hrs)   (mm)   (cms)
                  ID1 09:PNDOUT    26.87    2.667   58.03 297.15    .000
                 +ID2 05:CH2       11.03    2.833   58.00 304.05    .000
                  ================================================
                  SUM 10:5YROUT    37.90    5.500   58.00 299.16    .000

   NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

-------------------------------------------------------------------------------
101:0032-------------------------------------------------------------------------
* TOTAL is all flows from development site and argentia road
--------------------
| ADD HYD (TOTAL ) | ID: NHYD     AREA     QPEAK   TPEAK   R.V.    DWF
--------------------               (ha)     (cms)   (hrs)   (mm)   (cms)
                  ID1 03:MJ2         .00      .000     .00    .00    .000 **DRY**
                 +ID2 10:5YROUT    37.90    5.500   58.00 299.16    .000
                  ================================================
                  SUM 01:TOTAL      37.90    5.500   58.00 299.16    .000

   NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

-------------------------------------------------------------------------------
101:0033-------------------------------------------------------------------------
----------------------
| CALIB NASHYD       |   Area    (ha)=    4.80   Curve Number   (CN)=70.00
| 02:100    DT= 2.00 |   Ia      (mm)=   8.000   # of Linear Res.(N)= 3.00
----------------------   U.H. Tp(hrs)=    .700

     Unit Hyd Qpeak  (cms)=     .262

     PEAK FLOW       (cms)=     .511 (i)
     TIME TO PEAK    (hrs)=   58.667
     RUNOFF VOLUME    (mm)=  220.126
     TOTAL RAINFALL   (mm)=  308.000
     RUNOFF COEFFICIENT   =     .715

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

-------------------------------------------------------------------------------
101:0034-------------------------------------------------------------------------
-------------------------------------------------------------------------------
101:0002-------------------------------------------------------------------------
     FINISH
-------------------------------------------------------------------------------
*******************************************************************************
     WARNINGS / ERRORS / NOTES
     -------------------------
 001:0009 ROUTE RESERVOIR
      *** WARNING: Outflow volume is less than inflow volume.
      *** WARNING: Outflow volume is less than inflow volume.
   Simulation ended on 2012-05-16    at 14:54:00
===============================================================================
```

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

 SSSSS  W   W  M   M  H   H  Y   Y  M   M   OOO        999    999  =========
 S      W W W  MM MM  H   H   Y Y   MM MM  O   O      9   9  9   9
 SSSSS  W W W  M M M  HHHHH    Y    M M M  O   O  ##  9   9  9   9  Ver. 4.02
     S  W W W  M   M  H   H    Y    M   M  O   O       9999   9999 July 1999
 SSSSS   W W   M   M  H   H    Y    M   M   OOO          9      9  =========
                                                      9   9  9   9 # 2649264
      StormWater Management HYdrologic Model           999    999  =========

 ********************************************************************************
 *************************** SWMHYMO-99 Ver/4.02 ********************************
 *******  A single event and continuous hydrologic simulation model  ********
 *******     based on the principles of HYMO and its successors      ********
 *******                OTTHYMO-83 and OTTHYMO-89.                   ********
 ********************************************************************************
 ******* Distributed by:  J.F. Sabourin and Associates Inc.          ********
 *******                  Ottawa,  Ontario: (613) 727-5199          ********
 *******                  Gatineau, Quebec: (819) 243-6858          ********
 *******                  E-Mail: swmhymo@jfsa.com                  ********
 ********************************************************************************

 ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
 ++++++ Licensed user: Earth Tech Canada                           ++++++++
 +++++++              London              SERIAL#:2649264          +++++++
 ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

 ********************************************************************************
 *******           ++++++ PROGRAM ARRAY DIMENSIONS ++++++            ********
 *******           Maximum value for ID numbers  :     10            ********
 *******           Max. number of rainfall points:  15000            ********
 *******           Max. number of flow points    :  15000            ********
 ********************************************************************************


 ********************   D E T A I L E D   O U T P U T   ********************
 ********************************************************************************
 *       DATE: 2012-05-16       TIME: 14:58:07       RUN COUNTER: 002781       *
 ********************************************************************************
 * Input   filename: O:\PROJECTS\601429~1\GENCOR~1\LONDON~2\SWMHYMO\2YR.DAT*
 * Output  filename: O:\PROJECTS\601429~1\GENCOR~1\LONDON~2\SWMHYMO\2YR.out*
 * Summary filename: O:\PROJECTS\601429~1\GENCOR~1\LONDON~2\SWMHYMO\2YR.sum*
 * User comments:                                                         *
 * 1:_____________________________________________________________________*
 * 2:_____________________________________________________________________*
 * 3:_____________________________________________________________________*
 ********************************************************************************


--------------------------------------------------------------------------------
001:0001--------------------------------------------------------------------------
*#*****************************************************************************
*#  Project Name: [PROLOGIS PARK MEADOWVALE]    Project Number: [60142982]
*#  Date        : 01-03-2012
*#  Modeller    : [DPG]
*#  Revision    : 02-15-2012
*#  Revised by  : [dpg]
*#  Company     : Earth Tech Canada
*#  License #   :  2649264
*#*****************************************************************************
* Phase 1
--------------------
| START            |  Project  dir.: O:\PROJECTS\601429~1\GENCOR~1\LONDON~2\SWMHYMO\
--------------------  Rainfall dir.: O:\PROJECTS\601429~1\GENCOR~1\LONDON~2\SWMHYMO\
    TZERO =   .00 hrs on        0
    METOUT=   2 (output = METRIC)
    NRUN  = 001
    NSTORM=   0
--------------------------------------------------------------------------------
001:0002--------------------------------------------------------------------------
*#
*# 2-year design storm, City of Mississauga standards
*#
--------------------
| CHICAGO STORM    |    IDF curve parameters: A= 610.000
| Ptotal= 50.23 mm |                          B=   4.600
--------------------                          C=    .780
                         used in:   INTENSITY =  A / (t + B)^C

                         Duration of storm  = 24.00 hrs
                         Storm time step    = 10.00 min
                         Time to peak ratio =   .40

            TIME    RAIN |  TIME    RAIN |  TIME    RAIN |  TIME    RAIN
             hrs   mm/hr |   hrs   mm/hr |   hrs   mm/hr |   hrs   mm/hr
              .17    .470 |  6.17   1.042 | 12.17   1.888 | 18.17    .706
              .33    .477 |  6.33   1.084 | 12.33   1.790 | 18.33    .695
              .50    .484 |  6.50   1.130 | 12.50   1.704 | 18.50    .684
              .67    .491 |  6.67   1.181 | 12.67   1.626 | 18.67    .674
              .83    .498 |  6.83   1.237 | 12.83   1.556 | 18.83    .665
             1.00    .506 |  7.00   1.299 | 13.00   1.493 | 19.00    .655
             1.17    .513 |  7.17   1.370 | 13.17   1.435 | 19.17    .646
             1.33    .521 |  7.33   1.449 | 13.33   1.382 | 19.33    .637
             1.50    .530 |  7.50   1.540 | 13.50   1.333 | 19.50    .629
             1.67    .539 |  7.67   1.645 | 13.67   1.288 | 19.67    .620
             1.83    .548 |  7.83   1.768 | 13.83   1.247 | 19.83    .612
             2.00    .557 |  8.00   1.914 | 14.00   1.208 | 20.00    .604
             2.17    .567 |  8.17   2.091 | 14.17   1.172 | 20.17    .597
             2.33    .577 |  8.33   2.310 | 14.33   1.138 | 20.33    .589
             2.50    .588 |  8.50   2.588 | 14.50   1.106 | 20.50    .582
             2.67    .599 |  8.67   2.957 | 14.67   1.077 | 20.67    .575
             2.83    .610 |  8.83   3.469 | 14.83   1.049 | 20.83    .569
             3.00    .622 |  9.00   4.238 | 15.00   1.023 | 21.00    .562
             3.17    .635 |  9.17   5.534 | 15.17    .998 | 21.17    .555
             3.33    .648 |  9.33   8.251 | 15.33    .974 | 21.33    .549
             3.50    .662 |  9.50  18.302 | 15.50    .952 | 21.50    .543
             3.67    .677 |  9.67  75.359 | 15.67    .931 | 21.67    .537
             3.83    .692 |  9.83  21.356 | 15.83    .911 | 21.83    .531
             4.00    .708 | 10.00  10.947 | 16.00    .891 | 22.00    .526
             4.17    .725 | 10.17   7.527 | 16.17    .873 | 22.17    .520
             4.33    .743 | 10.33   5.811 | 16.33    .856 | 22.33    .515
             4.50    .762 | 10.50   4.773 | 16.50    .839 | 22.50    .509
             4.67    .783 | 10.67   4.074 | 16.67    .823 | 22.67    .504
             4.83    .804 | 10.83   3.569 | 16.83    .808 | 22.83    .499
             5.00    .827 | 11.00   3.186 | 17.00    .793 | 23.00    .494
             5.17    .852 | 11.17   2.884 | 17.17    .779 | 23.17    .489
             5.33    .878 | 11.33   2.640 | 17.33    .766 | 23.33    .485
             5.50    .906 | 11.50   2.438 | 17.50    .753 | 23.50    .480
             5.67    .936 | 11.67   2.269 | 17.67    .740 | 23.67    .476
             5.83    .969 | 11.83   2.123 | 17.83    .728 | 23.83    .471
             6.00   1.004 | 12.00   1.998 | 18.00    .717 | 24.00    .467

--------------------------------------------------------------------------------
001:0003--------------------------------------------------------------------------
* Future North Site Development
----------------------
| CALIB STANDHYD     |   Area    (ha)=   17.30
| 01:000103 DT= 2.00 |   Total Imp(%)=   90.00   Dir. Conn.(%)=   90.00
----------------------
                          IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=      15.57         1.73
     Dep. Storage     (mm)=       2.00         5.00
     Average Slope     (%)=        .50         2.00
     Length            (m)=     340.00        50.00
     Mannings n            =       .013         .250

     Max.eff.Inten.(mm/hr)=      75.36        10.17
               over (min)        8.00        28.00
     Storage Coeff.  (min)=       7.34 (ii)  27.48 (ii)
     Unit Hyd. Tpeak (min)=       8.00        28.00
     Unit Hyd. peak  (cms)=        .15          .04
                                                    *TOTALS*
     PEAK FLOW       (cms)=       2.32          .03         2.325 (iii)
     TIME TO PEAK    (hrs)=       9.70        10.10         9.700
     RUNOFF VOLUME    (mm)=      48.22        13.27        44.732
     TOTAL RAINFALL   (mm)=      50.23        50.23        50.227
     RUNOFF COEFFICIENT   =        .96          .26          .891

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN* =  70.0    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.

--------------------------------------------------------------------------------
001:0004--------------------------------------------------------------------------
--------------------
| ROUTE RESERVOIR  |    Requested routing time step =  2.0 min.
|  IN>01:(000103)  |
| OUT<02:(NORTH )  |    =========  OUTLFOW STORAGE TABLE  =========
--------------------    OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
                          (cms)    (ha.m.)   |    (cms)    (ha.m.)
                           .000  .0000E+00   |    1.300  .3000E+00

     ROUTING RESULTS            AREA     QPEAK     TPEAK       R.V.
     --------------------        (ha)     (cms)     (hrs)       (mm)
     INFLOW >01: (000103)      17.30     2.325     9.700     44.732
     OUTFLOW<02: (NORTH )      17.30      .928    10.000     44.732
    OVERFLOW<03: (OVRFLW)        .00      .000      .000       .000

                    TOTAL NUMBER OF SIMULATED OVERFLOWS  =        0
                    CUMULATIVE TIME OF OVERFLOWS  (hours)=      .00
                    PERCENTAGE OF TIME OVERFLOWING    (%)=      .00


                    PEAK   FLOW   REDUCTION [Qout/Qin](%)=    39.931
                    TIME SHIFT OF PEAK FLOW         (min)=    18.00
                    MAXIMUM  STORAGE   USED       (ha.m.)=.2145E+00

--------------------------------------------------------------------------------
001:0005--------------------------------------------------------------------------
--------------------
| ADD HYD (N1      | ID: NHYD     AREA     QPEAK   TPEAK   R.V.    DWF
--------------------              (ha)     (cms)   (hrs)   (mm)   (cms)
                  ID1 02:NORTH     17.30     .928   10.00  44.73    .000
                 +ID2 03:OVRFLW      .00     .000     .00    .00    .000 **DRY**
                  ================================================================
                  SUM 04:N1        17.30     .928   10.00  44.73    .000

   NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------
001:0006--------------------------------------------------------------------------
*Split out 10 year flow
----------------------
| COMPUTE DUALHYD    |   Average inlet capacities   [CINLET] =   3.649  (cms)
| TotalHyd 04:N1     |   Number of inlets in system [NINLET] =      1
---------------------   Total minor system capacity          =   3.649  (cms)
                        Total major system storage [TMJSTO] =       0.(cu.m.)

                  ID: NHYD        AREA     QPEAK     TPEAK     R.V.      DWF
                                   (ha)     (cms)     (hrs)     (mm)    (cms)
     TOTAL HYD.   04:N1          17.30      .928    10.000    44.732     .000
     ================================================================================
     MAJOR SYST   05:103MJ         .00      .000      .000      .000     .000
     MINOR SYST   06:103MN       17.30      .928    10.000    44.732     .000

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------
001:0007--------------------------------------------------------------------------
*Split out 2 year flow
----------------------
| COMPUTE DUALHYD    |   Average inlet capacities   [CINLET] =    .928  (cms)
| TotalHyd 06:103MN  |   Number of inlets in system [NINLET] =      1
---------------------   Total minor system capacity          =    .928  (cms)
                        Total major system storage [TMJSTO] =       0.(cu.m.)

                  ID: NHYD        AREA     QPEAK     TPEAK     R.V.      DWF
                                   (ha)     (cms)     (hrs)     (mm)    (cms)
     TOTAL HYD.   06:103MN       17.30      .928    10.000    44.732     .000
     ================================================================================
     MAJOR SYST   07:103CH         .00      .000    10.000    44.732     .000
     MINOR SYST   08:103PD       17.30      .928    10.000    44.732     .000

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------
001:0008--------------------------------------------------------------------------
* Prologis Park Development
----------------------
| CALIB STANDHYD     |   Area    (ha)=   10.80
| 09:000101 DT= 2.00 |   Total Imp(%)=   89.00   Dir. Conn.(%)=   89.00
----------------------
                          IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       9.61         1.19
     Dep. Storage     (mm)=       2.00         5.00
     Average Slope     (%)=        .50         2.00
     Length            (m)=     260.00        50.00
     Mannings n            =       .013         .250

     Max.eff.Inten.(mm/hr)=      75.36        10.64
               over (min)        6.00        26.00
     Storage Coeff.  (min)=       6.25 (ii)  26.02 (ii)
     Unit Hyd. Tpeak (min)=       6.00        26.00
     Unit Hyd. peak  (cms)=        .18          .04
                                                    *TOTALS*
     PEAK FLOW       (cms)=       1.56          .02         1.571 (iii)
     TIME TO PEAK    (hrs)=       9.70        10.07         9.700
     RUNOFF VOLUME    (mm)=      48.23        13.27        44.382
     TOTAL RAINFALL   (mm)=      50.23        50.23        50.227
     RUNOFF COEFFICIENT   =        .96          .26          .884

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN* =  70.0    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.

--------------------------------------------------------------------------------
001:0009--------------------------------------------------------------------------
*Route Reservoir placed as a holder if needed, otherwise leave empty
--------------------
| ROUTE RESERVOIR  |    Requested routing time step =  2.0 min.
|  IN>09:(000101)  |
| OUT<10:(SOUTH )  |    =========  OUTLFOW STORAGE TABLE  =========
--------------------    OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
                          (cms)    (ha.m.)   |    (cms)    (ha.m.)
                           .000  .0000E+00   |     .000  .0000E+00

     ROUTING RESULTS            AREA     QPEAK     TPEAK       R.V.
     --------------------        (ha)     (cms)     (hrs)       (mm)
     INFLOW >09: (000101)      10.80     1.571     9.700     44.382
     OUTFLOW<10: (SOUTH )        .00      .000      .000       .000
    OVERFLOW<01: (OVRFLW)      10.80     1.557     9.700     44.382

                    TOTAL NUMBER OF SIMULATED OVERFLOWS  =        1
                    CUMULATIVE TIME OF OVERFLOWS  (hours)=    25.27
                    PERCENTAGE OF TIME OVERFLOWING    (%)=    87.53


                    PEAK   FLOW   REDUCTION [Qout/Qin](%)=     .000
                    TIME SHIFT OF PEAK FLOW         (min)=  -582.00
                    MAXIMUM  STORAGE   USED       (ha.m.)=.3540E-09

      *** WARNING: Outflow volume is less than inflow volume.
--------------------------------------------------------------------------------
```

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001:0010-------------------------------------------------------------------------
--------------------
| ADD HYD (S1    ) | ID: NHYD     AREA     QPEAK   TPEAK   R.V.    DWF
--------------------                (ha)     (cms)   (hrs)   (mm)   (cms)
                 ID1 10:SOUTH       .00      .000     .00    .00    .000
                +ID2 01:OVRFLW    10.80    1.557    9.70  44.38    .000
                 ====================================================
                 SUM 02:S1         10.80    1.557    9.70  44.38    .000

   NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

-------------------------------------------------------------------------------
001:0011-------------------------------------------------------------------------
*Split out 10 year flow
----------------------
| COMPUTE DUALHYD    |   Average inlet capacities   [CINLET] =   2.762  (cms)
| TotalHyd 02:S1     |   Number of inlets in system [NINLET] =       1
----------------------   Total minor system capacity          =   2.762  (cms)
                         Total major system storage [TMJSTO] =       0.(cu.m.)

                  ID: NHYD        AREA     QPEAK     TPEAK     R.V.      DWF
                                   (ha)     (cms)     (hrs)     (mm)    (cms)
     TOTAL HYD.   02:S1          10.80     1.557     9.700   44.382     .000
     ==========================================================================
     MAJOR SYST   03:101MJ         .00      .000      .000     .000     .000
     MINOR SYST   04:101MN       10.80     1.557     9.700   44.382     .000

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

-------------------------------------------------------------------------------
001:0012-------------------------------------------------------------------------
*Split out 2 year flow
----------------------
| COMPUTE DUALHYD    |   Average inlet capacities   [CINLET] =   1.557  (cms)
| TotalHyd 04:101MN  |   Number of inlets in system [NINLET] =       1
----------------------   Total minor system capacity          =   1.557  (cms)
                         Total major system storage [TMJSTO] =       0.(cu.m.)

                  ID: NHYD        AREA     QPEAK     TPEAK     R.V.      DWF
                                   (ha)     (cms)     (hrs)     (mm)    (cms)
     TOTAL HYD.   04:101MN       10.80     1.557     9.700   44.382     .000
     ==========================================================================
     MAJOR SYST   06:101CH         .00      .000      .000     .000     .000
     MINOR SYST   09:101PD       10.80     1.557     9.700   44.382     .000

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

-------------------------------------------------------------------------------
001:0013-------------------------------------------------------------------------
--------------------
| ADD HYD (MJ1   ) | ID: NHYD     AREA     QPEAK   TPEAK   R.V.    DWF
--------------------                (ha)     (cms)   (hrs)   (mm)   (cms)
                 ID1 05:103MJ       .00      .000     .00    .00    .000 **DRY**
                +ID2 03:101MJ       .00      .000     .00    .00    .000 **DRY**
                 ====================================================
                 SUM 10:MJ1         .00      .000     .00    .00    .000 **DRY**
-------------------------------------------------------------------------------
001:0014-------------------------------------------------------------------------
--------------------
| ADD HYD (CH1   ) | ID: NHYD     AREA     QPEAK   TPEAK   R.V.    DWF
--------------------                (ha)     (cms)   (hrs)   (mm)   (cms)
                 ID1 07:103CH       .00      .000   10.00  44.73    .000
                +ID2 06:101CH       .00      .000     .00    .00    .000 **DRY**
                 ====================================================
                 SUM 01:CH1         .00      .000   10.00  44.73    .000

   NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

-------------------------------------------------------------------------------
001:0015-------------------------------------------------------------------------
--------------------
| ADD HYD (PD1   ) | ID: NHYD     AREA     QPEAK   TPEAK   R.V.    DWF
--------------------                (ha)     (cms)   (hrs)   (mm)   (cms)
                 ID1 08:103PD     17.30     .928   10.00  44.73    .000
                +ID2 09:101PD     10.80    1.557    9.70  44.38    .000
                 ====================================================
                 SUM 02:PD1       28.10    2.162    9.73  44.60    .000

   NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

-------------------------------------------------------------------------------
001:0016-------------------------------------------------------------------------
* East Roof
----------------------
| CALIB STANDHYD     |   Area    (ha)=    3.50
| 03:000105 DT= 2.00 |   Total Imp(%)=   99.00   Dir. Conn.(%)=   99.00
----------------------
                              IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=        3.46         .03
     Dep. Storage     (mm)=        2.00        5.00
     Average Slope     (%)=         .50        2.00
     Length             (m)=     150.00       50.00
     Mannings n          =         .013        .250

     Max.eff.Inten.(mm/hr)=       75.36       58.75
               over (min)         4.00       14.00
     Storage Coeff.  (min)=       4.49 (ii)  14.47 (ii)
     Unit Hyd. Tpeak (min)=       4.00       14.00
     Unit Hyd. peak  (cms)=        .26         .08
                                                      *TOTALS*
     PEAK FLOW       (cms)=        .65          .00          .648 (iii)
     TIME TO PEAK    (hrs)=       9.67         9.83         9.667
     RUNOFF VOLUME    (mm)=      48.23        42.80        48.173
     TOTAL RAINFALL   (mm)=      50.23        50.23        50.227
     RUNOFF COEFFICIENT   =        .96          .85          .959

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN* =  99.0    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.

-------------------------------------------------------------------------------
001:0017-------------------------------------------------------------------------
--------------------
| ROUTE RESERVOIR   |    Requested routing time step =  2.0 min.
|  IN>03:(000105)   |
| OUT<04:(EASTRF)   |    =========  OUTLFOW STORAGE TABLE  =========
--------------------    OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
                          (cms)    (ha.m.)   |    (cms)    (ha.m.)
                           .000  .0000E+00    |     .060  .2800E+00

     ROUTING RESULTS            AREA     QPEAK     TPEAK       R.V.
     --------------------       (ha)     (cms)     (hrs)       (mm)
     INFLOW >03: (000105)       3.50      .648     9.667     48.173
     OUTFLOW<04: (EASTRF)       3.50      .023    11.533     48.171
    OVERFLOW<05: (OVRFLW)        .00      .000      .000       .000

                  TOTAL NUMBER OF SIMULATED OVERFLOWS  =       0
                  CUMULATIVE TIME OF OVERFLOWS  (hours)=      .00
                  PERCENTAGE OF TIME OVERFLOWING    (%)=      .00


                  PEAK   FLOW   REDUCTION [Qout/Qin](%)=    3.624
                  TIME SHIFT OF PEAK FLOW         (min)=   112.00
                  MAXIMUM  STORAGE   USED       (ha.m.)=.1095E+00

-------------------------------------------------------------------------------
001:0018-------------------------------------------------------------------------
--------------------
| ADD HYD (E1    ) | ID: NHYD     AREA     QPEAK   TPEAK   R.V.    DWF
--------------------                (ha)     (cms)   (hrs)   (mm)   (cms)
                 ID1 04:EASTRF      3.50     .023   11.53  48.17    .000
                +ID2 05:OVRFLW      .00      .000     .00    .00    .000 **DRY**
                 ====================================================
                 SUM 06:E1          3.50     .023   11.53  48.17    .000

   NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

-------------------------------------------------------------------------------
001:0019-------------------------------------------------------------------------
* West Roof
----------------------
| CALIB STANDHYD     |   Area    (ha)=    5.00
| 07:000104 DT= 2.00 |   Total Imp(%)=   99.00   Dir. Conn.(%)=   99.00
----------------------
                              IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=        4.95         .05
     Dep. Storage     (mm)=        2.00        5.00
     Average Slope     (%)=         .50        2.00
     Length             (m)=     180.00       50.00
     Mannings n          =         .013        .250

     Max.eff.Inten.(mm/hr)=       75.36       54.06
               over (min)         6.00       16.00
     Storage Coeff.  (min)=       5.01 (ii)  15.33 (ii)
     Unit Hyd. Tpeak (min)=       6.00       16.00
     Unit Hyd. peak  (cms)=        .21         .07
                                                      *TOTALS*
     PEAK FLOW       (cms)=        .85          .00          .856 (iii)
     TIME TO PEAK    (hrs)=       9.67         9.87         9.667
     RUNOFF VOLUME    (mm)=      48.23        42.80        48.173
     TOTAL RAINFALL   (mm)=      50.23        50.23        50.227
     RUNOFF COEFFICIENT   =        .96          .85          .959

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN* =  99.0    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.

-------------------------------------------------------------------------------
001:0020-------------------------------------------------------------------------
--------------------
| ROUTE RESERVOIR   |    Requested routing time step =  2.0 min.
|  IN>07:(000104)   |
| OUT<08:(WESTRF)   |    =========  OUTLFOW STORAGE TABLE  =========
--------------------    OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
                          (cms)    (ha.m.)   |    (cms)    (ha.m.)
                           .000  .0000E+00    |     .080  .3900E+00

     ROUTING RESULTS            AREA     QPEAK     TPEAK       R.V.
     --------------------       (ha)     (cms)     (hrs)       (mm)
     INFLOW >07: (000104)       5.00      .856     9.667     48.173
     OUTFLOW<08: (WESTRF)       5.00      .032    11.667     48.172
    OVERFLOW<09: (OVRFLW)        .00      .000      .000       .000

                  TOTAL NUMBER OF SIMULATED OVERFLOWS  =       0
                  CUMULATIVE TIME OF OVERFLOWS  (hours)=      .00
                  PERCENTAGE OF TIME OVERFLOWING    (%)=      .00


                  PEAK   FLOW   REDUCTION [Qout/Qin](%)=    3.774
                  TIME SHIFT OF PEAK FLOW         (min)=   120.00
                  MAXIMUM  STORAGE   USED       (ha.m.)=.1576E+00

-------------------------------------------------------------------------------
001:0021-------------------------------------------------------------------------
--------------------
| ADD HYD (W1    ) | ID: NHYD     AREA     QPEAK   TPEAK   R.V.    DWF
--------------------                (ha)     (cms)   (hrs)   (mm)   (cms)
                 ID1 08:WESTRF      5.00      .032   11.67  48.17    .000
                +ID2 09:OVRFLW      .00      .000     .00    .00    .000 **DRY**
                 ====================================================
                 SUM 03:W1          5.00      .032   11.67  48.17    .000

   NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

-------------------------------------------------------------------------------
001:0022-------------------------------------------------------------------------
--------------------
| ADD HYD (EWROOF) | ID: NHYD     AREA     QPEAK   TPEAK   R.V.    DWF
--------------------                (ha)     (cms)   (hrs)   (mm)   (cms)
                 ID1 06:E1          3.50      .023   11.53  48.17    .000
                +ID2 03:W1          5.00      .032   11.67  48.17    .000
                 ====================================================
                 SUM 04:EWROOF      8.50      .056   11.60  48.17    .000

   NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

-------------------------------------------------------------------------------
001:0023-------------------------------------------------------------------------
* Argentia Road Extension
----------------------
| CALIB STANDHYD     |   Area    (ha)=    1.30
| 05:000102 DT= 2.00 |   Total Imp(%)=   85.00   Dir. Conn.(%)=   85.00
----------------------
                              IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=        1.11         .19
     Dep. Storage     (mm)=        2.00        5.00
     Average Slope     (%)=         .50        2.00
     Length             (m)=      90.00       50.00
     Mannings n          =         .013        .250

     Max.eff.Inten.(mm/hr)=       75.36       11.87
               over (min)         4.00       22.00
     Storage Coeff.  (min)=       3.31 (ii)  22.23 (ii)
     Unit Hyd. Tpeak (min)=       4.00       22.00
     Unit Hyd. peak  (cms)=        .31         .05
                                                      *TOTALS*
     PEAK FLOW       (cms)=        .22          .00          .220 (iii)
     TIME TO PEAK    (hrs)=       9.67        10.00         9.667
     RUNOFF VOLUME    (mm)=      48.23        13.27        42.984
     TOTAL RAINFALL   (mm)=      50.23        50.23        50.227
     RUNOFF COEFFICIENT   =        .96          .26          .856

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN* =  70.0    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.

-------------------------------------------------------------------------------
001:0024-------------------------------------------------------------------------
*Split out 10 year flow
----------------------
| COMPUTE DUALHYD    |   Average inlet capacities   [CINLET] =    .383  (cms)
| TotalHyd 05:000102 |   Number of inlets in system [NINLET] =       1
----------------------   Total minor system capacity          =    .383  (cms)
                         Total major system storage [TMJSTO] =       0.(cu.m.)

                  ID: NHYD        AREA     QPEAK     TPEAK     R.V.      DWF
                                   (ha)     (cms)     (hrs)     (mm)    (cms)
     TOTAL HYD.   05:000102      1.30      .220     9.667   42.984     .000
     ==========================================================================
     MAJOR SYST   06:102MJ         .00      .000      .000     .000     .000
     MINOR SYST   07:102MN        1.30      .220     9.667   42.984     .000

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

-------------------------------------------------------------------------------
001:0025-------------------------------------------------------------------------
*Split out 2 year flow
----------------------
| COMPUTE DUALHYD    |   Average inlet capacities   [CINLET] =    .220  (cms)
| TotalHyd 07:102MN  |   Number of inlets in system [NINLET] =       1
```

```
----------------------   Total minor system capacity         =    .220  (cms)
                         Total major system storage [TMJSTO] =       0.(cu.m.)

                  ID: NHYD        AREA     QPEAK     TPEAK     R.V.       DWF
                                  (ha)     (cms)     (hrs)     (mm)     (cms)
    TOTAL HYD.   07:102MN        1.30      .220     9.667   42.984     .000
    ======================================================================
    MAJOR SYST   08:102CH         .00      .000      .000     .000     .000
    MINOR SYST   09:102PD        1.30      .220     9.667   42.984     .000

    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

------------------------------------------------------------------------------
001:0026----------------------------------------------------------------------
--------------------
| ADD HYD (MJ2   ) | ID: NHYD     AREA     QPEAK   TPEAK   R.V.    DWF
--------------------              (ha)     (cms)   (hrs)   (mm)   (cms)
                  ID1 10:MJ1         .00      .000     .00    .00    .000 **DRY**
                 +ID2 06:102MJ       .00      .000     .00    .00    .000 **DRY**
                  ========================================================
                  SUM 03:MJ2         .00      .000     .00    .00    .000 **DRY**
------------------------------------------------------------------------------
001:0027----------------------------------------------------------------------
--------------------
| ADD HYD (CH2   ) | ID: NHYD     AREA     QPEAK   TPEAK   R.V.    DWF
--------------------              (ha)     (cms)   (hrs)   (mm)   (cms)
                  ID1 01:CH1         .00      .000   10.00  44.73    .000
                 +ID2 04:EWROOF     8.50      .056   11.60  48.17    .000
                 +ID3 08:102CH       .00      .000     .00    .00    .000 **DRY**
                  ========================================================
                  SUM 05:CH2        8.50      .056   11.60  48.17    .000

   NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

------------------------------------------------------------------------------
001:0028----------------------------------------------------------------------
--------------------
| ADD HYD (PD2   ) | ID: NHYD     AREA     QPEAK   TPEAK   R.V.    DWF
--------------------              (ha)     (cms)   (hrs)   (mm)   (cms)
                  ID1 02:PD1       28.10    2.162    9.73  44.60    .000
                 +ID2 09:102PD      1.30     .220    9.67  42.98    .000
                  ========================================================
                  SUM 06:PD2       29.40    2.309    9.70  44.53    .000

   NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

------------------------------------------------------------------------------
001:0029----------------------------------------------------------------------
--------------------
| ROUTE RESERVOIR   |    Requested routing time step =  2.0 min.
|  IN>06:(PD2   )   |
| OUT<07:(POND  )   |    =========  OUTLFOW STORAGE TABLE  =========
--------------------    OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
                          (cms)    (ha.m.)   |    (cms)    (ha.m.)
                           .000  .0000E+00   |    2.280  .2630E+00
                           .028  .1190E+00   |    4.686  .3620E+00
                           .311  .1530E+00   |    7.610  .4670E+00
                           .827  .1890E+00   |   11.693  .6020E+00
                          1.492  .2250E+00   |     .000  .0000E+00

     ROUTING RESULTS            AREA     QPEAK     TPEAK       R.V.
     -------------------         (ha)     (cms)     (hrs)       (mm)
     INFLOW >06: (PD2   )      29.40     2.309     9.700     44.526
     OUTFLOW<07: (POND  )      29.40     1.803     9.867     44.526
    OVERFLOW<08: (OVRFLW)        .00      .000      .000       .000

                  TOTAL NUMBER OF SIMULATED OVERFLOWS  =        0
                  CUMULATIVE TIME OF OVERFLOWS  (hours)=      .00
                  PERCENTAGE OF TIME OVERFLOWING    (%)=      .00


                  PEAK   FLOW   REDUCTION [Qout/Qin](%)=   78.088
                  TIME SHIFT OF PEAK FLOW         (min)=    10.00
                  MAXIMUM  STORAGE   USED       (ha.m.)=.2401E+00

------------------------------------------------------------------------------
001:0030----------------------------------------------------------------------
--------------------
| ADD HYD (PNDOUT) | ID: NHYD     AREA     QPEAK   TPEAK   R.V.    DWF
--------------------              (ha)     (cms)   (hrs)   (mm)   (cms)
                  ID1 07:POND      29.40    1.803    9.87  44.53    .000
                 +ID2 08:OVRFLW      .00      .000     .00    .00    .000 **DRY**
                  ========================================================
                  SUM 09:PNDOUT    29.40    1.803    9.87  44.53    .000

   NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

------------------------------------------------------------------------------
001:0031----------------------------------------------------------------------
* 5YROUT must be 2.84 m3/s or less for 5 year event based on 75 l/s/ha for
* 37.9 total site hectares.
--------------------
| ADD HYD (5YROUT) | ID: NHYD     AREA     QPEAK   TPEAK   R.V.    DWF
--------------------              (ha)     (cms)   (hrs)   (mm)   (cms)
                  ID1 09:PNDOUT    29.40    1.803    9.87  44.53    .000
                 +ID2 05:CH2        8.50      .056   11.60  48.17    .000
                  ========================================================
                  SUM 10:5YROUT    37.90    1.847    9.87  45.34    .000

   NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

------------------------------------------------------------------------------
001:0032----------------------------------------------------------------------
* TOTAL is all flows from development site and argentia road
--------------------
| ADD HYD (TOTAL ) | ID: NHYD     AREA     QPEAK   TPEAK   R.V.    DWF
--------------------              (ha)     (cms)   (hrs)   (mm)   (cms)
                  ID1 03:MJ2         .00      .000     .00    .00    .000 **DRY**
                 +ID2 10:5YROUT    37.90    1.847    9.87  45.34    .000
                  ========================================================
                  SUM 01:TOTAL     37.90    1.847    9.87  45.34    .000

   NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

------------------------------------------------------------------------------
001:0033----------------------------------------------------------------------
----------------------
| CALIB NASHYD       |   Area    (ha)=    4.80   Curve Number   (CN)=70.00
| 02:100     DT= 2.00 |   Ia      (mm)=   8.000   # of Linear Res.(N)= 3.00
----------------------   U.H. Tp(hrs)=    .700

     Unit Hyd Qpeak  (cms)=     .262

     PEAK FLOW       (cms)=     .050 (i)
     TIME TO PEAK    (hrs)=   10.500
     RUNOFF VOLUME    (mm)=   11.802
     TOTAL RAINFALL   (mm)=   50.227
     RUNOFF COEFFICIENT   =     .235

