



Westwood Village Community (Phase 2) Brian Domm Subdivision Hallman Subdivision

Preliminary Stormwater Management Report

Project Location:

North of Blenheim Road, West of Newman Drive
City of Cambridge

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Contents

1.0	Introduction	1
1.1	Overview.....	1
1.2	Background Information	2
1.3	Purpose of Study	3
1.4	Objectives	3
2.0	Existing Conditions and Background Information.....	5
2.1	Topographical Information	5
2.2	Pre-Development Conditions	5
2.3	Geotechnical and Hydrogeological Information	6
3.0	Stormwater Management Criteria	8
4.0	Proposed Development and SWM Strategy	9
4.1	Proposed Area Grading	9
4.2	Post-Development Conditions.....	9
5.0	Stormwater Management Design	13
5.1	Hydrologic Modelling.....	13
5.2	Stormwater Management Facility 2 (Cachet Subdivision)	13
5.3	Stormwater Quality Control	14
5.4	Stormwater Quantity Control	14
5.5	Water Balance Analysis	16
5.5.1	Infiltration	16
5.5.2	Surface Water.....	17
5.5.3	Roofwater Distribution Strategy	18
5.6	Block Level Stormwater Management Approach.....	19
6.0	Chloride Impact Assessment.....	20
6.1	Reasonable Use Concept	20
6.2	Chloride Impact – Mass Balance Analysis.....	21
6.3	Mitigation Measures.....	21
6.3.1	Salt Management Plans.....	21
7.0	Monitoring Program	22
7.1	Historical Monitoring (MESP)	22
7.2	During-Development Monitoring Program	22
7.2.1	Pre-Construction Monitoring Program.....	22
7.2.2	During-Construction Monitoring Program	23
7.2.3	Post-Construction Monitoring Program	23

8.0	Erosion and Sediment Control Measures	27
9.0	Conclusions and Recommendations	28

Figures

Figure 1.1 – Location Plan	4
Figure 2.1 – Existing Drainage Area Plan.....	7
Figure 4.1 – Proposed Drainage Area Plan.....	11
Figure 4.2 – Conveyance Infiltration and Roofwater Collection Strategy	12
Figure 7.1 – Pre-Construction Surface Water and Groundwater Monitoring Plan	25
Figure 7.2 – During and Post-Construction Surface Water and Groundwater Monitoring Plan ..	26

Tables

Table 3.1 – Existing Conditions Annual Water Balance.....	8
Table 5.1 – SWM Facility 2 Design Characteristics	15
Table 5.2 – Proposed Event Modelling Output	16
Table 5.3 – Wetland Water Balance Mitigation.....	19
Table 6.1 – Impact of Road Salt on Groundwater Chloride Levels	21
Table 7.1 – Monitoring Program Summary.....	24

Appendices

Appendix A	Draft Plan of Subdivision (Consolidated)
Appendix B	Hydrologic Parameters & SWM Design Sheets
Appendix C	Existing Conditions Hydrologic Modelling
Appendix D	Proposed Conditions Hydrologic Modelling
Appendix E	LVM Borehole Logs
Appendix F	Water Balance
Appendix G	Chloride Impact Assessment

Drawings

MTE Drawing No. 02534-800-EC1.1 – Existing Conditions Plan.....	Encl.
MTE Drawing No. 44720-114-SW2.1 – SWM Facility No.2 Plan	Encl.
MTE Drawing No. 44720-114-SW2.2 – SWM Facility No.2 Details and Sections Plan	Encl.
MTE Drawing No. 44720-114-SW2.3 – SWM Facility No.2 Details and Notes Plan	Encl.

1.0 INTRODUCTION

1.1 Overview

MTE Consultants Inc. (MTE) was retained by Hallman Construction Limited (Hallman) and Brian Domm (Domm) to complete a Preliminary Stormwater Management (SWM) Report in support of an Official Plan Amendment (OPA), Draft Plan of Subdivision (DPS), and Zoning By-law Amendment (ZBA) applications. Although separate subdivisions are proposed for each property, the lands have been comprehensively evaluated together to ensure a coordinated approach to the design and development of the Hallman and Domm lands.

The Hallman and Domm lands will ultimately be located in the City of Cambridge (after annexation from the Township of North Dumfries), and are immediately adjacent to a comprehensively planned community commonly referred to as “Westwood Village – Phase 1”. The lands owned by Hallman and Domm are generally in the northwestern portion of the Westwood Village Community (aka Cambridge West Community). Refer to Error! Reference source not found. for more details. These lands represent the logical extension and second phase of the Westwood Village Community. For the purpose of this report, the two Draft Plans will be reviewed as one cohesive development herein referred to as the ‘subject lands’.

A previous submission of this report was completed in 2021. At that time, the subject lands were within the jurisdiction of the Township of North Dumfries. This report has been prepared to document this change and reflect the update of the Draft Plans.

The subject lands comprise a total area of approximately 31.50ha, of which 19.44ha represents the Hallman property and 12.06ha represents the Domm property. Development plans for the subject lands include the construction of street-oriented residential units, a multiple residential block, park lands, the required roads, municipal services (storm, sanitary, and water), and open spaces. A Draft Plan of Subdivision (dated March 25, 2026) has been prepared by MHBC Planning for both proposed developments and form the basis of this report. The consolidated Draft Plan has been included in **Appendix A**.

This report presents the proposed plan detailing the stormwater quality, quantity, and water balance measures that will be provided for the proposed developments. This report should be read in conjunction with the following other reports;

- *Westwood Village Community (Phase 2) - Functional Servicing Report* (MTE, April 2026)
- *Westwood Village (Phase 2) Community – Hydrogeological Assessment* (MTE, April 2021)
- *Westwood Village Community (Phase 2) - Hydrogeological Assessment Report Addendum* (MTE, April 2026)
- *Cambridge West Community - Westwood Village - Final Stormwater Management Report* (MTE, April 2020)

1.2 Background Information

Master Environmental Servicing Plan

A Master Environmental Servicing Plan (MESP) was undertaken for the Cambridge West Community by the City of Cambridge and area landowners. The MESP was completed in November 2013 and approved by City Council on March 17, 2014. The purpose of the MESP was to guide the development of the remaining designated greenfield lands on the west side of the City. The MESP integrated environmental, servicing, transportation, and land use planning components to provide the basis for the preparation of a Community Plan for the Cambridge West Area, and for the preparation and processing of the future development applications.

The MESP outlined a preliminary municipal servicing strategy for the area, which included: sanitary, storm, and watermain servicing, along with a stormwater management strategy. The recommended stormwater management solution was designed to maximize the use of existing storm drainage infrastructure, maintain current levels of infiltration into the ground, maintain surface water inputs into local wetland features, and mitigate the potential for stream erosion. The recommended solution consisted of multiple types of stormwater management infrastructure, including lot-level and conveyance infiltration facilities, along with several extended detention end-of-pipe stormwater management facilities.

LPAT (Cambridge West Community)

In June 2018, the applications of the adjacent Hallman Subdivision (30T-16104), Cachet Subdivision (30T-16103) and Newman Lands (Huron Creek; 30T-16105) proceeded through the Local Planning Appeal Tribunal (LPAT) as Case No. 170301. The resulting LPAT order provided approval of the three Draft Plans of Subdivision on February 19, 2019.

Final Stormwater Management Report (Cambridge West Community)

As part of the final design stage for the Hallman Subdivision (30T-16104) and Cachet Subdivision (30T-16103), a Final Stormwater Management Report was submitted to the City of Cambridge in August 2019 (and revised in April 2020). The stormwater management approach for the Westwood Village Community (Phase 1) was developed as our implementation of the conceptual solution recommended by the MESP. The subject lands were considered as part of the overall stormwater management strategy, to ensure that adequate stormwater management infrastructure would be planned to accommodate their eventual development.

Stormwater Management Facility 2 (SWMF 2) within the Cachet Subdivision has been designed to service the majority of the subject lands. The MESP contemplated that a small drainage area consisting of approximately 3.6ha, would drain to a future SWM facility (SWMF 4) within the Domm lands. However, as part of the pre-consultation process for the subject lands in 2019/2020, MTE was requested to revisit the stormwater management strategy for this drainage area and determine if this area could be serviced by SWMF 2.

An Environmental Compliance Approval has been issued for SWMF 2 by the Ministry of the Environment, Conservation and Parks (MECP – formerly referred to as the MOE) in November 2020. To facilitate the servicing of the subject lands by SWMF 2, the storm sewer system within the Cachet Subdivision has been designed to accommodate the ultimate build-out. A Roof Water Collection System (RWCS) was also recommended to collect clean roof water from a portion of the subject lands to provide surface water inputs into Wetland 2, which is located within the Cachet Subdivision and adjacent to SWMF 2. Currently, the construction of SWMF 2 has been completed.

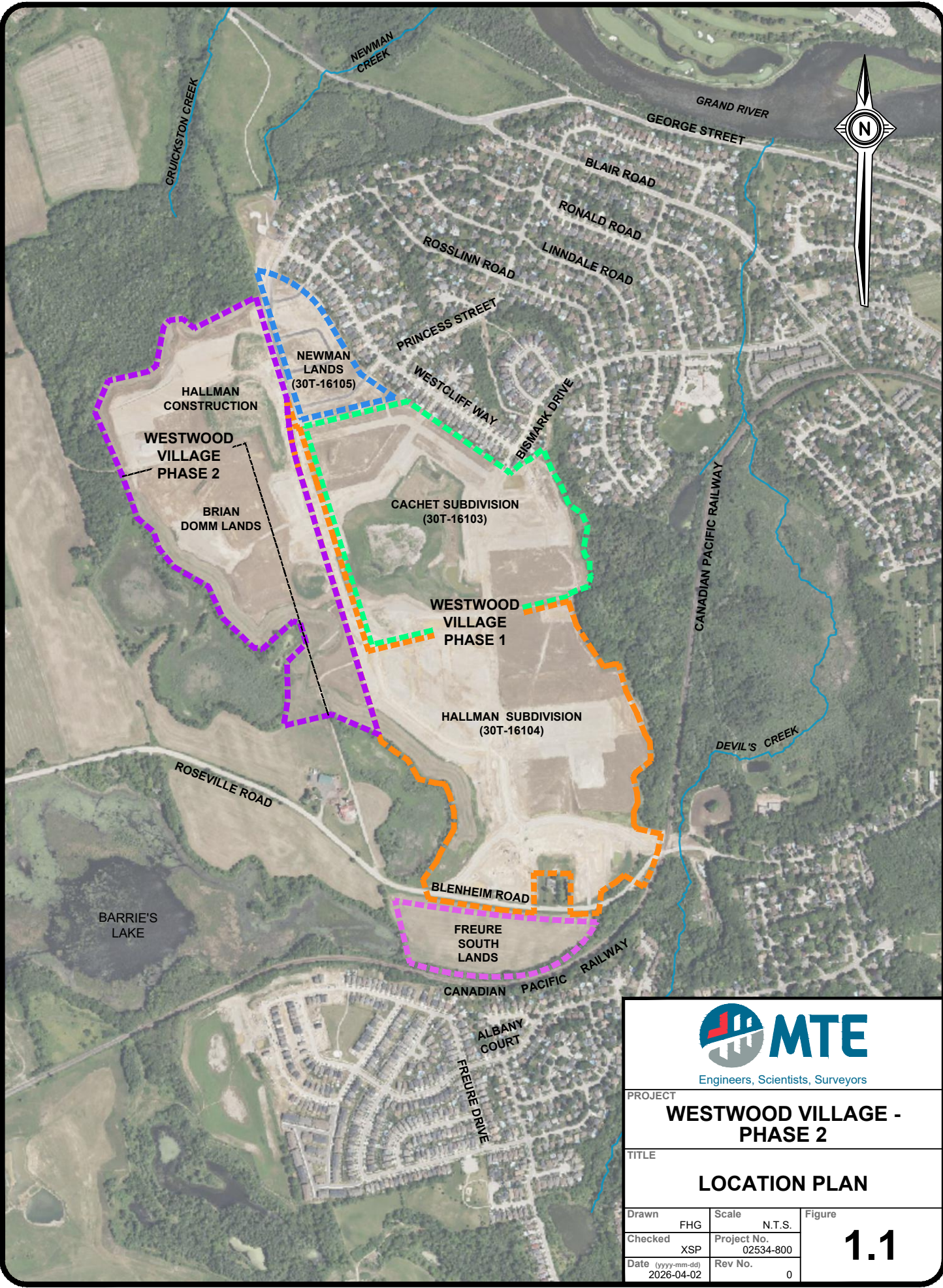
1.3 Purpose of Study

The purpose of this study is to document a recommended stormwater management strategy for the development proposals contemplated for the subject lands and to verify that SWMF 2 (located within the Cachet Subdivision) will have sufficient capacity to service the subject lands. The proposed stormwater management strategy has been developed in consideration of design requirements of the City of Cambridge, Region of Waterloo, Grand River Conservation Authority (GRCA), and the MECP. The proposed strategy also takes the findings and recommendations of previously completed and related studies into consideration.

1.4 Objectives

The overall objective of this stormwater management report is to recommend a stormwater management strategy for the proposed development that protects the hydrology and water quality of the receiving water systems. The primary objectives of this study are as follows:

- Document criteria for the management of stormwater runoff from the study area.
- Recommend a comprehensive plan for controlling the quality and quantity of stormwater runoff from the subject lands.
- Determine if SWMF 2 has sufficient quality and quantity controls for the subject lands.
- Recommend a comprehensive plan for balancing infiltration to groundwater and surface water inputs to existing environmental features as part of a strategy that ensures the long term protection of those features.



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PROJECT		
WESTWOOD VILLAGE - PHASE 2		
TITLE		
LOCATION PLAN		
Drawn	Scale	Figure 1.1
FHG	N.T.S.	
Checked	Project No.	
XSP	02534-800	
Date (yyyy-mm-dd)	Rev No.	
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2.0 EXISTING CONDITIONS AND BACKGROUND INFORMATION

2.1 Topographical Information

As previously discussed, the subject lands consist of approximately 31.50ha of land, which form Phase 2 of the overall Westwood Village Community. The subject lands are generally bounded by Newman Drive and the Cachet Subdivision to the east, and by existing agricultural and woodlot/wetlands to the south, west and north. The subject lands are currently under an interim agricultural use.

MTE conducted a detailed topographical survey of the Westwood Village lands in 2010. There was some initial survey work completed in 2005, as well as supplementary surveys completed in 2013, 2014, and 2017 through to 2020. Existing topographic conditions for the Westwood Village Community are illustrated in **Figure 2.1** and **MTE Drawing 02534-800-EC1.1**. Under existing conditions, the subject lands are moderately sloped throughout the majority of the site (generally between 2.0% and 10.0%). Existing elevations range between 307.0m near the wetland features in the north and 316.0m on the centralized hills in the central portion of the lands.

It should be noted, that as part of the Hallman Subdivision (30T-16104) and Cachet Subdivision (30T-16103) final design, an area grading contract for the entire Westwood Village Community was completed in the summer/fall of 2020. As part of this contract, the subject lands were filled and graded to support future development (graded to a sub-grade depth). Topsoil was placed on the sub-grade surface, and the lands were returned to an interim agricultural use. The “existing conditions” described in this report refer to the original site conditions prior to the 2020 area grading contract.

2.2 Pre-Development Conditions

The eastern portion of the subject lands primarily drain to an existing wetland feature (Wetland 2) as illustrated in **Figure 2.1**. This feature does not have a surface outlet and as a result recharges and drains internally. Based on monitoring data and a hydrogeological study completed as part of the MESP, it is understood that after rainfall events, the surface water inputs in this feature create a localized groundwater mound that dissipates laterally through shallow groundwater movements to the east. During drier periods, shallow groundwater flow from the west sustains the wetland level.

Wetland 2 water elevations experience natural fluctuations that are driven by surface water inputs and seasonal rise and fall of the local water table. Based on information documented in the MESP, historic air photo analysis, and multi-year monitoring, water levels in this wetland generally fluctuate within an elevation range of approximately 307.60m to 308.65m.

The northern and western portion of the subject lands drain externally towards the adjacent woodland and wetland features (Wetland 6 and Wetland 4/5) respectively. Both the northern and western portions of the subject lands are currently within the Cruickston Creek subwatershed, however were recommended in the MESP as being redirected to the Grand River via SWMF 2.

As part of the MESP, and confirmed through subsequent field surveys by WSP, Ambystoma salamanders were confirmed in suitable breeding ponds on adjacent lands, particularly in several vernal ponds illustrated in **Figure 2.1**. Those vernal ponds receive drainage from the northern and western portions of the subject lands as well as some external lands.

A current conditions hydrologic model was created for the Westwood Village subwatersheds as part of the MESP, using the GAWSER (version 6.9.12) hydrologic modelling platform. As part of the MESP, the current conditions model was run in continuous mode to estimate streamflow conditions and water balance information for the various water features within and surrounding the study area. The continuous model utilized a 39-year meteorological data set from the Preston (Cambridge) weather station. Design storm event simulations were also completed using the existing conditions hydrologic model with the intent of obtaining peak flow rates for a range of low-frequency storm events. Design storm event modelling was completed for the 4-hour 25mm and Regional (48 hour) storm events, along with the 2 through 100-year return period 3 hour Chicago design storms. The Chicago design storms were modeled using the Region's (DGSSMS) IDF values, which exceed the City of Cambridge IDF values. A summary of the IDF and pre-development catchment parameters has been included in **Appendix B**, whereas the pre and post-development modelling is included in **Appendices C and D**, respectively.

2.3 Geotechnical and Hydrogeological Information

From 2010 to 2013, LVM Inc. carried out a hydrogeological investigation for the Westwood Village Community lands for Hallman Construction Limited and Brian Domm Farms Ltd. The fieldwork for the investigation on the subject lands included: 13 boreholes to depths ranging from 4.88m to 11.89m, and 9 mini piezometers to depths ranging from 0.91m to 2.44m, collection of soil samples, and measurement of groundwater levels.

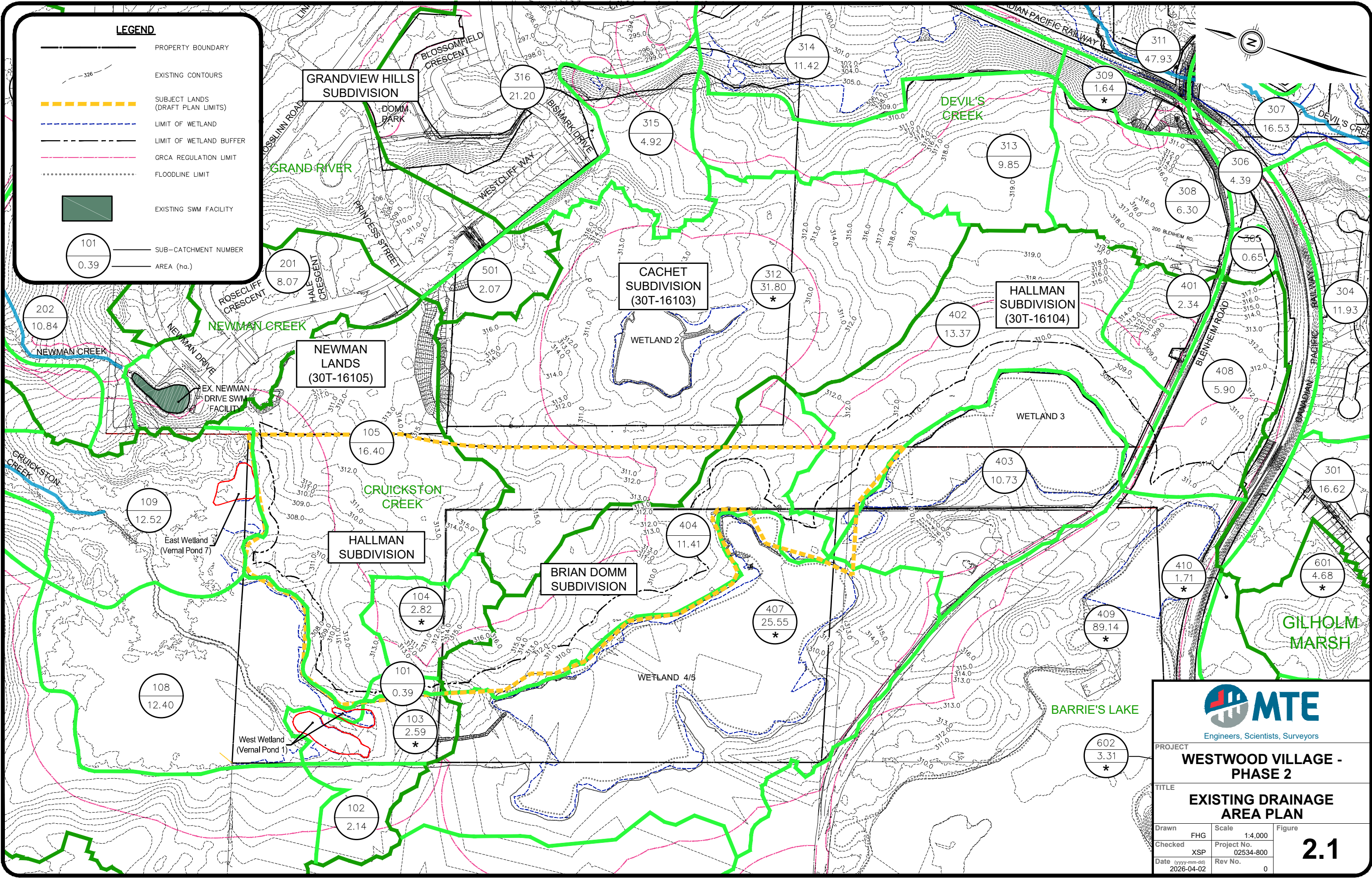
In the spring and summer of 2014, LVM also carried out a geotechnical investigation. The field work for this investigation included boreholes and handholes to accurately determine topsoil depths. Monitoring wells were installed to allow measurement of the stabilized groundwater levels and to support the existing hydrogeological data of the area.

MTE carried out a *Supplemental Hydrogeology Study* (October 11, 2017) for the Westwood Village Community lands. This study conducted additional fieldwork and summarizes the hydrogeological investigations performed for the development study area.

A Hydrogeological Assessment and subsequent Addendum were completed by MTE for the subject lands. The Addendum provides a summary of the monitoring completed since the original assessment and an updated impact assessment based on the gathered data. Refer to the *Westwood Village Community (Phase 2) – Hydrogeological Assessment Report Addendum* (MTE, April 2026) for more information.

Based on the results of LVM's detailed hydrogeological and geotechnical investigations, the subsurface stratigraphy is generally described as topsoil underlain by deposits of sand, or sand and gravel underlain at depth by deposits of silt/silt till. Silt was contacted in localized layers and pockets across the site. The granular deposits are extensive in areas and are typically saturated at their base, forming a shallow overburden aquifer. Groundwater in the overburden aquifer generally flows towards the Grand River, driven by topography and surface drainage features. The overburden aquifer (ranging in elevations from 305m to 308m) is separated from the bedrock aquifer (ranging in elevations from 270m to 300m) by a thick overburden aquitard.

Refer to the LVM's Geotechnical Investigation Report attached in the *Westwood Village (Phase 2) Community - Functional Servicing Report* (MTE, April 2026) for more details. The original LVM borehole logs are also provided in **Appendix E**.



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PROJECT
WESTWOOD VILLAGE - PHASE 2

TITLE
EXISTING DRAINAGE AREA PLAN

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Date: 2026-04-02

3.0 STORMWATER MANAGEMENT CRITERIA

The subject lands have been considered in the approved stormwater management strategy for the Westwood Village Community (Phase 1). The details have been well documented in the *Cambridge West Community, Westwood Village - Final Stormwater Management Report* (MTE, April 15, 2020), including the established stormwater management criteria.

The following stormwater management criteria has been established for the Phase 2 Community:

- **Water Quality** – Provide an *Enhanced* (MOE, 2003) level of stormwater quality treatment prior to discharge to surface or groundwater systems.
- **Water Quantity** – Control peak flow rates to creek systems to existing levels, to minimize flooding and preserve hydraulic and hydrologic functions.
- **Water Balance**
 - *Infiltration* – Maintain or enhance existing recharge rates across the development area.
 - *Surface Water* – Maintain existing surface water volume and hydro-period inputs into significant environmental features.

Water Quality and Quantity Control - SWM Facility 2

As described in the *Cambridge West Community, Westwood Village - Final Stormwater Management Report* (MTE, April 15, 2020), SWMF 2 will provide water quality and quantity controls for the subject lands. The quality control provided by SWMF 2 for the subject lands will need to meet requirements of an Enhanced level. All flows up to and including the Regional storm event will need to be controlled to the capacity of the proposed storm connection to the Princess Street storm sewer.

Water Balance

The existing conditions hydrologic model was run for a 39-year simulation period to determine the average annual evapotranspiration, runoff, and infiltration values. The average water balance results for the catchments within the MESP development study area are listed in **Table 3.1** below.

Table 3.1 – Existing Conditions Annual Water Balance

Condition	Hydrologic Component Values (mm/yr) (MESP – 83ha)
Precipitation	882.3
Evapotranspiration	582.2
Infiltration	249.3
Runoff	50.8

The proposed development will need to match or exceed the pre-development infiltration rate through a combination of lot-level and conveyance infiltration galleries. As good engineering practice, infiltration facilities should be constructed with an actual volume 15% larger than their modeled volume.

The volume and hydro-period of surface water inputs into the water features surrounding the subject lands need to be maintained under post-development conditions.

4.0 PROPOSED DEVELOPMENT AND SWM STRATEGY

4.1 Proposed Area Grading

Grading plans illustrating lot and road grades is enclosed in the *Westwood Village Community (Phase 2) - Functional Servicing Report* (MTE, April 2026). The grading design of the subject lands was controlled by many factors, including: servicing constraints (sanitary and storm), matching existing and proposed boundary grades around the perimeter of the property while respecting existing natural features, ensuring major storm event overland flows are directed towards the existing road rights-of-way and/or proposed SWM facilities, as well as maintaining a cut/fill balance for the overall development.

4.2 Post-Development Conditions

The stormwater management strategy for the Westwood Village Community is outlined in the approved MESP and detailed for implementation as part of the Final Stormwater Management Report. The subject lands were considered as part of the overall strategy. Although the Final Stormwater Management Report proposed four (4) new stormwater management facilities to service the Westwood Village Community, this report has re-evaluated the need for the fourth facility that was intended to serve a small drainage area of the Domm lands, to determine if this drainage area could be directed to SWMF 2. As such, the solution for the subject lands includes the implementation of at-source roof infiltration facilities throughout the property, and the use of SWMF 2 for water quality and quantity control. A conveyance infiltration facility is also proposed as part of the SWM strategy for the subject lands. The strategy has been designed to meet the criteria presented in Section 3.0 of this report.

The proposed development consists primarily of residential land use with a park block and related roads. Minor storm runoff from all contributing areas will be conveyed by the proposed storm sewer system to SWMF 2. Excess runoff from major storms will flow overland to the SWMF via the proposed rights-of-way and overland flow routes. The post-development catchment areas are detailed in **Figure 4.1**. Stormwater Management Facility 2 is located adjacent to Wetland 2. It will primarily discharge to the existing Princess Street storm sewer, which outlets directly to the Grand River. It should be noted that the proposed Plan of Subdivision for the Hallman and Domm lands contains a Block that will be developed through a Site Plan Approval process. As part of that process, a Stormwater Management Brief will be prepared identifying the stormwater management criteria for the Block and how the stormwater control measures will adhere to the Subdivision SWM criteria as established in this report.

Lot-level infiltration facilities are proposed to be connected to the majority of roof areas within the development. All lot-level infiltration systems for single detached lots will be located in the backyards and have been designed to accept 25mm of runoff.

A conveyance infiltration facility (infiltration facility located along the conveyance route) will also be provided to infiltrate treated 'non-roof' (road, front/rear yard) runoff. The conveyance facility within the subject lands has been designed to infiltrate 25mm of contributing runoff. The area contributing to the conveyance infiltration facility is illustrated in **Figure 4.2**.

Water balance into wetland features from the subject property will be met by a combination of inputs from the rear yards/roof areas of lots adjacent to the wetlands and contributions from a RWCS. The areas that will contribute to the wetland surface water balance under post-development conditions are detailed in **Figure 4.2**.

The post-development modelling parameters and imperviousness calculations are included in **Appendix B**.

701

Catchment 701 consists of the northern portion of Cachet Subdivision and is adjacent to the portion of the subject lands that are proposed to drain to SWMF 2. The drainage area contains residential blocks and a portion of SWMF 2, for a total area of 8.81ha.

702

Catchment 702 consists of the major portion of Hallman Subdivision (30T-16104) and the western portion of Cachet Subdivision. The catchment is proposed to drain to SWMF 2. The drainage area contains residential, park, and mixed-use blocks as well as a school and the majority of SWMF 2, for a total area of 27.88ha.

708

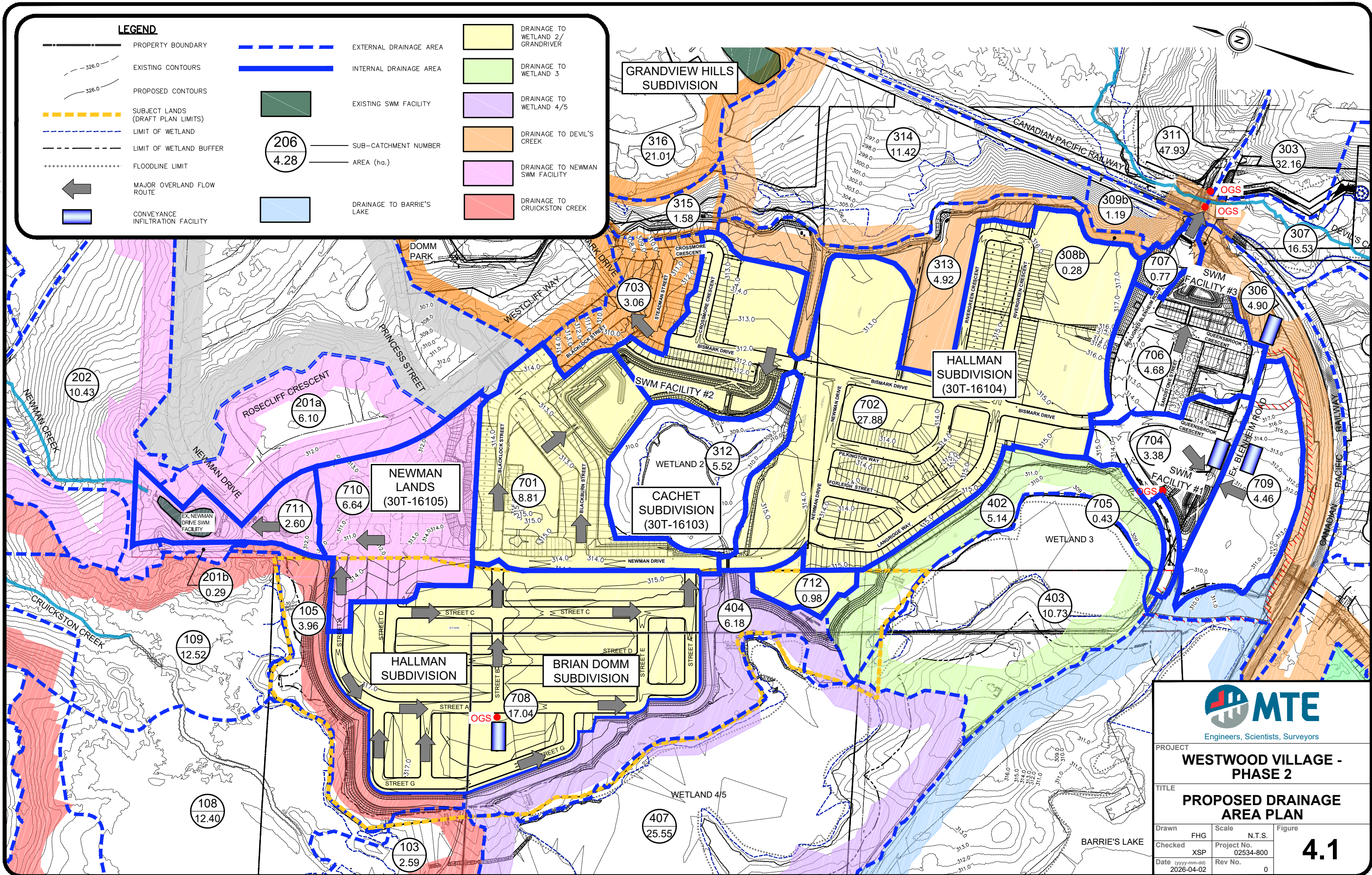
Catchment 708 consists of the majority of the subject lands and is proposed to drain to SWMF 2. The drainage area contains primarily residential and park blocks, and has a total area of 17.04ha.

710

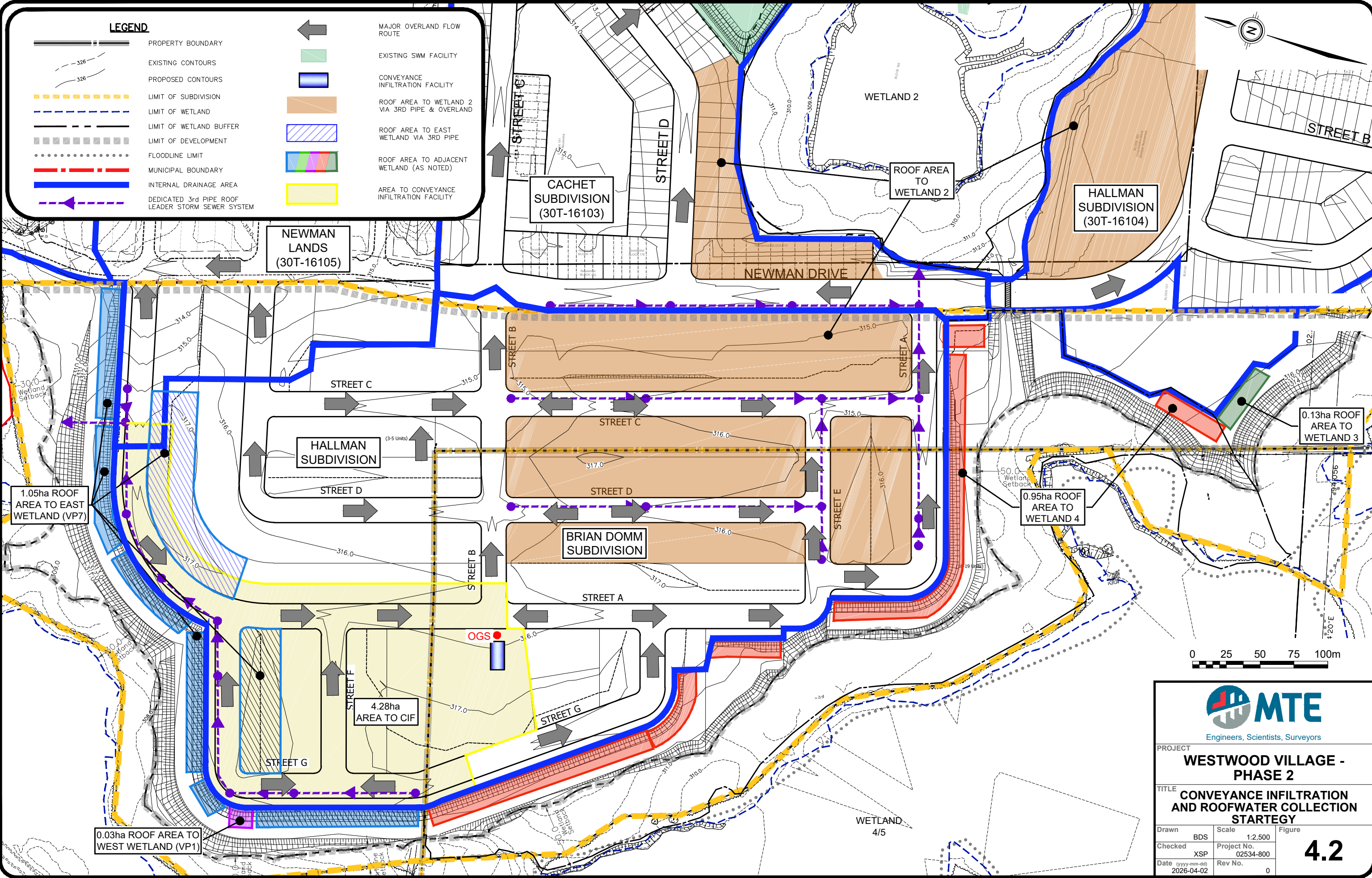
Catchments 710 consists of the southern portion of Newman Lands which is proposed to drain to the existing Newman Drive SWM Pond. It should be noted that the drainage area from the subject lands to be accommodated by the Newman SWMF has been coordinated with the engineering consultant (Meritech) for the Newman Lands. A portion of the subject lands at the northeast would be graded toward this catchment. This catchment area has a total drainage area of 6.64ha.

712

Catchment 712 consists of the southern portion of the subject lands and is proposed to drain to SWMF 2 through the storm sewer system and overland flow route within catchment 702. The drainage area contains two multiple residential blocks and have a combined area of approximately 0.98ha.



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PROJECT			
WESTWOOD VILLAGE - PHASE 2			
TITLE			
CONVEYANCE INFILTRATION AND ROOFWATER COLLECTION STRATEGY			
Drawn	BDS	Scale	1:2,500
Checked	XSP	Project No.	02534-800
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5.0 STORMWATER MANAGEMENT DESIGN

5.1 Hydrologic Modelling

As previously noted, an existing conditions hydrologic model for the Westwood Village Community subwatersheds was developed for the MESP using the GAWSER (version 6.9.12) modelling platform. This model was then updated in the Final Stormwater Management Report (April 2020) to reflect the proposed conditions and stormwater management strategies approved for the Westwood Village Community lands to create a proposed hydrologic model. This proposed hydrologic model was further refined in this report to simulate the proposed development conditions and stormwater management strategy proposed for the subject lands. Both continuous and single event simulations were run using GAWSER (version 6.9.18). The proposed development conditions were modelled for the:

- Quality event (25mm depth, 4hr Chicago distribution).
- 2, 5, 10, 25, 50, and 100-year return period rainfall events (3hr Chicago distribution derived from the Region's Intensity-Duration-Frequency parameters).
- Regional storm event (48hr, 285mm depth - Hurricane Hazel).
- 39-year continuous simulation period (meteorological data from Preston weather station 1960-1999).

The IDF parameters and the hydrologic parameters for the pre and post-development conditions are included in **Appendix B**. The pre-development modelling is included in **Appendix C**; whereas the post-development modelling is included in **Appendix D**.

5.2 Stormwater Management Facility 2 (Cachet Subdivision)

As described in Section 4.2, the majority of the subject lands are proposed to drain to SWMF 2. The facility will provide quality and quantity controls for the subject lands. The detailed design of SWMF 2 was completed as part of the final SWM designs (MTE, April 2020) for the Westwood Village Community (Phase 1). An Environmental Compliance Approval was issued for SWMF 2 by the MECP in November 2020. The construction of SWMF 2 was completed in 2021. The facility is located within the Cachet Subdivision (30T-16103), adjacent to Wetland 2. The facility was originally designed to provide Enhanced level of quality control for a total drainage area of 51.22ha with a 57.7% imperviousness.

In addition to the original designed drainage area, an additional 3.5ha area of the subject lands is proposed to be directed to SWMF 2. This report confirms that SWMF 2 has enough capacity to service the additional area without requiring any changes or causing significant impacts, while meeting all the criteria as described in Section 3.0 of this report.

Please refer to the Final Stormwater Management Report for more details regarding the design of SWMF 2. The approved design drawings **44720-114-SW2.1** to **SW2.3** for SWMF 2 are enclosed, updated with the new ponding elevations under various storm events.

5.3 Stormwater Quality Control

SWMF 2 was designed as a wetland with a permanent pool depth of 0.3m. The facility incorporates two sediment forebays with a depth of 1.5m, which offers benefits of dilution and settling of sediment. A planting scheme was prepared that carefully selected plant species and their location in and around the basins to stabilize banks, mitigate temperature increases, and provide aesthetics and safety benefits.

The total drainage area for SWMF 2, which includes the subject lands and the majority of the Hallman Subdivision and Cachet Subdivision, is 54.72ha at 58.6% imperviousness. The MECF requires 108.6m³/ha of storage, 40m³/ha of which is extended detention, and the remainder of which is the permanent pool. The required permanent pool and extended detention volumes for SWMF 2 are therefore 3,751m³ and 2,189m³, respectively.

SWMF 2 has a forebay at both its northern and southern ends. The northern forebay will accept minor storm event flows from the northern portion of the facility's drainage area (catchments 701 and 708) via a splitter structure designed to split off flows in excess of the 25mm quality event. The large flows will be directed into the main pond, avoiding potential 'washout' of the forebay. The southern forebay will accept minor storm event flows from the southern portion of the facility's drainage area (catchment 702 and 712). A similar splitter structure would surcharge the incoming sewers and therefore was not proposed for this forebay.

The northern and southern forebays have permanent pool volumes of 944m³ and 2,617m³, respectively, which combined with 3,752m³ of permanent pool within the designed wetland makes for a total provided permanent pool volume of 7,313m³ within SWMF 2. A 235mm orifice at the outlet structure will be able to provide over 24-hour extended detention for 2,209 m³.

The SWMF 2 design characteristics are summarized in **Table 5.1** below. Refer to **Appendix B** for the relevant updated design sheets and calculations (catchment parameters, imperviousness calculations, stage-storage discharge relationships, drawdown calculations, forebay sizing calculations, control manhole sizing, etc.). Refer to the appended **MTE Drawings 44720-114-SW2.1 to SW2.3** for more details of SWMF 2.

All the calculations demonstrate that the original design of SWMF 2 will be able to provide the intended functions for quality control, given the additional drainage area from the proposed development.

5.4 Stormwater Quantity Control

As previously discussed, flows for all storm events will be conveyed to SWMF 2 by a combination of storm sewers and overland flow routes (road rights-of-way). The post-development design storm event modelling output is included in **Appendix D**.

A typical single-stage outlet pipe was designed for use in this stormwater management facility. A single 235mm orifice plate at elevation 308.30m will control peak design flows for all storm durations to a maximum of 0.191m³/s to suit the capacity of the outlet sewer (95% full-flow capacity of a 450mm diameter pipe at 0.5% slope). The designed wetland portion of the facility has storage sufficient to hold the 5-year storm to elevation 309.20m, above which the designed wetland provides storage in combination with Wetland 2. SWMF 2 together with Wetland 2, has a total active storage capacity (with an assumed spring water level of 308.40m in the wetland) of 137,900m³ to elevation 311.30m. The peak ponding elevation, storage, and outflow for SWMF 2 for the various design storms are updated and listed in **Table 5.2** below.

Table 5.1 – SWM Facility 2 Design Characteristics

General	Facility Characteristics
Stormwater Management Facility Type	Wetland
Required MECP Water Quality Protection	Level 1 (Enhanced)
Total Contributing Area	54.72ha
Imperviousness	58.6%
Bottom Elevation (of main facility)	308.00m
Storage	
Unit Area Storage Volume Requirements as per SWMPDM (MOE, 2003)	108.6m ³ /ha
Required Total Volume	5,989m ³
<i>Permanent Pool</i>	
Required Permanent Pool Volume	3,751m ³
Permanent Pool Volume Provided	7,313m ³
Permanent Pool Elevation	308.30m
<i>Extended Detention</i>	
Minimum Required Volume (40m ³ /ha)	2,189m ³
Approximate Drawdown Time (40m ³ /ha)	28.4hr
Extended Detention Elevation (40m ³ /ha)	308.43m
Peak Release Rate for Extended Detention (40m ³ /ha) – no diversion to Wetland 2	0.018m ³ /s
North Forebay	
Required Forebay Length	30.7m
Actual Forebay Length	39.0m
Permanent Pool Elevation	308.30m
Bottom Elevation	306.80m
South Forebay	
Required Forebay Length	42.4m
Actual Forebay Length	87.0m
Permanent Pool Elevation	308.30m
Bottom Elevation	306.80m
Outlet Controls	
<i>CSP Riser</i>	
Orifice 1 Diameter (Extended Detention)	235mm
Orifice 1 Elevation (Extended Detention)	308.30m
Shared Storage Elevation (SWMF 2 & Wetland 2)	309.20m

Table 5.2 – Proposed Event Modelling Output

Storm Event	Maximum Ponding Elevation (m)	Peak Storage Requirement (m ³)	Peak Outflow (m ³ /s) to Wetland ¹ (to sewer)
25mm Storm	308.54	4,077	0.000 (0.041)
2-Year Storm	308.69	6,825	0.000 (0.062)
5-Year Storm	309.05	14,066	0.000 (0.096)
10-Year Storm	309.24 *	18,548 *	0.224 (0.111)
25-Year Storm	309.31 *	21,017 *	0.901 (0.119)
50-Year Storm	309.37	23,442	1.899 (0.125)
100-Year Storm	309.40	25,047	2.725 (0.128)
Regional Storm	310.85	30,418	6.152 (0.139)

* Storage provided in Wetland 2 depressions below weir elevation 309.20m

¹ Unbracketed flows are those leaving SWMF 2 to the wetland (via the equalization channel).

The 10 to 100-year event elevations refer to the maximum ponding required to pass flows to the wetland during infrequent events. During these events, the ponding elevation within the SWMF are higher than the ponding elevations within the wetland, as shown in the table in **MTE Drawing 44720-114-SW2.1**. During infrequent events (10 to 100-year), the SWMF fills to 309.20m before beginning to fill the wetland. Once the wetland level reaches 309.20m, available storage is shared with the upper portion (above 309.20m) of the SWMF.

Emergency overflow from Wetland 2 is provided with two spill points: one to the southeast (312.0m), over an earthen berm to the wildlife crossing beneath Bismark Drive; the other to the southwest (313.0m), towards Wetland 4 via the wildlife crossing beneath Newman Drive.

The model results demonstrate that the original design of SWMF 2 will be able to provide the intended functions for quantity control without any negative impacts, given additional drainage area from the proposed development.

5.5 Water Balance Analysis

During urban development, the conversion of pervious vegetated areas to impervious surfaces leads to a decrease in evapotranspiration and infiltration volumes, and an increase in runoff volumes. The MESP established that both existing infiltration rates and existing surface water inputs to key natural features were to be maintained in the post-development conditions.

5.5.1 Infiltration

The infiltration strategy identified for the subject lands is an enhancement over the current average annual volumes. As such, lot-level and conveyance controls will be implemented within the development lands to achieve the infiltration targets.

5.5.1.1 Lot-Level Controls

Lot-level infiltration facilities have been designed to accept 25mm of runoff from the contributing roof area, which is assumed to be approximately 43% and 36% of residential and townhouse blocks, respectively, within the catchment area. This equates to approximately 24% of the development. The volume to area relationship modelled in GAWSER assumes a 0.4 void ratio. The facilities are to be oversized by 15% to provide some volumetric infiltration capacity redundancy to allow for a potential loss in performance over time. Runoff is to be directed to the infiltration facilities through direct connection of the roof leaders, wherein each facility will

contain an overflow to the local storm sewer system. Specific details of this configuration will be shown on the lot grading details plans during the final design stage.

Lot-level infiltration galleries located within condominium blocks will likely consist of a series of independent infiltration galleries located within appropriate areas of the site (e.g. pervious areas, under parking lots, etc.). Given the relatively small size of the rear yard areas, the galleries will likely be constructed using a commercial subsurface storage system in order to provide the necessary volumetric efficiency. Runoff will enter the galleries through direct connection of roof leaders. The infiltration galleries are also to be oversized by 15%.