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

------------------------------------------------------------------------------
001:0034----------------------------------------------------------------------
      FINISH
------------------------------------------------------------------------------
******************************************************************************
     WARNINGS / ERRORS / NOTES
     -------------------------
 001:0009 ROUTE RESERVOIR
     *** WARNING: Outflow volume is less than inflow volume.
   Simulation ended on 2012-05-16      at 14:58:07
==============================================================================
```

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

 SSSSS  W   W  M   M  H   H  Y   Y  M   M   OOO        999    999  =========
 S      W W W  MM MM  H   H   Y Y   MM MM  O   O      9   9  9   9
 SSSSS  W W W  M M M  HHHHH    Y    M M M  O   O  ##  9   9  9   9  Ver. 4.02
     S  W W W  M   M  H   H    Y    M   M  O   O       9999   9999 July 1999
 SSSSS   W W   M   M  H   H    Y    M   M   OOO          9      9  =========
                                                      9   9  9   9  # 2649264
      StormWater Management HYdrologic Model           999    999  =========

 ****************************************************************************
 *************************** SWMHYMO-99 Ver/4.02 ****************************
 *******  A single event and continuous hydrologic simulation model  *******
 *******     based on the principles of HYMO and its successors      *******
 *******                OTTHYMO-83 and OTTHYMO-89.                   *******
 ****************************************************************************
 ******* Distributed by:  J.F. Sabourin and Associates Inc.          *******
 *******                  Ottawa,  Ontario: (613) 727-5199          *******
 *******                  Gatineau, Quebec: (819) 243-6858          *******
 *******                  E-Mail: swmhymo@jfsa.com                  *******
 ****************************************************************************

 ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
 ++++++ Licensed user: Earth Tech Canada                            ++++++++
 +++++++              London              SERIAL#:2649264           +++++++++
 ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

 ****************************************************************************
 *******           ++++++ PROGRAM ARRAY DIMENSIONS ++++++            *******
 *******           Maximum value for ID numbers  :     10           *******
 *******           Max. number of rainfall points:  15000           *******
 *******           Max. number of flow points    :  15000           *******
 ****************************************************************************


 ********************   D E T A I L E D   O U T P U T   *********************
 ****************************************************************************
 *       DATE: 2012-05-16       TIME: 14:58:49       RUN COUNTER: 002782       *
 ****************************************************************************
 * Input   filename: O:\PROJECTS\601429~1\GENCOR~1\LONDON~2\SWMHYMO\5YR.DAT*
 * Output  filename: O:\PROJECTS\601429~1\GENCOR~1\LONDON~2\SWMHYMO\5YR.out*
 * Summary filename: O:\PROJECTS\601429~1\GENCOR~1\LONDON~2\SWMHYMO\5YR.sum*
 * User comments:                                                           *
 * 1:_______________________________________________________________________*
 * 2:_______________________________________________________________________*
 * 3:_______________________________________________________________________*
 ****************************************************************************


--------------------------------------------------------------------------------
001:0001--------------------------------------------------------------------------
*#**************************************************************************
*#  Project Name: [PROLOGIS PARK MEADOWVALE]    Project Number: [60142982]
*#  Date        : 01-03-2012
*#  Modeller    : [DPG]
*#  Revision    : 02-15-2012
*#  Revised by  : [dpg]
*#  Company     : Earth Tech Canada
*#  License #   :  2649264
*#**************************************************************************
* Phase 1
--------------------
| START            |  Project  dir.: O:\PROJECTS\601429~1\GENCOR~1\LONDON~2\SWMHYMO\
--------------------  Rainfall dir.: O:\PROJECTS\601429~1\GENCOR~1\LONDON~2\SWMHYMO\
    TZERO =   .00 hrs on        0
    METOUT=   2 (output = METRIC)
    NRUN  = 001
    NSTORM=   0
--------------------------------------------------------------------------------
001:0002--------------------------------------------------------------------------
*#
*# 5-year design storm, City of Mississauga standards
*#
--------------------
| CHICAGO STORM    |    IDF curve parameters: A= 820.000
| Ptotal= 67.52 mm |                          B=   4.600
--------------------                          C=    .780
                        used in:   INTENSITY =  A / (t + B)^C

                        Duration of storm  = 24.00 hrs
                        Storm time step    = 10.00 min
                        Time to peak ratio =   .40

            TIME    RAIN |  TIME    RAIN |  TIME    RAIN |  TIME    RAIN
             hrs   mm/hr |   hrs   mm/hr |   hrs   mm/hr |   hrs   mm/hr
              .17    .632 |  6.17   1.401 | 12.17   2.537 | 18.17    .948
              .33    .641 |  6.33   1.457 | 12.33   2.407 | 18.33    .934
              .50    .650 |  6.50   1.519 | 12.50   2.290 | 18.50    .920
              .67    .660 |  6.67   1.587 | 12.67   2.186 | 18.67    .906
              .83    .669 |  6.83   1.663 | 12.83   2.092 | 18.83    .893
             1.00    .680 |  7.00   1.747 | 13.00   2.007 | 19.00    .881
             1.17    .690 |  7.17   1.841 | 13.17   1.929 | 19.17    .868
             1.33    .701 |  7.33   1.948 | 13.33   1.858 | 19.33    .857
             1.50    .712 |  7.50   2.071 | 13.50   1.792 | 19.50    .845
             1.67    .724 |  7.67   2.212 | 13.67   1.732 | 19.67    .834
             1.83    .736 |  7.83   2.377 | 13.83   1.676 | 19.83    .823
             2.00    .749 |  8.00   2.573 | 14.00   1.624 | 20.00    .813
             2.17    .762 |  8.17   2.811 | 14.17   1.575 | 20.17    .802
             2.33    .776 |  8.33   3.105 | 14.33   1.530 | 20.33    .792
             2.50    .790 |  8.50   3.479 | 14.50   1.487 | 20.50    .783
             2.67    .805 |  8.67   3.974 | 14.67   1.448 | 20.67    .773
             2.83    .820 |  8.83   4.663 | 14.83   1.410 | 20.83    .764
             3.00    .837 |  9.00   5.697 | 15.00   1.375 | 21.00    .755
             3.17    .854 |  9.17   7.440 | 15.17   1.341 | 21.17    .747
             3.33    .871 |  9.33  11.092 | 15.33   1.310 | 21.33    .738
             3.50    .890 |  9.50  24.603 | 15.50   1.280 | 21.50    .730
             3.67    .910 |  9.67 101.302 | 15.67   1.251 | 21.67    .722
             3.83    .930 |  9.83  28.708 | 15.83   1.224 | 21.83    .714
             4.00    .952 | 10.00  14.716 | 16.00   1.198 | 22.00    .707
             4.17    .975 | 10.17  10.118 | 16.17   1.174 | 22.17    .699
             4.33    .999 | 10.33   7.812 | 16.33   1.150 | 22.33    .692
             4.50   1.025 | 10.50   6.416 | 16.50   1.128 | 22.50    .685
             4.67   1.052 | 10.67   5.476 | 16.67   1.107 | 22.67    .678
             4.83   1.081 | 10.83   4.797 | 16.83   1.086 | 22.83    .671
             5.00   1.112 | 11.00   4.282 | 17.00   1.066 | 23.00    .664
             5.17   1.145 | 11.17   3.877 | 17.17   1.047 | 23.17    .658
             5.33   1.180 | 11.33   3.549 | 17.33   1.029 | 23.33    .652
             5.50   1.218 | 11.50   3.278 | 17.50   1.012 | 23.50    .645
             5.67   1.258 | 11.67   3.049 | 17.67    .995 | 23.67    .639
             5.83   1.302 | 11.83   2.854 | 17.83    .979 | 23.83    .633
             6.00   1.349 | 12.00   2.685 | 18.00    .963 | 24.00    .628

--------------------------------------------------------------------------------
001:0003--------------------------------------------------------------------------
* Future North Site Development
----------------------
| CALIB STANDHYD     |   Area    (ha)=   17.30
| 01:000103 DT= 2.00 |   Total Imp(%)=   90.00   Dir. Conn.(%)=   90.00
----------------------
                          IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=     15.57         1.73
     Dep. Storage     (mm)=      2.00         5.00
     Average Slope     (%)=       .50         2.00
     Length            (m)=    340.00        50.00
     Mannings n            =      .013         .250

     Max.eff.Inten.(mm/hr)=    101.30        20.97
               over (min)        6.00        22.00
     Storage Coeff.  (min)=     6.52 (ii)   21.59 (ii)
     Unit Hyd. Tpeak (min)=     6.00        22.00
     Unit Hyd. peak  (cms)=      .18          .05
                                                  *TOTALS*
     PEAK FLOW       (cms)=     3.36          .06         3.388 (iii)
     TIME TO PEAK    (hrs)=     9.70        10.00          9.700
     RUNOFF VOLUME    (mm)=    65.52        22.80         61.247
     TOTAL RAINFALL   (mm)=    67.52        67.52         67.518
     RUNOFF COEFFICIENT   =      .97          .34           .907

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN* =  70.0    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.

--------------------------------------------------------------------------------
001:0004--------------------------------------------------------------------------
--------------------
| ROUTE RESERVOIR  |    Requested routing time step =  2.0 min.
|  IN>01:(000103)  |
| OUT<02:(NORTH )  |    =========  OUTLFOW STORAGE TABLE  =========
--------------------    OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
                          (cms)    (ha.m.)   |    (cms)    (ha.m.)
                           .000  .0000E+00   |    1.300  .3000E+00

     ROUTING RESULTS            AREA     QPEAK     TPEAK       R.V.
     --------------------        (ha)     (cms)     (hrs)       (mm)
     INFLOW >01: (000103)      17.30     3.388     9.700     61.247
     OUTFLOW<02: (NORTH )      17.30     1.274     9.933     61.247
    OVERFLOW<03: (OVRFLW)        .00      .000      .000       .000

                    TOTAL NUMBER OF SIMULATED OVERFLOWS  =        0
                    CUMULATIVE TIME OF OVERFLOWS  (hours)=      .00
                    PERCENTAGE OF TIME OVERFLOWING    (%)=      .00


                    PEAK   FLOW   REDUCTION [Qout/Qin](%)=   37.608
                    TIME SHIFT OF PEAK FLOW         (min)=    14.00
                    MAXIMUM  STORAGE   USED       (ha.m.)=.2945E+00

--------------------------------------------------------------------------------
001:0005--------------------------------------------------------------------------
--------------------
| ADD HYD (N1      | ID: NHYD     AREA     QPEAK   TPEAK   R.V.    DWF
--------------------              (ha)     (cms)   (hrs)   (mm)   (cms)
                  ID1 02:NORTH     17.30    1.274    9.93  61.25    .000
                 +ID2 03:OVRFLW      .00     .000     .00    .00    .000 **DRY**
                  ========================================================
                  SUM 04:N1        17.30    1.274    9.93  61.25    .000

   NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------
001:0006--------------------------------------------------------------------------
*Split out 10 year flow
----------------------
| COMPUTE DUALHYD    |   Average inlet capacities   [CINLET] =   3.649  (cms)
| TotalHyd 04:N1     |   Number of inlets in system [NINLET] =       1
---------------------   Total minor system storage   =   3.649  (cms)
                        Total major system storage [TMJSTO] =       0.(cu.m.)

                    ID: NHYD        AREA     QPEAK     TPEAK     R.V.      DWF
                                     (ha)     (cms)     (hrs)     (mm)    (cms)
    TOTAL HYD.   04:N1          17.30     1.274     9.933   61.247     .000
    ================================================================================
    MAJOR SYST   05:103MJ         .00      .000      .000      .000      .000
    MINOR SYST   06:103MN       17.30     1.274     9.933   61.247     .000

    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------
001:0007--------------------------------------------------------------------------
*Split out 2 year flow
----------------------
| COMPUTE DUALHYD    |   Average inlet capacities   [CINLET] =    .928  (cms)
| TotalHyd 06:103MN  |   Number of inlets in system [NINLET] =       1
---------------------   Total minor system capacity          =    .928  (cms)
                        Total major system storage [TMJSTO] =       0.(cu.m.)

                    ID: NHYD        AREA     QPEAK     TPEAK     R.V.      DWF
                                     (ha)     (cms)     (hrs)     (mm)    (cms)
    TOTAL HYD.   06:103MN       17.30     1.274     9.933   61.247     .000
    ================================================================================
    MAJOR SYST   07:103CH         .90      .346     9.933   61.247     .000
    MINOR SYST   08:103PD       16.40      .928     9.733   61.247     .000

    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------
001:0008--------------------------------------------------------------------------
* Prologis Park Development
----------------------
| CALIB STANDHYD     |   Area    (ha)=   10.80
| 09:000101 DT= 2.00 |   Total Imp(%)=   89.00   Dir. Conn.(%)=   89.00
----------------------
                          IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=      9.61         1.19
     Dep. Storage     (mm)=      2.00         5.00
     Average Slope     (%)=       .50         2.00
     Length            (m)=    260.00        50.00
     Mannings n            =      .013         .250

     Max.eff.Inten.(mm/hr)=    101.30        22.42
               over (min)        6.00        20.00
     Storage Coeff.  (min)=     5.55 (ii)   20.23 (ii)
     Unit Hyd. Tpeak (min)=     6.00        20.00
     Unit Hyd. peak  (cms)=      .20          .06
                                                  *TOTALS*
     PEAK FLOW       (cms)=     2.17          .04         2.192 (iii)
     TIME TO PEAK    (hrs)=     9.70         9.97          9.700
     RUNOFF VOLUME    (mm)=    65.52        22.80         60.820
     TOTAL RAINFALL   (mm)=    67.52        67.52         67.518
     RUNOFF COEFFICIENT   =      .97          .34           .901

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN* =  70.0    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.

--------------------------------------------------------------------------------
001:0009--------------------------------------------------------------------------
*Route Reservoir placed as a holder if needed, otherwise leave empty
----------------------
| ROUTE RESERVOIR  |    Requested routing time step =  2.0 min.
|  IN>09:(000101)  |
| OUT<10:(SOUTH )  |    =========  OUTLFOW STORAGE TABLE  =========
--------------------    OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
                          (cms)    (ha.m.)   |    (cms)    (ha.m.)
                           .000  .0000E+00   |     .000  .0000E+00

     ROUTING RESULTS            AREA     QPEAK     TPEAK       R.V.
     --------------------        (ha)     (cms)     (hrs)       (mm)
     INFLOW >09: (000101)      10.80     2.192     9.700     60.820
     OUTFLOW<10: (SOUTH )        .00      .000      .000       .000
    OVERFLOW<01: (OVRFLW)      10.80     2.182     9.700     60.820

                    TOTAL NUMBER OF SIMULATED OVERFLOWS  =        1
                    CUMULATIVE TIME OF OVERFLOWS  (hours)=    25.17
                    PERCENTAGE OF TIME OVERFLOWING    (%)=    89.99


                    PEAK   FLOW   REDUCTION [Qout/Qin](%)=     .000
                    TIME SHIFT OF PEAK FLOW         (min)=  -582.00
                    MAXIMUM  STORAGE   USED       (ha.m.)=.0000E+00

      *** WARNING: Outflow volume is less than inflow volume.
--------------------------------------------------------------------------------
```

```
001:0010-------------------------------------------------------------------------
--------------------
| ADD HYD (S1    ) | ID: NHYD     AREA     QPEAK   TPEAK   R.V.    DWF
--------------------                (ha)     (cms)   (hrs)   (mm)   (cms)
                ID1 10:SOUTH       .00      .000     .00    .00    .000
               +ID2 01:OVRFLW    10.80     2.182    9.70  60.82    .000
                ====================================================
                SUM 02:S1         10.80     2.182    9.70  60.82    .000

   NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

-------------------------------------------------------------------------------
001:0011-------------------------------------------------------------------------
*Split out 10 year flow
----------------------
| COMPUTE DUALHYD    |   Average inlet capacities   [CINLET] =   2.762  (cms)
| TotalHyd 02:S1     |   Number of inlets in system [NINLET] =       1
----------------------   Total minor system capacity          =   2.762  (cms)
                         Total major system storage [TMJSTO] =       0.(cu.m.)

                  ID: NHYD        AREA     QPEAK     TPEAK     R.V.      DWF
                                   (ha)     (cms)     (hrs)     (mm)    (cms)
     TOTAL HYD.   02:S1          10.80     2.182     9.700   60.820     .000
     ================================================================
     MAJOR SYST   03:101MJ         .00      .000      .000     .000     .000
     MINOR SYST   04:101MN       10.80     2.182     9.700   60.820     .000

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

-------------------------------------------------------------------------------
001:0012-------------------------------------------------------------------------
*Split out 2 year flow
----------------------
| COMPUTE DUALHYD    |   Average inlet capacities   [CINLET] =   1.557  (cms)
| TotalHyd 04:101MN  |   Number of inlets in system [NINLET] =       1
----------------------   Total minor system capacity          =   1.557  (cms)
                         Total major system storage [TMJSTO] =       0.(cu.m.)

                  ID: NHYD        AREA     QPEAK     TPEAK     R.V.      DWF
                                   (ha)     (cms)     (hrs)     (mm)    (cms)
     TOTAL HYD.   04:101MN       10.80     2.182     9.700   60.820     .000
     ================================================================
     MAJOR SYST   06:101CH         .42      .625     9.700   60.820     .000
     MINOR SYST   09:101PD       10.38     1.557     9.633   60.820     .000

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

-------------------------------------------------------------------------------
001:0013-------------------------------------------------------------------------
--------------------
| ADD HYD (MJ1   ) | ID: NHYD     AREA     QPEAK   TPEAK   R.V.    DWF
--------------------                (ha)     (cms)   (hrs)   (mm)   (cms)
                ID1 05:103MJ        .00      .000     .00    .00    .000 **DRY**
               +ID2 03:101MJ        .00      .000     .00    .00    .000 **DRY**
                ====================================================
                SUM 10:MJ1          .00      .000     .00    .00    .000 **DRY**
-------------------------------------------------------------------------------
001:0014-------------------------------------------------------------------------
--------------------
| ADD HYD (CH1   ) | ID: NHYD     AREA     QPEAK   TPEAK   R.V.    DWF
--------------------                (ha)     (cms)   (hrs)   (mm)   (cms)
                ID1 07:103CH        .90      .346    9.93  61.25    .000
               +ID2 06:101CH        .42      .625    9.70  60.82    .000
                ====================================================
                SUM 01:CH1          1.32     .625    9.70  61.11    .000

   NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

-------------------------------------------------------------------------------
001:0015-------------------------------------------------------------------------
--------------------
| ADD HYD (PD1   ) | ID: NHYD     AREA     QPEAK   TPEAK   R.V.    DWF
--------------------                (ha)     (cms)   (hrs)   (mm)   (cms)
                ID1 08:103PD      16.40      .928    9.73  61.25    .000
               +ID2 09:101PD      10.38     1.557    9.63  60.82    .000
                ====================================================
                SUM 02:PD1        26.78     2.485    9.73  61.08    .000

   NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

-------------------------------------------------------------------------------
001:0016-------------------------------------------------------------------------
* East Roof
--------------------
| CALIB STANDHYD     |   Area    (ha)=    3.50
| 03:000105 DT= 2.00 |   Total Imp(%)=   99.00   Dir. Conn.(%)=   99.00
--------------------

                           IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       3.46         .03
     Dep. Storage     (mm)=       2.00        5.00
     Average Slope     (%)=        .50        2.00
     Length             (m)=    150.00       50.00
     Mannings n            =       .013        .250

     Max.eff.Inten.(mm/hr)=     101.30       88.28
               over (min)        4.00       12.00
     Storage Coeff.  (min)=       3.99 (ii)  12.47 (ii)
     Unit Hyd. Tpeak (min)=       4.00       12.00
     Unit Hyd. peak  (cms)=        .28         .09
                                                      *TOTALS*
     PEAK FLOW       (cms)=        .89          .01          .895 (iii)
     TIME TO PEAK    (hrs)=       9.67         9.80         9.667
     RUNOFF VOLUME    (mm)=      65.52        60.05        65.464
     TOTAL RAINFALL   (mm)=      67.52        67.52        67.518
     RUNOFF COEFFICIENT   =        .97          .89          .970

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN* =  99.0    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.

-------------------------------------------------------------------------------
001:0017-------------------------------------------------------------------------
--------------------
| ROUTE RESERVOIR   |    Requested routing time step =  2.0 min.
|  IN>03:(000105)   |
| OUT<04:(EASTRF)   |    =========  OUTLFOW STORAGE TABLE  =========
--------------------    OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
                          (cms)    (ha.m.)   |    (cms)    (ha.m.)
                           .000  .0000E+00    |     .060  .2800E+00

     ROUTING RESULTS            AREA     QPEAK     TPEAK       R.V.
     --------------------       (ha)     (cms)     (hrs)       (mm)
     INFLOW >03: (000105)       3.50      .895     9.667     65.464
     OUTFLOW<04: (EASTRF)       3.50      .032    11.533     65.463
    OVERFLOW<05: (OVRFLW)        .00      .000      .000       .000

                  TOTAL NUMBER OF SIMULATED OVERFLOWS  =       0
                  CUMULATIVE TIME OF OVERFLOWS  (hours)=      .00
                  PERCENTAGE OF TIME OVERFLOWING    (%)=      .00


                  PEAK   FLOW   REDUCTION [Qout/Qin](%)=    3.559
                  TIME SHIFT OF PEAK FLOW        (min)=   11.00
                  MAXIMUM  STORAGE   USED       (ha.m.)=.1486E+00

-------------------------------------------------------------------------------
001:0018-------------------------------------------------------------------------
--------------------
| ADD HYD (E1    ) | ID: NHYD     AREA     QPEAK   TPEAK   R.V.    DWF
--------------------                (ha)     (cms)   (hrs)   (mm)   (cms)
                ID1 04:EASTRF       3.50     .032   11.53  65.46    .000
               +ID2 05:OVRFLW        .00     .000     .00    .00    .000 **DRY**
                ====================================================
                SUM 06:E1           3.50     .032   11.53  65.46    .000

   NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

-------------------------------------------------------------------------------
001:0019-------------------------------------------------------------------------
* West Roof
--------------------
| CALIB STANDHYD     |   Area    (ha)=    5.00
| 07:000104 DT= 2.00 |   Total Imp(%)=   99.00   Dir. Conn.(%)=   99.00
--------------------

                           IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       4.95         .05
     Dep. Storage     (mm)=       2.00        5.00
     Average Slope     (%)=        .50        2.00
     Length             (m)=    180.00       50.00
     Mannings n            =       .013        .250

     Max.eff.Inten.(mm/hr)=     101.30       79.75
               over (min)        4.00       14.00
     Storage Coeff.  (min)=       4.45 (ii)  13.29 (ii)
     Unit Hyd. Tpeak (min)=       4.00       14.00
     Unit Hyd. peak  (cms)=        .26         .08
                                                      *TOTALS*
     PEAK FLOW       (cms)=       1.24          .01         1.247 (iii)
     TIME TO PEAK    (hrs)=       9.67         9.83         9.667
     RUNOFF VOLUME    (mm)=      65.52        60.05        65.464
     TOTAL RAINFALL   (mm)=      67.52        67.52        67.518
     RUNOFF COEFFICIENT   =        .97          .89          .970

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN* =  99.0    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.

-------------------------------------------------------------------------------
001:0020-------------------------------------------------------------------------
--------------------
| ROUTE RESERVOIR   |    Requested routing time step =  2.0 min.
|  IN>07:(000104)   |
| OUT<08:(WESTRF)   |    =========  OUTLFOW STORAGE TABLE  =========
--------------------    OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
                          (cms)    (ha.m.)   |    (cms)    (ha.m.)
                           .000  .0000E+00    |     .080  .3900E+00

     ROUTING RESULTS            AREA     QPEAK     TPEAK       R.V.
     --------------------       (ha)     (cms)     (hrs)       (mm)
     INFLOW >07: (000104)       5.00     1.247     9.667     65.464
     OUTFLOW<08: (WESTRF)       5.00      .044    11.600     65.463
    OVERFLOW<09: (OVRFLW)        .00      .000      .000       .000

                  TOTAL NUMBER OF SIMULATED OVERFLOWS  =       0
                  CUMULATIVE TIME OF OVERFLOWS  (hours)=      .00
                  PERCENTAGE OF TIME OVERFLOWING    (%)=      .00


                  PEAK   FLOW   REDUCTION [Qout/Qin](%)=    3.517
                  TIME SHIFT OF PEAK FLOW        (min)=   116.00
                  MAXIMUM  STORAGE   USED       (ha.m.)=.2138E+00

-------------------------------------------------------------------------------
001:0021-------------------------------------------------------------------------
--------------------
| ADD HYD (W1    ) | ID: NHYD     AREA     QPEAK   TPEAK   R.V.    DWF
--------------------                (ha)     (cms)   (hrs)   (mm)   (cms)
                ID1 08:WESTRF       5.00      .044   11.60  65.46    .000
               +ID2 09:OVRFLW        .00      .000     .00    .00    .000 **DRY**
                ====================================================
                SUM 03:W1           5.00      .044   11.60  65.46    .000

   NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

-------------------------------------------------------------------------------
001:0022-------------------------------------------------------------------------
--------------------
| ADD HYD (EWROOF) | ID: NHYD     AREA     QPEAK   TPEAK   R.V.    DWF
--------------------                (ha)     (cms)   (hrs)   (mm)   (cms)
                ID1 06:E1           3.50      .032   11.53  65.46    .000
               +ID2 03:W1           5.00      .044   11.60  65.46    .000
                ====================================================
                SUM 04:EWROOF       8.50      .076   11.57  65.46    .000

   NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

-------------------------------------------------------------------------------
001:0023-------------------------------------------------------------------------
* Argentia Road Extension
--------------------
| CALIB STANDHYD     |   Area    (ha)=    1.30
| 05:000102 DT= 2.00 |   Total Imp(%)=   85.00   Dir. Conn.(%)=   85.00
--------------------

                           IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       1.11         .19
     Dep. Storage     (mm)=       2.00        5.00
     Average Slope     (%)=        .50        2.00
     Length             (m)=     90.00       50.00
     Mannings n            =       .013        .250

     Max.eff.Inten.(mm/hr)=     101.30       23.51
               over (min)        2.00       18.00
     Storage Coeff.  (min)=       2.94 (ii)  17.34 (ii)
     Unit Hyd. Tpeak (min)=       2.00       18.00
     Unit Hyd. peak  (cms)=        .42         .06
                                                      *TOTALS*
     PEAK FLOW       (cms)=        .30          .01          .306 (iii)
     TIME TO PEAK    (hrs)=       9.67         9.90         9.667
     RUNOFF VOLUME    (mm)=      65.52        22.81        59.112
     TOTAL RAINFALL   (mm)=      67.52        67.52        67.518
     RUNOFF COEFFICIENT   =        .97          .34          .875

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN* =  70.0    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.

-------------------------------------------------------------------------------
001:0024-------------------------------------------------------------------------
*Split out 10 year flow
----------------------
| COMPUTE DUALHYD    |   Average inlet capacities   [CINLET] =    .383  (cms)
| TotalHyd 05:000102 |   Number of inlets in system [NINLET] =       1
----------------------   Total minor system capacity          =    .383  (cms)
                         Total major system storage [TMJSTO] =       0.(cu.m.)

                  ID: NHYD        AREA     QPEAK     TPEAK     R.V.      DWF
                                   (ha)     (cms)     (hrs)     (mm)    (cms)
     TOTAL HYD.   05:000102      1.30      .306     9.667   59.112     .000
     ================================================================
     MAJOR SYST   06:102MJ         .00      .000      .000     .000     .000
     MINOR SYST   07:102MN        1.30      .306     9.667   59.112     .000

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

-------------------------------------------------------------------------------
001:0025-------------------------------------------------------------------------
*Split out 2 year flow
----------------------
| COMPUTE DUALHYD    |   Average inlet capacities   [CINLET] =    .220  (cms)
| TotalHyd 07:102MN  |   Number of inlets in system [NINLET] =       1
```

```
----------------------   Total minor system capacity         =    .220  (cms)
                         Total major system storage [TMJSTO] =       0.(cu.m.)

                  ID: NHYD        AREA     QPEAK     TPEAK     R.V.      DWF
                                  (ha)     (cms)     (hrs)     (mm)    (cms)
    TOTAL HYD.   07:102MN        1.30      .306     9.667   59.112     .000
    ======================================================================
    MAJOR SYST   08:102CH         .05      .086     9.667   59.112     .000
    MINOR SYST   09:102PD        1.25      .220     9.567   59.112     .000

    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------
001:0026----------------------------------------------------------------------
--------------------
| ADD HYD (MJ2   ) | ID: NHYD     AREA     QPEAK   TPEAK   R.V.    DWF
--------------------              (ha)     (cms)   (hrs)   (mm)   (cms)
                  ID1 10:MJ1         .00     .000     .00    .00    .000 **DRY**
                 +ID2 06:102MJ       .00     .000     .00    .00    .000 **DRY**
                  ========================================================
                  SUM 03:MJ2         .00     .000     .00    .00    .000 **DRY**
--------------------------------------------------------------------------------
001:0027----------------------------------------------------------------------
--------------------
| ADD HYD (CH2   ) | ID: NHYD     AREA     QPEAK   TPEAK   R.V.    DWF
--------------------              (ha)     (cms)   (hrs)   (mm)   (cms)
                  ID1 01:CH1        1.32     .625    9.70  61.11    .000
                 +ID2 04:EWROOF     8.50     .076   11.57  65.46    .000
                 +ID3 08:102CH       .05     .086    9.67  59.11    .000
                  ========================================================
                  SUM 05:CH2        9.88     .673    9.70  64.85    .000

   NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------
001:0028----------------------------------------------------------------------
--------------------
| ADD HYD (PD2   ) | ID: NHYD     AREA     QPEAK   TPEAK   R.V.    DWF
--------------------              (ha)     (cms)   (hrs)   (mm)   (cms)
                  ID1 02:PD1       26.78    2.485    9.73  61.08    .000
                 +ID2 09:102PD      1.25     .220    9.57  59.11    .000
                  ========================================================
                  SUM 06:PD2       28.02    2.633    9.73  60.99    .000

   NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------
001:0029----------------------------------------------------------------------
--------------------
| ROUTE RESERVOIR   |    Requested routing time step =  2.0 min.
|  IN>06:(PD2   )   |
| OUT<07:(POND  )   |    =========  OUTLFOW STORAGE TABLE  =========
--------------------    OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
                          (cms)    (ha.m.)   |    (cms)    (ha.m.)
                           .000  .0000E+00   |    2.280  .2630E+00
                           .028  .1190E+00   |    4.686  .3620E+00
                           .311  .1530E+00   |    7.610  .4670E+00
                           .827  .1890E+00   |   11.693  .6020E+00
                          1.492  .2250E+00   |     .000  .0000E+00

     ROUTING RESULTS            AREA     QPEAK     TPEAK       R.V.
     -------------------         (ha)     (cms)     (hrs)       (mm)
     INFLOW >06: (PD2   )      28.02     2.633     9.733     60.994
     OUTFLOW<07: (POND  )      28.02     2.239     9.867     60.993
    OVERFLOW<08: (OVRFLW)        .00      .000      .000       .000

                  TOTAL NUMBER OF SIMULATED OVERFLOWS  =        0
                  CUMULATIVE TIME OF OVERFLOWS  (hours)=      .00
                  PERCENTAGE OF TIME OVERFLOWING    (%)=      .00


                  PEAK   FLOW   REDUCTION [Qout/Qin](%)=   85.029
                  TIME SHIFT OF PEAK FLOW         (min)=     8.00
                  MAXIMUM  STORAGE   USED       (ha.m.)=.2616E+00

--------------------------------------------------------------------------------
001:0030----------------------------------------------------------------------
--------------------
| ADD HYD (PNDOUT) | ID: NHYD     AREA     QPEAK   TPEAK   R.V.    DWF
--------------------              (ha)     (cms)   (hrs)   (mm)   (cms)
                  ID1 07:POND      28.02    2.239    9.87  60.99    .000
                 +ID2 08:OVRFLW      .00     .000     .00    .00    .000 **DRY**
                  ========================================================
                  SUM 09:PNDOUT    28.02    2.239    9.87  60.99    .000

   NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------
001:0031----------------------------------------------------------------------
* 5YROUT must be 2.84 m3/s or less for 5 year event based on 75 l/s/ha for
* 37.9 total site hectares.
--------------------
| ADD HYD (5YROUT) | ID: NHYD     AREA     QPEAK   TPEAK   R.V.    DWF
--------------------              (ha)     (cms)   (hrs)   (mm)   (cms)
                  ID1 09:PNDOUT    28.02    2.239    9.87  60.99    .000
                 +ID2 05:CH2        9.88     .673    9.70  64.85    .000
                  ========================================================
                  SUM 10:5YROUT    37.90    2.614    9.87  62.00    .000

   NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------
001:0032----------------------------------------------------------------------
* TOTAL is all flows from development site and argentia road
--------------------
| ADD HYD (TOTAL ) | ID: NHYD     AREA     QPEAK   TPEAK   R.V.    DWF
--------------------              (ha)     (cms)   (hrs)   (mm)   (cms)
                  ID1 03:MJ2         .00     .000     .00    .00    .000 **DRY**
                 +ID2 10:5YROUT    37.90    2.614    9.87  62.00    .000
                  ========================================================
                  SUM 01:TOTAL     37.90    2.614    9.87  62.00    .000

   NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------
001:0033----------------------------------------------------------------------
----------------------
| CALIB NASHYD       |   Area    (ha)=    4.80   Curve Number   (CN)=70.00
| 02:100     DT= 2.00 |   Ia      (mm)=   8.000   # of Linear Res.(N)= 3.00
----------------------   U.H. Tp(hrs)=    .700

     Unit Hyd Qpeak  (cms)=     .262

     PEAK FLOW      (cms)=     .095 (i)
     TIME TO PEAK   (hrs)=   10.467
     RUNOFF VOLUME   (mm)=   21.039
     TOTAL RAINFALL  (mm)=   67.518
     RUNOFF COEFFICIENT  =     .312

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

--------------------------------------------------------------------------------
001:0034----------------------------------------------------------------------
      FINISH
--------------------------------------------------------------------------------
********************************************************************************
     WARNINGS / ERRORS / NOTES
     -------------------------
 001:0009 ROUTE RESERVOIR
     *** WARNING: Outflow volume is less than inflow volume.
   Simulation ended on 2012-05-16     at 14:58:49
================================================================================
```

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

 SSSSS  W   W  M   M  H   H  Y   Y  M   M   OOO        999    999  =========
 S      W W W  MM MM  H   H   Y Y   MM MM  O   O      9   9  9   9
 SSSSS  W W W  M M M  HHHHH    Y    M M M  O   O  ##  9   9  9   9  Ver. 4.02
     S  W W W  M   M  H   H    Y    M   M  O   O       9999   9999 July 1999
 SSSSS   W W   M   M  H   H    Y    M   M   OOO           9      9 =========
                                                      9   9  9   9 # 2649264
      StormWater Management HYdrologic Model           999    999  =========

 ****************************************************************************
 *************************** SWMHYMO-99 Ver/4.02 ****************************
 *******  A single event and continuous hydrologic simulation model  *******
 *******     based on the principles of HYMO and its successors      *******
 *******                OTTHYMO-83 and OTTHYMO-89.                   *******
 ****************************************************************************
 ******* Distributed by:  J.F. Sabourin and Associates Inc.          *******
 *******                  Ottawa,  Ontario: (613) 727-5199          *******
 *******                  Gatineau, Quebec: (819) 243-6858          *******
 *******                  E-Mail: swmhymo@jfsa.com                  *******
 ****************************************************************************

 ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
 ++++++ Licensed user: Earth Tech Canada                            ++++++++
 +++++++              London              SERIAL#:2649264           +++++++++
 ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

 ****************************************************************************
 *******           ++++++ PROGRAM ARRAY DIMENSIONS ++++++            *******
 *******           Maximum value for ID numbers  :     10           *******
 *******           Max. number of rainfall points:  15000           *******
 *******           Max. number of flow points    :  15000           *******
 ****************************************************************************


 ********************   D E T A I L E D   O U T P U T   ********************
 ****************************************************************************
 *       DATE: 2012-05-16       TIME: 14:53:09       RUN COUNTER: 002776     *
 ****************************************************************************
 * Input   filename: O:\PROJECTS\601429~1\GENCOR~1\LONDON~2\SWMHYMO\10YR.DA*
 * Output  filename: O:\PROJECTS\601429~1\GENCOR~1\LONDON~2\SWMHYMO\10YR.ou*
 * Summary filename: O:\PROJECTS\601429~1\GENCOR~1\LONDON~2\SWMHYMO\10YR.su*
 * User comments:                                                         *
 * 1:_____________________________________________________________________*
 * 2:_____________________________________________________________________*
 * 3:_____________________________________________________________________*
 ****************************************************************************


--------------------------------------------------------------------------------
001:0001--------------------------------------------------------------------------
*#**************************************************************************
*#  Project Name: [PROLOGIS PARK MEADOWVALE]    Project Number: [60142982]
*#  Date        : 01-03-2012
*#  Modeller    : [DPG]
*#  Revision    : 02-15-2012
*#  Revised by  : [dpg]
*#  Company     : Earth Tech Canada
*#  License #   :  2649264
*#**************************************************************************
* Phase 1
--------------------
| START            |  Project  dir.: O:\PROJECTS\601429~1\GENCOR~1\LONDON~2\SWMHYMO\
--------------------  Rainfall dir.: O:\PROJECTS\601429~1\GENCOR~1\LONDON~2\SWMHYMO\
    TZERO =   .00 hrs on        0
    METOUT=   2 (output = METRIC)
    NRUN  = 001
    NSTORM=   0
--------------------------------------------------------------------------------
001:0002--------------------------------------------------------------------------
*#
*# 10-year design storm, City of Mississauga standards
*#
--------------------
| CHICAGO STORM    |    IDF curve parameters: A=1010.000
| Ptotal= 83.16 mm |                          B=   4.600
--------------------                          C=    .780
                         used in:   INTENSITY =  A / (t + B)^C

                         Duration of storm  = 24.00 hrs
                         Storm time step    = 10.00 min
                         Time to peak ratio =   .40

            TIME    RAIN |  TIME    RAIN |  TIME    RAIN |  TIME    RAIN
             hrs   mm/hr |   hrs   mm/hr |   hrs   mm/hr |   hrs   mm/hr
              .17    .778 |  6.17   1.726 |  12.17   3.125 |  18.17   1.168
              .33    .789 |  6.33   1.795 |  12.33   2.964 |  18.33   1.150
              .50    .801 |  6.50   1.871 |  12.50   2.821 |  18.50   1.133
              .67    .812 |  6.67   1.955 |  12.67   2.693 |  18.67   1.116
              .83    .825 |  6.83   2.048 |  12.83   2.577 |  18.83   1.100
             1.00    .837 |  7.00   2.151 |  13.00   2.472 |  19.00   1.085
             1.17    .850 |  7.17   2.268 |  13.17   2.376 |  19.17   1.070
             1.33    .863 |  7.33   2.400 |  13.33   2.288 |  19.33   1.055
             1.50    .877 |  7.50   2.550 |  13.50   2.208 |  19.50   1.041
             1.67    .892 |  7.67   2.724 |  13.67   2.133 |  19.67   1.027
             1.83    .907 |  7.83   2.928 |  13.83   2.064 |  19.83   1.014
             2.00    .922 |  8.00   3.170 |  14.00   2.000 |  20.00   1.001
             2.17    .939 |  8.17   3.462 |  14.17   1.940 |  20.17    .988
             2.33    .955 |  8.33   3.824 |  14.33   1.884 |  20.33    .976
             2.50    .973 |  8.50   4.286 |  14.50   1.832 |  20.50    .964
             2.67    .991 |  8.67   4.895 |  14.67   1.783 |  20.67    .953
             2.83   1.011 |  8.83   5.744 |  14.83   1.737 |  20.83    .941
             3.00   1.031 |  9.00   7.016 |  15.00   1.693 |  21.00    .930
             3.17   1.051 |  9.17   9.163 |  15.17   1.652 |  21.17    .920
             3.33   1.073 |  9.33  13.662 |  15.33   1.613 |  21.33    .909
             3.50   1.096 |  9.50  30.304 |  15.50   1.576 |  21.50    .899
             3.67   1.121 |  9.67 124.775 |  15.67   1.541 |  21.67    .889
             3.83   1.146 |  9.83  35.360 |  15.83   1.508 |  21.83    .880
             4.00   1.173 | 10.00  18.126 |  16.00   1.476 |  22.00    .870
             4.17   1.201 | 10.17  12.462 |  16.17   1.446 |  22.17    .861
             4.33   1.231 | 10.33   9.622 |  16.33   1.417 |  22.33    .852
             4.50   1.262 | 10.50   7.903 |  16.50   1.389 |  22.50    .843
             4.67   1.296 | 10.67   6.745 |  16.67   1.363 |  22.67    .835
             4.83   1.332 | 10.83   5.909 |  16.83   1.338 |  22.83    .827
             5.00   1.369 | 11.00   5.274 |  17.00   1.313 |  23.00    .818
             5.17   1.410 | 11.17   4.775 |  17.17   1.290 |  23.17    .810
             5.33   1.453 | 11.33   4.371 |  17.33   1.268 |  23.33    .803
             5.50   1.500 | 11.50   4.037 |  17.50   1.246 |  23.50    .795
             5.67   1.550 | 11.67   3.756 |  17.67   1.226 |  23.67    .788
             5.83   1.604 | 11.83   3.516 |  17.83   1.206 |  23.83    .780
             6.00   1.662 | 12.00   3.307 |  18.00   1.187 |  24.00    .773

--------------------------------------------------------------------------------
001:0003--------------------------------------------------------------------------
* Future North Site Development
----------------------
| CALIB STANDHYD     |   Area    (ha)=   17.30
| 01:000103 DT= 2.00 |   Total Imp(%)=   90.00   Dir. Conn.(%)=   90.00
----------------------
                          IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=     15.57         1.73
     Dep. Storage     (mm)=      2.00         5.00
     Average Slope     (%)=       .50         2.00
     Length            (m)=    340.00        50.00
     Mannings n            =      .013         .250

     Max.eff.Inten.(mm/hr)=    124.77        34.32
               over (min)        6.00        18.00
     Storage Coeff.  (min)=     6.00 (ii)   18.38 (ii)
     Unit Hyd. Tpeak (min)=     6.00        18.00
     Unit Hyd. peak  (cms)=      .19          .06
                                                    *TOTALS*
     PEAK FLOW       (cms)=     4.24          .10     4.296 (iii)
     TIME TO PEAK    (hrs)=     9.70         9.90      9.700
     RUNOFF VOLUME    (mm)=    81.16        32.66     76.313
     TOTAL RAINFALL   (mm)=    83.16        83.16     83.163
     RUNOFF COEFFICIENT   =      .98          .39       .918

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN* =  70.0    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.

--------------------------------------------------------------------------------
001:0004--------------------------------------------------------------------------
--------------------
| ROUTE RESERVOIR  |    Requested routing time step =  2.0 min.
|  IN>01:(000103)  |
| OUT<02:(NORTH )  |    =========  OUTLFOW STORAGE TABLE  =========
--------------------    OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
                          (cms)    (ha.m.)   |    (cms)    (ha.m.)
                           .000  .0000E+00   |    1.300  .3000E+00

     ROUTING RESULTS            AREA     QPEAK     TPEAK       R.V.
     --------------------        (ha)     (cms)     (hrs)       (mm)
     INFLOW >01: (000103)      17.30     4.296     9.700     76.313
     OUTFLOW<02: (NORTH )      16.16     1.300     9.767     76.313
    OVERFLOW<03: (OVRFLW)       1.14     2.349     9.767     76.313

                    TOTAL NUMBER OF SIMULATED OVERFLOWS  =        2
                    CUMULATIVE TIME OF OVERFLOWS  (hours)=      .20
                    PERCENTAGE OF TIME OVERFLOWING    (%)=      .65


                    PEAK   FLOW   REDUCTION [Qout/Qin](%)=    30.258
                    TIME SHIFT OF PEAK FLOW         (min)=     4.00
                    MAXIMUM  STORAGE   USED       (ha.m.)=.2982E+00

--------------------------------------------------------------------------------
001:0005--------------------------------------------------------------------------
--------------------
| ADD HYD (N1      | ID: NHYD     AREA     QPEAK   TPEAK   R.V.    DWF
--------------------              (ha)     (cms)   (hrs)   (mm)   (cms)
                  ID1 02:NORTH     16.16    1.300    9.77  76.31    .000
                 +ID2 03:OVRFLW     1.14    2.349    9.77  76.31    .000
                  ================================================
                  SUM 04:N1        17.30    3.649    9.77  76.31    .000

   NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------
001:0006--------------------------------------------------------------------------
*Split out 10 year flow
----------------------
| COMPUTE DUALHYD    |   Average inlet capacities   [CINLET] =   3.649  (cms)
| TotalHyd 04:N1     |   Number of inlets in system [NINLET] =     1
----------------------   Total minor system capacity          =   3.649  (cms)
                         Total major system storage [TMJSTO] =       0.(cu.m.)

                    ID: NHYD        AREA     QPEAK     TPEAK     R.V.       DWF
                                     (ha)     (cms)     (hrs)     (mm)     (cms)
    TOTAL HYD.   04:N1           17.30     3.649     9.767   76.313     .000
    ================================================================================
    MAJOR SYST   05:103MJ          .00      .000     9.767   76.313     .000
    MINOR SYST   06:103MN        17.30     3.649     9.767   76.313     .000

    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------
001:0007--------------------------------------------------------------------------
*Split out 2 year flow
----------------------
| COMPUTE DUALHYD    |   Average inlet capacities   [CINLET] =    .928  (cms)
| TotalHyd 06:103MN  |   Number of inlets in system [NINLET] =      1
----------------------   Total minor system capacity          =    .928  (cms)
                         Total major system storage [TMJSTO] =       0.(cu.m.)

                    ID: NHYD        AREA     QPEAK     TPEAK     R.V.       DWF
                                     (ha)     (cms)     (hrs)     (mm)     (cms)
    TOTAL HYD.   06:103MN        17.30     3.649     9.767   76.313     .000
    ================================================================================
    MAJOR SYST   07:103CH         2.15     2.721     9.767   76.313     .000
    MINOR SYST   08:103PD        15.15      .928     9.700   76.313     .000

    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------
001:0008--------------------------------------------------------------------------
* Prologis Park Development
----------------------
| CALIB STANDHYD     |   Area    (ha)=   10.80
| 09:000101 DT= 2.00 |   Total Imp(%)=   89.00   Dir. Conn.(%)=   89.00
----------------------
                          IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=      9.61         1.19
     Dep. Storage     (mm)=      2.00         5.00
     Average Slope     (%)=       .50         2.00
     Length            (m)=    260.00        50.00
     Mannings n            =      .013         .250

     Max.eff.Inten.(mm/hr)=    124.77        34.32
               over (min)        6.00        18.00
     Storage Coeff.  (min)=     5.11 (ii)   17.48 (ii)
     Unit Hyd. Tpeak (min)=     6.00        18.00
     Unit Hyd. peak  (cms)=      .21          .06
                                                    *TOTALS*
     PEAK FLOW       (cms)=     2.73          .07     2.766 (iii)
     TIME TO PEAK    (hrs)=     9.70         9.90      9.700
     RUNOFF VOLUME    (mm)=    81.16        32.66     75.828
     TOTAL RAINFALL   (mm)=    83.16        83.16     83.163
     RUNOFF COEFFICIENT   =      .98          .39       .912

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN* =  70.0    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.