5.5.1.2. Distributed Conveyance Controls

The proposed SWM strategy includes a conveyance infiltration facility (CIF), located within the central park block (Block 16 - Domm) of the proposed development. **Figure 4.2** illustrates the drainage area of the conveyance facility which serves to infiltrate 'non-roof' runoff in order to provide a distributed infiltration balance to meet pre-development levels. The system will incorporate an upstream oil and grit separator to treat stormwater prior to entering the facility. The overflow from the CIF will discharge to the proposed storm sewer system in the subject lands.

The CIF is proposed to infiltrate 20mm of runoff from a 4.28ha drainage area. The facility is to be oversized by 15% to provide some volumetric infiltration capacity redundancy to allow for a potential loss in performance over time. The post-development hydrologic modelling that accompanies this report reflects this design philosophy. The design of CIF will need to meet criteria described in the MOE's 2003 *Stormwater Management Planning and Design Manual*. Specific details of the design will be provided during the final design stage.

As can be seen from the continuous GAWSER modelling and summary water balance tables contained in **Appendix F**, implementation of the proposed infiltration measures results in an average annual infiltration depth of 262.5mm, which exceeds the pre-development value of 256.4mm.

5.5.2 Surface Water

As described in Section 3.0, an objective of the proposed stormwater management plan is to ensure that the surface water volume inputs into the wetland features surrounding the development are maintained.

5.5.2.1. Wetland 2

Wetland 2 (hydrograph 5312) is located within the Cachet Subdivision, adjacent to SWMF 2, and receives a pre-development runoff volume of 23,800m³ (MESP, 2013). In the post-development condition, Wetland 2 receives a direct runoff volume of 6,442m³, which is supplemented by directing clean roof water year-round via a RWCS, to achieve an annual post-development runoff volume of 24,569m³. Refer to **Appendix F** for the detailed water balance assessment. The roof areas that drain to Wetland 2 are illustrated in **Figure 4.2**.

Wetland 2 primarily receives surface balance inputs from the contributing roof areas, rather than runoff from SWMF 2. All SWMF 2 discharge up to and including the 5-year storm event, which would include all winter month melts and events, outlets to the Princess Street storm sewer. In this manner, SWMF 2 has an inherent wetland winter bypass, which functions passively, avoiding ecological impacts associated with chloride loading.

5.5.2.2. Wetland 3

Wetland 3 (hydrograph 1402) is located south of the subject lands and receives a pre-development runoff volume of 37,300m³. In the post-development condition, it receives post-development non-winter runoff from Facility 1 outlet totaling 6,860m³, runoff from the undeveloped buffer (catchment 402), proposed Blenheim Road, and the rear yard/roof areas of the subject land (catchment 712) for a total post-development runoff volume of 38,920m³ - a small (4%) surface water runoff surplus. Refer to **Appendix F** for the detailed water balance assessment.

5.5.2.3. Wetland 4 and 5

Wetlands 4 and 5 (hydrograph 1405), which are hydraulically connected, are located west of the subject lands and receive a pre-development runoff volume of 55,000m³. In the post-development condition, they receive surface water input from the undeveloped buffer and the rear yard/roof areas of the subject lands (catchments 708 and 712) for a total post-development runoff volume of 55,708m³. Refer to **Appendix F** for the detailed water balance assessment.

5.5.2.4. West Wetland (VP1)

This wetland was identified as Vernal Pond 1 (WSP, 2016) and is located northwest of the subject lands and ultimately contributes to Cruickston Creek. It receives a pre-development runoff volume of 3,802m³. In the post-development condition, it receives surface water input from the undeveloped lands and buffer to the west of the subject lands, and the rear yard/roof areas of the development, for a total post-development runoff volume of 3,882m³ (a slight increase of approximately 2%). Refer to **Appendix F** for the detailed water balance assessment and **Figure F1** for the catchment delineation of VP1.

5.5.2.5. East Wetland (VP7)

This wetland was identified as Vernal Pond 7 (WSP, 2016) and is located north of the subject lands and ultimately contributes to Cruickston Creek. It receives a pre-development runoff volume of 9,135m³. In the post-development condition, it receives surface water input from the undeveloped lands and buffer to the north of the subject lands, the rear yard/roof areas of the adjacent lots, and additional roof drainage collected through a third-pipe system within the development. A total of 9,535m³ of post-development runoff will be contributed to this wetland (a slight increase of less than 4%), as illustrated in **Figure 4.2**. Refer to **Appendix F** for the detailed water balance assessment and **Figure F1** for the catchment delineation of VP7.

5.5.2.6. Cruickston Creek

Cruickston Creek downstream of the proposed development area (hydrograph 1110) receives a pre-development runoff volume of 46,300m³ via diffuse drainage through the surrounding 'hogsback' swamp into a channel toward the north end of that feature. It receives a total post-development runoff volume of 46,300m³, matching pre-development. Refer to **Appendix F** for the detailed water balance assessment.

5.5.3 Roofwater Distribution Strategy

Clean roofwater is primarily used to maintain year-round surface water inputs to the numerous wetlands surrounding the subject lands as illustrated in **Figure 4.2**. Specific roof areas have been assigned to contribute to each wetland as shown in **Table 5.3**. This roofwater will be conveyed to each wetland either via overland flow (those directly adjacent) or via a proposed RWCS. Downspouts will be directly connected to the RWCS network via individual separate

storm sewer connections. All remaining residential blocks will have lot-level infiltration galleries that will infiltrate clean roof water as described in Section 5.5.1.1.

Table 5.3 – Wetland Water Balance Mitigation

Wetland	Designated Roof Area within Subject Lands (ha)	Conveyance Route
Wetland 2	1.54	RWCS
Wetland 3	0.13	Overland
Wetland 4/5	0.95	Overland
West Wetland (VP 1)	0.03	Overland
East Wetland (VP7)	1.05	RWCS/Overland

5.6 Block Level Stormwater Management Approach

The proposed Plan of Subdivision for the subject lands contain one block that will be developed through a Site Plan Approval process. As part of that process, a SWM Brief will be prepared identifying the stormwater management criteria for the block and how the stormwater control measures will adhere to the Subdivision SWM criteria as established in this report. To facilitate this process, the following summarizes the overall approach for stormwater management for the blocks within the plan.

Water Quality Control

- Criteria - Provide an Enhanced level of stormwater quality control.
- *Stormwater Management Strategy - This has been provided by Stormwater Management Facility 2 within the Cachet Subdivision.*

Water Quantity

- Criteria - Control peak flow rates to creek systems to existing levels, to minimize flooding and preserve hydraulic and hydrologic functions.
- *Stormwater Management Strategy - This has been provided by Stormwater Management Facility 2 within the Cachet Subdivision.*

Water Balance

- Criteria - Infiltration – maintain or enhance existing recharge rates across the development area.
- *Stormwater Management Strategy - The infiltration galleries should be designed to accept 25mm of runoff from the contributing roof area (except for area designated to drain to wetlands). These facilities are to be oversized by 15% to provide some volumetric and infiltration capacity redundancy to allow for potential loss in performance over time. Runoff is to be directed to the infiltration facilities through direct connection of the roof leaders, and each facility should contain overflows to the storm sewer system. The infiltration facilities are to be situated to have a minimum 1.0m separation to high groundwater.*
- Criteria - Surface Water – Maintain existing surface water volume and hydro-period inputs into significant environmental features.
- *Stormwater Management Strategy - Reserved sufficient rear yard/roof areas to provide drainage to maintain surface water inputs to surrounding wetlands.*

6.0 CHLORIDE IMPACT ASSESSMENT

A Chloride Impact Assessment was prepared for the subject lands and includes the calculation of the loading of salt from de-icing operations to groundwater so as to ensure that groundwater chloride concentrations will remain within Reasonable Use Guidelines established by the Ministry of Environments, Conservation and Parks (MECP), previously referred to as the MOE.

6.1 Reasonable Use Concept

The assessment of road salt and its implications on groundwater can be made by estimating total chloride levels and comparing the estimated value with specific target criteria for chloride concentrations. Although the Region has yet to establish groundwater quality criterion for chlorides, the Ontario Drinking Water Standard (ODWS) for chloride of 250mg/L generally defines the upper limit of acceptability. In recent years, the MECP's Reasonable Use Concept (RUC) has been adopted for various studies conducted in the Region to assess the impact of road salt on groundwater quality, per the Region's document entitled *Draft Protocol for Evaluating Road Salt Impacts to Groundwater Using the Reasonable Use Concept*, dated January, 2008.

The RUC establishes limits for the allowable concentrations of contaminants based on background groundwater quality and the reasonable use of groundwater on adjacent property. The limits are set such that there would not be any significant effect on the use of the groundwater on the adjacent property. Since the reasonable use of groundwater is commonly drinking water, the Reasonable Use limits are typically set on this basis. As a result, the quality of groundwater may not be degraded by an amount in excess of:

- 50% of the difference between background¹ and the Ontario Drinking Water Objectives for non-health related parameters (e.g. chloride); or
- 25% of the difference between background and the Ontario Drinking Water Objectives for health related parameters (e.g. lead).

The Reasonable Use Concept has been incorporated in Regulation 232/98. The Reasonable Use requirements have been included directly as performance specifications for the site specific design approach. In cases where the reasonable use of groundwater is other than drinking water, for example where background groundwater quality is poor, the RUC guideline allows alternative concentration limits to be set. These alternative limits would be determined on a case-by-case basis.

Given the ODWS for chloride is 250mg/L and the background chloride concentration in the groundwater is approximately 2.5mg/L, the RUC maximum concentration of chloride in groundwater for the site should not exceed 126mg/L.

¹ For the development-scale assessment, the background level would be the concentration in the groundwater prior to anthropogenic impacts (2.5mg/L). (*Draft Protocol for Evaluating Road Salt Impacts to Groundwater Using the Reasonable Use Concept*. Region of Waterloo, DOCs:409317, Version 1.0 January 2008)

6.2 Chloride Impact – Mass Balance Analysis

In an effort to quantify potential winter salt application impacts (chloride) to the existing groundwater quality, a conservative mass balance analysis was completed. Both municipal roads and private parking areas within multi-residential blocks have been included in this analysis. The road lengths used in the analysis are based on the Draft Plans. The area of the private parking (for all hard surfaces; such as asphalt surfaces and concrete sidewalks) for the purposes of calculating total annual salt weight (in tonnes) has been based on overall conceptual site plans.

This mass balance approach, although basic, is considered a conservative evaluation since it does not include any dilution from groundwater already present in the system, any flow through dilution effects, or any off-site effects. All of these effects would result in additional dilution of the chloride concentrations. The salt application rates used in the analysis do not include the expected 25% reduction in average salt application rates for municipal roads and the Best Management Practices recommended in previous studies for the Region. The annual salt application rate for private parking areas was suggested by Regional staff based on recent studies/analysis completed. The results of the salt application analysis are summarized in **Table 6.1** and detailed in **Appendix G**.

Table 6.1 – Impact of Road Salt on Groundwater Chloride Levels

Chloride Calculations	Local Road	Local Road to CIF	Private Parking Areas to CIF	Private Parking Areas
Lengths of Roads in subdivisions (km)	2.26	0.79	0.00ha	0.00ha
Annual Salt Application Rate (tonnes/2 lane-km)	1	1	15 tonnes/ha	15 tonnes/ha
Total Salt Applied (tonnes/year)	2.26	0.79	0.00	0.00
Total Estimated Infiltration Volume	66,500m ³			
Infiltration Rate into Subsurface	28% for Roads and 10% for Private Parking Areas 100% for CIF (Conveyance Infiltration Facility) Contributions			
Weight of Salt Infiltrating (Annual)	3.05tonnes			
Additional Chloride Input to Groundwater	13mg/L			

6.3 Mitigation Measures

The estimated post-development groundwater chloride concentration of 13mg/L is below the corresponding RUC limits of 126mg/L. As a best management practice, Salt Management Plans for the multiple residential block should be completed to address potential groundwater quality impacts relate to winter de-icing operations.

6.3.1 Salt Management Plans

For the multiple residential block within the subject lands, it is likely that snow removal and ice control will be undertaken by a private winter maintenance service provider. As such, it is recommended that a site specific Salt Management Plan be implemented as part of the future development of these sites. The purpose of the Salt Management Plan will be to reduce the impact of all winter maintenance activities involving salting practices on the surface water and groundwater resources. The Salt Management Plan should outline operational practices and strategies for three main areas of concern: general salt use, salt storage, and snow storage/disposal. With respect to snow storage, it is

recommended that the snow be stored on impervious surfaces that are connected to a storm sewer system, to prevent chloride impacted water from infiltrating directly into the groundwater system.

7.0 MONITORING PROGRAM

7.1 Historical Monitoring (MESP)

A comprehensive monitoring program was developed as part of the MESP study, including hydrological, groundwater, and biological components. The monitoring completed by MTE for the MESP included the following: climate monitoring (weather station), stream temperature monitoring, water quality (wetland and stream) sampling, wetland water level monitoring, baseflow rate sampling, continuous streamflow rate monitoring, and ambient air temperature monitoring. For additional details of the biological monitoring, refer to MMM Group's *Natural Environment Study* (NES) (Section 9) within the MESP.

The During-Development Monitoring Program specified herein was generated by recommended monitoring components within *Section 9.3.1.9* of the MESP (NES), which specified that final monitoring programs be verified at the Draft Plan of Subdivision application stage and undertaken by the developer.

7.2 During-Development Monitoring Program

In accordance with the recommendations of the MESP, a development monitoring program was developed through subsequent meetings with relevant agencies (GRCA, City, Region of Waterloo) and implemented as documented in *Section 7.0* of MTE's *Final Stormwater Management Report* (April, 2020). The During-Development Monitoring Program associated with the subject lands is divided into three components:

- Pre-Construction
- During-Construction
- Post-Construction

Table E.1 of the Final Stormwater Management Report summarizes the various components of the monitoring program along with specific locations, parameters, frequency, and status. It has been updated to only include monitoring associated with the subject lands, as shown in **Table 7.1**. **Figure 7.1** illustrates the pre-construction surface and groundwater monitoring locations, and **Figure 7.2** illustrates the proposed during and post-construction surface and groundwater monitoring locations.

The following section documents the During-Development Monitoring program as it relates to the subject lands.

7.2.1 Pre-Construction Monitoring Program

This stage of the monitoring program is intended to establish the detailed site background conditions and baseline data, prior to area grading. This information will facilitate comparison with conditions in the during- and post-construction periods, and allow for an evaluation of mitigative measures, if necessary.

The pre-construction monitoring includes the following parameters:

- **Groundwater** – monitoring will include water levels (continuous via datalogger) and annual general chemistry.

- **Wetland** – monitoring will include water levels, temperature and quality sampling within Wetland 2, 3, 4, and 5.

7.2.2 During-Construction Monitoring Program

This stage will begin at the start of the subdivision area grading and continue until 90% build-out of the subdivision. The purpose of the during-construction monitoring is to ensure that the stormwater management measures are functioning as intended, and to monitor the effectiveness of ESC measures.

The during-construction monitoring program will include all the components of the pre-construction monitoring program, with the addition of the following components:

- **Stormwater Management Facility (SWMF)** – assess facility compliance with stormwater management objectives based on the following indicators:
 - Water quality monitoring (grab samples) is conducted seasonally (spring, summer, fall) at the SWMF forebays and outlet structure following storm events.
 - Water level monitoring is conducted at the facility outlet via continuous datalogger (seasonal manual measurements) from April to November. Note that logger installation/removal varies depending on weather conditions and presence of ice in/around the SWMF.
- **Erosion and Sediment Control** – per ESC plans to be prepared during detailed design.

7.2.3 Post-Construction Monitoring Program

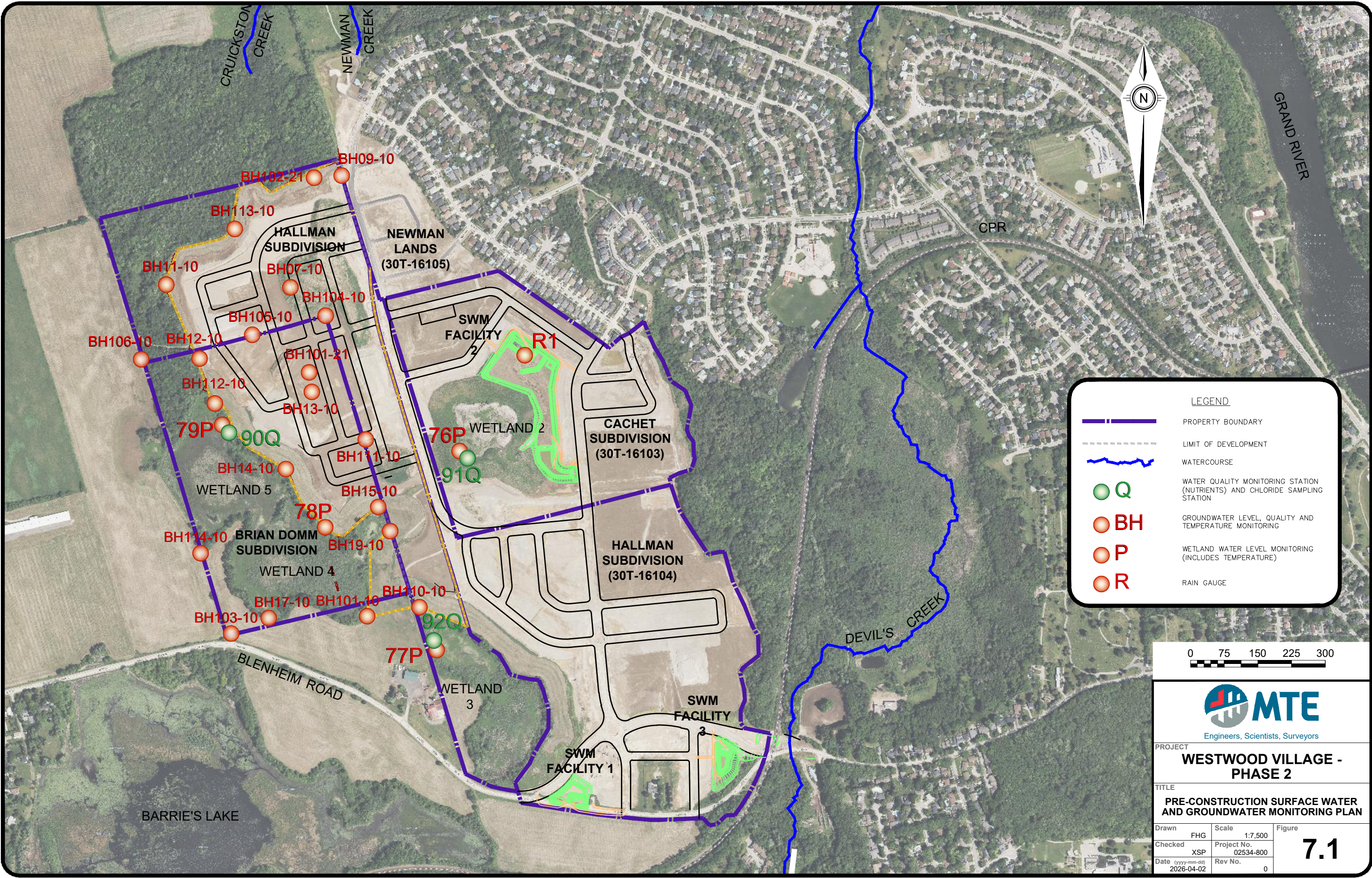
This period of monitoring will begin following 90% build-out of the subdivision (buildings are constructed, lots are sodded/landscaped, open spaces are stabilized) and cleanout of the SWMF forebay and wetland. The purpose of this stage of monitoring is to ensure that the SWMF continues to operate as designed. The post-construction monitoring period will extend for a 2-year period and will include all the components of the pre- and during-construction monitoring programs.

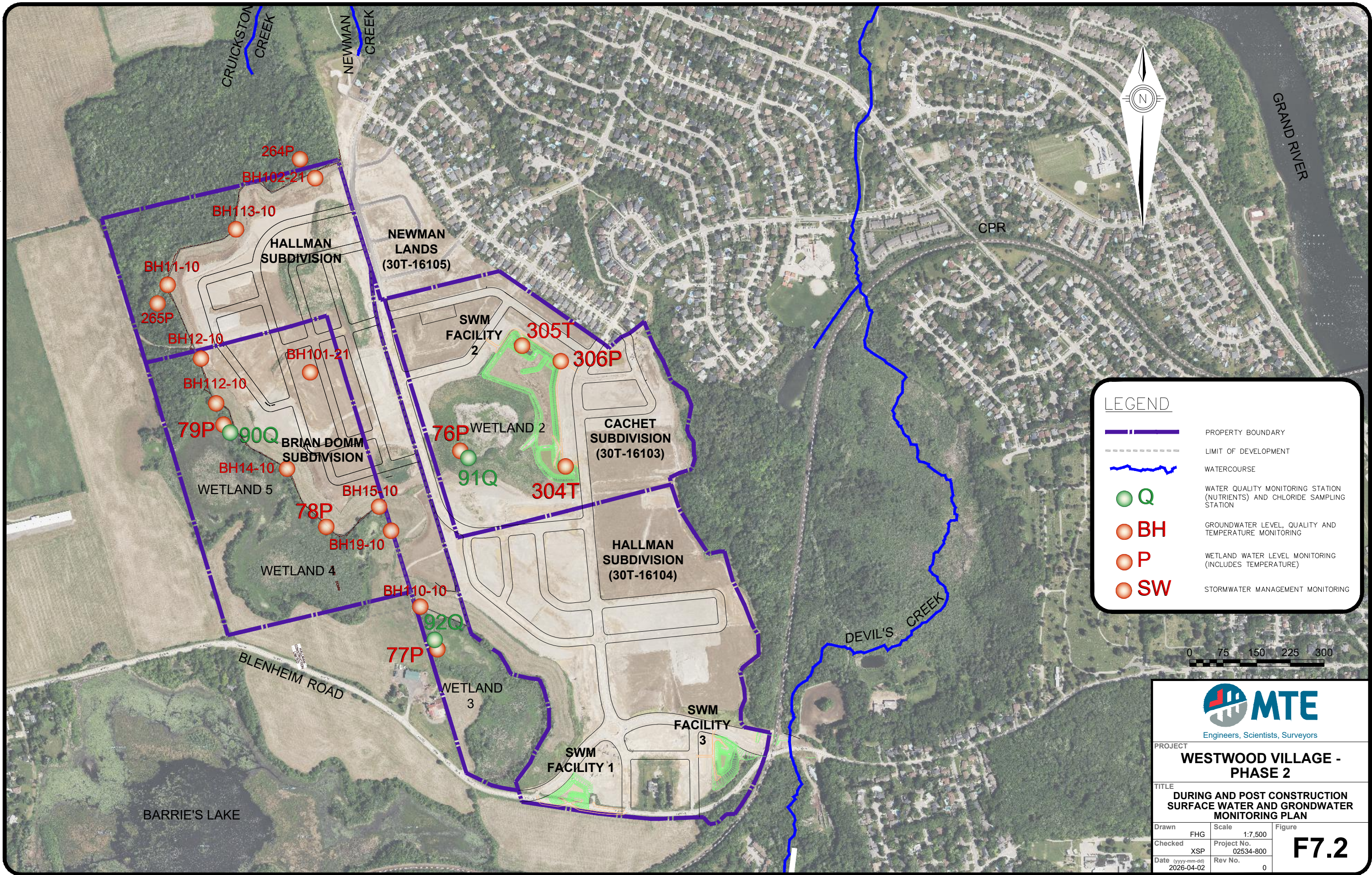
It is recommended that, following completion of the developer's portion of the post-construction monitoring program and assumption of the SWM infrastructure by the City, the City continues with a post-construction inspection and maintenance program to ensure the long-term effectiveness of the proposed SWM infrastructure.

TABLE 7.1 DURING-DEVELOPMENT SURFACE AND GROUNDWATER MONITORING PROGRAM-WESTWOOD VILLAGE COMMUNITY (PHASE 2)

Monitoring Component	Type of Monitoring	Development Phase	Sampling Frequency	Location(s)	Methodology / Timing
SWM Facilities	Water Temperature and Levels	During/Post-Construction	Continuous (30 minute interval)	SW3 (305T), SW4 (304T), SW5 (306P) - Forebays and Outlet of SWMF2	Water temperatures will be continuously measured with recordings taken every 30 minutes. Water levels will be measured continuously at facility outlet(s) to monitoring drawdown and general facility performance.
	Water Quality	During/Post-Construction	Seasonal (winter, spring, summer, fall)	304Q, 305Q, 306Q - Forebays and Outlet of SWMF2	Grab samples will be taken once per season following storm events and tested for TSS and Chloride in a laboratory.
Wetland Features	Water Quality	All	3-4x per year (one base sample per season)	Wetland 2 (91Q), Wetland 3 (92Q), and Wetland 4 (90Q)	Grab samples will be taken 3-4 times per year (once per season) under base flow conditions. Samples will be analyzed for dissolved chlorides, TKN, and total phosphorous in a laboratory.
	Water Temperature	All	Continuous (6 hour interval)	Wetland 2 (76P), Wetland 3 (77P), Wetland 4 (78P), Wetland 5 (79P)	Water temperatures will be continuously measured with recordings taken every 6 hours.
	Water Levels	All	Continuous (6 hour interval)	Wetland 2 (76P), Wetland 3 (77P), Wetland 4 (78P), Wetland 5 (79P), Vernal Pool 1 (264P), Vernal Pool 7 (265P)	Water levels will be continuously measured with recordings taken every 6 hours.
Groundwater	Water Levels	Pre-Construction	4x per year	On site monitoring wells BH06-10, BH11-10, BH12-10, BH14-10, BH15-10, BH16-10, BH19-10, BH112-10, MW101-21, MW102-21	Monitored on a quarterly basis (manual water level measurements or with dataloggers) for two continuous years within seven years of commencement of grading activities in a phase.
		During/Post-Construction	4x per year	On site monitoring wells BH06-10, BH11-10, BH12-10, BH14-10, BH15-10, BH16-10, BH19-10, BH112-10, MW101-21, MW102-21	Monitored on a quarterly basis (manual water level measurements or with dataloggers). It is recognized that as development of a Phase progresses, some monitoring wells and mini piezometers will be decommissioned (per O. Reg. 903) due to their locations.
	Chemistry	Pre-Construction	1x per year	On site monitoring wells BH11-10, BH14-10, BH15-10, BH19-10, BH112-10, MW101-21, MW102-21	Sampled on an annual basis and analyzed for general chemistry parameters (Metals, Anions, etc.).
		During/Post-Construction	1x per year	On site monitoring wells BH11-10, BH14-10, BH15-10, BH19-10, BH112-10, MW101-21, MW102-21	Sampled on an annual basis and analyzed for general chemistry parameters (Metals, Anions, etc.). Additionally, it is recognized that as development progresses, some monitoring wells will be decommissioned (as per O. Reg. 903) due to their locations.
Biological	Brook Trout	All		Refer to <i>Environmental Impact Study</i> (MMM, February 2016) for details.	
	Vegetation	All		Refer to <i>Environmental Impact Study</i> (MMM, February 2016) for details.	
	Avifauna	All		Refer to <i>Environmental Impact Study</i> (MMM, February 2016) for details.	
	Herpetofauna	All		Refer to <i>Environmental Impact Study</i> (MMM, February 2016) for details.	
	Wildlife Passage	During/Post-Construction		Refer to <i>Environmental Impact Study</i> (MMM, February 2016) for details.	
	Buffer Integrity and Functioning	Post-Construction		Refer to <i>Environmental Impact Study</i> (MMM, February 2016) for details.	

<https://mte85.sharepoint.com/sites/02534-800/Shared Documents/02 - Reports/MTE Reports/SWM/Table 7.1 Monitoring Program.xlsx>





LEGEND

- PROPERTY BOUNDARY
- LIMIT OF DEVELOPMENT
- WATERCOURSE
- WATER QUALITY MONITORING STATION (NUTRIENTS) AND CHLORIDE SAMPLING STATION (Q)
- GROUNDWATER LEVEL, QUALITY AND TEMPERATURE MONITORING (BH)
- WETLAND WATER LEVEL MONITORING (INCLUDES TEMPERATURE) (P)
- STORMWATER MANAGEMENT MONITORING (SW)



MTE
Engineers, Scientists, Surveyors

PROJECT
WESTWOOD VILLAGE - PHASE 2

TITLE
DURING AND POST CONSTRUCTION SURFACE WATER AND GROUNDWATER MONITORING PLAN

Drawn	FHG	Scale	1:7,500	Figure F7.2
Checked	XSP	Project No.	02534-800	
Date (yyyy-mm-dd)	2026-04-02	Rev No.	0	

8.0 EROSION AND SEDIMENT CONTROL MEASURES

Precautions will be taken during all stages of construction to limit erosion and sedimentation. The erosion and sediment control plans will follow the *Erosion and Sediment Control Guide for Urban Construction* (STEP, 2019) document. The plans will illustrate the erosion and sediment control measures to be implemented during construction, which will limit impacts associated with site development.

Typically, the recommended construction sequence for erosion and sediment control measures will be as follows:

- Placement of all sediment control fencing where required.
- Stripping and strategic placement of topsoil stockpiles. Placement of sediment control fencing around all stockpile areas.
- Construction of temporary sediment control ponds which will serve as sedimentation basins for the site during construction.
- Construction of temporary swales to direct runoff to sedimentation basins, with rock check dams as required to control velocities; and
- Re-vegetation of completed areas as soon as possible after construction, including those areas not slated for construction within 30 days.

Where rock check dams are proposed to promote sedimentation and reduce velocities, clean aggregate is to be placed perpendicular to the direction of flow in the swale, with a small volume of excavation on the upstream side to provide storage for accumulated sediment.

Sediment control fencing shall consist of filter fabric attached to page wire fencing and sealed at ground level. It will be installed at the perimeter of the work areas and intermittently on sloped areas where required. Sediment control fencing will be placed around all topsoil stockpiles.

Storage consistent with the GRCA's requirement of 125m³/ha of live and dead storage respectively (total 250m³/ha), will be provided. This storage will be provided to ensure that suspended material will have ample time to settle out. In addition, the sediment basin will be sized with sufficient capacity to allow flows to pass without breaching. Once the active construction and grading activities have been completed, the sedimentation basins can be cleaned out.

Access to topsoil or fill storage areas will be located on the upstream side of storage piles. This practice will ensure continuity of the sediment control fencing in the downslope direction which is most vulnerable to erosion and sediment deposition.

It is recommended that during construction, monitoring and inspection of the erosion and sediment controls be conducted to ensure the satisfactory performance of these measures. Reporting of the inspection and monitoring results should be distributed to the City of Cambridge and the GRCA. If it is found that the erosion and sediment control measures are not working adequately, they shall be augmented to the satisfaction of the City and the GRCA, based on field decisions.

9.0 CONCLUSIONS AND RECOMMENDATIONS

Based on the foregoing analysis, it is concluded that:

1. The stormwater management strategy outlined herein will provide appropriate levels of quality, quantity, and water balance controls to meet the criteria set out for the subject lands, as documented in the *Cambridge West Community, Master Environmental Servicing Plan*, MTE Consultants Inc., November, 2013 and the *Cambridge West Community Westwood Village - Final Stormwater Management Report* (MTE, April 15, 2020).
2. 'Enhanced' quality control of stormwater runoff can be provided by Stormwater Management Facility 2 (SWMF 2) within the Cachet Subdivision (30T-16103).
3. Quantity control of stormwater runoff can also be achieved by SWMF 2.
4. No revisions/modifications are required to the original design of SWMF 2 as a result of the additional drainage area being directed to this facility.
5. Infiltration targets can be satisfactorily met through the use of the prescribed lot-level and conveyance infiltration controls, as recommended within this report.
6. Surface water inputs to existing wetlands and other environmental features will be maintained in the post-development condition.
7. Implementing erosion and sediment controls during construction will minimize any negative impacts of construction activities on the adjacent properties and the receiving watercourse.
8. Based on a simple conservative mass balance analysis, the expected average post-development groundwater chloride concentration of 13mg/L is below the Ontario Drinking Water Standard of 250mg/L and the Reasonable Use Concept limit of 126mg/L.

The findings of this report, and the above conclusions, lead to the following recommendations:

1. That the preliminary design and modelling of the proposed stormwater management measures for the development be reviewed and re-confirmed at the time of final design.
2. That the infiltration and surface water balance, as calculated in this report, be reviewed and re-confirmed during final design.
3. That sediment and erosion controls be implemented during construction as described in Section 8.0 of this report.
4. That Salt Management plans be prepared for multiple residential blocks within the subject lands.

All of which is respectfully submitted,
MTE Consultants Inc.



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https://mte85.sharepoint.com/sites/02534-800/Shared Documents/02 - Reports/MTE Reports/SWM/02534-800_rpt_2026-04-02_Preliminary SWM Report.docx

Appendix A

Draft Plan of Subdivision (Consolidated)

CONSOLIDATED
DRAFT PLANS OF SUBDIVISION

LEGAL DESCRIPTION

PART OF LOTS 13 AND 14, CONCESSION 11
PART OF LOTS 17 AND 18, CONCESSION 12
AND PART OF ROAD ALLOWANCE BETWEEN CONCESSIONS 11 & 12
TOWNSHIP OF NORTH DUMFRIES
REGIONAL MUNICIPALITY OF WATERLOO

OWNER'S CERTIFICATE

I HEREBY AUTHORIZE MACNAUGHTON HERMSEN BRITTON CLARKSON PLANNING LIMITED
TO SUBMIT THIS PLAN FOR APPROVAL.

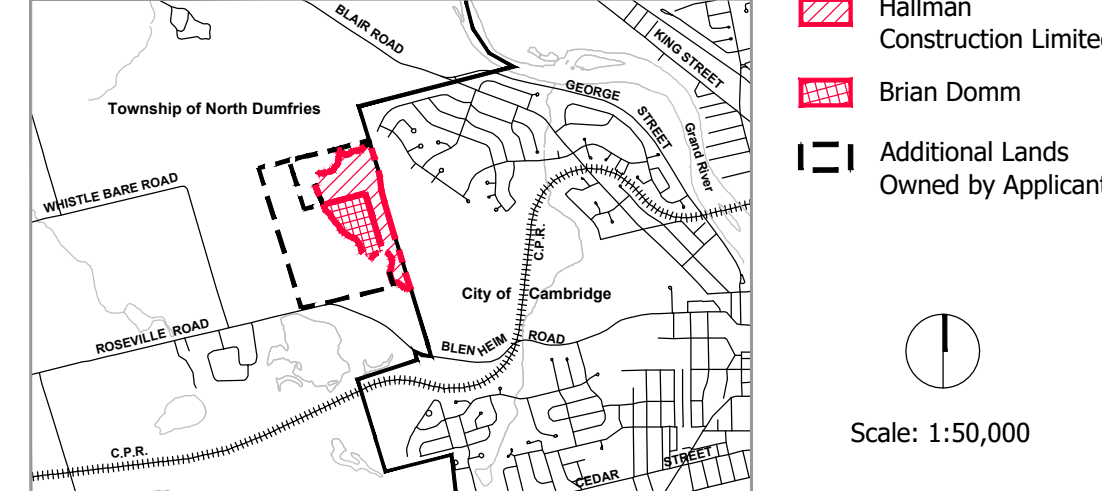
Date: _____ Paul Grespan, Authorized Signing Officer
(Hallman Construction Limited)

SURVEYOR'S CERTIFICATE

I HEREBY CERTIFY THAT THE BOUNDARIES OF THE LAND TO BE SUBDIVIDED ON THIS
PLAN AND THEIR RELATIONSHIP TO THE ADJACENT LANDS ARE ACCURATELY AND
CORRECTLY SHOWN.

Date: _____ Trevor D.A. McNeil, Surveyor, O.L.S.
MTE OLS LTD.

KEY PLAN



ADDITIONAL INFORMATION

Required Under Section 51 (17) of the Planning Act, R.S.O., 1990, c.P.13 as Amended

(a) As Shown	(e) As Shown	(i) Loam
(b) As Shown	(f) As Shown	(j) As Shown
(c) As Shown	(g) As Shown	(k) All Services as Required
(d) Residential, Multiple Residential,	(h) Municipal Water Supply	(l) As Shown

Park, Open Space, Wildlife Corridor

AREA SCHEDULE - Hallman Construction Limited		30T-	
DESCRIPTION	LOTS/BLOCKS	UNITS	AREA
Low Density Residential	1-18	263-369	10.552 ha
Low Density Residential (Consolidation Block)	19,20	26-43	0.644 ha
Multiple Residential	21	125-165	1.852 ha
Park	22		0.339 ha
Open Space	23-25		2.490 ha
Wildlife Corridor	26		0.245 ha
0.3m Reserve	27-32		0.006 ha
Roads			3.309 ha
Total	32	414-577	19.437 ha

AREA SCHEDULE - Brian Domm		30T-	
DESCRIPTION	LOTS/BLOCKS	UNITS	AREA
Low Density Residential	1-14	144-207	5.336 ha
Low Density Residential (Consolidation Block)	15,16		0.121 ha
Multiple Residential (Consolidation Block)*	17	60-75*	0.122 ha
Park	18		0.662 ha
Open Space	19,20		3.680 ha
Roads			2.144 ha
Total	20	204-282	12.065 ha

AREA SCHEDULE - Total	LOTS/BLOCKS	UNITS	AREA
Low Density Residential	32	407-576	15.888 ha
Low Density Residential (Consolidation Block)	4	26-43	0.765 ha
Multiple Residential	1	125-165	1.852 ha
Multiple Residential (Consolidation Block)*	1	60-75*	0.122 ha
Park	2		1.001 ha
Open Space	5		6.170 ha
Wildlife Corridor	1		0.245 ha
0.3m Reserve	6		0.006 ha
Roads			5.453 ha
Total	52	618-859	31.502 ha

*Due to multiple block configuration/size, some of the multiple residential units on the Domm
Draft Plan of Subdivision are accounted for on the adjacent Hallman Draft Plan of Subdivision

NOTES

- All dimensions are in metres unless otherwise shown.
- Topographic Survey Base prepared by MTE.
- Boundary information prepared by MTE (Plan 58R-22341 dated August 6, 2025)
- Dripline and Wetland Limits provided by WSP.

Revision No.	Date	Issued / Revision	By

Stamp	Date	March 25, 2026
	File No.	0800C
	Plan Scale	1:1,250 (30 x 36)
	Drawn By	D.G.S./SP
Checked By	D.A.	

Project	WESTWOOD PHASE 2 Applicant: Hallman Construction Limited 539 Riverbend Drive Kitchener, Ontario	
File Name	DRAFT PLAN OF SUBDIVISION	

Scale Bar	0 10 25 50 75 100	Dwg No.	1 of 1
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K:\0800C-Gatehouse Developments-North Dumfries Lands\DP\Westwood\ Consolidated Draft Plan 23March2026.dwg



PLANNING
URBAN DESIGN
& LANDSCAPE
ARCHITECTURE

Appendix B

Hydrologic Parameters & SWM Design Sheets

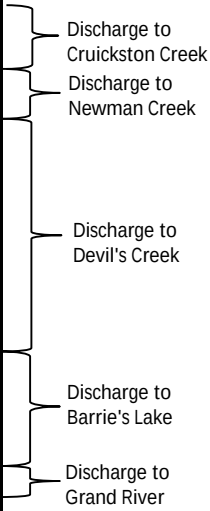
WESTWOOD VILLAGE PHASE 2
PREMINARY STORMWATER MANAGEMENT DESIGN
City of Cambridge, Ontario



Project Number: 02534-800
Date: April 1, 2026
Design By: JNJ/XSP
File: Q:\02534\800\SWM\02534-800 SWM Design 2026 March.xlsx

HYDROLOGIC PARAMETERS
Pre-Development Conditions

Sub-Catchment Number	Area	Overland Slope	Overland Length	SCS Curve Number		Percent Impervious	Land Use	Comment
	(ha)	(%)	(m)	Pervious (AMC II)	Impervious	(%)		
101	0.07	Parameters defined in Cambridge West Community MESP Report, completed by MTE Consultants, November 2013.		70	98	35	Crop Field, Residential	Existing lands northwest of development
104	2.82						Crop Field, Residential	Existing lands northwest of development
105	16.40						Crop Field, Residential	Existing lands northwest of development
201	8.07						Crop Field, Residential	Existing lands north of development
202	10.84						Crop Field, Residential	Existing lands north of development
303	32.16	4.0	80	70	98	6	Crop Field, Residential	Existing lands southeast of development
305	0.65						Crop Field, Residential	Southeast Corner below Blenheim Road
306	4.39						Crop Field, Residential	Southeast Corner below Blenheim Road
308	6.30						Crop Field, Residential	Southeast Corner above Blenheim Road
309	1.64						Crop Field, Residential	Southeast Corner above Blenheim Road
311	47.93	24.2	120	70	98	0	Crop Field, Residential	Existing lands east of development
312	31.80						Crop Field, Residential	Central Area to Wetland #2
313	9.85						Crop Field	Eastern side of property & limit of grading
315	4.92						Crop Field	Northeast corner to Bismark
316	21.20						Crop Field, Residential	Existing lands northeast of development
401	2.34						Crop Field	Southern area to Small Wetland north of Blenheim
							Crop Field	Western area to Wetland #3
							Crop Field	Western area to Wetland #4
							Crop Field	Western area to Barrie's Lake
							Crop Field	Northernwestern area, Domm Lane
501	2.07					20	Crop Field	Existing lands northeast of development
Total	234.13							



Post-Development Conditions

Sub-Catchment Number	Area	Overland Slope	Overland Length	SCS Curve Number		Percent Impervious	Land Use	Comment
	(ha)	(%)	(m)	Pervious (AMC II)	Impervious			
						(%)		
701	8.81	0.5	60	70	98	58	Residential, Wetland, Park, SWM Facility	Northern portion of property to Central SWM Facility
702	25.18	0.5	60	70	98	60	Residential, Wetland, Park, School, Commercial, SWM Facility	Central portion of property to Central SWM Facility
7021	2.70	2.0	60	70	98	38	School	Northern portion of property to Central SWM Facility (Minor Storms)
703	3.06	2.0	60	70	98	63	Residential	Drainage to Grandview SWM Facility
704	3.38	2.0	60	70	98	58	Residential, SWM Facility	Southwestern corner to Southwest SWM Facility
705	0.43	4.0	60	70	98	80	Roadway	Blenheim Road to Southwest SWM Facility
706	4.68	2.0	60	70	98	57	Residential, SWM Facility	Southeastern corner to Devil's Creek SWM Facility
707	0.77	3.0	60	70	98	38	Roadway	Blenheim Road uncontrolled to Devil's Creek (via depression)
708	17.04	1.0	60	70	98	61	Residential, Park	Northwestern external drainage to Central SWM Facility
709	4.46	1.0	60	70	98	60	Residential, SWM Facility	Southern external area to Southwest SWM Facility
710	6.64	1.0	60	70	98	59	Residential, Park	Northeastern external drainage to future Newman Creek Pond
711	2.60	1.0	60	70	98	50	Residential	Northeastern external drainage to future Newman Creek Pond
712	0.98	1.0	60	70	98	54	Residential, SWM Facility	Western external area to future SWM Facility
104	0.18							Existing lands northwest of development
105	3.23							Existing lands northwest of development
1050	0.74							Roof to Cruickston Creek, 0.34ha in 708
201a	6.10	1.0	60	70	98	46		Existing lands north of development
201b	0.29	12.0	35	70	98	0		Existing lands north of development
202	10.43							Existing lands north of development
303	32.16							Existing lands southeast of development
305i	0.56	3.1	90	70	98	0	Crop Field, Residential	Intermediate drainage area.
305	0.15	4.0	80	70	98	0	Crop Field, Residential	Southeast Corner below Blenheim Road
306	4.90	2.0	800	70	98	0	Crop Field, Residential	Southeast Corner below Blenheim Road
308b	0.28	11.8	30	70	98	0	Crop Field	Southeast Corner above Blenheim Road
309b	1.19	26.9	60	70	98	0	Crop Field	Southeast Corner above Blenheim Road
311	47.93							Existing lands east of development
312	5.52							Wetland #2
313	4.92							Eastern side of property & limit of grading
315	1.58							Northeast corner to Bismark
316	21.01							Existing lands northeast of development
402	5.14							Western area to Wetland #3
404	5.23							Western area to Wetland #4
7120	0.95					100		Roof area to Wetland #4
408i	5.53							Intermediate drainage area.
408	1.48							Western area to Barrie's Lake
Total	234.69	Note: the 0.15 ha. additional was previously draining directly to the Grand River (no pre-development catchment assigned)						

IDF PARAMETERS

Region of Waterloo (DGSSMS)

Frequency (Years)	a	b	c	Comment
25mm (4hr)	386	4.0	0.750	
2	582	4.6	0.756	
5	1,395	12.7	0.839	
10	2,146	16.9	0.878	
25	3,509	22.6	0.925	
50	4,620	25.8	0.948	
100	5,886	28.6	0.969	

City of Cambridge

Frequency (Years)	a	b	c	Comment
2	573	5.0	0.761	
5	1,220	10.5	0.823	
10	1,729	14.0	0.849	
25	2,227	17.0	0.865	
50	2,640	19.0	0.866	
100	3,015	21.0	0.870	