--------------------------------------------------------------------------------
001:0009--------------------------------------------------------------------------
*Route Reservoir placed as a holder if needed, otherwise leave empty
----------------------
| ROUTE RESERVOIR    |    Requested routing time step =  2.0 min.
|  IN>09:(000101)    |
| OUT<10:(SOUTH )    |    =========  OUTLFOW STORAGE TABLE  =========
--------------------    OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
                          (cms)    (ha.m.)   |    (cms)    (ha.m.)
                           .000  .0000E+00   |     .000  .0000E+00

     ROUTING RESULTS            AREA     QPEAK     TPEAK       R.V.
     --------------------        (ha)     (cms)     (hrs)       (mm)
     INFLOW >09: (000101)      10.80     2.766     9.700     75.828
     OUTFLOW<10: (SOUTH )        .00      .000      .000       .000
    OVERFLOW<01: (OVRFLW)      10.80     2.762     9.700     75.828

                    TOTAL NUMBER OF SIMULATED OVERFLOWS  =        1
                    CUMULATIVE TIME OF OVERFLOWS  (hours)=    25.23
                    PERCENTAGE OF TIME OVERFLOWING    (%)=    91.54


                    PEAK   FLOW   REDUCTION [Qout/Qin](%)=     .000
                    TIME SHIFT OF PEAK FLOW         (min)=  -582.00
                    MAXIMUM  STORAGE   USED       (ha.m.)=.1421E-09

      *** WARNING: Outflow volume is less than inflow volume.
--------------------------------------------------------------------------------
```

```
001:0010-----------------------------------------------------------------------
--------------------
| ADD HYD (S1    ) | ID: NHYD     AREA     QPEAK   TPEAK   R.V.    DWF
--------------------                (ha)     (cms)   (hrs)   (mm)   (cms)
                ID1 10:SOUTH        .00      .000     .00    .00    .000
               +ID2 01:OVRFLW     10.80     2.762    9.70  75.83    .000
                ====================================================
                SUM 02:S1         10.80     2.762    9.70  75.83    .000

   NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

-----------------------------------------------------------------------------
001:0011-----------------------------------------------------------------------
*Split out 10 year flow
----------------------
| COMPUTE DUALHYD    |   Average inlet capacities   [CINLET] =   2.762  (cms)
| TotalHyd 02:S1     |   Number of inlets in system [NINLET] =       1
----------------------   Total minor system capacity          =   2.762  (cms)
                         Total major system storage [TMJSTO] =       0.(cu.m.)

                  ID: NHYD        AREA     QPEAK     TPEAK     R.V.      DWF
                                  (ha)     (cms)     (hrs)     (mm)    (cms)
     TOTAL HYD.   02:S1          10.80     2.762     9.700   75.828     .000
     ==========================================================================
     MAJOR SYST   03:101MJ          .00      .000     9.700   75.828     .000
     MINOR SYST   04:101MN        10.80     2.762     9.700   75.828     .000

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

-----------------------------------------------------------------------------
001:0012-----------------------------------------------------------------------
*Split out 2 year flow
----------------------
| COMPUTE DUALHYD    |   Average inlet capacities   [CINLET] =   1.557  (cms)
| TotalHyd 04:101MN  |   Number of inlets in system [NINLET] =       1
----------------------   Total minor system capacity          =   1.557  (cms)
                         Total major system storage [TMJSTO] =       0.(cu.m.)

                  ID: NHYD        AREA     QPEAK     TPEAK     R.V.      DWF
                                  (ha)     (cms)     (hrs)     (mm)    (cms)
     TOTAL HYD.   04:101MN       10.80     2.762     9.700   75.828     .000
     ==========================================================================
     MAJOR SYST   06:101CH          .83     1.205     9.700   75.828     .000
     MINOR SYST   09:101PD        9.97     1.557     9.600   75.828     .000

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

-----------------------------------------------------------------------------
001:0013-----------------------------------------------------------------------
--------------------
| ADD HYD (MJ1   ) | ID: NHYD     AREA     QPEAK   TPEAK   R.V.    DWF
--------------------                (ha)     (cms)   (hrs)   (mm)   (cms)
                ID1 05:103MJ        .00      .000    9.77  76.31    .000
               +ID2 03:101MJ        .00      .000    9.70  75.83    .000
                ====================================================
                SUM 10:MJ1          .00      .000    9.77  76.17    .000

   NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

-----------------------------------------------------------------------------
001:0014-----------------------------------------------------------------------
--------------------
| ADD HYD (CH1   ) | ID: NHYD     AREA     QPEAK   TPEAK   R.V.    DWF
--------------------                (ha)     (cms)   (hrs)   (mm)   (cms)
                ID1 07:103CH       2.15     2.721    9.77  76.31    .000
               +ID2 06:101CH        .83     1.205    9.70  75.83    .000
                ====================================================
                SUM 01:CH1         2.98     3.436    9.77  76.18    .000

   NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

-----------------------------------------------------------------------------
001:0015-----------------------------------------------------------------------
--------------------
| ADD HYD (PD1   ) | ID: NHYD     AREA     QPEAK   TPEAK   R.V.    DWF
--------------------                (ha)     (cms)   (hrs)   (mm)   (cms)
                ID1 08:103PD       15.15     .928    9.70  76.31    .000
               +ID2 09:101PD        9.97    1.557    9.60  75.83    .000
                ====================================================
                SUM 02:PD1         25.12    2.485    9.70  76.12    .000

   NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

-----------------------------------------------------------------------------
001:0016-----------------------------------------------------------------------
* East Roof
--------------------
| CALIB STANDHYD     |   Area    (ha)=    3.50
| 03:000105 DT= 2.00 |   Total Imp(%)=   99.00   Dir. Conn.(%)=   99.00
---------------------

                           IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       3.46         .03
     Dep. Storage     (mm)=       2.00        5.00
     Average Slope     (%)=        .50        2.00
     Length            (m)=     150.00       50.00
     Mannings n            =       .013        .250

     Max.eff.Inten.(mm/hr)=     124.77      109.15
               over (min)          4.00       12.00
     Storage Coeff.  (min)=       3.67 (ii)  11.46 (ii)
     Unit Hyd. Tpeak (min)=       4.00       12.00
     Unit Hyd. peak  (cms)=        .29         .10
                                                      *TOTALS*
     PEAK FLOW       (cms)=       1.11         .01        1.120 (iii)
     TIME TO PEAK    (hrs)=       9.67        9.80        9.667
     RUNOFF VOLUME    (mm)=      81.16       75.68       81.108
     TOTAL RAINFALL   (mm)=      83.16       83.16       83.163
     RUNOFF COEFFICIENT   =        .98         .91         .975

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN* =  99.0     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.

-----------------------------------------------------------------------------
001:0017-----------------------------------------------------------------------
--------------------
| ROUTE RESERVOIR    |   Requested routing time step =  2.0 min.
|  IN>03:(000105)    |
| OUT<04:(EASTRF)    |   =========  OUTFLOW STORAGE TABLE  =========
--------------------   OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
                         (cms)    (ha.m.)   |    (cms)    (ha.m.)
                          .000  .0000E+00    |     .060  .2800E+00

     ROUTING RESULTS            AREA     QPEAK     TPEAK       R.V.
     -------------------         (ha)     (cms)     (hrs)       (mm)
     INFLOW >03: (000105)       3.50     1.120     9.667     81.108
     OUTFLOW<04: (EASTRF)       3.50      .039    11.500     81.107
    OVERFLOW<05: (OVRFLW)        .00      .000      .000       .000

                  TOTAL NUMBER OF SIMULATED OVERFLOWS  =        0
                  CUMULATIVE TIME OF OVERFLOWS  (hours)=      .00
                  PERCENTAGE OF TIME OVERFLOWING    (%)=      .00


                  PEAK   FLOW   REDUCTION [Qout/Qin](%)=    3.518
                  TIME SHIFT OF PEAK FLOW         (min)=   110.00
                  MAXIMUM  STORAGE   USED       (ha.m.)=.1839E+00

-----------------------------------------------------------------------------
001:0018-----------------------------------------------------------------------
--------------------
| ADD HYD (E1    ) | ID: NHYD     AREA     QPEAK   TPEAK   R.V.    DWF
--------------------                (ha)     (cms)   (hrs)   (mm)   (cms)
                ID1 04:EASTRF       3.50      .039   11.50  81.11    .000
               +ID2 05:OVRFLW        .00      .000     .00    .00    .000 **DRY**
                ====================================================
                SUM 06:E1           3.50      .039   11.50  81.11    .000

   NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

-----------------------------------------------------------------------------
001:0019-----------------------------------------------------------------------
* West Roof
--------------------
| CALIB STANDHYD     |   Area    (ha)=    5.00
| 07:000104 DT= 2.00 |   Total Imp(%)=   99.00   Dir. Conn.(%)=   99.00
---------------------

                           IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       4.95         .05
     Dep. Storage     (mm)=       2.00        5.00
     Average Slope     (%)=        .50        2.00
     Length            (m)=     180.00       50.00
     Mannings n            =       .013        .250

     Max.eff.Inten.(mm/hr)=     124.77      109.15
               over (min)          4.00       12.00
     Storage Coeff.  (min)=       4.10 (ii)  11.89 (ii)
     Unit Hyd. Tpeak (min)=       4.00       12.00
     Unit Hyd. peak  (cms)=        .28         .09
                                                      *TOTALS*
     PEAK FLOW       (cms)=       1.56         .01        1.566 (iii)
     TIME TO PEAK    (hrs)=       9.67        9.80        9.667
     RUNOFF VOLUME    (mm)=      81.16       75.68       81.108
     TOTAL RAINFALL   (mm)=      83.16       83.16       83.163
     RUNOFF COEFFICIENT   =        .98         .91         .975

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN* =  99.0     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.

-----------------------------------------------------------------------------
001:0020-----------------------------------------------------------------------
--------------------
| ROUTE RESERVOIR    |   Requested routing time step =  2.0 min.
|  IN>07:(000104)    |
| OUT<08:(WESTRF)    |   =========  OUTFLOW STORAGE TABLE  =========
--------------------   OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
                         (cms)    (ha.m.)   |    (cms)    (ha.m.)
                          .000  .0000E+00    |     .080  .3900E+00

     ROUTING RESULTS            AREA     QPEAK     TPEAK       R.V.
     -------------------         (ha)     (cms)     (hrs)       (mm)
     INFLOW >07: (000104)       5.00     1.566     9.667     81.108
     OUTFLOW<08: (WESTRF)       5.00      .054    11.567     81.107
    OVERFLOW<09: (OVRFLW)        .00      .000      .000       .000

                  TOTAL NUMBER OF SIMULATED OVERFLOWS  =        0
                  CUMULATIVE TIME OF OVERFLOWS  (hours)=      .00
                  PERCENTAGE OF TIME OVERFLOWING    (%)=      .00


                  PEAK   FLOW   REDUCTION [Qout/Qin](%)=    3.466
                  TIME SHIFT OF PEAK FLOW         (min)=   114.00
                  MAXIMUM  STORAGE   USED       (ha.m.)=.2645E+00

-----------------------------------------------------------------------------
001:0021-----------------------------------------------------------------------
--------------------
| ADD HYD (W1    ) | ID: NHYD     AREA     QPEAK   TPEAK   R.V.    DWF
--------------------                (ha)     (cms)   (hrs)   (mm)   (cms)
                ID1 08:WESTRF       5.00      .054   11.57  81.11    .000
               +ID2 09:OVRFLW        .00      .000     .00    .00    .000 **DRY**
                ====================================================
                SUM 03:W1           5.00      .054   11.57  81.11    .000

   NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

-----------------------------------------------------------------------------
001:0022-----------------------------------------------------------------------
--------------------
| ADD HYD (EWROOF) | ID: NHYD     AREA     QPEAK   TPEAK   R.V.    DWF
--------------------                (ha)     (cms)   (hrs)   (mm)   (cms)
                ID1 06:E1           3.50      .039   11.50  81.11    .000
               +ID2 03:W1           5.00      .054   11.57  81.11    .000
                ====================================================
                SUM 04:EWROOF       8.50      .094   11.53  81.11    .000

   NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

-----------------------------------------------------------------------------
001:0023-----------------------------------------------------------------------
* Argentia Road Extension
--------------------
| CALIB STANDHYD     |   Area    (ha)=    1.30
| 05:000102 DT= 2.00 |   Total Imp(%)=   85.00   Dir. Conn.(%)=   85.00
---------------------

                           IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       1.11         .19
     Dep. Storage     (mm)=       2.00        5.00
     Average Slope     (%)=        .50        2.00
     Length            (m)=      90.00       50.00
     Mannings n            =       .013        .250

     Max.eff.Inten.(mm/hr)=     124.77       39.13
               over (min)          2.00       14.00
     Storage Coeff.  (min)=       2.70 (ii)  14.45 (ii)
     Unit Hyd. Tpeak (min)=       2.00       14.00
     Unit Hyd. peak  (cms)=        .44         .08
                                                      *TOTALS*
     PEAK FLOW       (cms)=        .38         .01         .383 (iii)
     TIME TO PEAK    (hrs)=       9.67        9.83        9.667
     RUNOFF VOLUME    (mm)=      81.16       32.67       73.888
     TOTAL RAINFALL   (mm)=      83.16       83.16       83.163
     RUNOFF COEFFICIENT   =        .98         .39         .888

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN* =  70.0     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.

-----------------------------------------------------------------------------
001:0024-----------------------------------------------------------------------
*Split out 10 year flow
----------------------
| COMPUTE DUALHYD    |   Average inlet capacities   [CINLET] =    .383  (cms)
| TotalHyd 05:000102 |   Number of inlets in system [NINLET] =       1
----------------------   Total minor system capacity          =    .383  (cms)
                         Total major system storage [TMJSTO] =       0.(cu.m.)

                  ID: NHYD        AREA     QPEAK     TPEAK     R.V.      DWF
                                  (ha)     (cms)     (hrs)     (mm)    (cms)
     TOTAL HYD.   05:000102        1.30      .383     9.667   73.888     .000
     ==========================================================================
     MAJOR SYST   06:102MJ          .00      .000      .000     .000     .000
     MINOR SYST   07:102MN         1.30      .383     9.667   73.888     .000

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

-----------------------------------------------------------------------------
001:0025-----------------------------------------------------------------------
*Split out 2 year flow
```

```
----------------------
| COMPUTE DUALHYD    |   Average inlet capacities   [CINLET] =    .220  (cms)
| TotalHyd 07:102MN  |   Number of inlets in system [NINLET] =      1
----------------------   Total minor system capacity         =    .220  (cms)
                         Total major system storage [TMJSTO] =      0.(cu.m.)

                  ID: NHYD        AREA     QPEAK     TPEAK      R.V.       DWF
                                  (ha)     (cms)     (hrs)     (mm)     (cms)
     TOTAL HYD.   07:102MN        1.30      .383     9.667   73.888      .000
     ==========================================================================
     MAJOR SYST   08:102CH         .10      .163     9.667   73.888      .000
     MINOR SYST   09:102PD        1.20      .220     9.533   73.888      .000

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------
001:0026----------------------------------------------------------------------
--------------------
| ADD HYD (MJ2   ) | ID: NHYD     AREA     QPEAK   TPEAK   R.V.    DWF
--------------------              (ha)     (cms)   (hrs)   (mm)   (cms)
                  ID1 10:MJ1         .00     .000    9.77  76.17    .000
                 +ID2 06:102MJ       .00     .000     .00    .00    .000 **DRY**
                  ========================================================
                  SUM 03:MJ2         .00     .000    9.77  76.17    .000

   NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------
001:0027----------------------------------------------------------------------
--------------------
| ADD HYD (CH2   ) | ID: NHYD     AREA     QPEAK   TPEAK   R.V.    DWF
--------------------              (ha)     (cms)   (hrs)   (mm)   (cms)
                  ID1 01:CH1        2.98    3.436    9.77  76.18    .000
                 +ID2 04:EWROOF     8.50     .094   11.53  81.11    .000
                 +ID3 08:102CH       .10     .163    9.67  73.89    .000
                  ========================================================
                  SUM 05:CH2       11.58    3.506    9.77  79.78    .000

   NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------
001:0028----------------------------------------------------------------------
--------------------
| ADD HYD (PD2   ) | ID: NHYD     AREA     QPEAK   TPEAK   R.V.    DWF
--------------------              (ha)     (cms)   (hrs)   (mm)   (cms)
                  ID1 02:PD1       25.12    2.485    9.70  76.12    .000
                 +ID2 09:102PD      1.20     .220    9.53  73.89    .000
                  ========================================================
                  SUM 06:PD2       26.32    2.705    9.70  76.02    .000

   NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------
001:0029----------------------------------------------------------------------
--------------------
| ROUTE RESERVOIR  |    Requested routing time step =  2.0 min.
|  IN>06:(PD2   )  |
| OUT<07:(POND  )  |    =========  OUTLFOW STORAGE TABLE  =========
--------------------    OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
                          (cms)    (ha.m.)   |    (cms)    (ha.m.)
                           .000  .0000E+00   |    2.280  .2630E+00
                           .028  .1190E+00   |    4.686  .3620E+00
                           .311  .1530E+00   |    7.610  .4670E+00
                           .827  .1890E+00   |   11.693  .6020E+00
                          1.492  .2250E+00   |     .000  .0000E+00

     ROUTING RESULTS            AREA     QPEAK     TPEAK       R.V.
     ---------------           (ha)     (cms)     (hrs)       (mm)
     INFLOW >06: (PD2   )      26.32    2.705     9.700     76.019
     OUTFLOW<07: (POND  )      26.32    2.428     9.867     76.018
    OVERFLOW<08: (OVRFLW)        .00     .000      .000       .000

                  TOTAL NUMBER OF SIMULATED OVERFLOWS  =        0
                  CUMULATIVE TIME OF OVERFLOWS  (hours)=      .00
                  PERCENTAGE OF TIME OVERFLOWING    (%)=      .00


                  PEAK   FLOW   REDUCTION [Qout/Qin](%)=   89.774
                  TIME SHIFT OF PEAK FLOW         (min)=    10.00
                  MAXIMUM  STORAGE   USED       (ha.m.)=.2692E+00

--------------------------------------------------------------------------------
001:0030----------------------------------------------------------------------
--------------------
| ADD HYD (PNDOUT) | ID: NHYD     AREA     QPEAK   TPEAK   R.V.    DWF
--------------------              (ha)     (cms)   (hrs)   (mm)   (cms)
                  ID1 07:POND      26.32    2.428    9.87  76.02    .000
                 +ID2 08:OVRFLW      .00     .000     .00    .00    .000 **DRY**
                  ========================================================
                  SUM 09:PNDOUT    26.32    2.428    9.87  76.02    .000

   NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------
001:0031----------------------------------------------------------------------
* 5YROUT must be 2.84 m3/s or less for 5 year event based on 75 l/s/ha for
* 37.9 total site hectares.
--------------------
| ADD HYD (5YROUT) | ID: NHYD     AREA     QPEAK   TPEAK   R.V.    DWF
--------------------              (ha)     (cms)   (hrs)   (mm)   (cms)
                  ID1 09:PNDOUT    26.32    2.428    9.87  76.02    .000
                 +ID2 05:CH2       11.58    3.506    9.77  79.78    .000
                  ========================================================
                  SUM 10:5YROUT    37.90    5.738    9.77  77.17    .000

   NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------
001:0032----------------------------------------------------------------------
* TOTAL is all flows from development site and argentia road
--------------------
| ADD HYD (TOTAL ) | ID: NHYD     AREA     QPEAK   TPEAK   R.V.    DWF
--------------------              (ha)     (cms)   (hrs)   (mm)   (cms)
                  ID1 03:MJ2         .00     .000    9.77  76.17    .000
                 +ID2 10:5YROUT    37.90    5.738    9.77  77.17    .000
                  ========================================================
                  SUM 01:TOTAL      37.90    5.738    9.77  77.17    .000

   NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------
001:0033----------------------------------------------------------------------
--------------------
| CALIB NASHYD     |   Area    (ha)=    4.80   Curve Number   (CN)=70.00
| 02:100    DT= 2.00 |   Ia      (mm)=   8.000   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=    .700

     Unit Hyd Qpeak  (cms)=     .262

     PEAK FLOW       (cms)=     .142 (i)
     TIME TO PEAK    (hrs)=   10.467
     RUNOFF VOLUME    (mm)=   30.700
     TOTAL RAINFALL   (mm)=   83.163
     RUNOFF COEFFICIENT   =     .369

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

--------------------------------------------------------------------------------
001:0034----------------------------------------------------------------------
      FINISH
--------------------------------------------------------------------------------
********************************************************************************
     WARNINGS / ERRORS / NOTES
                          -------------------------
 001:0009 ROUTE RESERVOIR
      *** WARNING: Outflow volume is less than inflow volume.
   Simulation ended on 2012-05-16     at 14:53:09
================================================================================
```

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

 SSSSS  W   W  M   M  H   H  Y   Y  M   M   OOO        999    999  =========
 S      W W W  MM MM  H   H   Y Y   MM MM  O   O      9   9  9   9
 SSSSS  W W W  M M M  HHHHH    Y    M M M  O   O  ##  9   9  9   9 Ver. 4.02
     S   W W   M   M  H   H    Y    M   M  O   O       9999   9999 July 1999
 SSSSS   W W   M   M  H   H    Y    M   M   OOO           9      9 =========
                                                      9   9  9   9 # 2649264
      StormWater Management HYdrologic Model           999    999  =========

 ************************************************************************
 ************************** SWMHYMO-99 Ver/4.02 **************************
 *******  A single event and continuous hydrologic simulation model  *******
 *******     based on the principles of HYMO and its successors      *******
 *******                OTTHYMO-83 and OTTHYMO-89.                   *******
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 *******                  E-Mail: swmhymo@jfsa.com                  *******
 ************************************************************************

 ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
 ++++++ Licensed user: Earth Tech Canada                          ++++++
 +++++++              London              SERIAL#:2649264         +++++++
 ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

 ************************************************************************
 *******           ++++++ PROGRAM ARRAY DIMENSIONS ++++++          *******
 *******           Maximum value for ID numbers  :     10         *******
 *******           Max. number of rainfall points:  15000         *******
 *******           Max. number of flow points    :  15000         *******
 ************************************************************************


 ********************   D E T A I L E D   O U T P U T   ********************
 ************************************************************************
 *       DATE: 2012-05-16       TIME: 14:57:13      RUN COUNTER: 002780     *
 ************************************************************************
 * Input   filename: O:\PROJECTS\601429~1\GENCOR~1\LONDON~2\SWMHYMO\25YR.DA*
 * Output  filename: O:\PROJECTS\601429~1\GENCOR~1\LONDON~2\SWMHYMO\25YR.ou*
 * Summary filename: O:\PROJECTS\601429~1\GENCOR~1\LONDON~2\SWMHYMO\25YR.su*
 * User comments:                                                         *
 * 1:_____________________________________________________________________*
 * 2:_____________________________________________________________________*
 * 3:_____________________________________________________________________*
 ************************************************************************


-------------------------------------------------------------------------------
001:0001--------------------------------------------------------------------------
*#**************************************************************************
*#  Project Name: [PROLOGIS PARK MEADOWVALE]    Project Number: [60142982]
*#  Date        : 01-03-2012
*#  Modeller    : [DPG]
*#  Revision    : 02-15-2012
*#  Revised by  : [dpg]
*#  Company     : Earth Tech Canada
*#  License #   :  2649264
*#**************************************************************************
* Phase 1
--------------------
| START            |  Project  dir.: O:\PROJECTS\601429~1\GENCOR~1\LONDON~2\SWMHYMO\
--------------------  Rainfall dir.: O:\PROJECTS\601429~1\GENCOR~1\LONDON~2\SWMHYMO\
    TZERO =   .00 hrs on        0
    METOUT=   2 (output = METRIC)
    NRUN  = 001
    NSTORM=   0
-------------------------------------------------------------------------------
001:0002--------------------------------------------------------------------------
*#
*# 25-year design storm, City of Mississauga standards
*#
--------------------
| CHICAGO STORM    |    IDF curve parameters: A=1160.000
| Ptotal= 95.51 mm |                          B=   4.600
--------------------                          C=    .780
                        used in:   INTENSITY =  A / (t + B)^C

                        Duration of storm  = 24.00 hrs
                        Storm time step    = 10.00 min
                        Time to peak ratio =   .40

            TIME    RAIN |  TIME    RAIN |  TIME    RAIN |  TIME    RAIN
             hrs   mm/hr |   hrs   mm/hr |   hrs   mm/hr |   hrs   mm/hr
              .17    .894 |  6.17   1.982 | 12.17   3.589 | 18.17   1.342
              .33    .907 |  6.33   2.062 | 12.33   3.405 | 18.33   1.321
              .50    .920 |  6.50   2.149 | 12.50   3.240 | 18.50   1.301
              .67    .933 |  6.67   2.245 | 12.67   3.093 | 18.67   1.282
              .83    .947 |  6.83   2.352 | 12.83   2.960 | 18.83   1.264
             1.00    .961 |  7.00   2.471 | 13.00   2.839 | 19.00   1.246
             1.17    .976 |  7.17   2.605 | 13.17   2.729 | 19.17   1.229
             1.33    .992 |  7.33   2.756 | 13.33   2.628 | 19.33   1.212
             1.50   1.008 |  7.50   2.929 | 13.50   2.535 | 19.50   1.195
             1.67   1.024 |  7.67   3.129 | 13.67   2.450 | 19.67   1.180
             1.83   1.041 |  7.83   3.363 | 13.83   2.371 | 19.83   1.164
             2.00   1.059 |  8.00   3.641 | 14.00   2.297 | 20.00   1.149
             2.17   1.078 |  8.17   3.977 | 14.17   2.228 | 20.17   1.135
             2.33   1.097 |  8.33   4.392 | 14.33   2.164 | 20.33   1.121
             2.50   1.118 |  8.50   4.922 | 14.50   2.104 | 20.50   1.107
             2.67   1.139 |  8.67   5.622 | 14.67   2.048 | 20.67   1.094
             2.83   1.161 |  8.83   6.597 | 14.83   1.995 | 20.83   1.081
             3.00   1.184 |  9.00   8.058 | 15.00   1.945 | 21.00   1.069
             3.17   1.208 |  9.17  10.524 | 15.17   1.897 | 21.17   1.056
             3.33   1.233 |  9.33  15.691 | 15.33   1.853 | 21.33   1.044
             3.50   1.259 |  9.50  34.804 | 15.50   1.810 | 21.50   1.033
             3.67   1.287 |  9.67 143.305 | 15.67   1.770 | 21.67   1.021
             3.83   1.316 |  9.83  40.611 | 15.83   1.732 | 21.83   1.010
             4.00   1.347 | 10.00  20.818 | 16.00   1.695 | 22.00   1.000
             4.17   1.379 | 10.17  14.313 | 16.17   1.660 | 22.17    .989
             4.33   1.414 | 10.33  11.051 | 16.33   1.627 | 22.33    .979
             4.50   1.450 | 10.50   9.077 | 16.50   1.596 | 22.50    .969
             4.67   1.488 | 10.67   7.747 | 16.67   1.565 | 22.67    .959
             4.83   1.529 | 10.83   6.786 | 16.83   1.536 | 22.83    .949
             5.00   1.573 | 11.00   6.058 | 17.00   1.509 | 23.00    .940
             5.17   1.619 | 11.17   5.484 | 17.17   1.482 | 23.17    .931
             5.33   1.669 | 11.33   5.021 | 17.33   1.456 | 23.33    .922
             5.50   1.722 | 11.50   4.637 | 17.50   1.431 | 23.50    .913
             5.67   1.780 | 11.67   4.314 | 17.67   1.408 | 23.67    .904
             5.83   1.842 | 11.83   4.038 | 17.83   1.385 | 23.83    .896
             6.00   1.909 | 12.00   3.799 | 18.00   1.363 | 24.00    .888

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001:0003--------------------------------------------------------------------------
* Future North Site Development
----------------------
| CALIB STANDHYD     |   Area    (ha)=   17.30
| 01:000103 DT= 2.00 |   Total Imp(%)=   90.00   Dir. Conn.(%)=   90.00
----------------------
                          IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=      15.57         1.73
     Dep. Storage     (mm)=       2.00         5.00
     Average Slope     (%)=        .50         2.00
     Length            (m)=     340.00        50.00
     Mannings n            =       .013         .250

     Max.eff.Inten.(mm/hr)=     143.31        46.37
               over (min)         6.00        16.00
     Storage Coeff.  (min)=       5.68 (ii)   16.65 (ii)
     Unit Hyd. Tpeak (min)=       6.00        16.00
     Unit Hyd. peak  (cms)=        .19          .07
                                                    *TOTALS*
     PEAK FLOW       (cms)=       4.95          .14      5.028 (iii)
     TIME TO PEAK    (hrs)=       9.70         9.87       9.700
     RUNOFF VOLUME    (mm)=      93.51        41.09      88.272
     TOTAL RAINFALL   (mm)=      95.51        95.51      95.514
     RUNOFF COEFFICIENT   =        .98          .43        .924

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN* =  70.0    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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001:0004--------------------------------------------------------------------------
--------------------
| ROUTE RESERVOIR  |    Requested routing time step =  2.0 min.
|  IN>01:(000103)  |
| OUT<02:(NORTH )  |    =========  OUTLFOW STORAGE TABLE  =========
--------------------    OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
                          (cms)    (ha.m.)   |    (cms)    (ha.m.)
                           .000  .0000E+00   |    1.300  .3000E+00

     ROUTING RESULTS            AREA     QPEAK     TPEAK       R.V.
     --------------------        (ha)     (cms)     (hrs)       (mm)
     INFLOW >01: (000103)      17.30     5.028     9.700     88.272
     OUTFLOW<02: (NORTH )      15.40     1.300     9.733     88.272
    OVERFLOW<03: (OVRFLW)       1.90     3.532     9.733     88.272

                    TOTAL NUMBER OF SIMULATED OVERFLOWS  =        1
                    CUMULATIVE TIME OF OVERFLOWS  (hours)=      .27
                    PERCENTAGE OF TIME OVERFLOWING    (%)=      .86


                    PEAK   FLOW   REDUCTION [Qout/Qin](%)=    25.855
                    TIME SHIFT OF PEAK FLOW         (min)=     2.00
                    MAXIMUM  STORAGE   USED       (ha.m.)=.2991E+00

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001:0005--------------------------------------------------------------------------
--------------------
| ADD HYD (N1      | ID: NHYD     AREA     QPEAK   TPEAK   R.V.    DWF
--------------------              (ha)     (cms)   (hrs)   (mm)   (cms)
                  ID1 02:NORTH     15.40    1.300    9.73  88.27    .000
                 +ID2 03:OVRFLW     1.90    3.532    9.73  88.27    .000
                  ================================================
                  SUM 04:N1        17.30    4.832    9.73  88.27    .000

   NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

-------------------------------------------------------------------------------
001:0006--------------------------------------------------------------------------
*Split out 10 year flow
----------------------
| COMPUTE DUALHYD    |   Average inlet capacities   [CINLET] =   3.649  (cms)
| TotalHyd 04:N1     |   Number of inlets in system [NINLET] =     1
----------------------   Total minor system capacity          =   3.649  (cms)
                         Total major system storage [TMJSTO] =       0.(cu.m.)

                  ID: NHYD        AREA     QPEAK     TPEAK     R.V.      DWF
                                   (ha)     (cms)     (hrs)     (mm)    (cms)
     TOTAL HYD.   04:N1          17.30     4.832     9.733   88.271     .000
     ================================================================================
     MAJOR SYST   05:103MJ         .24     1.183     9.733   88.271     .000
     MINOR SYST   06:103MN       17.06     3.649     9.733   88.271     .000

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

-------------------------------------------------------------------------------
001:0007--------------------------------------------------------------------------
*Split out 2 year flow
----------------------
| COMPUTE DUALHYD    |   Average inlet capacities   [CINLET] =    .928  (cms)
| TotalHyd 06:103MN  |   Number of inlets in system [NINLET] =      1
----------------------   Total minor system capacity          =    .928  (cms)
                         Total major system storage [TMJSTO] =       0.(cu.m.)

                  ID: NHYD        AREA     QPEAK     TPEAK     R.V.      DWF
                                   (ha)     (cms)     (hrs)     (mm)    (cms)
     TOTAL HYD.   06:103MN       17.06     3.649     9.733   88.271     .000
     ================================================================================
     MAJOR SYST   07:103CH         2.67     2.721     9.733   88.271     .000
     MINOR SYST   08:103PD       14.39      .928     9.667   88.272     .000

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

-------------------------------------------------------------------------------
001:0008--------------------------------------------------------------------------
* Prologis Park Development
----------------------
| CALIB STANDHYD     |   Area    (ha)=   10.80
| 09:000101 DT= 2.00 |   Total Imp(%)=   89.00   Dir. Conn.(%)=   89.00
----------------------
                          IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       9.61         1.19
     Dep. Storage     (mm)=       2.00         5.00
     Average Slope     (%)=        .50         2.00
     Length            (m)=     260.00        50.00
     Mannings n            =       .013         .250

     Max.eff.Inten.(mm/hr)=     143.31        46.37
               over (min)         4.00        16.00
     Storage Coeff.  (min)=       4.83 (ii)   15.81 (ii)
     Unit Hyd. Tpeak (min)=       4.00        16.00
     Unit Hyd. peak  (cms)=        .25          .07
                                                    *TOTALS*
     PEAK FLOW       (cms)=       3.34          .10      3.389 (iii)
     TIME TO PEAK    (hrs)=       9.67         9.87       9.667
     RUNOFF VOLUME    (mm)=      93.51        41.09      87.747
     TOTAL RAINFALL   (mm)=      95.51        95.51      95.514
     RUNOFF COEFFICIENT   =        .98          .43        .919

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN* =  70.0    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.

-------------------------------------------------------------------------------
001:0009--------------------------------------------------------------------------
*Route Reservoir placed as a holder if needed, otherwise leave empty
--------------------
| ROUTE RESERVOIR  |    Requested routing time step =  2.0 min.
|  IN>09:(000101)  |
| OUT<10:(SOUTH )  |    =========  OUTLFOW STORAGE TABLE  =========
--------------------    OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
                          (cms)    (ha.m.)   |    (cms)    (ha.m.)
                           .000  .0000E+00   |     .000  .0000E+00

     ROUTING RESULTS            AREA     QPEAK     TPEAK       R.V.
     --------------------        (ha)     (cms)     (hrs)       (mm)
     INFLOW >09: (000101)      10.80     3.389     9.667     87.747
     OUTFLOW<10: (SOUTH )        .00      .000      .000       .000
    OVERFLOW<01: (OVRFLW)      10.80     3.278     9.700     87.747

                    TOTAL NUMBER OF SIMULATED OVERFLOWS  =        1
                    CUMULATIVE TIME OF OVERFLOWS  (hours)=    25.20
                    PERCENTAGE OF TIME OVERFLOWING    (%)=    92.42


                    PEAK   FLOW   REDUCTION [Qout/Qin](%)=     .000
                    TIME SHIFT OF PEAK FLOW         (min)=  -580.00
                    MAXIMUM  STORAGE   USED       (ha.m.)=.0000E+00

      *** WARNING: Outflow volume is less than inflow volume.
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001:0010-----------------------------------------------------------------------
--------------------
| ADD HYD (S1    ) | ID: NHYD     AREA     QPEAK   TPEAK   R.V.    DWF
--------------------                (ha)     (cms)   (hrs)   (mm)   (cms)
                ID1 10:SOUTH       .00      .000     .00    .00    .000 **DRY**
               +ID2 01:OVRFLW    10.80     3.278    9.70  87.75    .000
                ====================================================
                SUM 02:S1         10.80     3.278    9.70  87.75    .000

   NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

-----------------------------------------------------------------------------
001:0011-----------------------------------------------------------------------
*Split out 10 year flow
----------------------
| COMPUTE DUALHYD    |   Average inlet capacities   [CINLET] =   2.762  (cms)
| TotalHyd 02:S1     |   Number of inlets in system [NINLET] =       1
----------------------   Total minor system capacity          =   2.762  (cms)
                         Total major system storage [TMJSTO] =       0.(cu.m.)

                  ID: NHYD        AREA     QPEAK     TPEAK     R.V.      DWF
                                   (ha)     (cms)     (hrs)     (mm)    (cms)
     TOTAL HYD.   02:S1          10.80     3.278     9.700   87.747     .000
     ==========================================================================
     MAJOR SYST   03:101MJ          .17      .516     9.700   87.747     .000
     MINOR SYST   04:101MN        10.63     2.762     9.633   87.747     .000

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

-----------------------------------------------------------------------------
001:0012-----------------------------------------------------------------------
*Split out 2 year flow
----------------------
| COMPUTE DUALHYD    |   Average inlet capacities   [CINLET] =   1.557  (cms)
| TotalHyd 04:101MN  |   Number of inlets in system [NINLET] =       1
----------------------   Total minor system capacity          =   1.557  (cms)
                         Total major system storage [TMJSTO] =       0.(cu.m.)

                  ID: NHYD        AREA     QPEAK     TPEAK     R.V.      DWF
                                   (ha)     (cms)     (hrs)     (mm)    (cms)
     TOTAL HYD.   04:101MN       10.63     2.762     9.633   87.747     .000
     ==========================================================================
     MAJOR SYST   06:101CH          .97      .205     9.633   87.747     .000
     MINOR SYST   09:101PD        9.66     1.557     9.567   87.747     .000

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

-----------------------------------------------------------------------------
001:0013-----------------------------------------------------------------------
--------------------
| ADD HYD (MJ1   ) | ID: NHYD     AREA     QPEAK   TPEAK   R.V.    DWF
--------------------                (ha)     (cms)   (hrs)   (mm)   (cms)
                ID1 05:103MJ        .24     1.183    9.73  88.27    .000
               +ID2 03:101MJ        .17      .516    9.70  87.75    .000
                ====================================================
                SUM 10:MJ1           .41     1.250    9.73  88.05    .000

   NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

-----------------------------------------------------------------------------
001:0014-----------------------------------------------------------------------
--------------------
| ADD HYD (CH1   ) | ID: NHYD     AREA     QPEAK   TPEAK   R.V.    DWF
--------------------                (ha)     (cms)   (hrs)   (mm)   (cms)
                ID1 07:103CH       2.67     2.721    9.73  88.27    .000
               +ID2 06:101CH        .97     1.205    9.63  87.75    .000
                ====================================================
                SUM 01:CH1          3.64     3.926    9.73  88.13    .000

   NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

-----------------------------------------------------------------------------
001:0015-----------------------------------------------------------------------
--------------------
| ADD HYD (PD1   ) | ID: NHYD     AREA     QPEAK   TPEAK   R.V.    DWF
--------------------                (ha)     (cms)   (hrs)   (mm)   (cms)
                ID1 08:103PD       14.39      .928    9.67  88.27    .000
               +ID2 09:101PD        9.66     1.557    9.57  87.75    .000
                ====================================================
                SUM 02:PD1          24.05     2.485    9.67  88.06    .000

   NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

-----------------------------------------------------------------------------
001:0016-----------------------------------------------------------------------
* East Roof
--------------------
| CALIB STANDHYD     |   Area    (ha)=    3.50
| 03:000105 DT= 2.00 |   Total Imp(%)=   99.00   Dir. Conn.(%)=   99.00
---------------------

                           IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       3.46         .03
     Dep. Storage     (mm)=       2.00        5.00
     Average Slope     (%)=        .50        2.00
     Length            (m)=     150.00       50.00
     Mannings n            =       .013        .250

     Max.eff.Inten.(mm/hr)=     143.31      142.59
               over (min)          4.00       10.00
     Storage Coeff.  (min)=       3.47 (ii)  10.48 (ii)
     Unit Hyd. Tpeak (min)=       4.00       10.00
     Unit Hyd. peak  (cms)=        .31         .11
                                                      *TOTALS*
     PEAK FLOW       (cms)=       1.29         .01        1.300 (iii)
     TIME TO PEAK    (hrs)=       9.67        9.77        9.667
     RUNOFF VOLUME    (mm)=      93.51       88.02       93.459
     TOTAL RAINFALL   (mm)=      95.51       95.51       95.514
     RUNOFF COEFFICIENT   =        .98         .92         .978

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN* =  99.0     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.

-----------------------------------------------------------------------------
001:0017-----------------------------------------------------------------------
--------------------
| ROUTE RESERVOIR    |    Requested routing time step =  2.0 min.
|  IN>03:(000105)    |
| OUT<04:(EASTRF)    |    =========  OUTFLOW STORAGE TABLE  =========
--------------------    OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
                          (cms)    (ha.m.)   |    (cms)    (ha.m.)
                           .000  .0000E+00   |     .060  .2800E+00

     ROUTING RESULTS            AREA     QPEAK     TPEAK       R.V.
     -------------------         (ha)     (cms)     (hrs)       (mm)
     INFLOW >03: (000105)       3.50     1.300     9.667     93.459
     OUTFLOW<04: (EASTRF)       3.50      .045    11.500     93.457
    OVERFLOW<05: (OVRFLW)        .00      .000      .000       .000

                  TOTAL NUMBER OF SIMULATED OVERFLOWS  =        0
                  CUMULATIVE TIME OF OVERFLOWS  (hours)=      .00
                  PERCENTAGE OF TIME OVERFLOWING    (%)=      .00


                  PEAK   FLOW   REDUCTION [Qout/Qin](%)=    3.490
                  TIME SHIFT OF PEAK FLOW         (min)=   110.00
                  MAXIMUM  STORAGE   USED       (ha.m.)=.2117E+00

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001:0018-----------------------------------------------------------------------
--------------------
| ADD HYD (E1    ) | ID: NHYD     AREA     QPEAK   TPEAK   R.V.    DWF
--------------------                (ha)     (cms)   (hrs)   (mm)   (cms)
                ID1 04:EASTRF      3.50      .045   11.50  93.46    .000
               +ID2 05:OVRFLW       .00      .000     .00    .00    .000 **DRY**
                ====================================================
                SUM 06:E1          3.50      .045   11.50  93.46    .000

   NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

-----------------------------------------------------------------------------
001:0019-----------------------------------------------------------------------
* West Roof
--------------------
| CALIB STANDHYD     |   Area    (ha)=    5.00
| 07:000104 DT= 2.00 |   Total Imp(%)=   99.00   Dir. Conn.(%)=   99.00
---------------------

                           IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       4.95         .05
     Dep. Storage     (mm)=       2.00        5.00
     Average Slope     (%)=        .50        2.00
     Length            (m)=     180.00       50.00
     Mannings n            =       .013        .250

     Max.eff.Inten.(mm/hr)=     143.31      125.57
               over (min)          4.00       12.00
     Storage Coeff.  (min)=       3.88 (ii)  11.24 (ii)
     Unit Hyd. Tpeak (min)=       4.00       12.00
     Unit Hyd. peak  (cms)=        .29         .10
                                                      *TOTALS*
     PEAK FLOW       (cms)=       1.81         .01        1.819 (iii)
     TIME TO PEAK    (hrs)=       9.67        9.80        9.667
     RUNOFF VOLUME    (mm)=      93.51       88.02       93.459
     TOTAL RAINFALL   (mm)=      95.51       95.51       95.514
     RUNOFF COEFFICIENT   =        .98         .92         .978

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN* =  99.0     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.

-----------------------------------------------------------------------------
001:0020-----------------------------------------------------------------------
--------------------
| ROUTE RESERVOIR    |    Requested routing time step =  2.0 min.
|  IN>07:(000104)    |
| OUT<08:(WESTRF)    |    =========  OUTFLOW STORAGE TABLE  =========
--------------------    OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
                          (cms)    (ha.m.)   |    (cms)    (ha.m.)
                           .000  .0000E+00   |     .080  .3900E+00

     ROUTING RESULTS            AREA     QPEAK     TPEAK       R.V.
     -------------------         (ha)     (cms)     (hrs)       (mm)
     INFLOW >07: (000104)       5.00     1.819     9.667     93.459
     OUTFLOW<08: (WESTRF)       5.00      .062    11.567     93.457
    OVERFLOW<09: (OVRFLW)        .00      .000      .000       .000

                  TOTAL NUMBER OF SIMULATED OVERFLOWS  =        0
                  CUMULATIVE TIME OF OVERFLOWS  (hours)=      .00
                  PERCENTAGE OF TIME OVERFLOWING    (%)=      .00


                  PEAK   FLOW   REDUCTION [Qout/Qin](%)=    3.435
                  TIME SHIFT OF PEAK FLOW         (min)=   114.00
                  MAXIMUM  STORAGE   USED       (ha.m.)=.3046E+00

-----------------------------------------------------------------------------
001:0021-----------------------------------------------------------------------
--------------------
| ADD HYD (W1    ) | ID: NHYD     AREA     QPEAK   TPEAK   R.V.    DWF
--------------------                (ha)     (cms)   (hrs)   (mm)   (cms)
                ID1 08:WESTRF      5.00      .062   11.57  93.46    .000
               +ID2 09:OVRFLW       .00      .000     .00    .00    .000 **DRY**
                ====================================================
                SUM 03:W1          5.00      .062   11.57  93.46    .000

   NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

-----------------------------------------------------------------------------
001:0022-----------------------------------------------------------------------
--------------------
| ADD HYD (EWROOF) | ID: NHYD     AREA     QPEAK   TPEAK   R.V.    DWF
--------------------                (ha)     (cms)   (hrs)   (mm)   (cms)
                ID1 06:E1          3.50      .045   11.50  93.46    .000
               +ID2 03:W1          5.00      .062   11.57  93.46    .000
                ====================================================
                SUM 04:EWROOF      8.50      .108   11.53  93.46    .000

   NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

-----------------------------------------------------------------------------
001:0023-----------------------------------------------------------------------
* Argentia Road Extension
--------------------
| CALIB STANDHYD     |   Area    (ha)=    1.30
| 05:000102 DT= 2.00 |   Total Imp(%)=   85.00   Dir. Conn.(%)=   85.00
---------------------

                           IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       1.11         .19
     Dep. Storage     (mm)=       2.00        5.00
     Average Slope     (%)=        .50        2.00
     Length            (m)=      90.00       50.00
     Mannings n            =       .013        .250

     Max.eff.Inten.(mm/hr)=     143.31       49.88
               over (min)          2.00       14.00
     Storage Coeff.  (min)=       2.56 (ii)  13.21 (ii)
     Unit Hyd. Tpeak (min)=       2.00       14.00
     Unit Hyd. peak  (cms)=        .46         .08
                                                      *TOTALS*
     PEAK FLOW       (cms)=        .43         .02         .443 (iii)
     TIME TO PEAK    (hrs)=       9.67        9.83        9.667
     RUNOFF VOLUME    (mm)=      93.51       41.09       85.651
     TOTAL RAINFALL   (mm)=      95.51       95.51       95.514
     RUNOFF COEFFICIENT   =        .98         .43         .897

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN* =  70.0     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.

-----------------------------------------------------------------------------
001:0024-----------------------------------------------------------------------
*Split out 10 year flow
----------------------
| COMPUTE DUALHYD    |   Average inlet capacities   [CINLET] =    .383  (cms)
| TotalHyd 05:000102 |   Number of inlets in system [NINLET] =       1
----------------------   Total minor system capacity          =    .383  (cms)
                         Total major system storage [TMJSTO] =       0.(cu.m.)

                  ID: NHYD        AREA     QPEAK     TPEAK     R.V.      DWF
                                   (ha)     (cms)     (hrs)     (mm)    (cms)
     TOTAL HYD.   05:000102        1.30      .443     9.667   85.651     .000
     ==========================================================================
     MAJOR SYST   06:102MJ          .02      .060     9.667   85.651     .000
     MINOR SYST   07:102MN         1.28      .383     9.600   85.650     .000

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

-----------------------------------------------------------------------------
001:0025-----------------------------------------------------------------------
*Split out 2 year flow
```

```
---------------------
| COMPUTE DUALHYD    |   Average inlet capacities   [CINLET] =    .220  (cms)
| TotalHyd 07:102MN  |   Number of inlets in system [NINLET] =      1
---------------------   Total minor system capacity          =    .220  (cms)
                        Total major system storage [TMJSTO] =      0.(cu.m.)

                 ID: NHYD        AREA     QPEAK     TPEAK      R.V.       DWF
                                 (ha)     (cms)     (hrs)     (mm)     (cms)
    TOTAL HYD.   07:102MN        1.28      .383     9.600   85.650      .000
    ==========================================================================
    MAJOR SYST   08:102CH         .11      .163     9.600   85.650      .000
    MINOR SYST   09:102PD        1.17      .220     9.533   85.651      .000

    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------
001:0026----------------------------------------------------------------------
-------------------
| ADD HYD (MJ2   ) | ID: NHYD     AREA     QPEAK   TPEAK   R.V.    DWF
-------------------                (ha)     (cms)   (hrs)   (mm)   (cms)
                  ID1 10:MJ1         .41    1.250    9.73  88.05    .000
                 +ID2 06:102MJ       .02     .060    9.67  85.65    .000
                  ========================================================
                  SUM 03:MJ2         .43    1.250    9.73  87.94    .000

   NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------
001:0027----------------------------------------------------------------------
-------------------
| ADD HYD (CH2   ) | ID: NHYD     AREA     QPEAK   TPEAK   R.V.    DWF
-------------------                (ha)     (cms)   (hrs)   (mm)   (cms)
                  ID1 01:CH1        3.64    3.926    9.73  88.13    .000
                 +ID2 04:EWROOF     8.50     .108   11.53  93.46    .000
                 +ID3 08:102CH       .11     .163    9.60  85.65    .000
                  ========================================================
                  SUM 05:CH2       12.25    4.003    9.73  91.81    .000

   NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------
001:0028----------------------------------------------------------------------
-------------------
| ADD HYD (PD2   ) | ID: NHYD     AREA     QPEAK   TPEAK   R.V.    DWF
-------------------                (ha)     (cms)   (hrs)   (mm)   (cms)
                  ID1 02:PD1       24.05    2.485    9.67  88.06    .000
                 +ID2 09:102PD      1.17     .220    9.53  85.65    .000
                  ========================================================
                  SUM 06:PD2       25.22    2.705    9.67  87.95    .000

   NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------
001:0029----------------------------------------------------------------------
--------------------
| ROUTE RESERVOIR   |    Requested routing time step =  2.0 min.
|  IN>06:(PD2   )   |
| OUT<07:(POND  )   |    =========  OUTLFOW STORAGE TABLE  =========
--------------------    OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
                          (cms)    (ha.m.)   |    (cms)    (ha.m.)
                           .000  .0000E+00   |    2.280  .2630E+00
                           .028  .1190E+00   |    4.686  .3620E+00
                           .311  .1530E+00   |    7.610  .4670E+00
                           .827  .1890E+00   |   11.693  .6020E+00
                          1.492  .2250E+00   |     .000  .0000E+00

     ROUTING RESULTS            AREA     QPEAK     TPEAK       R.V.
     ---------------           (ha)     (cms)     (hrs)       (mm)
     INFLOW >06: (PD2   )      25.22     2.705     9.667     87.949
     OUTFLOW<07: (POND  )      25.22     2.502     9.867     87.948
    OVERFLOW<08: (OVRFLW)        .00      .000      .000       .000

                  TOTAL NUMBER OF SIMULATED OVERFLOWS  =        0
                  CUMULATIVE TIME OF OVERFLOWS  (hours)=      .00
                  PERCENTAGE OF TIME OVERFLOWING    (%)=      .00


                  PEAK   FLOW   REDUCTION [Qout/Qin](%)=   92.489
                  TIME SHIFT OF PEAK FLOW         (min)=    12.00
                  MAXIMUM  STORAGE   USED       (ha.m.)=.2721E+00

--------------------------------------------------------------------------------
001:0030----------------------------------------------------------------------
-------------------
| ADD HYD (PNDOUT) | ID: NHYD     AREA     QPEAK   TPEAK   R.V.    DWF
-------------------                (ha)     (cms)   (hrs)   (mm)   (cms)
                  ID1 07:POND      25.22    2.502    9.87  87.95    .000
                 +ID2 08:OVRFLW      .00     .000     .00    .00    .000 **DRY**
                  ========================================================
                  SUM 09:PNDOUT    25.22    2.502    9.87  87.95    .000

   NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------
001:0031----------------------------------------------------------------------
* 5YROUT must be 2.84 m3/s or less for 5 year event based on 75 l/s/ha for
* 37.9 total site hectares.
-------------------
| ADD HYD (5YROUT) | ID: NHYD     AREA     QPEAK   TPEAK   R.V.    DWF
-------------------                (ha)     (cms)   (hrs)   (mm)   (cms)
                  ID1 09:PNDOUT    25.22    2.502    9.87  87.95    .000
                 +ID2 05:CH2       12.25    4.003    9.73  91.81    .000
                  ========================================================
                  SUM 10:5YROUT    37.47    6.249    9.73  89.21    .000

   NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------
001:0032----------------------------------------------------------------------
* TOTAL is all flows from development site and argentia road
-------------------
| ADD HYD (TOTAL ) | ID: NHYD     AREA     QPEAK   TPEAK   R.V.    DWF
-------------------                (ha)     (cms)   (hrs)   (mm)   (cms)
                  ID1 03:MJ2         .43    1.250    9.73  87.94    .000
                 +ID2 10:5YROUT    37.47    6.249    9.73  89.21    .000
                  ========================================================
                  SUM 01:TOTAL     37.90    7.499    9.73  89.19    .000

   NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------
001:0033----------------------------------------------------------------------
---------------------
| CALIB NASHYD      |   Area    (ha)=    4.80   Curve Number   (CN)=70.00
| 02:100    DT= 2.00 |   Ia      (mm)=   8.000   # of Linear Res.(N)= 3.00
---------------------   U.H. Tp(hrs)=    .700

     Unit Hyd Qpeak  (cms)=     .262

     PEAK FLOW       (cms)=     .184 (i)
     TIME TO PEAK    (hrs)=   10.433
     RUNOFF VOLUME    (mm)=   39.001
     TOTAL RAINFALL   (mm)=   95.514
     RUNOFF COEFFICIENT   =     .408

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

--------------------------------------------------------------------------------
001:0034----------------------------------------------------------------------
      FINISH
--------------------------------------------------------------------------------
********************************************************************************
     WARNINGS / ERRORS / NOTES
                          -------------------------
 001:0009 ROUTE RESERVOIR
      *** WARNING: Outflow volume is less than inflow volume.
   Simulation ended on 2012-05-16     at 14:57:13
================================================================================
```