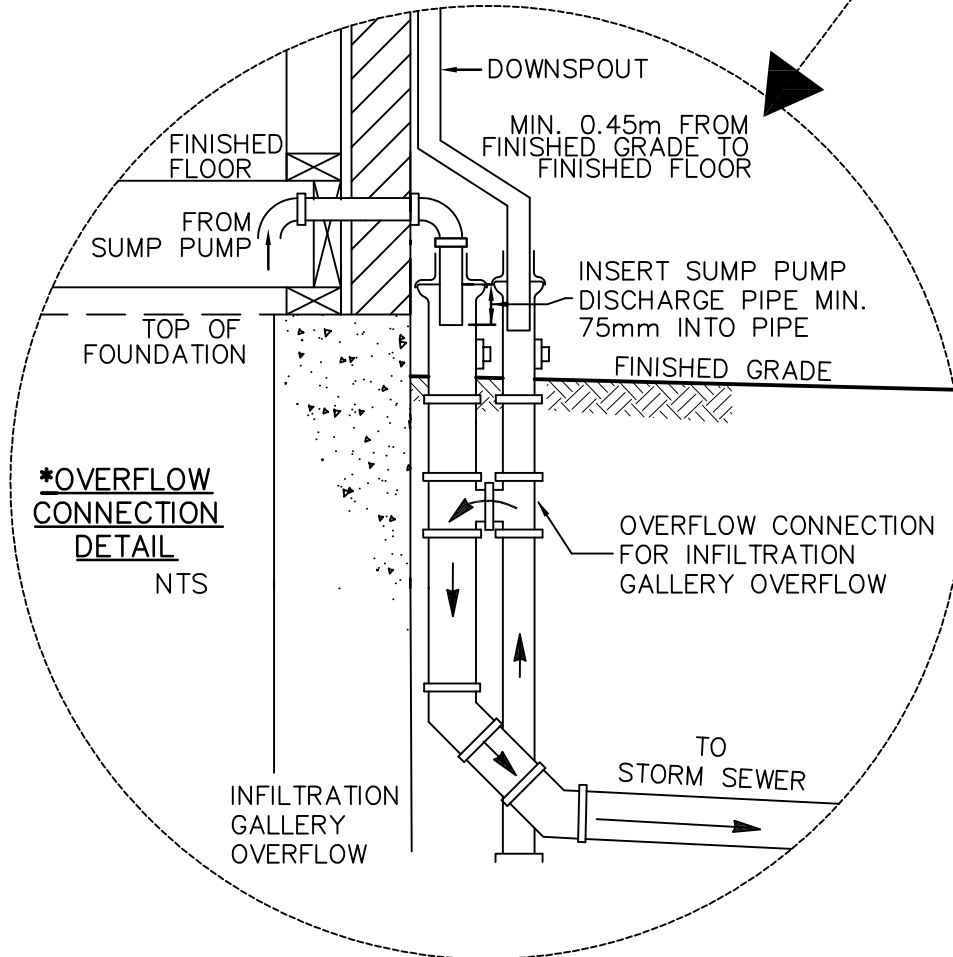
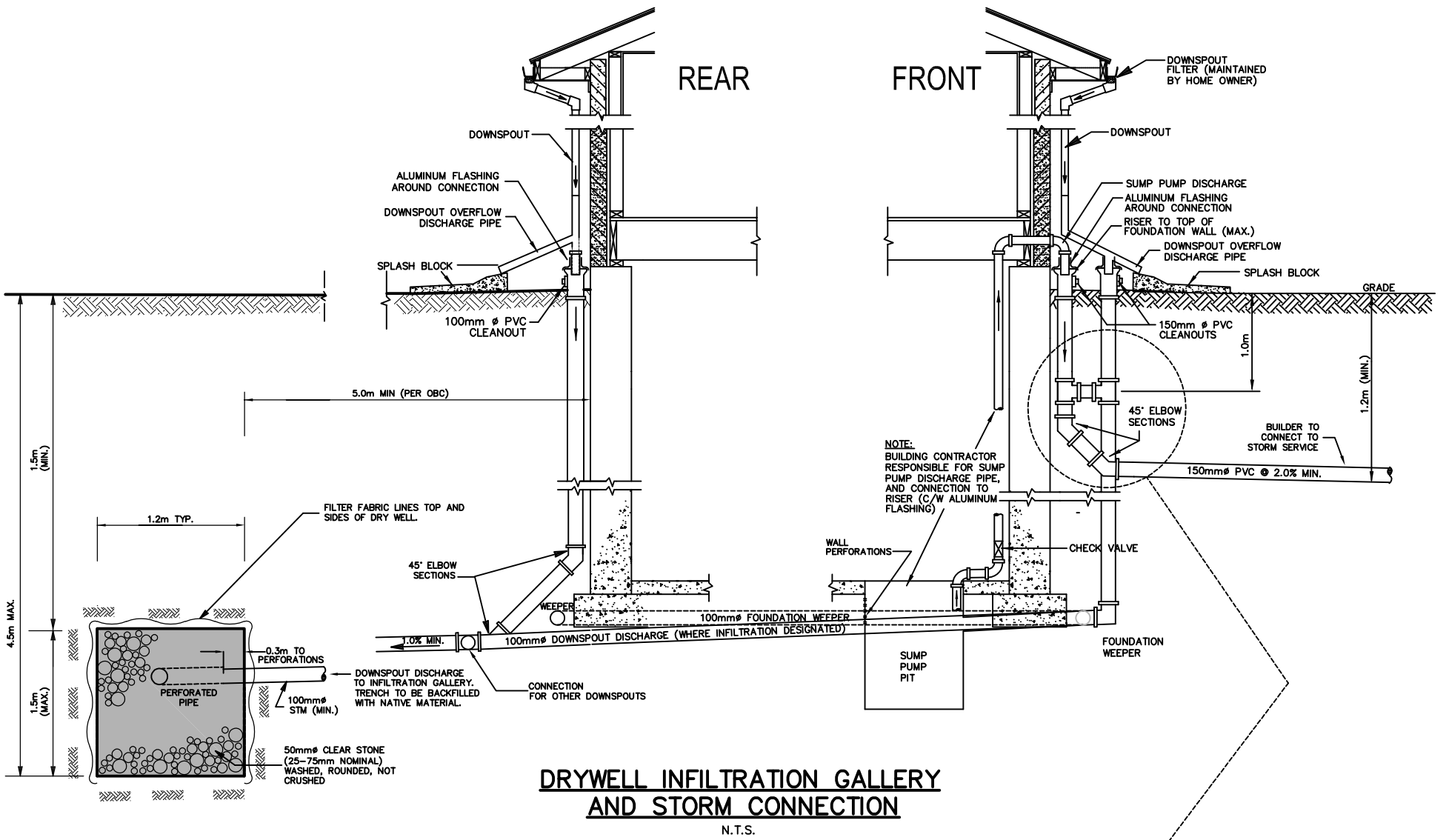
WESTWOOD VILLAGE PHASE 2
PREMINARY STORMWATER MANAGEMENT DESIGN
City of Cambridge, Ontario



Project Number: 02534-800
Date: April 1, 2026
Design By: XSP
File: Q:\02534\800\SWM\02534-800 SWM Design 2026 March.xlsx

IMPERVIOUS CALCULATION

Catchment	Use	Area	% Impervious (Assumed)	Impervious Area	Cumulative Impervious Area	% Roof (Assumed)	Roof Area (ha)
701	Right-of-Way	2.14	80%	1.71	1.71	0%	0.00
SWM2	Residential	3.78	55%	2.08	3.79	48%	1.80
	Multiple-Residential	1.36	60%	0.82	4.61	30%	0.41
	Service Corridor	0.05	80%	0.04	4.65	0%	0.00
	SWM	1.48	30%	0.44	5.09	0%	0.00
	Open Space/Wetland	0.00	0%	0.00	5.09	0%	0.00
	Totals	8.81			58%	25%	2.21
702	Right-of-Way	5.56	80%	4.45	4.45	0%	0.00
SWM2	Residential	6.93	55%	3.81	8.26	43%	2.95
	Multiple-Residential	5.68	60%	3.41	11.67	30%	1.70
	Mixed Use	3.43	80%	2.74	14.41	25%	0.86
	Service Corridor	0.12	80%	0.10	14.51	0%	0.00
	Open Space/Park	1.80	0%	0.00	14.51	0%	0.00
	SWM	1.66	30%	0.50	15.01	0%	0.00
	Totals	25.18			60%	22%	5.51
7021	School	2.70	38%	1.01	1.01	14%	0.39
	Totals	2.70			38%	14%	0.39
703	Right-of-Way	1.03	80%	0.83	0.83	0%	0.00
Grandview	Residential	1.86	55%	1.02	1.85	43%	0.79
	Multiple-Residential	0.12	60%	0.07	1.92	30%	0.03
	Open Space/Wetland	0.06	0%	0.00	1.92	0%	0.00
	Totals	3.06			63%	27%	0.82
704	Right-of-Way	0.97	80%	0.77	0.77	0%	0.00
SWM1	Residential	0.37	55%	0.21	0.98	43%	0.16
	Multiple-Residential	1.24	60%	0.74	1.72	30%	0.37
	SWM	0.80	30%	0.24	1.96	0%	0.00
	Totals	3.38			58%	16%	0.53
705	Right-of-Way	0.43	80%	0.34	0.34	0%	0.00
Blenheim Rd	Totals	0.43			80%	0%	0.00
706	Right-of-Way	1.43	80%	1.14	1.14	0%	0.00
SWM3	Residential	1.56	55%	0.86	2.00	43%	0.66
	Multiple-Residential	0.77	60%	0.46	2.46	30%	0.23
	Pervious Area	0.30	0%	0.00	2.46	0%	0.00
	Service Corridor	0.02	80%	0.01	2.48	0%	0.00
	SWM	0.60	30%	0.18	2.66	0%	0.00
	Totals	4.68			57%	19%	0.90
707	Right-of-Way	0.37	80%	0.30	0.30	0%	0.00
Blenheim Rd	Other Pervious Area	0.40	0%	0.00	0.30	0%	0.00
	Totals	0.77			38%	0%	0.00
708	Right-of-Way	3.71	80%	2.97	2.97	0%	0.00
Township to SWM2	Residential	4.14	54%	2.26	5.22	38%	1.58
	Townhouse	4.91	60%	2.95	8.17	42%	2.06
	Service Corridor	0.00	80%	0.00	8.17	0%	0.00
	Open Space/Wetland	0.00	0%	0.00	8.17	0%	0.00
	Subtotal	12.76			64%	29%	3.64
Area to Conveyance	Right-of-Way	1.47	80%	1.18	1.18	0%	0.00
	Residential	0.83	56%	0.47	1.65	26%	0.21
	Park	1.01	0%	0.00	1.65	0%	0.00
	Townhouse	0.96	60%	0.58	2.22	42%	0.25
	Subtotal	4.28			52%	11%	0.47
	Totals	17.04			61%	24%	4.11
709	Residential	4.46	60%	2.68	2.68	30%	1.34
Freure	Totals	4.46			60%	30%	1.34
710	Right-of-Way	1.86	80%	1.48	1.48	0%	0.00
Newman	Residential	4.42	55%	2.43	3.92	42%	1.86
	Multiple-Residential	0.00	60%	0.00	3.92	30%	0.00
	Open Space/Wetland	0.36	0%	0.00	3.92	0%	0.00
	Totals	6.64			59%	28%	1.86
711	Right-of-Way	0.46	80%	0.37	0.37	0%	0.00
Newman	Residential	1.19	55%	0.65	1.02	43%	0.51
	SWM	0.95	30%	0.29	1.31	0%	0.00
	Totals	2.60			50%	19%	0.51
712	Right-of-Way	0.00	80%	0.00	0.00	0%	0.00
	Residential	0.00	55%	0.00	0.00	43%	0.00
	Multiple-Residential	0.98	54%	0.53	0.53	0%	0.00
	SWM	0.00	30%	0.00	0.53	0%	0.00
	Totals	0.98			54%	0%	0.00



WESTWOOD VILLAGE PHASE 2
PREMINARY STORMWATER MANAGEMENT DESIGN
City of Cambridge, Ontario

Project Number: 02534-800
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MECP Volume Calculation - SWM Facility #2 (Central SWM Facility)

Step 1: Choose Level of Water Quality Control

Enhanced 80% long-term S.S. removal

Step 2: Choose Type of Facility

Wetlands

Step 3: Define Catchment area and Imperviousness

Catchment Area (ha)

54.72

Imperviousness (%)

58.6

Interpolated Storage Volume Requirement (m³/ha)

108.6

Permanent Pool Required (m³)

3751

Extended Detention Volume Required (m³)

2189

Table 3.2 Water Quality Storage Requirements based on Receiving Waters (from MOE Stormwater Management Planning and Design Manual, March 2003)					
Protection Level	SWMP Type	Storage Volume (m ³ /ha) for Impervious Level			
		35	55	70	85
Enhanced 80% long-term S.S. removal	Wetlands	80	105	120	140
	Hybrid Wet Pond/Wetland	110	150	175	195
	Wet Pond	140	190	225	250
Normal 70% long-term S.S. Removal	Wetlands	60	70	80	90
	Hybrid Wet Pond/Wetland	75	90	105	120
	Wet Pond	90	110	130	150
Basic 60% long-term S.S. Removal	Wetlands	60	60	60	60
	Hybrid Wet Pond/Wetland	60	70	75	80
	Wet Pond	60	75	85	95
	Dry Pond (Continuous Flow)	90	150	200	240

WESTWOOD VILLAGE PHASE 2
PREMINARY STORMWATER MANAGEMENT DESIGN - FACILITY 2 (CENTRAL)
City of Cambridge, Ontario



Project Number: 02534-800
Date: April 1, 2026
Design By: JNJ/XSP
File: Q:\02534\800\SWM\02534-800 SWM Design 2026 March.xlsx

STAGE-STORAGE RELATIONSHIP

Stage	Active Depth	North Forebay (Permanent Pool)			South Forebay (Permanent Pool)			Constructed Wetland			Central Wetland 2			Total Pond Volume	Active Constr WI Storage Volume	Active Storage Volume	Volume Summary		Comments	Stage
		Area	Volume	Cumulative Volume	Area	Volume	Cumulative Volume	Area	Volume	Cumulative Volume	Area	Volume	Cumulative Volume							
m	m	m ²	m ³	m ³	m ²	m ³	m ³	m ²	m ³	m ³	m ²	m ³	m ³	m ³	m ³	m ³	m ³			m
306.80		345	0	0	1174	0	0		0	0				0					Bottom of Forebays	306.80
306.90		379	36	36	1239	121	121		0	0				157						306.90
307.00		412	40	76	1305	127	248		0	0				324						307.00
307.10		447	43	119	1372	134	382		0	0				500						307.10
307.20		482	46	165	1440	141	522		0	0				687						307.20
307.30		519	50	215	1510	148	670		0	0				885						307.30
307.40		555	54	269	1581	155	824		0	0				1093						307.40
307.50		593	57	326	1653	162	986		0	0				1312						307.50
307.60		631	61	388	1727	169	1155		0	0				1543						307.60
307.70		670	65	453	1801	176	1332		0	0				1784						307.70
307.80		718	69	522	1912	186	1517		0	0				2039						307.80
307.90		767	74	596	2025	197	1714		0	0				2310						307.90
308.00		818	79	676	2139	208	1922	11934	0	0				2598					Bottom of Constr. Wetland	308.00
308.10		869	84	760	2256	220	2142	12314	1212	1212				4114						308.10
308.20		922	90	849	2373	231	2374	12696	1251	2463				5686						308.20
308.30		975	95	944	2494	243	2617	13080	1289	3752				7313			7313		Permanent Pool Elevation	308.30
308.30	0.00							16687	0	0				7313	0	0				308.30
308.40	0.10							17233	1696	1696				9009	1696					308.40
308.50	0.20							17784	1751	3447				10760	3447	3447	2189	308.43	MECP Quality Volume	308.50
308.60	0.30							18339	1806	5253				12566	5253	5253	4077	308.54	25mm Event	308.60
308.70	0.40							18898	1862	7115				14428	7115	7115	6825	308.69	1:2 Year Event	308.70
308.80	0.50							19462	1918	9033				16346	9033	9033				308.80
308.90	0.60							20268	1987	11019				18332	11019	11019				308.90
309.00	0.70							20585	2043	13062				20375	13062	13062				309.00
309.10	0.80							20901	2074	15136				22449	15136	15136	14066	309.05	1:5 Year Event	309.10
309.20	0.90							21218	2106	17242				24555	17242	17242			Spill into Wetland 2 (5312)	309.20
309.30	1.00							21328	2127	19370	24178	1209	1209	27891	19370	20578				309.30
309.40	1.10							21679	2150	21520	25321	2475	3684	32517	21520	25204	18548	309.24	1:10 Year Event	309.40
309.50	1.20							22030	2185	23705	26286	2580	6264	37282	23705	29970	21017	309.31	1:25 Year Event	309.50
309.60	1.30							22381	2221	25926	27255	2677	8941	42180	25926	34867	23442	309.37	1:50 Year Event	309.60
309.70	1.40							22732	2256	28182	28232	2774	11716	47210	28182	39897	25047	309.40	1:100 Year Event	309.70
309.80	1.50							23083	2291	30472	29214	2872	14588	52373	30472	45060	30418	309.51	Regional Event	309.80
309.90	1.60							23434	2326	32798	30204	2971	17559	57670	32798	50357				309.90
310.00	1.70							23785	2361	35159	31200	3070	20629	63101	35159	55788				310.00
310.10	1.80							24135	2396	37555	32202	3170	23799	68667	37555	61354				310.10
310.20	1.90							24486	2431	39986	33211	3271	27070	74369	39986	67056				310.20
310.30	2.00							24837	2466	42452	34227	3372	30442	80207	42452	72894				310.30
310.40	2.10							25188	2501	44954	35249	3474	33915	86182	44954	78869				310.40
310.50	2.20							25539	2536	47490	36278	3576	37492	92295		84982				310.50
310.60	2.30							25890	2571	50061	37314	3680	41171	98546		91233				310.60
310.70	2.40							26241	2607	52668	38356	3784	44955	104936		97623				310.70
310.80	2.50							26592	2642	55310	39404	3888	48843	111465		104152				310.80
310.90	2.60							26943	2677	57986	40459	3993	52836	118135		110822				310.90
311.00	2.70							27294	2712	60698	41521	4099	56935	124946		117633				311.00
311.10	2.80							27645	2747	63445	42589	4206	61141	131898		124586				311.10
311.20	2.90							27996	2782	66227	43664	4313	65453	138993		131680				311.20
311.30	3.00							28346	2817	69044	44747	4421	69874	146231		138918				311.30

WESTWOOD VILLAGE PHASE 2
PREMINARY STORMWATER MANAGEMENT DESIGN
North Dumfries, Ontario - FACILITY 2 (CENTRAL)



Project Number: 02534-800
 Date: April 1, 2026
 Design By: JNJ/XSP
 File: Q:\02534\800\SWM\02534-800 SWM Design 2026 March.xlsx

STAGE-STORAGE RELATIONSHIP

GAWSER 5312: WL 2 + SWMF2 Storage > 309.2m

use in major events model, assuming starting water level in WL is 308.4 (spring conditions)

Stage	Effective Infiltration Area	Area	Volume	Cumulative Volume	Volume Summary		Comments
m		m ²	m ³	m ³	m ³		
308.30							
308.40	0.0000	10600		0	601	308.45	25mm Event
308.50	0.3400	14000	1230	1230	994	308.49	1:2 Year Event
308.60					1990	308.55	1:5 Year Event
308.70					2749	308.59	1:10 Year Event
308.80							
308.90					9015	308.96	1:25 Year Event
309.00	0.9319	19919	8480	9710			
309.10	Area in SSD table						
309.20	1.3000	22500	4242	9800			
309.30	1.3578	45506	3400	13110			
309.40	1.4721	47000	4625	17735	14997	309.35	1:50 Year Event
309.50	1.5686	48316	4766	22501	19880	309.45	1:100 Year Event
309.60	1.6655	49636	4898	27399			
309.70	1.7632	50964	5030	32429			
309.80	1.8614	52297	5163	37592			
309.90	1.9604	53638	5297	42889			
310.00	2.0600	54985	5431	48320			
310.10	2.1602	56337	5566	53886			
310.20	2.2611	57697	5702	59588			
310.30	2.3627	59064	5838	65426			
310.40	2.4649	60437	5975	71401			
310.50	2.5678	61817	6113	77513			
310.60	2.6714	63204	6251	83764			
310.70	2.7756	64597	6390	90154			
310.80	2.8804	65996	6530	96684	99837	310.85	Regional Event
310.90	2.9859	67402	6670	103354			
311.00	3.0921	68815	6811	110165			
311.10	3.1989	70234	6952	117117		311.15	Freeboard
311.20	3.3064	71660	7095	124212			
311.30	3.4147	73093	7238	131450			

^ subtract 1.06 ha for water coverage @ 308.4 to remove area from infiltration calculations

**WESTWOOD VILLAGE PHASE 2
PREMINARY STORMWATER MANAGEMENT DESIGN**

- FACILITY 2 (CENTRAL)



City of Cambridge, Ontario

Project Number: 02534-800
Date: April 1, 2026
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Orifice Calculations			
$Q_o = C_d \cdot A_o \cdot (2 \cdot g \cdot H_o)^{0.5}$			
Sewer Orifice 1	Wetland Orifice 2	Orifice 3	
C_d	0.63	0.63	0.63
Invert (m)	308.3	500	500
Width (m)	0.00	0.00	0.00
Diameter/Height (m)	0.235	0.175	0.175
Type (H/V)	V	V	V

Cd	Description	Weir Calculations	
0.63	Orifice Plate	$Q_w = C_w \cdot (H_w)^{1.5} \cdot ((L - 0.2 \cdot H_w) + (0.8 \cdot \tan(\theta) \cdot H_w))$	
0.82	Eccentric Reducer		
		Cw	1.60
		Invert (m)	309.2
		Length (m)	7
		Side Slope (H:V)	3
		Side Slope (rad)	1.249

STAGE-DISCHARGE RELATIONSHIP

													Extended Detention
Stage	Active Volume	Orifice 1			Orifice 2			Weir Flow	Total Flow	Average Discharge	Increment Volume	Increment Dewatering Time	Cumulative Dewatering Time
		Area	H _o	Flow	Area	H _o	Flow						
m	m ³	m ²	m	m ³ /s	m ²	m	m ³ /s	m ³ /s	m ³ /s	m ³ /s	m ³	hours	hours
308.30	0	0.00	0.00	0.000				0.00	0.00	0.01	1696	85.85	48.25
308.40	1696	0.02	0.05	0.011				0.00	0.01	0.02	1751	21.29	10.65
308.50	3447	0.04	0.10	0.035				0.00	0.03	0.04	1806	11.61	
308.60	5253	0.04	0.18	0.052				0.00	0.05	0.06	1862	8.91	
308.70	7115	0.04	0.28	0.064	0.00	0.00	0.000	0.00	0.06	0.07	1918	7.66	
308.80	9033	0.04	0.38	0.075	0.00	0.00	0.000	0.00	0.07	0.08	1987	6.94	
308.90	11019	0.04	0.48	0.084	0.00	0.00	0.000	0.00	0.08	0.09	2043	6.43	
309.00	13062	0.04	0.58	0.092	0.00	0.00	0.000	0.00	0.09	0.10	2074	5.99	
309.10	15136	0.04	0.68	0.100	0.00	0.00	0.000	0.00	0.10	0.10	2106	5.65	
309.20	17242	0.04	0.78	0.107	0.00	0.00	0.000	0.00	0.11	0.29	3336	3.16	
309.30	20578	0.04	0.88	0.114	0.00	0.00		0.37	0.48	0.83	4625		
309.40	25204	0.04	0.98	0.120	0.00	0.00		1.06	1.18	1.66	4766		
309.50	29970	0.04	1.08	0.126	0.00	0.00		2.01	2.14	2.73	4898		
309.60	34867	0.04	1.18	0.132	0.00	0.00		3.19	3.32	4.02	5030		
309.70	39897	0.04	1.28	0.137	0.00	0.00		4.58	4.72	5.52	5163		
309.80	45060	0.04	1.38	0.142	0.00	0.00		6.19	6.33	7.24	5297		
309.90	50357	0.04	1.48	0.147	0.00	0.00		8.00	8.15	9.17	5431		
310.00	55788	0.04	1.58	0.152	0.00	0.00		10.03	10.18	11.30	5566		
310.10	61354	0.04	1.68	0.157	0.00	0.00		12.27	12.42	13.65	5702		
310.20	67056	0.04	1.78	0.162	0.00	0.00		14.72	14.88	16.22	5838		
310.30	72894	0.04	1.88	0.166	0.00	0.00		17.39	17.55	19.00	5975		
310.40	78869	0.04	1.98	0.170	0.00	0.00		20.28	20.45	22.00	6113		
310.50	84982	0.04	2.08	0.175	0.00	0.00		23.38	23.56	25.23	6251		
310.60	91233	0.04	2.18	0.179	0.00	0.00		26.72	26.89	28.68	6390		
310.70	97623	0.04	2.28	0.183	0.00	0.00		30.28	30.46	32.36	6530		
310.80	104152	0.04	2.38	0.187	0.00	0.00		34.07	34.25	36.27	6670		
310.90	110822	0.04	2.48	0.191	0.00	0.00		38.09	38.28	40.41	6811		
311.00	117633	0.04	2.58	0.195	0.00	0.00		42.35	42.54	44.79	6952		
311.10	124586	0.04	2.68	0.198	0.00	0.00		46.85	47.05	49.42	7095		
311.20	131680	0.04	2.78	0.202	0.00	0.00		51.59	51.79	54.29	7238		
311.30	138918	0.04	2.88	0.205	0.00	0.00		56.58	56.78	28.39	0		



Project Number: 02534-800
Date: April 1, 2026
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NORTH FOREBAY DESIGN CALCULATIONS
MECP SWM Planning and Design Manual, 2003

Forebay Design Flows

Flow into forebay during the 1:5-year return period event 2.877 m³/s
Flow into forebay during the 25 mm - 4 hour design storm event 0.632 m³/s
Peak flow from main pond outlet for the 25mm design storm (from GAWSER) 0.041 m³/s

Forebay Characteristics

b = 9.0 m bottom width
y = 1.5 m depth
z = 3 :1 side slope
w = 13.5 m average width
R = 1.10 m hydraulic radius
A = 20.3 m² cross-sectional area

1. Length Calculation Based on Settling Velocity

L = forebay flow length (m)
r = length-to-width ratio
Q_p = peak flow rate through forebay (m³/s)
v_s = settling velocity (m/s)

$$L = \sqrt{\frac{rQ_p}{v_s}}$$
 Equation 4.5: Forebay Settling Length

a) Required Settling Length (assuming Q_p = forebay through-flow & v_s = 0.0055 m/s)

Q_p = 0.63 m³/s peak flow rate through forebay
v_s = 0.0055 m/s settling velocity
r = 0.63 length-to-width ratio
L = 8.5 m required settling length
L = 8.5 m trial length

Table 1: Average settling velocities

	Mass Removed	Particle Size Range	Average Settling Velocity
	%	µm	m/s
	80 - 100	x ≤ 20	0.00000254
Enhanced:	70 - 80	20 < x ≤ 40	0.00001300
Normal:	60 - 70	40 < x ≤ 60	0.00002540
Basic:	40 - 60	60 < x ≤ 130	0.00012700
Medium Sand:	20 - 40	130 < x ≤ 400	0.00059267
Gross Grit:	0 - 20	400 < x ≤ 4000	0.00550333

b) Required Settling Length (assuming Q_p = pond discharge & v_s = 0.0003 m/s)

Q_p = 0.041 m³/s peak flow rate through forebay
v_s = 0.0003 m/s settling velocity
r = 0.75 length-to-width ratio
L = 10.1 m required settling length
L = 10.1 m trial length

2. Length Calculation Based on Flow Dispersion Length

Q = 2.88 m³/s inlet flow rate
d = 1.5 m depth of permanent pool in forebay
V_f = 0.50 m/s desired velocity in forebay (typical value ≤ 0.50 m/s)
L = 30.7 m required length of dispersion

$$L_D = \frac{8Q}{dV_f}$$
 Equation 4.6: Dispersion Length

3. Required Forebay Length

L = 30.7 m design length (proposed length 39m)
r = 2.96 design length-to-width ratio (typical minimum of 2.0)

4. Scour Velocity

v_s = 0.15 m/s scour velocity (typical value = 0.15 m/s)
v = 0.14 m/s actual velocity

OK The actual velocity through the forebay is less than the scour velocity.

5. Weir Flow From Forebay

L = 9 m length of crest of weir
α = 1.65 coefficient
H = 0.5 m head
Q = 5.25 m³/s discharge

$$Q = \alpha LH^{1.5}$$
 Equation 4.4: Weir Flow

OK The weir flow from the forebay exceeds the flow entering the forebay

6. Estimated Cleanout Frequencies

a) Forebay

Forebay volume 944 m³
Estimated TSS removal efficiency 50%
Impervious level 60%
Estimated annual sediment loading 2.2 m³/ha
Contributing area 25.85 ha
Annual sediment volume 29 m³/yr
Cleanout frequency for 33% volume reduction 10.9 years

Table 2: Annual sediment loading

Impervious Level	Annual Loading
%	m ³ /ha
35%	0.6
55%	1.9
70%	2.8
85%	3.8

b) Stormwater Management Pond

Wetpond volume (excluding forebay) 3752 m³
Estimated TSS removal efficiency 30%
Impervious level 59%
Estimated annual sediment loading 2.1 m³/ha
Contributing area 54.72 ha
Annual sediment volume 35 m³/yr
Cleanout frequency for 33% volume reduction 35.4 years

WESTWOOD VILLAGE PHASE 2
PREMINARY STORMWATER MANAGEMENT DESIGN
City of Cambridge, Ontario - FACILITY 2 (CENTRAL)



Project Number: 02534-800
Date: April 1, 2026
Design By: JNJ/XSP
File: Q:\02534\800\SWM\02534-800 SWM Design 2026 March.xlsx

NORTH SPLITTER MANHOLE DESIGN CALCULATION

	Forebay Inlet Pipe	Pond Inlet Pipe		Manhole Weir
Number of pipes =	1	1		Weir Elevation = 309.471 m
Diameter =	750	1050	mm	Weir Length = 3.000 m
Area =	0.442	0.866	m ²	Weir Coefficient = 1.65
Orifice Coefficient =	0.820	0.820		
Invert Elevation =	308.720	308.695	m	Weir Opening
Slope =	0.40%	1.14%		
Hydraulic Radius =	0.188	0.263	m	Area = 3.040 m ²
Manning's 'n' =	0.013	0.013		Coefficient = 0.63
Velocity =	1.594	3.367	m/s	
Pipe Capacity =	0.704	2.916	m ³ /s	

Q _{25mm} =	0.632 m ³ /s	forebay design flow (lower limit)
Q =	2.877 m ³ /s	maximum design flow in sewer pipes

Water Elevation	Head Above Invert	Forebay Inflow	Weir Head	Weir Flow	Weir Opening Flow	Pipe Orifice Head	Pipe Orifice Flow	Total Pond Flow
m	m	m ³ /s	m	m ³ /s	m ³ /s	m	m ³ /s	m ³ /s
308.700								
308.800	0.080	0.002						0.002
308.900	0.180	0.041						0.041
309.000	0.280	0.101						0.101
309.100	0.380	0.177						0.177
309.200	0.480	0.267						0.267
309.300	0.580	0.369						0.369
309.400	0.680	0.482						0.482
309.471	0.751	0.804						0.804
309.500	0.780	0.849	0.029	0.024	1.444	0.805	0.843	0.874
309.600	0.880	0.989	0.129	0.229	3.045	0.905	1.027	1.219
309.700	0.980	1.112	0.229	0.542	4.058	1.005	1.225	1.654
309.800	1.080	1.222	0.329	0.934	4.863	1.105	2.002	2.156
309.900	1.180	1.323	0.429	1.391	5.554	1.205	2.235	2.714
309.928	1.208	1.350	0.457	1.529	5.732	1.233	2.296	2.879
310.000	1.280	1.417	0.529	1.905	6.167	1.305	2.446	3.322
310.100	1.380	1.505	0.629	2.469	6.725	1.405	2.641	3.975
310.200	1.480	1.589	0.729	3.081	7.239	1.505	2.822	4.410
310.300	1.580	1.668	0.829	3.736	7.720	1.605	2.992	4.660
310.400	1.680	1.743	0.929	4.432	8.172	1.705	3.153	4.896
310.500	1.780	1.815	1.029	5.167	8.601	1.805	3.306	5.122
310.600	1.880	1.885	1.129	5.938	9.009	1.905	3.452	5.337
310.700	1.980	1.952	1.229	6.744	9.400	2.005	3.593	5.545
310.800	2.080	2.017	1.329	7.584	9.775	2.105	3.728	5.745
310.900	2.180	2.080	1.429	8.456	10.136	2.205	3.858	5.938
311.000	2.280	2.141	1.529	9.359	10.484	2.305	3.984	6.125
311.100	2.380	2.200	1.629	10.292	10.822	2.405	4.107	6.307
311.200	2.480	2.258	1.729	11.254	11.149	2.505	4.225	6.483
311.300	2.580	2.314	1.829	12.244	11.467	2.605	4.341	6.655
311.400	2.680	2.369	1.929	13.262	11.776	2.705	4.453	6.823
311.500	2.780	2.423	2.029	14.306	12.078	2.805	4.563	6.986
311.600	2.880	2.476	2.129	15.377	12.372	2.905	4.670	7.146
311.700	2.980	2.527	2.229	16.473	12.659	3.005	4.775	7.302
311.800	3.080	2.577	2.329	17.594	12.940	3.105	4.877	7.455
311.900	3.180	2.627	2.429	18.739	13.215	3.205	4.978	7.605
312.000	3.280	2.675	2.529	19.908	13.484	3.305	5.076	7.752
312.100	3.380	2.723	2.629	21.100	13.748	3.405	5.173	7.896
312.200	3.480	2.770	2.729	22.316	14.007	3.505	5.267	8.037
312.300	3.580	2.816	2.829	23.553	14.261	3.605	5.360	8.177
312.400	3.680	2.861	2.929	24.813	14.511	3.705	5.452	8.313
312.500	3.780	2.906	3.029	26.095	14.757	3.805	5.542	8.448
312.600	3.880	2.950	3.129	27.398	14.998	3.905	5.630	8.581
312.700	3.980	2.993	3.229	28.722	15.236	4.005	5.718	8.711
312.800	4.080	3.036	3.329	30.066	15.470	4.105	5.804	8.840

Notes:

1. Forebay inflow calculated as:
- $$Q = C \cdot A_o \cdot \sqrt{2g \cdot \left(H - \frac{2}{3}d \right)}$$
- for H > d
- $$Q = f \cdot \frac{H}{d} \cdot C \cdot \sqrt{g} \cdot d^{2.5}$$
- for H < d, where
- $$f \cdot \frac{H}{d} = 0.494 \left(\frac{H}{d} \right)^{1.57} - 0.04 \left(\frac{H}{d} \right)^{0.5}$$

2. Bypassing inflow calculated as the smallest of

$$Q = C_d \cdot L \cdot H^{1.5}$$
weir flow

$$Q = C \cdot A \cdot \sqrt{2g \cdot H}$$
weir opening (orifice) flow

$$Q = C \cdot A \cdot \sqrt{2g \cdot \left(H - \frac{2}{3}d \right)}$$
pipe opening (orifice) flow

WESTWOOD VILLAGE PHASE 2
PREMINARY STORMWATER MANAGEMENT DESIG - FACILITY 2 (CENTRAL)
City of Cambridge, Ontario



Project Number: 02534-800
Date: April 1, 2026
Design By: JNJ/XSP
File: Q:\02534\800\SWM\02534-800 SWM Design 2026 March.xlsx

NORTH SPLITTER MANHOLE DESIGN CALCULATION

	US SPMH	DS SPMH		
	Main Pond Inlet Pipe	Forebay Inlet Pipe	Bypass Pipe	Manhole Weir
Number of pipes =	1	1	1	
Diameter =	1350	750	1050 mm	Weir Elevation = 309.331 m
Area =	1.431	0.442	0.866 m ²	Weir Length = 3.000 m
Orifice Coefficient =	NA	0.820	0.820	Weir Coefficient = 1.65
Pipe Length =	32.9	27.6	11.9 m	
Invert Elevation at SPMH =	309.233	308.720	308.695 m	
Slope =	0.40%	0.40%	1.14%	
Hydraulic Radius =	0.338	0.188	0.263 m	
Manning's 'n' =	0.013	0.013	0.013	
Full Flow Velocity =	NA	1.594	3.367 m/s	
Pipe Capacity =	3.376	0.704	2.916 m ³ /s	
Design Flow =	2.88 m ³ /s	Minor system design flow - input elsewhere Under design flow conditions		
Design Velocity =	2.65 m/s			
Upstream Obvert =	310.71 m	Head loss into SPMH based on design velocity Head loss through main pond inlet pipe SPMH water surface required to pass minor system design flow Hydraulic grade line elevation upstream of main pond inlet pipe		
Exit head loss =	0.359 m			
Friction head Loss =	0.095 m			
SPMH 5yr WSEL =	309.81 m			
Upstream HGL =	310.27 m			

Q _{25mm} =	0.632 m ³ /s	Peak flow from hydrologic modeling - 25 mm stm
Q _{5yr} =	2.877 m ³ /s	Peak flow through main pond inlet (from storm design sheet) - 5 yr stm
WSEL _{25mm} =	308.54 m	Maximum water surface elevation in pond - 25 mm stm
WSEL _{5yr} =	309.05 m	Maximum water surface elevation in pond - 5 yr stm

Water Elevation	Depth Above Invert	Forebay Inflow	Weir Head	Weir Flow	Depth Above Pipe Invert	Pipe Orifice Flow	Total Pond Flow
m	m	m ³ /s	m	m ³ /s	m	m ³ /s	m ³ /s
308.700							
308.800	0.080	0.015					0.015
308.900	0.180	0.073					0.073
309.000	0.280	0.167					0.167
309.100	0.380	0.290					0.290
309.200	0.480	0.434					0.434
309.300	0.580	0.585					0.585
309.331	0.611	0.632					0.632
309.400	0.680	0.728	0.069	0.090	0.705	1.088	0.818
309.500	0.780	0.849	0.169	0.344	0.805	1.340	1.193
309.600	0.880	0.989	0.269	0.691	0.905	1.583	1.680
309.700	0.980	1.112	0.369	1.110	1.005	1.793	2.221
309.800	1.080	1.222	0.469	1.590	1.105	2.002	2.812
309.811	1.091	1.234	0.480	1.646	1.116	2.029	2.880
309.900	1.180	1.323	0.569	2.125	1.205	2.235	3.448
310.000	1.280	1.417	0.669	2.709	1.305	2.446	3.863
310.100	1.380	1.505	0.769	3.338	1.405	2.641	4.146
310.200	1.480	1.589	0.869	4.010	1.505	2.822	4.410
310.300	1.580	1.668	0.969	4.722	1.605	2.992	4.660
310.400	1.680	1.743	1.069	5.471	1.705	3.153	4.896
310.500	1.780	1.815	1.169	6.256	1.805	3.306	5.122
310.600	1.880	1.885	1.269	7.076	1.905	3.452	5.337
310.700	1.980	1.952	1.369	7.929	2.005	3.593	5.545
310.800	2.080	2.017	1.469	8.813	2.105	3.728	5.745
310.900	2.180	2.080	1.569	9.728	2.205	3.858	5.938

Notes:

1. Forebay inflow calculated as:

$$Q = C \cdot A_o \cdot \sqrt{2g \cdot \left(H - \frac{2}{3}d\right)} \quad \text{for } H > d$$

$$Q = f \cdot \frac{H}{d} \cdot C \cdot \sqrt{g} \cdot d^{2.5} \quad \text{for } H < d, \text{ where:}$$

$$f \cdot \frac{H}{d} = 0.494 \left(\frac{H}{d}\right)^{1.57} - 0.04 \left(\frac{H}{d}\right)^{0.5}$$

2. Bypassing inflow calculated as the smallest of:

$$Q = C_d \cdot L \cdot H^{1.5} \quad \text{weir flow}$$

$$Q = C \cdot A \cdot \sqrt{2g \cdot \left(H - \frac{2}{3}d\right)} \quad \text{pipe opening (orifice) flow}$$

3. Exit head loss calculation:

$$h_t = k \frac{v^2}{2g} \quad \text{where:}$$

k = 1 at exit into SPMH

v = average velocity in pipe in minor system design event

4. Friction head loss calculation:

$$h_f = s_f L \quad \text{where:}$$

$$s_f = \left(\frac{Qn}{0.312D^{2.67}} \right)^2$$



Project Number: 02534-800
Date: April 1, 2026
Design By: JNJ/XSP
File: Q:\02534\800\SWM\02534-800 SWM Design 2026 March.xlsx

SOUTH FOREBAY DESIGN CALCULATIONS
MOE SWM Planning and Design Manual, 2003

Forebay Design Flows

Flow into forebay during the 1:5-year return period event	3.979 m ³ /s
Flow into forebay during the 25 mm - 4 hour design storm event	0.747 m ³ /s
Peak flow from main pond outlet for the 25mm design storm (from GAWSER)	0.041 m ³ /s

Forebay Characteristics

b =	14.0 m	bottom width
y =	1.5 m	depth
z =	3 :1	side slope
w =	18.5 m	average width
R =	1.18 m	hydraulic radius
A =	27.8 m ²	cross-sectional area

1. Length Calculation Based on Settling Velocity

L = forebay flow length (m)
r = length-to-width ratio
Q_p = peak flow rate through forebay (m³/s)
v_s = settling velocity (m/s)

$$L = \sqrt{\frac{rQ_p}{v_s}}$$
 Equation 4.5: Forebay Settling Length

a) Required Settling Length (assuming Q_p = forebay through-flow & v_s = 0.0055 m/s)

Q _p =	0.75 m ³ /s	peak flow rate through forebay
v _s =	0.0055 m/s	settling velocity
r =	0.39	length-to-width $Q = \alpha LH^{1.5}$
L =	7.3 m	required settling length
L =	7.3 m	trial length

Table 1: Average settling velocities

	Mass Removed	Particle Size Range	Average Settling Velocity
	%	µm	m/s
	80 - 100	x ≤ 20	0.00000254
Enhanced:	70 - 80	20 < x ≤ 40	0.00001300
Normal:	60 - 70	40 < x ≤ 60	0.00002540
Basic:	40 - 60	60 < x ≤ 130	0.00012700
Medium Sand:	20 - 40	130 < x ≤ 400	0.00059267
Gross Grit:	0 - 20	400 < x ≤ 4000	0.00550333

b) Required Settling Length (assuming Q_p = pond discharge & v_s = 0.0003 m/s)

Q _p =	0.041 m ³ /s	peak flow rate through forebay
v _s =	0.0003 m/s	settling velocity
r =	0.40	length-to-width ratio
L =	7.4 m	required settling length
L =	7.4 m	trial length

2. Length Calculation Based on Flow Dispersion Length

Q =	3.98 m ³ /s	inlet flow rate
d =	1.5 m	depth of permanent pool in forebay
V _f =	0.50 m/s	desired velocity in forebay (typical value ≤ 0.50 m/s)
L =	42.4 m	required length of dispersion

$$L_D = \frac{8Q}{dV_f}$$
 Equation 4.6: Dispersion Length

3. Required Forebay Length

L =	42.4 m	design length	Proposed Length 87m
r =	2.29	design length-to-width ratio (typical minimum of 2.0)	

4. Scour Velocity

v _s =	0.15 m/s	scour velocity (typical value = 0.15 m/s)
v =	0.14 m/s	actual velocity

OK The actual velocity through the forebay is less than the scour velocity.