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

 SSSSS  W   W  M   M  H   H  Y   Y  M   M   OOO        999    999  =========
 S      W W W  MM MM  H   H   Y Y   MM MM  O   O      9   9  9   9
 SSSSS  W W W  M M M  HHHHH    Y    M M M  O   O  ##  9   9  9   9  Ver. 4.02
     S   W W   M   M  H   H    Y    M   M  O   O       9999   9999 July 1999
 SSSSS   W W   M   M  H   H    Y    M   M   OOO         9      9  =========
                                                     9   9  9   9 # 2649264
      StormWater Management HYdrologic Model          999    999  =========

 ************************************************************************
 *************************** SWMHYMO-99 Ver/4.02 ************************
 *******  A single event and continuous hydrologic simulation model  *******
 *******     based on the principles of HYMO and its successors      *******
 *******                OTTHYMO-83 and OTTHYMO-89.                   *******
 ************************************************************************
 ******* Distributed by:  J.F. Sabourin and Associates Inc.           *******
 *******                  Ottawa,  Ontario: (613) 727-5199           *******
 *******                  Gatineau, Quebec: (819) 243-6858           *******
 *******                  E-Mail: swmhymo@jfsa.com                   *******
 ************************************************************************

 ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
 ++++++ Licensed user: Earth Tech Canada                              ++++++
 +++++++              London              SERIAL#:2649264             +++++++
 ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

 ************************************************************************
 *******           ++++++ PROGRAM ARRAY DIMENSIONS ++++++             *******
 *******           Maximum value for ID numbers  :     10            *******
 *******           Max. number of rainfall points:  15000            *******
 *******           Max. number of flow points    :  15000            *******
 ************************************************************************


 ********************   D E T A I L E D   O U T P U T   ********************
 ************************************************************************
 *       DATE: 2012-05-16       TIME: 14:56:40       RUN COUNTER: 002779     *
 ************************************************************************
 * Input   filename: O:\PROJECTS\601429~1\GENCOR~1\LONDON~2\SWMHYMO\50YR.DA*
 * Output  filename: O:\PROJECTS\601429~1\GENCOR~1\LONDON~2\SWMHYMO\50YR.ou*
 * Summary filename: O:\PROJECTS\601429~1\GENCOR~1\LONDON~2\SWMHYMO\50YR.su*
 * User comments:                                                         *
 * 1:_____________________________________________________________________*
 * 2:_____________________________________________________________________*
 * 3:_____________________________________________________________________*
 ************************************************************************


-------------------------------------------------------------------------------
001:0001-------------------------------------------------------------------------
*#**************************************************************************
*#  Project Name: [PROLOGIS PARK MEADOWVALE]    Project Number: [60142982]
*#  Date        : 01-03-2012
*#  Modeller    : [DPG]
*#  Revision    : 02-15-2012
*#  Revised by  : [dpg]
*#  Company     : Earth Tech Canada
*#  License #   :  2649264
*#**************************************************************************
* Phase 1
--------------------
| START            |  Project  dir.: O:\PROJECTS\601429~1\GENCOR~1\LONDON~2\SWMHYMO\
--------------------  Rainfall dir.: O:\PROJECTS\601429~1\GENCOR~1\LONDON~2\SWMHYMO\
    TZERO =   .00 hrs on        0
    METOUT=   2 (output = METRIC)
    NRUN  = 001
    NSTORM=   0
-------------------------------------------------------------------------------
001:0002-------------------------------------------------------------------------
*#
*# 50-year design storm, City of Mississauga standards
*#
--------------------
| CHICAGO STORM    |    IDF curve parameters: A=1300.000
| Ptotal=107.04 mm |                          B=   4.700
--------------------                          C=    .780
                         used in:   INTENSITY =  A / (t + B)^C

                         Duration of storm  = 24.00 hrs
                         Storm time step    = 10.00 min
                         Time to peak ratio =   .40

            TIME    RAIN |  TIME    RAIN |  TIME    RAIN |  TIME    RAIN
             hrs   mm/hr |   hrs   mm/hr |   hrs   mm/hr |   hrs   mm/hr
              .17   1.002 |  6.17   2.222 | 12.17   4.026 | 18.17   1.504
              .33   1.016 |  6.33   2.312 | 12.33   3.819 | 18.33   1.481
              .50   1.031 |  6.50   2.410 | 12.50   3.634 | 18.50   1.459
              .67   1.046 |  6.67   2.518 | 12.67   3.469 | 18.67   1.437
              .83   1.061 |  6.83   2.637 | 12.83   3.320 | 18.83   1.417
             1.00   1.078 |  7.00   2.771 | 13.00   3.184 | 19.00   1.397
             1.17   1.094 |  7.17   2.921 | 13.17   3.061 | 19.17   1.377
             1.33   1.112 |  7.33   3.091 | 13.33   2.947 | 19.33   1.358
             1.50   1.129 |  7.50   3.285 | 13.50   2.843 | 19.50   1.340
             1.67   1.148 |  7.67   3.509 | 13.67   2.747 | 19.67   1.322
             1.83   1.167 |  7.83   3.772 | 13.83   2.658 | 19.83   1.305
             2.00   1.187 |  8.00   4.084 | 14.00   2.576 | 20.00   1.289
             2.17   1.208 |  8.17   4.461 | 14.17   2.499 | 20.17   1.272
             2.33   1.230 |  8.33   4.928 | 14.33   2.427 | 20.33   1.257
             2.50   1.253 |  8.50   5.523 | 14.50   2.359 | 20.50   1.241
             2.67   1.276 |  8.67   6.310 | 14.67   2.296 | 20.67   1.226
             2.83   1.301 |  8.83   7.406 | 14.83   2.236 | 20.83   1.212
             3.00   1.327 |  9.00   9.050 | 15.00   2.180 | 21.00   1.198
             3.17   1.354 |  9.17  11.825 | 15.17   2.127 | 21.17   1.184
             3.33   1.382 |  9.33  17.642 | 15.33   2.077 | 21.33   1.171
             3.50   1.412 |  9.50  39.143 | 15.50   2.030 | 21.50   1.158
             3.67   1.443 |  9.67 159.748 | 15.67   1.984 | 21.67   1.145
             3.83   1.476 |  9.83  45.671 | 15.83   1.941 | 21.83   1.133
             4.00   1.510 | 10.00  23.415 | 16.00   1.901 | 22.00   1.120
             4.17   1.546 | 10.17  16.091 | 16.17   1.862 | 22.17   1.109
             4.33   1.585 | 10.33  12.417 | 16.33   1.824 | 22.33   1.097
             4.50   1.626 | 10.50  10.196 | 16.50   1.789 | 22.50   1.086
             4.67   1.669 | 10.67   8.700 | 16.67   1.755 | 22.67   1.075
             4.83   1.715 | 10.83   7.619 | 16.83   1.722 | 22.83   1.064
             5.00   1.763 | 11.00   6.800 | 17.00   1.691 | 23.00   1.054
             5.17   1.816 | 11.17   6.156 | 17.17   1.661 | 23.17   1.043
             5.33   1.871 | 11.33   5.634 | 17.33   1.632 | 23.33   1.033
             5.50   1.931 | 11.50   5.203 | 17.50   1.605 | 23.50   1.023
             5.67   1.996 | 11.67   4.840 | 17.67   1.578 | 23.67   1.014
             5.83   2.065 | 11.83   4.530 | 17.83   1.553 | 23.83   1.004
             6.00   2.140 | 12.00   4.261 | 18.00   1.528 | 24.00    .995

-------------------------------------------------------------------------------
001:0003-------------------------------------------------------------------------
* Future North Site Development
----------------------
| CALIB STANDHYD     |   Area    (ha)=   17.30
| 01:000103 DT= 2.00 |   Total Imp(%)=   90.00   Dir. Conn.(%)=   90.00
----------------------
                           IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=      15.57         1.73
     Dep. Storage     (mm)=       2.00         5.00
     Average Slope     (%)=        .50         2.00
     Length            (m)=     340.00        50.00
     Mannings n            =       .013         .250

     Max.eff.Inten.(mm/hr)=     159.75        56.00
               over (min)         6.00        16.00
     Storage Coeff.  (min)=       5.43 (ii)   15.61 (ii)
     Unit Hyd. Tpeak (min)=       6.00        16.00
     Unit Hyd. peak  (cms)=        .20          .07
                                                    *TOTALS*
     PEAK FLOW       (cms)=       5.58          .17       5.683 (iii)
     TIME TO PEAK    (hrs)=       9.70         9.87        9.700
     RUNOFF VOLUME    (mm)=     105.03        49.36       99.469
     TOTAL RAINFALL   (mm)=     107.04       107.04      107.035
     RUNOFF COEFFICIENT   =        .98          .46         .929

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN* =  70.0    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.

-------------------------------------------------------------------------------
001:0004-------------------------------------------------------------------------
--------------------
| ROUTE RESERVOIR  |    Requested routing time step =  2.0 min.
|  IN>01:(000103)  |
| OUT<02:(NORTH )  |    =========  OUTLFOW STORAGE TABLE  =========
--------------------    OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
                          (cms)    (ha.m.)   |    (cms)    (ha.m.)
                           .000  .0000E+00   |    1.300  .3000E+00

     ROUTING RESULTS            AREA     QPEAK     TPEAK       R.V.
     --------------------        (ha)     (cms)     (hrs)       (mm)
     INFLOW >01: (000103)      17.30     5.683     9.700     99.469
     OUTFLOW<02: (NORTH )      14.81     1.300     9.700     99.468
    OVERFLOW<03: (OVRFLW)       2.49     4.357     9.700     99.469

                    TOTAL NUMBER OF SIMULATED OVERFLOWS  =        2
                    CUMULATIVE TIME OF OVERFLOWS  (hours)=      .30
                    PERCENTAGE OF TIME OVERFLOWING    (%)=      .96


                    PEAK   FLOW   REDUCTION [Qout/Qin](%)=   22.877
                    TIME SHIFT OF PEAK FLOW         (min)=      .00
                    MAXIMUM  STORAGE   USED       (ha.m.)=.2989E+00

-------------------------------------------------------------------------------
001:0005-------------------------------------------------------------------------
--------------------
| ADD HYD (N1      | ID: NHYD     AREA     QPEAK   TPEAK   R.V.    DWF
--------------------              (ha)     (cms)   (hrs)   (mm)   (cms)
                  ID1 02:NORTH     14.81    1.300    9.70  99.47    .000
                 +ID2 03:OVRFLW     2.49    4.357    9.70  99.47    .000
                  ================================================
                  SUM 04:N1        17.30    5.657    9.70  99.47    .000

   NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

-------------------------------------------------------------------------------
001:0006-------------------------------------------------------------------------
*Split out 10 year flow
----------------------
| COMPUTE DUALHYD    |   Average inlet capacities   [CINLET] =   3.649  (cms)
| TotalHyd 04:N1     |   Number of inlets in system [NINLET] =      1
----------------------   Total minor system capacity          =   3.649  (cms)
                         Total major system storage [TMJSTO] =       0.(cu.m.)

                    ID: NHYD        AREA     QPEAK     TPEAK     R.V.      DWF
                                     (ha)     (cms)     (hrs)     (mm)    (cms)
     TOTAL HYD.   04:N1           17.30     5.657     9.700   99.469     .000
     ================================================================================
     MAJOR SYST   05:103MJ          .63     2.008     9.700   99.469     .000
     MINOR SYST   06:103MN        16.67     3.649     9.700   99.468     .000

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

-------------------------------------------------------------------------------
001:0007-------------------------------------------------------------------------
*Split out 2 year flow
----------------------
| COMPUTE DUALHYD    |   Average inlet capacities   [CINLET] =    .928  (cms)
| TotalHyd 06:103MN  |   Number of inlets in system [NINLET] =      1
----------------------   Total minor system capacity          =    .928  (cms)
                         Total major system storage [TMJSTO] =       0.(cu.m.)

                    ID: NHYD        AREA     QPEAK     TPEAK     R.V.      DWF
                                     (ha)     (cms)     (hrs)     (mm)    (cms)
     TOTAL HYD.   06:103MN        16.67     3.649     9.700   99.468     .000
     ================================================================================
     MAJOR SYST   07:103CH         2.84     2.721     9.700   99.468     .000
     MINOR SYST   08:103PD        13.83      .928     9.633   99.469     .000

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

-------------------------------------------------------------------------------
001:0008-------------------------------------------------------------------------
* Prologis Park Development
----------------------
| CALIB STANDHYD     |   Area    (ha)=   10.80
| 09:000101 DT= 2.00 |   Total Imp(%)=   89.00   Dir. Conn.(%)=   89.00
----------------------
                           IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       9.61         1.19
     Dep. Storage     (mm)=       2.00         5.00
     Average Slope     (%)=        .50         2.00
     Length            (m)=     260.00        50.00
     Mannings n            =       .013         .250

     Max.eff.Inten.(mm/hr)=     159.75        60.27
               over (min)         4.00        14.00
     Storage Coeff.  (min)=       4.63 (ii)   14.51 (ii)
     Unit Hyd. Tpeak (min)=       4.00        14.00
     Unit Hyd. peak  (cms)=        .25          .08
                                                    *TOTALS*
     PEAK FLOW       (cms)=       3.77          .12       3.836 (iii)
     TIME TO PEAK    (hrs)=       9.67         9.83        9.667
     RUNOFF VOLUME    (mm)=     105.03        49.36       98.912
     TOTAL RAINFALL   (mm)=     107.04       107.04      107.035
     RUNOFF COEFFICIENT   =        .98          .46         .924

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN* =  70.0    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.

-------------------------------------------------------------------------------
001:0009-------------------------------------------------------------------------
*Route Reservoir placed as a holder if needed, otherwise leave empty
--------------------
| ROUTE RESERVOIR  |    Requested routing time step =  2.0 min.
|  IN>09:(000101)  |
| OUT<10:(SOUTH )  |    =========  OUTLFOW STORAGE TABLE  =========
--------------------    OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
                          (cms)    (ha.m.)   |    (cms)    (ha.m.)
                           .000  .0000E+00   |     .000  .0000E+00

     ROUTING RESULTS            AREA     QPEAK     TPEAK       R.V.
     --------------------        (ha)     (cms)     (hrs)       (mm)
     INFLOW >09: (000101)      10.80     3.836     9.667     98.912
     OUTFLOW<10: (SOUTH )        .00      .000      .000       .000
    OVERFLOW<01: (OVRFLW)      10.80     3.704     9.700     98.912

                    TOTAL NUMBER OF SIMULATED OVERFLOWS  =        1
                    CUMULATIVE TIME OF OVERFLOWS  (hours)=    25.20
                    PERCENTAGE OF TIME OVERFLOWING    (%)=    93.10


                    PEAK   FLOW   REDUCTION [Qout/Qin](%)=     .000
                    TIME SHIFT OF PEAK FLOW         (min)=  -580.00
                    MAXIMUM  STORAGE   USED       (ha.m.)=.4736E-09

      *** WARNING: Outflow volume is less than inflow volume.
-------------------------------------------------------------------------------
```

```
001:0010-----------------------------------------------------------------------
--------------------
| ADD HYD (S1    ) | ID: NHYD     AREA     QPEAK   TPEAK   R.V.    DWF
-------------------                (ha)     (cms)   (hrs)   (mm)   (cms)
                ID1 10:SOUTH       .00      .000     .00    .00    .000
               +ID2 01:OVRFLW    10.80     3.704    9.70  98.91    .000
                ======================================================
                SUM 02:S1         10.80     3.704    9.70  98.91    .000

   NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

-------------------------------------------------------------------------------
001:0011-----------------------------------------------------------------------
*Split out 10 year flow
---------------------
| COMPUTE DUALHYD    |   Average inlet capacities   [CINLET] =   2.762  (cms)
| TotalHyd 02:S1     |   Number of inlets in system [NINLET] =       1
---------------------  Total minor system capacity           =   2.762  (cms)
                       Total major system storage [TMJSTO] =       0.(cu.m.)

                  ID: NHYD        AREA     QPEAK     TPEAK     R.V.      DWF
                                  (ha)     (cms)     (hrs)     (mm)    (cms)
     TOTAL HYD.   02:S1          10.80     3.704     9.700   98.912     .000
     ==========================================================================
     MAJOR SYST   03:101MJ          .35      .942     9.700   98.912     .000
     MINOR SYST   04:101MN        10.45     2.762     9.600   98.912     .000

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

-------------------------------------------------------------------------------
001:0012-----------------------------------------------------------------------
*Split out 2 year flow
---------------------
| COMPUTE DUALHYD    |   Average inlet capacities   [CINLET] =   1.557  (cms)
| TotalHyd 04:101MN  |   Number of inlets in system [NINLET] =       1
---------------------  Total minor system capacity           =   1.557  (cms)
                       Total major system storage [TMJSTO] =       0.(cu.m.)

                  ID: NHYD        AREA     QPEAK     TPEAK     R.V.      DWF
                                  (ha)     (cms)     (hrs)     (mm)    (cms)
     TOTAL HYD.   04:101MN       10.45     2.762     9.600   98.912     .000
     ==========================================================================
     MAJOR SYST   06:101CH         1.02     1.205     9.600   98.912     .000
     MINOR SYST   09:101PD         9.43     1.557     9.567   98.912     .000

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

-------------------------------------------------------------------------------
001:0013-----------------------------------------------------------------------
--------------------
| ADD HYD (MJ1   ) | ID: NHYD     AREA     QPEAK   TPEAK   R.V.    DWF
-------------------                (ha)     (cms)   (hrs)   (mm)   (cms)
                ID1 05:103MJ        .63     2.008    9.70  99.47    .000
               +ID2 03:101MJ        .35      .942    9.70  98.91    .000
                ======================================================
                SUM 10:MJ1           .98     2.950    9.70  99.27    .000

   NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

-------------------------------------------------------------------------------
001:0014-----------------------------------------------------------------------
--------------------
| ADD HYD (CH1   ) | ID: NHYD     AREA     QPEAK   TPEAK   R.V.    DWF
-------------------                (ha)     (cms)   (hrs)   (mm)   (cms)
                ID1 07:103CH       2.84     2.721    9.70  99.47    .000
               +ID2 06:101CH       1.02     1.205    9.60  98.91    .000
                ======================================================
                SUM 01:CH1          3.86     3.926    9.70  99.32    .000

   NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

-------------------------------------------------------------------------------
001:0015-----------------------------------------------------------------------
--------------------
| ADD HYD (PD1   ) | ID: NHYD     AREA     QPEAK   TPEAK   R.V.    DWF
-------------------                (ha)     (cms)   (hrs)   (mm)   (cms)
                ID1 08:103PD       13.83     .928    9.63  99.47    .000
               +ID2 09:101PD        9.43    1.557    9.57  98.91    .000
                ======================================================
                SUM 02:PD1         23.26    2.485    9.63  99.24    .000

   NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

-------------------------------------------------------------------------------
001:0016-----------------------------------------------------------------------
* East Roof
--------------------
| CALIB STANDHYD     |   Area    (ha)=    3.50
| 03:000105 DT= 2.00 |   Total Imp(%)=   99.00   Dir. Conn.(%)=   99.00
---------------------

                           IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       3.46          .03
     Dep. Storage     (mm)=       2.00         5.00
     Average Slope     (%)=        .50         2.00
     Length            (m)=     150.00        50.00
     Mannings n            =       .013         .250

     Max.eff.Inten.(mm/hr)=     159.75       159.12
               over (min)        4.00        10.00
     Storage Coeff.  (min)=       3.33 (ii)   10.03 (ii)
     Unit Hyd. Tpeak (min)=       4.00        10.00
     Unit Hyd. peak  (cms)=        .31          .11
                                                      *TOTALS*
     PEAK FLOW       (cms)=       1.45          .01         1.459 (iii)
     TIME TO PEAK    (hrs)=       9.67         9.77         9.667
     RUNOFF VOLUME    (mm)=     105.03        99.53       104.980
     TOTAL RAINFALL   (mm)=     107.04       107.04       107.035
     RUNOFF COEFFICIENT   =        .98          .93          .981

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN* =  99.0     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.

-------------------------------------------------------------------------------
001:0017-----------------------------------------------------------------------
--------------------
| ROUTE RESERVOIR    |   Requested routing time step =  2.0 min.
|  IN>03:(000105)    |
| OUT<04:(EASTRF)    |   =========  OUTFLOW STORAGE TABLE  =========
--------------------   OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
                         (cms)    (ha.m.)   |    (cms)    (ha.m.)
                          .000  .0000E+00   |     .060  .2800E+00

     ROUTING RESULTS            AREA     QPEAK     TPEAK       R.V.
     -------------------        (ha)     (cms)     (hrs)       (mm)
     INFLOW >03: (000105)       3.50     1.459     9.667    104.980
     OUTFLOW<04: (EASTRF)       3.50      .051    11.500    104.979
    OVERFLOW<05: (OVRFLW)        .00      .000      .000       .000

                  TOTAL NUMBER OF SIMULATED OVERFLOWS  =        0
                  CUMULATIVE TIME OF OVERFLOWS  (hours)=      .00
                  PERCENTAGE OF TIME OVERFLOWING    (%)=      .00


                  PEAK   FLOW   REDUCTION [Qout/Qin](%)=    3.489
                  TIME SHIFT OF PEAK FLOW         (min)=   110.00
                  MAXIMUM  STORAGE   USED       (ha.m.)=.2376E+00

-------------------------------------------------------------------------------
001:0018-----------------------------------------------------------------------
--------------------
| ADD HYD (E1    ) | ID: NHYD     AREA     QPEAK   TPEAK   R.V.    DWF
-------------------                (ha)     (cms)   (hrs)   (mm)   (cms)
                ID1 04:EASTRF      3.50      .051   11.50 104.98    .000
               +ID2 05:OVRFLW       .00      .000     .00    .00    .000 **DRY**
                ======================================================
                SUM 06:E1          3.50      .051   11.50 104.98    .000

   NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

-------------------------------------------------------------------------------
001:0019-----------------------------------------------------------------------
* West Roof
--------------------
| CALIB STANDHYD     |   Area    (ha)=    5.00
| 07:000104 DT= 2.00 |   Total Imp(%)=   99.00   Dir. Conn.(%)=   99.00
---------------------

                           IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       4.95          .05
     Dep. Storage     (mm)=       2.00         5.00
     Average Slope     (%)=        .50         2.00
     Length            (m)=     180.00        50.00
     Mannings n            =       .013         .250

     Max.eff.Inten.(mm/hr)=     159.75       159.12
               over (min)        4.00        10.00
     Storage Coeff.  (min)=       3.71 (ii)   10.41 (ii)
     Unit Hyd. Tpeak (min)=       4.00        10.00
     Unit Hyd. peak  (cms)=        .29          .11
                                                      *TOTALS*
     PEAK FLOW       (cms)=       2.04          .01         2.047 (iii)
     TIME TO PEAK    (hrs)=       9.67         9.77         9.667
     RUNOFF VOLUME    (mm)=     105.03        99.53       104.980
     TOTAL RAINFALL   (mm)=     107.04       107.04       107.035
     RUNOFF COEFFICIENT   =        .98          .93          .981

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN* =  99.0     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.

-------------------------------------------------------------------------------
001:0020-----------------------------------------------------------------------
--------------------
| ROUTE RESERVOIR    |   Requested routing time step =  2.0 min.
|  IN>07:(000104)    |
| OUT<08:(WESTRF)    |   =========  OUTFLOW STORAGE TABLE  =========
--------------------   OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
                         (cms)    (ha.m.)   |    (cms)    (ha.m.)
                          .000  .0000E+00   |     .080  .3900E+00

     ROUTING RESULTS            AREA     QPEAK     TPEAK       R.V.
     -------------------        (ha)     (cms)     (hrs)       (mm)
     INFLOW >07: (000104)       5.00     2.047     9.667    104.980
     OUTFLOW<08: (WESTRF)       5.00      .070    11.567    104.979
    OVERFLOW<09: (OVRFLW)        .00      .000      .000       .000

                  TOTAL NUMBER OF SIMULATED OVERFLOWS  =        0
                  CUMULATIVE TIME OF OVERFLOWS  (hours)=      .00
                  PERCENTAGE OF TIME OVERFLOWING    (%)=      .00


                  PEAK   FLOW   REDUCTION [Qout/Qin](%)=    3.427
                  TIME SHIFT OF PEAK FLOW         (min)=   114.00
                  MAXIMUM  STORAGE   USED       (ha.m.)=.3419E+00

-------------------------------------------------------------------------------
001:0021-----------------------------------------------------------------------
--------------------
| ADD HYD (W1    ) | ID: NHYD     AREA     QPEAK   TPEAK   R.V.    DWF
-------------------                (ha)     (cms)   (hrs)   (mm)   (cms)
                ID1 08:WESTRF      5.00      .070   11.57 104.98    .000
               +ID2 09:OVRFLW       .00      .000     .00    .00    .000 **DRY**
                ======================================================
                SUM 03:W1          5.00      .070   11.57 104.98    .000

   NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

-------------------------------------------------------------------------------
001:0022-----------------------------------------------------------------------
--------------------
| ADD HYD (EWROOF) | ID: NHYD     AREA     QPEAK   TPEAK   R.V.    DWF
-------------------                (ha)     (cms)   (hrs)   (mm)   (cms)
                ID1 06:E1          3.50      .051   11.50 104.98    .000
               +ID2 03:W1          5.00      .070   11.57 104.98    .000
                ======================================================
                SUM 04:EWROOF      8.50      .121   11.53 104.98    .000

   NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

-------------------------------------------------------------------------------
001:0023-----------------------------------------------------------------------
* Argentia Road Extension
--------------------
| CALIB STANDHYD     |   Area    (ha)=    1.30
| 05:000102 DT= 2.00 |   Total Imp(%)=   85.00   Dir. Conn.(%)=   85.00
---------------------

                           IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       1.11          .19
     Dep. Storage     (mm)=       2.00         5.00
     Average Slope     (%)=        .50         2.00
     Length            (m)=      90.00        50.00
     Mannings n            =       .013         .250

     Max.eff.Inten.(mm/hr)=     159.75        66.02
               over (min)        2.00        12.00
     Storage Coeff.  (min)=       2.45 (ii)   11.97 (ii)
     Unit Hyd. Tpeak (min)=       2.00        12.00
     Unit Hyd. peak  (cms)=        .47          .09
                                                      *TOTALS*
     PEAK FLOW       (cms)=        .48          .02          .498 (iii)
     TIME TO PEAK    (hrs)=       9.67         9.80         9.667
     RUNOFF VOLUME    (mm)=     105.03        49.37        96.685
     TOTAL RAINFALL   (mm)=     107.04       107.04       107.035
     RUNOFF COEFFICIENT   =        .98          .46          .903

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN* =  70.0     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.

-------------------------------------------------------------------------------
001:0024-----------------------------------------------------------------------
*Split out 10 year flow
---------------------
| COMPUTE DUALHYD    |   Average inlet capacities   [CINLET] =    .383  (cms)
| TotalHyd 05:000102 |   Number of inlets in system [NINLET] =       1
---------------------  Total minor system capacity           =    .383  (cms)
                       Total major system storage [TMJSTO] =       0.(cu.m.)

                  ID: NHYD        AREA     QPEAK     TPEAK     R.V.      DWF
                                  (ha)     (cms)     (hrs)     (mm)    (cms)
     TOTAL HYD.   05:000102       1.30      .498     9.667   96.685     .000
     ==========================================================================
     MAJOR SYST   06:102MJ          .04      .115     9.667   96.685     .000
     MINOR SYST   07:102MN         1.26      .383     9.567   96.685     .000

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

-------------------------------------------------------------------------------
001:0025-----------------------------------------------------------------------
*Split out 2 year flow
```

```
----------------------
| COMPUTE DUALHYD    |   Average inlet capacities   [CINLET] =    .220  (cms)
| TotalHyd 07:102MN  |   Number of inlets in system [NINLET] =      1
----------------------   Total minor system capacity          =    .220  (cms)
                         Total major system storage [TMJSTO] =      0.(cu.m.)

                  ID: NHYD        AREA     QPEAK     TPEAK      R.V.       DWF
                                  (ha)     (cms)     (hrs)     (mm)     (cms)
     TOTAL HYD.   07:102MN        1.26      .383     9.567   96.685     .000
     ==========================================================================
     MAJOR SYST   08:102CH         .11      .163     9.567   96.685     .000
     MINOR SYST   09:102PD        1.15      .220     9.533   96.685     .000

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------
001:0026----------------------------------------------------------------------
--------------------
| ADD HYD (MJ2   ) | ID: NHYD     AREA     QPEAK   TPEAK   R.V.    DWF
--------------------              (ha)     (cms)   (hrs)   (mm)   (cms)
                  ID1 10:MJ1         .98    2.950    9.70  99.27    .000
                 +ID2 06:102MJ       .04     .115    9.67  96.69    .000
                  ========================================================
                  SUM 03:MJ2         1.02    2.950    9.70  99.16    .000

   NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------
001:0027----------------------------------------------------------------------
--------------------
| ADD HYD (CH2   ) | ID: NHYD     AREA     QPEAK   TPEAK   R.V.    DWF
--------------------              (ha)     (cms)   (hrs)   (mm)   (cms)
                  ID1 01:CH1        3.86    3.926    9.70  99.32    .000
                 +ID2 04:EWROOF     8.50     .121   11.53 104.98    .000
                 +ID3 08:102CH       .11     .163    9.57  96.69    .000
                  ========================================================
                  SUM 05:CH2       12.47    4.096    9.70 103.16    .000

   NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------
001:0028----------------------------------------------------------------------
--------------------
| ADD HYD (PD2   ) | ID: NHYD     AREA     QPEAK   TPEAK   R.V.    DWF
--------------------              (ha)     (cms)   (hrs)   (mm)   (cms)
                  ID1 02:PD1       23.26    2.485    9.63  99.24    .000
                 +ID2 09:102PD      1.15     .220    9.53  96.69    .000
                  ========================================================
                  SUM 06:PD2       24.41    2.705    9.63  99.12    .000

   NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------
001:0029----------------------------------------------------------------------
--------------------
| ROUTE RESERVOIR  |    Requested routing time step =  2.0 min.
|  IN>06:(PD2   )  |
| OUT<07:(POND  )  |    =========  OUTLFOW STORAGE TABLE  =========
--------------------    OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
                          (cms)    (ha.m.)   |    (cms)    (ha.m.)
                           .000  .0000E+00   |    2.280  .2630E+00
                           .028  .1190E+00   |    4.686  .3620E+00
                           .311  .1530E+00   |    7.610  .4670E+00
                           .827  .1890E+00   |   11.693  .6020E+00
                          1.492  .2250E+00   |     .000  .0000E+00

     ROUTING RESULTS            AREA     QPEAK     TPEAK       R.V.
     ---------------           (ha)     (cms)     (hrs)       (mm)
     INFLOW >06: (PD2   )      24.41     2.705     9.633     99.122
     OUTFLOW<07: (POND  )      24.41     2.553     9.867     99.121
    OVERFLOW<08: (OVRFLW)        .00      .000      .000       .000

                  TOTAL NUMBER OF SIMULATED OVERFLOWS  =        0
                  CUMULATIVE TIME OF OVERFLOWS  (hours)=      .00
                  PERCENTAGE OF TIME OVERFLOWING    (%)=      .00


                  PEAK   FLOW   REDUCTION [Qout/Qin](%)=   94.365
                  TIME SHIFT OF PEAK FLOW         (min)=    14.00
                  MAXIMUM  STORAGE   USED       (ha.m.)=.2746E+00

--------------------------------------------------------------------------------
001:0030----------------------------------------------------------------------
--------------------
| ADD HYD (PNDOUT) | ID: NHYD     AREA     QPEAK   TPEAK   R.V.    DWF
--------------------              (ha)     (cms)   (hrs)   (mm)   (cms)
                  ID1 07:POND      24.41    2.553    9.87  99.12    .000
                 +ID2 08:OVRFLW      .00     .000     .00    .00    .000 **DRY**
                  ========================================================
                  SUM 09:PNDOUT    24.41    2.553    9.87  99.12    .000

   NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------
001:0031----------------------------------------------------------------------
* 5YROUT must be 2.84 m3/s or less for 5 year event based on 75 l/s/ha for
* 37.9 total site hectares.
--------------------
| ADD HYD (5YROUT) | ID: NHYD     AREA     QPEAK   TPEAK   R.V.    DWF
--------------------              (ha)     (cms)   (hrs)   (mm)   (cms)
                  ID1 09:PNDOUT    24.41    2.553    9.87  99.12    .000
                 +ID2 05:CH2       12.47    4.096    9.70 103.16    .000
                  ========================================================
                  SUM 10:5YROUT    36.88    6.343    9.73 100.49    .000

   NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------
001:0032----------------------------------------------------------------------
* TOTAL is all flows from development site and argentia road
--------------------
| ADD HYD (TOTAL ) | ID: NHYD     AREA     QPEAK   TPEAK   R.V.    DWF
--------------------              (ha)     (cms)   (hrs)   (mm)   (cms)
                  ID1 03:MJ2         1.02    2.950    9.70  99.16    .000
                 +ID2 10:5YROUT    36.88    6.343    9.73 100.49    .000
                  ========================================================
                  SUM 01:TOTAL     37.90    9.252    9.70 100.45    .000

   NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------
001:0033----------------------------------------------------------------------
--------------------
| CALIB NASHYD     |   Area    (ha)=    4.80   Curve Number   (CN)=70.00
| 02:100    DT= 2.00 |   Ia      (mm)=   8.000   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=    .700

     Unit Hyd Qpeak  (cms)=     .262

     PEAK FLOW       (cms)=     .225 (i)
     TIME TO PEAK    (hrs)=   10.433
     RUNOFF VOLUME    (mm)=   47.178
     TOTAL RAINFALL   (mm)=  107.035
     RUNOFF COEFFICIENT   =     .441

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

--------------------------------------------------------------------------------
001:0034----------------------------------------------------------------------
      FINISH
--------------------------------------------------------------------------------
********************************************************************************
     WARNINGS / ERRORS / NOTES
                          -------------------------
 001:0000 ROUTE RESERVOIR
      *** WARNING: Outflow volume is less than inflow volume.
   Simulation ended on 2012-05-16     at 14:56:41
 ================================================================================
```

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

 SSSSS  W   W  M   M  H   H  Y   Y  M   M   OOO        999    999  =========
 S      W W W  MM MM  H   H   Y Y   MM MM  O   O      9   9  9   9
 SSSSS  W W W  M M M  HHHHH    Y    M M M  O   O  ##  9   9  9   9  Ver. 4.02
     S   W W   M   M  H   H    Y    M   M  O   O       9999   9999 July 1999
 SSSSS   W W   M   M  H   H    Y    M   M   OOO            9      9 =========
                                                        9   9  9   9 # 2649264
      StormWater Management HYdrologic Model            999    999  =========

 ************************************************************************
 *************************** SWMHYMO-99 Ver/4.02 ***************************
 *******  A single event and continuous hydrologic simulation model  *******
 *******     based on the principles of HYMO and its successors      *******
 *******                OTTHYMO-83 and OTTHYMO-89.                   *******
 ************************************************************************
 ******* Distributed by:  J.F. Sabourin and Associates Inc.           *******
 *******                  Ottawa,  Ontario: (613) 727-5199           *******
 *******                  Gatineau, Quebec: (819) 243-6858           *******
 *******                  E-Mail: swmhymo@jfsa.com                   *******
 ************************************************************************

 ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
 ++++++ Licensed user: Earth Tech Canada                            ++++++++
 +++++++              London                SERIAL#:2649264         +++++++
 ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

 ************************************************************************
 *******           ++++++ PROGRAM ARRAY DIMENSIONS ++++++            *******
 *******           Maximum value for ID numbers  :     10           *******
 *******           Max. number of rainfall points:  15000           *******
 *******           Max. number of flow points    :  15000           *******
 ************************************************************************


 ********************   D E T A I L E D   O U T P U T   ********************
 ************************************************************************
 *       DATE: 2012-05-16       TIME: 14:52:11       RUN COUNTER: 002775     *
 ************************************************************************
 * Input   filename: O:\PROJECTS\601429~1\GENCOR~1\LONDON~2\SWMHYMO\100YR.D*
 * Output  filename: O:\PROJECTS\601429~1\GENCOR~1\LONDON~2\SWMHYMO\100YR.O*
 * Summary filename: O:\PROJECTS\601429~1\GENCOR~1\LONDON~2\SWMHYMO\100YR.s*
 * User comments:                                                         *
 * 1:_____________________________________________________________________*
 * 2:_____________________________________________________________________*
 * 3:_____________________________________________________________________*
 ************************************************************************


--------------------------------------------------------------------------------
001:0001--------------------------------------------------------------------------
*#**************************************************************************
*#  Project Name: [PROLOGIS PARK MEADOWVALE]    Project Number: [60142982]
*#  Date        : 01-03-2012
*#  Modeller    : [DPG]
*#  Revision    : 02-15-2012
*#  Revised by  : [dpg]
*#  Company     : Earth Tech Canada
*#  License #   :  2649264
*#**************************************************************************
* Phase 1
--------------------
| START            |  Project  dir.: O:\PROJECTS\601429~1\GENCOR~1\LONDON~2\SWMHYMO\
--------------------  Rainfall dir.: O:\PROJECTS\601429~1\GENCOR~1\LONDON~2\SWMHYMO\
    TZERO =   .00 hrs on        0
    METOUT=   2 (output = METRIC)
    NRUN  = 001
    NSTORM=   0
--------------------------------------------------------------------------------
001:0002--------------------------------------------------------------------------
*#
*# 100-year design storm, City of Mississauga standards
*#
--------------------
| CHICAGO STORM    |    IDF curve parameters: A=1450.000
| Ptotal=119.37 mm |                          B=   4.000
--------------------                          C=    .780
                         used in:   INTENSITY =  A / (t + B)^C

                         Duration of storm  = 24.00 hrs
                         Storm time step    = 10.00 min
                         Time to peak ratio =   .40

            TIME    RAIN |  TIME    RAIN |  TIME    RAIN |  TIME    RAIN
             hrs   mm/hr |   hrs   mm/hr |   hrs   mm/hr |   hrs   mm/hr
              .17   1.118 |  6.17   2.481 | 12.17   4.500 | 18.17   1.679
              .33   1.134 |  6.33   2.581 | 12.33   4.268 | 18.33   1.653
              .50   1.150 |  6.50   2.691 | 12.50   4.061 | 18.50   1.628
              .67   1.167 |  6.67   2.811 | 12.67   3.875 | 18.67   1.604
              .83   1.184 |  6.83   2.945 | 12.83   3.708 | 18.83   1.581
             1.00   1.202 |  7.00   3.095 | 13.00   3.557 | 19.00   1.559
             1.17   1.221 |  7.17   3.263 | 13.17   3.419 | 19.17   1.537
             1.33   1.240 |  7.33   3.453 | 13.33   3.292 | 19.33   1.516
             1.50   1.260 |  7.50   3.670 | 13.50   3.176 | 19.50   1.496
             1.67   1.281 |  7.67   3.921 | 13.67   3.068 | 19.67   1.476
             1.83   1.303 |  7.83   4.215 | 13.83   2.969 | 19.83   1.457
             2.00   1.325 |  8.00   4.564 | 14.00   2.876 | 20.00   1.438
             2.17   1.348 |  8.17   4.987 | 14.17   2.790 | 20.17   1.420
             2.33   1.373 |  8.33   5.510 | 14.33   2.710 | 20.33   1.402
             2.50   1.398 |  8.50   6.177 | 14.50   2.634 | 20.50   1.385
             2.67   1.424 |  8.67   7.060 | 14.67   2.564 | 20.67   1.369
             2.83   1.452 |  8.83   8.290 | 14.83   2.497 | 20.83   1.352
             3.00   1.481 |  9.00  10.136 | 15.00   2.434 | 21.00   1.337
             3.17   1.511 |  9.17  13.256 | 15.17   2.375 | 21.17   1.321
             3.33   1.542 |  9.33  19.803 | 15.33   2.319 | 21.33   1.306
             3.50   1.575 |  9.50  43.957 | 15.50   2.266 | 21.50   1.292
             3.67   1.610 |  9.67 176.312 | 15.67   2.215 | 21.67   1.278
             3.83   1.647 |  9.83  51.281 | 15.83   2.167 | 21.83   1.264
             4.00   1.685 | 10.00  26.302 | 16.00   2.122 | 22.00   1.250
             4.17   1.726 | 10.17  18.057 | 16.17   2.078 | 22.17   1.237
             4.33   1.769 | 10.33  13.923 | 16.33   2.037 | 22.33   1.224
             4.50   1.814 | 10.50  11.424 | 16.50   1.997 | 22.50   1.212
             4.67   1.863 | 10.67   9.743 | 16.67   1.959 | 22.67   1.199
             4.83   1.914 | 10.83   8.529 | 16.83   1.923 | 22.83   1.187
             5.00   1.968 | 11.00   7.609 | 17.00   1.888 | 23.00   1.176
             5.17   2.027 | 11.17   6.886 | 17.17   1.854 | 23.17   1.164
             5.33   2.089 | 11.33   6.302 | 17.33   1.822 | 23.33   1.153
             5.50   2.156 | 11.50   5.818 | 17.50   1.791 | 23.50   1.142
             5.67   2.228 | 11.67   5.411 | 17.67   1.761 | 23.67   1.131
             5.83   2.305 | 11.83   5.064 | 17.83   1.733 | 23.83   1.121
             6.00   2.390 | 12.00   4.763 | 18.00   1.705 | 24.00   1.110

--------------------------------------------------------------------------------
001:0003--------------------------------------------------------------------------
* Future North Site Development
----------------------
| CALIB STANDHYD     |   Area    (ha)=   17.30
| 01:000103 DT= 2.00 |   Total Imp(%)=   90.00   Dir. Conn.(%)=   90.00
----------------------
                           IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=      15.57         1.73
     Dep. Storage     (mm)=       2.00         5.00
     Average Slope     (%)=        .50         2.00
     Length            (m)=     340.00        50.00
     Mannings n            =       .013         .250

     Max.eff.Inten.(mm/hr)=     176.31        71.56
               over (min)         6.00        14.00
     Storage Coeff.  (min)=       5.22 (ii)   14.45 (ii)
     Unit Hyd. Tpeak (min)=       6.00        14.00
     Unit Hyd. peak  (cms)=        .21          .08
                                                    *TOTALS*
     PEAK FLOW       (cms)=       6.23          .22      6.371 (iii)
     TIME TO PEAK    (hrs)=       9.70         9.83       9.700
     RUNOFF VOLUME    (mm)=     117.37        58.59       111.495
     TOTAL RAINFALL   (mm)=     119.37       119.37       119.373
     RUNOFF COEFFICIENT   =        .98          .49          .934

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN* =  70.0    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.

--------------------------------------------------------------------------------
001:0004--------------------------------------------------------------------------
--------------------
| ROUTE RESERVOIR  |    Requested routing time step =  2.0 min.
|  IN>01:(000103)  |
| OUT<02:(NORTH )  |    =========  OUTLFOW STORAGE TABLE  =========
--------------------    OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
                          (cms)    (ha.m.)   |    (cms)    (ha.m.)
                           .000  .0000E+00   |    1.300  .3000E+00

     ROUTING RESULTS            AREA     QPEAK     TPEAK       R.V.
     --------------------        (ha)     (cms)     (hrs)       (mm)
     INFLOW >01: (000103)      17.30     6.371     9.700    111.495
     OUTFLOW<02: (NORTH )      14.30     1.300     9.667    111.495
    OVERFLOW<03: (OVRFLW)       3.00     5.050     9.700    111.495

                    TOTAL NUMBER OF SIMULATED OVERFLOWS  =        3
                    CUMULATIVE TIME OF OVERFLOWS  (hours)=      .37
                    PERCENTAGE OF TIME OVERFLOWING    (%)=     1.18


                    PEAK   FLOW   REDUCTION [Qout/Qin](%)=    20.406
                    TIME SHIFT OF PEAK FLOW         (min)=    -2.00
                    MAXIMUM  STORAGE   USED       (ha.m.)=.3001E+00

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001:0005--------------------------------------------------------------------------
--------------------
| ADD HYD (N1      | ID: NHYD     AREA     QPEAK   TPEAK   R.V.    DWF
--------------------              (ha)     (cms)   (hrs)   (mm)   (cms)
                  ID1 02:NORTH     14.30    1.300    9.67 111.50    .000
                 +ID2 03:OVRFLW     3.00    5.050    9.70 111.50    .000
                  ==========================================================
                  SUM 04:N1        17.30    6.350    9.70 111.50    .000

   NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------
001:0006--------------------------------------------------------------------------
*Split out 10 year flow
----------------------
| COMPUTE DUALHYD    |   Average inlet capacities   [CINLET] =   3.649  (cms)
| TotalHyd 04:N1     |   Number of inlets in system [NINLET] =      1
----------------------   Total minor system capacity          =   3.649  (cms)
                         Total major system storage [TMJSTO] =       0.(cu.m.)

                    ID: NHYD        AREA     QPEAK     TPEAK     R.V.       DWF
                                     (ha)     (cms)     (hrs)     (mm)     (cms)
     TOTAL HYD.   04:N1           17.30     6.350     9.700  111.495     .000
     ================================================================================
     MAJOR SYST   05:103MJ         1.06     2.701     9.700  111.495     .000
     MINOR SYST   06:103MN        16.24     3.649     9.667  111.495     .000

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------
001:0007--------------------------------------------------------------------------
*Split out 2 year flow
----------------------
| COMPUTE DUALHYD    |   Average inlet capacities   [CINLET] =    .928  (cms)
| TotalHyd 06:103MN  |   Number of inlets in system [NINLET] =      1
----------------------   Total minor system capacity          =    .928  (cms)
                         Total major system storage [TMJSTO] =       0.(cu.m.)

                    ID: NHYD        AREA     QPEAK     TPEAK     R.V.       DWF
                                     (ha)     (cms)     (hrs)     (mm)     (cms)
     TOTAL HYD.   06:103MN        16.24     3.649     9.667  111.495     .000
     ================================================================================
     MAJOR SYST   07:103CH         2.90     2.721     9.667  111.495     .000
     MINOR SYST   08:103PD        13.34      .928     9.600  111.495     .000

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------
001:0008--------------------------------------------------------------------------
* Prologis Park Development
----------------------
| CALIB STANDHYD     |   Area    (ha)=   10.80
| 09:000101 DT= 2.00 |   Total Imp(%)=   89.00   Dir. Conn.(%)=   89.00
----------------------
                           IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       9.61         1.19
     Dep. Storage     (mm)=       2.00         5.00
     Average Slope     (%)=        .50         2.00
     Length            (m)=     260.00        50.00
     Mannings n            =       .013         .250

     Max.eff.Inten.(mm/hr)=     176.31        71.56
               over (min)         4.00        14.00
     Storage Coeff.  (min)=       4.45 (ii)   13.67 (ii)
     Unit Hyd. Tpeak (min)=       4.00        14.00
     Unit Hyd. peak  (cms)=        .26          .08
                                                    *TOTALS*
     PEAK FLOW       (cms)=       4.20          .15      4.287 (iii)
     TIME TO PEAK    (hrs)=       9.67         9.83       9.667
     RUNOFF VOLUME    (mm)=     117.37        58.59       110.908
     TOTAL RAINFALL   (mm)=     119.37       119.37       119.373
     RUNOFF COEFFICIENT   =        .98          .49          .929

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN* =  70.0    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.

--------------------------------------------------------------------------------
001:0009--------------------------------------------------------------------------
*Route Reservoir placed as a holder if needed, otherwise leave empty
--------------------
| ROUTE RESERVOIR  |    Requested routing time step =  2.0 min.
|  IN>09:(000101)  |
| OUT<10:(SOUTH )  |    =========  OUTLFOW STORAGE TABLE  =========
--------------------    OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
                          (cms)    (ha.m.)   |    (cms)    (ha.m.)
                           .000  .0000E+00   |     .000  .0000E+00

     ROUTING RESULTS            AREA     QPEAK     TPEAK       R.V.
     --------------------        (ha)     (cms)     (hrs)       (mm)
     INFLOW >09: (000101)      10.80     4.287     9.667    110.908
     OUTFLOW<10: (SOUTH )        .00      .000      .000       .000
    OVERFLOW<01: (OVRFLW)      10.80     4.134     9.667    110.908

                    TOTAL NUMBER OF SIMULATED OVERFLOWS  =        1
                    CUMULATIVE TIME OF OVERFLOWS  (hours)=    25.23
                    PERCENTAGE OF TIME OVERFLOWING    (%)=    93.69


                    PEAK   FLOW   REDUCTION [Qout/Qin](%)=     .000
                    TIME SHIFT OF PEAK FLOW         (min)=  -580.00
                    MAXIMUM  STORAGE   USED       (ha.m.)=.0000E+00

      *** WARNING: Outflow volume is less than inflow volume.
--------------------------------------------------------------------------------
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001:0010-----------------------------------------------------------------------
--------------------
| ADD HYD (S1    ) | ID: NHYD     AREA     QPEAK   TPEAK   R.V.    DWF
--------------------                (ha)     (cms)   (hrs)   (mm)   (cms)
                ID1 10:SOUTH       .00      .000     .00    .00    .000
               +ID2 01:OVRFLW    10.80    4.134    9.67 110.91    .000
                ========================================================
                SUM 02:S1         10.80    4.134    9.67 110.91    .000

   NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

-------------------------------------------------------------------------------
001:0011-----------------------------------------------------------------------
*Split out 10 year flow
----------------------
| COMPUTE DUALHYD    |   Average inlet capacities   [CINLET] =   2.762  (cms)
| TotalHyd 02:S1     |   Number of inlets in system [NINLET] =       1
----------------------   Total minor system capacity          =   2.762  (cms)
                         Total major system storage [TMJSTO] =       0.(cu.m.)

                  ID: NHYD        AREA     QPEAK     TPEAK     R.V.      DWF
                                   (ha)     (cms)     (hrs)     (mm)    (cms)
     TOTAL HYD.   02:S1           10.80     4.134     9.667  110.908     .000
     ==========================================================================
     MAJOR SYST   03:101MJ          .53     1.372     9.667  110.908     .000
     MINOR SYST   04:101MN        10.27     2.762     9.600  110.908     .000

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

-------------------------------------------------------------------------------
001:0012-----------------------------------------------------------------------
*Split out 2 year flow
----------------------
| COMPUTE DUALHYD    |   Average inlet capacities   [CINLET] =   1.557  (cms)
| TotalHyd 04:101MN  |   Number of inlets in system [NINLET] =       1
----------------------   Total minor system capacity          =   1.557  (cms)
                         Total major system storage [TMJSTO] =       0.(cu.m.)

                  ID: NHYD        AREA     QPEAK     TPEAK     R.V.      DWF
                                   (ha)     (cms)     (hrs)     (mm)    (cms)
     TOTAL HYD.   04:101MN        10.27     2.762     9.600  110.908     .000
     ==========================================================================
     MAJOR SYST   06:101CH         1.02     1.205     9.600  110.908     .000
     MINOR SYST   09:101PD         9.24     1.557     9.567  110.908     .000

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

-------------------------------------------------------------------------------
001:0013-----------------------------------------------------------------------
--------------------
| ADD HYD (MJ1   ) | ID: NHYD     AREA     QPEAK   TPEAK   R.V.    DWF
--------------------                (ha)     (cms)   (hrs)   (mm)   (cms)
                ID1 05:103MJ       1.06    2.701    9.70 111.50    .000
               +ID2 03:101MJ        .53    1.372    9.67 110.91    .000
                ========================================================
                SUM 10:MJ1         1.60    4.070    9.70 111.30    .000

   NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

-------------------------------------------------------------------------------
001:0014-----------------------------------------------------------------------
--------------------
| ADD HYD (CH1   ) | ID: NHYD     AREA     QPEAK   TPEAK   R.V.    DWF
--------------------                (ha)     (cms)   (hrs)   (mm)   (cms)
                ID1 07:103CH       2.90    2.721    9.67 111.50    .000
               +ID2 06:101CH       1.02    1.205    9.60 110.91    .000
                ========================================================
                SUM 01:CH1         3.92    3.926    9.67 111.34    .000

   NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

-------------------------------------------------------------------------------
001:0015-----------------------------------------------------------------------
--------------------
| ADD HYD (PD1   ) | ID: NHYD     AREA     QPEAK   TPEAK   R.V.    DWF
--------------------                (ha)     (cms)   (hrs)   (mm)   (cms)
                ID1 08:103PD      13.34     .928    9.60 111.50    .000
               +ID2 09:101PD       9.24    1.557    9.57 110.91    .000
                ========================================================
                SUM 02:PD1        22.58    2.485    9.60 111.25    .000

   NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

-------------------------------------------------------------------------------
001:0016-----------------------------------------------------------------------
* East Roof
--------------------
| CALIB STANDHYD     |   Area    (ha)=    3.50
| 03:000105 DT= 2.00 |   Total Imp(%)=   99.00   Dir. Conn.(%)=   99.00
---------------------

                           IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       3.46          .03
     Dep. Storage     (mm)=       2.00         5.00
     Average Slope     (%)=        .50         2.00
     Length            (m)=     150.00        50.00
     Mannings n            =       .013         .250

     Max.eff.Inten.(mm/hr)=     176.31       175.76
               over (min)        4.00        10.00
     Storage Coeff.  (min)=       3.20 (ii)    9.64 (ii)
     Unit Hyd. Tpeak (min)=       4.00        10.00
     Unit Hyd. peak  (cms)=        .32          .12
                                                      *TOTALS*
     PEAK FLOW       (cms)=       1.61          .01         1.621 (iii)
     TIME TO PEAK    (hrs)=       9.67         9.77         9.667
     RUNOFF VOLUME    (mm)=     117.37       111.86       117.318
     TOTAL RAINFALL   (mm)=     119.37       119.37       119.373
     RUNOFF COEFFICIENT   =        .98          .94          .983

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN* =  99.0     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.

-------------------------------------------------------------------------------
001:0017-----------------------------------------------------------------------
--------------------
| ROUTE RESERVOIR    |   Requested routing time step =  2.0 min.
|  IN>03:(000105)    |
| OUT<04:(EASTRF)    |   =========  OUTLFOW STORAGE TABLE  =========
--------------------   OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
                         (cms)    (ha.m.)   |    (cms)    (ha.m.)
                          .000  .0000E+00   |     .060  .2800E+00

     ROUTING RESULTS            AREA     QPEAK     TPEAK       R.V.
     ---------------            (ha)     (cms)     (hrs)       (mm)
     INFLOW >03: (000105)       3.50     1.621     9.667    117.318
     OUTFLOW<04: (EASTRF)       3.50      .057    11.500    117.316
    OVERFLOW<05: (OVRFLW)        .00      .000      .000       .000

                  TOTAL NUMBER OF SIMULATED OVERFLOWS  =        0
                  CUMULATIVE TIME OF OVERFLOWS  (hours)=      .00
                  PERCENTAGE OF TIME OVERFLOWING    (%)=      .00


                  PEAK   FLOW   REDUCTION [Qout/Qin](%)=    3.508
                  TIME SHIFT OF PEAK FLOW         (min)=   110.00
                  MAXIMUM  STORAGE   USED       (ha.m.)=.2653E+00

-------------------------------------------------------------------------------
001:0018-----------------------------------------------------------------------
--------------------
| ADD HYD (E1    ) | ID: NHYD     AREA     QPEAK   TPEAK   R.V.    DWF
--------------------                (ha)     (cms)   (hrs)   (mm)   (cms)
                ID1 04:EASTRF      3.50     .057   11.50 117.32    .000
               +ID2 05:OVRFLW       .00     .000     .00    .00    .000 **DRY**
                ========================================================
                SUM 06:E1          3.50     .057   11.50 117.32    .000

   NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

-------------------------------------------------------------------------------
001:0019-----------------------------------------------------------------------
* West Roof
--------------------
| CALIB STANDHYD     |   Area    (ha)=    5.00
| 07:000104 DT= 2.00 |   Total Imp(%)=   99.00   Dir. Conn.(%)=   99.00
---------------------

                           IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       4.95          .05
     Dep. Storage     (mm)=       2.00         5.00
     Average Slope     (%)=        .50         2.00
     Length            (m)=     180.00        50.00
     Mannings n            =       .013         .250

     Max.eff.Inten.(mm/hr)=     176.31       175.76
               over (min)        4.00        10.00
     Storage Coeff.  (min)=       3.57 (ii)   10.01 (ii)
     Unit Hyd. Tpeak (min)=       4.00        10.00
     Unit Hyd. peak  (cms)=        .30          .11
                                                      *TOTALS*
     PEAK FLOW       (cms)=       2.26          .02         2.276 (iii)
     TIME TO PEAK    (hrs)=       9.67         9.77         9.667
     RUNOFF VOLUME    (mm)=     117.37       111.86       117.318
     TOTAL RAINFALL   (mm)=     119.37       119.37       119.373
     RUNOFF COEFFICIENT   =        .98          .94          .983

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN* =  99.0     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.

-------------------------------------------------------------------------------
001:0020-----------------------------------------------------------------------
--------------------
| ROUTE RESERVOIR    |   Requested routing time step =  2.0 min.
|  IN>07:(000104)    |
| OUT<08:(WESTRF)    |   =========  OUTLFOW STORAGE TABLE  =========
--------------------   OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
                         (cms)    (ha.m.)   |    (cms)    (ha.m.)
                          .000  .0000E+00   |     .080  .3900E+00

     ROUTING RESULTS            AREA     QPEAK     TPEAK       R.V.
     ---------------            (ha)     (cms)     (hrs)       (mm)
     INFLOW >07: (000104)       5.00     2.276     9.667    117.318
     OUTFLOW<08: (WESTRF)       5.00      .078    11.567    117.316
    OVERFLOW<09: (OVRFLW)        .00      .000      .000       .000

                  TOTAL NUMBER OF SIMULATED OVERFLOWS  =        0
                  CUMULATIVE TIME OF OVERFLOWS  (hours)=      .00
                  PERCENTAGE OF TIME OVERFLOWING    (%)=      .00


                  PEAK   FLOW   REDUCTION [Qout/Qin](%)=    3.441
                  TIME SHIFT OF PEAK FLOW         (min)=   114.00
                  MAXIMUM  STORAGE   USED       (ha.m.)=.3818E+00

-------------------------------------------------------------------------------
001:0021-----------------------------------------------------------------------
--------------------
| ADD HYD (W1    ) | ID: NHYD     AREA     QPEAK   TPEAK   R.V.    DWF
--------------------                (ha)     (cms)   (hrs)   (mm)   (cms)
                ID1 08:WESTRF      5.00     .078   11.57 117.32    .000
               +ID2 09:OVRFLW       .00     .000     .00    .00    .000 **DRY**
                ========================================================
                SUM 03:W1          5.00     .078   11.57 117.32    .000

   NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

-------------------------------------------------------------------------------
001:0022-----------------------------------------------------------------------
--------------------
| ADD HYD (EWROOF) | ID: NHYD     AREA     QPEAK   TPEAK   R.V.    DWF
--------------------                (ha)     (cms)   (hrs)   (mm)   (cms)
                ID1 06:E1          3.50     .057   11.50 117.32    .000
               +ID2 03:W1          5.00     .078   11.57 117.32    .000
                ========================================================
                SUM 04:EWROOF      8.50     .135   11.53 117.32    .000

   NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

-------------------------------------------------------------------------------
001:0023-----------------------------------------------------------------------
* Argentia Road Extension
--------------------
| CALIB STANDHYD     |   Area    (ha)=    1.30
| 05:000102 DT= 2.00 |   Total Imp(%)=   85.00   Dir. Conn.(%)=   85.00
---------------------

                           IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       1.11          .19
     Dep. Storage     (mm)=       2.00         5.00
     Average Slope     (%)=        .50         2.00
     Length            (m)=      90.00        50.00
     Mannings n            =       .013         .250

     Max.eff.Inten.(mm/hr)=     176.31        78.37
               over (min)        2.00        12.00
     Storage Coeff.  (min)=       2.35 (ii)   11.25 (ii)
     Unit Hyd. Tpeak (min)=       2.00        12.00
     Unit Hyd. peak  (cms)=        .49          .10
                                                      *TOTALS*
     PEAK FLOW       (cms)=        .54          .03          .553 (iii)
     TIME TO PEAK    (hrs)=       9.67         9.80         9.667
     RUNOFF VOLUME    (mm)=     117.37        58.60       108.556
     TOTAL RAINFALL   (mm)=     119.37       119.37       119.373
     RUNOFF COEFFICIENT   =        .98          .49          .909

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN* =  70.0     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.

-------------------------------------------------------------------------------
001:0024-----------------------------------------------------------------------
*Split out 10 year flow
----------------------
| COMPUTE DUALHYD    |   Average inlet capacities   [CINLET] =    .383  (cms)
| TotalHyd 05:000102 |   Number of inlets in system [NINLET] =       1
----------------------   Total minor system capacity          =    .383  (cms)
                         Total major system storage [TMJSTO] =       0.(cu.m.)

                  ID: NHYD        AREA     QPEAK     TPEAK     R.V.      DWF
                                   (ha)     (cms)     (hrs)     (mm)    (cms)
     TOTAL HYD.   05:000102        1.30      .563     9.667  108.556     .000
     ==========================================================================
     MAJOR SYST   06:102MJ          .06      .170     9.667  108.556     .000
     MINOR SYST   07:102MN         1.24      .383     9.567  108.557     .000

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

-------------------------------------------------------------------------------
001:0025-----------------------------------------------------------------------
*Split out 2 year flow
```

```
----------------------
| COMPUTE DUALHYD    |   Average inlet capacities   [CINLET] =    .220  (cms)
| TotalHyd 07:102MN  |   Number of inlets in system [NINLET] =      1
----------------------   Total minor system capacity         =    .220  (cms)
                         Total major system storage [TMJSTO] =      0.(cu.m.)

                  ID: NHYD        AREA     QPEAK     TPEAK     R.V.      DWF
                                  (ha)     (cms)     (hrs)     (mm)    (cms)
     TOTAL HYD.   07:102MN        1.24      .383     9.567  108.557     .000
     ============================================================================
     MAJOR SYST   08:102CH         .11      .163     9.567  108.557     .000
     MINOR SYST   09:102PD        1.13      .220     9.533  108.557     .000

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------
001:0026----------------------------------------------------------------------
--------------------
| ADD HYD (MJ2   ) | ID: NHYD     AREA     QPEAK   TPEAK   R.V.    DWF
--------------------                (ha)     (cms)   (hrs)   (mm)   (cms)
                  ID1 10:MJ1        1.60     4.070    9.70 111.30    .000
                 +ID2 06:102MJ       .06      .170    9.67 108.56    .000
                  ========================================================
                  SUM 03:MJ2        1.66     4.070    9.70 111.20    .000

   NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------
001:0027----------------------------------------------------------------------
--------------------
| ADD HYD (CH2   ) | ID: NHYD     AREA     QPEAK   TPEAK   R.V.    DWF
--------------------                (ha)     (cms)   (hrs)   (mm)   (cms)
                  ID1 01:CH1        3.92     3.926    9.67 111.34    .000
                 +ID2 04:EWROOF     8.50      .135   11.53 117.32    .000
                 +ID3 08:102CH       .11      .163    9.57 108.56    .000
                  ========================================================
                  SUM 05:CH2       12.53     4.170    9.67 115.37    .000

   NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------
001:0028----------------------------------------------------------------------
--------------------
| ADD HYD (PD2   ) | ID: NHYD     AREA     QPEAK   TPEAK   R.V.    DWF
--------------------                (ha)     (cms)   (hrs)   (mm)   (cms)
                  ID1 02:PD1       22.58     2.485    9.60 111.25    .000
                 +ID2 09:102PD      1.13      .220    9.53 108.56    .000
                  ========================================================
                  SUM 06:PD2       23.71     2.705    9.60 111.13    .000

   NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------
001:0029----------------------------------------------------------------------
--------------------
| ROUTE RESERVOIR  |    Requested routing time step =  2.0 min.
|  IN>06:(PD2   )  |
| OUT<07:(POND  )  |    =========  OUTLFOW STORAGE TABLE  =========
--------------------    OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
                          (cms)    (ha.m.)   |    (cms)    (ha.m.)
                           .000  .0000E+00   |    2.280  .2630E+00
                           .028  .1190E+00   |    4.686  .3620E+00
                           .311  .1530E+00   |    7.610  .4670E+00
                           .827  .1890E+00   |   11.693  .6020E+00
                          1.492  .2250E+00   |     .000  .0000E+00

     ROUTING RESULTS            AREA     QPEAK     TPEAK       R.V.
     ---------------           (ha)     (cms)     (hrs)       (mm)
     INFLOW >06: (PD2   )      23.71     2.705     9.600    111.126
     OUTFLOW<07: (POND  )      23.71     2.592     9.900    111.125
    OVERFLOW<08: (OVRFLW)        .00      .000      .000       .000

                  TOTAL NUMBER OF SIMULATED OVERFLOWS  =        0
                  CUMULATIVE TIME OF OVERFLOWS  (hours)=      .00
                  PERCENTAGE OF TIME OVERFLOWING    (%)=      .00


                  PEAK   FLOW   REDUCTION [Qout/Qin](%)=   95.841
                  TIME SHIFT OF PEAK FLOW         (min)=    18.00
                  MAXIMUM  STORAGE   USED       (ha.m.)=.2760E+00

--------------------------------------------------------------------------------
001:0030----------------------------------------------------------------------
--------------------
| ADD HYD (PNDOUT) | ID: NHYD     AREA     QPEAK   TPEAK   R.V.    DWF
--------------------                (ha)     (cms)   (hrs)   (mm)   (cms)
                  ID1 07:POND      23.71     2.592    9.90 111.12    .000
                 +ID2 08:OVRFLW      .00      .000     .00    .00    .000 **DRY**
                  ========================================================
                  SUM 09:PNDOUT    23.71     2.592    9.90 111.12    .000

   NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------
001:0031----------------------------------------------------------------------
* 5YROUT must be 2.84 m3/s or less for 5 year event based on 75 l/s/ha for
* 37.9 total site hectares.
--------------------
| ADD HYD (5YROUT) | ID: NHYD     AREA     QPEAK   TPEAK   R.V.    DWF
--------------------                (ha)     (cms)   (hrs)   (mm)   (cms)
                  ID1 09:PNDOUT    23.71     2.592    9.90 111.12    .000
                 +ID2 05:CH2       12.53     4.170    9.67 115.37    .000
                  ========================================================
                  SUM 10:5YROUT    36.24     6.506    9.77 112.59    .000

   NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------
001:0032----------------------------------------------------------------------
* TOTAL is all flows from development site and argentia road
--------------------
| ADD HYD (TOTAL ) | ID: NHYD     AREA     QPEAK   TPEAK   R.V.    DWF
--------------------                (ha)     (cms)   (hrs)   (mm)   (cms)
                  ID1 03:MJ2        1.66     4.070    9.70 111.20    .000
                 +ID2 10:5YROUT    36.24     6.506    9.77 112.59    .000
                  ========================================================
                  SUM 01:TOTAL     37.90   10.503     9.70 112.53    .000

   NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------
001:0033----------------------------------------------------------------------
--------------------
| CALIB NASHYD     |   Area    (ha)=    4.80   Curve Number   (CN)=70.00
| 02:100    DT= 2.00 |   Ia      (mm)=   8.000   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=    .700

     Unit Hyd Qpeak  (cms)=     .262

     PEAK FLOW       (cms)=     .271 (i)
     TIME TO PEAK    (hrs)=   10.433
     RUNOFF VOLUME    (mm)=   56.322
     TOTAL RAINFALL   (mm)=  119.373
     RUNOFF COEFFICIENT   =     .472

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

--------------------------------------------------------------------------------
001:0034----------------------------------------------------------------------
      FINISH
--------------------------------------------------------------------------------
********************************************************************************
     WARNINGS / ERRORS / NOTES
--------------------------
 001:0009 ROUTE RESERVOIR
      *** WARNING: Outflow volume is less than inflow volume.
   Simulation ended on 2012-05-16     at 14:52:12
================================================================================
```

DRAFT

Preliminary Geotechnical Investigation

7564 Tenth Line Road, Mississauga, Ontario

Prepared for:

Prologis Inc.
500 – 1800 Wazee Street
Denver, CO USA 80202

October 30, 2024

Pinchin File: 342044.001

Issued to:	**Prologis Inc.**
Issued on:	**October 30, 2024**
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Issuing Office:	**Mississauga, ON**

Author: Eric Naylor, P.Eng.
Geotechnical Project Manager

Reviewer: Julia Brown, P.Eng., PMP
Director, Geotechnical Services

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APPENDICES

1.0 INTRODUCTION AND SCOPE

Pinchin Ltd. (Pinchin) was retained by Prologis Inc. (Client) to conduct a Preliminary Geotechnical Investigation and provide subsequent geotechnical design recommendations as part of due diligence requirements for potential acquisition of 7564 Tenth Line Road, Mississauga, Ontario (Site).

Based on information provided by the Client, the current plans for development consist of three one-storey industrial buildings, with no basement levels, and associated access roadways and parking. Proposed final grades were not know at the time of this report's preparation.

Pinchin's geotechnical comments and recommendations are based on the results of the Preliminary Geotechnical Investigation and our understanding of the project scope.

The purpose of the Preliminary Geotechnical Investigation was to delineate the subsurface conditions and soil engineering characteristics by advancing a total of thirty (30) sampled boreholes (Boreholes BH1 to BH30), at the Site.

Based on a desk top review and the results of the Preliminary Geotechnical Investigation, the following geotechnical data and engineering design recommendations are provided herein:

- A detailed description of the soil and groundwater conditions;
- Site preparation recommendations;
- Open cut excavations;
- Anticipated groundwater management;
- Site service trench design;
- Preliminary foundation design recommendations including soil bearing resistances at Ultimate Limit States (ULS) and Serviceability Limit States (SLS) design;
- Potential total and differential settlements;
- Foundation frost protection and engineered fill specifications and installation;
- Seismic Site classification for seismic Site response;
- Concrete floor slab-on-grade support recommendations; and,
- Potential construction concerns.