5. Weir Flow From Forebay

L =	18 m	length of crest of weir
α =	1.65	coefficient
H =	0.5 m	head
Q =	10.50 m ³ /s	discharge

Equation 4.4: Weir Flow

OK The weir flow from the forebay exceeds the flow entering the forebay

6. Estimated Cleanout Frequencies

a) Forebay

Forebay volume	2617 m ³
Estimated TSS removal efficiency	50%
Impervious level	57%
Estimated annual sediment loading	2.1 m ³ /ha
Contributing area	28.86 ha
Annual sediment volume	30 m ³ /yr
Cleanout frequency for 33% volume reduction	29.2 years

Table 2: Annual sediment loading

Impervious Level	Annual Loading
%	m ³ /ha
35%	0.6
55%	1.9
70%	2.8
85%	3.8

b) Stormwater Management Pond

Wetpond volume (excluding forebay)	3752 m ³
Estimated TSS removal efficiency	30%
Impervious level	59%
Estimated annual sediment loading	2.1 m ³ /ha
Contributing area	54.72 ha
Annual sediment volume	35 m ³ /yr
Cleanout frequency for 33% volume reduction	35.4 years

WESTWOOD VILLAGE PHASE 2
PREMINARY STORMWATER MANAGEMENT DESIGN
City of Cambridge, Ontario **- FACILITY 2 (CENTRAL)**



Project Number: 02534-800
Date: April 1, 2026
Design By: JNJ/XSP
File: Q:\02534\800\SWM\02534-800 SWM Design 2026 March.xlsx

FALLING HEAD DRAWDOWN CALCULATION
MECP SWM Planning and Design Manual, 2003

$$t = \frac{0.66C_2h^{1.5} + 2C_3h^{0.5}}{2.75A_o} \quad \text{Equation 4.11}$$

where

t =	102298 s	
	28.4 hr	drawdown time
A _p =	17400.7 m ²	surface area of the pond
C =	0.63	discharge coefficient
d =	235 mm	diameter of the orifice
A _o =	0.04337 m ²	cross-sectional area of the orifice
g =	9.81 m/s ²	gravitational acceleration constant
h ₁ =	308.430 m	starting water elevation above the orifice
h ₂ =	308.300 m	ending water elevation above the orifice
h =	0.13 m	maximum water elevation above the orifice
C ₂ =	5508.08	slope coefficient from the area-depth linear regression
C ₃ =	16684.7	intercept from the area-depth linear regression

	ELEVATION m	STAGE m	AREA m ²	COMMENTS
1	308.300	0	16687	Permanent pool Extended detention - 40cu.m/ha = 2209cu.m
2	308.400	0.1	17233	
3	308.500	0.2	17784	
4	308.600	0.3	18339	
				DRAWDOWN TIME: 102298 s 28.4 hr

Regression Output:

m ₁ =	5508.08	slope coefficient from the area-depth linear regression
b =	16684.67	intercept from the area-depth linear regression
se ₁ =	14.55	standard error for coefficient m ₁
se _b =	2.72	standard error for constant b
R ² =	1.0000	coefficient of determination
se _y =	3.25	standard error of the y estimate
F =	143255.16	F statistic
df =	2	degrees of freedom
SS _{reg} =	1516946	regression sum of squares
SS _{resid} =	21	residual sum of squares

Major SWM 2 North

Project Description		
Friction Method	Manning Formula	
Solve For	Normal Depth	
Input Data		
Roughness Coefficient	0.013	
Channel Slope	2.000 %	Minimum slope along overland flow route
Bottom Width	4.00 m	
Discharge	3.03 m³/s	Q100yr - 5 yr STM capacity
Results		
Normal Depth	210.4 mm	Depth of overland flow (250mm provided)
Flow Area	0.8 m²	
Wetted Perimeter	4.4 m	
Hydraulic Radius	190.3 mm	
Top Width	4.00 m	
Critical Depth	388.3 mm	
Critical Slope	0.288 %	
Velocity	3.60 m/s	
Velocity Head	0.66 m	
Specific Energy	0.87 m	
Froude Number	2.507	
Flow Type	Supercritical	
GVF Input Data		
Downstream Depth	0.0 mm	
Length	0.0 m	
Number Of Steps	0	
GVF Output Data		
Upstream Depth	0.0 mm	
Profile Description		
Profile Headloss	0.00 m	
Downstream Velocity	Infinity m/s	
Upstream Velocity	Infinity m/s	
Normal Depth	210.4 mm	
Critical Depth	388.3 mm	
Channel Slope	2.000 %	
Critical Slope	0.288 %	

Major Overland SWM2 South

Project Description		
Friction Method	Manning Formula	
Solve For	Normal Depth	
Input Data		
Roughness Coefficient	0.013	
Channel Slope	0.009 m/m	Minimum slope along overland flow route
Bottom Width	4.00 m	
Discharge	2.18 m³/s	Q100yr - 5 yr STM capacity
Results		
Normal Depth	219.7 mm	Depth of overland flow (250mm provided)
Flow Area	0.9 m²	
Wetted Perimeter	4.4 m	
Hydraulic Radius	198.0 mm	
Top Width	4.00 m	
Critical Depth	311.7 mm	
Critical Slope	0.003 m/m	
Velocity	2.48 m/s	
Velocity Head	0.31 m	
Specific Energy	0.53 m	
Froude Number	1.690	
Flow Type	Supercritical	
GVF Input Data		
Downstream Depth	0.0 mm	
Length	0.0 m	
Number Of Steps	0	
GVF Output Data		
Upstream Depth	0.0 mm	
Profile Description		
Profile Headloss	0.00 m	
Downstream Velocity	Infinity m/s	
Upstream Velocity	Infinity m/s	
Normal Depth	219.7 mm	
Critical Depth	311.7 mm	
Channel Slope	0.009 m/m	
Critical Slope	0.003 m/m	

Appendix C

Existing Conditions Hydrologic Modelling

Cambridge West
Existing Conditions Hydrologic Modeling Parameter Database
Kitchener, Ontario

Project Nu 2534-100
Date: October 18, 2017
File: Q:\02534\100\SWM\2534-200 GAWSER existing conditions parameter database July 2013.xlsx



HYD	Area (sq.km)	1	2	3	4	5	6	7	8	9	Sum	HYD	FTB	GWFACT	LENGTH	WIDTH	OFFCSLP	MCSLP	HYD	Ploughed	Grass	Forest	Roadway	Fence	For Edges	Sum
401	0.0235	2.0	0.0	0.0	39.2	0.0	0.0	0.0	58.8	0.0	100.0	401	3	1	160	140	10	10	401	90			5	5		100
402	0.1336	1.0	0.0	0.0	32.7	0.0	0.0	0.0	66.3	0.0	100.0	402	2	1	160	270	3.5	2	402	95			2.5	2.5		100
403	0.1073	1.0	41.0	18.7	8.8	0.0	0.0	0.0	30.5	0.0	100.0	403	5	1	140	180	5	5	403	20	60		10		10	100
404	0.1141	0.0	0.0	0.0	30.0	0.0	0.0	0.0	70.0	0.0	100.0	404	3	1	230	170	2	2	404	100						100
405	0.0966	1.0	0.0	0.0	19.8	0.0	0.0	0.0	79.2	0.0	100.0	405	3	1	230	210	2	2	405	93	2			5		100
406	0.093	0.0	0.0	0.0	15.0	0.0	0.0	0.0	85.0	0.0	100.0	406	3	1	180	275	3.5	2	406	100						100
407	0.2555	0.5	30.0	14.9	14.9	0.0	0.0	0.0	9.2	30.5	100.0	407	3	1	100	100	3.5	3.5	407		60	30			10	100
408	0.0581	3.0	0.0	0.0	9.7	0.0	0.0	0.0	87.3	0.0	100.0	408	3	1	350	150	10	2	408	100						100
409	0.8914	3.0	28.0	0.0	0.0	5.8	0.0	24.9	0.0	38.3	100.0	409	4	1	300	200	5	3.5	409	35	35	10	5	5	10	100
410	0.0171	0.0	0.0	0.0	0.0	0.0	60.0	0.0	40.0	0.0	100.0	410	3	1	200	80	1	2	410	100						100
101	0.0039	0.0	0.0	0.0	10.0	0.0	80.0	0.0	10.0	0.0	100.0	101	2	1	40	100	3.5	3.5	101	100						100
102	0.0214	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	100.0	102	2	1	180	120	3.5	3.5	102	100						100
103	0.0259	0.0	10.0	10.0	0.0	0.0	0.0	0.0	0.0	80.0	100.0	103	5	1	280	90	3.5	2	103			80			20	100
104	0.0282	0.0	0.0	0.0	40.0	0.0	0.0	0.0	60.0	0.0	100.0	104	3	1	100	90	5	2	104	95			5			100
105	0.1656	0.0	0.0	0.0	5.0	0.0	0.0	0.0	95.0	0.0	100.0	105	3	1	280	550	3.5	2	105	97.5			2.5			100
106	0.0215	0.0	0.0	0.0	20.0	0.0	0.0	0.0	80.0	0.0	100.0	106	3	1	220	100	2	0.5	106	95				5		100
107	0.151	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	100.0	107	2	1	10	400	5	3.5	107	96			2	2		100
108	0.124	0.0	20.0	45.0	0.0	10.0	0.0	0.0	0.0	25.0	100.0	108	5	0	300	250	0.5	0.5	108			85			15	100
109	0.1252	5.0	0.0	0.0	0.0	15.0	0.0	80.0	0.0	0.0	100.0	109	3	0	600	100	5	5	109			85			15	100
110	0.0201	0.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	100.0	110	2	1	60	60	5	5	110	100						100
111	0.0498	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	100.0	111	2	1	10	250	10	5	111	96			2	2		100
201	0.0806	35.0	3.0	0.0	0.0	0.0	0.0	0.0	62.0	0.0	100.0	201	1.2	0	260	310	2	1	201		50		40		10	100
202	0.146	0.0	0.0	0.0	0.0	30.0	0.0	50.0	0.0	20.0	100.0	202	3	0	400	200	10	0.5	202			85			15	100
203	0.0368	0.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	100.0	203	2	0	380	100	10	5	203	96			2	2		100
204	0.0453	0.0	0.0	0.0	10.0	0.0	50.0	0.0	40.0	0.0	100.0	204	2	0	200	115	1	1	204	96			2	2		100
205	0.07	0.0	0.0	35.0	0.0	0.0	0.0	65.0	0.0	0.0	100.0	205	5	0	500	140	2	2	205		20	60		20		100
301	0.1662	30.0	0.0	0.0	3.5	0.0	66.5	0.0	0.0	0.0	100.0	301	1.2	0	350	520	2	1	301		60		40			100
302	0.1347	20.0	5.0	11.8	0.0	0.0	63.2	0.0	0.0	0.0	100.0	302	1.2	0	180	240	2	1	302		40		50		10	100
303	0.321	25.0	0.0	0.0	15.0	0.0	60.0	0.0	0.0	0.0	100.0	303	1.2	0	300	300	2	2	303		40		50		10	100
304	0.1193	30.0	0.0	0.0	3.5	0.0	31.5	0.0	35.0	0.0	100.0	304	1.2	0	300	420	2	3.5	304		40		50		10	100
305	0.0064	6.0	0.0	0.0	9.4	0.0	0.0	0.0	84.6	0.0	100.0	305	2	0	80	80	2	2	305	100						100
306	0.0447	3.0	0.0	0.0	9.7	0.0	0.0	0.0	87.3	0.0	100.0	306	2	0	500	50	10	2	306				100			100
307	0.1653	0.0	0.0	85.0	0.0	0.0	0.0	5.0	0.0	10.0	100.0	307	3	0	850	200	10	1	307		15	70			15	100
308	0.063	2.0	0.0	0.0	12.3	0.0	0.0	0.0	85.8	0.0	100.0	308	3	0	200	320	3.5	2	308	85	5		5		5	100
309	0.0164	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	100.0	309	3	0	60	200	10	1	309			80			20	100
310	0.0682	25.0	0.0	0.0	0.0	0.0	26.3	0.0	48.8	0.0	100.0	310	1.2	0	450	140	3.5	1	310		40		50		10	100
311	0.4726	0.0	2.0	64.0	0.0	0.0	0.0	34.0	0.0	0.0	100.0	311	5	0	1200	390	2	0.5	311		80	10			10	100
312	0.318	0.0	4.0	1.0	5.0	0.0	0.0	0.0	90.0	0.0	100.0	312	3	1	450	180	3.5	2	312	85	6.5		2	6.5		100
313	0.0985	0.0	0.0	0.0	10.0	0.0	0.0	0.0	90.0	0.0	100.0	313	2	0	170	580	5	3.5	313	98				2		100
314	0.1142	0.0	0.0	20.0	0.0	0.0	0.0	10.0	0.0	70.0	100.0	314	3	0	500	240	10	1	314			85			15	100
315	0.045	0.0	0.0	0.0	30.0	0.0	0.0	0.0	70.0	0.0	100.0	315	3	0	110	410	10	2	315	98				2		100
316	0.2117	20.0	0.0	8.0	16.0	0.0	8.0	0.0	48.0	0.0	100.0	316	1.2	0	650	330	3.5	2	316		40		50		10	100
317	0.118	20.0	0.0	0.0	0.0	0.0	40.0	0.0	40.0	0.0	100.0	317	1.2	0	150	200	2	1.5	317		40		50		10	100
318	0.1539	30.0	0.0	0.0	0.0	0.0	10.5	0.0	59.5	0.0	100.0	318	1.2	0	450	340	2	1.5	318		40		50		10	100
601	0.0468	0.0	0.0	0.0	0.0	0.0	60.0	0.0	40.0	0.0	100.0	601	3	1	230	200	5	10	601	100						100
602	0.0331	0.0	0.0	0.0	0.0	0.0	60.0	0.0	40.0	0.0	100.0	602	3	1	200	170	3.5	10	602	70	30					100
603	0.0912	0.0	0.0	0.0	5.0	0.0	70.0	0.0	25.0	0.0	100.0	603	2	1	150	550	2	2	603	50	50					100
604	0.2409	0.0	18.0	4.0	0.0	0.0	8.0	0.0	40.0	30.0	100.0	604	4	1	300	300	10	10	604	40		50			10	100

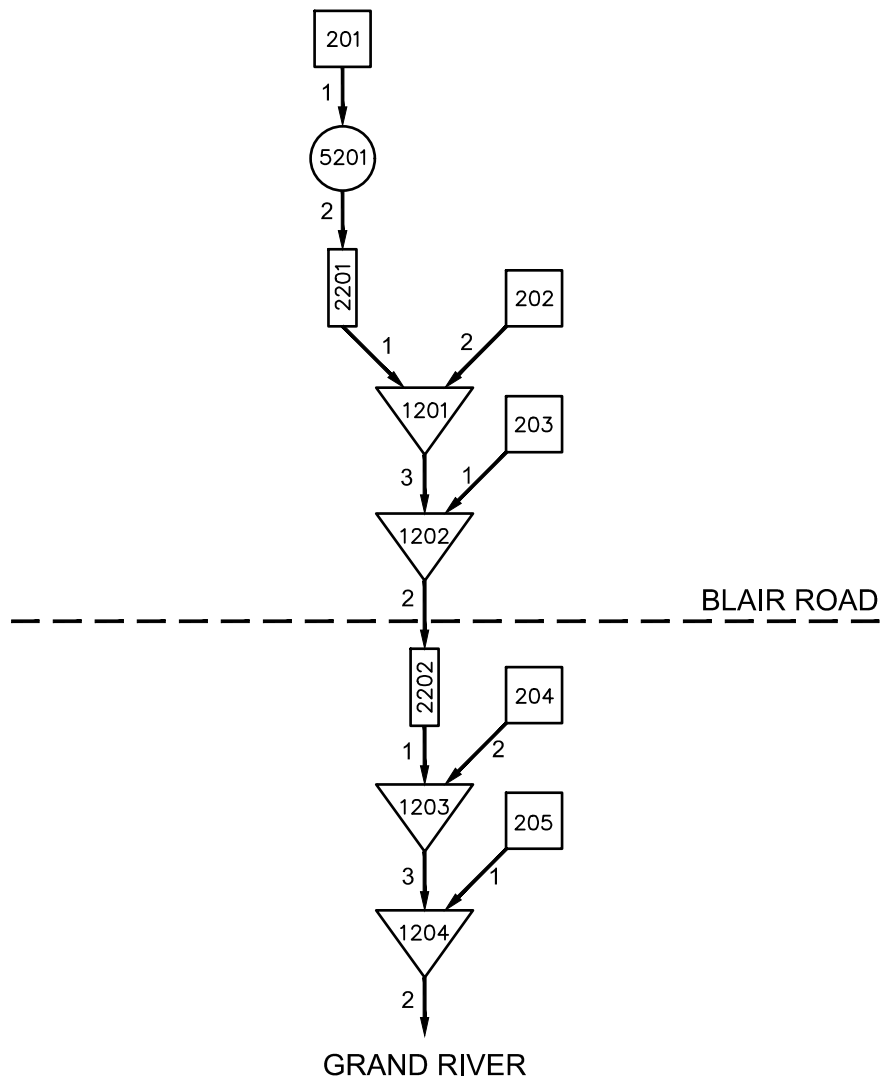
gawsparm.dat

GAWSER Parameter Adjustment Table

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
FDS	0.75	1.00	0.00	1.00	1.20	1.15	1.15	1.50	1.50	1.00	0.75	0.75
FKEFF	0.03	0.03	0.03	0.10	0.40	0.65	0.75	0.90	0.65	0.25	0.10	0.03
FCS	0.03	0.03	0.03	0.09	0.40	0.50	0.60	0.75	0.35	0.30	0.13	0.06
FD	0.06	0.04	0.05	0.05	0.06	0.08	0.10	0.11	0.10	0.10	0.08	0.07
FKO	5.00	5.00	3.50	3.50	4.00	4.50	5.50	6.00	5.00	4.00	3.50	4.00
FKSS	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
FHI	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FKMF	0.25	0.33	1.10	1.30	1.50	1.00	1.00	1.00	1.00	1.00	0.25	0.15
FNEW	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95
FEVAP	0.00	0.00	0.00	2.67	3.94	4.60	4.74	3.81	2.60	1.55	1.00	0.00
FMCR	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FOCF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FOCR	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FKE	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00
FKD	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FDD	1.00	1.00	1.00	1.00	1.00	2.50	2.50	2.50	2.50	2.50	1.00	1.00
FRCC	1.00	1.00	1.00	1.00	1.00	1.00	1.50	1.50	1.50	1.50	1.00	1.00
FSSC	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FTE	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FTEM	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FDINS	0.20	0.20	0.20	0.50	0.70	1.20	1.50	1.50	1.20	0.70	0.20	0.20

→

NEWMAN CREEK



LEGEND



CATCHMENT



ADD HYDROGRAPH



ROUTE RESERVOIR



ROUTE CHANNEL

FIGURE C1

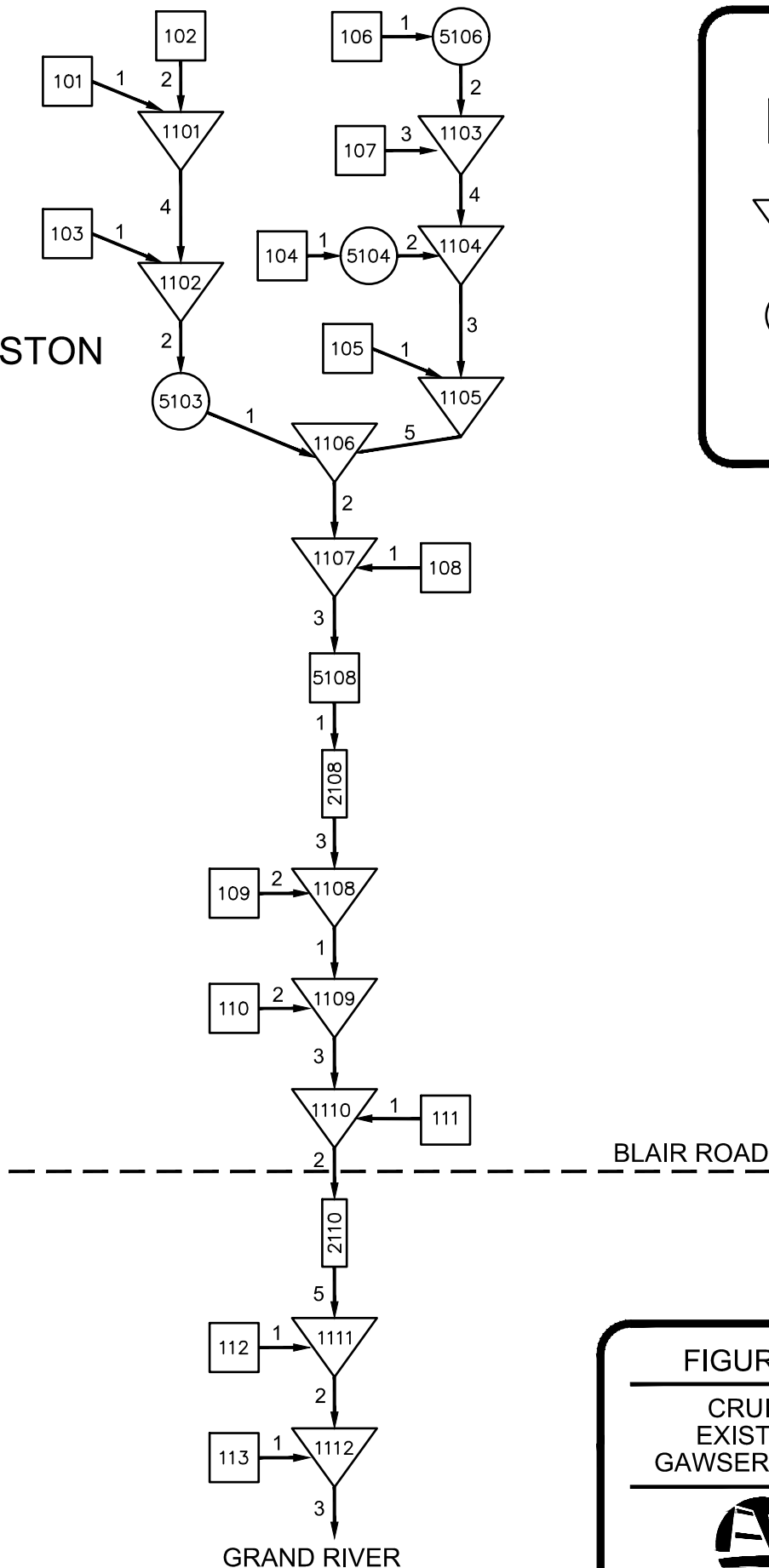
Scale N.T.S.

NEWMAN CREEK
EXISTING CONDITIONS
GAWSER MODEL SCHEMATIC



Engineers | Scientists | Surveyors

CRUICKSTON CREEK



LEGEND

- 5201 CATCHMENT
- 1201 ADD HYDROGRAPH
- 201 ROUTE RESERVOIR
- 2202 ROUTE CHANNEL

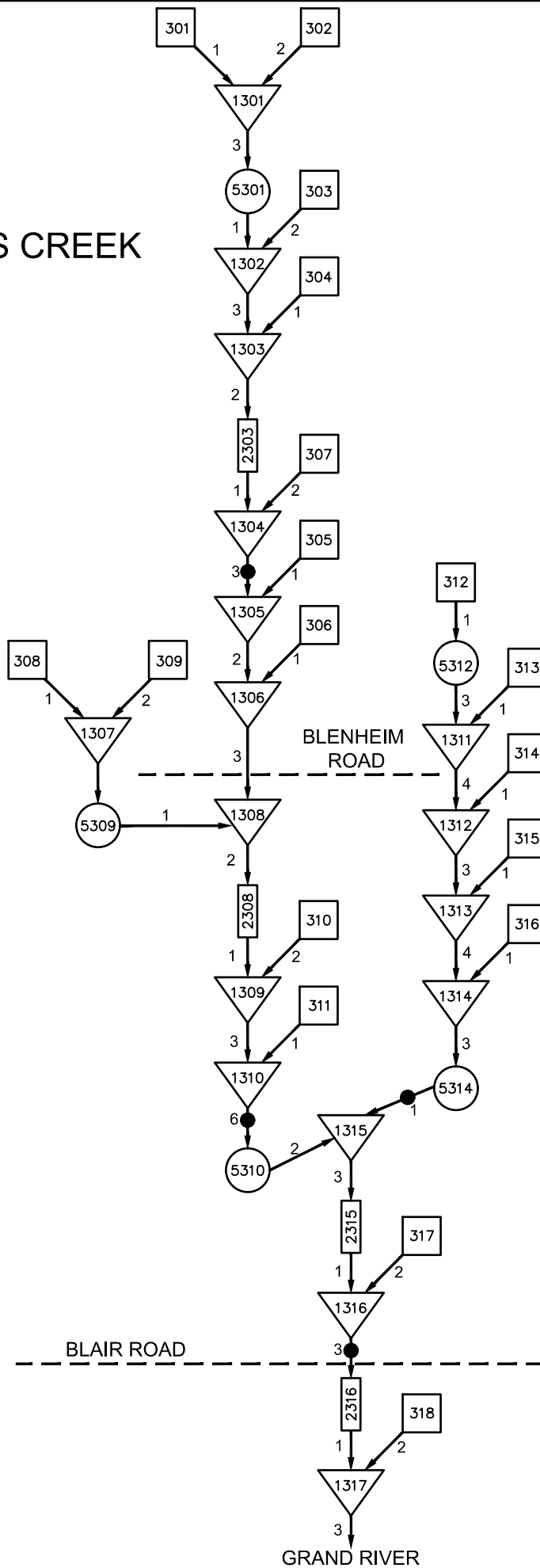
FIGURE C2

Scale N.T.S.

CRUICKSTON CREEK
EXISTING CONDITIONS
GAWSER MODEL SCHEMATIC



DEVIL'S CREEK



LEGEND

- 5201 CATCHMENT
- 1201 ADD HYDROGRAPH
- 201 ROUTE RESERVOIR
- 2202 ROUTE CHANNEL
- REMOVE FLOW FROM GROUNDWATER

FIGURE C3

Scale N.T.S.

DEVIL'S CREEK
EXISTING CONDITIONS
GAWSER MODEL SCHEMATIC



BARRIE'S LAKE

LEGEND



CATCHMENT



ADD HYDROGRAPH



ROUTE RESERVOIR



ROUTE CHANNEL

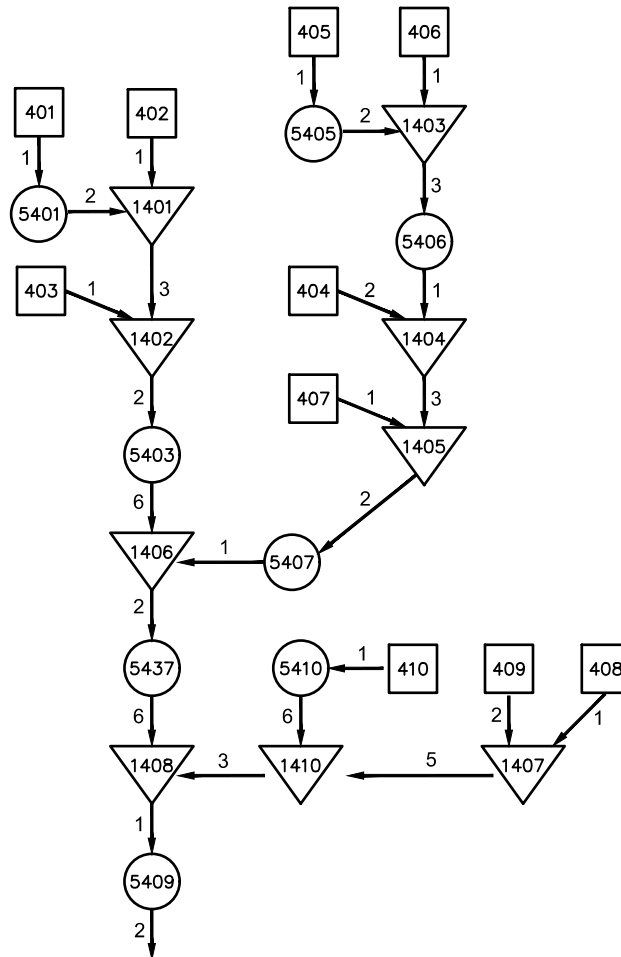


FIGURE C4

Scale N.T.S.

BARRIE'S LAKE
EXISTING CONDITIONS
GAWSER MODEL SCHEMATIC




```
* Cruickston, Newman, and Devil's Creeks Subwatersheds Model - Existing Cond.
* =====
* MTE Consultants Inc., 2011
* =====
* Hydrologic Response Units - Cruickston, Newman, and Devil's Creeks
* =====
*
* Unit Response Unit Descriptions
* 1 = Impervious
* 2 = Wetland (Open water)
* 3 = Organic Soils
* 4 = Silt tills-poor and imperfectly draining
* 5 = Silt tills high vegetation cover
* 6 = Sand tills-sandy clay to fine sand loams
* 7 = Sand tills with high vegetation cover
* 8 = Silt/sand over sand/gravel tills (gravelly sandy clay to gravelly sandy silt loams)
* 9 = Silt/sand over sand/gravel tills with high vegetation cover
*
* Soil drainage parameters taken from "Hydrology of Floods in Canada", 1989.
* Edited by Watt, W.E., National Research Council of Canada
*
READ SOIL PARAMETERS NZONE=9
```

	IMP	WET	ORG	SILT LOW	SILT HIGH	SAND LOW	SAND HIGH	SAND/GRAV LOW	SAND/GRAV HIGH
DS=	2.0	40.0	40.0	5.0	15.0	5.0	15.0	5.0	15.0
KEFF=	0	0.2	2.0	5.0	15.0	10.0	40.0	10.0	40.0
CS=	0	0.2	1.5	3.8	11.2	7.5	30.0	7.5	30.0
D=	0	0.2	0.2	0.5	1.5	1.0	4.0	1.0	4.0
SAV=	0	200	200	200	200	200	200	200	200
HI=	0	0.01	100	100	200	100	200	100	200
SMCI=	0	0.56	0.56	0.54	0.54	0.46	0.46	0.46	0.46
IMCI=	0	0.46	0.46	0.40	0.40	0.23	0.23	0.23	0.23
FCAPI=	0	0.46	0.46	0.40	0.40	0.23	0.23	0.23	0.23
WILTI=	0	0.27	0.27	0.19	0.19	0.07	0.07	0.07	0.07
HII=	0	0.01	150	150	400	300	600	400	600
SMCII=	0	0.56	0.56	0.54	0.54	0.46	0.46	0.40	0.40
IMCII=	0	0.46	0.46	0.40	0.40	0.23	0.23	0.10	0.10
FCAPII=	0	0.46	0.46	0.40	0.40	0.23	0.23	0.10	0.10
WILTII=	0	0.27	0.27	0.19	0.19	0.07	0.07	0.04	0.04
X=	0	1	1	0	1	0	0	0	0
FATR=	1	1	1	1	1	1	1	1	1
INCS=	0	1	3	1	5	1	5	1	5

* Go to event file

* CHANGE INPUT FILE

* 3.5% Typical off-channel (Steep areas)

```
*
* COMPUTE RATING CURVE ID=1 VS= 2.035 NSEGS=3
* MIN EL= 100.00 MAX EL= 100.80
* CHNSLP= 0.03500 FLNSLP= 0.03500
* N= 0.350 DIST= 24.45
* N=-0.150 DIST= 25.55
* N= 0.350 DIST= 50.00
* DIST ELEV DIST ELEV DIST ELEV
* 0.00 100.80 24.45 100.30 24.75 100.00
* 25.50 100.00 25.55 100.30 50.00 100.80
* RFN=0.0000 PCODE=1
```

* 5% Typical off-channel (Steep areas)

```
*
* COMPUTE RATING CURVE ID=2 VS= 2.050 NSEGS=3
* MIN EL= 100.00 MAX EL= 100.80
```

```
CHNSLP= 0.05000 FLNSLP= 0.05000
N= 0.350 DIST= 24.45
N=-0.150 DIST= 25.55
N= 0.350 DIST= 50.00
DIST ELEV DIST ELEV DIST ELEV
0.00 100.80 24.45 100.30 24.75 100.00
25.50 100.00 25.55 100.30 50.00 100.80
RFN=0.0000 PCODE=1
```

* 3.5% Typical Main channel Parabolic Swale

```
*
* COMPUTE RATING CURVE ID=3 VS= 100.035 NSEGS=3
* MIN EL= 100.70 MAX EL= 103.00
* CHNSLP= 0.03500 FLNSLP= 0.03500
* N= 0.080 DIST= 20.00
* N=-0.050 DIST= 30.00
* N= 0.080 DIST= 50.00
* DIST ELEV DIST ELEV DIST ELEV
* 0.00 103.00 20.00 101.00 23.00 100.80
* 25.00 100.70 27.00 100.80 30.00 101.00
* 50.00 103.00
* RFN=0.0000 PCODE=1
```

* 2% Typical Main channel Parabolic Swale

```
*
* COMPUTE RATING CURVE ID=4 VS= 100.020 NSEGS=3
* MIN EL= 100.70 MAX EL= 103.00
* CHNSLP= 0.02000 FLNSLP= 0.02000
* N= 0.080 DIST= 20.00
* N=-0.050 DIST= 30.00
* N= 0.080 DIST= 50.00
* DIST ELEV DIST ELEV DIST ELEV
* 0.00 103.00 20.00 101.00 23.00 100.80
* 25.00 100.70 27.00 100.80 30.00 101.00
* 50.00 103.00
* RFN=0.0000 PCODE=1
```

* Catchment 2% Typical off-channel (Steep areas)

```
*
* COMPUTE RATING CURVE ID=5 VS= 2.020 NSEGS=3
* MIN EL= 100.00 MAX EL= 100.80
* CHNSLP= 0.02000 FLNSLP= 0.02000
* N= 0.350 DIST= 24.45
* N=-0.150 DIST= 25.55
* N= 0.350 DIST= 50.00
* DIST ELEV DIST ELEV DIST ELEV
* 0.00 100.80 24.45 100.30 24.75 100.00
* 25.50 100.00 25.55 100.30 50.00 100.80
* RFN=0.0000 PCODE=1
```

* Catchment 0.5% Main channel Parabolic Swale

```
*
* COMPUTE RATING CURVE ID=6 VS= 100.005 NSEGS=3
* MIN EL= 100.70 MAX EL= 103.00
* CHNSLP= 0.00500 FLNSLP= 0.005000
* N= 0.080 DIST= 20.00
* N=-0.050 DIST= 30.00
* N= 0.080 DIST= 50.00
* DIST ELEV DIST ELEV DIST ELEV
* 0.00 103.00 20.00 101.00 23.00 100.80
* 25.00 100.70 27.00 100.80 30.00 101.00
* 50.00 103.00
* RFN=0.0000 PCODE=1
```

```
*****
* CRUICKSTON CREEK
*
*
* Catchment 106
* VS= 100.005 is main channel & VS= 2.02 is off-channel
*
COMPUTE FLOWRATE ID=1 NHD= 106 AREA= 0.0215 Sq km L= 220 m W= 100 m
SOIL ZONE I II III IV V VI VII VIII IX
0.0 0.0 0.0 20.0 0.0 0.0 0.0 80.0 0.0
RATING CURVES: IDMC=6 IDOC=5 QRCM= 0.05 QROC= 0.01
ROUTING MODEL=2 CONSTANTS: OVERLAND FTB= 3.0 TLO= 0.0
SUBSURFACE: KSS= 5.0 KGW= 384 h PCODE=1 WQPCODE=1
RBASIN=0 IDA=0 IDB=0 IDC=0 IDD=0 RBDUMP=0
GWFACT=1.00 GWON=1
SWQTH= 0.0 L/s SWPUMP= 0.0 L/s SWCODE=0

*
* Route flows from 106 through a depression
*
ROUTE SPECIAL POND ID=2 HYD NO=5106 INFLOW=1 PCODE=0 OPTION=15
Inflow controls:
USPCT=100% USDIV=0 PCTA= 0% ADIV=0
GWPCIT= 0% GWDIV=0
Maximum level for Routing Tables: ZMAX= 317.000
Recharge characteristics for Compartment A
LEVELA= 315.000 EVAPA= 0.0 mm/d ACODE=0
CDA= 0.000 mm/h DZA= 23.00 m
Recharge characteristics for Compartment B
LEVELB= 315.000 CCBA= 0.00000 EVAPB= 1.4 mm/d BCODE=1
CDB= 25.000 mm/h DZB= 10.00 m
Irrigation Pond Controls: IPOND=0
Number of points= 5
Compartment A Compartment B
Elevation Outflow Storage SFArea Outflow Storage SFArea
(m) (cms) (ha*m) (ha) (cms) (ha*m) (ha)
315.000 0.000 0.000 0.000 0.000 0.000 0.018
315.500 0.000 0.000 0.000 0.000 0.043 0.155
316.000 0.000 0.000 0.000 0.000 0.155 0.291
316.500 0.000 0.000 0.000 0.000 0.355 0.511
317.000 0.000 0.000 0.000 5.000 0.693 0.839

*
PRINT HYD ID=2 PCODE=1 MODE=10
*
* Catchment 107
* VS= 100.035 is main channel & VS= 2.050 is off-channel
*
COMPUTE FLOWRATE ID=3 NHD= 107 AREA= 0.1510 Sq km L= 10 m W= 400 m
SOIL ZONE I II III IV V VI VII VIII IX
0.0 0.0 0.0 0.0 0.0 0.0 0.0 100.0 0.0
RATING CURVES: IDMC=3 IDOC=2 QRCM= 0.05 QROC= 0.01
ROUTING MODEL=2 CONSTANTS: OVERLAND FTB= 2.0 TLO= 0.0
SUBSURFACE: KSS= 5.0 KGW= 384 h PCODE=1 WQPCODE=1
RBASIN=0 IDA=0 IDB=0 IDC=0 IDD=0 RBDUMP=0
GWFACT=1.00 GWON=1
SWQTH= 0.0 L/s SWPUMP= 0.0 L/s SWCODE=0

*
PRINT HYD ID=3 PCODE=1 MODE=10
*
* Sum hydr. 107 & 5106, call result 1103
*
ADD HYD ID=4 HYD NO= 1103 IDA=3 IDB=2 ICODE=0
*
* Catchment 104
```

```
* VS= 100.020 is main channel & VS= 2.050 is off-channel
*
COMPUTE FLOWRATE ID=1 NHD= 104 AREA= 0.0282 Sq km L= 100 m W= 90 m
SOIL ZONE I II III IV V VI VII VIII IX
0.0 0.0 0.0 40.0 0.0 0.0 0.0 60.0 0.0
RATING CURVES: IDMC=4 IDOC=2 QRCM= 0.05 QROC= 0.01
ROUTING MODEL=2 CONSTANTS: OVERLAND FTB= 3.0 TLO= 0.0
SUBSURFACE: KSS= 5.0 KGW= 384 h PCODE=1 WQPCODE=1
RBASIN=0 IDA=0 IDB=0 IDC=0 IDD=0 RBDUMP=0
GWFACT=1.00 GWON=1
SWQTH= 0.0 L/s SWPUMP= 0.0 L/s SWCODE=0

*
PRINT HYD ID=1 PCODE=1 MODE=10
*
* Route flows from 104 through a depression
*
ROUTE SPECIAL POND ID=2 HYD NO=5104 INFLOW=1 PCODE=0 OPTION=15
Inflow controls:
USPCT=100% USDIV=0 PCTA= 0% ADIV=0
GWPCIT= 0% GWDIV=0
Maximum level for Routing Tables: ZMAX= 311.400
Recharge characteristics for Compartment A
LEVELA= 309.500 EVAPA= 0.0 mm/d ACODE=0
CDA= 0.000 mm/h DZA= 23.00 m
Recharge characteristics for Compartment B
LEVELB= 309.500 CCBA= 0.00000 EVAPB= 1.4 mm/d BCODE=1
CDB= 25.000 mm/h DZB= 10.00 m
Irrigation Pond Controls: IPOND=0
Number of points= 5
Compartment A Compartment B
Elevation Outflow Storage SFArea Outflow Storage SFArea
(m) (cms) (ha*m) (ha) (cms) (ha*m) (ha)
309.500 0.000 0.000 0.000 0.000 0.000 0.007
310.000 0.000 0.000 0.000 0.000 0.031 0.118
310.500 0.000 0.000 0.000 0.000 0.123 0.248
311.000 0.000 0.000 0.000 0.000 0.283 0.394
311.400 0.000 0.000 0.000 5.000 0.476 0.569

*
PRINT HYD ID=2 PCODE=1 MODE=10
*
* Sum hydr. 1103, 5104, call result 1104
*
ADD HYD ID=3 HYD NO= 1104 IDA=2 IDB=4 ICODE=0
*
* Catchment 105
* VS= 100.020 is main channel & VS= 2.035 is off-channel
*
COMPUTE FLOWRATE ID=1 NHD= 105 AREA= 0.1640 Sq km L= 280 m W= 550 m
SOIL ZONE I II III IV V VI VII VIII IX
0.0 0.0 0.0 5.0 0.0 0.0 0.0 95.0 0.0
RATING CURVES: IDMC=4 IDOC=1 QRCM= 0.05 QROC= 0.01
ROUTING MODEL=2 CONSTANTS: OVERLAND FTB= 3.0 TLO= 0.0
SUBSURFACE: KSS= 5.0 KGW= 384 h PCODE=1 WQPCODE=1
RBASIN=0 IDA=0 IDB=0 IDC=0 IDD=0 RBDUMP=0
GWFACT=1.00 GWON=1
SWQTH= 0.0 L/s SWPUMP= 0.0 L/s SWCODE=0

*
PRINT HYD ID=1 PCODE=1 MODE=10
*
* Sum hydr. 105, 1104, call result 1105
*
ADD HYD ID=5 HYD NO= 1105 IDA=1 IDB=3 ICODE=0
*
* Catchment 101
```

```
* VS= 100.035 is main channel & VS= 2.035 is off-channel
*
COMPUTE FLOWRATE ID=1 NHD= 101 AREA= 0.0039 Sq km L= 40 m W= 100 m
SOIL ZONE I II III IV V VI VII VIII IX
0.0 0.0 0.0 10.0 0.0 80.0 0.0 10.0 0.0
RATING CURVES: IDMC=3 IDOC=1 QRM= 0.05 QROC= 0.01
ROUTING MODEL=2 CONSTANTS: OVERLAND FTB= 2.0 TLO= 0.0
SUBSURFACE: KSS= 5.0 KGW= 384 h PCODE=1 WQPCODE=1
RBASIN=0 IDA=0 IDB=0 IDC=0 IDD=0 RBDUMP=0
GWFACT=1.00 GWON=1
SWQTH= 0.0 L/s SWPUMP= 0.0 L/s SWCODE=0

*
PRINT HYD ID=1 PCODE=1 MODE=10
*
* Catchment 102
* VS= 100.035 is main channel & VS= 2.035 is off-channel
*
COMPUTE FLOWRATE ID=2 NHD= 102 AREA= 0.0214 Sq km L= 180 m W= 120 m
SOIL ZONE I II III IV V VI VII VIII IX
0.0 0.0 0.0 0.0 0.0 0.0 0.0 100.0 0.0
RATING CURVES: IDMC=3 IDOC=1 QRM= 0.05 QROC= 0.01
ROUTING MODEL=2 CONSTANTS: OVERLAND FTB= 2.0 TLO= 0.0
SUBSURFACE: KSS= 5.0 KGW= 384 h PCODE=1 WQPCODE=1
RBASIN=0 IDA=0 IDB=0 IDC=0 IDD=0 RBDUMP=0
GWFACT=1.00 GWON=1
SWQTH= 0.0 L/s SWPUMP= 0.0 L/s SWCODE=0

*
PRINT HYD ID=2 PCODE=1 MODE=10
*
* Sum hydr. 101, 102, call result 1101
*
ADD HYD ID=4 HYD NO= 1101 IDA=1 IDB=2 ICODE=0
*
* Catchment 103
* VS= 100.020 is main channel & VS= 2.035 is off-channel
*
COMPUTE FLOWRATE ID=1 NHD= 103 AREA= 0.0259 Sq km L= 280 m W= 90 m
SOIL ZONE I II III IV V VI VII VIII IX
0.0 10.0 10.0 0.0 0.0 0.0 0.0 0.0 80.0
RATING CURVES: IDMC=4 IDOC=1 QRM= 0.05 QROC= 0.01
ROUTING MODEL=2 CONSTANTS: OVERLAND FTB= 5.0 TLO= 0.0
SUBSURFACE: KSS= 5.0 KGW= 384 h PCODE=1 WQPCODE=1
RBASIN=0 IDA=0 IDB=0 IDC=0 IDD=0 RBDUMP=0
GWFACT=1.00 GWON=1
SWQTH= 0.0 L/s SWPUMP= 0.0 L/s SWCODE=0

*
PRINT HYD ID=1 PCODE=1 MODE=10
*
* Sum hydr. 103, 1101, call result 1102
*
ADD HYD ID=2 HYD NO= 1102 IDA=1 IDB=4 ICODE=0
*
PRINT HYD ID=2 PCODE=1 MODE=10
*
* Route flows from 1102 through a depression
*
ROUTE SPECIAL POND ID=1 HYD NO=5103 INFLOW=2 PCODE=0 OPTION=15
Inflow controls:
USPCT=100% USDIV=0 PCTA= 0% ADIV=0
GWPC= 0% GWDIV=0
Maximum level for Routing Tables: ZMAX= 308.000
Recharge characteristics for Compartment A
LEVELA= 307.300 EVAPA= 0.0 mm/d ACODE=0
CDA= 0.000 mm/h DZA= 23.00 m
```

```
Recharge characteristics for Compartment B
LEVELB= 307.300 CCBA= 0.00000 EVAPB= 1.4 mm/d BCODE=1
CDB= 4.000 mm/h DZB= 10.00 m
Irrigation Pond Controls: IPOND=0
Number of points= 4
Compartment A Compartment B
Elevation Outflow Storage SFArea Outflow Storage SFArea
(m) (cms) (ha*m) (ha) (cms) (ha*m) (ha)
307.300 0.000 0.000 0.000 0.000 0.000 0.200
307.500 0.000 0.000 0.000 0.000 0.055 0.347
307.600 0.000 0.000 0.000 0.000 0.093 0.415
308.000 0.000 0.000 0.000 5.000 0.312 0.680

*
PRINT HYD ID=1 PCODE=1 MODE=10
*
* Sum hydr. 5102, 1105, call result 1106
*
ADD HYD ID=2 HYD NO= 1106 IDA=1 IDB=5 ICODE=0
*
* 0.5% Off-channel (Flat areas)
*
COMPUTE RATING CURVE ID=5 VS= 1.005 NSEGS=3
MIN EL= 100.00 MAX EL= 100.60
CHNSLP= 0.00500 FLNSLP= 0.00500
N= 0.350 DIST= 39.15
N=-0.150 DIST= 40.85
N= 0.350 DIST= 80.00
DIST ELEV DIST ELEV
0.00 100.60 39.15 100.20 39.75 100.00
40.25 100.00 40.85 100.20 80.00 100.60
RFN=0.0000 PCODE=1

*
* Catchment 108
* VS= 100.005 is main channel & VS= 2.005 is off-channel
*
COMPUTE FLOWRATE ID=1 NHD= 108 AREA= 0.124 Sq km L= 300 m W= 250 m
SOIL ZONE I II III IV V VI VII VIII IX
0.0 10.0 45.0 0.0 15.0 0.0 0.0 0.0 30.0
RATING CURVES: IDMC=6 IDOC=5 QRM= 0.05 QROC= 0.01
ROUTING MODEL=2 CONSTANTS: OVERLAND FTB= 5.0 TLO= 0.0
SUBSURFACE: KSS= 5.0 KGW= 384 h PCODE=1 WQPCODE=1
RBASIN=0 IDA=0 IDB=0 IDC=0 IDD=0 RBDUMP=0
GWFACT=0.00 GWON=1
SWQTH= 0.0 L/s SWPUMP= 0.0 L/s SWCODE=0

*
PRINT HYD ID=1 PCODE=1 MODE=10
*
* Sum hydr. 108, 1106, call result 1107
*
ADD HYD ID=3 HYD NO= 1107 IDA=1 IDB=2 ICODE=0
*
PRINT HYD ID=3 PCODE=1 MODE=10
*
* Route flows from 1107 through small wetland storage area
*
ROUTE RESERVOIR ID=1 HYD NO=5108 INFLOW=3 PCODE=0 OPTION=5
OUTFLOW STORAGE OUTFLOW STORAGE
CMS HA-M CMS HA-M
0.0 0.0 0.003 0.010
0.005 0.030 5.000 0.200

*
PRINT HYD ID=1 PCODE=1 MODE=10
*
COMPUTE RATING CURVE ID=6 VS= 9.000 NSEGS=3
```



```

      MIN EL= 294.25    MAX EL= 297.00
      CHNSLP= 0.03500    FLNSLP= 0.03500
      N= 0.080  DIST= 95.70
      N=-0.035 DIST= 99.50
      N= 0.080  DIST= 130.00
      DIST      ELEV      DIST      ELEV      DIST      ELEV
      70.00    297.00    78.00    296.00    94.00    295.00
      95.70    294.40    97.60    294.25    99.50    294.40
      100.00   295.00    115.00   296.00    130.00   297.00
      RFN=0.0000 PCODE=1

*
* Route through reach 2108
* Using Valley Section 9.000 As channel Rating Curve
*
ROUTE CHANNEL      ID=3 HYD NO= 2108 INFLOW=1 LENGTH= 600 m SLOPE=0.03500
      RCID=6 NS=1 PCODE=1 INDEX=1 PIPE=0 CANOPY= 75.0%
*
* 5% Main channel Parabolic Swale
*
COMPUTE RATING CURVE ID=6 VS= 100.050 NSEGS=3
      MIN EL= 100.70    MAX EL= 103.00
      CHNSLP= 0.05000    FLNSLP= 0.050000
      N= 0.080  DIST= 20.00
      N=-0.050 DIST= 30.00
      N= 0.080  DIST= 50.00
      DIST      ELEV      DIST      ELEV      DIST      ELEV
      0.00    103.00    20.00    101.00    23.00    100.80
      25.00    100.70    27.00    100.80    30.00    101.00
      50.00    103.00
      RFN=0.0000 PCODE=1

* Catchment 109
* VS= 100.050 is main channel & VS= 2.050 is off-channel
*
COMPUTE FLOWRATE      ID=2 NHD= 109 AREA= 0.1252 Sq km L= 600 m W= 100 m
      SOIL ZONE I II III IV V VI VII VIII IX
      5.0 0.0 0.0 0.0 15.0 0.0 80.0 0.0 0.0
      RATING CURVES: IDMC=6 IDOC=2 QRCM= 0.05 QROC= 0.01
      ROUTING MODEL=2 CONSTANTS: OVERLAND FTB= 3.0 TLO= 0.0
      SUBSURFACE: KSS= 5.0 KGW= 384 h PCODE=1 WQPCODE=1
      RBASIN=0 IDA=0 IDB=0 IDC=0 IDD=0 RBDUMP=0
      GWFACT=0.00 GWON=1
      SWQTH= 0.0 L/s SWPUMP= 0.0 L/s SWCODE=0
*
PRINT HYD      ID=2 PCODE=1 MODE=10
*
* Sum hydr. 109, 2108, call result 1108
*
ADD HYD      ID=1 HYD NO= 1108 IDA=3 IDB=2 ICODE=0
*
PRINT HYD      ID=1 PCODE=1 MODE=10
*
* Catchment 110
* VS= 100.050 is main channel & VS= 2.050 is off-channel
*
COMPUTE FLOWRATE      ID=2 NHD= 110 AREA= 0.0201 Sq km L= 60 m W= 60 m
      SOIL ZONE I II III IV V VI VII VIII IX
      0.0 0.0 0.0 0.0 0.0 100.0 0.0 0.0 0.0
      RATING CURVES: IDMC=6 IDOC=2 QRCM= 0.05 QROC= 0.01
      ROUTING MODEL=2 CONSTANTS: OVERLAND FTB= 2.0 TLO= 0.0
      SUBSURFACE: KSS= 5.0 KGW= 384 h PCODE=1 WQPCODE=1
      RBASIN=0 IDA=0 IDB=0 IDC=0 IDD=0 RBDUMP=0
      GWFACT=1.00 GWON=1
      SWQTH= 0.0 L/s SWPUMP= 0.0 L/s SWCODE=0
*

```

```

PRINT HYD      ID=2 PCODE=1 MODE=10
*
* Sum hydr. 110, 1108, call result 1109
*
ADD HYD      ID=3 HYD NO= 1109 IDA=2 IDB=1 ICODE=0
*
PRINT HYD      ID=3 PCODE=1 MODE=10
*
* Catchment 10% Typical off-channel (Steep areas)
*
COMPUTE RATING CURVE ID=5 VS= 2.100 NSEGS=3
      MIN EL= 100.00    MAX EL= 100.80
      CHNSLP= 0.10000    FLNSLP= 0.10000
      N= 0.350  DIST= 24.45
      N=-0.150 DIST= 25.55
      N= 0.350  DIST= 50.00
      DIST      ELEV      DIST      ELEV      DIST      ELEV
      0.00    100.80    24.45    100.30    24.75    100.00
      25.50    100.00    25.55    100.30    50.00    100.80
      RFN=0.0000 PCODE=1
*
* Catchment 111
* VS= 100.050 is main channel & VS= 1.10 is off-channel
*
COMPUTE FLOWRATE      ID=1 NHD= 111 AREA= 0.0498 Sq km L= 10 m W= 250 m
      SOIL ZONE I II III IV V VI VII VIII IX
      0.0 0.0 0.0 0.0 0.0 0.0 0.0 100.0 0.0
      RATING CURVES: IDMC=6 IDOC=5 QRCM= 0.05 QROC= 0.01
      ROUTING MODEL=2 CONSTANTS: OVERLAND FTB= 2.0 TLO= 0.0
      SUBSURFACE: KSS= 5.0 KGW= 384 h PCODE=1 WQPCODE=1
      RBASIN=0 IDA=0 IDB=0 IDC=0 IDD=0 RBDUMP=0
      GWFACT=1.00 GWON=1
      SWQTH= 0.0 L/s SWPUMP= 0.0 L/s SWCODE=0
*
PRINT HYD      ID=1 PCODE=1 MODE=10
*
* Sum hydr. 111, 1109, call result 1110
*
ADD HYD      ID=2 HYD NO= 1110 IDA=1 IDB=3 ICODE=0
*
* Cruickston Creek at Blair Road
*
PRINT HYD      ID=2 PCODE=1 MODE=10
KEEP HYD      ID=2 CUTOFF=24 ICODE=3 ISTEP=1 IFORM=0 IDB=2 IMET=1
KEEP HYD      ID=2 CUTOFF=24 ICODE=5 ISTEP=1 IFORM=0 IDB=2 IMET=1
*
COMPUTE RATING CURVE ID=5 VS= 7.000 NSEGS=3
      MIN EL= 279.10    MAX EL= 281.00
      CHNSLP= 0.01500    FLNSLP= 0.01700
      N= 0.080  DIST= 98.95
      N=-0.035 DIST= 100.95
      N= 0.080  DIST= 165.00
      DIST      ELEV      DIST      ELEV      DIST      ELEV
      40.00    281.00    60.00    280.00    98.95    279.50
      100.00    279.10    100.95    279.50    125.00    280.00
      165.00    281.00
      RFN=0.0000 PCODE=1
*
* Route through reach 2110
* Using Valley Section 7.000 As channel Rating Curve
*
ROUTE CHANNEL      ID=5 HYD NO= 2110 INFLOW=2 LENGTH= 800 m SLOPE=0.01600
      RCID=5 NS=1 PCODE=1 INDEX=1 PIPE=0 CANOPY= 50.0%
*