Abbreviations terminology and principle symbols commonly used throughout the report, borehole logs and appendices are enclosed in Appendix I.

2.0 SITE DESCRIPTION AND GEOLOGICAL SETTING

The Site is located at 7564 Tenth Line Road in Mississauga, Ontario. The Site is currently undeveloped and used for agricultural purposes. The site is adjacent to Highway 401 right-of-way to the north and industrial buildings to the south.

Data obtained from the Ontario Geological Survey Maps, as published by the Ontario Ministry of Natural Resources, indicates that the Site is located on glaciolacustrine deposits generally comprising silty clay or clay cohesive till. The underlying bedrock at this Site is of the Queenston Formation consisting of shale, limestone, dolostone and siltstone (Ontario Geological Survey Map 1972, published 1978).

3.0 GEOTECHNICAL FIELD INVESTIGATION AND METHODOLOGY

Pinchin completed field investigations at the Site between September 26th and October 2nd , 2024 by advancing a total of thirty (30) sampled boreholes throughout the Site. The boreholes were advanced to depths of approximately 6.4 metres below existing ground surface (mbgs). The approximate spatial locations of the boreholes advanced at the Site are shown on the sketch in Figure 1. A drafted borehole location plan will be provided in the final version of this report.

The boreholes were advanced with the use of a CME 55 track-mounted rotary drill rig which was equipped with standard soil sampling equipment. Soil samples were collected at 0.75 and 1.5 m intervals using a 51 mm outside diameter (OD) split spoon barrel in conjunction with Standard Penetration Tests (SPT) “N” values (ASTM D1586). The SPT “N” values were used to assess the compactness condition of the non-cohesive soils and estimate the consistency of cohesive soils.

Monitoring wells were installed in two boreholes to allow measurement of stabilized groundwater levels . The monitoring wells were constructed using flush-threaded 50 mm diameter Trilock pipe with 3.0 meter long 10-slot well screens, delivered to the Site in pre-cleaned individually sealed plastic bags. The screen and riser pipes were not allowed to come into contact with the ground or drilling equipment prior to installation.

A completed well record was submitted to the property owner and the Ministry of the Environment, Conservation and Parks for Ontario (MECP) as per Ontario Regulation 903, as amended. A licensed well technician must properly decommission the monitoring wells prior to construction according to Regulation 903 of the Ontario Water Resources Act.

Groundwater observations and measurements were obtained from the open boreholes during and upon completion of drilling. Groundwater levels were not measured at the time of the draft version of this report, but will be included in the final report. The groundwater observations and measurements recorded are included on the appended borehole logs.

The borehole locations were not surveyed at the time of the draft version of this report. Surveyed borehole locations and ground surface elevations will be provided in the final version of this report.

The field investigation was monitored by experienced Pinchin personnel. Pinchin logged the drilling operations and identified the soil samples as they were retrieved. The recovered soil samples were sealed into plastic bags and carefully transported to Pinchin's accredited materials testing laboratory for detailed analysis and testing. All soil samples were classified according to visual and index properties by the project engineer.

The field logging of the soil and groundwater conditions was performed to collect geotechnical engineering design information. The borehole logs include textural descriptions of the subsoil in accordance with a modified Unified Soil Classification System (USCS) and indicate the soil boundaries inferred from non-continuous sampling and observations made during the borehole advancement. These boundaries reflect approximate transition zones for the purpose of geotechnical design and should not be interpreted as exact planes of geological change. The modified USCS classification is explained in further detail in Appendix I. Details of the soil and groundwater conditions encountered within the boreholes are included on the Borehole Logs within Appendix II.

Select soil samples collected from the boreholes were submitted to Pinchin's material testing laboratory to determine the grain size distribution and plasticity characteristics of the soil. At the time of writing this report, the laboratory results are not yet available, and will be included in the final version of this report.

4.0 SUBSURFACE CONDITIONS

4.1 Borehole Soil Stratigraphy

In general, the soil stratigraphy at the Site comprises topsoil underlain with a layer of sandy silt, underlain by glacial till deposits. The upper layer of glacial till typically comprises cohesive silty clay or sandy silt and clay, which overlies sandy silt til silty sand till. The appended borehole logs provide detailed soil descriptions and stratigraphies, results of SPTs, moisture content profiles, details of monitoring well installations, and groundwater measurements.

4.1.1 Topsoil

All borehole on site encountered topsoil at surface, ranging in thickness from 100 mm to 300 mm.

4.1.2 Sandy Silt

A 0.4 to 0.6 m thick layer of sandy silt was found beneath the topsoil in most boreholes on site, extending to depths of 0.8 mbgs. This sandy silt layer contained trace gravel, was brown in colour and was described as moist.

SPT 'N'-values within this sandy silt layer ranged between 4 and 10 blows per 0.3 m of penetration, indicating a loose stat of compactness.

4.1.3 Silty Clay to Sandy Silty Clay Till

Underlying the topsoil in all boreholes, a 4.0 to 6.5 m thick deposit of silty clay was encountered, extending to depths between about 4.2 to 6.7 mbgs. Boreholes BH9, BH21, BH27 and BH28 were terminated in this deposit. The silty clay was described as sandy to containing some sand, trace to some gravel and brown in colour. The moisture content of this deposit was generally described as being about the plastic limit (APL) to drier than the plastic limit (DTPL).

SPT 'N'-values within the silty clay deposit ranged between 5 and greater than 50 blows per 0.3 m of penetration, suggesting a firm to hard consistency. The majority of this glacial till deposit more than 1.5 m below existing grade was very stiff to hard.

4.1.4 Sandy Silt to Silty Sand to Silty Sand and Gravel Till

Underlying the upper cohesive glacial till in all boreholes except Boreholes BH9, BH21, BH27 and BH28, a deposit of sandy silt to silty sand to silty sand and gravel till was encountered. This lower non-cohesive glacial till deposit extended to the termination depth of all boreholes in which it was encountered. This non-cohesive deposit was generally described as grey, wet, and containing trace rock fragments.

SPT 'N'-values within this deposit ranged from 13 to greater than 50 blow per 0.3 m of penetration, indicating a compact to very dense state of compactness.

4.2 Groundwater Conditions

Groundwater observations and measurements were obtained in the open boreholes at the completion of drilling and are summarized on the appended borehole logs. Groundwater levels in the open boreholes generally ranged from 5.0 to 6.7 mbgs. Groundwater had not been measured in the monitoring wells installed for this investigation at the time of the draft version of this report.

Typically, the grey colour of the soils noted in the boreholes between 5.0 to 5.5 mbgs is indicative of permanent saturated conditions, and therefore, the fluctuations of the long-term groundwater should not be expected to drop below this depth. Perched groundwater may occur above these depths particularly following heavy rainfall or snowmelt.

Seasonal variations in the water table should be expected, with higher levels occurring during wet weather conditions in the spring and fall and lower levels occurring during dry weather conditions.

5.0 PRELIMINARY GEOTECHNICAL DESIGN RECOMMENDATIONS

5.1 General Information

The recommendations presented in the following sections of this report are based on the information available regarding the proposed construction, the results obtained from the preliminary geotechnical investigation, and Pinchin's experience with similar projects. Since the investigation only represents a portion of the subsurface conditions, it is possible that conditions may be encountered during construction that are substantially different than those encountered during the investigation. If these situations are encountered, adjustments to the design may be necessary. A qualified geotechnical engineer should be on-Site during the foundation preparation to ensure the subsurface conditions are the same/similar to what was observed during the investigation.

It is Pinchin's understanding that the development will consist of a three one-storey slab-on-grade (i.e. no basement level) industrial buildings and associated parking areas and access roadways. Information on proposed finished grades was not available at the time of this report's preparation.

5.2 Site Preparation

The existing topsoil is not considered suitable to remain below the proposed buildings, driveways and parking areas and will need to be removed. In calculating the approximate quantity of topsoil to be stripped, we recommend that the topsoil thicknesses provided on the individual borehole logs be increased by 50 mm to account for variations and some stripping of the mineral soil below.

Pinchin recommends that any engineered fill required at the Site be compacted in accordance with the criteria stated in the following table:

Type of Engineered Fill	Maximum Loose Lift Thickness (mm)	Compaction Requirements	Moisture Content (Percent of Optimum)
Structural fill to support foundations and floor slabs	200	100% SPMDD	Plus 2 to minus 4
Subgrade fill beneath parking lots and access roadways	300	98% SPMDD	Plus 2 to minus 4

Prior to placing any fill material at the Site, the subgrade should be inspected by a qualified geotechnical engineer, and loosened/soft pockets should be sub excavated and replaced with engineered fill.

Engineered structural fill must extend at least 1 m beyond the edge of proposed footings, and then downwards and outwards to competent subgrade at 1 horizontal to 1 vertical. It is also recommended that engineered structural fill be overbuilt at least 300 mm above the design underside of footing elevations.

The native sandy silty clay to silty clay till should be suitable for use as engineered fill and subgrade fill provided the grading work is carried out during periods of time with warmer weather and limited precipitation. Any wet portions of the native soils may need to be placed in thin lifts over large areas and allowed to dry. Placement in thin lifts is also important to ensure that any drier blocky portions of the native soils are properly broken down such that there are no air voids left in the fill. Use of heavy sheepsfoot packers will help to properly compact the fill.

It is recommended that any additional material imported to Site to raise grades below the proposed buildings comprise imported Ontario Provincial Standard Specification (OPSS) 1010 Granular 'B' Type I material. It is noted that Granular 'B' Type I material may consist of up to 100% Reclaimed Concrete Materials (RCM). RCM used as Granular 'B' shall not contain any loose reinforcing material. It is also noted that RCM will tend to increase the pH level of the Site and potentially contain environmental contaminants. The presence of thick RCM fills could affect the environmental conditions of the Site and become an issue in the future should the Site be sold or redeveloped.

If the work is carried out during very dry weather, water may have to be added to the material to improve compaction. Other types of imported soil may be suitable for use on Site but should be approved by a geotechnical engineer prior to import. A qualified geotechnical engineering technician should be on site to observe fill placement operations and perform field density tests at random locations throughout each lift, to indicate the specified compaction is being achieved.

5.3 Open Cut Excavations

It is anticipated that the foundations will be constructed at conventional frost depths, approximately 1.5 metres below finished floor elevation. Excavations for site services are expected at conventional depths of 2 to 3 mbgs.

Based on the subsurface information obtained from within the boreholes, it is anticipated that the excavated material will predominately consist of topsoil, sandy silt and native silty clay material. Groundwater was generally encountered at depths between 5.0 and 6.7 mbgs.

Where workers must enter trench excavations deeper than 1.2 m, the trench excavations should be suitably sloped and/or braced in accordance with the Occupational Health and Safety Act (OHSA), Ontario Regulation 213/91, Construction Projects, July 1, 2011, Part III - Excavations, Section 226. Alternatively, the excavation walls may be supported by either closed shoring, bracing, or trench boxes complying with sections 235 to 239 and 241 under O. Reg. 231/91, s. 234(1). The use of trench boxes can most likely be used for temporary support of vertical side walls. The appropriate trench should be designed/confirmed for use in this soil deposit.

Based on the OHSA, the silty clay soils would be classified as Type 2 soil and temporary excavations in these soils may be cut vertical in the bottom 1.2 m and must be sloped back at an inclination of 1 horizontal to 1 vertical (H to V) above this. The sandy silt soils would be classified as Type 3 soil and temporary excavations in these soils must be sloped back at an inclination of 1 horizontal to 1 vertical (H to V)from the base of the excavation. Excavations extending below the groundwater table would be classified as a Type 4 soil and temporary excavations will have to be sloped back at 3 horizontal to 1 vertical from the base of the excavation. Excavations through more than one soil type must be sloped as per the requirements of the soil type with the highest number.

In addition to compliance with the OHSA, the excavation procedures must also be in compliance to any potential other regulatory authorities, such as federal and municipal safety standards.

Alternatively, the excavation walls may be supported by either closed shoring, or bracing, complying with sections 235 to 239 and 241 under O. Reg. 231/91, s. 234(1). Pinchin would be pleased to provide further recommendations on shoring design once the building plans have been completed.

Seasonal variations in the water table should be expected, with higher levels occurring during wet weather conditions in the spring and fall and lower levels occurring during dry weather conditions. If construction commences during wet periods (typically spring or fall), there is a greater potential that the groundwater elevation could be higher and/or perched groundwater may be present. Any potential precipitation or perched groundwater should be able to be controlled from pumping from filtered sumps.

Prior to commencing excavations, it is critical that all existing surface water and potential surface water is controlled and diverted away from the Site to prevent infiltration and subgrade softening. At no time should excavations be left open for a period of time that will expose them to precipitation and cause subgrade softening.

All collected water is to discharge a sufficient distance away from the excavation to prevent re-entry. Sediment control measures, such as a silt fence should be installed at the discharge point of the dewatering system. The utmost care should be taken to avoid any potential impacts on the environment.

It is the responsibility of the contractor to propose a suitable dewatering system based on the groundwater elevation at the time of construction. The method used should not adversely impact any nearby structures. Excavations to conventional design depths for the building foundations are not expected to require a Permit to Take Water or a submission to the Environmental Activity and Sector Registry (EASR). It is the responsibility of the contractor to make this application if required.

As previously mentioned, above average seasonal variations in the groundwater table should be expected, with higher levels occurring during wet weather conditions in the spring and fall and lower levels occurring during dry weather conditions. As such, depending on the groundwater at the time of the excavation works, a more involved dewatering system may be required.

5.4 Site Servicing

5.4.1 Pipe Bedding and Cover Materials for Flexible and Rigid Pipes

The subgrade soil conditions beneath the site services will likely comprise natural glacial till soils. Any organic or excessively loose/soft soil encountered below the pipe inverts should be removed and replaced with additional pipe bedding. No support problems are anticipated for flexible or rigid pipes founded in the natural mineral soils. It is critical that the pipe subgrade is inspected by a geotechnical engineer prior to placement of pipe bedding material to ensure adequate support is available for the services.

Service pipes require an adequate base to ensure proper pipe connection and positive flow is maintained post construction. As such, pipe bedding should be placed to be of uniform thickness and compactness. The pipe bedding and cover material should conform to OPSD 802.010 and 802.013 specifications for flexible pipes and to OPSD 802.031 to 802.033 with Class “B” bedding for rigid pipes. The pipe bedding material should consist of a minimum thickness of 150 mm Granular “A” (OPSS 1010) below the pipe and extend up the sides to the spring line. However, the bedding thickness may have to be increased depending on the pipe diameter or if wet or weak subgrade conditions are encountered. The pipe cover material from the spring line should consist of a Granular “B” Type I (OPSS 1010) and should extend to a minimum of 300 mm above the top of the pipe. All granular fill material is to be placed in maximum 200 mm thick loose lifts compacted to a minimum of 98% SPMDD.

The bedding material, pipe and cover material should be installed as soon as practically possible after the excavation subgrade is exposed. The longer the excavated subgrade soil remains open to weather conditions and groundwater seepage, the greater the chance for construction problems to occur. Where it is difficult to stabilize the subgrade due to groundwater or the material is higher than the optimum moisture content, a Granular “B” Type II material may be required. Alternatively, if constant groundwater infiltration becomes an issue, then an approximate 150 mm granular pad consisting of 19 mm clear stone gravel (OPSS 1004) wrapped in a non-woven geotextile should be considered to maintain the integrity of the natural subgrade soil.

The clear stone should contain a minimum of 50% crushed particles. Water collected within the stone should be controlled through sumps and filtered pumps.

5.4.2 Trench Backfill

Following placement of the pipe bedding cover the trench shall be backfilled. The on-Site glacial till soils from above the groundwater table will be suitable for use at trench backfill. Portions of the material may be too wet and will require drying prior to placing as backfill. The natural clayey soils will have a blocky/lumpy texture, and a sheepsfoot roller is recommended in order to achieve proper compaction and ensure that all air voids are removed to avoid long term softening and settlement.

The soil should be placed to the design subgrade level, and be compacted in maximum 200 mm thick lifts to 98% SPMDD within 4% of the optimum moisture content for hardscaped areas and 95% SPMDD within 4% of the optimum moisture content for landscaped areas. The natural material must be free of organics or other deleterious material.

All stockpiled material should be protected from deleterious materials, additional moisture and be kept from freezing.

Quality control will be the utmost importance when selecting the material to use as backfill whether natural material or imported granular. The selection of the material should be done as early in the contract as possible to allow sufficient time for gradation and proctor testing on representative samples to ensure it meets the projects specifications.

Where the natural soil will be exposed, adequate compaction may prove difficult if the material becomes wet (i.e., above the optimum moisture content). Depending on the moisture content of the natural materials at the time of construction, they may either require moisture to be added or stockpiled and left to dry to achieve moisture content within plus 2% to minus 4% of optimum.

Depending on weather conditions at the time of construction, an imported material may be required regardless to achieve adequate compaction. If the imported material is not the same/similar to the soil observed on the side walls of the excavation, then a horizontal transition between the materials should be sloped as per frost heave taper OPSD 205.060.

Any natural material is to be placed in maximum 200 mm thick lifts compacted to 98% SPMDD within plus 2% to minus 4% optimum moisture content. Imported material should consist of a Granular “A”, Granular “B” Type I, or Select Subgrade Material (OPSS 1010). Heavy construction equipment and truck traffic should not cross any pipe until at least 1 m of compacted soil is placed above the top of the pipe.

Post compaction settlement of finer grained soil can be expected, even when placed to compaction specifications. As such, fill materials should be installed as far in advance as possible before finishing the roadway in order to mitigate post compaction settlements.

5.5 Foundation Design

5.5.1 Shallow Foundations Bearing on Engineered Fill or Undisturbed Native Soils

The existing glacial till deposits is considered suitable to support the proposed building, provided all of the topsoil and any previously disturbed native material is removed, and the subgrade prepared as above. In the event that design underside of footing elevations are above the level of undisturbed native soils, the engineered structural fill must be placed as described in Section 5.2 of this report.

Conventional shallow strip or spread footings between 0.5 m and 3.0 in width, established on properly placed engineered structural fill or on the upper inorganic undisturbed native soils, may be designed using a bearing resistance for 25 mm of settlement at Serviceability Limit States of 150 kPa, and a factored geotechnical bearing resistance of 225 kPa at Ultimate Limit States (ULS).

Conventional shallow strip or spread footings between 0.5 m and 3.0 in width, established on the inorganic glacial till more than 1.5 m below existing grade, may be designed using a bearing resistance for 25 mm of settlement at Serviceability Limit States of 200 kPa, and a factored geotechnical bearing resistance of 225 kPa at Ultimate Limit States (ULS).

Higher bearing resistances may be available for deeper footings; however, as the actual building designs are unknown, Pinchin should be consulted to confirm the design bearing resistances provided are suitable for the design footing elevations.

As the actual service loads were not known at the time of this report, these should be reviewed by the project structural engineer to determine if SLS or ULS governs the footing design.

It is noted that there is a likelihood of weaker subgrade soil to be encountered between the investigation locations. Pinchin presumes that any areas of weaker subgrade soil will consist of small pockets of soft/loose natural soil which can be compacted to match the density of the remainder of the Site. As such, the material must be compacted to a minimum of 100% Standard Proctor Maximum Dry Density (SPMDD) prior to installing the concrete formwork. Any soft/loose areas which are not able to achieve the recommended 100% SPMDD are to be removed and replaced with a low strength concrete.

Pinchin notes that a qualified geotechnical engineering consultant should be on-Site during the proof roll and foundation preparation activities to verify the recommended level of compaction is achieved and to verify the design assumptions and recommendations. This is especially critical with respect to the recommended soil bearing pressures. If variations occur in the soil conditions between the borehole locations, site verification and site review by Pinchin is recommended to provide appropriate recommendations at that time.

The natural subgrade soil is sensitive to change in moisture content and can become loose/soft if subjected to additional water or precipitation. As well, it could be easily disturbed if travelled on during construction. Once it becomes disturbed it is no longer considered adequate to support the recommended design bearing pressures. It is recommended that a working slab of lean concrete (mud slab) be placed in the footing areas immediately after excavation and inspection to protect the founding soils during placement of formwork and reinforcing steel.

In addition, to ensure and protect the integrity of the subgrade soil during construction operations, the following is recommended:

- Prior to commencing excavations, it is critical that all existing surface water, potential surface water and perched groundwater are controlled and diverted away from the work Site to prevent infiltration and subgrade softening. At no time should excavations be left open for a period of time that will expose them to inclement weather conditions and cause subgrade softening;
- The subgrade should be sloped to a sump outside the excavation to promote surface drainage and the collected water pumped out of the excavation. Any potential precipitation or seepage entering the excavations should be pumped away immediately (not allowed to pond);
- The footing areas should be cleaned of all deleterious materials such as topsoil, organics, fill, disturbed, or caved material;
- Any potential large cobbles or boulders (i.e. greater than 200 mm in diameter) within the subgrade material are to be removed and replaced with a similar soil type not containing particles greater than 200 mm in diameter. It is critical that particles greater than 200 mm in diameter are not in contact with the foundation to prevent point loading and overstressing; and,
- If the excavated subgrade soil remains open to weather conditions and groundwater seepage, sidewall stability and suitability of the subgrade soil will need to be verified prior to construction.

If construction proceeds during freezing weather conditions, adequate temporary frost protection for the footing bases and concrete must be provided and maintained above freezing at all times.

5.5.2 Cast-in-place Concrete Caissons

Bored piles (drilled shafts) may be considered as an alternative for the building foundations. Bored piles typically involve drilling a vertical hole into the ground, and filling the hole with structural concrete and reinforcing steel. Once additional information on proposed grades and proposed building loads is available, further assessment on the potential use of caisson foundations can be provided.

5.5.3 *Earth Pressure Parameters*

The following parameters (un-factored) should be used for the design of structural elements subject to unbalanced earth pressures.

Soil Layer	Bulk Unit Weight (kN/m^3)	Angle of Internal Friction	Active Earth Pressure Coefficient	At-Rest Earth Pressure Coefficient	Passive Earth Pressure Coefficient
Glacial Till	21	30°	0.33	0.50	3.00

5.5.4 *Site Classification for Seismic Site Response & Soil Behaviour*

The following information has been provided to assist the building designer from a geotechnical perspective only. These geotechnical seismic design parameters should be reviewed in detail by the structural engineer and be incorporated into the design as required.

The seismic site classification has been based on the 2012 OBC. The parameters for determination of Site Classification for Seismic Site Response are set out in Table 4.1.8.4.A of the OBC. The site classification is based on the average shear wave velocity in the top 30 m of the site stratigraphy. If the average shear wave velocity is not known, the site class can be estimated from energy corrected Standard Penetration Resistance (N60) and/or the average undrained shear strength of the soil in the top 30 m.

The boreholes advanced at this Site extended to approximately 6.4 mbgs and were terminated in the glacial till deposit. SPT “N” values within this soil deposit ranged between 10 and greater than 50 blows per 300 mm. As such, based on Table 4.1.8.4.A of the OBC, this Site has been classified as Class D. A Site Class D has an average shear wave velocity (Vs) of between 180 and 360 m/s. It is recommended that shear wave velocity soundings be completed at the Site once final design and depths of foundations are known as a higher Site Classification may be available for deeper foundations at the Site.

5.5.5 *Foundation Transition Zones*

Excessive differential settlements can occur where the subgrade support material types differ below the underside of continuous strip footings, (i.e., structural fill to native silty clay). As such, where strip footings transition from one material to another the transition between the materials should be suitably sloped or benched to mitigate differential settlements.

Pinchin also recommends the following transition precautions to mitigate/accommodate potential differential settlements:

- For strip footings, the transition zones should be adequately reinforced with additional reinforced steel lap lengths or widened footings;
- Steel reinforced poured concrete foundation walls; and
- Control joints throughout the transition zone(s).

The above recommendations should be reviewed by the structural engineer and incorporated into the design as necessary.

Where strip footings are founded at different elevations, the subgrade soil is to have a maximum slope of 2 H to 1 V, with the concrete footing having a maximum rise of 600 mm and a minimum run of 600 mm between each step, as detailed in the 2012 Ontario Building Code (OBC). The lower footing should be installed first to mitigate the risk of undermining the upper footing.

Individual spread footings are to be spaced a minimum distance of one and a half times the largest footing width apart from each other to avoid stress bulb interaction between footings. This assumes the footings are at the same elevation.

Foundations may be placed at a higher elevation relative to one another provided that the slope between the outside face of the foundations are separated at a minimum slope of 2H: 1V with an imaginary line drawn from the underside of the foundations. The lower footing should be installed first to mitigate the risk of undermining the upper footing.

5.5.6 Estimated Settlement

All individual spread footings should be founded on uniform subgrade soils, reviewed and approved by a licensed geotechnical engineer.

Foundations installed in accordance with the recommendations outlined in the preceding sections are not expected to exceed total settlements of 25 mm and differential settlements of 19 mm.

All foundations are to be designed and constructed to the minimum widths as detailed in the 2012 OBC.

5.5.7 Building Drainage

To assist in maintaining the buildings dry from surface water seepage, it is recommended that exterior grades around the buildings be sloped away at a 2% gradient or more, for a distance of at least 2.0 m. Roof drains should discharge a minimum of 1.5 m away from the structure to a drainage swale or appropriate storm drainage system.

Exterior perimeter foundations drains are not required, where the finished floor elevation is established a minimum of 150 mm above the exterior final grades or that the exterior gradient is properly sloped to divert surface water away from the buildings.

5.5.8 Shallow Foundations Frost Protection & Foundation Backfill

In the Mississauga, Ontario area, exterior perimeter foundations for heated buildings require a minimum of 1.2 m of soil cover above the underside of the footing to provide soil cover for frost protection.

Where the foundations for heated buildings do not have the minimum 1.2 m of soil cover frost protection, they should be protected from frost with a combination of soil cover and rigid polystyrene insulation, such as Dow Styrofoam or equivalent product. If required, Pinchin can provide appropriate foundation frost protection recommendations as part of the design review.

To minimize potential frost movements from soil frost adhesion, the perimeter foundation backfill should consist of a free draining granular material, such as a Granular 'B' Type I (OPSS 1010) or an approved sand fill, extending a minimum lateral distance of 600 mm beyond the foundation. The existing glacial till soils are not considered suitable for reuse as foundation wall backfill due to poor hydraulic conductivity. Backfill must be brought up evenly on both sides of walls not designed to resist lateral earth pressure. All backfill material is to be placed in maximum 300 mm thick lifts compacted to a minimum of 100% SPMDD below the interior of building and exterior hard landscaping areas; and, 95% SPMDD below exterior soft landscaping areas. It is recommended that inspection and testing be carried out during construction to confirm backfill quality, thickness and to ensure compaction requirements are achieved.

5.6 Floor Slabs

Prior to the installation of the engineered fill material, all organics and deleterious materials should be removed to the underlying organic free in-situ soil. The natural subgrade soil is to be proof roll compacted with a minimum 10 tonne non-vibratory steel drum roller to observe for weak/soft spots. It is noted that some locations will not be accessible by the steel drum roller; as such, these locations can be proof roll compacted with a minimum 450 kg vibratory plate compactor.

The in-situ inorganic glacial till material encountered within the boreholes is considered adequate for the support of the concrete floor slabs provided it is proof roll compacted as outlined above. Any soft area(s) encountered during proof rolling should be excavated and replaced with a similar soil type.

Once the subgrade soil is exposed it is to be inspected and approved by a qualified geotechnical engineering consultant to ensure that the material conforms to the soil type and consistency observed during the subsurface investigation work.

Based on the in-situ soil conditions, it is recommended to establish the concrete floor slab on a minimum 300 mm thick layer of Granular "A" (OPSS 1010) compacted to 100% SPMDD. To create a better draining working pad within the building prior to floor slab placement, consideration can be given to placing a 300 mm thick layer of crusher run Granular 'B' with a maximum particle size of 50 mm, compacted to 100% SPMDD, with an underlying subdrain system Any required up-fill should consist of a Granular "B" Type I or Type II (OPSS 1010).

The installation of a vapour barrier may be required under the floor slab. If required, the vapour barrier should conform to the flooring manufacturer's and designer's requirements. Consideration may be given to carrying out moisture emission and/or relative humidity testing of the slab to determine the concrete condition prior to flooring installation. To minimize the potential for excess moisture in the floor slab, a concrete mixture with a low water-to-cement ratio (i.e. 0.5 to 0.55) should be used.

The following table provides the unfactored modulus of subgrade reaction values:

Material Type	Modulus of Subgrade Reaction (kN/m^3)
Granular A (OPSS 1010)	85,000
Granular "B" Type I (OPSS 1010)	75,000
Granular "B" Type II (OPSS 1010)	85,000
Native Glacial Till or Engineered Fill	20,000

5.7 Asphaltic Concrete Pavement Structure Design for Parking Lot and Driveways

5.7.1 Discussion

Parking areas and driveway access will be constructed around the proposed buildings. The in-situ glacial till deposit is considered a sufficient bearing material for an asphaltic concrete pavement structure provided all organics, deleterious materials and areas of disturbed native soil are removed prior to installing the engineered fill material.

At this time Pinchin is unaware of the proposed final grades for the parking lot and access roadways. As such, provided the pavement structure overlies the in-situ silty clay material, the following pavement structure is recommended.

5.7.2 Pavement Structure

The following table presents the minimum specifications for a flexible asphaltic concrete pavement structure:

Pavement Layer	Compaction Requirements	Parking Areas	Driveways
Surface Course Asphaltic Concrete HL-3 (OPSS 1150)	92% MRD as per OPSS 310	35 mm	35 mm

Pavement Layer	Compaction Requirements	Parking Areas	Driveways
Binder Course Asphaltic Concrete HL-8 (OPSS 1150)	92 % MRD as per OPSS 310	55 mm	80 mm
Base Course: Granular "A" (OPSS 1010)	100% Standard Proctor Maximum Dry Density (ASTM-D698)	150 mm	150 mm
Subbase Course: Granular "B" Type I (OPSS 1010)	100% Standard Proctor Maximum Dry Density (ASTM D698)	400 mm	450 mm

Notes:

I. Prior to placing the pavement structure, the subgrade soil is to be proof rolled with a smooth drum roller without vibration to observe weak spots and the deflection of the soil; and

II. The recommended pavement structure may have to be adjusted according to Region of Peel standards. Also, if construction takes place during times of substantial precipitation and the subgrade soil becomes wet and disturbed, the granular thickness may have to be increased to compensate for the weaker subgrade soil. In addition, the granular fill material thickness may have to be temporarily increased to allow heavy construction equipment access the Site, in order to avoid the subgrade from "pumping" up into the granular material.

III. Performance grade PG 58-28 asphaltic concrete should be specified for Marshall mixes. Consideration should be given to increasing the grade to 64-28 in areas designed for heavy truck traffic.

It is understood that consideration may be given to using asphalt reinforcement or granular reinforcement to optimize the pavement design. It is also understood that the Client has previous experience utilizing FORTA-FI asphalt reinforcement on other projects. As the native subgrade soils at this Site are silty, they may have frost susceptibility. As such, a significant reduction in the overall pavement structure thickness may result in increased potential for pavement distress due to frost heave. As such, it is recommended that the optimization be limited to asphalt reinforcement, subject to reassessment once additional information is available on proposed grades and engineered fill type if the pavement structure will be supported on engineered fill. The following optimized pavement structure utilizing FORTA-FI asphalt reinforcement could be considered:

Pavement Layer	Compaction Requirements	Light Duty Traffic and Parking Areas	Heavy Duty Traffic Areas and Access Roads
Surface Course: Asphaltic Concrete HL-3 (OPSS 1150) FORTA-FI Reinforced	92% MRD as per OPSS.MUNI 310	35 mm	35 mm
Binder Course: Asphaltic Concrete FORTA-FI Reinforced	92% MRD as per OPSS.MUNI 310	45 mm HL-4	55 mm HL-8
Base Course: Granular "A" (OPSS 1010)	100% Standard Proctor Maximum Dry Density (ASTM-D698)	150 mm	150 mm

Pavement Layer	Compaction Requirements	Light Duty Traffic and Parking Areas	Heavy Duty Traffic Areas and Access Roads
Subbase Course: Granular "B" Type II (OPSS 1010)	100% Standard Proctor Maximum Dry Density (ASTM D698)	350 mm	400 mm

Notes:

i) Prior to placing the pavement structure, the subgrade soil is to be proof rolled with a smooth drum roller without vibration to observe weak spots and the deflection of the soil; and

ii) The recommended pavement structure may have to be adjusted according to the Town of Caledon municipal standards. Also, if construction takes place during times of substantial precipitation and the subgrade soil becomes wet and disturbed, the granular thickness may have to be increased to compensate for the weaker subgrade soil. In addition, the granular fill material thickness may have to be temporarily increased to allow heavy construction equipment to access the Site, in order to avoid the subgrade from "pumping" up into the granular material.

iii) Performance grade PG 58-28 asphaltic concrete should be specified for Marshall mixes. Consideration should be given to increasing the grade to 64-28 in areas designed for heavy truck traffic.

The FORTA-FI reinforcement must be introduced into the asphalt mixes as per the manufacturer's instructions, ensuring a homogenous asphalt mix with no clumps of reinforcement fibres. It is understood that the typical dosing of FORTA-Fi reinforcement is 0.5 kg per metric tonne.

It is also noted that there is potential that significant amounts of soil may be imported during site preparation. There may be potential for additional pavement structure optimization for areas where pavement overly fill that has low frost susceptibility, such as imported clean sand or sand and gravel.

It is also noted that the subbase thicknesses provided in these pavement designs are expected to be suitable to support gravel truck traffic (assumed 60 t, five axle gravel trucks) and crane loads (outriggers on 2.1 m by 2.7 m pads with bearing pressures up to 125 kPa), prior to placement of Granular 'A' base and asphalt. Some re-grading and recompaction of the surface of the Granular 'B' may be required, particularly in any areas where trucks have turning movements.

5.7.3 Rigid Pavement Structure

Alternatively, consideration may also be given to the use of Portland cement concrete pavement where there is intense truck use and turning of transport vehicles in conjunction with the waste handling, loading docks or delivery facilities. Dolly pads are also to comprise concrete pavement.

The following table provides the minimum recommended rigid pavement structures:

Pavement Layer	Compaction Requirements	Light Duty Pavement	Heavy Duty Pavement
Portland Cement Concrete, CAN/CSA A23.1- Class C-2	CAN/CSA A23.1	150 mm	200 mm
Base Course, OPSS MUNI 1010 Granular A	100% Standard Proctor Maximum Dry Density (ASTM-D698)	200 mm	200 mm

Note:

I. Prior to installation of the concrete pavement structure, in addition to the granular base course, it is recommended to install a granular subbase consisting of OPSS 1010 Granular "B", with a minimum thickness of 400 mm for the heavy duty apron slab areas. The purpose of the Granular "B" is to provide a stable working base for construction equipment, as well as providing a free-draining layer and added frost protection beneath the concrete.

All concrete pavement and dolly pads at this Site are to be rebar reinforced.

5.7.4 Pavement Structure Subgrade Preparation and Granular up Fill

The proper placement of base and subbase fill materials becomes very important in addressing the proper load distribution to provide a durable pavement structure.

The pavement subgrade materials should be thoroughly proof-rolled prior to placement of the Granular 'B' subbase course. If any unstable areas are noted, then the Granular 'B' thickness may need to be increased to support pavement construction traffic. This should be left as a field decision by a qualified geotechnical engineer at the time of construction, but it is recommended that additional Granular 'B' be carried as a provisional item under the construction contract.

Where fill material is required to increase the grade to the underside of the pavement structure it should consist of Granular 'B' Type I (OPSS 1010). The up fill material is to be placed in maximum 300 mm thick lifts compacted to 98% SPMDD within 4% of the optimum moisture content.

It is noted that as per OPSS.MUNI 1010, Granular 'A' and Granular 'B' Type I may consist of up to 100% Reclaimed Concrete Material (RCM). It is noted that RCM must not include any loose reinforcing materials, and reclaimed materials must be homogeneously blended.

Samples of both the Granular 'A' and Granular 'B' Type I aggregates should be tested for conformance to OPSS 1010 prior to utilization on Site and during construction. All stockpiled material should be protected from deleterious materials, additional moisture and be kept from freezing.

Post compaction settlement of fine grained soil can be expected, even when placed to compaction specifications. As such, fill material should be installed as far in advance as possible before finishing the parking lot and access roadways for best grade integrity.

Where the subgrade material types differ below the underside of the pavement structure, the transition between the materials should be sloped as per frost heave taper OPSD 205.60.

5.7.5 Drainage

Control of surface water is a critical factor in achieving good pavement structure life. The pavement thickness designs are based on a drained pavement subgrade via sub-drains or ditches.

The glacial till soils have poor natural drainage and therefore it is recommended that pavement subdrains be installed in the lower areas and be connected to the catch basins. Subdrains should comprise 150 mm diameter perforated pipe infilter sock, bedded in concrete sand. The upper limit of the concrete sand bedding should be at the lower limit of the pavement subbase, with the subgrade below the subbase sloped towards the subdrain.

The surface of the roadways should be free of depressions and be sloped at a minimum grade of 1% in order to drain to appropriate drainage areas. Subgrade soil should slope a minimum of 3% toward stormwater collection points. Positive slopes are very important for the proper performance of the drainage system. The granular base and subbase materials should extend horizontally to any potential ditches or swales.

In addition, routine maintenance of the drainage systems will assist with the longevity of the pavement structure. Ditches, culverts, sewers and catch basins should be regularly cleared of debris and vegetation.

6.0 SITE SUPERVISION & QUALITY CONTROL

It is recommended that all geotechnical aspects of the project be reviewed and confirmed under the appropriate geotechnical supervision, to routinely check such items. This includes but is not limited to inspection and confirmation of the undisturbed natural subgrade material prior to subgrade preparation, pouring any foundations or footings, backfilling, or engineered fill installation to ensure that the actual conditions are not markedly different than what was observed at the borehole locations and geotechnical components are constructed as per Pinchin's recommendations. Compaction quality control of engineered fill material (full-time monitoring) is recommended as standard practice, as well as regular sampling and testing of aggregates and concrete, to ensure that physical characteristics of materials for compliance during installation and satisfies all specifications presented within this report.

7.0 TERMS AND LIMITATIONS

This Geotechnical Investigation was performed for the exclusive use of Prologis Inc. (Client) in order to evaluate the subsurface conditions at 7564 Tenth Line Road, Mississauga, Ontario. Within the limitations of scope, schedule and budget, our services have been executed in accordance with generally accepted practises in the field of geotechnical engineering for the Site.

Classification and identification of soil, and geologic units have been based upon commonly accepted methods employed in professional geotechnical practice. No warranty or other conditions, expressed or implied, should be understood. Conclusions derived are specific to the immediate area of study and cannot be extrapolated extensively away from sample locations.

Performance of this Geotechnical Investigation to the standards established by Pinchin is intended to reduce, but not eliminate, uncertainty regarding the subgrade soil at the Site, and recognizes reasonable limits on time and cost.

Regardless how exhaustive a Geotechnical Investigation is performed, the investigation cannot identify all the subsurface conditions. Therefore, no warranty is expressed or implied that the entire Site is representative of the subsurface information obtained at the specific locations of our investigation. If during construction, subsurface conditions differ from then what was encountered within our test location and the additional subsurface information provided to us, Pinchin should be contacted to review our recommendations. This report does not alleviate the contractor, owner, or any other parties of their respective responsibilities.

This report has been prepared for the exclusive use of the Client and their authorized agents. Any use which a third party makes of this report, or any reliance on or decisions to be made based on it, are the responsibility of the third parties. If additional parties require reliance on this report, written authorization from Pinchin will be required. Pinchin disclaims responsibility of consequential financial effects on transactions or property values, or requirements for follow-up actions and costs. No other warranties are implied or expressed. Furthermore, this report should not be construed as legal advice.

The liability of Pinchin or our officers, directors, shareholders or staff will be limited to the lesser of the fees paid or actual damages incurred by the Client. Pinchin will not be responsible for any consequential or indirect damages. Pinchin will only be liable for damages resulting from the negligence of Pinchin. Pinchin will not be liable for any losses or damage if the Client has failed, within a period of two years following the date upon which the claim is discovered (Claim Period), to commence legal proceedings against Pinchin to recover such losses or damage unless the laws of the jurisdiction which governs the Claim Period which is applicable to such claim provides that the applicable Claim Period is greater than two years and cannot be abridged by the contract between the Client and Pinchin, in which case the Claim Period shall be deemed to be extended by the shortest additional period which results in this provision being legally enforceable.

Pinchin makes no other representations whatsoever, including those concerning the legal significance of its findings, or as to other legal matters touched on in this report, including, but not limited to, ownership of any property, or the application of any law to the facts set forth herein. With respect to regulatory compliance issues, regulatory statutes are subject to interpretation and these interpretations may change over time.

Please refer to Appendix IV, Report Limitations and Guidelines for Use, which pertains to this report.

Specific limitations related to the legal and financial and limitations to the scope of the current work are outlined in our proposal, the attached Methodology and the Authorization to Proceed, Limitation of Liability and Terms of Engagement which accompanied the proposal.

Information provided by Pinchin is intended for Client use only. Pinchin will not provide results or information to any party unless disclosure by Pinchin is required by law. Any use by a third party of reports or documents authored by Pinchin or any reliance by a third party on or decisions made by a third party based on the findings described in said documents, is the sole responsibility of such third parties. Pinchin accepts no responsibility for damages suffered by any third party as a result of decisions made or actions conducted. No other warranties are implied or expressed.

342044.001 DRAFT Preliminary Geotechnical Investigation 7564 Tenth Line Mississauga ON Oct 30 2024

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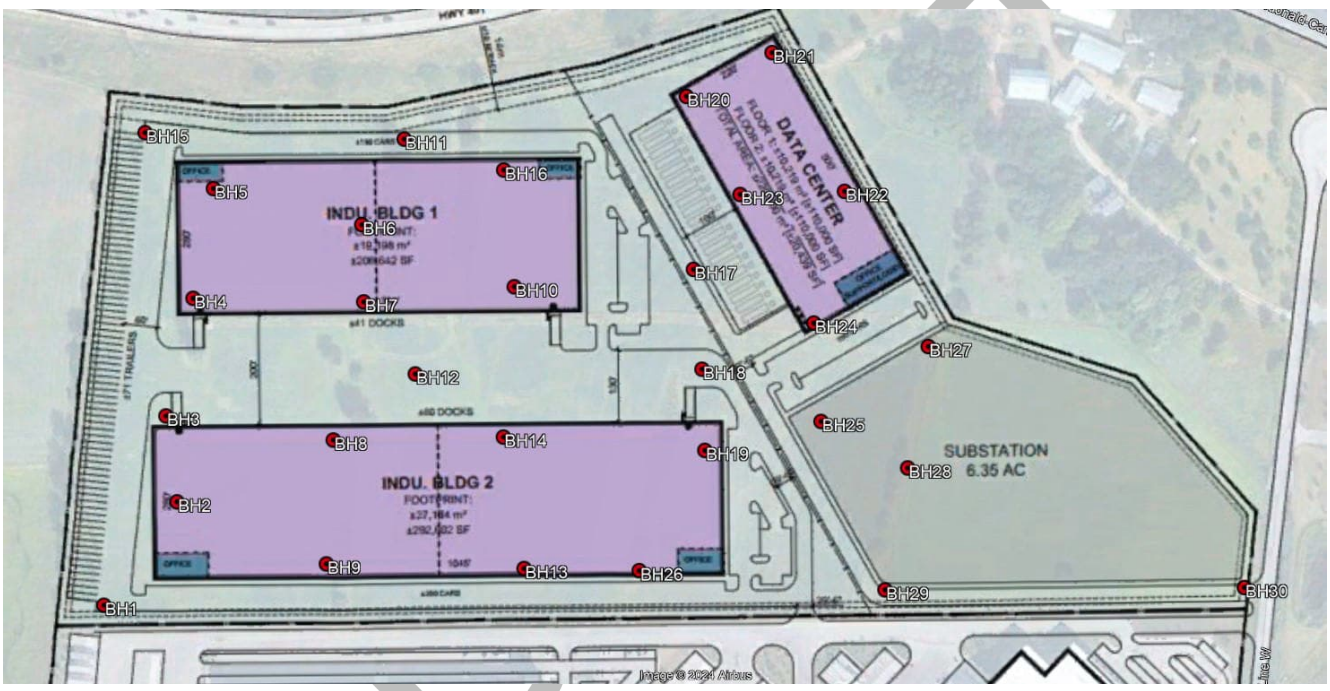
FIGURES



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N

LEGEND

BOREHOLE

INFERRED GROUNDWATER FLOW DIRECTION

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PINCHIN

PROJECT NAME: GEOTECHNICAL INVESTIGATION

CLIENT NAME: PROLOGIS

PROJECT LOCATION: 7564 TENTH LINE ROAD, MISSISSAUGA, ONTARIO

FIGURE NAME: BOREHOLE LOCATION PLAN

PROJECT NUMBER:	SCALE:
342044.000	
DRAWN BY: EN	REVIEWED BY: EN
DATE: OCT 2024	FIGURE NUMBER: 1

APPENDIX I

Abbreviations, Terminology and Principle Symbols used in Report and Borehole Logs

ABBREVIATIONS, TERMINOLOGY & PRINCIPAL SYMBOLS USED

Sampling Method

AS	Auger Sample	**w**	Washed Sample
SS	Split Spoon Sample	**HQ**	Rock Core (63.5 mm diam.)
ST	Thin Walled Shelby Tube	**NQ**	Rock Core (47.5 mm diam.)
BS	Block Sample	**BQ**	Rock Core (36.5 mm diam.)

In-Situ Soil Testing

Standard Penetration Test (SPT), "N" value is the number of blows required to drive a 51 mm outside diameter spilt barrel sampler into the soil a distance of 300 mm with a 63.5 kg weight free falling a distance of 760 mm after an initial penetration of 150 mm has been achieved. The SPT, "N" value is a qualitative term used to interpret the compactness condition of cohesionless soils and is used only as a very approximation to estimate the consistency and undrained shear strength of cohesive soils.

Dynamic Cone Penetration Test (DCPT) is the number of blows required to drive a cone with a 60 degree apex attached to "A" size drill rods continuously into the soil for each 300 mm penetration with a 63.5 kg weight free falling a distance of 760 mm.

Cone Penetration Test (CPT) is an electronic cone point with a 10 cm2 base area with a 60 degree apex pushed through the soil at a penetration rate of 2 cm/s.

Field Vane Test (FVT) consists of a vane blade, a set of rods and torque measuring apparatus used to determine the undrained shear strength of cohesive soils.

Soil Descriptions

The soil descriptions and classifications are based on an expanded Unified Soil Classification System (USCS). The USCS classifies soils on the basis of engineering properties. The system divides soils into three major categories; coarse grained, fine grained and highly organic soils. The soil is then subdivided based on either gradation or plasticity characteristics. The classification excludes particles larger than 75 mm. To aid in quantifying material amounts by weight within the respective grain size fractions the following terms have been included to expand the USCS:

Soil Classification		Terminology	Proportion
Clay	< 0.002 mm		
Silt	0.002 to 0.06 mm	“trace”, trace sand, etc.	1 to 10%
Sand	0.075 to 4.75 mm	“some”, some sand, etc.	10 to 20%
Gravel	4.75 to 75 mm	Adjective, sandy, gravelly, etc.	20 to 35%
Cobbles	75 to 200 mm	And, and gravel, and silt, etc.	>35%
Boulders	>200 mm	Noun, Sand, Gravel, Silt, etc.	>35% and main fraction

Notes:

- Soil properties, such as strength, gradation, plasticity, structure, etcetera, dictate the soils engineering behaviour over grain size fractions; and
- With the exception of soil samples tested for grain size distribution or plasticity, all soil samples have been classified based on visual and tactile observations. The accuracy of visual and tactile observation is not sufficient to differentiate between changes in soil classification or precise grain size and is therefore an approximate description.

The following table outlines the qualitative terms used to describe the compactness condition of cohesionless soil:

Cohesionless Soil	
Compactness Condition	**SPT N-Index (blows per 300 mm)**
Very Loose	0 to 4
Loose	4 to 10
Compact	10 to 30
Dense	30 to 50
Very Dense	> 50

The following table outlines the qualitative terms used to describe the consistency of cohesive soils related to undrained shear strength and SPT, N-Index:

Cohesive Soil		
Consistency	**Undrained Shear Strength (kPa)**	**SPT N-Index (blows per 300 mm)**
Very Soft	<12	<2
Soft	12 to 25	2 to 4
Firm	25 to 50	4 to 8
Stiff	50 to 100	8 to 15
Very Stiff	100 to 200	15 to 30
Hard	>200	>30

Note: Utilizing the SPT, N-Index value to correlate the consistency and undrained shear strength of cohesive soils is only very approximate and needs to be used with caution.

Soil & Rock Physical Properties

General

W Natural water content or moisture content within soil sample
γ Unit weight
γ' Effective unit weight
γ_d Dry unit weight
γ_{sat} Saturated unit weight
ρ Density
ρ_s Density of solid particles
ρ_w Density of Water
ρ_d Dry density
ρ_{sat} Saturated density e Void ratio
n Porosity
S_r Degree of saturation
E_{50} Strain at 50% maximum stress (cohesive soil)

Consistency

W_L	Liquid limit
W_P	Plastic Limit
I_P	Plasticity Index
W_S	Shrinkage Limit
I_L	Liquidity Index
I_C	Consistency Index
e_{max}	Void ratio in loosest state
e_{min}	Void ratio in densest state
I_D	Density Index (formerly relative density)

Shear Strength

C_u, S_u	Undrained shear strength parameter (total stress)
C'_d	Drained shear strength parameter (effective stress)
r	Remolded shear strength
τ_p	Peak residual shear strength
τ_r	Residual shear strength
ø’	Angle of interface friction, coefficient of friction = tan ø’

Consolidation (One Dimensional)

C_C	Compression index (normally consolidated range)
C_r	Recompression index (over consolidated range)
C_S	Swelling index
m_V	Coefficient of volume change
c_V	Coefficient of consolidation
T_V	Time factor (vertical direction)
U	Degree of consolidation
σ'_O	Overburden pressure
σ'_p	Preconsolidation pressure (most probable)
OCR	Overconsolidation ratio

Permeability

The following table outlines the terms used to describe the degree of permeability of soil and common soil types associated with the permeability rates**:**

Permeability (k cm/s)	Degree of Permeability	Common Associated Soil Type
$> 10^{-1}$	Very High	Clean gravel
10^{-1} to 10^{-3}	High	Clean sand, Clean sand and gravel
10^{-3} to 10^{-5}	Medium	Fine sand to silty sand
10^{-5} to 10^{-7}	Low	Silt and clayey silt (low plasticity)
$>10^{-7}$	Practically Impermeable	Silty clay (medium to high plasticity)

Rock Coring

Rock Quality Designation (RQD) is an indirect measure of the number of fractures within a rock mass, Deere et al. (1967). It is the sum of sound pieces of rock core equal to or greater than 100 mm recovered from the core run, divided by the total length of the core run, expressed as a percentage. If the core section is broken due to mechanical or handling, the pieces are fitted together and if 100 mm or greater included in the total sum**.**

RQD is calculated as follows:

$$\text{RQD (\%)} = \frac{\Sigma \text{ Length of core pieces} > 100 \text{ mm} \times 100}{\text{Total length of core run}}$$

The following is the Classification of Rock with Respect to RQD Value:

RQD Classification	RQD Value (%)
Very poor quality	**<25**
Poor quality	25 to 50
Fair quality	50 to 75
Good quality	75 to 90
Excellent quality	90 to 100

APPENDIX II

Pinchin's Borehole Logs

Log of Borehole: BH2

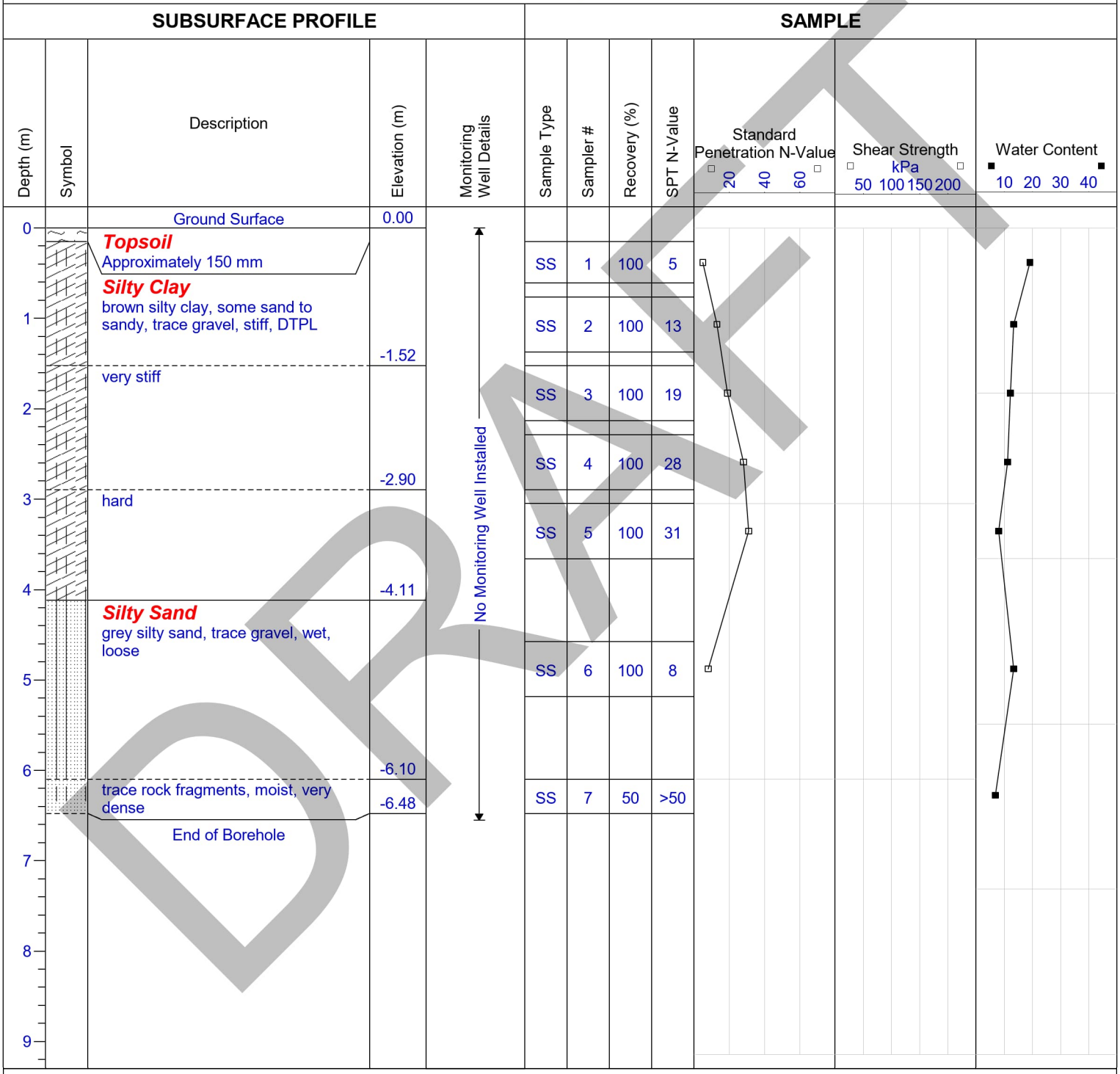
Project #: 342044.000 **Logged By:** CG

Project: Preliminary Geotechnical Investigation

Client: Prologis

Location: 7564 Tenth Line Road, Mississauga

Drill Date: September 26, 2024 **Project Manager:** EN



Contractor: Geo-Environmental **Grade Elevation:** TBD

Drilling Method: 200 mm OD Hollow Stem Augers **Top of Casing Elevation:** N/A

Well Casing Size: N/A **Sheet:** 1 of 1

Log of Borehole: BH3

Project #: 342044.000 **Logged By:** CG

Project: Preliminary Geotechnical Investigation

Client: Prologis

Location: 7564 Tenth Line Road, Mississauga

Drill Date: September 26, 2024 **Project Manager:** EN

SUBSURFACE PROFILE | **SAMPLE**

Depth (m)	Description	Elevation (m)	Monitoring Well Details	Sample Type	Sampler #	Recovery (%)	SPT N-Value
0	Ground Surface	0.00	No Monitoring Well Installed				
	Topsoil Approximately 200 mm	-0.21		SS	1	75	7
	Silty Clay brown silty clay, some sand, trace gravel, firm, DTPL	-0.76		SS	2	85	12
1	stiff	-1.52		SS	3	85	21
	very stiff	-2.29		SS	4	90	34
2	hard			SS	5	85	51
3							
4		-4.11					
	stiff			SS	6	100	12
5		-5.64					
	Sandy Silt grey sandy silt, some gravel, wet, very dense	-6.71		SS	7	65	50
6	End of Borehole						
7							
8							
9							

Standard Penetration N-Value: 20, 40, 60

Shear Strength kPa: 50, 100, 150, 200

Water Content: 10, 20, 30, 40

Contractor: Geo-Environmental **Grade Elevation:** TBD

Drilling Method: 200 mm OD Hollow Stem Augers **Top of Casing Elevation:** N/A

Well Casing Size: N/A **Sheet:** 1 of 1

Log of Borehole: BH4

Project #: 342044.000 **Logged By:** CG

Project: Preliminary Geotechnical Investigation

Client: Prologis

Location: 7564 Tenth Line Road, Mississauga

Drill Date: September 26, 2024 **Project Manager:** EN

Depth (m)	Description	Elevation (m)	Monitoring Well Details	Sample Type	Sampler #	Recovery (%)	SPT N-Value
0	Ground Surface	0.00					
	Topsoil Approximately 300 mm	-0.30					
	brown silty clay, some sand to sandy, trace gravel, very stiff, DTPL			SS	1	100	12
1				SS	2	100	22
2				SS	3	100	25
				SS	4	100	29
		-2.90					
3	hard			SS	5	100	35
4		-4.11					
	Sandy Silt grey sandy silt, trace gravel, moist, compact			SS	6	100	22
5							
6		-6.10					
	Silty Sand grey silty sand, trace gravel and rock fragments, moist, very dense	-6.40		SS	7	50	>50
	End of Borehole						
7							
8							
9							

Standard Penetration N-Value: 20, 40, 60

Shear Strength kPa: 50, 100, 150, 200

Water Content: 10, 20, 30, 40

Contractor: Geo-Environmental **Grade Elevation:** TBD

Drilling Method: 200 mm OD Hollow Stem Augers **Top of Casing Elevation:** N/A

Well Casing Size: N/A **Sheet:** 1 of 1

Log of Borehole: BH5

Project #: 342044.000 **Logged By:** EN/TV

Project: Preliminary Geotechnical Investigation

Client: Prologis

Location: 7564 Tenth Line Road, Mississauga

Drill Date: September 27, 2024 **Project Manager:** EN

Depth (m)	Description	Elevation (m)	Sample Type	Sampler #	Recovery (%)	SPT N-Value
0	Ground Surface	0.00				
	Topsoil Approximately 300 mm	-0.30				
1	**Silty Clay** brown silty clay, some sand to sandy, trace gravel, very stiff, DTPL		SS	1	100	12
			SS	2	100	22
2			SS	3	100	25
		-2.90	SS	4	100	29
3	hard		SS	5	100	35
4		-4.11				
	Sandy Silt grey sandy silt, trace gravel, moist, compact		SS	6	100	22
5						
6		-6.10				
	Silty Sand grey silty sand, trace gravel and rock fragments, moist, very dense	-6.40	SS	7	50	>50
7	End of Borehole					
8						
9						

Standard Penetration N-Value: 20, 40, 60

Shear Strength kPa: 50, 100, 150, 200

Water Content: 10, 20, 30, 40

Contractor: Geo-Environmental **Grade Elevation:** TBD

Drilling Method: 200 mm OD Hollow Stem Augers **Top of Casing Elevation:** N/A

Well Casing Size: N/A **Sheet:** 1 of 1

Log of Borehole: BH6

Project #: 342044.000 **Logged By:** TV

Project: Preliminary Geotechnical investigation

Client: Prologis

Location: 7564 Tenth Line Road, Mississauga

Drill Date: Sept 27 , 2024 **Project Manager:** EN

Depth (m)	Description	Elevation (m)	Monitoring Well Details	Sample Type	Sampler #	Recovery (%)	SPT N-Value
	Ground Surface	0.00					
0	**Topsoil** Approximately 300 mm	-0.30					
	Sandy Silt Sandy silt, trace gravel, brown, moist, loose	-0.76		SS	1	100	6
1				SS	3	100	23
	Silty Clay sandy silty clay, trace gravel, APL, very stiff	-1.52					
2	some sand, hard			SS	3	21	34
				SS	4	100	34
	very stiff	-2.90					
3				SS	5	100	18
4		-4.11					
	Sandy Silt trace gravel, wet, dense						
5				SS	6	83	42
6		-6.10					
	Sand and Gravel Sand and gravel, brown, wet compact	-6.40		SS	7	50	26
7	End of Borehole						
8							
9							

Standard Penetration N-Value: 20 40 60

Shear Strength kPa: 50 100 150 200

Water Content: 10 20 30 40

Contractor: GEO-Environmental **Grade Elevation:** TBD

Drilling Method: 200 mm OD Holow Stem Augers **Top of Casing Elevation:** N/A

Well Casing Size: N/A **Sheet:** 1 of 1

Log of Borehole: BH7

Project #: 342044.000 **Logged By:** EN/TV

Project: Preliminary Geotechnial Investigation

Client: Prologis

Location: 7564 Tenth Line Road, Mississauga

Drill Date: September 27 , 2024 **Project Manager:** EN

SUBSURFACE PROFILE					SAMPLE						
Depth (m)	Symbol	Description	Elevation (m)	Monitoring Well Details	Sample Type	Sampler #	Recovery (%)	SPT N-Value	Standard Penetration N-Value (20 40 60)	Shear Strength kPa (50 100 150 200)	Water Content (10 20 30 40)
0		Ground Surface	0.00								
0		**Topsoil** Approximately 150 mm									
0		**Silty Clay** sandy silty clay, trace gravel, APL, firm			SS	1	67	5			
1					SS	2	100	18			
2					SS	3	100	19			
2			-2.13								
2		some sand, DTPL, hard			SS	4	100	41			
2			-2.90								
3		Brown to grey			SS	5	100	33			
4			-4.11								
4		**Silty Sand** Silty sand, some gravel, brown, wet, compact									
5					SS	6	71	15			
6			-6.10								
6		**Sand and Gravel** Sand and gravel, brown, wet, very dense	-6.40		SS	7	75	57			
7		End of Borehole									
8											
9											

Contractor: Geo-Enviromental **Grade Elevation:** TBD

Drilling Method: 200 mm OD Hollow Stem Augers **Top of Casing Elevation:** N/A

Well Casing Size: N/A **Sheet:** 1 of 1

Log of Borehole: BH8

Project #: 342044.00 **Logged By:** TV

Project: Preliminary Geotechnical Investigation

Client: Prologis

Location: 7564 Tenth Line Road, Mississauga

Drill Date: September 27, 2024 **Project Manager:** EN

Depth (m)	Description	Elevation (m)	Sample Type	Sampler #	Recovery (%)	SPT N-Value
0	Ground Surface	0.00				
	Topsoil Approximately 150 mm	-0.30				
	Silty Clay Sandy silty clay, trace gravel, brown, DTPL, firm to very stiff		SS	1	67	6
1			SS	2	100	28
2		-2.13	SS	3	100	25
	Hard		SS	4	100	33
		-2.90				
3	trace rock fragments		SS	5	25	58
4		-4.11				
	some sand, brown to grey, APL, stiff					
5			SS	6	83	8
6		-6.10				
	Sandy Silt trace gravel, brown, moist, very dense	-6.40	SS	7	67	79
7	End of Borehole					
8						
9						

Standard Penetration N-Value: 20, 40, 60

Shear Strength kPa: 50, 100, 150, 200

Water Content: 10, 20, 30, 40

Contractor: Geo-Environmental **Grade Elevation:** TBD

Drilling Method: 200 mm OD Hollow Stem Augers **Top of Casing Elevation:** N/A

Well Casing Size: N/A **Sheet:** 1 of 1

Log of Borehole: BH9

Project #: 342044.00 **Logged By:** EN/TV

Project: Preliminary Geotechnical Investigation

Client: Prologis

Location: 7564 Tenth Line Road, Mississauga

Drill Date: September 27 , 2024 **Project Manager:** EN

SUBSURFACE PROFILE					SAMPLE						
Depth (m)	Symbol	Description	Elevation (m)	Monitoring Well Details	Sample Type	Sampler #	Recovery (%)	SPT N-Value	Standard Penetration N-Value (20 40 60)	Shear Strength kPa (50 100 150 200)	Water Content (10 20 30 40)
0		Ground Surface	0.00								
		Topsoil Approximately 200 mm	-0.30								
		Silty Clay Sandy silty clay, trace gravel, brown, DTPL, firm to very stiff			SS	1	100	5			
1					SS	2	100	20			
2			-2.13		SS	3	100	21			
		Hard			SS	4	100	36			
3					SS	5	100	38			
4			-4.11								
		some sand, brown to grey, APL, stiff			SS	6	83	12			
5											
6			-6.10								
		Sandy, DTPL, hard	-6.40		SS	7	75	50			
		End of Borehole									
7											
8											
9											

Contractor: Geo-Environmental **Grade Elevation:** TBD

Drilling Method: 200 mm OD Hollow Stem Augers **Top of Casing Elevation:** N/A

Well Casing Size: N/A **Sheet:** 1 of 1

Log of Borehole: BH10

Project #: 342044.00 **Logged By:** EN/TV

Project: Preliminary Geotechnical Investigation

Client: Prologis

Location: 7564 Tenth Line Road, Mississauga

Drill Date: September 27, 2024 **Project Manager:** EN

Depth (m)	Description	Elevation (m)	Monitoring Well Details	Sample Type	Sampler #	Recovery (%)	SPT N-Value
0	Ground Surface	0.00					
	Topsoil Approximately 150 mm			SS	1	62	4
	Sandy Silt Sandy silt, trace gravel,brown, moist, loose	-0.76		SS	2	100	17
1	**Silty Clay** sandy silty clay, trace gravel, brown, DTPL, very stiff			SS	3	100	24
2	hard	-2.13		SS	4	100	33
3	some sand, very stiff	-3.05		SS	5	100	22
4		-4.57					
	Silty Sand Silty sand, trace gravel, brown moist, very dense			SS	6	83	66
5							
6		-6.40		SS	7	12	50
	End of Borehole						
7							
8							
9							

Standard Penetration N-Value: 20 40 60

Shear Strength kPa: 50 100 150 200

Water Content: 10 20 30 40

Contractor: Geo-Environmental **Grade Elevation:** TBD

Drilling Method: 200 mm OD Hollow Stem Augers **Top of Casing Elevation:** N/A

Well Casing Size: N/A **Sheet:** 1 of 1

Log of Borehole: BH11

Project #: 342044.00 **Logged By:** EN/TV

Project: Preliminary Geotechnical Investigation

Client: Prologis

Location: 7564 Tenth Line Road, Mississauga

Drill Date: September 27 , 2024 **Project Manager:** EN

Depth (m)	Description	Elevation (m)	Monitoring Well Details	Sample Type	Sampler #	Recovery (%)	SPT N-Value
0	Ground Surface	0.00					
	Topsoil Approximately 250 mm	-0.30		SS	1	100	7
	Sandy Silt Sandy silt, trace gravel, brown, moist, loose	-0.76		SS	2	92	14
1	**Silty Clay** Sandy silty clay, trace gravel, brown DTPL, stiff	-1.52		SS	3	100	24
2	very stiff			SS	4	100	23
3	stiff	-3.05		SS	5	100	14
4		-4.57					
	Silty Sand Silty sand, some gravel, brown, wet, very dense			SS	6	50	84
5							
6	gravelly	-6.10		SS	7	50	93
		-6.40					
	End of Borehole						
7	Groundwater in open borehole measured at 5.6 mbgs upon completion of drilling.						
8							
9							

SUBSURFACE PROFILE

SAMPLE

Standard Penetration N-Value: 20 40 60

Shear Strength kPa: 50 100 150 200

Water Content: 10 20 30 40

Contractor: Geo-Environmental **Grade Elevation:** TBD

Drilling Method: 200 mm OD Hollow Stem Augers **Top of Casing Elevation:** N/A

Well Casing Size: N/A **Sheet:** 1 of 1

Log of Borehole: BH12

Project #: 342044.00 **Logged By:** EN/TV

Project: Preliminary Geotechnical Investigation

Client: Prologis

Location: 7564 Tenth Line Road, Mississauga

Drill Date: September 27 , 2024 **Project Manager:** EN

Depth (m)	Symbol	Description	Elevation (m)	Monitoring Well Details	Sample Type	Sampler #	Recovery (%)	SPT N-Value
0		Ground Surface	0.00					
		Topsoil Approximately 200 mm	-0.21		SS	1	67	7
1		**Silty Clay** Sandy silty clay, trace gravel, brown, DTPL, firm to very stiff			SS	2	100	17
2					SS	3	100	24
					SS	4	100	25
3					SS	5	100	30
4			-4.11					
		Silty Sand Silty sand, trace gravel, brown, moist, compact			SS	6	75	17
5								
6			-6.10					
		Sand and Gravel Silty sand and gravel, brown, wet, very dense	-6.71		SS	7	75	59
7		End of Borehole						
8								
9								

SUBSURFACE PROFILE

SAMPLE

Standard Penetration N-Value: 20 40 60

Shear Strength kPa: 50 100 150 200

Water Content: 10 20 30 40

Contractor: Geo-Environmental **Grade Elevation:** TBD

Drilling Method: 200 mm OD Hollow Stem Augers **Top of Casing Elevation:** N/A

Well Casing Size: N/A **Sheet:** 1 of 1

Log of Borehole: BH13

Project #: 342044.00 **Logged By:** TV

Project: Preliminary Geotechnical Investigation

Client: Prologis

Location: 7564 Tenth Line Road, Mississauga

Drill Date: September 27 , 2024 **Project Manager:** EN

SUBSURFACE PROFILE					SAMPLE						
Depth (m)	Symbol	Description	Elevation (m)	Monitoring Well Details	Sample Type	Sampler #	Recovery (%)	SPT N-Value	Standard Penetration N-Value (20 40 60)	Shear Strength kPa (50 100 150 200)	Water Content (10 20 30 40)
0		Ground Surface	0.00								
		Topsoil Approximately 200 mm	-0.30								
		Silty Clay Sandy silty clay, trace gravel, brown, DTPL, firm to very stiff			SS	1	83	6			
1					SS	2	96	16			
2					SS	3	100	20			
					SS	4	100	24			
3					SS	5	100	30			
4											
5					SS	6	100	19			
6			-6.10								
		Silty Sand Silty sand, trace gravel, brown, wet, very dense	-6.40		SS	7	33	50			
		End of Borehole									
7											
8											
9											

Contractor: Geo-Environmental **Grade Elevation:** TBD

Drilling Method: 200 mm OD Hollow Stem Augers **Top of Casing Elevation:** N/A

Well Casing Size: N/A **Sheet:** 1 of 1

Log of Borehole: BH14

Project #: 342044.00 **Logged By:** TV

Project: Preliminary Geotechnical Investigation

Client: Prologis

Location: 7564 Tenth Line Road, Mississauga

Drill Date: September 27 , 2024 **Project Manager:** EN

Depth (m)	Description	Elevation (m)	Sample Type	Sampler #	Recovery (%)	SPT N-Value
0	Ground Surface	0.00				
	Topsoil Approximately 200 mm	-0.30	SS	1	96	6
1	**Silty Clay** Sandy silty clay, trace gravel, brown, DTPL, stiff		SS	2	96	12
	Very stiff	-1.37	SS	3	100	22
2		-2.13	SS	4	100	36
	Hard		SS	5	100	32
3						
4		-4.11				
	Very stiff		SS	6	100	16
5						
6		-6.10				
	No recovery	-6.40	SS	7	0	10
	End of Borehole					
7	Groundwater level at 4.9 mbgs in open borehole upon completion of drilling.					
8						
9						

Standard Penetration N-Value: 20, 40, 60

Shear Strength kPa: 50, 100, 150, 200

Water Content: 10, 20, 30, 40

Contractor: Geo-Environmental **Grade Elevation:** TBD

Drilling Method: 200 mm OD Hollow Stem Augers **Top of Casing Elevation:** N/A

Well Casing Size: N/A **Sheet:** 1 of 1

Log of Borehole: BH15

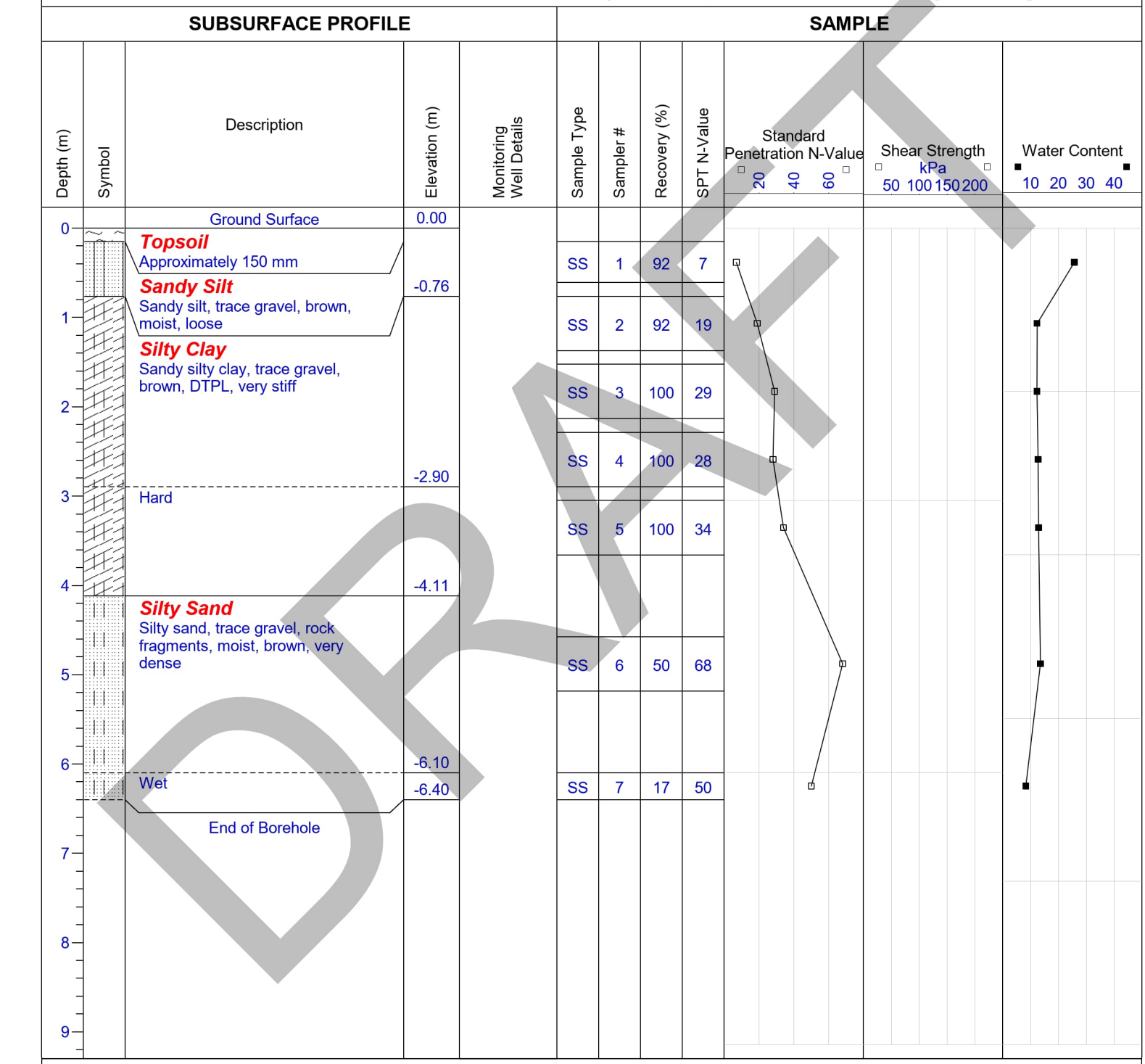
Project #: 342044.00 **Logged By:** TV

Project: Preliminary Geotechnical Investigation

Client: Prologis

Location: 7564 Tenth Line Road, Mississauga

Drill Date: September 30, 2024 **Project Manager:** EN



Contractor: Geo-Environmental **Grade Elevation:** TBD

Drilling Method: 200 mm OD Hollow Stem Augers **Top of Casing Elevation:** N/A

Well Casing Size: N/A **Sheet:** 1 of 1

Log of Borehole: BH16

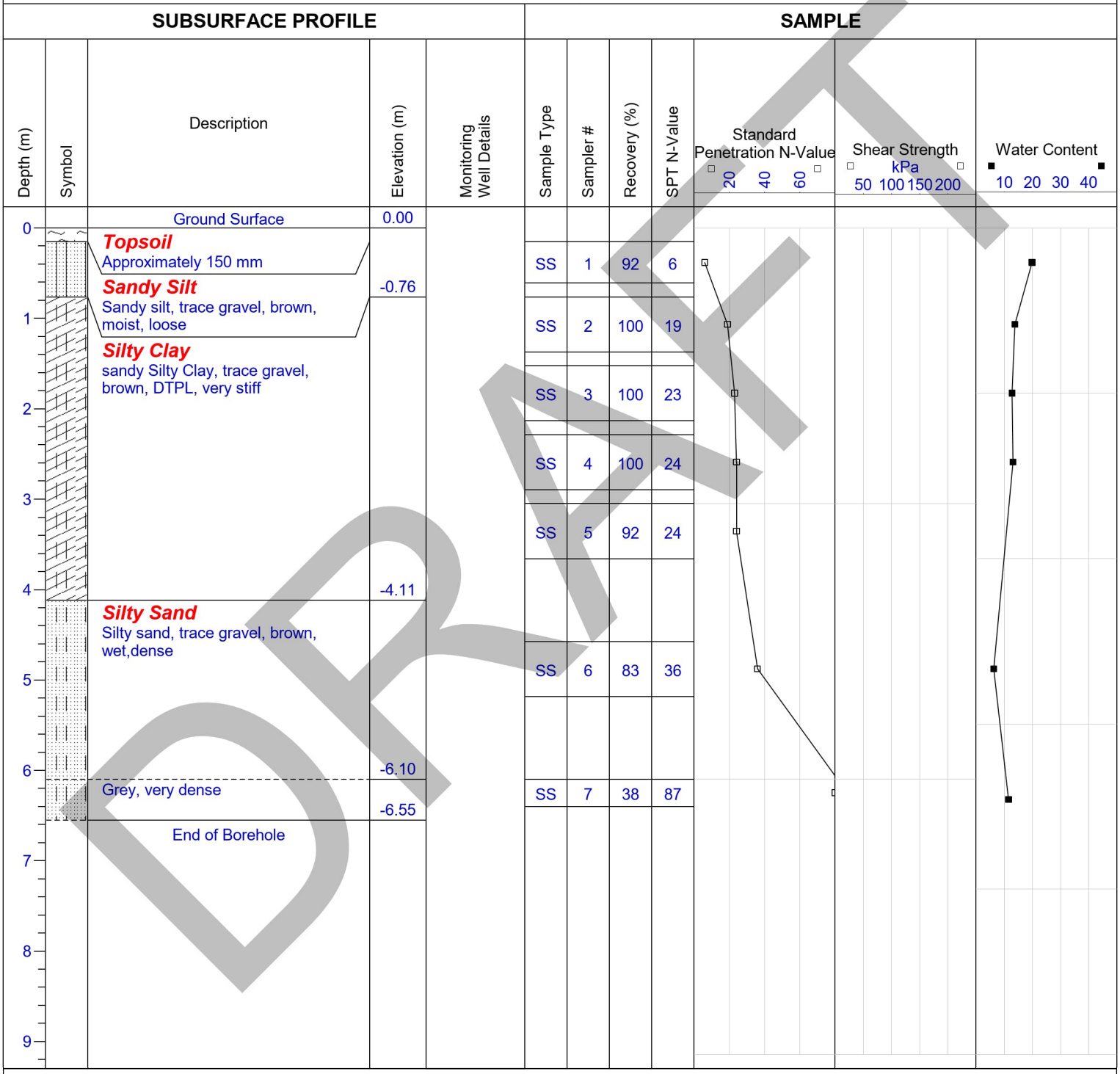
Project #: 342044.00 **Logged By:** TV

Project: Preliminary Geotechnical Investigation

Client: Prologis

Location: 7564 Tenth Line Road, Mississauga

Drill Date: September 30, 2024 **Project Manager:** EN



Contractor: Geo-Environmental **Grade Elevation:** TBD

Drilling Method: 200 mm OD Hollow Stem Augers **Top of Casing Elevation:** N/A

Well Casing Size: N/A **Sheet:** 1 of 1

Log of Borehole: BH17

Project #: 342044.00 **Logged By:** TV

Project: Preliminary Geotechnical Investigation

Client: Prologis

Location: 7564 Tenth Line Road, Mississauga

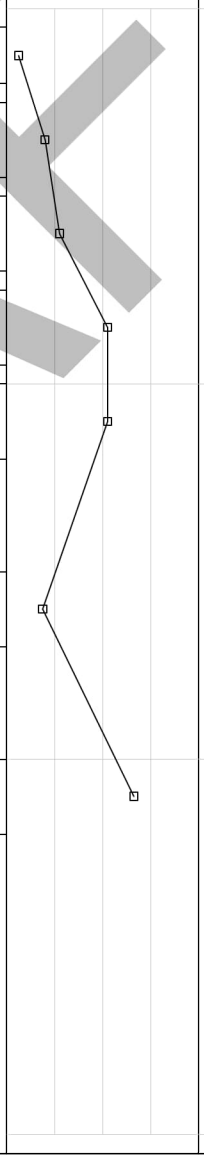
Drill Date: September 30 , 2024 **Project Manager:** EN