```

```
PRINT HYD          ID=5 PCODE=1 MODE=10
KEEP HYD          ID=5 CUTOFF=24 ICODE=5 ISTEP=1 IFORM=0 IDB=5 IMET=1
*
*
*****
* BARRIE'S LAKE
*
*
*   2% Typical Main channel Parabolic Swale
*
COMPUTE RATING CURVE ID=1 VS= 100.020 NSEGS=3
      MIN EL= 100.70 MAX EL= 103.00
      CHNSLP= 0.02000 FLNSLP= 0.02000
      N= 0.080 DIST= 20.00
      N=-0.050 DIST= 30.00
      N= 0.080 DIST= 50.00
      DIST ELEV DIST ELEV DIST ELEV
      0.00 103.00 20.00 101.00 23.00 100.80
      25.00 100.70 27.00 100.80 30.00 101.00
      50.00 103.00
      RFN=0.0000 PCODE=1
*
*   3.5% Typical Main channel Parabolic Swale
*
COMPUTE RATING CURVE ID=2 VS= 100.035 NSEGS=3
      MIN EL= 100.70 MAX EL= 103.00
      CHNSLP= 0.03500 FLNSLP= 0.03500
      N= 0.080 DIST= 20.00
      N=-0.050 DIST= 30.00
      N= 0.080 DIST= 50.00
      DIST ELEV DIST ELEV DIST ELEV
      0.00 103.00 20.00 101.00 23.00 100.80
      25.00 100.70 27.00 100.80 30.00 101.00
      50.00 103.00
      RFN=0.0000 PCODE=1
*
* Catchment 2% Typical off-channel (Steep areas)
*
COMPUTE RATING CURVE ID=3 VS= 2.020 NSEGS=3
      MIN EL= 100.00 MAX EL= 100.80
      CHNSLP= 0.02000 FLNSLP= 0.02000
      N= 0.350 DIST= 24.45
      N=-0.150 DIST= 25.55
      N= 0.350 DIST= 50.00
      DIST ELEV DIST ELEV DIST ELEV
      0.00 100.80 24.45 100.30 24.75 100.00
      25.50 100.00 25.55 100.30 50.00 100.80
      RFN=0.0000 PCODE=1
*
*   3.5% Typical off-channel (Steep areas)
*
COMPUTE RATING CURVE ID=4 VS= 2.035 NSEGS=3
      MIN EL= 100.00 MAX EL= 100.80
      CHNSLP= 0.03500 FLNSLP= 0.03500
      N= 0.350 DIST= 24.45
      N=-0.150 DIST= 25.55
      N= 0.350 DIST= 50.00
      DIST ELEV DIST ELEV DIST ELEV
      0.00 100.80 24.45 100.30 24.75 100.00
      25.50 100.00 25.55 100.30 50.00 100.80
      RFN=0.0000 PCODE=1
*
*   10% Typical Main channel Parabolic Swale
```

```
*
COMPUTE RATING CURVE ID=5 VS= 100.100 NSEGS=3
      MIN EL= 100.70 MAX EL= 103.00
      CHNSLP= 0.10000 FLNSLP= 0.10000
      N= 0.080 DIST= 20.00
      N=-0.050 DIST= 30.00
      N= 0.080 DIST= 50.00
      DIST ELEV DIST ELEV DIST ELEV
      0.00 103.00 20.00 101.00 23.00 100.80
      25.00 100.70 27.00 100.80 30.00 101.00
      50.00 103.00
      RFN=0.0000 PCODE=1
*
* Catchment 10% Typical off-channel (Steep areas)
*
COMPUTE RATING CURVE ID=6 VS= 2.100 NSEGS=3
      MIN EL= 100.00 MAX EL= 100.80
      CHNSLP= 0.10000 FLNSLP= 0.10000
      N= 0.350 DIST= 24.45
      N=-0.150 DIST= 25.55
      N= 0.350 DIST= 50.00
      DIST ELEV DIST ELEV DIST ELEV
      0.00 100.80 24.45 100.30 24.75 100.00
      25.50 100.00 25.55 100.30 50.00 100.80
      RFN=0.0000 PCODE=1
*
* Catchment 401
* VS= 100.100 is main channel & VS= 2.10 is off-channel
*
COMPUTE FLOWRATE ID=1 NHD= 401 AREA= 0.0234 Sq km L= 160 m W= 140 m
      SOIL ZONE I II III IV V VI VII VIII IX
      2.0 0.0 0.0 39.2 0.0 0.0 0.0 58.8 0.0
      RATING CURVES: IDMC=5 IDOC=6 QRCM= 0.05 QROC= 0.01
      ROUTING MODEL=2 CONSTANTS: OVERLAND FTB= 3.0 TLO= 0.0
      SUBSURFACE: KSS= 5.0 KGW= 384 h PCODE=1 WQPCODE=1
      RBASIN=0 IDA=0 IDB=0 IDC=0 IDD=0 RBDUMP=0
      GWFACT=1.00 GWON=1
      SWQTH= 0.0 L/s SWPUMP= 0.0 L/s SWCODE=0
*
PRINT HYD          ID=1 PCODE=1 MODE=10
*
* Route flows from 401 through a depression
*
ROUTE SPECIAL POND ID=2 HYD NO=5401 INFLOW=1 PCODE=0 OPTION=15
Inflow controls:
      USPCT=100% USDIV=0 PCTA= 0% ADIV=0
      GWPCT= 0% GWDIV=0
Maximum level for Routing Tables: ZMAX= 310.000
Recharge characteristics for Compartment A
      LEVELA= 308.400 EVAPA= 0.0 mm/d ACODE=0
      CDA= 0.000 mm/h DZA= 23.00 m
Recharge characteristics for Compartment B
      LEVELB= 308.400 CCBA= 0.00000 EVAPB= 1.4 mm/d BCODE=1
      CDB= 25.000 mm/h DZB= 10.00 m
Irrigation Pond Controls: IPOND=0
Number of points= 8
      Compartment A Compartment B
      Elevation Outflow Storage SFArea Outflow Storage SFArea
      (m) (cms) (ha*m) (ha) (cms) (ha*m) (ha)
      308.400 0.000 0.000 0.000 0.000 0.000 0.001
      308.500 0.000 0.000 0.000 0.000 0.001 0.026
      308.600 0.000 0.000 0.000 0.000 0.006 0.075
      308.700 0.000 0.000 0.000 0.000 0.016 0.119
      309.000 0.000 0.000 0.000 0.000 0.076 0.278
```

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309.300      0.000      0.000      0.000      0.000      0.183      0.439
309.600      0.000      0.000      0.000      0.000      0.339      0.596
310.000      0.000      0.000      0.000      5.000      0.602      0.720
*
PRINT HYD      ID=2 PCODE=1 MODE=10
*
* Catchment 402
* VS= 100.020 is main channel & VS= 2.035 is off-channel
*
COMPUTE FLOWRATE ID=1 NHD= 402 AREA= 0.1337 Sq km L= 160 m W= 270 m
SOIL ZONE I II III IV V VI VII VIII IX
1.0 0.0 0.0 32.7 0.0 0.0 0.0 66.3 0.0
RATING CURVES: IDMC=1 IDOC=4 QRCM= 0.05 QROC= 0.01
ROUTING MODEL=2 CONSTANTS: OVERLAND FTB= 2.0 TLO= 0.0
SUBSURFACE: KSS= 5.0 KGW= 384 h PCODE=1 WQPCODE=1
RBASIN=0 IDA=0 IDB=0 IDC=0 IDD=0 RBDUMP=0
GWFACT=1.00 GWON=1
SWQTH= 0.0 L/s SWPUMP= 0.0 L/s SWCODE=0
*
PRINT HYD      ID=1 PCODE=1 MODE=10
*
* Sum hydr. 5401, 402, call result 1401
*
ADD HYD      ID=3 HYD NO= 1401 IDA=1 IDB=2 ICODE=0
*
PRINT HYD      ID=3 PCODE=1 MODE=10
*
* 5% Typical Main channel Parabolic Swale
*
COMPUTE RATING CURVE ID=5 VS= 100.050 NSEGS=3
MIN EL= 100.70 MAX EL= 103.00
CHNSLP= 0.05000 FLNSLP= 0.05000
N= 0.080 DIST= 20.00
N=-0.050 DIST= 30.00
N= 0.080 DIST= 50.00
DIST ELEV DIST ELEV DIST ELEV
0.00 103.00 20.00 101.00 23.00 100.80
25.00 100.70 27.00 100.80 30.00 101.00
50.00 103.00
RFN=0.0000 PCODE=1
*
* Catchment 5% Typical off-channel (Steep areas)
*
COMPUTE RATING CURVE ID=6 VS= 2.050 NSEGS=3
MIN EL= 100.00 MAX EL= 100.80
CHNSLP= 0.05000 FLNSLP= 0.05000
N= 0.350 DIST= 24.45
N=-0.150 DIST= 25.55
N= 0.350 DIST= 50.00
DIST ELEV DIST ELEV DIST ELEV
0.00 100.80 24.45 100.30 24.75 100.00
25.50 100.00 25.55 100.30 50.00 100.80
RFN=0.0000 PCODE=1
*
* Catchment 403
* HRU was 1.0 41.0 18.7 8.8 0.0 0.0 0.0 30.5 0.0
* VS= 100.050 is main channel & VS= 2.050 is off-channel
*
COMPUTE FLOWRATE ID=1 NHD= 403 AREA= 0.1073 Sq km L= 140 m W= 180 m
SOIL ZONE I II III IV V VI VII VIII IX
1.0 26.0 33.7 8.8 0.0 0.0 0.0 30.5 0.0
RATING CURVES: IDMC=5 IDOC=6 QRCM= 0.05 QROC= 0.01
ROUTING MODEL=2 CONSTANTS: OVERLAND FTB= 5.0 TLO= 0.0
SUBSURFACE: KSS= 5.0 KGW= 384 h PCODE=1 WQPCODE=1
```

```

RBASIN=0 IDA=0 IDB=0 IDC=0 IDD=0 RBDUMP=0
GWFACT=1.00 GWON=1
SWQTH= 0.0 L/s SWPUMP= 0.0 L/s SWCODE=0
*
PRINT HYD      ID=1 PCODE=1 MODE=10
*
* Sum hydr. 1401, 403, call result 1402
*
ADD HYD      ID=2 HYD NO= 1402 IDA=1 IDB=3 ICODE=0
*
PRINT HYD      ID=2 PCODE=1 MODE=10
*
* Route flows from 1402 through a depression
* Revised Sept 28/17 to include storage down to 307.9 to match monitored data
*
ROUTE SPECIAL POND ID=6 HYD NO=5403 INFLOW=2 PCODE=0 OPTION=15
Inflow controls:
USPCT=100% USDIV=0 PCTA= 0% ADIV=0
GWPCT= 0% GWDIV=0
Maximum level for Routing Tables: ZMAX= 309.500
Recharge characteristics for Compartment A
LEVELA= 307.900 EVAPA= 0.0 mm/d ACODE=0
CDA= 0.000 mm/h DZA= 23.00 m
Recharge characteristics for Compartment B
LEVELB= 307.900 CCBA= 0.00000 EVAPB= 1.4 mm/d BCODE=1
CDB= 4.000 mm/h DZB= 10.00 m
Irrigation Pond Controls: IPOND=0
Number of points= 7
Compartment A Compartment B
Elevation Outflow Storage SFArea Outflow Storage SFArea
(m) (cms) (ha*m) (ha) (cms) (ha*m) (ha)
307.900 0.000 0.000 0.000 0.000 0.000 0.000 0.745
308.200 0.000 0.000 0.000 0.000 0.000 0.235 0.824
308.500 0.000 0.000 0.000 0.000 0.000 0.986 4.184
309.000 0.000 0.000 0.000 0.000 0.000 3.497 5.859
309.200 0.000 0.000 0.000 0.000 0.000 4.673 5.902
309.400 0.000 0.000 0.000 0.000 0.000 6.726 7.784
309.500 0.000 0.000 0.000 5.000 6.726 7.784
*
PRINT HYD      ID=6 PCODE=1 MODE=10
*
* Catchment 405
* VS= 100.020 is main channel & VS= 2.020 is off-channel
*
COMPUTE FLOWRATE ID=1 NHD= 405 AREA= 0.0966 Sq km L= 230 m W= 210 m
SOIL ZONE I II III IV V VI VII VIII IX
1.0 0.0 0.0 19.8 0.0 0.0 0.0 79.2 0.0
RATING CURVES: IDMC=1 IDOC=3 QRCM= 0.05 QROC= 0.01
ROUTING MODEL=2 CONSTANTS: OVERLAND FTB= 3.0 TLO= 0.0
SUBSURFACE: KSS= 5.0 KGW= 384 h PCODE=1 WQPCODE=1
RBASIN=0 IDA=0 IDB=0 IDC=0 IDD=0 RBDUMP=0
GWFACT=1.00 GWON=1
SWQTH= 0.0 L/s SWPUMP= 0.0 L/s SWCODE=0
*
* Route flows from 405 through a depression
*
ROUTE SPECIAL POND ID=2 HYD NO=5405 INFLOW=1 PCODE=0 OPTION=15
Inflow controls:
USPCT=100% USDIV=0 PCTA= 0% ADIV=0
GWPCT= 0% GWDIV=0
Maximum level for Routing Tables: ZMAX= 315.000
Recharge characteristics for Compartment A
LEVELA= 313.600 EVAPA= 0.0 mm/d ACODE=0
CDA= 0.000 mm/h DZA= 23.00 m
```


Recharge characteristics for Compartment B
LEVELB= 313.600 CCBA= 0.00000 EVAPB= 1.4 mm/d BCODE=1
CDB= 25.000 mm/h DZB= 10.00 m
Irrigation Pond Controls: IPOND=0
Number of points= 9

Elevation (m)	Compartment A		Compartment B		SFArea (ha)
	Outflow (cms)	Storage (ha*m)	Outflow (cms)	Storage (ha*m)	
313.600	0.000	0.000	0.000	0.000	0.001
313.700	0.000	0.000	0.000	0.000	0.002
313.800	0.000	0.000	0.000	0.000	0.012
313.900	0.000	0.000	0.000	0.000	0.034
314.000	0.000	0.000	0.000	0.000	0.068
314.200	0.000	0.000	0.000	0.000	0.173
314.400	0.000	0.000	0.000	0.000	0.347
314.700	0.000	0.000	0.000	0.000	0.778
315.000	0.000	0.000	0.000	5.000	1.430

*
PRINT HYD ID=2 PCODE=1 MODE=10
*
* Catchment 406
* VS= 100.020 is main channel & VS= 2.035 is off-channel
*
COMPUTE FLOWRATE ID=1 NHD= 406 AREA= 0.093 Sq km L= 180 m W= 275 m
SOIL ZONE I II III IV V VI VII VIII IX
0.0 0.0 0.0 15.0 0.0 0.0 0.0 85.0 0.0
RATING CURVES: IDMC=1 IDOC=4 QRCM= 0.05 QROC= 0.01
ROUTING MODEL=2 CONSTANTS: OVERLAND FTB= 3.0 TLO= 0.0
SUBSURFACE: KSS= 5.0 KGW= 384 h PCODE=1 WQPCODE=1
RBASIN=0 IDA=0 IDB=0 IDC=0 IDD=0 RBDUMP=0
GWFACT=1.00 GWON=1
SWQTH= 0.0 L/s SWPUMP= 0.0 L/s SWCODE=0
*
* Sum hydr. 5405, 406, call result 1403
*
ADD HYD ID=3 HYD NO= 1403 IDA=1 IDB=2 ICODE=0
*
* Route flows from 1403 through a depression
*
ROUTE SPECIAL POND ID=1 HYD NO=5406 INFLOW=3 PCODE=0 OPTION=15
Inflow controls:
USPCT=100% USDIV=0 PCTA= 0% ADIV=0
GWPCT= 0% GWDIV=0
Maximum level for Routing Tables: ZMAX= 101.000
Recharge characteristics for Compartment A
LEVELA= 98.800 EVAPA= 0.0 mm/d ACODE=0
CDA= 0.000 mm/h DZA= 23.00 m
Recharge characteristics for Compartment B
LEVELB= 98.800 CCBA= 0.00000 EVAPB= 1.4 mm/d BCODE=1
CDB= 25.000 mm/h DZB= 10.00 m
Irrigation Pond Controls: IPOND=0
Number of points= 4

Elevation (m)	Compartment A		Compartment B		SFArea (ha)
	Outflow (cms)	Storage (ha*m)	Outflow (cms)	Storage (ha*m)	
98.800	0.000	0.000	0.000	0.000	0.001
100.000	0.000	0.000	0.000	0.000	0.036
100.500	0.000	0.000	0.000	0.000	0.353
101.000	0.000	0.000	0.000	5.000	0.992

*
PRINT HYD ID=1 PCODE=1 MODE=10
*
* Catchment 404
* VS= 100.020 is main channel & VS= 2.020 is off-channel

*
COMPUTE FLOWRATE ID=2 NHD= 404 AREA= 0.1141 Sq km L= 230 m W= 170 m
SOIL ZONE I II III IV V VI VII VIII IX
0.0 0.0 0.0 30.0 0.0 0.0 0.0 70.0 0.0
RATING CURVES: IDMC=1 IDOC=3 QRCM= 0.05 QROC= 0.01
ROUTING MODEL=2 CONSTANTS: OVERLAND FTB= 3.0 TLO= 0.0
SUBSURFACE: KSS= 5.0 KGW= 384 h PCODE=1 WQPCODE=1
RBASIN=0 IDA=0 IDB=0 IDC=0 IDD=0 RBDUMP=0
GWFACT=1.00 GWON=1
SWQTH= 0.0 L/s SWPUMP= 0.0 L/s SWCODE=0
*
PRINT HYD ID=2 PCODE=1 MODE=10
*
* Sum hydr. 5406, 404, call result 1404
*
ADD HYD ID=3 HYD NO= 1404 IDA=1 IDB=2 ICODE=0
*
* Catchment 407
* VS= 100.035 is main channel & VS= 2.035 is off-channel
*
COMPUTE FLOWRATE ID=1 NHD= 407 AREA= 0.2555 Sq km L= 100 m W= 100 m
SOIL ZONE I II III IV V VI VII VIII IX
0.5 30.0 14.9 14.9 0.0 0.0 0.0 9.2 30.5
RATING CURVES: IDMC=2 IDOC=4 QRCM= 0.05 QROC= 0.01
ROUTING MODEL=2 CONSTANTS: OVERLAND FTB= 3.0 TLO= 0.0
SUBSURFACE: KSS= 5.0 KGW= 384 h PCODE=1 WQPCODE=1
RBASIN=0 IDA=0 IDB=0 IDC=0 IDD=0 RBDUMP=0
GWFACT=1.00 GWON=1
SWQTH= 0.0 L/s SWPUMP= 0.0 L/s SWCODE=0
*
PRINT HYD ID=1 PCODE=1 MODE=10
*
* Sum hydr. 1404, 407, call result 1405
*
ADD HYD ID=2 HYD NO= 1405 IDA=1 IDB=3 ICODE=0
*
PRINT HYD ID=2 PCODE=1 MODE=10
*
* Route flows from 1405 through a depression
*
ROUTE SPECIAL POND ID=1 HYD NO=5407 INFLOW=2 PCODE=0 OPTION=15
Inflow controls:
USPCT=100% USDIV=0 PCTA= 0% ADIV=0
GWPCT= 0% GWDIV=0
Maximum level for Routing Tables: ZMAX= 309.300
Recharge characteristics for Compartment A
LEVELA= 308.800 EVAPA= 0.0 mm/d ACODE=0
CDA= 0.000 mm/h DZA= 23.00 m
Recharge characteristics for Compartment B
LEVELB= 308.800 CCBA= 0.00000 EVAPB= 1.4 mm/d BCODE=1
CDB= 4.000 mm/h DZB= 10.00 m
Irrigation Pond Controls: IPOND=0
Number of points= 4

Elevation (m)	Compartment A		Compartment B		SFArea (ha)
	Outflow (cms)	Storage (ha*m)	Outflow (cms)	Storage (ha*m)	
308.800	0.000	0.000	0.000	0.000	0.000
309.000	0.000	0.000	0.000	0.000	0.953
309.200	0.000	0.000	0.000	0.000	2.292
309.300	0.000	0.000	0.000	5.000	2.750

*
PRINT HYD ID=1 PCODE=1 MODE=10
*
* Sum hydr. 5403, 5407, call result 1406

```
*
ADD HYD          ID=2 HYD NO= 1406 IDA=1 IDB=6 ICODE=0
*
PRINT HYD        ID=2 PCODE=1 MODE=10
*
* Route flows from 1406 through a depression
*
ROUTE SPECIAL POND ID=6 HYD NO=5437 INFLOW=2 PCODE=0 OPTION=15
Inflow controls:
    USPCT=100% USDIV=0      PCTA=  0% ADIV=0
    GWPCT=  0% GWDIV=0
Maximum level for Routing Tables: ZMAX= 310.900
Recharge characteristics for Compartment A
    LEVELA= 309.200      EVAPA= 0.0 mm/d ACODE=0
    CDA=  0.000 mm/h DZA= 23.00 m
Recharge characteristics for Compartment B
    LEVELB= 309.200 CCBA= 0.00000 EVAPB= 1.4 mm/d BCODE=1
    CDB=  4.000 mm/h DZB= 10.00 m
Irrigation Pond Controls: IPOND=0
Number of points= 6
      Compartment A      Compartment B
Elevation Outflow Storage SFArea Outflow Storage SFArea
(m) (cms) (ha*m) (ha) (cms) (ha*m) (ha)
309.200 0.000 0.000 0.000 0.000 0.000 13.36
309.500 0.000 0.000 0.000 0.000 4.501 16.65
310.000 0.000 0.000 0.000 0.000 14.54 23.50
310.500 0.000 0.000 0.000 0.000 27.30 27.54
310.800 0.000 0.000 0.000 0.000 35.96 30.21
310.900 0.000 0.000 0.000 5.000 36.50 31.99
*
PRINT HYD        ID=6 PCODE=1 MODE=10
*
* Catchment 10% Typical off-channel (Steep areas)
*
COMPUTE RATING CURVE ID=5 VS= 2.100 NSEGS=3
    MIN EL= 100.00 MAX EL= 100.80
    CHNSLP= 0.10000 FLNSLP= 0.10000
    N= 0.350 DIST= 24.45
    N=-0.150 DIST= 25.55
    N= 0.350 DIST= 50.00
    DIST ELEV DIST ELEV DIST ELEV
    0.00 100.80 24.45 100.30 24.75 100.00
    25.50 100.00 25.55 100.30 50.00 100.80
    RFN=0.0000 PCODE=1
*
* Catchment 408
* VS= 100.020 is main channel & VS= 2.100 is off-channel
*
COMPUTE FLOWRATE ID=1 NHD= 408 AREA= 0.0590 Sq km L= 350 m W= 150 m
      SOIL ZONE I II III IV V VI VII VIII IX
      3.0 0.0 0.0 9.7 0.0 0.0 0.0 87.3 0.0
RATING CURVES: IDMC=1 IDOC=5 QRCM= 0.05 QROC= 0.01
ROUTING MODEL=2 CONSTANTS: OVERLAND FTB= 3.0 TLO= 0.0
SUBSURFACE: KSS= 5.0 KGW= 384 h PCODE=1 WQPCODE=1
RBASIN=0 IDA=0 IDB=0 IDC=0 IDD=0 RBDUMP=0
GWFACT=1.00 GWON=1
SWQTH= 0.0 L/s SWPUMP= 0.0 L/s SWCODE=0
*
PRINT HYD        ID=1 PCODE=1 MODE=10
*
* Catchment 409
* VS= 100.035 is main channel & VS= 2.050 is off-channel
*
COMPUTE FLOWRATE ID=2 NHD= 409 AREA= 0.8914 Sq km L= 300 m W= 200 m
```

```
      SOIL ZONE I II III IV V VI VII VIII IX
      3.0 28.0 0.0 0.0 5.8 0.0 24.9 0.0 38.3
RATING CURVES: IDMC=2 IDOC=6 QRCM= 0.05 QROC= 0.01
ROUTING MODEL=2 CONSTANTS: OVERLAND FTB= 4.0 TLO= 0.0
SUBSURFACE: KSS= 5.0 KGW= 384 h PCODE=1 WQPCODE=1
RBASIN=0 IDA=0 IDB=0 IDC=0 IDD=0 RBDUMP=0
GWFACT=1.00 GWON=1
SWQTH= 0.0 L/s SWPUMP= 0.0 L/s SWCODE=0
*
PRINT HYD        ID=2 PCODE=1 MODE=10
*
* Sum hydr. 408, 409, call result 1407
*
ADD HYD          ID=5 HYD NO= 1407 IDA=1 IDB=2 ICODE=0
*
PRINT HYD        ID=5 PCODE=1 MODE=10
*
* Catchment 410
* VS= 100.020 is main channel & VS= 2.020 is off-channel
*
COMPUTE FLOWRATE ID=1 NHD= 410 AREA= 0.0171 Sq km L= 200 m W= 80 m
      SOIL ZONE I II III IV V VI VII VIII IX
      0.0 0.0 0.0 0.0 0.0 60.0 0.0 40.0 0.0
RATING CURVES: IDMC=1 IDOC=3 QRCM= 0.05 QROC= 0.01
ROUTING MODEL=2 CONSTANTS: OVERLAND FTB= 3.0 TLO= 0.0
SUBSURFACE: KSS= 5.0 KGW= 384 h PCODE=1 WQPCODE=1
RBASIN=0 IDA=0 IDB=0 IDC=0 IDD=0 RBDUMP=0
GWFACT=1.00 GWON=1
SWQTH= 0.0 L/s SWPUMP= 0.0 L/s SWCODE=0
*
* Route flows from 410 through a depression
*
ROUTE SPECIAL POND ID=2 HYD NO=5410 INFLOW=1 PCODE=0 OPTION=15
Inflow controls:
    USPCT=100% USDIV=0      PCTA=  0% ADIV=0
    GWPCT=  0% GWDIV=0
Maximum level for Routing Tables: ZMAX= 318.500
Recharge characteristics for Compartment A
    LEVELA= 317.600      EVAPA= 0.0 mm/d ACODE=0
    CDA=  0.000 mm/h DZA= 23.00 m
Recharge characteristics for Compartment B
    LEVELB= 317.600 CCBA= 0.00000 EVAPB= 1.4 mm/d BCODE=1
    CDB= 25.000 mm/h DZB= 10.00 m
Irrigation Pond Controls: IPOND=0
Number of points= 5
      Compartment A      Compartment B
Elevation Outflow Storage SFArea Outflow Storage SFArea
(m) (cms) (ha*m) (ha) (cms) (ha*m) (ha)
317.600 0.000 0.000 0.000 0.000 0.000 0.002
317.800 0.000 0.000 0.000 0.000 0.000 0.003 0.028
318.000 0.000 0.000 0.000 0.000 0.000 0.014 0.078
318.200 0.000 0.000 0.000 0.000 0.000 0.036 0.150
318.500 0.000 0.000 0.000 5.000 0.043 0.300
*
PRINT HYD        ID=2 PCODE=1 MODE=10
*
* Sum hydr. 1407, 5410, call result 1410
*
ADD HYD          ID=3 HYD NO= 1410 IDA=5 IDB=2 ICODE=0
*
PRINT HYD        ID=3 PCODE=1 MODE=10
*
* Sum hydr. 1410, 5437, call result 1408
*
```

```
ADD HYD          ID=1 HYD NO= 1408 IDA=3 IDB=6 ICODE=0
*
PRINT HYD        ID=1 PCODE=1 MODE=10
*
* Route flows from 1408 through Barrie's Lake
*
ROUTE SPECIAL POND ID=2 HYD NO=5409 INFLOW=1 PCODE=0 OPTION=15
Inflow controls:
  USPCT=100% USDIV=0      PCTA= 0% ADIV=0
  GWPCT= 0% GWDIV=0
Maximum level for Routing Tables: ZMAX= 310.500
Recharge characteristics for Compartment A
  LEVELA= 308.500          EVAPA= 0.0 mm/d ACODE=0
  CDA= 0.000 mm/h DZA= 23.00 m
Recharge characteristics for Compartment B
  LEVELB= 308.500 CCBA= 0.00000 EVAPB= 1.4 mm/d BCODE=1
  CDB= 4.000 mm/h DZB= 10.00 m
Irrigation Pond Controls: IPOND=0
Number of points= 3
      Compartment A          Compartment B
Elevation Outflow Storage SFArea Outflow Storage SFArea
(m) (cms) (ha*m) (ha) (cms) (ha*m) (ha)
308.500 0.000 0.000 0.000 0.000 0.000 27.00
309.500 0.000 0.000 0.000 0.000 28.50 30.00
310.500 0.000 0.000 0.000 0.000 61.50 36.00

*
PRINT HYD        ID=2 PCODE=1 MODE=10
*
*****
* GILHOLM MARSH
*
*
*
* 2% Typical Main channel Parabolic Swale
*
COMPUTE RATING CURVE ID=1 VS= 100.020 NSEGS=3
MIN EL= 100.70 MAX EL= 103.00
CHNSLP= 0.02000 FLNSLP= 0.02000
N= 0.080 DIST= 20.00
N=-0.050 DIST= 30.00
N= 0.080 DIST= 50.00
DIST ELEV DIST ELEV DIST ELEV
0.00 103.00 20.00 101.00 23.00 100.80
25.00 100.70 27.00 100.80 30.00 101.00
50.00 103.00
RFN=0.0000 PCODE=1

*
* Catchment 5% Typical off-channel (Steep areas)
*
COMPUTE RATING CURVE ID=2 VS= 2.050 NSEGS=3
MIN EL= 100.00 MAX EL= 100.80
CHNSLP= 0.05000 FLNSLP= 0.05000
N= 0.350 DIST= 24.45
N=-0.150 DIST= 25.55
N= 0.350 DIST= 50.00
DIST ELEV DIST ELEV DIST ELEV
0.00 100.80 24.45 100.30 24.75 100.00
25.50 100.00 25.55 100.30 50.00 100.80
RFN=0.0000 PCODE=1

*
* Catchment 2% Typical off-channel (Steep areas)
*
COMPUTE RATING CURVE ID=3 VS= 2.020 NSEGS=3
MIN EL= 100.00 MAX EL= 100.80
```

```
CHNSLP= 0.02000 FLNSLP= 0.02000
N= 0.350 DIST= 24.45
N=-0.150 DIST= 25.55
N= 0.350 DIST= 50.00
DIST ELEV DIST ELEV DIST ELEV
0.00 100.80 24.45 100.30 24.75 100.00
25.50 100.00 25.55 100.30 50.00 100.80
RFN=0.0000 PCODE=1

*
* 3.5% Typical off-channel (Steep areas)
*
COMPUTE RATING CURVE ID=4 VS= 2.035 NSEGS=3
MIN EL= 100.00 MAX EL= 100.80
CHNSLP= 0.03500 FLNSLP= 0.03500
N= 0.350 DIST= 24.45
N=-0.150 DIST= 25.55
N= 0.350 DIST= 50.00
DIST ELEV DIST ELEV DIST ELEV
0.00 100.80 24.45 100.30 24.75 100.00
25.50 100.00 25.55 100.30 50.00 100.80
RFN=0.0000 PCODE=1

*
* 10% Typical Main channel Parabolic Swale
*
COMPUTE RATING CURVE ID=5 VS= 100.100 NSEGS=3
MIN EL= 100.70 MAX EL= 103.00
CHNSLP= 0.10000 FLNSLP= 0.10000
N= 0.080 DIST= 20.00
N=-0.050 DIST= 30.00
N= 0.080 DIST= 50.00
DIST ELEV DIST ELEV DIST ELEV
0.00 103.00 20.00 101.00 23.00 100.80
25.00 100.70 27.00 100.80 30.00 101.00
50.00 103.00
RFN=0.0000 PCODE=1

*
* Catchment 10% Typical off-channel (Steep areas)
*
COMPUTE RATING CURVE ID=6 VS= 2.100 NSEGS=3
MIN EL= 100.00 MAX EL= 100.80
CHNSLP= 0.10000 FLNSLP= 0.10000
N= 0.350 DIST= 24.45
N=-0.150 DIST= 25.55
N= 0.350 DIST= 50.00
DIST ELEV DIST ELEV DIST ELEV
0.00 100.80 24.45 100.30 24.75 100.00
25.50 100.00 25.55 100.30 50.00 100.80
RFN=0.0000 PCODE=1

*
* Catchment 601
* VS= 100.100 is main channel & VS= 2.050 is off-channel
*
COMPUTE FLOWRATE ID=1 NHD= 601 AREA= 0.0468 Sq km L= 230 m W= 200 m
SOIL ZONE I II III IV V VI VII VIII IX
0.0 0.0 0.0 0.0 0.0 60.0 0.0 40.0 0.0
RATING CURVES: IDMC=5 IDOC=2 QRCM= 0.5 QROC= 0.05
ROUTING MODEL=2 CONSTANTS: OVERLAND FTB= 3.0 TLO= 0.0
SUBSURFACE: KSS= 5.0 KGW= 384 h PCODE=1 WQPCODE=1
RBASIN=0 IDA=0 IDB=0 IDC=0 IDD=0 RBDUMP=0
GWFACT=1.00 GWON=1
SWQTH= 0.0 L/s SWPUMP= 0.0 L/s SWCODE=0

*
PRINT HYD        ID=1 PCODE=1 MODE=10
*
```



```
* Route flows from 601 through 5601
*
ROUTE SPECIAL POND ID=2 HYD NO=5601 INFLOW=1 PCODE=0 OPTION=15
Inflow controls:
  USPCT=100% USDIV=0      PCTA=  0% ADIV=0
  GWPCIT=  0% GWDIV=0
Maximum level for Routing Tables: ZMAX= 318.500
Recharge characteristics for Compartment A
  LEVELA= 313.000      EVAPA= 0.0 mm/d ACODE=0
  CDA=  0.000 mm/h DZA= 23.00 m
Recharge characteristics for Compartment B
  LEVELB= 313.000 CCBA= 0.00000 EVAPB= 1.4 mm/d BCODE=1
  CDB= 25.000 mm/h DZB= 10.00 m
Irrigation Pond Controls: IPOND=0
Number of points= 7

      Compartment A      Compartment B
Elevation Outflow Storage SFArea Outflow Storage SFArea
(m) (cms) (ha*m) (ha) (cms) (ha*m) (ha)
313.000 0.000 0.000 0.000 0.000 0.000 0.030
314.000 0.000 0.000 0.000 0.000 0.080 0.129
315.000 0.000 0.000 0.000 0.000 0.264 0.240
316.000 0.000 0.000 0.000 0.000 0.578 0.388
316.500 0.000 0.000 0.000 0.000 0.868 0.770
317.500 0.000 0.000 0.000 0.000 1.955 1.404
318.500 0.000 0.000 0.000 5.000 2.100 1.500

*
PRINT HYD ID=2 PCODE=1 MODE=10
*
* Catchment 602
* VS= 100.100 is main channel & VS= 2.035 is off-channel
*
COMPUTE FLOWRATE ID=1 NHD= 602 AREA= 0.0331 Sq km L= 200 m W= 170 m
SOIL ZONE I II III IV V VI VII VIII IX
0.0 0.0 0.0 0.0 0.0 60.0 0.0 40.0 0.0
RATING CURVES: IDMC=5 IDOC=4 QRCM= 0.5 QROC= 0.05
ROUTING MODEL=2 CONSTANTS: OVERLAND FTB= 3.0 TLO= 0.0
SUBSURFACE: KSS= 5.0 KGW= 384 h PCODE=1 WQPCODE=1
RBASIN=0 IDA=0 IDB=0 IDC=0 IDD=0 RBDUMP=0
GWFACT=1.00 GWON=1
SWQTH= 0.0 L/s SWPUMP= 0.0 L/s SWCODE=0

*
PRINT HYD ID=1 PCODE=1 MODE=10
*
* Sum hydr. 5601, 602, call result 1601
*
ADD HYD ID=3 HYD NO= 1601 IDA=1 IDB=2 ICODE=0
*
PRINT HYD ID=3 PCODE=1 MODE=10
*
* Route flows from 1601 through 5602
*
ROUTE SPECIAL POND ID=1 HYD NO=5602 INFLOW=3 PCODE=0 OPTION=15
Inflow controls:
  USPCT=100% USDIV=0      PCTA=  0% ADIV=0
  GWPCIT=  0% GWDIV=0
Maximum level for Routing Tables: ZMAX= 318.00
Recharge characteristics for Compartment A
  LEVELA= 311.000      EVAPA= 0.0 mm/d ACODE=0
  CDA=  0.000 mm/h DZA= 23.00 m
Recharge characteristics for Compartment B
  LEVELB= 311.000 CCBA= 0.00000 EVAPB= 1.4 mm/d BCODE=1
  CDB= 25.000 mm/h DZB= 10.00 m
Irrigation Pond Controls: IPOND=0
Number of points= 9
```

```
      Compartment A      Compartment B
Elevation Outflow Storage SFArea Outflow Storage SFArea
(m) (cms) (ha*m) (ha) (cms) (ha*m) (ha)
311.000 0.000 0.000 0.000 0.000 0.000 0.005
312.000 0.000 0.000 0.000 0.000 0.046 0.087
313.000 0.000 0.000 0.000 0.000 0.170 0.160
314.000 0.000 0.000 0.000 0.000 0.370 0.241
315.000 0.000 0.000 0.000 0.000 0.662 0.343
316.000 0.000 0.000 0.000 0.000 1.075 0.483
316.500 0.000 0.000 0.000 0.000 1.339 0.572
317.000 0.000 0.000 0.000 0.000 1.673 0.765
318.000 0.000 0.000 0.000 5.000 1.800 0.800

*
PRINT HYD ID=1 PCODE=1 MODE=10
*
* Catchment 603
* VS= 100.020 is main channel & VS= 2.020 is off-channel
*
COMPUTE FLOWRATE ID=2 NHD= 603 AREA= 0.0912 Sq km L= 150 m W= 550 m
SOIL ZONE I II III IV V VI VII VIII IX
0.0 0.0 0.0 0.0 5.0 0.0 70.0 0.0 25.0 0.0
RATING CURVES: IDMC=1 IDOC=3 QRCM= 0.5 QROC= 0.05
ROUTING MODEL=2 CONSTANTS: OVERLAND FTB= 2.0 TLO= 0.0
SUBSURFACE: KSS= 5.0 KGW= 384 h PCODE=1 WQPCODE=1
RBASIN=0 IDA=0 IDB=0 IDC=0 IDD=0 RBDUMP=0
GWFACT=1.00 GWON=1
SWQTH= 0.0 L/s SWPUMP= 0.0 L/s SWCODE=0

*
PRINT HYD ID=2 PCODE=1 MODE=10
*
* Sum hydr. 5602, 603, call result 1602
*
ADD HYD ID=3 HYD NO= 1602 IDA=1 IDB=2 ICODE=0
*
PRINT HYD ID=3 PCODE=1 MODE=10
*
* Catchment 604
* VS= 100.100 is main channel & VS= 2.100 is off-channel
*
COMPUTE FLOWRATE ID=1 NHD= 604 AREA= 0.2409 Sq km L= 300 m W= 300 m
SOIL ZONE I II III IV V VI VII VIII IX
0.0 18.0 4.0 0.0 0.0 8.0 0.0 40.0 30.0
RATING CURVES: IDMC=5 IDOC=6 QRCM= 0.5 QROC= 0.05
ROUTING MODEL=2 CONSTANTS: OVERLAND FTB= 4.0 TLO= 0.0
SUBSURFACE: KSS= 5.0 KGW= 384 h PCODE=1 WQPCODE=1
RBASIN=0 IDA=0 IDB=0 IDC=0 IDD=0 RBDUMP=0
GWFACT=1.00 GWON=1
SWQTH= 0.0 L/s SWPUMP= 0.0 L/s SWCODE=0

*
PRINT HYD ID=1 PCODE=1 MODE=10
*
* Sum hydr. 1602, 604, call result 1603
*
ADD HYD ID=2 HYD NO= 1603 IDA=1 IDB=3 ICODE=0
*
PRINT HYD ID=2 PCODE=1 MODE=10
*
* Route flows from 1603 through 5604
*
ROUTE SPECIAL POND ID=1 HYD NO=5604 INFLOW=2 PCODE=0 OPTION=15
Inflow controls:
  USPCT=100% USDIV=0      PCTA=  0% ADIV=0
  GWPCIT=  0% GWDIV=0
Maximum level for Routing Tables: ZMAX= 316.00
```

Recharge characteristics for Compartment A
LEVELA= 311.500 EVAPA= 0.0 mm/d ACODE=0
CDA= 0.000 mm/h DZA= 23.00 m
Recharge characteristics for Compartment B
LEVELB= 311.500 CCBA= 0.00000 EVAPB= 1.4 mm/d BCODE=1
CDB= 4.000 mm/h DZB= 10.00 m
Irrigation Pond Controls: IPOND=0
Number of points= 9

	Compartment A			Compartment B		
Elevation	Outflow	Storage	SFArea	Outflow	Storage	SFArea
(m)	(cms)	(ha*m)	(ha)	(cms)	(ha*m)	(ha)
311.500	0.000	0.000	0.000	0.000	0.000	4.758
312.000	0.000	0.000	0.000	0.000	2.511	5.345
312.500	0.000	0.000	0.000	0.000	5.330	5.930
313.000	0.000	0.000	0.000	0.000	8.487	6.697
313.500	0.000	0.000	0.000	0.000	12.08	7.691
314.000	0.000	0.000	0.000	0.000	16.18	8.686
314.500	0.000	0.000	0.000	0.000	21.12	11.07
315.000	0.000	0.000	0.000	0.000	27.01	12.92
316.000	0.000	0.000	0.000	5.000	30.00	13.00

*
PRINT HYD ID=1 PCODE=1 MODE=10
*
*

* NEWMAN CREEK
*
*
* 2.0% Typical off-channel (Steep areas)
*
COMPUTE RATING CURVE ID=1 VS= 2.020 NSEGS=3
MIN EL= 100.00 MAX EL= 100.80
CHNSLP= 0.02000 FLNSLP= 0.02000
N= 0.350 DIST= 24.45
N=-0.150 DIST= 25.55
N= 0.350 DIST= 50.00
DIST ELEV DIST ELEV DIST ELEV
0.00 100.80 24.45 100.30 24.75 100.00
25.50 100.00 25.55 100.30 50.00 100.80
RFN=0.0000 PCODE=1
*
* 10.0% Typical off-channel (Steep areas)
*
COMPUTE RATING CURVE ID=2 VS= 2.100 NSEGS=3
MIN EL= 100.00 MAX EL= 100.80
CHNSLP= 0.10000 FLNSLP= 0.10000
N= 0.350 DIST= 24.45
N=-0.150 DIST= 25.55
N= 0.350 DIST= 50.00
DIST ELEV DIST ELEV DIST ELEV
0.00 100.80 24.45 100.30 24.75 100.00
25.50 100.00 25.55 100.30 50.00 100.80
RFN=0.0000 PCODE=1
*
* 1.0% Typical Main channel Parabolic Swale
*
COMPUTE RATING CURVE ID=3 VS= 100.010 NSEGS=3
MIN EL= 100.70 MAX EL= 103.00
CHNSLP= 0.01000 FLNSLP= 0.01000
N= 0.080 DIST= 20.00
N=-0.050 DIST= 30.00

N=	0.080	DIST=	50.00				
DIST	ELEV	DIST	ELEV	DIST	ELEV		
0.00	103.00	20.00	101.00	23.00	100.80		
25.00	100.70	27.00	100.80	30.00	101.00		
50.00	103.00						
RFN=	0.0000	PCODE=	1				

*
* Typical Urban section
*
COMPUTE RATING CURVE ID=5 VS= 3.200 NSEGS=3
MIN EL= 295.00 MAX EL= 295.70
CHNSLP= 0.01000 FLNSLP= 0.01000
N= 0.015 DIST= 200.00
N=-0.015 DIST= 300.00
N= 0.015 DIST= 500.00
DIST ELEV DIST ELEV DIST ELEV
0.00 295.70 200.00 295.50 200.10 295.00
299.90 295.00 300.00 295.50 500.00 295.70
*
* Typical Urban section
*
COMPUTE RATING CURVE ID=6 VS= 3.200 NSEGS=3
MIN EL= 295.00 MAX EL= 295.70
CHNSLP= 0.02000 FLNSLP= 0.02000
N= 0.015 DIST= 200.00
N=-0.015 DIST= 300.00
N= 0.015 DIST= 500.00
DIST ELEV DIST ELEV DIST ELEV
0.00 295.70 200.00 295.50 200.10 295.00
299.90 295.00 300.00 295.50 500.00 295.70
*
* Catchment 201
* VS= 100.010 is main channel & VS= 2.020 is off-channel
*
COMPUTE FLOWRATE ID=1 NHD= 201 AREA= 0.0807 Sq km L= 260 m W= 310 m
SOIL ZONE I II III IV V VI VII VIII IX
35.0 3.0 0.0 0.0 0.0 0.0 0.0 62.0 0.0
RATING CURVES: IDMC=5 IDOC=6 QRCM= 0.5 QROC= 0.05
ROUTING MODEL=2 CONSTANTS: OVERLAND FTB= 1.2 TLO= 0.0
SUBSURFACE: KSS= 5.0 KGW= 384 h PCODE=1 WQPCODE=1
RBASIN=0 IDA=0 IDB=0 IDC=0 IDD=0 RBDUMP=0
GWFACT=0.00 GWON=1
SWQTH= 0.0 L/s SWPUMP= 0.0 L/s SWCODE=0
*
PRINT HYD ID=1 PCODE=1 MODE=10
*
* Route flows from 201 through existing Grandview Hills SWM Facility (Newman)
*
ROUTE SPECIAL POND ID=2 HYD NO=5201 INFLOW=1 PCODE=0 OPTION=15
Inflow controls:
USPCT=100% USDIV=0 PCTA= 0% ADIV=0
GWPCT= 0% GWDIV=0
Maximum level for Routing Tables: ZMAX= 306.300
Recharge characteristics for Compartment A
LEVELA= 304.580 EVAPA= 0.0 mm/d ACODE=0
CDA= 0.000 mm/h DZA= 23.00 m
Recharge characteristics for Compartment B
LEVELB= 304.580 CCBA= 0.00000 EVAPB= 1.4 mm/d BCODE=1
CDB= 0.000 mm/h DZB= 10.00 m
Irrigation Pond Controls: IPOND=0
Number of points= 7

	Compartment A			Compartment B		
Elevation	Outflow	Storage	SFArea	Outflow	Storage	SFArea
(m)	(cms)	(ha*m)	(ha)	(cms)	(ha*m)	(ha)

304.580	0.000	0.000	0.000	0.000	0.000	0.290
305.100	0.000	0.000	0.000	0.006	0.174	0.290
305.400	0.000	0.000	0.000	0.046	0.301	0.290
305.500	0.000	0.000	0.000	0.285	0.349	0.290
305.700	0.000	0.000	0.000	0.316	0.451	0.290
306.000	0.000	0.000	0.000	2.330	0.624	0.290
306.300	0.000	0.000	0.000	6.643	0.821	0.290

*
PRINT HYD ID=2 PCODE=1 MODE=10
KEEP HYD ID=2 CUTOFF=24 ICODE=5 ISTEP=1 IFORM=0 IDB=2 IMET=1
*

COMPUTE RATING CURVE ID=4 VS= 6.000 NSEGS=3
MIN EL= 298.40 MAX EL= 300.00
CHNSLP= 0.06600 FLNSLP= 0.07400
N= 0.080 DIST= 98.90
N=-0.035 DIST= 101.10
N= 0.080 DIST= 125.00
DIST ELEV DIST ELEV DIST ELEV
75.00 300.00 85.00 299.50 95.00 299.00
98.90 298.90 99.30 298.40 100.70 298.40
101.10 298.90 105.00 299.00 115.00 299.50
125.00 300.00
RFN=0.0000 PCODE=1

*
* Route through reach 2201
* Using Valley Section 6.0 As channel Rating Curve
*

ROUTE CHANNEL ID=1 HYD NO= 2201 INFLOW=2 LENGTH= 350 m SLOPE=0.07
RCID=4 NS=1 PCODE=1 INDEX=1 PIPE=0 CANOPY= 75.0%

*
* 0.5% Typical Main channel Parabolic Swale
*

COMPUTE RATING CURVE ID=4 VS= 100.005 NSEGS=3
MIN EL= 100.70 MAX EL= 103.00
CHNSLP= 0.00500 FLNSLP= 0.00500
N= 0.080 DIST= 20.00
N=-0.050 DIST= 30.00
N= 0.080 DIST= 50.00
DIST ELEV DIST ELEV DIST ELEV
0.00 103.00 20.00 101.00 23.00 100.80
25.00 100.70 27.00 100.80 30.00 101.00
50.00 103.00
RFN=0.0000 PCODE=1

*
* Catchment 202
* VS= 100.005 is main channel & VS= 2.100 is off-channel
*

COMPUTE FLOWRATE ID=2 NHD= 202 AREA= 0.1084 Sq km L= 400 m W= 200 m
SOIL ZONE I II III IV V VI VII VIII IX
0.0 0.0 0.0 0.0 30.0 0.0 50.0 0.0 20.0
RATING CURVES: IDMC=4 IDOC=2 QRCM= 0.05 QROC= 0.01
ROUTING MODEL=2 CONSTANTS: OVERLAND FTB= 3.0 TLO= 0.0
SUBSURFACE: KSS= 5.0 KGW= 384 h PCODE=1 WQPCODE=1
RBASIN=0 IDA=0 IDB=0 IDC=0 IDD=0 RBDUMP=0
GWFACT=0.00 GWON=1
SWQTH= 0.0 L/s SWPUMP= 0.0 L/s SWCODE=0

*
PRINT HYD ID=2 PCODE=1 MODE=10
*
* Sum hydr. 2201, 202, call result 1201
*
ADD HYD ID=3 HYD NO= 1201 IDA=1 IDB=2 ICODE=0
*
* 5.0% Main channel Parabolic Swale

*
COMPUTE RATING CURVE ID=4 VS= 100.050 NSEGS=3
MIN EL= 100.70 MAX EL= 103.00
CHNSLP= 0.05000 FLNSLP= 0.05000
N= 0.080 DIST= 20.00
N=-0.050 DIST= 30.00
N= 0.080 DIST= 50.00
DIST ELEV DIST ELEV DIST ELEV
0.00 103.00 20.00 101.00 23.00 100.80
25.00 100.70 27.00 100.80 30.00 101.00
50.00 103.00
RFN=0.0000 PCODE=1

*
* Catchment 203
* VS= 100.050 is main channel & VS= 2.100 is off-channel
*

COMPUTE FLOWRATE ID=1 NHD= 203 AREA= 0.0368 Sq km L= 380 m W= 100 m
SOIL ZONE I II III IV V VI VII VIII IX
0.0 0.0 0.0 0.0 0.0 100.0 0.0 0.0 0.0
RATING CURVES: IDMC=4 IDOC=2 QRCM= 0.05 QROC= 0.01
ROUTING MODEL=2 CONSTANTS: OVERLAND FTB= 2.0 TLO= 0.0
SUBSURFACE: KSS= 5.0 KGW= 384 h PCODE=1 WQPCODE=1
RBASIN=0 IDA=0 IDB=0 IDC=0 IDD=0 RBDUMP=0
GWFACT=0.00 GWON=1
SWQTH= 0.0 L/s SWPUMP= 0.0 L/s SWCODE=0

*
PRINT HYD ID=1 PCODE=1 MODE=10
*
* Sum hydr. 1201, 203, call result 1202
*

ADD HYD ID=2 HYD NO= 1202 IDA=3 IDB=1 ICODE=0
*
* Newman Creek at Blair Road

PRINT HYD ID=2 PCODE=1 MODE=10
*
COMPUTE RATING CURVE ID=4 VS= 5.000 NSEGS=3
MIN EL= 277.20 MAX EL= 280.00
CHNSLP= 0.02500 FLNSLP= 0.02700
N= 0.080 DIST= 98.95
N=-0.035 DIST= 100.95
N= 0.080 DIST= 165.00
DIST ELEV DIST ELEV DIST ELEV
85.00 280.00 95.00 278.00 98.00 277.50
100.00 277.20 102.00 277.50 105.00 278.00
115.00 280.00
RFN=0.0000 PCODE=1

*
* Route through reach 2202
* Using Valley Section 5.0 as channel Rating Curve
*

ROUTE CHANNEL ID=1 HYD NO= 2202 INFLOW=2 LENGTH= 520 m SLOPE=0.025
RCID=4 NS=1 PCODE=1 INDEX=1 PIPE=0 CANOPY= 75.0%

*
* 1% Off-channel (Flat areas)
*

COMPUTE RATING CURVE ID=4 VS= 1.010 NSEGS=3
MIN EL= 100.00 MAX EL= 100.60
CHNSLP= 0.01000 FLNSLP= 0.01000
N= 0.350 DIST= 39.15
N=-0.150 DIST= 40.85
N= 0.350 DIST= 80.00
DIST ELEV DIST ELEV DIST ELEV
0.00 100.60 39.15 100.20 39.75 100.00

```

40.25 100.00 40.85 100.20 80.00 100.60
RFN=0.0000 PCODE=1

*
* Catchment 204
* VS= 100.010 is main channel & VS= 2.010 is off-channel
*
COMPUTE FLOWRATE ID=2 NHD= 204 AREA= 0.0453 Sq km L= 200 m W= 115 m
SOIL ZONE I II III IV V VI VII VIII IX
0.0 0.0 0.0 10.0 0.0 50.0 0.0 40.0 0.0
RATING CURVES: IDMC=3 IDOC=4 QRM= 0.05 QROC= 0.01
ROUTING MODEL=2 CONSTANTS: OVERLAND FTB= 2.0 TLO= 0.0
SUBSURFACE: KSS= 5.0 KGW= 384 h PCODE=1 WQPCODE=1
RBASIN=0 IDA=0 IDB=0 IDC=0 IDD=0 RBDUMP=0
GWFACT=0.00 GWON=1
SWQTH= 0.0 L/s SWPUMP= 0.0 L/s SWCODE=0

*
PRINT HYD ID=2 PCODE=1 MODE=10
*
* Sum 204, 2202, call result 1203
*
ADD HYD ID=3 HYD NO= 1203 IDA=1 IDB=2 ICODE=0
*
* 2% off-channel (Steep areas)
*
COMPUTE RATING CURVE ID=4 VS= 2.020 NSEGS=3
MIN EL= 100.00 MAX EL= 100.80
CHNSLP= 0.02000 FLNSLP= 0.02000
N= 0.350 DIST= 24.45
N=-0.150 DIST= 25.55
N= 0.350 DIST= 50.00
DIST ELEV DIST ELEV DIST ELEV
0.00 100.80 24.45 100.30 24.75 100.00
25.50 100.00 25.55 100.30 50.00 100.80
RFN=0.0000 PCODE=1

*
* 2.0% Main channel Parabolic Swale
*
COMPUTE RATING CURVE ID=5 VS= 100.020 NSEGS=3
MIN EL= 100.70 MAX EL= 103.00
CHNSLP= 0.02000 FLNSLP= 0.02000
N= 0.080 DIST= 20.00
N=-0.050 DIST= 30.00
N= 0.080 DIST= 50.00
DIST ELEV DIST ELEV DIST ELEV
0.00 103.00 20.00 101.00 23.00 100.80
25.00 100.70 27.00 100.80 30.00 101.00
50.00 103.00
RFN=0.0000 PCODE=1

*
* Catchment 205
* VS= 100.020 is main channel & VS= 2.020 is off-channel
*
COMPUTE FLOWRATE ID=1 NHD= 205 AREA= 0.07 Sq km L= 500 m W= 140 m
SOIL ZONE I II III IV V VI VII VIII IX
0.0 0.0 35.0 0.0 0.0 0.0 65.0 0.0 0.0
RATING CURVES: IDMC=5 IDOC=4 QRM= 0.05 QROC= 0.01
ROUTING MODEL=2 CONSTANTS: OVERLAND FTB= 5.0 TLO= 0.0
SUBSURFACE: KSS= 5.0 KGW= 384 h PCODE=1 WQPCODE=1
RBASIN=0 IDA=0 IDB=0 IDC=0 IDD=0 RBDUMP=0
GWFACT=0.00 GWON=1
SWQTH= 0.0 L/s SWPUMP= 0.0 L/s SWCODE=0

*
PRINT HYD ID=1 PCODE=1 MODE=10
*
```

```

* Sum 205, 1203, call result 1204
*
ADD HYD ID=2 HYD NO= 1204 IDA=3 IDB=1 ICODE=0
*
* NEWMAN CREEK AT GRAND RIVER
*
PRINT HYD ID=2 PCODE=1 MODE=10
*
*****
* DEVIL'S CREEK
*
*
* 2% Typical off-channel (Steep areas)
*
COMPUTE RATING CURVE ID=1 VS= 2.020 NSEGS=3
MIN EL= 100.00 MAX EL= 100.80
CHNSLP= 0.02000 FLNSLP= 0.02000
N= 0.350 DIST= 24.45
N=-0.150 DIST= 25.55
N= 0.350 DIST= 50.00
DIST ELEV DIST ELEV DIST ELEV
0.00 100.80 24.45 100.30 24.75 100.00
25.50 100.00 25.55 100.30 50.00 100.80
RFN=0.0000 PCODE=1

*
* 3.5% Typical off-channel (Steep areas)
*
COMPUTE RATING CURVE ID=2 VS= 2.035 NSEGS=3
MIN EL= 100.00 MAX EL= 100.80
CHNSLP= 0.03500 FLNSLP= 0.03500
N= 0.350 DIST= 24.45
N=-0.150 DIST= 25.55
N= 0.350 DIST= 50.00
DIST ELEV DIST ELEV DIST ELEV
0.00 100.80 24.45 100.30 24.75 100.00
25.50 100.00 25.55 100.30 50.00 100.80
RFN=0.0000 PCODE=1

*
* 10.0% Typical off-channel (Steep areas)
*
COMPUTE RATING CURVE ID=3 VS= 2.100 NSEGS=3
MIN EL= 100.00 MAX EL= 100.80
CHNSLP= 0.10000 FLNSLP= 0.10000
N= 0.350 DIST= 24.45
N=-0.150 DIST= 25.55
N= 0.350 DIST= 50.00
DIST ELEV DIST ELEV DIST ELEV
0.00 100.80 24.45 100.30 24.75 100.00
25.50 100.00 25.55 100.30 50.00 100.80
RFN=0.0000 PCODE=1

*
* 1.0% Typical Main channel Parabolic Swale
*
COMPUTE RATING CURVE ID=4 VS= 100.010 NSEGS=3
MIN EL= 100.70 MAX EL= 103.00
CHNSLP= 0.01000 FLNSLP= 0.01000
N= 0.080 DIST= 20.00
N=-0.050 DIST= 30.00
N= 0.080 DIST= 50.00
DIST ELEV DIST ELEV DIST ELEV
0.00 103.00 20.00 101.00 23.00 100.80
25.00 100.70 27.00 100.80 30.00 101.00
50.00 103.00
```



```

      RFN=0.0000 PCODE=1
*
*   2.0% Typical Main channel Parabolic Swale
*
COMPUTE RATING CURVE ID=5  VS=   100.020  NSEGS=3
      MIN EL=  100.70  MAX EL=  103.00
      CHNSLP= 0.02000  FLNSLP= 0.02000
      N= 0.080  DIST=  20.00
      N=-0.050  DIST=  30.00
      N= 0.080  DIST=  50.00
      DIST  ELEV      DIST  ELEV      DIST  ELEV
      0.00  103.00    20.00  101.00    23.00  100.80
      25.00  100.70    27.00  100.80    30.00  101.00
      50.00  103.00
      RFN=0.0000 PCODE=1
*
* Typical Urban section
*
COMPUTE RATING CURVE ID=6  VS=   3.200  NSEGS=3
      MIN EL=  295.00  MAX EL=  295.70
      CHNSLP= 0.02000  FLNSLP= 0.02000
      N= 0.015  DIST=  200.00
      N=-0.015  DIST=  300.00
      N= 0.015  DIST=  500.00
      DIST  ELEV      DIST  ELEV      DIST  ELEV
      0.00  295.70    200.00  295.50    200.10  295.00
      299.90  295.00    300.00  295.50    500.00  295.70
*
* Catchment 301
* VS=  100.010 is main channel & VS= 2.020 is off-channel
*
COMPUTE FLOWRATE  ID=1 NHD= 301 AREA=  0.1662 Sq km L=  350 m W=  520 m
      SOIL ZONE I  II III  IV  V  VI VII VIII IX
      30.0  0.0 0.0  3.5 0.0 66.5 0.0  0.0 0.0
      RATING CURVES: IDMC=6 IDOC=6 QRMCM= 0.50 QROC= 0.05
      ROUTING MODEL=2 CONSTANTS: OVERLAND FTB= 1.2 TLO= 0.0
      SUBSURFACE: KSS= 5.0 KGW= 384 h PCODE=1 WQPCODE=1
      RBASIN=0 IDA=0 IDB=0 IDC=0 IDD=0 RBDUMP=0
      GWFACT=0.00 GWON=1
      SWQTH=  0.0 L/s SWPUMP=  0.0 L/s SWCODE=0
*
PRINT HYD  ID=1 PCODE=1 MODE=10
*
* Catchment 302
* VS=  100.010 is main channel & VS= 2.020 is off-channel
*
COMPUTE FLOWRATE  ID=2 NHD= 302 AREA=  0.1347 Sq km L=  180 m W=  240 m
      SOIL ZONE I  II III  IV  V  VI VII VIII IX
      20.0  5.0 11.8  0.0 0.0 63.2 0.0  0.0 0.0
      RATING CURVES: IDMC=6 IDOC=6 QRMCM= 0.50 QROC= 0.05
      ROUTING MODEL=2 CONSTANTS: OVERLAND FTB= 1.2 TLO= 0.0
      SUBSURFACE: KSS= 5.0 KGW= 384 h PCODE=1 WQPCODE=1
      RBASIN=0 IDA=0 IDB=0 IDC=0 IDD=0 RBDUMP=0
      GWFACT=0.00 GWON=1
      SWQTH=  0.0 L/s SWPUMP=  0.0 L/s SWCODE=0
*
PRINT HYD  ID=2 PCODE=1 MODE=10
*
* Sum hydr.  301, 302, call result  1301
*
ADD HYD  ID=3 HYD NO= 1301 IDA=1 IDB=2 ICODE=0
*
* Route flows from 1301 through the Grand Ridge Estates SWM Facility
*
```

```

ROUTE SPECIAL POND ID=1 HYD NO=5301 INFLOW=3 PCODE=0 OPTION=15
Inflow controls:
      USPCT=100% USDIV=0      PCTA=  0% ADIV=0
      GWPCT=  0% GWDIV=0
Maximum level for Routing Tables: ZMAX= 311.600
Recharge characteristics for Compartment A
      LEVELA= 309.390      EVAPA= 0.0 mm/d ACODE=0
      CDA=  0.000 mm/h DZA= 23.00 m
Recharge characteristics for Compartment B
      LEVELB= 309.390 CCBA= 0.00000  EVAPB= 1.4 mm/d BCODE=1
      CDB=  0.000 mm/h DZB= 10.00 m
Irrigation Pond Controls: IPOND=0
Number of points= 17
      Compartment A      Compartment B
      Elevation Outflow Storage SFArea Outflow Storage SFArea
      (m) (cms) (ha*m) (ha) (cms) (ha*m) (ha)
      309.390 0.000 0.000 0.000 0.000 0.000 0.000 0.790
      309.590 0.000 0.000 0.000 0.037 0.240 0.790
      309.690 0.000 0.000 0.000 0.046 0.370 0.790
      309.730 0.000 0.000 0.000 0.049 0.410 0.790
      309.820 0.000 0.000 0.000 0.055 0.530 0.790
      309.940 0.000 0.000 0.000 0.062 0.690 0.790
      309.950 0.000 0.000 0.000 0.391 0.710 0.790
      310.030 0.000 0.000 0.000 0.417 0.820 0.790
      310.400 0.000 0.000 0.000 0.524 1.320 0.790
      310.820 0.000 0.000 0.000 0.624 1.920 0.790
      310.850 0.000 0.000 0.000 0.631 1.970 0.790
      311.000 0.000 0.000 0.000 0.662 2.210 0.790
      311.200 0.000 0.000 0.000 1.494 2.530 0.790
      311.300 0.000 0.000 0.000 2.177 2.690 0.790
      311.400 0.000 0.000 0.000 2.981 2.850 0.790
      311.500 0.000 0.000 0.000 3.890 3.000 0.790
      311.600 0.000 0.000 0.000 4.893 3.160 0.790
*
PRINT HYD  ID=1 PCODE=1 MODE=10
*
* Catchment 303
* VS=  100.020 is main channel & VS= 2.020 is off-channel
*
COMPUTE FLOWRATE  ID=2 NHD= 303 AREA=  0.3216 Sq km L=  300 m W=  300 m
      SOIL ZONE I  II III  IV  V  VI VII VIII IX
      25.0  0.0 0.0 15.0 0.0 60.0 0.0  0.0 0.0
      RATING CURVES: IDMC=6 IDOC=6 QRMCM= 0.50 QROC= 0.05
      ROUTING MODEL=2 CONSTANTS: OVERLAND FTB= 1.2 TLO= 0.0
      SUBSURFACE: KSS= 5.0 KGW= 384 h PCODE=1 WQPCODE=1
      RBASIN=0 IDA=0 IDB=0 IDC=0 IDD=0 RBDUMP=0
      GWFACT=0.00 GWON=1
      SWQTH=  0.0 L/s SWPUMP=  0.0 L/s SWCODE=0
*
PRINT HYD  ID=2 PCODE=1 MODE=10
*
* Sum hydr.  303, 5301, call result  1302
*
ADD HYD  ID=3 HYD NO= 1302 IDA=1 IDB=2 ICODE=0
*
* Catchment 304
* VS=  100.035 is main channel & VS= 2.020 is off-channel
*
COMPUTE FLOWRATE  ID=1 NHD= 304 AREA=  0.1193 Sq km L=  300 m W=  420 m
      SOIL ZONE I  II III  IV  V  VI VII VIII IX
      30.0  0.0 0.0  3.5 0.0 31.5 0.0  0.0 0.0
      RATING CURVES: IDMC=6 IDOC=6 QRMCM= 0.50 QROC= 0.05
      ROUTING MODEL=2 CONSTANTS: OVERLAND FTB= 1.2 TLO= 0.0
      SUBSURFACE: KSS= 5.0 KGW= 384 h PCODE=1 WQPCODE=1
*
```

```
RBASIN=0 IDA=0 IDB=0 IDC=0 IDD=0 RBDUMP=0
GWFACT=0.00 GWON=1
SWQTH= 0.0 L/s SWPUMP= 0.0 L/s SWCODE=0
*
PRINT HYD ID=1 PCODE=1 MODE=10
*
* Sum hydr. 304, 1302, call result 1303
*
ADD HYD ID=2 HYD NO= 1303 IDA=1 IDB=3 ICODE=0
*
COMPUTE RATING CURVE ID=6 VS= 1.000 NSEGS=3
MIN EL= 301.00 MAX EL= 303.00
CHNSLP= 0.01300 FLNSLP= 0.01400
N= 0.080 DIST= 97.00
N=-0.035 DIST= 103.00
N= 0.080 DIST= 140.00
DIST ELEV DIST ELEV DIST ELEV
60.00 303.00 85.00 302.50 97.00 301.50
100.00 301.00 103.00 301.50 115.00 302.50
140.00 303.00
RFN=0.0000 PCODE=1
*
* Route through reach 2303
* Using Valley Section 1.0 As channel Rating Curve
*
ROUTE CHANNEL ID=1 HYD NO= 2303 INFLOW=2 LENGTH= 900 m SLOPE=0.013
RCID=6 NS=1 PCODE=1 INDEX=1 PIPE=0 CANOPY= 90.0%
*
* Catchment 307
* VS= 100.010 is main channel & VS= 2.100 is off-channel
*
COMPUTE FLOWRATE ID=2 NHD= 307 AREA= 0.1653 Sq km L= 850 m W= 200 m
SOIL ZONE I II III IV V VI VII VIII IX
0.0 0.0 85.0 0.0 0.0 0.0 5.0 0.0 10.0
RATING CURVES: IDMC=4 IDOC=3 QRCM= 0.05 QROC= 0.01
ROUTING MODEL=2 CONSTANTS: OVERLAND FTB= 3.0 TLO= 0.0
SUBSURFACE: KSS= 5.0 KGW= 384 h PCODE=1 WQPCODE=1
RBASIN=0 IDA=0 IDB=0 IDC=0 IDD=0 RBDUMP=0
GWFACT=0.00 GWON=1
SWQTH= 0.0 L/s SWPUMP= 0.0 L/s SWCODE=0
*
PRINT HYD ID=2 PCODE=1 MODE=10
*
* Sum hydr. 307, 2303, call result 1304
*
ADD HYD ID=3 HYD NO= 1304 IDA=1 IDB=2 ICODE=0
*
REMOVE FLOW FROM GW ID=3 OPTION=2 PCODE=0 QPCT=00% KGW=384 h QSOUT= 0.004
*
PRINT HYD ID=3 PCODE=1 MODE=10
*
* Catchment 305
* VS= 100.020 is main channel & VS= 2.020 is off-channel
*
COMPUTE FLOWRATE ID=1 NHD= 305 AREA= 0.0065 Sq km L= 80 m W= 80 m
SOIL ZONE I II III IV V VI VII VIII IX
6.0 0.0 0.0 9.4 0.0 0.0 0.0 84.6 0.0
RATING CURVES: IDMC=5 IDOC=1 QRCM= 0.05 QROC= 0.01
ROUTING MODEL=2 CONSTANTS: OVERLAND FTB= 2.0 TLO= 0.0
SUBSURFACE: KSS= 5.0 KGW= 384 h PCODE=1 WQPCODE=1
RBASIN=0 IDA=0 IDB=0 IDC=0 IDD=0 RBDUMP=0
GWFACT=0.00 GWON=1
SWQTH= 0.0 L/s SWPUMP= 0.0 L/s SWCODE=0
*
```

```
PRINT HYD ID=1 PCODE=1 MODE=10
*
* Sum hydr. 305, 1304, call result 1305
*
ADD HYD ID=2 HYD NO= 1305 IDA=1 IDB=3 ICODE=0
*
* Catchment 306
* VS= 100.020 is main channel & VS= 2.100 is off-channel
*
COMPUTE FLOWRATE ID=1 NHD= 306 AREA= 0.0439 Sq km L= 500 m W= 50 m
SOIL ZONE I II III IV V VI VII VIII IX
3.0 0.0 0.0 9.7 0.0 0.0 0.0 87.3 0.0
RATING CURVES: IDMC=5 IDOC=3 QRCM= 0.05 QROC= 0.01
ROUTING MODEL=2 CONSTANTS: OVERLAND FTB= 2.0 TLO= 0.0
SUBSURFACE: KSS= 5.0 KGW= 384 h PCODE=1 WQPCODE=1
RBASIN=0 IDA=0 IDB=0 IDC=0 IDD=0 RBDUMP=0
GWFACT=0.00 GWON=1
SWQTH= 0.0 L/s SWPUMP= 0.0 L/s SWCODE=0
*
PRINT HYD ID=1 PCODE=1 MODE=10
*
* Sum hydr. 306, 1305, call result 1306
*
ADD HYD ID=3 HYD NO= 1306 IDA=1 IDB=2 ICODE=0
*
* Devil's Creek at Blenheim Road
*
PRINT HYD ID=3 PCODE=1 MODE=10
*
* Catchment 308
* VS= 100.020 is main channel & VS= 2.035 is off-channel
*
COMPUTE FLOWRATE ID=1 NHD= 308 AREA= 0.063 Sq km L= 200 m W= 320 m
SOIL ZONE I II III IV V VI VII VIII IX
2.0 0.0 0.0 12.3 0.0 0.0 0.0 85.8 0.0
RATING CURVES: IDMC=5 IDOC=2 QRCM= 0.05 QROC= 0.01
ROUTING MODEL=2 CONSTANTS: OVERLAND FTB= 3.0 TLO= 0.0
SUBSURFACE: KSS= 5.0 KGW= 384 h PCODE=1 WQPCODE=1
RBASIN=0 IDA=0 IDB=0 IDC=0 IDD=0 RBDUMP=0
GWFACT=0.00 GWON=1
SWQTH= 0.0 L/s SWPUMP= 0.0 L/s SWCODE=0
*
PRINT HYD ID=1 PCODE=1 MODE=10
*
* Catchment 309
* VS= 100.010 is main channel & VS= 2.100 is off-channel
*
COMPUTE FLOWRATE ID=2 NHD= 309 AREA= 0.0164 Sq km L= 60 m W= 200 m
SOIL ZONE I II III IV V VI VII VIII IX
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 100.0
RATING CURVES: IDMC=4 IDOC=3 QRCM= 0.05 QROC= 0.01
ROUTING MODEL=2 CONSTANTS: OVERLAND FTB= 3.0 TLO= 0.0
SUBSURFACE: KSS= 5.0 KGW= 384 h PCODE=1 WQPCODE=1
RBASIN=0 IDA=0 IDB=0 IDC=0 IDD=0 RBDUMP=0
GWFACT=0.00 GWON=1
SWQTH= 0.0 L/s SWPUMP= 0.0 L/s SWCODE=0
*
PRINT HYD ID=2 PCODE=1 MODE=10
*
* Sum hydr. 308, 309, call result 1307
*
ADD HYD ID=4 HYD NO= 1307 IDA=1 IDB=2 ICODE=0
*
* Route flows from 1307 through a depression
```

```
*
ROUTE SPECIAL POND ID=1 HYD NO=5309 INFLOW=4 PCODE=0 OPTION=15
Inflow controls:
  USPCT=100% USDIV=0      PCTA= 0% ADIV=0
  GWPCT= 0% GWDIV=0
Maximum level for Routing Tables: ZMAX= 300.500
Recharge characteristics for Compartment A
  LEVELA= 298.500      EVAPA= 0.0 mm/d ACODE=0
  CDA= 0.000 mm/h DZA= 23.00 m
Recharge characteristics for Compartment B
  LEVELB= 298.500 CCBA= 0.00000 EVAPB= 1.4 mm/d BCODE=1
  CDB= 25.000 mm/h DZB= 10.00 m
Irrigation Pond Controls: IPOND=0
Number of points= 5
      Compartment A      Compartment B
Elevation Outflow Storage SFArea Outflow Storage SFArea
(m) (cms) (ha*m) (ha) (cms) (ha*m) (ha)
298.500 0.000 0.000 0.000 0.000 0.000 0.001
299.000 0.000 0.000 0.000 0.000 0.005 0.017
299.500 0.000 0.000 0.000 0.000 0.028 0.077
300.000 0.000 0.000 0.000 0.000 0.083 0.143
300.500 0.000 0.000 0.000 5.000 0.171 0.209

*
PRINT HYD ID=1 PCODE=1 MODE=10
*
* Sum hydr. 5309,1306 call result 1308
*
ADD HYD ID=2 HYD NO= 1308 IDA=1 IDB=3 ICODE=0
*
PRINT HYD ID=2 PCODE=1 MODE=10
KEEP HYD ID=2 CUTOFF=24 ICODE=5 ISTEP=1 IFORM=0 IDB=2 IMET=1
*
COMPUTE RATING CURVE ID=6 VS= 2.000 NSEGS=3
  MIN EL= 290.00 MAX EL= 291.50
  CHNSLP= 0.0030 FLNSLP= 0.0035
  N= 0.080 DIST= 99.50
  N=-0.035 DIST= 100.50
  N= 0.080 DIST= 165.00
    DIST ELEV DIST ELEV DIST ELEV
    35.00 291.50 75.00 291.00 98.50 290.50
    99.50 290.40 99.60 290.00 100.40 290.00
    100.50 290.40 101.50 290.50 125.00 291.00
    165.00 291.50
  RFN=0.0000 PCODE=1

*
* Route through reach 2308
* Using Valley Section 2.0 As channel Rating Curve
*
ROUTE CHANNEL ID=1 HYD NO= 2308 INFLOW=2 LENGTH= 1400 m SLOPE=0.003
  RCID=6 NS=1 PCODE=1 INDEX=1 PIPE=0 CANOPY= 75.0%
*
* Typical Urban section
*
COMPUTE RATING CURVE ID=6 VS= 3.200 NSEGS=3
  MIN EL= 295.00 MAX EL= 295.70
  CHNSLP= 0.02000 FLNSLP= 0.02000
  N= 0.015 DIST= 200.00
  N=-0.015 DIST= 300.00
  N= 0.015 DIST= 500.00
    DIST ELEV DIST ELEV DIST ELEV
    0.00 295.70 200.00 295.50 200.10 295.00
    299.90 295.00 300.00 295.50 500.00 295.70

*
* Catchment 310
```

```
* VS= 100.010 is main channel & VS= 2.035 is off-channel
*
COMPUTE FLOWRATE ID=2 NHD= 310 AREA= 0.0682 Sq km L= 450 m W= 140 m
  SOIL ZONE I II III IV V VI VII VIII IX
  25.0 0.0 0.0 0.0 0.0 26.3 0.0 48.8 0.0
  RATING CURVES: IDMC=6 IDOC=6 QRCM= 0.50 QROC= 0.05
  ROUTING MODEL=2 CONSTANTS: OVERLAND FTB= 1.2 TLO= 0.0
  SUBSURFACE: KSS= 5.0 KGW= 384 h PCODE=1 WQPCODE=1
  RBASIN=0 IDA=0 IDB=0 IDC=0 IDD=0 RBDUMP=0
  GWFACT=0.00 GWON=1
  SWQTH= 0.0 L/s SWPUMP= 0.0 L/s SWCODE=0

*
PRINT HYD ID=2 PCODE=1 MODE=10
*
* Sum hydr. 310, 2308, call result 1309
*
ADD HYD ID=3 HYD NO= 1309 IDA=1 IDB=2 ICODE=0
*
* Catchment 0.5% Main channel Parabolic Swale
*
COMPUTE RATING CURVE ID=6 VS= 100.005 NSEGS=3
  MIN EL= 100.70 MAX EL= 103.00
  CHNSLP= 0.00500 FLNSLP= 0.005000
  N= 0.080 DIST= 20.00
  N=-0.050 DIST= 30.00
  N= 0.080 DIST= 50.00
    DIST ELEV DIST ELEV DIST ELEV
    0.00 103.00 20.00 101.00 23.00 100.80
    25.00 100.70 27.00 100.80 30.00 101.00
    50.00 103.00
  RFN=0.0000 PCODE=1

*
* Catchment 311
* VS= 100.005 is main channel & VS= 2.020 is off-channel
*
COMPUTE FLOWRATE ID=1 NHD= 311 AREA= 0.4793 Sq km L= 1200 m W= 390 m
  SOIL ZONE I II III IV V VI VII VIII IX
  0.0 2.0 64.0 0.0 0.0 0.0 34.0 0.0 0.0
  RATING CURVES: IDMC=6 IDOC=1 QRCM= 0.05 QROC= 0.01
  ROUTING MODEL=2 CONSTANTS: OVERLAND FTB= 5.0 TLO= 0.0
  SUBSURFACE: KSS= 5.0 KGW= 384 h PCODE=1 WQPCODE=1
  RBASIN=0 IDA=0 IDB=0 IDC=0 IDD=0 RBDUMP=0
  GWFACT=0.00 GWON=1
  SWQTH= 0.0 L/s SWPUMP= 0.0 L/s SWCODE=0

*
PRINT HYD ID=1 PCODE=1 MODE=10
*
* Sum hydr. 311, 1309, call result 1310
*
ADD HYD ID=6 HYD NO= 1310 IDA=1 IDB=3 ICODE=0
*
REMOVE FLOW FROM GW ID=6 OPTION=2 PCODE=0 QPCT=00% KGW=384 h QSOUT= 0.001
*
PRINT HYD ID=6 PCODE=1 MODE=10
*
* Route flows from 1310 through the Devil's Creek wetland area
*
ROUTE SPECIAL POND ID=2 HYD NO=5310 INFLOW=6 PCODE=0 OPTION=5
Inflow controls:
  USPCT=100% USDIV=0      PCTA= 0% ADIV=0
  GWPCT= 0% GWDIV=0
Maximum level for Routing Tables: ZMAX= 292.500
Recharge characteristics for Compartment A
  LEVELA= 289.300      EVAPA= 0.0 mm/d ACODE=0
```

CDA= 0.000 mm/h DZA= 23.00 m
Recharge characteristics for Compartment B
LEVELB= 289.300 CCBA= 0.00000 EVAPB= 1.4 mm/d BCODE=1
CDB= 4.000 mm/h DZB= 10.00 m
Irrigation Pond Controls: IPOND=0
Number of points= 11

Elevation (m)	Compartment A		Compartment B			
	Outflow (cms)	Storage (ha*m)	SFArea (ha)	Outflow (cms)	Storage (ha*m)	SFArea (ha)
289.300	0.000	0.000	0.000	0.000	0.000	0.00
289.600	0.000	0.000	0.000	0.090	0.500	10.00
289.700	0.000	0.000	0.000	0.110	1.495	10.00
289.800	0.000	0.000	0.000	0.130	2.492	10.00
289.900	0.000	0.000	0.000	0.230	3.489	10.00
290.000	0.000	0.000	0.000	1.200	3.515	10.00
290.500	0.000	0.000	0.000	4.200	3.815	10.00
291.000	0.000	0.000	0.000	8.200	4.648	10.00
291.500	0.000	0.000	0.000	13.00	7.048	10.00
292.000	0.000	0.000	0.000	18.40	12.448	10.00
292.500	0.000	0.000	0.000	24.40	20.998	10.00

*
PRINT HYD ID=2 PCODE=1 MODE=10
KEEP HYD ID=2 CUTOFF=24 ICODE=5 ISTEP=1 IFORM=0 IDB=2 IMET=1
*
* Catchment 312
* VS= 100.020 is main channel & VS= 2.035 is off-channel
*
COMPUTE FLOWRATE ID=1 NHD= 312 AREA= 0.318 Sq km L= 450 m W= 180 m
SOIL ZONE I II III IV V VI VII VIII IX
0.0 4.0 1.0 5.0 0.0 0.0 0.0 90.0 0.0
RATING CURVES: IDMC=5 IDOC=2 QRM= 0.05 QROC= 0.01
ROUTING MODEL=2 CONSTANTS: OVERLAND FTB= 3.0 TLO= 0.0
SUBSURFACE: KSS= 5.0 KGW= 384 h PCODE=1 WQPCODE=1
RBASIN=0 IDA=0 IDB=0 IDC=0 IDD=0 RBDUMP=0
GWFACT=1.00 GWON=1
SWQTH= 0.0 L/s SWPUMP= 0.0 L/s SWCODE=0
*
PRINT HYD ID=1 PCODE=1 MODE=10
*
* Central Wetland
* Route 6312 through Wetland 2 Depression - Revised per MTE Survey April 2017
* Min Ponding set to 307.9 to be more in line with monitoring data
*
ROUTE SPECIAL POND ID=3 HYD NO=5312 INFLOW=1 PCODE=0 OPTION=15
Inflow controls:
USPCT=100% USDIV=0 PCTA= 0% ADIV=0
GWPC= 0% GWDIV=0
Maximum level for Routing Tables: ZMAX= 311.000
Recharge characteristics for Compartment A
LEVELA= 307.900 EVAPA= 0.0 mm/d ACODE=0
CDA= 0.000 mm/h DZA= 10.00 m
Recharge characteristics for Compartment B
LEVELB= 307.900 CCBA= 0.00000 EVAPB= 1.4 mm/d BCODE=1
CDB= 4.000 mm/h DZB= 10.00 m
Irrigation Pond Controls: IPOND=0
Number of points= 10

Elevation (m)	Compartment A		Compartment B			
	Outflow (cms)	Storage (ha*m)	SFArea (ha)	Outflow (cms)	Storage (ha*m)	SFArea (ha)
307.900	0.000	0.0000	0.0000	0.0000	0.2000	0.7500
308.000	0.000	0.0000	0.0000	0.0000	0.2730	1.1500
308.400	0.000	0.0000	0.0000	0.0000	0.7730	1.3460
308.500	0.000	0.0000	0.0000	0.0000	0.9140	1.4849
309.000	0.000	0.0000	0.0000	0.0000	1.8210	2.1441

309.500	0.000	0.0000	0.0000	0.1259	3.1740	3.2667
310.000	0.000	0.0000	0.0000	0.1523	5.2080	4.8696
310.500	0.000	0.0000	0.0000	0.1747	8.0750	6.5959
310.700	0.000	0.0000	0.0000	0.1829	9.4630	7.2920
311.000	0.000	0.0000	0.0000	0.1945	11.783	8.1691

*
PRINT HYD ID=3 PCODE=1 MODE=10
KEEP HYD ID=3 CUTOFF=24 ICODE=5 ISTEP=1 IFORM=0 IDB=3 IMET=1
*
* 3.5% Main channel Parabolic Swale
*
COMPUTE RATING CURVE ID=4 VS= 100.035 NSEGS=3

MIN EL=	100.70	MAX EL=	103.00
CHNSLP=	0.03500	FLNSLP=	0.03500
N=	0.080	DIST=	20.00
N=-	0.050	DIST=	30.00
N=	0.080	DIST=	50.00
DIST	ELEV	DIST	ELEV
0.00	103.00	20.00	101.00
25.00	100.70	27.00	100.80
50.00	103.00		
RFN=	0.0000	PCODE=	1

*
* 5% off-channel (Steep areas)
*
COMPUTE RATING CURVE ID=6 VS= 2.050 NSEGS=3

MIN EL=	100.00	MAX EL=	100.80
CHNSLP=	0.05000	FLNSLP=	0.05000
N=	0.350	DIST=	24.45
N=-	0.150	DIST=	25.55
N=	0.350	DIST=	50.00
DIST	ELEV	DIST	ELEV
0.00	100.80	24.45	100.30
25.50	100.00	25.55	100.30
50.00	100.80		
RFN=	0.0000	PCODE=	1

*
* Catchment 313
* VS= 100.035 is main channel & VS= 2.050 is off-channel
*
COMPUTE FLOWRATE ID=1 NHD= 313 AREA= 0.0985 Sq km L= 170 m W= 580 m

SOIL ZONE I	II	III	IV	V	VI	VII	VIII	IX
0.0	0.0	0.0	10.0	0.0	0.0	0.0	90.0	0.0
RATING CURVES: IDMC=4 IDOC=6 QRM= 0.05 QROC= 0.01								
ROUTING MODEL=2 CONSTANTS: OVERLAND FTB= 2.0 TLO= 0.0								
SUBSURFACE: KSS= 5.0 KGW= 384 h PCODE=1 WQPCODE=1								
RBASIN=0 IDA=0 IDB=0 IDC=0 IDD=0 RBDUMP=0								
GWFACT=0.00 GWON=1								
SWQTH= 0.0 L/s SWPUMP= 0.0 L/s SWCODE=0								

*
PRINT HYD ID=1 PCODE=1 MODE=10
*
* Sum hydr. 5312,313 call result 1311
*
ADD HYD ID=4 HYD NO= 1311 IDA=1 IDB=3 ICODE=0
*
* 1.0% Main channel Parabolic Swale
*
COMPUTE RATING CURVE ID=4 VS= 100.010 NSEGS=3

MIN EL=	100.70	MAX EL=	103.00
CHNSLP=	0.01000	FLNSLP=	0.01000
N=	0.080	DIST=	20.00
N=-	0.050	DIST=	30.00
N=	0.080	DIST=	50.00
DIST	ELEV	DIST	ELEV


```

      0.00 103.00    20.00 101.00    23.00 100.80
      25.00 100.70    27.00 100.80    30.00 101.00
      50.00 103.00
      RFN=0.0000 PCODE=1
* Catchment 314
* VS= 100.010 is main channel & VS= 2.100 is off-channel
*
COMPUTE FLOWRATE ID=1 NHD= 314 AREA= 0.1142 Sq km L= 500 m W= 240 m
      SOIL ZONE I   II  III   IV   V   VI  VII  VIII  IX
      0.0  0.0 20.0  0.0  0.0  0.0 10.0  0.0 70.0
      RATING CURVES: IDMC=4 IDOC=3 QRCM= 0.05 QROC= 0.01
      ROUTING MODEL=2 CONSTANTS: OVERLAND FTB= 3.0 TLO= 0.0
      SUBSURFACE: KSS= 5.0 KGW= 384 h PCODE=1 WQPCODE=1
      RBASIN=0 IDA=0 IDB=0 IDC=0 IDD=0 RBDUMP=0
      GWFACT=0.00 GWON=1
      SWQTH= 0.0 L/s SWPUMP= 0.0 L/s SWCODE=0
*
PRINT HYD ID=1 PCODE=1 MODE=10
*
* Sum hydr. 1311,314 call result 1312
*
ADD HYD ID=3 HYD NO= 1312 IDA=1 IDB=4 ICODE=0
*
* Catchment 315
* VS= 100.020 is main channel & VS= 2.100 is off-channel
*
COMPUTE FLOWRATE ID=1 NHD= 315 AREA= 0.0492 Sq km L= 110 m W= 410 m
      SOIL ZONE I   II  III   IV   V   VI  VII  VIII  IX
      0.0  0.0  0.0 30.0  0.0  0.0  0.0 70.0  0.0
      RATING CURVES: IDMC=5 IDOC=3 QRCM= 0.05 QROC= 0.01
      ROUTING MODEL=2 CONSTANTS: OVERLAND FTB= 3.0 TLO= 0.0
      SUBSURFACE: KSS= 5.0 KGW= 384 h PCODE=1 WQPCODE=1
      RBASIN=0 IDA=0 IDB=0 IDC=0 IDD=0 RBDUMP=0
      GWFACT=0.00 GWON=1
      SWQTH= 0.0 L/s SWPUMP= 0.0 L/s SWCODE=0
*
PRINT HYD ID=1 PCODE=1 MODE=10
*
* Sum hydr. 1312,315 call result 1313
*
ADD HYD ID=4 HYD NO= 1313 IDA=1 IDB=3 ICODE=0
*
* Typical Urban section
*
COMPUTE RATING CURVE ID=6 VS= 3.200 NSEGS=3
      MIN EL= 295.00 MAX EL= 295.70
      CHNSLP= 0.02000 FLNSLP= 0.02000
      N= 0.015 DIST= 200.00
      N=-0.015 DIST= 300.00
      N= 0.015 DIST= 500.00
      DIST ELEV DIST ELEV DIST ELEV
      0.00 295.70 200.00 295.50 200.10 295.00
      299.90 295.00 300.00 295.50 500.00 295.70
*
* Catchment 316
*
COMPUTE FLOWRATE ID=1 NHD= 316 AREA= 0.212 Sq km L= 650 m W= 330 m
      SOIL ZONE I   II  III   IV   V   VI  VII  VIII  IX
      20.0  0.0  8.0 16.0  0.0  8.0  0.0 48.0  0.0
      RATING CURVES: IDMC=6 IDOC=6 QRCM= 0.50 QROC= 0.05
      ROUTING MODEL=2 CONSTANTS: OVERLAND FTB= 1.2 TLO= 0.0
      SUBSURFACE: KSS= 5.0 KGW= 384 h PCODE=1 WQPCODE=1
      RBASIN=0 IDA=0 IDB=0 IDC=0 IDD=0 RBDUMP=0
      GWFACT=0.00 GWON=1
```

```

      SWQTH= 0.0 L/s SWPUMP= 0.0 L/s SWCODE=0
*
PRINT HYD ID=1 PCODE=1 MODE=10
*
* Sum hydr. 1313,316 call result 1314
*
ADD HYD ID=3 HYD NO= 1314 IDA=1 IDB=4 ICODE=0
*
PRINT HYD ID=3 PCODE=1 MODE=10
*
* Route flows from 1314 through Grandview Hills SWM Facility (Devil's)
*
ROUTE SPECIAL POND ID=1 HYD NO=5314 INFLOW=3 PCODE=0 OPTION=15
      Inflow controls:
      USPCT=100% USDIV=0 PCTA= 0% ADIV=0
      GWPCT= 0% GWDIV=0
      Maximum level for Routing Tables: ZMAX= 291.000
      Recharge characteristics for Compartment A
      LEVELA= 289.800 EVAPA= 0.0 mm/d ACODE=0
      CDA= 0.000 mm/h DZA= 23.00 m
      Recharge characteristics for Compartment B
      LEVELB= 289.800 CCBA= 0.00000 EVAPB= 1.4 mm/d BCODE=1
      CDB= 4.000 mm/h DZB= 10.00 m
      Irrigation Pond Controls: IPOND=0
      Number of points= 9
      Compartment A Compartment B
      Elevation Outflow Storage SFArea Outflow Storage SFArea
      (m) (cms) (ha*m) (ha) (cms) (ha*m) (ha)
      289.800 0.000 0.000 0.000 0.000 0.000 0.600
      289.900 0.000 0.000 0.000 0.059 0.087 0.600
      290.000 0.000 0.000 0.000 0.084 0.185 0.600
      290.100 0.000 0.000 0.000 0.103 0.295 0.600
      290.200 0.000 0.000 0.000 0.119 0.417 0.600
      290.300 0.000 0.000 0.000 0.502 0.549 0.600
      290.400 0.000 0.000 0.000 1.191 0.691 0.600
      290.500 0.000 0.000 0.000 2.078 0.860 0.600
      291.000 0.000 0.000 0.000 5.000 1.200 0.600
*
REMOVE FLOW FROM GW ID=1 OPTION=2 PCODE=0 QPCT=00% KGW=384 h QSOUT= 0.004
*
PRINT HYD ID=1 PCODE=1 MODE=10
*
* Sum hydr. 5314,1310 call result 1315
*
ADD HYD ID=3 HYD NO= 1315 IDA=1 IDB=2 ICODE=0
*
COMPUTE RATING CURVE ID=6 VS= 3.000 NSEGS=3
      MIN EL= 285.20 MAX EL= 287.00
      CHNSLP= 0.01100 FLNSLP= 0.01200
      N= 0.080 DIST= 99.30
      N=-0.035 DIST= 100.70
      N= 0.080 DIST= 120.00
      DIST ELEV DIST ELEV DIST ELEV
      80.00 287.00 85.00 286.00 90.00 285.70
      99.30 285.50 99.40 285.20 100.60 285.20
      100.70 285.50 110.00 285.70 115.00 286.00
      120.00 287.00
      RFN=0.0000 PCODE=1
*
* Route through reach 2315
* Using Valley Section 3.0 As channel Rating Curve
*
ROUTE CHANNEL ID=1 HYD NO= 2315 INFLOW=3 LENGTH= 420 m SLOPE=0.011
      RCID=6 NS=1 PCODE=1 INDEX=1 PIPE=0 CANOPY= 25.0%
```