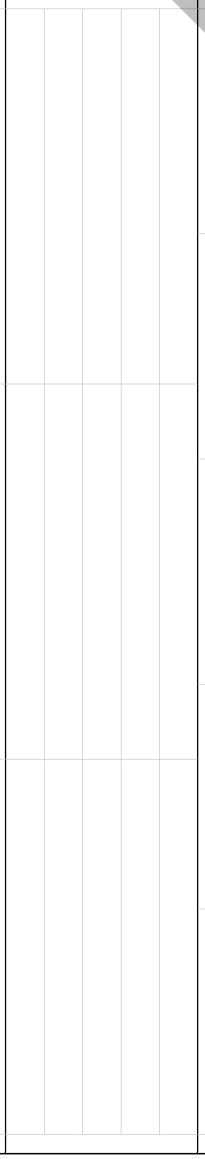
SUBSURFACE PROFILE

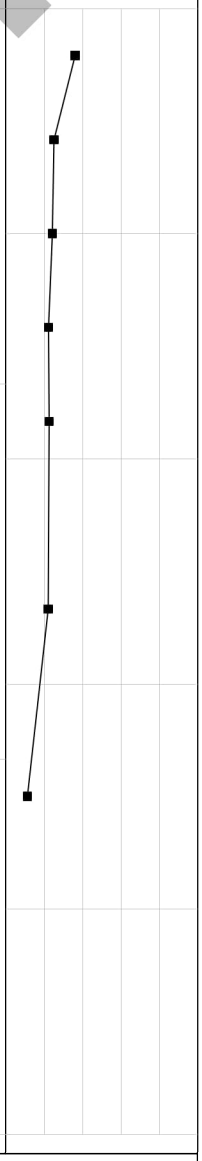
Depth (m)	Description	Elevation (m)
0	Ground Surface	0.00
	Topsoil Approximately 150 mm	
	Sandy Silt sandy silt, trace gravel, brown, moist, loose	-0.76
1	**Silty Clay** sandy silty clay, trace gravel, DTPL, very stiff	
2		-2.13
	Hard	
3		
4		-4.11
	Sandy Silt Sandy silt, trace gravel, brown to grey, moist, compact	
5		
6		-6.10
	very dense, some rock fragments	
		-6.71
7	End of Borehole	
	Open borehole dry upon completion of drilling.	
8		
9		

SAMPLE

Sample Type	Sampler #	Recovery (%)	SPT N-Value
SS	1	75	5
SS	2	100	16
SS	3	100	22
SS	4	100	42
SS	5	100	42
SS	6	100	15
SS	7	100	53







Contractor: Geo-Environmental **Grade Elevation:** TBD

Drilling Method: 200 mm OD Hollow Stem Augers **Top of Casing Elevation:** N/A

Well Casing Size: N/A **Sheet:** 1 of 1

Log of Borehole: BH18

Project #: 342044.00 **Logged By:** TV

Project: Preliminary Geotechnical Investigation

Client: Prologis

Location: 7564 Tenth Line Road, Mississauga

Drill Date: September 30 , 2024 **Project Manager:** EN

Depth (m)	Description	Elevation (m)	Monitoring Well Details	Sample Type	Sampler #	Recovery (%)	SPT N-Value
0	Ground Surface	0.00					
	Topsoil Approximately 150 mm			SS	1	92	7
	Sandy Silt sandy silt, trace gravel, brown, moist, loose	-0.76		SS	2	100	16
1	**Silty Clay** Sandy silty clay, trace gravel, brown, DTPL, very stiff			SS	3	200	19
2	hard	-2.13		SS	4	100	35
	very stiff	-3.05		SS	5	100	29
3							
4	**Sandy Silt** Sandy silt, trace gravel, brown to grey, moist, compact	-4.11		SS	6	100	13
5							
6	Wet, very dense	-6.10		SS	7	75	74
	End of Borehole	-6.55					
7							
8							
9							

Standard Penetration N-Value: 20, 40, 60

Shear Strength kPa: 50, 100, 150, 200

Water Content: 10, 20, 30, 40

Contractor: Geo-Environmental **Grade Elevation:** TBD

Drilling Method: 200 mm OD Hollow Stem Augers **Top of Casing Elevation:** N/A

Well Casing Size: N/A **Sheet:** 1 of 1

Log of Borehole: BH19

Project #: 342044.00 **Logged By:** TV

Project: Preliminary Geotechnical Investigation

Client: Prologis

Location: 7564 Tenth Line Road, Mississauga

Drill Date: September 30, 2024 **Project Manager:** EN

Depth (m)	Description	Elevation (m)	Monitoring Well Details	Sample Type	Sampler #	Recovery (%)	SPT N-Value
0	Ground Surface	0.00					
	Topsoil Approximately 150 mm			SS	1	75	5
	Sandy Silt Sandy silt, trace gravel, brown, moist, loose	-0.76		SS	2	100	19
1	**Silty Clay** Sandy silty clay, trace gravel, brown, DTPL, very stiff			SS	3	92	19
2				SS	4	100	26
		-2.90					
3	trace rock fragments, APL			SS	5	42	25
4		-4.11					
	grey, hard			SS	6	75	42
5		-5.49					
	Silty Sand Silty sand, trace gravel, brown, wet, compact			SS	7	100	24
6		-6.71					
	End of Borehole						
7	Groundwater level in open borehole at 5.5 mbgs upon completion of drilling.						
8							
9							

Standard Penetration N-Value: 20, 40, 60

Shear Strength kPa: 50, 100, 150, 200

Water Content: 10, 20, 30, 40

Contractor: Geo-Environmental **Grade Elevation:** TBD

Drilling Method: 200 mm OD Hollow Stem Augers **Top of Casing Elevation:** N/A

Well Casing Size: N/A **Sheet:** 1 of 1

Log of Borehole: BH20

Project #: 342044.00 **Logged By:** TV

Project: Preliminary Geotechnical Investigation

Client: Prologis

Location: 7564 Tenth Line Road, Mississauga

Drill Date: September 30 , 2024 **Project Manager:** EN

SUBSURFACE PROFILE

Depth (m)	Description	Elevation (m)
0	Ground Surface	0.00
	Topsoil Approximately 200 mm	-0.21
	Sandy Silt Sandy Silt, trace gravel, brown, moist, loose	-0.76
1	**Silty Clay** Sandy silty clay, trace gravel, brown, DTPL, stiff	-1.37
2	Hard	-2.13
	Very stiff	
3		
4		-4.11
	Silty Sand Silty sand, trace gravel, brown, moist, dense	
5		
6		-6.10
	No Recovery	
		-6.86
7	End of Borehole	
	Open borehole dry upon completion of driling.	
8		
9		

SAMPLE

Sample Type	Sampler #	Recovery (%)	SPT N-Value
SS	1	92	6
SS	2	83	14
SS	3	50	44
SS	4	100	30
SS	5	100	21
SS	6	96	33
	7		50
	8		50

Standard Penetration N-Value: 20, 40, 60

Shear Strength kPa: 50, 100, 150, 200

Water Content: 10, 20, 30, 40

Contractor: Geo-Environmental **Grade Elevation:** TBD

Drilling Method: 200 mm OD Hollow Stem Augers **Top of Casing Elevation:** N/A

Well Casing Size: N/A **Sheet:** 1 of 1

Log of Borehole: BH21

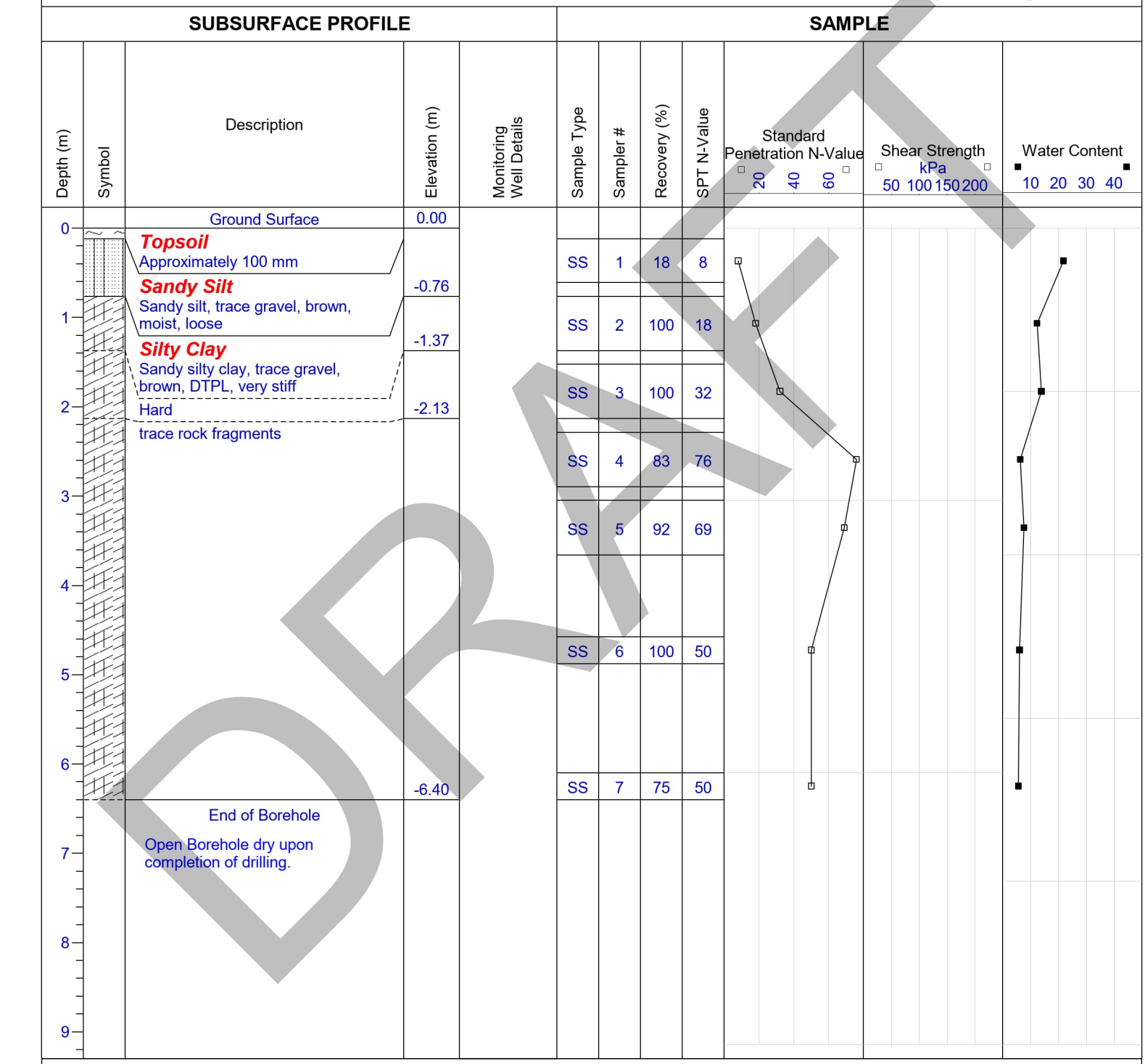
Project #: 342044.00 **Logged By:** TV

Project: Preliminary Geotechnical Investigation

Client: Prologis

Location: 7564 Tenth Line Road, Mississauga

Drill Date: October 1, 2024 **Project Manager:** EN



Contractor: Geo-Environmental **Grade Elevation:** TBD

Drilling Method: 200 mm OD Hollow Stem Augers **Top of Casing Elevation:** N/A

Well Casing Size: N/A **Sheet:** 1 of 1

Log of Borehole: BH22

Project #: 342044.00 **Logged By:** TV

Project: Preliminary Geotechnical Investigation

Client: Prologis

Location: 7564 Tenth Line Road, Mississauga

Drill Date: October 1 , 2024 **Project Manager:** EN

Depth (m)	Symbol	Description	Elevation (m)	Monitoring Well Details	Sample Type	Sampler #	Recovery (%)	SPT N-Value
		Ground Surface	0.00					
0		**Topsoil** Approximately 150 mm			SS	1	92	9
		Sandy Silt Sandy Silt, trace gravel, brown, moist, loose	-0.76					
1					SS	2	100	28
		Silty Clay Sandy silty clay, trace gravel, brown, DTPL, very stiff	-1.37					
					SS	3	62	49
2		trace rock fragments, hard	-2.13					
		Silty Sand Silty sand, trace gravel, brown, moist, very dense			SS	4	42	50
3					SS	5	42	50
4								
					SS	6	42	50
5								
6			-6.10					
		Grey, wet	-6.71		SS	7	58	76
7		End of Borehole Open borehole dry upon completion of drilling.						
8								
9								

Standard Penetration N-Value: 20, 40, 60

Shear Strength kPa: 50, 100, 150, 200

Water Content: 10, 20, 30, 40

Contractor: Geo-Environmental **Grade Elevation:** TBD

Drilling Method: 200 mm OD Hollow Stem Augers **Top of Casing Elevation:** N/A

Well Casing Size: N/A **Sheet:** 1 of 1

Log of Borehole: BH23

Project #: 342044.00 **Logged By:** TV

Project: Preliminary Geotechnical Investigation

Client: Prologis

Location: 7564 Tenth Line Road, Mississauga

Drill Date: October 1, 2024 **Project Manager:** EN

Depth (m)	Description	Elevation (m)	Sample Type	Sampler #	Recovery (%)	SPT N-Value
0	Ground Surface	0.00				
	Topsoil Approximately 130 mm		SS	1	88	7
	Sandy Silt sandy silt, trace gravel, brown, moist, loose	-0.76				
1			SS	2	100	21
	Silty Clay Sandy silty clay, trace gravel, brown, DTPL, very stiff					
2			SS	3	100	25
		-2.90	SS	4	100	27
3	hard		SS	5	13	88
4		-4.11				
	Silty Sand Silty sand, trace gravel and rock fragments, brown, very dense		SS	6	100	88
5						
6		-6.10				
	Grey, wet, dense		SS	7	75	44
		-6.71				
7	End of Borehole					
8						
9						

Standard Penetration N-Value: 20, 40, 60

Shear Strength kPa: 50, 100, 150, 200

Water Content: 10, 20, 30, 40

Contractor: Geo-Environmental **Grade Elevation:** TBD

Drilling Method: 200 mm OD Hollow Stem Augers **Top of Casing Elevation:** N/A

Well Casing Size: N/A **Sheet:** 1 of 1

Log of Borehole: BH24

Project #: 342044.00 **Logged By:** TV

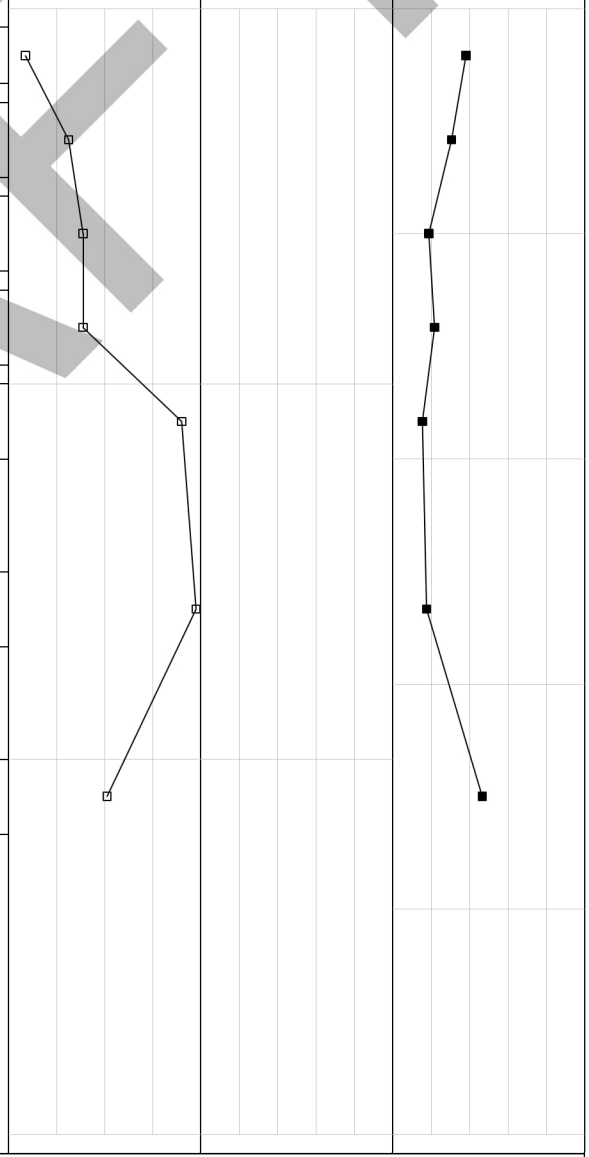
Project: Preliminary Geotechnical Investigation

Client: Prologis

Location: 7564 Tenth Line Road, Mississauga

Drill Date: October 1, 2024 **Project Manager:** EN

Depth (m)	Description	Elevation (m)	Monitoring Well Details	Sample Type	Sampler #	Recovery (%)	SPT N-Value
0	Ground Surface	0.00					
	Topsoil Approximately 130 mm			SS	1	83	7
	Sandy Silt Sandy Silt, trace gravel, moist, loose	-0.76		SS	2	100	25
1	**Sandy Silty clay** Sandy silt and clay, trace gravel, brown, DTPL, very stiff	-1.37		SS	3	100	31
2	hard	-2.90		SS	4	100	31
	Sandy Silt Sandy silt, trace gravel, brown, moist, very dense			SS	5	92	72
3							
4	grey	-4.11		SS	6	100	78
5							
6	Wet, dense	-6.10		SS	7	33	41
	End of Borehole	-6.71					
7							
8							
9							



Contractor: Geo-Environmental **Grade Elevation:** TBD

Drilling Method: 200 mm OD Hollow Stem Augers **Top of Casing Elevation:** N/A

Well Casing Size: N/A **Sheet:** 1 of 1

Log of Borehole: BH25

Project #: 342044.00 **Logged By:** TV

Project: Preliminary Geotechnical Investigation

Client: Prologis

Location: 7564 Tenth Line Road, Mississauga

Drill Date: October 1, 2024 **Project Manager:** EN

Depth (m)	Description	Elevation (m)	Sample Type	Sampler #	Recovery (%)	SPT N-Value
0	Ground Surface	0.00				
	Topsoil Approximately 150 mm		SS	1	92	7
	Sandy Silt Sandy Silt, trace gravel, brown, moist, loose	-0.76	SS	2	100	22
1	**Sandy Silty clay** Sandy silty clay, trace gravel, brown, DTPL, very stiff		SS	3	100	29
2			SS	4	100	25
		-2.90				
3	Hard		SS	5	88	32
4		-4.11				
	Sandy silt Sandy silt, trace gravel, brown, moist, very dense		SS	6	75	64
5						
6		-6.10				
	Grey, wet, compact		SS	7	92	23
		-6.71				
7	End of Borehole					
8						
9						

Standard Penetration N-Value: 20, 40, 60

Shear Strength kPa: 50, 100, 150, 200

Water Content: 10, 20, 30, 40

Contractor: Geo-Environmental **Grade Elevation:** TBD

Drilling Method: 200 mm OD Hollow Stem Augers **Top of Casing Elevation:** N/A

Well Casing Size: N/A **Sheet:** 1 of 1

Log of Borehole: BH26

Project #: 342044.00 **Logged By:** EN/TV

Project: Preliminary Geotechnical Investigation

Client: Prologis

Location: 7564 Tenth Line Road, Mississauga

Drill Date: October 1, 2024 **Project Manager:** EN

SUBSURFACE PROFILE

Depth (m)	Description	Elevation (m)
0	Ground Surface	0.00
	Topsoil Approximately 150 mm	
	Sandy Silt Sandy silt, trace gravel, brown, moist, loose	-0.76
1	**Silty Clay** sandy silty clay, trace gravel, brown, DTPL, very stiff	
2		
		-2.90
3	hard	
4		
5		
6		-6.10
	Sand Sand, trace gravel, grey, wet, very loose	-6.71
7	End of Borehole	
8		
9		

Monitoring Well Details: Riser, Bentonite, Silica Sand, Screen

SAMPLE

Sample Type	Sampler #	Recovery (%)	SPT N-Value
SS	1	85	8
SS	2	100	24
SS	3	100	28
SS	4	100	28
SS	5	100	30
SS	6	100	51
SS	7	75	WH

Standard Penetration N-Value: 20 40 60

Shear Strength kPa: 50 100 150 200

Water Content: 10 20 30 40

Contractor: Geo-Environmental **Grade Elevation:** TBD

Drilling Method: 200 mm OD Hollow Stem Augers **Top of Casing Elevation:** N/A

Well Casing Size: N/A **Sheet:** 1 of 1

Log of Borehole: BH27

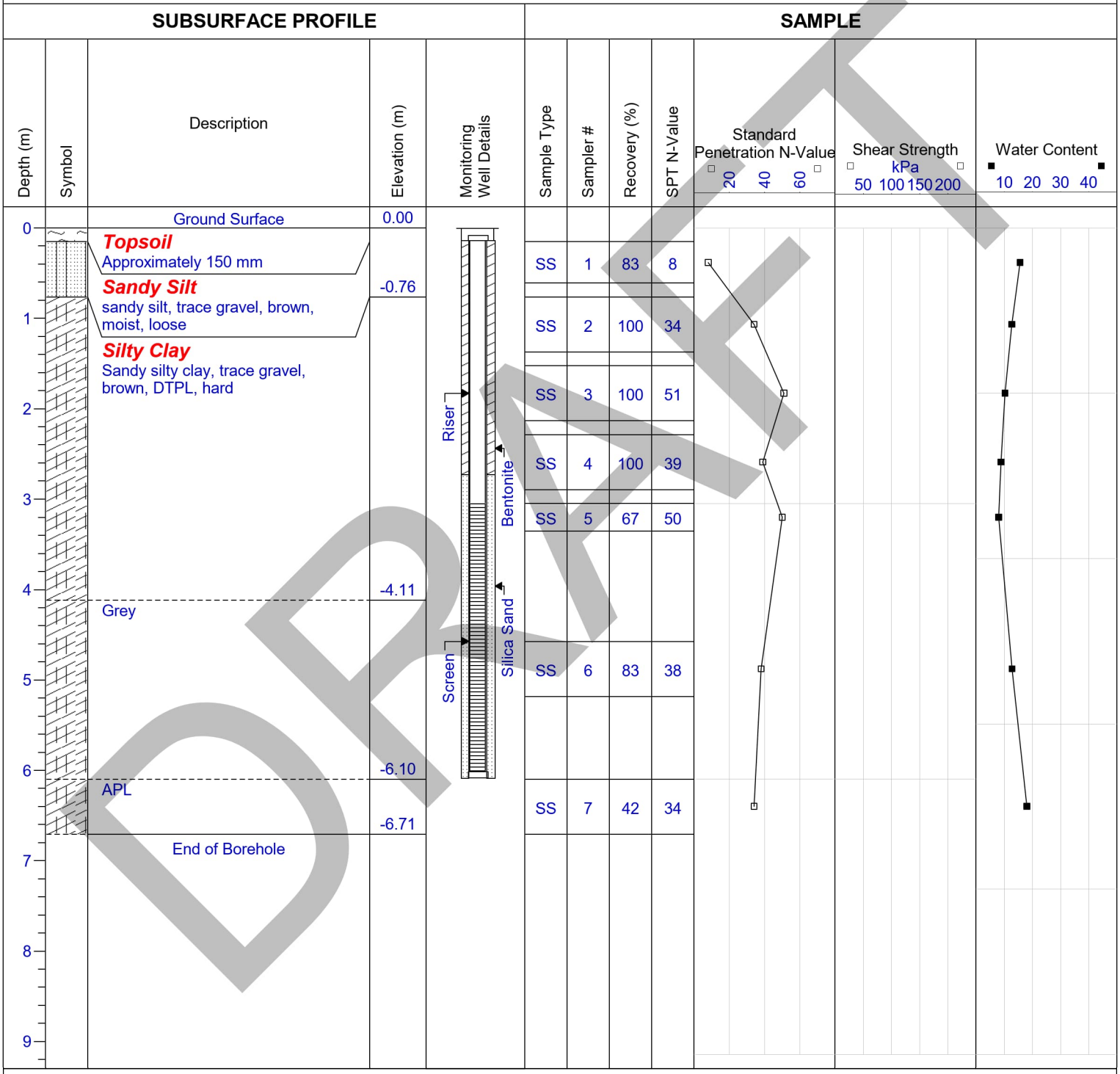
Project #: 342044.00 **Logged By:** TV

Project: Preliminary Geotechnical Investigation

Client: Prologis

Location: 7564 Tenth Line Road, Mississauga

Drill Date: October 2, 2024 **Project Manager:** EN



Contractor: Geo-Environmental **Grade Elevation:** TBD

Drilling Method: 200 mm OD Hollow Stem Augers **Top of Casing Elevation:** N/A

Well Casing Size: N/A **Sheet:** 1 of 1

Log of Borehole: BH28

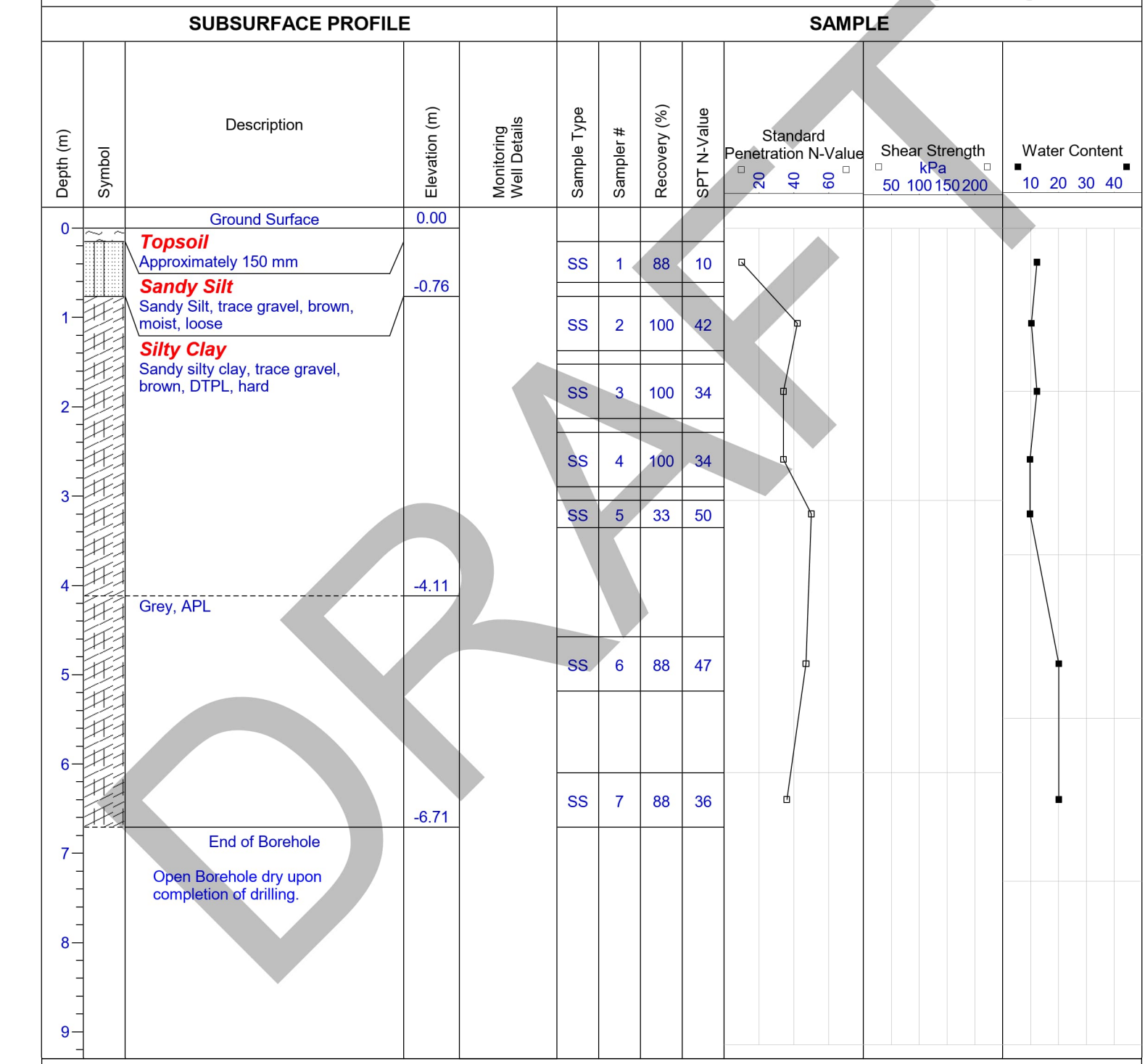
Project #: 342044.00 **Logged By:** EN/TV

Project: Preliminary Geotechnical Investigation

Client: Prologis

Location: 7564 Tenth Line Road, Mississauga

Drill Date: October 2, 2024 **Project Manager:** EN



Contractor: Geo-Environmental **Grade Elevation:** TBD

Drilling Method: 200 mm OD Hollow Stem Augers **Top of Casing Elevation:** N/A

Well Casing Size: N/A **Sheet:** 1 of 1

Log of Borehole: BH29

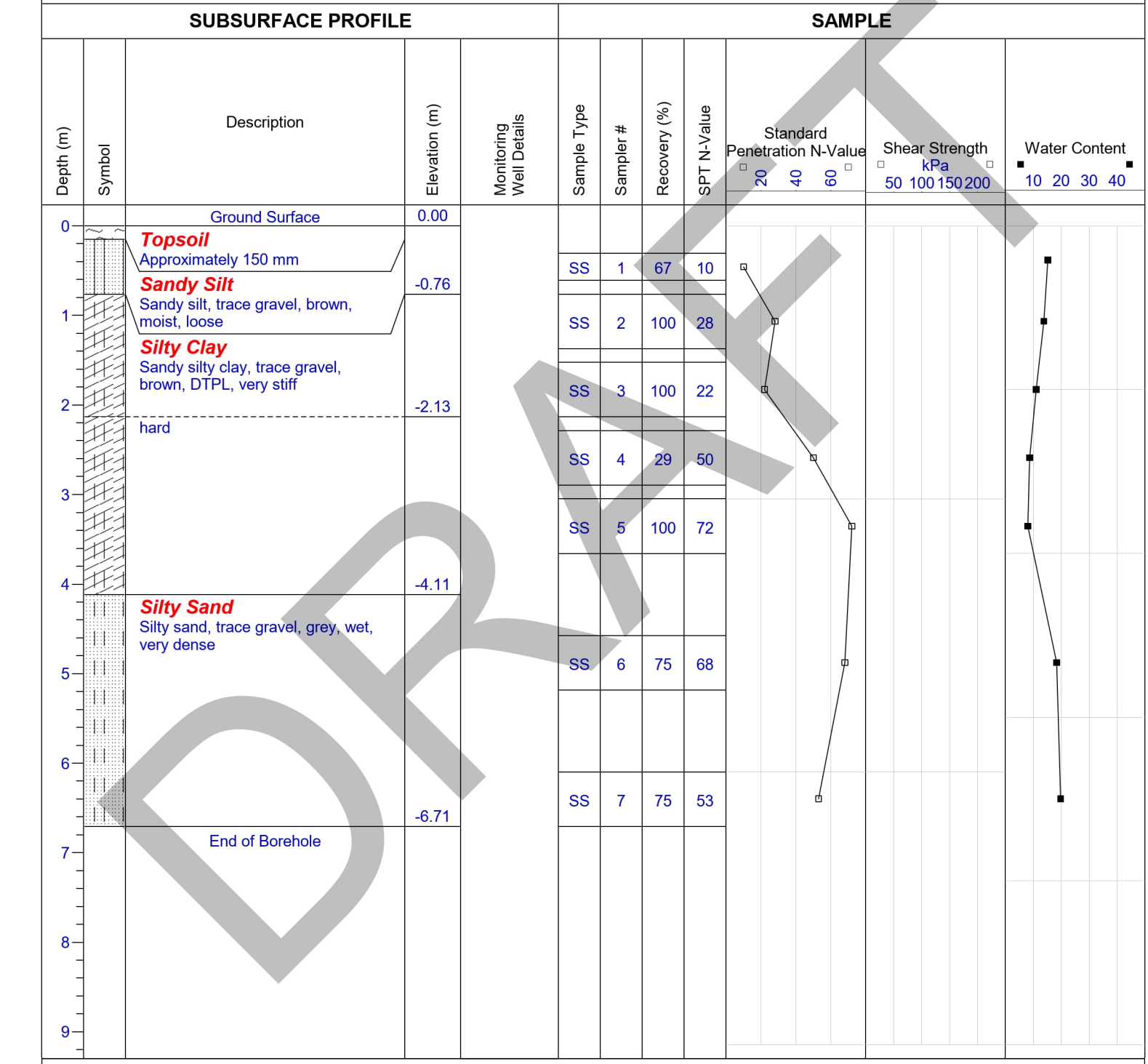
Project #: 342044.00 **Logged By:** TV

Project: Preliminary Geotechnical Investigation

Client: Prologis

Location: 7564 Tenth Line Road, Mississauga

Drill Date: October 2, 2024 **Project Manager:** EN



Contractor: Geo-Environmental **Grade Elevation:** TBD

Drilling Method: 200 mm OD Hollow Stem Augers **Top of Casing Elevation:** N/A

Well Casing Size: N/A **Sheet:** 1 of 1

Log of Borehole: BH30

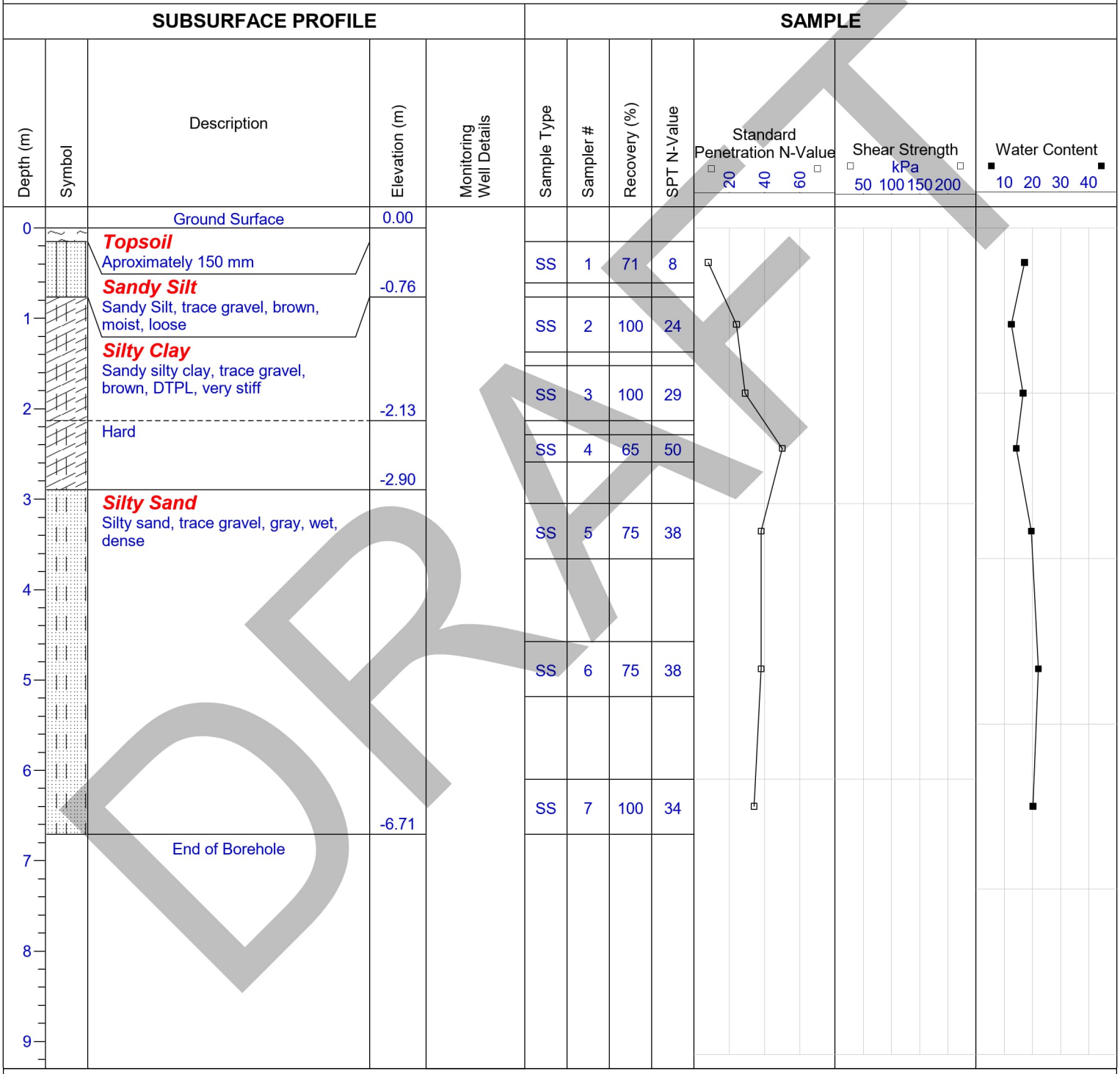
Project #: 342044.00 **Logged By:** TV

Project: Preliminary Geotechnical Investigation

Client: Prologis

Location: 7564 Tenth Line Road, Mississauga

Drill Date: October 2, 2024 **Project Manager:** EN



Contractor: Geo-Environmental **Grade Elevation:** TBD

Drilling Method: 200 mm OD Hollow Stem Augers **Top of Casing Elevation:** N/A

Well Casing Size: N/A **Sheet:** 1 of 1

APPENDIX III

Report Limitations and Guidelines for Use

REPORT LIMITATIONS & GUIDELINES FOR USE

This information has been provided to help manage risks with respect to the use of this report.

GEOTECHNICAL SERVICES ARE PERFORMED FOR SPECIFIC PURPOSES, PERSONS AND PROJECTS

This report was prepared for the exclusive use of the Client and their authorized agents, subject to the conditions and limitations contained within the duly authorized work plan. Any use which a third party makes of this report, or any reliance on or decisions to be made based on it, are the responsibility of the third parties. If additional parties require reliance on this report, written authorization from Pinchin will be required. Pinchin disclaims responsibility of consequential financial effects on transactions or property values, or requirements for follow-up actions and costs. No other warranties are implied or expressed. Furthermore, this report should not be construed as legal advice.

SUBSURFACE CONDITIONS CAN CHANGE

This geotechnical report is based on the existing conditions at the time the study was performed, and Pinchin's opinion of soil conditions are strictly based on soil samples collected at specific test hole locations. The findings and conclusions of Pinchin's reports may be affected by the passage of time, by manmade events such as construction on or adjacent to the Site, or by natural events such as floods, earthquakes, slope instability or groundwater fluctuations.

LIMITATIONS TO PROFESSIONAL OPINIONS

Interpretations of subsurface conditions are based on field observations from test holes that were spaced to capture a 'representative' snap shot of subsurface conditions. Site exploration identifies subsurface conditions only at points of sampling. Pinchin reviews field and laboratory data and then applies professional judgment to formulate an opinion of subsurface conditions throughout the Site. Actual subsurface conditions may differ, between sampling locations, from those indicated in this report.

LIMITATIONS OF RECOMMENDATIONS

Subsurface soil conditions should be verified by a qualified geotechnical engineer during construction. Pinchin should be notified if any discrepancies to this report or unusual conditions are found during construction.

Sufficient monitoring, testing and consultation should be provided by Pinchin during construction and/or excavation activities, to confirm that the conditions encountered are consistent with those indicated by the test hole investigation, and to provide recommendations for design changes should the conditions revealed during the work differ from those anticipated. In addition, monitoring, testing and consultation by Pinchin should be completed to evaluate whether or not earthwork activities are completed in

accordance with our recommendations. Retaining Pinchin for construction observation for this project is the most effective method of managing the risks associated with unanticipated conditions. However, please be advised that any construction/excavation observations by Pinchin is over and above the mandate of this geotechnical evaluation and therefore, additional fees would apply.

MISINTERPRETATION OF GEOTECHNICAL ENGINEERING REPORT

Misinterpretation of this report by other design team members can result in costly problems. You could lower that risk by having Pinchin confer with appropriate members of the design team after submitting the report. Also retain Pinchin to review pertinent elements of the design team's plans and specifications. Contractors can also misinterpret a geotechnical engineering or geologic report. Reduce that risk by having Pinchin participate in pre-bid and preconstruction conferences, and by providing construction observation. Please be advised that retaining Pinchin to participation in any 'other' activities associated with this project is over and above the mandate of this geotechnical investigation and therefore, additional fees would apply.

CONTRACTORS RESPONSIBILITY FOR SITE SAFETY

This geotechnical report is not intended to direct the contractor's procedures, methods, schedule or management of the work Site. The contractor is solely responsible for job Site safety and for managing construction operations to minimize risks to on-Site personnel and to adjacent properties. It is ultimately the contractor's responsibility that the Ontario Occupational Health and Safety Act is adhered to, and Site conditions satisfy all 'other' acts, regulations and/or legislation that may be mandated by federal, provincial and/or municipal authorities.

SUBSURFACE SOIL AND/OR GROUNDWATER CONTAMINATION

This report is geotechnical in nature and was not performed in accordance with any environmental guidelines. As such, any environmental comments are very preliminary in nature and based solely on field observations. Accordingly, the scope of services do not include any interpretations, recommendations, findings, or conclusions regarding the, assessment, prevention or abatement of contaminants, and no conclusions or inferences should be drawn regarding contamination, as they may relate to this project. The term "contamination" includes, but is not limited to, molds, fungi, spores, bacteria, viruses, PCBs, petroleum hydrocarbons, inorganics, pesticides/insecticides, volatile organic compounds, polycyclic aromatic hydrocarbons and/or any of their by-products.

Pinchin will not be responsible for any consequential or indirect damages. Pinchin will only be held liable for damages resulting from the negligence of Pinchin. Pinchin will not be liable for any losses or damage if the Client has failed, within a period of two years following the date upon which the claim is discovered within the meaning of the Limitations Act, 2002 (Ontario), to commence legal proceedings against Pinchin to recover such losses or damage.