```
*
* Typical Urban section
*
COMPUTE RATING CURVE ID=6 VS= 3.200 NSEGS=3
      MIN EL= 295.00 MAX EL= 295.70
      CHNSLP= 0.02000 FLNSLP= 0.02000
      N= 0.015 DIST= 200.00
      N=-0.015 DIST= 300.00
      N= 0.015 DIST= 500.00
      DIST ELEV DIST ELEV DIST ELEV
      0.00 295.70 200.00 295.50 200.10 295.00
      299.90 295.00 300.00 295.50 500.00 295.70

*
* Catchment 317
*
COMPUTE FLOWRATE ID=2 NHD= 317 AREA= 0.118 Sq km L= 150 m W= 200 m
      SOIL ZONE I II III IV V VI VII VIII IX
      20.0 0.0 0.0 0.0 0.0 40.0 0.0 40.0 0.0
      RATING CURVES: IDMC=6 IDOC=6 QRCM= 0.50 QROC= 0.05
      ROUTING MODEL=2 CONSTANTS: OVERLAND FTB= 1.2 TLO= 0.0
      SUBSURFACE: KSS= 5.0 KGW= 384 h PCODE=1 WQPCODE=1
      RBASIN=0 IDA=0 IDB=0 IDC=0 IDD=0 RBDUMP=0
      GWFACT=0.00 GWON=1
      SWQTH= 0.0 L/s SWPUMP= 0.0 L/s SWCODE=0

*
PRINT HYD ID=2 PCODE=1 MODE=10
*
* Sum hydr. 2315,317 call result 1316
*
ADD HYD ID=3 HYD NO= 1316 IDA=1 IDB=2 ICODE=0
*
REMOVE FLOW FROM GW ID=3 OPTION=2 PCODE=0 QPCT=00% KGW=384 h QSOUT= 0.003
*
* Devil's Creek at Blair Road
*
PRINT HYD ID=3 PCODE=1 MODE=10
KEEP HYD ID=3 CUTOFF=24 ICODE=3 ISTEP=1 IFORM=0 IDB=3 IMET=1
KEEP HYD ID=3 CUTOFF=24 ICODE=5 ISTEP=1 IFORM=0 IDB=3 IMET=1
*
COMPUTE RATING CURVE ID=6 VS= 4.000 NSEGS=3
      MIN EL= 282.00 MAX EL= 285.00
      CHNSLP= 0.01900 FLNSLP= 0.02100
      N= 0.080 DIST= 99.30
      N=-0.035 DIST= 100.70
      N= 0.080 DIST= 120.00
      DIST ELEV DIST ELEV DIST ELEV
      80.00 285.00 90.00 284.00 96.00 283.00
      99.30 282.30 99.40 282.00 100.60 282.00
      100.70 282.30 104.00 283.00 110.00 284.00
      120.00 285.00
      RFN=0.0000 PCODE=1

*
* Route through reach 2316
* Using Valley Section 4.0 As channel Rating Curve
*
ROUTE CHANNEL ID=1 HYD NO= 2316 INFLOW=3 LENGTH= 270 m SLOPE=0.019
      RCID=6 NS=1 PCODE=1 INDEX=1 PIPE=0 CANOPY= 50.0%

*
* Typical Urban section
*
COMPUTE RATING CURVE ID=6 VS= 3.200 NSEGS=3
      MIN EL= 295.00 MAX EL= 295.70
      CHNSLP= 0.02000 FLNSLP= 0.02000
      N= 0.015 DIST= 200.00
```

```
      N=-0.015 DIST= 300.00
      N= 0.015 DIST= 500.00
      DIST ELEV DIST ELEV DIST ELEV
      0.00 295.70 200.00 295.50 200.10 295.00
      299.90 295.00 300.00 295.50 500.00 295.70

*
* Catchment 318
*
COMPUTE FLOWRATE ID=2 NHD= 318 AREA= 0.1539 Sq km L= 450 m W= 340 m
      SOIL ZONE I II III IV V VI VII VIII IX
      30.0 0.0 0.0 0.0 0.0 10.5 0.0 59.5 0.0
      RATING CURVES: IDMC=6 IDOC=6 QRCM= 0.50 QROC= 0.05
      ROUTING MODEL=2 CONSTANTS: OVERLAND FTB= 1.2 TLO= 0.0
      SUBSURFACE: KSS= 5.0 KGW= 384 h PCODE=1 WQPCODE=1
      RBASIN=0 IDA=0 IDB=0 IDC=0 IDD=0 RBDUMP=0
      GWFACT=0.00 GWON=1
      SWQTH= 0.0 L/s SWPUMP= 0.0 L/s SWCODE=0

*
PRINT HYD ID=2 PCODE=1 MODE=10
*
* Sum hydr. 2316,318 call result 1317
*
ADD HYD ID=3 HYD NO= 1317 IDA=1 IDB=2 ICODE=0
*
* Devil's Creek at Grand River
*
PRINT HYD ID=3 PCODE=1 MODE=10
*

*****
* SMALL CATCHMENT TO GRAND RIVER STORM SEWER OUTLET
*
*
*
* 3.5% Typical off-channel (Steep areas)
*
COMPUTE RATING CURVE ID=2 VS= 2.035 NSEGS=3
      MIN EL= 100.00 MAX EL= 100.80
      CHNSLP= 0.03500 FLNSLP= 0.03500
      N= 0.350 DIST= 24.45
      N=-0.150 DIST= 25.55
      N= 0.350 DIST= 50.00
      DIST ELEV DIST ELEV DIST ELEV
      0.00 100.80 24.45 100.30 24.75 100.00
      25.50 100.00 25.55 100.30 50.00 100.80
      RFN=0.0000 PCODE=1

*
* 3.5% Main channel Parabolic Swale
*
COMPUTE RATING CURVE ID=4 VS= 100.035 NSEGS=3
      MIN EL= 100.70 MAX EL= 103.00
      CHNSLP= 0.03500 FLNSLP= 0.03500
      N= 0.080 DIST= 20.00
      N=-0.050 DIST= 30.00
      N= 0.080 DIST= 50.00
      DIST ELEV DIST ELEV DIST ELEV
      0.00 103.00 20.00 101.00 23.00 100.80
      25.00 100.70 27.00 100.80 30.00 101.00
      50.00 103.00
      RFN=0.0000 PCODE=1

*
* Catchment 501
*
```

```
COMPUTE FLOWRATE      ID=2 NHD= 501 AREA=   0.0207 Sq km L=  100 m W=   200 m
      SOIL ZONE I      II  III      IV      V      VI  VII  VIII  IX
                    0.0  0.0  0.0  20.0  0.0  0.0  0.0  80.0  0.0
      RATING CURVES: IDMC=4 IDOC=2 QRCM=   0.05 QROC=   0.01
      ROUTING MODEL=2 CONSTANTS: OVERLAND FTB=  3.0 TLO=  0.0
      SUBSURFACE: KSS=  5.0 KGW= 384 h PCODE=1 WQPCODE=1
      RBASIN=0 IDA=0 IDB=0 IDC=0 IDD=0 RBDUMP=0
      GWFACT=1.00 GWON=1
      SWQTH=   0.0 L/s SWPUMP=   0.0 L/s SWCODE=0

*
PRINT HYD              ID=2 PCODE=1 MODE=10
*
CHANGE INPUT FILE
*
* Go to event file
*
CHANGE INPUT FILE
*
FINISH
```

1	106	0.0215	7.46	0.0195	0.	RCFLAGS	0	0	cndchi.dat
1	5106	0.0215	0.00	0.0000	110.	RCFLAGS	0	0	
1	107	0.1510	6.28	0.1524	0.	RCFLAGS	0	0	
1	1103	0.1725	5.50	0.1524	0.	RCFLAGS	0	0	
1	104	0.0282	8.69	0.0597	0.	RCFLAGS	0	0	
1	5104	0.0282	0.00	0.0000	197.	RCFLAGS	0	0	
1	1104	0.2007	4.72	0.1524	0.	RCFLAGS	0	0	
1	105	0.1640	6.58	0.0651	0.	RCFLAGS	0	0	
1	1105	0.3647	5.56	0.2128	0.	RCFLAGS	0	0	
1	101	0.0039	6.84	0.0105	0.	RCFLAGS	0	0	
1	102	0.0214	6.27	0.0362	0.	RCFLAGS	0	0	
1	1101	0.0253	6.36	0.0467	0.	RCFLAGS	0	0	
1	103	0.0259	0.09	0.0000	0.	RCFLAGS	0	0	
1	1102	0.0512	3.19	0.0467	0.	RCFLAGS	0	0	
1	5103	0.0512	0.00	0.0000	149.	RCFLAGS	0	0	
1	1106	0.4159	4.87	0.2128	0.	RCFLAGS	0	0	
1	108	0.1240	0.71	0.0007	0.	RCFLAGS	0	0	
1	1107	0.5399	3.92	0.2130	0.	RCFLAGS	0	0	
1	5108	0.5399	3.86	0.1747	358.	RCFLAGS	0	0	
1	2108	0.5399	3.88	0.1704	0.	RCFLAGS	0	0	
1	109	0.1252	2.08	0.0178	0.	RCFLAGS	0	0	
1	1108	0.6651	3.54	0.1869	0.	RCFLAGS	0	0	
1	110	0.0201	6.28	0.0691	0.	RCFLAGS	0	0	
1	1109	0.6852	3.62	0.1942	0.	RCFLAGS	0	0	
1	111	0.0498	6.28	0.0889	0.	RCFLAGS	0	0	
1	1110	0.7350	3.80	0.2325	0.	RCFLAGS	0	0	
1	2110	0.7350	3.80	0.2281	0.	RCFLAGS	0	0	
1	401	0.0234	9.08	0.0468	0.	RCFLAGS	0	0	
1	5401	0.0234	0.00	0.0000	141.	RCFLAGS	0	0	
1	402	0.1337	8.49	0.1723	0.	RCFLAGS	0	0	
1	1401	0.1571	7.23	0.1723	0.	RCFLAGS	0	0	
1	403	0.1073	3.56	0.0375	0.	RCFLAGS	0	0	
1	1402	0.2644	5.74	0.2097	0.	RCFLAGS	0	0	
1	5403	0.2644	0.00	0.0000	1357.	RCFLAGS	0	0	
1	405	0.0966	7.69	0.0774	0.	RCFLAGS	0	0	
1	5405	0.0966	0.00	0.0000	374.	RCFLAGS	0	0	
1	406	0.0930	7.18	0.0713	0.	RCFLAGS	0	0	
1	1403	0.1896	3.52	0.0713	0.	RCFLAGS	0	0	
1	5406	0.1896	0.00	0.0000	306.	RCFLAGS	0	0	
1	404	0.1141	8.09	0.1080	0.	RCFLAGS	0	0	
1	1404	0.3037	3.04	0.1080	0.	RCFLAGS	0	0	
1	407	0.2555	2.80	0.1436	0.	RCFLAGS	0	0	
1	1405	0.5592	2.93	0.2514	0.	RCFLAGS	0	0	
1	5407	0.5592	0.00	0.0000	1370.	RCFLAGS	0	0	
1	1406	0.8236	0.00	0.0000	0.	RCFLAGS	0	0	
1	5437	0.8236	0.00	0.0000	0.	RCFLAGS	0	0	
1	408	0.0590	7.57	0.0589	0.	RCFLAGS	0	0	cndchi.dat
1	409	0.8914	1.18	0.0608	0.	RCFLAGS	0	0	
1	1407	0.9504	1.58	0.1181	0.	RCFLAGS	0	0	
1	410	0.0171	6.26	0.0206	0.	RCFLAGS	0	0	
1	5410	0.0171	0.00	0.0000	70.	RCFLAGS	0	0	
1	1410	0.9675	1.55	0.1181	0.	RCFLAGS	0	0	
1	1408	1.7911	0.84	0.1181	0.	RCFLAGS	0	0	
1	5409	1.7911	0.00	0.0000	1235.	RCFLAGS	0	0	
1	601	0.0468	6.28	0.0741	0.	RCFLAGS	0	0	
1	5601	0.0468	0.00	0.0000	258.	RCFLAGS	0	0	
1	602	0.0331	6.28	0.0551	0.	RCFLAGS	0	0	
1	1601	0.0799	2.60	0.0551	0.	RCFLAGS	0	0	
1	5602	0.0799	0.00	0.0000	181.	RCFLAGS	0	0	
1	603	0.0912	6.58	0.0800	0.	RCFLAGS	0	0	
1	1602	0.1711	3.51	0.0800	0.	RCFLAGS	0	0	
1	604	0.2409	3.14	0.1230	0.	RCFLAGS	0	0	
1	1603	0.4120	3.29	0.2025	0.	RCFLAGS	0	0	
1	5604	0.4120	0.00	0.0000	1249.	RCFLAGS	0	0	

1	201	0.0807	14.80	0.3379	0.	RCFLAGS	0	0	
1	5201	0.0807	6.57	0.0039	1134.	RCFLAGS	0	0	
1	2201	0.0807	6.56	0.0039	0.	RCFLAGS	0	0	
1	202	0.1084	0.78	0.0007	0.	RCFLAGS	0	0	
1	1201	0.1891	3.24	0.0041	0.	RCFLAGS	0	0	
1	203	0.0368	6.56	0.0588	0.	RCFLAGS	0	0	
1	1202	0.2259	3.78	0.0597	0.	RCFLAGS	0	0	
1	2202	0.2259	3.78	0.0597	0.	RCFLAGS	0	0	
1	204	0.0453	7.15	0.0548	0.	RCFLAGS	0	0	
1	1203	0.2712	4.35	0.1144	0.	RCFLAGS	0	0	
1	205	0.0700	0.40	0.0002	0.	RCFLAGS	0	0	
1	1204	0.3412	3.54	0.1146	0.	RCFLAGS	0	0	
1	301	0.1662	13.99	0.5657	0.	RCFLAGS	0	0	
1	302	0.1347	10.38	0.5591	0.	RCFLAGS	0	0	
1	1301	0.3009	12.38	1.1248	0.	RCFLAGS	0	0	
1	5301	0.3009	11.36	0.0428	3242.	RCFLAGS	0	0	
1	303	0.3216	13.48	1.3922	0.	RCFLAGS	0	0	
1	1302	0.6225	12.46	1.4048	0.	RCFLAGS	0	0	
1	304	0.1193	13.99	0.4652	0.	RCFLAGS	0	0	
1	1303	0.7418	12.70	1.8700	0.	RCFLAGS	0	0	
1	2303	0.7418	12.70	1.7830	0.	RCFLAGS	0	0	
1	307	0.1653	0.53	0.0008	0.	RCFLAGS	0	0	
1	1304	0.9071	10.48	1.7833	0.	RCFLAGS	0	0	
1	305	0.0065	8.46	0.0172	0.	RCFLAGS	0	0	
1	1305	0.9136	11.26	1.8024	0.	RCFLAGS	0	0	
1	306	0.0439	7.84	0.0614	0.	RCFLAGS	0	0	
1	1306	0.9575	11.10	1.8619	0.	RCFLAGS	0	0	
1	308	0.0630	7.73	0.0437	0.	RCFLAGS	0	0	
1	309	0.0164	0.30	0.0000	0.	RCFLAGS	0	0	cndchi.dat
1	1307	0.0794	6.19	0.0437	0.	RCFLAGS	0	0	
1	5309	0.0794	0.00	0.0000	321.	RCFLAGS	0	0	
1	1308	1.0369	10.25	1.8619	0.	RCFLAGS	0	0	
1	2308	1.0369	12.65	1.4408	0.	RCFLAGS	0	0	
1	310	0.0682	12.56	0.2812	0.	RCFLAGS	0	0	
1	1309	1.1051	12.65	1.5181	0.	RCFLAGS	0	0	
1	311	0.4793	0.49	0.0021	0.	RCFLAGS	0	0	
1	1310	1.5844	8.97	1.5188	0.	RCFLAGS	0	0	
1	5310	1.5844	3.89	0.0955	7727.	RCFLAGS	0	0	
1	312	0.3180	6.30	0.1981	0.	RCFLAGS	0	0	
1	5312	0.3180	0.00	0.0000	3565.	RCFLAGS	0	0	
1	313	0.0985	7.15	0.0680	0.	RCFLAGS	0	0	
1	1311	0.4165	1.69	0.0680	0.	RCFLAGS	0	0	
1	314	0.1142	0.35	0.0003	0.	RCFLAGS	0	0	
1	1312	0.5307	1.40	0.0682	0.	RCFLAGS	0	0	
1	315	0.0492	8.35	0.0435	0.	RCFLAGS	0	0	
1	1313	0.5799	1.99	0.1117	0.	RCFLAGS	0	0	
1	316	0.2120	11.86	0.5734	0.	RCFLAGS	0	0	
1	1314	0.7919	4.63	0.6777	0.	RCFLAGS	0	0	
1	5314	0.7919	4.22	0.0919	2306.	RCFLAGS	0	0	
1	1315	2.3763	4.30	0.1907	0.	RCFLAGS	0	0	
1	2315	2.3763	4.30	0.1907	0.	RCFLAGS	0	0	
1	317	0.1180	11.37	0.6139	0.	RCFLAGS	0	0	
1	1316	2.4943	4.64	0.6350	0.	RCFLAGS	0	0	
1	2316	2.4943	4.85	0.6277	0.	RCFLAGS	0	0	
1	318	0.1539	13.77	0.5547	0.	RCFLAGS	0	0	
1	1317	2.6482	5.37	1.1824	0.	RCFLAGS	0	0	
1	501	0.0207	7.47	0.0237	0.	RCFLAGS	0	0	
2	106	0.0215	20.59	0.0501	0.	RCFLAGS	0	0	cndchi.dat
2	5106	0.0215	0.00	0.0000	303.	RCFLAGS	0	0	
2	107	0.1510	18.85	0.4147	0.	RCFLAGS	0	0	
2	1103	0.1725	16.50	0.4147	0.	RCFLAGS	0	0	
2	104	0.0282	22.38	0.1402	0.	RCFLAGS	0	0	
2	5104	0.0282	0.00	0.0000	519.	RCFLAGS	0	0	
2	1104	0.2007	14.18	0.4147	0.	RCFLAGS	0	0	

2	105	0.1640	19.28	0.1831	0.	RCFLAGS	0	0	
2	1105	0.3647	16.48	0.5894	0.	RCFLAGS	0	0	
2	101	0.0039	19.69	0.0262	0.	RCFLAGS	0	0	
2	102	0.0214	18.84	0.0968	0.	RCFLAGS	0	0	
2	1101	0.0253	18.97	0.1226	0.	RCFLAGS	0	0	
2	103	0.0259	0.78	0.0016	0.	RCFLAGS	0	0	
2	1102	0.0512	9.77	0.1226	0.	RCFLAGS	0	0	
2	5103	0.0512	0.00	0.0000	454.	RCFLAGS	0	0	
2	1106	0.4159	14.45	0.5894	0.	RCFLAGS	0	0	
2	108	0.1240	2.47	0.0063	0.	RCFLAGS	0	0	
2	1107	0.5399	11.70	0.5923	0.	RCFLAGS	0	0	
2	5108	0.5399	11.60	0.5725	493.	RCFLAGS	0	0	
2	2108	0.5399	11.60	0.5695	0.	RCFLAGS	0	0	
2	109	0.1252	3.93	0.0417	0.	RCFLAGS	0	0	
2	1108	0.6651	10.16	0.6098	0.	RCFLAGS	0	0	
2	110	0.0201	18.84	0.1769	0.	RCFLAGS	0	0	
2	1109	0.6852	10.41	0.6757	0.	RCFLAGS	0	0	
2	111	0.0498	18.84	0.2366	0.	RCFLAGS	0	0	
2	1110	0.7350	10.98	0.8590	0.	RCFLAGS	0	0	
2	2110	0.7350	11.14	0.8118	0.	RCFLAGS	0	0	
2	401	0.0234	22.83	0.1082	0.	RCFLAGS	0	0	
2	5401	0.0234	0.00	0.0000	398.	RCFLAGS	0	0	
2	402	0.1337	22.02	0.4171	0.	RCFLAGS	0	0	
2	1401	0.1571	18.74	0.4171	0.	RCFLAGS	0	0	
2	403	0.1073	10.86	0.0940	0.	RCFLAGS	0	0	
2	1402	0.2644	15.54	0.5104	0.	RCFLAGS	0	0	
2	5403	0.2644	0.00	0.0000	3687.	RCFLAGS	0	0	
2	405	0.0966	20.85	0.1989	0.	RCFLAGS	0	0	
2	5405	0.0966	0.00	0.0000	1216.	RCFLAGS	0	0	
2	406	0.0930	20.17	0.1883	0.	RCFLAGS	0	0	
2	1403	0.1896	9.89	0.1883	0.	RCFLAGS	0	0	
2	5406	0.1896	0.00	0.0000	1087.	RCFLAGS	0	0	
2	404	0.1141	21.50	0.2700	0.	RCFLAGS	0	0	
2	1404	0.3037	8.08	0.2700	0.	RCFLAGS	0	0	
2	407	0.2555	8.59	0.3147	0.	RCFLAGS	0	0	
2	1405	0.5592	8.31	0.5807	0.	RCFLAGS	0	0	
2	5407	0.5592	0.00	0.0000	3994.	RCFLAGS	0	0	
2	1406	0.8236	0.00	0.0000	0.	RCFLAGS	0	0	
2	5437	0.8236	0.00	0.0000	0.	RCFLAGS	0	0	
2	408	0.0590	20.53	0.1503	0.	RCFLAGS	0	0	cndchi.dat
2	409	0.8914	4.17	0.2523	0.	RCFLAGS	0	0	
2	1407	0.9504	5.18	0.3347	0.	RCFLAGS	0	0	
2	410	0.0171	18.82	0.0555	0.	RCFLAGS	0	0	
2	5410	0.0171	0.00	0.0000	228.	RCFLAGS	0	0	
2	1410	0.9675	5.09	0.3347	0.	RCFLAGS	0	0	
2	1408	1.7911	2.75	0.3347	0.	RCFLAGS	0	0	
2	5409	1.7911	0.00	0.0000	4444.	RCFLAGS	0	0	
2	601	0.0468	18.84	0.1984	0.	RCFLAGS	0	0	
2	5601	0.0468	0.00	0.0000	775.	RCFLAGS	0	0	
2	602	0.0331	18.84	0.1476	0.	RCFLAGS	0	0	
2	1601	0.0799	7.81	0.1476	0.	RCFLAGS	0	0	
2	5602	0.0799	0.00	0.0000	546.	RCFLAGS	0	0	
2	603	0.0912	19.29	0.2172	0.	RCFLAGS	0	0	
2	1602	0.1711	10.28	0.2172	0.	RCFLAGS	0	0	
2	604	0.2409	10.53	0.3336	0.	RCFLAGS	0	0	
2	1603	0.4120	10.42	0.5495	0.	RCFLAGS	0	0	
2	5604	0.4120	0.00	0.0000	4011.	RCFLAGS	0	0	
2	201	0.0807	28.52	0.6420	0.	RCFLAGS	0	0	
2	5201	0.0807	14.43	0.0190	2152.	RCFLAGS	0	0	
2	2201	0.0807	14.41	0.0190	0.	RCFLAGS	0	0	
2	202	0.1084	2.84	0.0163	0.	RCFLAGS	0	0	
2	1201	0.1891	7.78	0.0284	0.	RCFLAGS	0	0	
2	203	0.0368	19.13	0.1575	0.	RCFLAGS	0	0	
2	1202	0.2259	9.63	0.1700	0.	RCFLAGS	0	0	

2	2202	0.2259	9.63	0.1699	0.	RCFLAGS	0	0	
2	204	0.0453	20.00	0.1427	0.	RCFLAGS	0	0	
2	1203	0.2712	11.36	0.3127	0.	RCFLAGS	0	0	
2	205	0.0700	0.43	0.0003	0.	RCFLAGS	0	0	
2	1204	0.3412	9.12	0.3128	0.	RCFLAGS	0	0	
2	301	0.1662	27.77	1.1126	0.	RCFLAGS	0	0	
2	302	0.1347	21.96	1.1526	0.	RCFLAGS	0	0	
2	1301	0.3009	25.17	2.2591	0.	RCFLAGS	0	0	
2	5301	0.3009	22.46	0.0619	6869.	RCFLAGS	0	0	
2	303	0.3216	27.40	2.7645	0.	RCFLAGS	0	0	
2	1302	0.6225	25.02	2.7891	0.	RCFLAGS	0	0	
2	304	0.1193	27.77	0.9111	0.	RCFLAGS	0	0	
2	1303	0.7418	25.46	3.7002	0.	RCFLAGS	0	0	
2	2303	0.7418	25.45	3.5882	0.	RCFLAGS	0	0	
2	307	0.1653	0.53	0.0008	0.	RCFLAGS	0	0	
2	1304	0.9071	20.91	3.5884	0.	RCFLAGS	0	0	
2	305	0.0065	21.56	0.0405	0.	RCFLAGS	0	0	
2	1305	0.9136	21.70	3.6307	0.	RCFLAGS	0	0	
2	306	0.0439	20.80	0.1538	0.	RCFLAGS	0	0	
2	1306	0.9575	21.66	3.7845	0.	RCFLAGS	0	0	
2	308	0.0630	20.72	0.1138	0.	RCFLAGS	0	0	
2	309	0.0164	0.33	0.0000	0.	RCFLAGS	0	0	cndchi.dat
2	1307	0.0794	16.51	0.1139	0.	RCFLAGS	0	0	
2	5309	0.0794	1.64	0.0259	835.	RCFLAGS	0	0	
2	1308	1.0369	20.13	3.7845	0.	RCFLAGS	0	0	
2	2308	1.0369	23.65	3.0323	0.	RCFLAGS	0	0	
2	310	0.0682	26.06	0.5739	0.	RCFLAGS	0	0	
2	1309	1.1051	23.80	3.2119	0.	RCFLAGS	0	0	
2	311	0.4793	0.64	0.0022	0.	RCFLAGS	0	0	
2	1310	1.5844	16.79	3.2126	0.	RCFLAGS	0	0	
2	5310	1.5844	7.52	0.1128	16326.	RCFLAGS	0	0	
2	312	0.3180	18.68	0.5431	0.	RCFLAGS	0	0	
2	5312	0.3180	0.00	0.0000	7295.	RCFLAGS	0	0	
2	313	0.0985	20.00	0.1840	0.	RCFLAGS	0	0	
2	1311	0.4165	4.73	0.1840	0.	RCFLAGS	0	0	
2	314	0.1142	0.38	0.0004	0.	RCFLAGS	0	0	
2	1312	0.5307	3.79	0.1842	0.	RCFLAGS	0	0	
2	315	0.0492	21.77	0.1089	0.	RCFLAGS	0	0	
2	1313	0.5799	5.32	0.2923	0.	RCFLAGS	0	0	
2	316	0.2120	24.61	1.1784	0.	RCFLAGS	0	0	
2	1314	0.7919	10.48	1.4473	0.	RCFLAGS	0	0	
2	5314	0.7919	9.87	0.3568	4990.	RCFLAGS	0	0	
2	1315	2.3763	8.61	0.4683	0.	RCFLAGS	0	0	
2	2315	2.3763	8.60	0.4676	0.	RCFLAGS	0	0	
2	317	0.1180	24.68	1.3058	0.	RCFLAGS	0	0	
2	1316	2.4943	9.36	1.3415	0.	RCFLAGS	0	0	
2	2316	2.4943	9.58	1.3175	0.	RCFLAGS	0	0	
2	318	0.1539	27.46	1.0918	0.	RCFLAGS	0	0	
2	1317	2.6482	10.62	2.4093	0.	RCFLAGS	0	0	
2	501	0.0207	20.60	0.0603	0.	RCFLAGS	0	0	
3	106	0.0215	29.82	0.0699	0.	RCFLAGS	0	0	cndchi.dat
3	5106	0.0215	0.00	0.0000	439.	RCFLAGS	0	0	
3	107	0.1510	27.82	0.5812	0.	RCFLAGS	0	0	
3	1103	0.1725	24.35	0.5812	0.	RCFLAGS	0	0	
3	104	0.0282	31.88	0.1894	0.	RCFLAGS	0	0	
3	5104	0.0282	0.00	0.0000	754.	RCFLAGS	0	0	
3	1104	0.2007	20.93	0.5812	0.	RCFLAGS	0	0	
3	105	0.1640	28.32	0.2617	0.	RCFLAGS	0	0	
3	1105	0.3647	24.25	0.8324	0.	RCFLAGS	0	0	
3	101	0.0039	28.80	0.0354	0.	RCFLAGS	0	0	
3	102	0.0214	27.81	0.1339	0.	RCFLAGS	0	0	
3	1101	0.0253	27.96	0.1691	0.	RCFLAGS	0	0	
3	103	0.0259	2.83	0.0056	0.	RCFLAGS	0	0	
3	1102	0.0512	15.25	0.1698	0.	RCFLAGS	0	0	

3	5103	0.0512	0.00	0.0000	705.	RCFLAGS	0	0	
3	1106	0.4159	21.27	0.8324	0.	RCFLAGS	0	0	
3	108	0.1240	8.74	0.0296	0.	RCFLAGS	0	0	
3	1107	0.5399	18.39	0.8408	0.	RCFLAGS	0	0	
3	5108	0.5399	18.24	0.8262	580.	RCFLAGS	0	0	
3	2108	0.5399	18.24	0.8252	0.	RCFLAGS	0	0	
3	109	0.1252	5.93	0.0682	0.	RCFLAGS	0	0	
3	1108	0.6651	15.92	0.8916	0.	RCFLAGS	0	0	
3	110	0.0201	27.82	0.2388	0.	RCFLAGS	0	0	
3	1109	0.6852	16.27	1.0007	0.	RCFLAGS	0	0	
3	111	0.0498	27.82	0.3270	0.	RCFLAGS	0	0	
3	1110	0.7350	17.05	1.2817	0.	RCFLAGS	0	0	
3	2110	0.7350	17.27	1.2081	0.	RCFLAGS	0	0	
3	401	0.0234	32.35	0.1457	0.	RCFLAGS	0	0	
3	5401	0.0234	0.00	0.0000	579.	RCFLAGS	0	0	
3	402	0.1337	31.43	0.5706	0.	RCFLAGS	0	0	
3	1401	0.1571	26.75	0.5706	0.	RCFLAGS	0	0	
3	403	0.1073	20.23	0.1749	0.	RCFLAGS	0	0	
3	1402	0.2644	24.11	0.7223	0.	RCFLAGS	0	0	
3	5403	0.2644	0.00	0.0000	5686.	RCFLAGS	0	0	
3	405	0.0966	30.10	0.2769	0.	RCFLAGS	0	0	
3	5405	0.0966	0.00	0.0000	1843.	RCFLAGS	0	0	
3	406	0.0930	29.34	0.2637	0.	RCFLAGS	0	0	
3	1403	0.1896	14.39	0.2637	0.	RCFLAGS	0	0	
3	5406	0.1896	0.00	0.0000	1707.	RCFLAGS	0	0	
3	404	0.1141	30.87	0.3740	0.	RCFLAGS	0	0	
3	1404	0.3037	11.60	0.3740	0.	RCFLAGS	0	0	
3	407	0.2555	15.50	0.5686	0.	RCFLAGS	0	0	
3	1405	0.5592	13.38	0.9360	0.	RCFLAGS	0	0	
3	5407	0.5592	0.00	0.0000	6485.	RCFLAGS	0	0	
3	1406	0.8236	0.00	0.0000	0.	RCFLAGS	0	0	
3	5437	0.8236	0.00	0.0000	0.	RCFLAGS	0	0	
3	408	0.0590	29.67	0.2090	0.	RCFLAGS	0	0	cndchi.dat
3	409	0.8914	8.07	0.4979	0.	RCFLAGS	0	0	
3	1407	0.9504	9.41	0.6642	0.	RCFLAGS	0	0	
3	410	0.0171	27.80	0.0777	0.	RCFLAGS	0	0	
3	5410	0.0171	0.00	0.0000	344.	RCFLAGS	0	0	
3	1410	0.9675	9.25	0.6642	0.	RCFLAGS	0	0	
3	1408	1.7911	4.99	0.6642	0.	RCFLAGS	0	0	
3	5409	1.7911	0.00	0.0000	8263.	RCFLAGS	0	0	
3	601	0.0468	27.82	0.2745	0.	RCFLAGS	0	0	
3	5601	0.0468	0.00	0.0000	1156.	RCFLAGS	0	0	
3	602	0.0331	27.81	0.2040	0.	RCFLAGS	0	0	
3	1601	0.0799	11.52	0.2040	0.	RCFLAGS	0	0	
3	5602	0.0799	0.00	0.0000	819.	RCFLAGS	0	0	
3	603	0.0912	28.32	0.3054	0.	RCFLAGS	0	0	
3	1602	0.1711	15.10	0.3054	0.	RCFLAGS	0	0	
3	604	0.2409	17.13	0.5192	0.	RCFLAGS	0	0	
3	1603	0.4120	16.29	0.8232	0.	RCFLAGS	0	0	
3	5604	0.4120	0.00	0.0000	6284.	RCFLAGS	0	0	
3	201	0.0807	38.10	0.8212	0.	RCFLAGS	0	0	
3	5201	0.0807	22.91	0.0393	2797.	RCFLAGS	0	0	
3	2201	0.0807	22.89	0.0393	0.	RCFLAGS	0	0	
3	202	0.1084	5.62	0.0385	0.	RCFLAGS	0	0	
3	1201	0.1891	12.99	0.0647	0.	RCFLAGS	0	0	
3	203	0.0368	28.10	0.2178	0.	RCFLAGS	0	0	
3	1202	0.2259	15.45	0.2518	0.	RCFLAGS	0	0	
3	2202	0.2259	15.45	0.2515	0.	RCFLAGS	0	0	
3	204	0.0453	29.11	0.1985	0.	RCFLAGS	0	0	
3	1203	0.2712	17.73	0.4500	0.	RCFLAGS	0	0	
3	205	0.0700	3.50	0.0113	0.	RCFLAGS	0	0	
3	1204	0.3412	14.81	0.4504	0.	RCFLAGS	0	0	
3	301	0.1662	37.27	1.4503	0.	RCFLAGS	0	0	
3	302	0.1347	31.28	1.4944	0.	RCFLAGS	0	0	

3	1301	0.3009	34.59	2.9229	0.	RCFLAGS	0	0	
3	5301	0.3009	31.81	0.4148	8109.	RCFLAGS	0	0	
3	303	0.3216	36.97	3.5689	0.	RCFLAGS	0	0	
3	1302	0.6225	34.48	3.6019	0.	RCFLAGS	0	0	
3	304	0.1193	37.27	1.1745	0.	RCFLAGS	0	0	
3	1303	0.7418	34.93	4.7764	0.	RCFLAGS	0	0	
3	2303	0.7418	34.92	4.6594	0.	RCFLAGS	0	0	
3	307	0.1653	7.78	0.0627	0.	RCFLAGS	0	0	
3	1304	0.9071	29.97	4.6596	0.	RCFLAGS	0	0	
3	305	0.0065	30.76	0.0548	0.	RCFLAGS	0	0	
3	1305	0.9136	30.77	4.7161	0.	RCFLAGS	0	0	
3	306	0.0439	29.95	0.2124	0.	RCFLAGS	0	0	
3	1306	0.9575	30.73	4.9285	0.	RCFLAGS	0	0	
3	308	0.0630	29.89	0.1598	0.	RCFLAGS	0	0	
3	309	0.0164	0.49	0.0006	0.	RCFLAGS	0	0	cndchi.dat
3	1307	0.0794	23.82	0.1604	0.	RCFLAGS	0	0	
3	5309	0.0794	8.23	0.0893	846.	RCFLAGS	0	0	
3	1308	1.0369	29.01	4.9285	0.	RCFLAGS	0	0	
3	2308	1.0369	33.49	3.8266	0.	RCFLAGS	0	0	
3	310	0.0682	35.43	0.7453	0.	RCFLAGS	0	0	
3	1309	1.1051	33.61	4.1296	0.	RCFLAGS	0	0	
3	311	0.4793	6.09	0.0472	0.	RCFLAGS	0	0	
3	1310	1.5844	25.28	4.1367	0.	RCFLAGS	0	0	
3	5310	1.5844	11.69	0.1423	26143.	RCFLAGS	0	0	
3	312	0.3180	27.78	0.7779	0.	RCFLAGS	0	0	
3	5312	0.3180	0.00	0.0000	10055.	RCFLAGS	0	0	
3	313	0.0985	29.10	0.2594	0.	RCFLAGS	0	0	
3	1311	0.4165	6.88	0.2594	0.	RCFLAGS	0	0	
3	314	0.1142	2.23	0.0142	0.	RCFLAGS	0	0	
3	1312	0.5307	5.88	0.2628	0.	RCFLAGS	0	0	
3	315	0.0492	31.13	0.1509	0.	RCFLAGS	0	0	
3	1313	0.5799	8.02	0.4122	0.	RCFLAGS	0	0	
3	316	0.2120	34.08	1.5474	0.	RCFLAGS	0	0	
3	1314	0.7919	15.00	1.9169	0.	RCFLAGS	0	0	
3	5314	0.7919	14.35	0.7491	5999.	RCFLAGS	0	0	
3	1315	2.3763	12.88	0.8634	0.	RCFLAGS	0	0	
3	2315	2.3763	12.86	0.8588	0.	RCFLAGS	0	0	
3	317	0.1180	33.97	1.6983	0.	RCFLAGS	0	0	
3	1316	2.4943	13.86	1.7200	0.	RCFLAGS	0	0	
3	2316	2.4943	14.08	1.6883	0.	RCFLAGS	0	0	
3	318	0.1539	36.91	1.4191	0.	RCFLAGS	0	0	
3	1317	2.6482	15.40	3.0986	0.	RCFLAGS	0	0	
3	501	0.0207	29.83	0.0834	0.	RCFLAGS	0	0	
4	106	0.0215	38.82	0.0880	0.	RCFLAGS	0	0	cndchi.dat
4	5106	0.0215	0.00	0.0000	585.	RCFLAGS	0	0	
4	107	0.1510	36.63	0.7362	0.	RCFLAGS	0	0	
4	1103	0.1725	32.07	0.7362	0.	RCFLAGS	0	0	
4	104	0.0282	41.06	0.2334	0.	RCFLAGS	0	0	
4	5104	0.0282	0.00	0.0000	982.	RCFLAGS	0	0	
4	1104	0.2007	27.56	0.7362	0.	RCFLAGS	0	0	
4	105	0.1640	37.18	0.3357	0.	RCFLAGS	0	0	
4	1105	0.3647	31.89	1.0558	0.	RCFLAGS	0	0	
4	101	0.0039	37.70	0.0437	0.	RCFLAGS	0	0	
4	102	0.0214	36.62	0.1673	0.	RCFLAGS	0	0	
4	1101	0.0253	36.79	0.2110	0.	RCFLAGS	0	0	
4	103	0.0259	9.77	0.0205	0.	RCFLAGS	0	0	
4	1102	0.0512	23.12	0.2266	0.	RCFLAGS	0	0	
4	5103	0.0512	2.68	0.0332	945.	RCFLAGS	0	0	
4	1106	0.4159	28.29	1.0558	0.	RCFLAGS	0	0	
4	108	0.1240	17.31	0.0605	0.	RCFLAGS	0	0	
4	1107	0.5399	25.77	1.0908	0.	RCFLAGS	0	0	
4	5108	0.5399	25.56	1.0766	665.	RCFLAGS	0	0	
4	2108	0.5399	25.56	1.0753	0.	RCFLAGS	0	0	
4	109	0.1252	12.67	0.1695	0.	RCFLAGS	0	0	

4 1108	0.6651	23.13	1.2339	0.	RCFLAGS	0	0
4 110	0.0201	36.63	0.2933	0.	RCFLAGS	0	0
4 1109	0.6852	23.53	1.3726	0.	RCFLAGS	0	0
4 111	0.0498	36.63	0.4084	0.	RCFLAGS	0	0
4 1110	0.7350	24.41	1.7294	0.	RCFLAGS	0	0
4 2110	0.7350	24.64	1.6505	0.	RCFLAGS	0	0
4 401	0.0234	41.57	0.1803	0.	RCFLAGS	0	0
4 5401	0.0234	0.00	0.0000	755.	RCFLAGS	0	0
4 402	0.1337	40.56	0.7132	0.	RCFLAGS	0	0
4 1401	0.1571	34.52	0.7132	0.	RCFLAGS	0	0
4 403	0.1073	29.79	0.2657	0.	RCFLAGS	0	0
4 1402	0.2644	32.60	0.9571	0.	RCFLAGS	0	0
4 5403	0.2644	0.00	0.0000	7670.	RCFLAGS	0	0
4 405	0.0966	39.11	0.3501	0.	RCFLAGS	0	0
4 5405	0.0966	0.00	0.0000	2457.	RCFLAGS	0	0
4 406	0.0930	38.29	0.3342	0.	RCFLAGS	0	0
4 1403	0.1896	18.78	0.3342	0.	RCFLAGS	0	0
4 5406	0.1896	0.00	0.0000	2319.	RCFLAGS	0	0
4 404	0.1141	39.96	0.4696	0.	RCFLAGS	0	0
4 1404	0.3037	15.01	0.4696	0.	RCFLAGS	0	0
4 407	0.2555	24.14	0.9736	0.	RCFLAGS	0	0
4 1405	0.5592	19.18	1.4432	0.	RCFLAGS	0	0
4 5407	0.5592	0.00	0.0000	9344.	RCFLAGS	0	0
4 1406	0.8236	0.00	0.0000	0.	RCFLAGS	0	0
4 5437	0.8236	0.00	0.0000	0.	RCFLAGS	0	0
4 408	0.0590	38.61	0.2632	0.	RCFLAGS	0	0 cndchi.dat
4 409	0.8914	15.55	1.0319	0.	RCFLAGS	0	0
4 1407	0.9504	16.98	1.2798	0.	RCFLAGS	0	0
4 410	0.0171	36.61	0.0979	0.	RCFLAGS	0	0
4 5410	0.0171	6.39	0.0632	361.	RCFLAGS	0	0
4 1410	0.9675	16.79	1.2798	0.	RCFLAGS	0	0
4 1408	1.7911	9.07	1.2798	0.	RCFLAGS	0	0
4 5409	1.7911	0.00	0.0000	15195.	RCFLAGS	0	0
4 601	0.0468	36.63	0.3437	0.	RCFLAGS	0	0
4 5601	0.0468	0.00	0.0000	1536.	RCFLAGS	0	0
4 602	0.0331	36.63	0.2550	0.	RCFLAGS	0	0
4 1601	0.0799	15.17	0.2550	0.	RCFLAGS	0	0
4 5602	0.0799	0.00	0.0000	1089.	RCFLAGS	0	0
4 603	0.0912	37.18	0.3866	0.	RCFLAGS	0	0
4 1602	0.1711	19.82	0.3866	0.	RCFLAGS	0	0
4 604	0.2409	25.39	0.7836	0.	RCFLAGS	0	0
4 1603	0.4120	23.08	1.1696	0.	RCFLAGS	0	0
4 5604	0.4120	0.00	0.0000	8918.	RCFLAGS	0	0
4 201	0.0807	47.36	0.9857	0.	RCFLAGS	0	0
4 5201	0.0807	31.85	0.1480	3215.	RCFLAGS	0	0
4 2201	0.0807	31.84	0.1475	0.	RCFLAGS	0	0
4 202	0.1084	12.53	0.0957	0.	RCFLAGS	0	0
4 1201	0.1891	20.77	0.2187	0.	RCFLAGS	0	0
4 203	0.0368	36.91	0.2725	0.	RCFLAGS	0	0
4 1202	0.2259	23.40	0.3634	0.	RCFLAGS	0	0
4 2202	0.2259	23.40	0.3633	0.	RCFLAGS	0	0
4 204	0.0453	38.02	0.2493	0.	RCFLAGS	0	0
4 1203	0.2712	25.84	0.6123	0.	RCFLAGS	0	0
4 205	0.0700	10.98	0.0364	0.	RCFLAGS	0	0
4 1204	0.3412	22.79	0.6384	0.	RCFLAGS	0	0
4 301	0.1662	46.47	1.7526	0.	RCFLAGS	0	0
4 302	0.1347	40.51	1.8160	0.	RCFLAGS	0	0
4 1301	0.3009	43.80	3.5316	0.	RCFLAGS	0	0
4 5301	0.3009	40.84	0.4599	10207.	RCFLAGS	0	0
4 303	0.3216	46.22	4.2773	0.	RCFLAGS	0	0
4 1302	0.6225	43.62	4.3162	0.	RCFLAGS	0	0
4 304	0.1193	46.46	1.4134	0.	RCFLAGS	0	0
4 1303	0.7418	44.08	5.7246	0.	RCFLAGS	0	0
4 2303	0.7418	44.07	5.6098	0.	RCFLAGS	0	0

4 307	0.1653	17.10	0.1359	0.	RCFLAGS	0	0
4 1304	0.9071	39.15	5.6307	0.	RCFLAGS	0	0
4 305	0.0065	39.74	0.0676	0.	RCFLAGS	0	0
4 1305	0.9136	39.95	5.6999	0.	RCFLAGS	0	0
4 306	0.0439	38.88	0.2656	0.	RCFLAGS	0	0
4 1306	0.9575	39.90	5.9656	0.	RCFLAGS	0	0
4 308	0.0630	38.84	0.2024	0.	RCFLAGS	0	0
4 309	0.0164	6.67	0.0214	0.	RCFLAGS	0	0 cndchi.dat
4 1307	0.0794	32.20	0.2212	0.	RCFLAGS	0	0
4 5309	0.0794	16.14	0.1615	858.	RCFLAGS	0	0
4 1308	1.0369	38.08	5.9656	0.	RCFLAGS	0	0
4 2308	1.0369	43.51	4.7870	0.	RCFLAGS	0	0
4 310	0.0682	44.54	0.8970	0.	RCFLAGS	0	0
4 1309	1.1051	43.57	5.0522	0.	RCFLAGS	0	0
4 311	0.4793	14.31	0.1138	0.	RCFLAGS	0	0
4 1310	1.5844	34.72	5.1279	0.	RCFLAGS	0	0
4 5310	1.5844	16.63	0.7133	35020.	RCFLAGS	0	0
4 312	0.3180	36.69	1.0006	0.	RCFLAGS	0	0
4 5312	0.3180	0.00	0.0000	12762.	RCFLAGS	0	0
4 313	0.0985	38.01	0.3297	0.	RCFLAGS	0	0
4 1311	0.4165	8.99	0.3297	0.	RCFLAGS	0	0
4 314	0.1142	9.14	0.0661	0.	RCFLAGS	0	0
4 1312	0.5307	9.02	0.3941	0.	RCFLAGS	0	0
4 315	0.0492	40.22	0.1899	0.	RCFLAGS	0	0
4 1313	0.5799	11.67	0.5828	0.	RCFLAGS	0	0
4 316	0.2120	43.36	1.8898	0.	RCFLAGS	0	0
4 1314	0.7919	20.15	2.4235	0.	RCFLAGS	0	0
4 5314	0.7919	19.47	1.1865	6901.	RCFLAGS	0	0
4 1315	2.3763	17.88	1.3023	0.	RCFLAGS	0	0
4 2315	2.3763	17.85	1.2972	0.	RCFLAGS	0	0
4 317	0.1180	43.02	2.0402	0.	RCFLAGS	0	0
4 1316	2.4943	19.04	2.0761	0.	RCFLAGS	0	0
4 2316	2.4943	19.25	2.0325	0.	RCFLAGS	0	0
4 318	0.1539	46.07	1.7158	0.	RCFLAGS	0	0
4 1317	2.6482	20.81	3.7266	0.	RCFLAGS	0	0
4 501	0.0207	38.83	0.1049	0.	RCFLAGS	0	0
5 106	0.0215	50.19	0.1089	0.	RCFLAGS	0	0 cndchi.dat
5 5106	0.0215	0.00	0.0000	778.	RCFLAGS	0	0
5 107	0.1510	47.98	0.9128	0.	RCFLAGS	0	0
5 1103	0.1725	42.00	0.9128	0.	RCFLAGS	0	0
5 104	0.0282	52.45	0.2832	0.	RCFLAGS	0	0
5 5104	0.0282	0.00	0.0000	1263.	RCFLAGS	0	0
5 1104	0.2007	36.10	0.9128	0.	RCFLAGS	0	0
5 105	0.1640	48.54	0.4214	0.	RCFLAGS	0	0
5 1105	0.3647	41.69	1.3139	0.	RCFLAGS	0	0
5 101	0.0039	49.02	0.0531	0.	RCFLAGS	0	0
5 102	0.0214	47.97	0.2050	0.	RCFLAGS	0	0
5 1101	0.0253	48.13	0.2582	0.	RCFLAGS	0	0
5 103	0.0259	18.07	0.0407	0.	RCFLAGS	0	0
5 1102	0.0512	32.93	0.2937	0.	RCFLAGS	0	0
5 5103	0.0512	12.00	0.1269	986.	RCFLAGS	0	0
5 1106	0.4159	38.04	1.3139	0.	RCFLAGS	0	0
5 108	0.1240	27.47	0.0972	0.	RCFLAGS	0	0
5 1107	0.5399	35.61	1.3810	0.	RCFLAGS	0	0
5 5108	0.5399	35.35	1.3687	764.	RCFLAGS	0	0
5 2108	0.5399	35.35	1.3670	0.	RCFLAGS	0	0
5 109	0.1252	20.80	0.2860	0.	RCFLAGS	0	0
5 1108	0.6651	32.61	1.6313	0.	RCFLAGS	0	0
5 110	0.0201	47.98	0.3542	0.	RCFLAGS	0	0
5 1109	0.6852	33.06	1.8052	0.	RCFLAGS	0	0
5 111	0.0498	47.98	0.5003	0.	RCFLAGS	0	0
5 1110	0.7350	34.07	2.2476	0.	RCFLAGS	0	0
5 2110	0.7350	34.29	2.1645	0.	RCFLAGS	0	0
5 401	0.0234	52.96	0.2193	0.	RCFLAGS	0	0

5	5401	0.0234	0.00	0.0000	977.	RCFLAGS	0	0	
5	402	0.1337	51.94	0.8748	0.	RCFLAGS	0	0	
5	1401	0.1571	44.21	0.8748	0.	RCFLAGS	0	0	
5	403	0.1073	41.34	0.3685	0.	RCFLAGS	0	0	
5	1402	0.2644	43.04	1.2223	0.	RCFLAGS	0	0	
5	5403	0.2644	0.00	0.0000	10114.	RCFLAGS	0	0	
5	405	0.0966	50.49	0.4332	0.	RCFLAGS	0	0	
5	5405	0.0966	0.00	0.0000	3231.	RCFLAGS	0	0	
5	406	0.0930	49.65	0.4145	0.	RCFLAGS	0	0	
5	1403	0.1896	24.36	0.4145	0.	RCFLAGS	0	0	
5	5406	0.1896	0.00	0.0000	3099.	RCFLAGS	0	0	
5	404	0.1141	51.33	0.5795	0.	RCFLAGS	0	0	
5	1404	0.3037	19.29	0.5795	0.	RCFLAGS	0	0	
5	407	0.2555	34.48	1.4430	0.	RCFLAGS	0	0	
5	1405	0.5592	26.23	2.0200	0.	RCFLAGS	0	0	
5	5407	0.5592	0.00	0.0000	12983.	RCFLAGS	0	0	
5	1406	0.8236	0.00	0.0000	0.	RCFLAGS	0	0	
5	5437	0.8236	0.00	0.0000	0.	RCFLAGS	0	0	
5	408	0.0590	49.98	0.3245	0.	RCFLAGS	0	0	cndchi.dat
5	409	0.8914	24.52	1.7046	0.	RCFLAGS	0	0	
5	1407	0.9504	26.10	2.0253	0.	RCFLAGS	0	0	
5	410	0.0171	47.96	0.1208	0.	RCFLAGS	0	0	
5	5410	0.0171	16.49	0.0804	361.	RCFLAGS	0	0	
5	1410	0.9675	25.93	2.0253	0.	RCFLAGS	0	0	
5	1408	1.7911	14.01	2.0253	0.	RCFLAGS	0	0	
5	5409	1.7911	0.00	0.0000	23588.	RCFLAGS	0	0	
5	601	0.0468	47.98	0.4233	0.	RCFLAGS	0	0	
5	5601	0.0468	0.00	0.0000	2025.	RCFLAGS	0	0	
5	602	0.0331	47.98	0.3129	0.	RCFLAGS	0	0	
5	1601	0.0799	19.88	0.3129	0.	RCFLAGS	0	0	
5	5602	0.0799	0.00	0.0000	1436.	RCFLAGS	0	0	
5	603	0.0912	48.54	0.4801	0.	RCFLAGS	0	0	
5	1602	0.1711	25.87	0.4801	0.	RCFLAGS	0	0	
5	604	0.2409	35.67	1.0851	0.	RCFLAGS	0	0	
5	1603	0.4120	31.60	1.5643	0.	RCFLAGS	0	0	
5	5604	0.4120	0.00	0.0000	12219.	RCFLAGS	0	0	
5	201	0.0807	58.84	1.1764	0.	RCFLAGS	0	0	
5	5201	0.0807	43.28	0.2865	3540.	RCFLAGS	0	0	
5	2201	0.0807	43.27	0.2865	0.	RCFLAGS	0	0	
5	202	0.1084	20.90	0.1633	0.	RCFLAGS	0	0	
5	1201	0.1891	30.44	0.4267	0.	RCFLAGS	0	0	
5	203	0.0368	48.27	0.3355	0.	RCFLAGS	0	0	
5	1202	0.2259	33.35	0.6018	0.	RCFLAGS	0	0	
5	2202	0.2259	33.35	0.6015	0.	RCFLAGS	0	0	
5	204	0.0453	49.38	0.3076	0.	RCFLAGS	0	0	
5	1203	0.2712	36.02	0.8253	0.	RCFLAGS	0	0	
5	205	0.0700	19.89	0.0680	0.	RCFLAGS	0	0	
5	1204	0.3412	32.72	0.8933	0.	RCFLAGS	0	0	
5	301	0.1662	57.93	2.0916	0.	RCFLAGS	0	0	
5	302	0.1347	51.98	2.2382	0.	RCFLAGS	0	0	
5	1301	0.3009	55.26	4.2798	0.	RCFLAGS	0	0	
5	5301	0.3009	52.03	0.5184	12941.	RCFLAGS	0	0	
5	303	0.3216	57.67	5.0749	0.	RCFLAGS	0	0	
5	1302	0.6225	54.94	5.1185	0.	RCFLAGS	0	0	
5	304	0.1193	57.92	1.6845	0.	RCFLAGS	0	0	
5	1303	0.7418	55.42	6.7914	0.	RCFLAGS	0	0	
5	2303	0.7418	55.41	6.6744	0.	RCFLAGS	0	0	
5	307	0.1653	28.05	0.2221	0.	RCFLAGS	0	0	
5	1304	0.9071	50.43	6.7574	0.	RCFLAGS	0	0	
5	305	0.0065	51.09	0.0820	0.	RCFLAGS	0	0	
5	1305	0.9136	51.22	6.8409	0.	RCFLAGS	0	0	
5	306	0.0439	50.26	0.3258	0.	RCFLAGS	0	0	
5	1306	0.9575	51.18	7.1667	0.	RCFLAGS	0	0	
5	308	0.0630	50.21	0.2514	0.	RCFLAGS	0	0	

5	309	0.0164	14.14	0.0439	0.	RCFLAGS	0	0	cndchi.dat
5	1307	0.0794	42.76	0.2915	0.	RCFLAGS	0	0	
5	5309	0.0794	26.27	0.2470	873.	RCFLAGS	0	0	
5	1308	1.0369	49.27	7.1667	0.	RCFLAGS	0	0	
5	2308	1.0369	55.10	5.7453	0.	RCFLAGS	0	0	
5	310	0.0682	55.98	1.0679	0.	RCFLAGS	0	0	
5	1309	1.1051	55.15	6.0892	0.	RCFLAGS	0	0	
5	311	0.4793	24.02	0.1923	0.	RCFLAGS	0	0	
5	1310	1.5844	45.73	6.2265	0.	RCFLAGS	0	0	
5	5310	1.5844	25.88	2.0445	35994.	RCFLAGS	0	0	
5	312	0.3180	48.07	1.2559	0.	RCFLAGS	0	0	
5	5312	0.3180	0.00	0.0000	16219.	RCFLAGS	0	0	
5	313	0.0985	49.37	0.4101	0.	RCFLAGS	0	0	
5	1311	0.4165	11.68	0.4101	0.	RCFLAGS	0	0	
5	314	0.1142	17.43	0.1357	0.	RCFLAGS	0	0	
5	1312	0.5307	12.91	0.5457	0.	RCFLAGS	0	0	
5	315	0.0492	51.60	0.2344	0.	RCFLAGS	0	0	
5	1313	0.5799	16.20	0.7794	0.	RCFLAGS	0	0	
5	316	0.2120	54.81	2.3044	0.	RCFLAGS	0	0	
5	1314	0.7919	26.53	3.0172	0.	RCFLAGS	0	0	
5	5314	0.7919	25.82	1.6973	7875.	RCFLAGS	0	0	
5	1315	2.3763	26.16	2.8821	0.	RCFLAGS	0	0	
5	2315	2.3763	26.14	2.8604	0.	RCFLAGS	0	0	
5	317	0.1180	54.44	2.4199	0.	RCFLAGS	0	0	
5	1316	2.4943	27.47	2.8619	0.	RCFLAGS	0	0	
5	2316	2.4943	27.68	2.8586	0.	RCFLAGS	0	0	
5	318	0.1539	57.53	2.0480	0.	RCFLAGS	0	0	
5	1317	2.6482	29.42	4.4468	0.	RCFLAGS	0	0	
5	501	0.0207	50.20	0.1293	0.	RCFLAGS	0	0	
6	106	0.0215	58.80	0.1244	0.	RCFLAGS	0	0	cndchi.dat
6	5106	0.0215	0.00	0.0000	926.	RCFLAGS	0	0	
6	107	0.1510	56.60	1.0429	0.	RCFLAGS	0	0	
6	1103	0.1725	49.54	1.0429	0.	RCFLAGS	0	0	
6	104	0.0282	61.06	0.3198	0.	RCFLAGS	0	0	
6	5104	0.0282	0.00	0.0000	1479.	RCFLAGS	0	0	
6	1104	0.2007	42.58	1.0429	0.	RCFLAGS	0	0	
6	105	0.1640	57.15	0.4860	0.	RCFLAGS	0	0	
6	1105	0.3647	49.13	1.5050	0.	RCFLAGS	0	0	
6	101	0.0039	57.68	0.0599	0.	RCFLAGS	0	0	
6	102	0.0214	56.59	0.2329	0.	RCFLAGS	0	0	
6	1101	0.0253	56.76	0.2921	0.	RCFLAGS	0	0	
6	103	0.0259	24.69	0.0564	0.	RCFLAGS	0	0	
6	1102	0.0512	40.53	0.3427	0.	RCFLAGS	0	0	
6	5103	0.0512	19.35	0.1920	1014.	RCFLAGS	0	0	
6	1106	0.4159	45.47	1.5263	0.	RCFLAGS	0	0	
6	108	0.1240	35.29	0.1256	0.	RCFLAGS	0	0	
6	1107	0.5399	43.13	1.6458	0.	RCFLAGS	0	0	
6	5108	0.5399	42.84	1.6275	852.	RCFLAGS	0	0	
6	2108	0.5399	42.84	1.6225	0.	RCFLAGS	0	0	
6	109	0.1252	27.34	0.3735	0.	RCFLAGS	0	0	
6	1108	0.6651	39.92	1.9338	0.	RCFLAGS	0	0	
6	110	0.0201	56.60	0.3961	0.	RCFLAGS	0	0	
6	1109	0.6852	40.41	2.1358	0.	RCFLAGS	0	0	
6	111	0.0498	56.60	0.5663	0.	RCFLAGS	0	0	
6	1110	0.7350	41.51	2.6420	0.	RCFLAGS	0	0	
6	2110	0.7350	41.76	2.5478	0.	RCFLAGS	0	0	
6	401	0.0234	61.57	0.2476	0.	RCFLAGS	0	0	
6	5401	0.0234	0.00	0.0000	1148.	RCFLAGS	0	0	
6	402	0.1337	60.56	0.9937	0.	RCFLAGS	0	0	
6	1401	0.1571	51.54	0.9937	0.	RCFLAGS	0	0	
6	403	0.1073	50.01	0.4444	0.	RCFLAGS	0	0	
6	1402	0.2644	50.92	1.4174	0.	RCFLAGS	0	0	
6	5403	0.2644	0.00	0.0000	12047.	RCFLAGS	0	0	
6	405	0.0966	59.11	0.4951	0.	RCFLAGS	0	0	

6	5405	0.0966	0.00	0.0000	3828.	RCFLAGS	0	0	
6	406	0.0930	58.27	0.4741	0.	RCFLAGS	0	0	
6	1403	0.1896	28.58	0.4741	0.	RCFLAGS	0	0	
6	5406	0.1896	0.85	0.0397	3581.	RCFLAGS	0	0	
6	404	0.1141	59.95	0.6609	0.	RCFLAGS	0	0	
6	1404	0.3037	23.05	0.6609	0.	RCFLAGS	0	0	
6	407	0.2555	42.38	1.7823	0.	RCFLAGS	0	0	
6	1405	0.5592	31.88	2.4388	0.	RCFLAGS	0	0	
6	5407	0.5592	0.00	0.0000	15972.	RCFLAGS	0	0	
6	1406	0.8236	0.00	0.0000	0.	RCFLAGS	0	0	
6	5437	0.8236	0.00	0.0000	0.	RCFLAGS	0	0	
6	408	0.0590	58.60	0.3704	0.	RCFLAGS	0	0	cndchi.dat
6	409	0.8914	31.55	2.2372	0.	RCFLAGS	0	0	
6	1407	0.9504	33.23	2.6045	0.	RCFLAGS	0	0	
6	410	0.0171	56.58	0.1377	0.	RCFLAGS	0	0	
6	5410	0.0171	24.41	0.1287	362.	RCFLAGS	0	0	
6	1410	0.9675	33.08	2.6184	0.	RCFLAGS	0	0	
6	1408	1.7911	17.87	2.6184	0.	RCFLAGS	0	0	
6	5409	1.7911	0.00	0.0000	30146.	RCFLAGS	0	0	
6	601	0.0468	56.59	0.4811	0.	RCFLAGS	0	0	
6	5601	0.0468	0.00	0.0000	2397.	RCFLAGS	0	0	
6	602	0.0331	56.59	0.3555	0.	RCFLAGS	0	0	
6	1601	0.0799	23.44	0.3555	0.	RCFLAGS	0	0	
6	5602	0.0799	0.00	0.0000	1700.	RCFLAGS	0	0	
6	603	0.0912	57.15	0.5493	0.	RCFLAGS	0	0	
6	1602	0.1711	30.46	0.5493	0.	RCFLAGS	0	0	
6	604	0.2409	43.55	1.3080	0.	RCFLAGS	0	0	
6	1603	0.4120	38.11	1.8574	0.	RCFLAGS	0	0	
6	5604	0.4120	0.00	0.0000	14745.	RCFLAGS	0	0	
6	201	0.0807	67.52	1.3118	0.	RCFLAGS	0	0	
6	5201	0.0807	51.89	0.2982	3924.	RCFLAGS	0	0	
6	2201	0.0807	51.89	0.2982	0.	RCFLAGS	0	0	
6	202	0.1084	27.61	0.2158	0.	RCFLAGS	0	0	
6	1201	0.1891	37.97	0.4923	0.	RCFLAGS	0	0	
6	203	0.0368	56.88	0.3813	0.	RCFLAGS	0	0	
6	1202	0.2259	41.05	0.7590	0.	RCFLAGS	0	0	
6	2202	0.2259	41.05	0.7580	0.	RCFLAGS	0	0	
6	204	0.0453	57.99	0.3507	0.	RCFLAGS	0	0	
6	1203	0.2712	43.88	1.0515	0.	RCFLAGS	0	0	
6	205	0.0700	26.90	0.0935	0.	RCFLAGS	0	0	
6	1204	0.3412	40.40	1.1450	0.	RCFLAGS	0	0	
6	301	0.1662	66.59	2.3342	0.	RCFLAGS	0	0	
6	302	0.1347	60.64	2.5430	0.	RCFLAGS	0	0	
6	1301	0.3009	63.92	4.8151	0.	RCFLAGS	0	0	
6	5301	0.3009	60.49	0.5555	15092.	RCFLAGS	0	0	
6	303	0.3216	66.32	5.6321	0.	RCFLAGS	0	0	
6	1302	0.6225	63.50	5.6795	0.	RCFLAGS	0	0	
6	304	0.1193	66.58	1.8777	0.	RCFLAGS	0	0	
6	1303	0.7418	64.00	7.5384	0.	RCFLAGS	0	0	
6	2303	0.7418	63.99	7.4269	0.	RCFLAGS	0	0	
6	307	0.1653	36.36	0.2880	0.	RCFLAGS	0	0	
6	1304	0.9071	58.95	7.5624	0.	RCFLAGS	0	0	
6	305	0.0065	59.74	0.0922	0.	RCFLAGS	0	0	
6	1305	0.9136	59.75	7.6561	0.	RCFLAGS	0	0	
6	306	0.0439	58.87	0.3699	0.	RCFLAGS	0	0	
6	1306	0.9575	59.71	8.0259	0.	RCFLAGS	0	0	
6	308	0.0630	58.84	0.2879	0.	RCFLAGS	0	0	
6	309	0.0164	20.24	0.0605	0.	RCFLAGS	0	0	cndchi.dat
6	1307	0.0794	50.87	0.3443	0.	RCFLAGS	0	0	
6	5309	0.0794	34.10	0.3079	884.	RCFLAGS	0	0	
6	1308	1.0369	57.74	8.0259	0.	RCFLAGS	0	0	
6	2308	1.0369	63.67	6.6225	0.	RCFLAGS	0	0	
6	310	0.0682	64.63	1.1872	0.	RCFLAGS	0	0	
6	1309	1.1051	63.73	7.0043	0.	RCFLAGS	0	0	

6	311	0.4793	31.47	0.2525	0.	RCFLAGS	0	0	
6	1310	1.5844	53.97	7.2153	0.	RCFLAGS	0	0	
6	5310	1.5844	32.99	3.1464	37096.	RCFLAGS	0	0	
6	312	0.3180	56.69	1.4470	0.	RCFLAGS	0	0	
6	5312	0.3180	0.44	0.0054	18785.	RCFLAGS	0	0	
6	313	0.0985	57.98	0.4698	0.	RCFLAGS	0	0	
6	1311	0.4165	14.05	0.4698	0.	RCFLAGS	0	0	
6	314	0.1142	24.05	0.1912	0.	RCFLAGS	0	0	
6	1312	0.5307	16.20	0.6611	0.	RCFLAGS	0	0	
6	315	0.0492	60.21	0.2674	0.	RCFLAGS	0	0	
6	1313	0.5799	19.93	0.9279	0.	RCFLAGS	0	0	
6	316	0.2120	63.46	2.6001	0.	RCFLAGS	0	0	
6	1314	0.7919	31.59	3.4482	0.	RCFLAGS	0	0	
6	5314	0.7919	30.84	2.0705	8586.	RCFLAGS	0	0	
6	1315	2.3763	32.57	4.4020	0.	RCFLAGS	0	0	
6	2315	2.3763	32.55	4.3829	0.	RCFLAGS	0	0	
6	317	0.1180	63.09	2.6790	0.	RCFLAGS	0	0	
6	1316	2.4943	34.00	4.3928	0.	RCFLAGS	0	0	
6	2316	2.4943	34.21	4.3841	0.	RCFLAGS	0	0	
6	318	0.1539	66.19	2.2852	0.	RCFLAGS	0	0	
6	1317	2.6482	36.07	4.9448	0.	RCFLAGS	0	0	
6	501	0.0207	58.81	0.1472	0.	RCFLAGS	0	0	
7	106	0.0215	189.52	0.1862	0.	RCFLAGS	0	0	regional.dat
7	5106	0.0215	0.00	0.0000	2954.	RCFLAGS	0	0	
7	107	0.1510	177.83	1.3935	0.	RCFLAGS	0	0	
7	1103	0.1725	155.66	1.3935	0.	RCFLAGS	0	0	
7	104	0.0282	203.69	0.3133	0.	RCFLAGS	0	0	
7	5104	0.0282	62.68	0.2713	2935.	RCFLAGS	0	0	
7	1104	0.2007	142.60	1.6588	0.	RCFLAGS	0	0	
7	105	0.1640	180.75	1.0040	0.	RCFLAGS	0	0	
7	1105	0.3647	159.75	2.6606	0.	RCFLAGS	0	0	
7	101	0.0039	186.97	0.0507	0.	RCFLAGS	0	0	
7	102	0.0214	177.82	0.2334	0.	RCFLAGS	0	0	
7	1101	0.0253	179.23	0.2834	0.	RCFLAGS	0	0	
7	103	0.0259	109.05	0.1618	0.	RCFLAGS	0	0	
7	1102	0.0512	143.73	0.4240	0.	RCFLAGS	0	0	
7	5103	0.0512	119.39	0.4176	1113.	RCFLAGS	0	0	
7	1106	0.4159	154.79	3.0782	0.	RCFLAGS	0	0	
7	108	0.1240	175.27	0.4888	0.	RCFLAGS	0	0	
7	1107	0.5399	159.49	3.5607	0.	RCFLAGS	0	0	
7	5108	0.5399	159.09	3.5327	1501.	RCFLAGS	0	0	
7	2108	0.5399	159.08	3.5321	0.	RCFLAGS	0	0	
7	109	0.1252	108.47	0.8715	0.	RCFLAGS	0	0	
7	1108	0.6651	149.56	4.3868	0.	RCFLAGS	0	0	
7	110	0.0201	185.06	0.2838	0.	RCFLAGS	0	0	
7	1109	0.6852	150.60	4.6024	0.	RCFLAGS	0	0	
7	111	0.0498	177.82	0.5538	0.	RCFLAGS	0	0	
7	1110	0.7350	152.44	5.1161	0.	RCFLAGS	0	0	
7	2110	0.7350	152.44	5.0985	0.	RCFLAGS	0	0	
7	401	0.0234	204.65	0.2513	0.	RCFLAGS	0	0	
7	5401	0.0234	0.00	0.0000	3382.	RCFLAGS	0	0	
7	402	0.1337	199.72	1.2721	0.	RCFLAGS	0	0	
7	1401	0.1571	169.97	1.2721	0.	RCFLAGS	0	0	
7	403	0.1073	215.01	0.9278	0.	RCFLAGS	0	0	
7	1402	0.2644	188.25	2.1999	0.	RCFLAGS	0	0	
7	5403	0.2644	0.00	0.0000	45797.	RCFLAGS	0	0	
7	405	0.0966	191.37	0.7934	0.	RCFLAGS	0	0	
7	5405	0.0966	49.66	0.5344	8477.	RCFLAGS	0	0	
7	406	0.0930	187.52	0.7623	0.	RCFLAGS	0	0	
7	1403	0.1896	117.28	1.2082	0.	RCFLAGS	0	0	
7	5406	0.1896	76.34	1.0583	4883.	RCFLAGS	0	0	
7	404	0.1141	197.23	0.9900	0.	RCFLAGS	0	0	
7	1404	0.3037	121.76	1.8723	0.	RCFLAGS	0	0	
7	407	0.2555	184.58	2.6493	0.	RCFLAGS	0	0	

7	1405	0.5592	150.46	4.2359	0.	RCFLAGS	0	0	
7	5407	0.5592	99.22	4.0805	26658.	RCFLAGS	0	0	
7	1406	0.8236	67.37	4.0805	0.	RCFLAGS	0	0	
7	5437	0.8236	0.00	0.0000	51695.	RCFLAGS	0	0	
7	408	0.0590	186.31	0.5260	0.	RCFLAGS	0	0	regional.dat
7	409	0.8914	139.30	5.8698	0.	RCFLAGS	0	0	
7	1407	0.9504	142.22	6.3957	0.	RCFLAGS	0	0	
7	410	0.0171	182.14	0.1708	0.	RCFLAGS	0	0	
7	5410	0.0171	134.15	0.1606	362.	RCFLAGS	0	0	
7	1410	0.9675	142.08	6.5532	0.	RCFLAGS	0	0	
7	1408	1.7911	76.74	6.5532	0.	RCFLAGS	0	0	
7	5409	1.7911	0.00	0.0000	129010.	RCFLAGS	0	0	
7	601	0.0468	182.16	0.5107	0.	RCFLAGS	0	0	
7	5601	0.0468	0.00	0.0000	7462.	RCFLAGS	0	0	
7	602	0.0331	182.16	0.3688	0.	RCFLAGS	0	0	
7	1601	0.0799	75.46	0.3688	0.	RCFLAGS	0	0	
7	5602	0.0799	0.00	0.0000	5375.	RCFLAGS	0	0	
7	603	0.0912	185.82	0.8290	0.	RCFLAGS	0	0	
7	1602	0.1711	99.04	0.8290	0.	RCFLAGS	0	0	
7	604	0.2409	163.13	2.1489	0.	RCFLAGS	0	0	
7	1603	0.4120	136.52	2.9780	0.	RCFLAGS	0	0	
7	5604	0.4120	0.00	0.0000	53207.	RCFLAGS	0	0	
7	201	0.0807	217.24	1.0217	0.	RCFLAGS	0	0	
7	5201	0.0807	202.32	0.9572	5061.	RCFLAGS	0	0	
7	2201	0.0807	202.31	0.9528	0.	RCFLAGS	0	0	
7	202	0.1084	113.93	0.6130	0.	RCFLAGS	0	0	
7	1201	0.1891	151.65	1.4998	0.	RCFLAGS	0	0	
7	203	0.0368	185.82	0.4103	0.	RCFLAGS	0	0	
7	1202	0.2259	157.22	1.9022	0.	RCFLAGS	0	0	
7	2202	0.2259	157.21	1.9017	0.	RCFLAGS	0	0	
7	204	0.0453	188.62	0.4458	0.	RCFLAGS	0	0	
7	1203	0.2712	162.46	2.3399	0.	RCFLAGS	0	0	
7	205	0.0700	130.21	0.3375	0.	RCFLAGS	0	0	
7	1204	0.3412	155.84	2.6739	0.	RCFLAGS	0	0	
7	301	0.1662	217.13	2.0311	0.	RCFLAGS	0	0	
7	302	0.1347	212.11	1.9091	0.	RCFLAGS	0	0	
7	1301	0.3009	214.88	3.9243	0.	RCFLAGS	0	0	
7	5301	0.3009	211.52	3.1523	28782.	RCFLAGS	0	0	
7	303	0.3216	218.83	4.3010	0.	RCFLAGS	0	0	
7	1302	0.6225	215.30	6.6600	0.	RCFLAGS	0	0	
7	304	0.1193	214.56	1.5044	0.	RCFLAGS	0	0	
7	1303	0.7418	215.18	7.9619	0.	RCFLAGS	0	0	
7	2303	0.7418	215.17	7.9609	0.	RCFLAGS	0	0	
7	307	0.1653	197.80	1.0321	0.	RCFLAGS	0	0	
7	1304	0.9071	212.01	8.9846	0.	RCFLAGS	0	0	
7	305	0.0065	187.55	0.0784	0.	RCFLAGS	0	0	
7	1305	0.9136	213.41	9.0567	0.	RCFLAGS	0	0	
7	306	0.0439	186.98	0.4310	0.	RCFLAGS	0	0	
7	1306	0.9575	212.19	9.4877	0.	RCFLAGS	0	0	
7	308	0.0630	187.90	0.4894	0.	RCFLAGS	0	0	
7	309	0.0164	82.82	0.1284	0.	RCFLAGS	0	0	regional.dat
7	1307	0.0794	166.20	0.6179	0.	RCFLAGS	0	0	
7	5309	0.0794	142.95	0.6028	936.	RCFLAGS	0	0	
7	1308	1.0369	206.89	10.0905	0.	RCFLAGS	0	0	
7	2308	1.0369	206.85	10.3626	0.	RCFLAGS	0	0	
7	310	0.0682	206.64	0.8959	0.	RCFLAGS	0	0	
7	1309	1.1051	206.84	10.7727	0.	RCFLAGS	0	0	
7	311	0.4793	167.25	1.1368	0.	RCFLAGS	0	0	
7	1310	1.5844	194.86	11.8948	0.	RCFLAGS	0	0	
7	5310	1.5844	160.34	9.8086	54523.	RCFLAGS	0	0	
7	312	0.3180	184.13	2.4966	0.	RCFLAGS	0	0	
7	5312	0.3180	77.74	0.1524	52271.	RCFLAGS	0	0	
7	313	0.0985	184.96	0.7834	0.	RCFLAGS	0	0	
7	1311	0.4165	103.10	0.9101	0.	RCFLAGS	0	0	

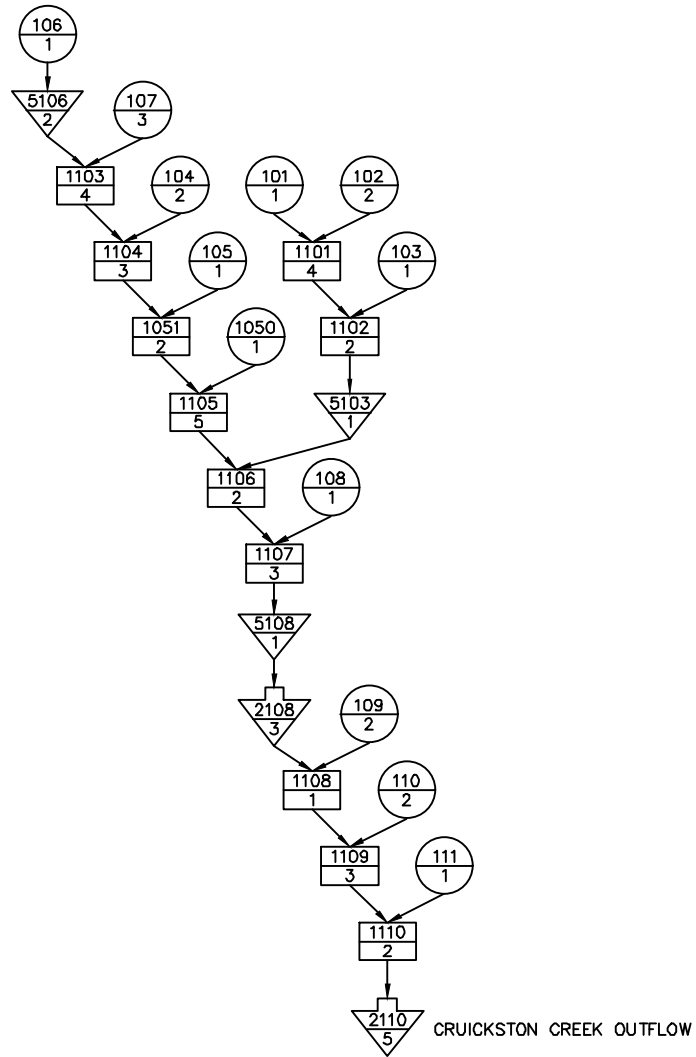
7	314	0.1142	109.89	0.6157	0.	RCFLAGS	0	0	
7	1312	0.5307	104.56	1.5258	0.	RCFLAGS	0	0	
7	315	0.0492	197.89	0.4156	0.	RCFLAGS	0	0	
7	1313	0.5799	112.48	1.9414	0.	RCFLAGS	0	0	
7	316	0.2120	213.60	2.4614	0.	RCFLAGS	0	0	
7	1314	0.7919	139.55	4.2027	0.	RCFLAGS	0	0	
7	5314	0.7919	133.38	4.1121	10967.	RCFLAGS	0	0	
7	1315	2.3763	151.96	13.0180	0.	RCFLAGS	0	0	
7	2315	2.3763	151.93	13.0055	0.	RCFLAGS	0	0	
7	317	0.1180	202.41	1.6725	0.	RCFLAGS	0	0	
7	1316	2.4943	154.32	13.5334	0.	RCFLAGS	0	0	
7	2316	2.4943	154.74	13.4917	0.	RCFLAGS	0	0	
7	318	0.1539	210.76	1.8713	0.	RCFLAGS	0	0	
7	1317	2.6482	158.00	14.9584	0.	RCFLAGS	0	0	
7	501	0.0207	190.70	0.1937	0.	RCFLAGS	0	0	
8	106	0.0215	1.56	0.0042	0.	RCFLAGS	0	0	25mm.dat
8	5106	0.0215	0.00	0.0000	23.	RCFLAGS	0	0	
8	107	0.1510	0.72	0.0186	0.	RCFLAGS	0	0	
8	1103	0.1725	0.63	0.0186	0.	RCFLAGS	0	0	
8	104	0.0282	2.44	0.0175	0.	RCFLAGS	0	0	
8	5104	0.0282	0.00	0.0000	56.	RCFLAGS	0	0	
8	1104	0.2007	0.54	0.0186	0.	RCFLAGS	0	0	
8	105	0.1640	0.93	0.0094	0.	RCFLAGS	0	0	
8	1105	0.3647	0.72	0.0271	0.	RCFLAGS	0	0	
8	101	0.0039	1.11	0.0019	0.	RCFLAGS	0	0	
8	102	0.0214	0.71	0.0046	0.	RCFLAGS	0	0	
8	1101	0.0253	0.78	0.0065	0.	RCFLAGS	0	0	
8	103	0.0259	0.09	0.0000	0.	RCFLAGS	0	0	
8	1102	0.0512	0.43	0.0065	0.	RCFLAGS	0	0	
8	5103	0.0512	0.00	0.0000	18.	RCFLAGS	0	0	
8	1106	0.4159	0.63	0.0271	0.	RCFLAGS	0	0	
8	108	0.1240	0.64	0.0007	0.	RCFLAGS	0	0	
8	1107	0.5399	0.63	0.0272	0.	RCFLAGS	0	0	
8	5108	0.5399	0.61	0.0037	168.	RCFLAGS	0	0	
8	2108	0.5399	0.61	0.0037	0.	RCFLAGS	0	0	
8	109	0.1252	1.62	0.0127	0.	RCFLAGS	0	0	
8	1108	0.6651	0.80	0.0134	0.	RCFLAGS	0	0	
8	110	0.0201	0.72	0.0096	0.	RCFLAGS	0	0	
8	1109	0.6852	0.79	0.0217	0.	RCFLAGS	0	0	
8	111	0.0498	0.72	0.0114	0.	RCFLAGS	0	0	
8	1110	0.7350	0.79	0.0332	0.	RCFLAGS	0	0	
8	2110	0.7350	0.79	0.0287	0.	RCFLAGS	0	0	
8	401	0.0234	2.81	0.0146	0.	RCFLAGS	0	0	
8	5401	0.0234	0.00	0.0000	37.	RCFLAGS	0	0	
8	402	0.1337	2.35	0.0479	0.	RCFLAGS	0	0	
8	1401	0.1571	2.00	0.0479	0.	RCFLAGS	0	0	
8	403	0.1073	1.14	0.0096	0.	RCFLAGS	0	0	
8	1402	0.2644	1.65	0.0575	0.	RCFLAGS	0	0	
8	5403	0.2644	0.00	0.0000	373.	RCFLAGS	0	0	
8	405	0.0966	1.77	0.0177	0.	RCFLAGS	0	0	
8	5405	0.0966	0.00	0.0000	67.	RCFLAGS	0	0	
8	406	0.0930	1.37	0.0138	0.	RCFLAGS	0	0	
8	1403	0.1896	0.67	0.0138	0.	RCFLAGS	0	0	
8	5406	0.1896	0.00	0.0000	58.	RCFLAGS	0	0	
8	404	0.1141	2.02	0.0277	0.	RCFLAGS	0	0	
8	1404	0.3037	0.76	0.0277	0.	RCFLAGS	0	0	
8	407	0.2555	1.17	0.0538	0.	RCFLAGS	0	0	
8	1405	0.5592	0.95	0.0812	0.	RCFLAGS	0	0	
8	5407	0.5592	0.00	0.0000	410.	RCFLAGS	0	0	
8	1406	0.8236	0.00	0.0000	0.	RCFLAGS	0	0	
8	5437	0.8236	0.00	0.0000	0.	RCFLAGS	0	0	
8	408	0.0590	1.79	0.0128	0.	RCFLAGS	0	0	25mm.dat
8	409	0.8914	0.94	0.0433	0.	RCFLAGS	0	0	
8	1407	0.9504	0.99	0.0556	0.	RCFLAGS	0	0	

8	410	0.0171	0.70	0.0025	0.	RCFLAGS	0	0
8	5410	0.0171	0.00	0.0000	8.	RCFLAGS	0	0
8	1410	0.9675	0.97	0.0556	0.	RCFLAGS	0	0
8	1408	1.7911	0.52	0.0556	0.	RCFLAGS	0	0
8	5409	1.7911	0.00	0.0000	783.	RCFLAGS	0	0
8	601	0.0468	0.72	0.0094	0.	RCFLAGS	0	0
8	5601	0.0468	0.00	0.0000	30.	RCFLAGS	0	0
8	602	0.0331	0.72	0.0070	0.	RCFLAGS	0	0
8	1601	0.0799	0.30	0.0070	0.	RCFLAGS	0	0
8	5602	0.0799	0.00	0.0000	21.	RCFLAGS	0	0
8	603	0.0912	0.94	0.0117	0.	RCFLAGS	0	0
8	1602	0.1711	0.50	0.0117	0.	RCFLAGS	0	0
8	604	0.2409	0.47	0.0150	0.	RCFLAGS	0	0
8	1603	0.4120	0.48	0.0268	0.	RCFLAGS	0	0
8	5604	0.4120	0.00	0.0000	161.	RCFLAGS	0	0
8	201	0.0807	8.78	0.1684	0.	RCFLAGS	0	0
8	5201	0.0807	3.85	0.0023	662.	RCFLAGS	0	0
8	2201	0.0807	3.84	0.0023	0.	RCFLAGS	0	0
8	202	0.1084	0.63	0.0005	0.	RCFLAGS	0	0
8	1201	0.1891	2.00	0.0025	0.	RCFLAGS	0	0
8	203	0.0368	1.00	0.0075	0.	RCFLAGS	0	0
8	1202	0.2259	1.84	0.0080	0.	RCFLAGS	0	0
8	2202	0.2259	1.84	0.0079	0.	RCFLAGS	0	0
8	204	0.0453	1.42	0.0095	0.	RCFLAGS	0	0
8	1203	0.2712	1.77	0.0174	0.	RCFLAGS	0	0
8	205	0.0700	0.39	0.0002	0.	RCFLAGS	0	0
8	1204	0.3412	1.48	0.0175	0.	RCFLAGS	0	0
8	301	0.1662	7.83	0.2656	0.	RCFLAGS	0	0
8	302	0.1347	5.40	0.2288	0.	RCFLAGS	0	0
8	1301	0.3009	6.74	0.4944	0.	RCFLAGS	0	0
8	5301	0.3009	6.16	0.0260	1687.	RCFLAGS	0	0
8	303	0.3216	7.21	0.6298	0.	RCFLAGS	0	0
8	1302	0.6225	6.70	0.6361	0.	RCFLAGS	0	0
8	304	0.1193	7.82	0.2173	0.	RCFLAGS	0	0
8	1303	0.7418	6.88	0.8534	0.	RCFLAGS	0	0
8	2303	0.7418	6.88	0.8032	0.	RCFLAGS	0	0
8	307	0.1653	0.52	0.0008	0.	RCFLAGS	0	0
8	1304	0.9071	5.72	0.8034	0.	RCFLAGS	0	0
8	305	0.0065	2.63	0.0044	0.	RCFLAGS	0	0
8	1305	0.9136	6.49	0.8114	0.	RCFLAGS	0	0
8	306	0.0439	2.06	0.0135	0.	RCFLAGS	0	0
8	1306	0.9575	6.28	0.8245	0.	RCFLAGS	0	0
8	308	0.0630	1.91	0.0092	0.	RCFLAGS	0	0
8	309	0.0164	0.28	0.0000	0.	RCFLAGS	0	0 25mm.dat
8	1307	0.0794	1.57	0.0092	0.	RCFLAGS	0	0
8	5309	0.0794	0.00	0.0000	70.	RCFLAGS	0	0
8	1308	1.0369	5.80	0.8245	0.	RCFLAGS	0	0
8	2308	1.0369	7.13	0.6333	0.	RCFLAGS	0	0
8	310	0.0682	6.55	0.1185	0.	RCFLAGS	0	0
8	1309	1.1051	7.09	0.6669	0.	RCFLAGS	0	0
8	311	0.4793	0.48	0.0020	0.	RCFLAGS	0	0
8	1310	1.5844	5.09	0.6676	0.	RCFLAGS	0	0
8	5310	1.5844	2.19	0.0672	3732.	RCFLAGS	0	0
8	312	0.3180	0.93	0.0293	0.	RCFLAGS	0	0
8	5312	0.3180	0.00	0.0000	2204.	RCFLAGS	0	0
8	313	0.0985	1.42	0.0117	0.	RCFLAGS	0	0
8	1311	0.4165	0.34	0.0117	0.	RCFLAGS	0	0
8	314	0.1142	0.34	0.0003	0.	RCFLAGS	0	0
8	1312	0.5307	0.34	0.0119	0.	RCFLAGS	0	0
8	315	0.0492	2.28	0.0112	0.	RCFLAGS	0	0
8	1313	0.5799	0.50	0.0231	0.	RCFLAGS	0	0
8	316	0.2120	6.11	0.2513	0.	RCFLAGS	0	0
8	1314	0.7919	2.00	0.2716	0.	RCFLAGS	0	0
8	5314	0.7919	1.78	0.0578	852.	RCFLAGS	0	0

8	1315	2.3763	2.36	0.1234	0.	RCFLAGS	0	0
8	2315	2.3763	2.36	0.1234	0.	RCFLAGS	0	0
8	317	0.1180	5.45	0.2292	0.	RCFLAGS	0	0
8	1316	2.4943	2.50	0.2419	0.	RCFLAGS	0	0
8	2316	2.4943	2.72	0.2384	0.	RCFLAGS	0	0
8	318	0.1539	7.67	0.2563	0.	RCFLAGS	0	0
8	1317	2.6482	3.01	0.4947	0.	RCFLAGS	0	0
8	501	0.0207	1.57	0.0051	0.	RCFLAGS	0	0

Appendix D

Proposed Conditions Hydrologic Modelling



LEGEND

- 
 HYDROGRAPH GENERATION NUMBER
 GAWSER STORAGE LOCATION NUMBER
- 
 HYDROGRAPH ROUTING NUMBER
 GAWSER STORAGE LOCATION NUMBER
- 
 HYDROGRAPH ADDITION NUMBER
 GAWSER STORAGE LOCATION NUMBER

FIGURE D1

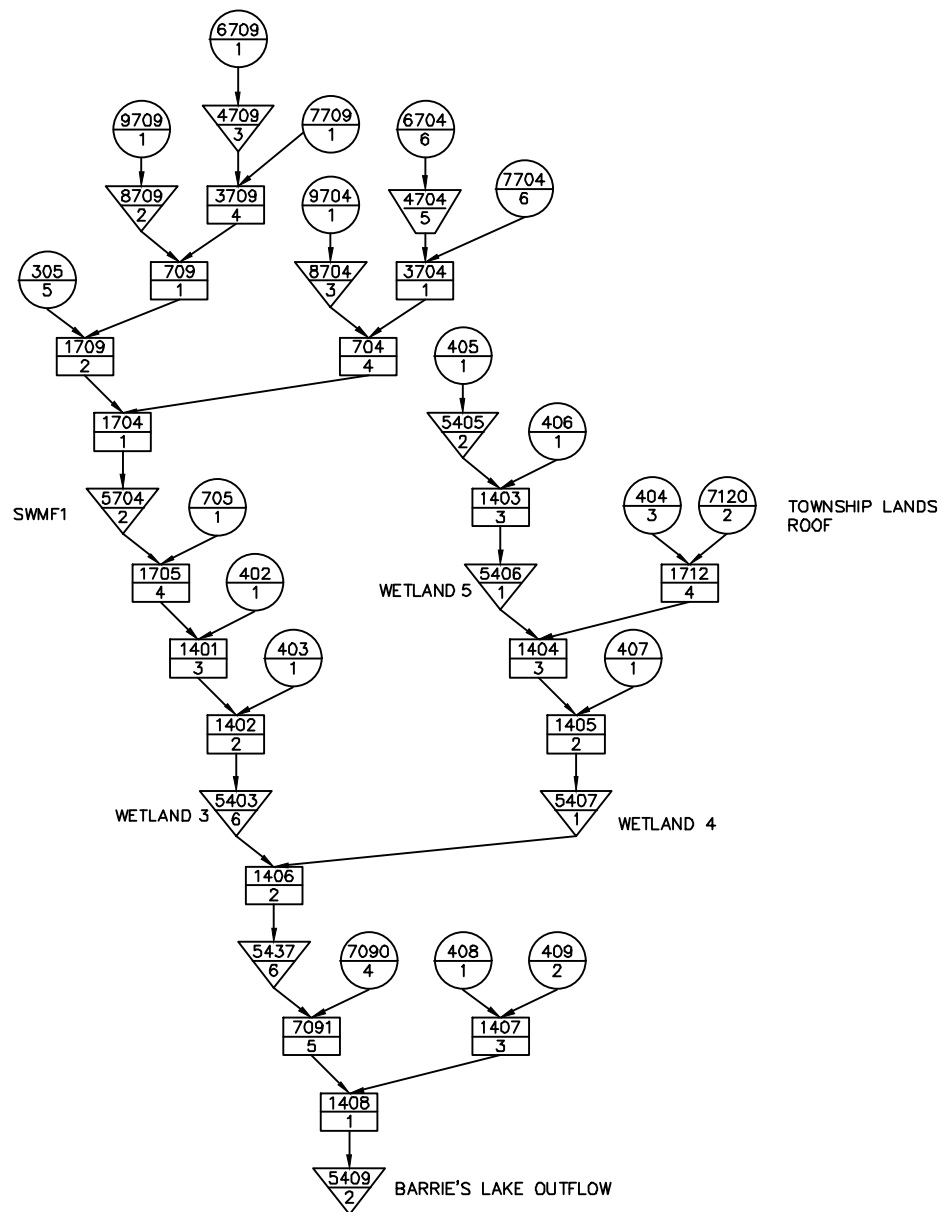
Date: 12/3/20
Scale: N/A

CRUICKSTON CREEK GAWSER MODEL



Engineers, Scientists, Surveyors

Project No.: 02534-800



LEGEND



HYDROGRAPH GENERATION NUMBER
GAWSER STORAGE LOCATION NUMBER



HYDROGRAPH ROUTING NUMBER
GAWSER STORAGE LOCATION NUMBER



HYDROGRAPH ADDITION NUMBER
GAWSER STORAGE LOCATION NUMBER

FIGURE D2

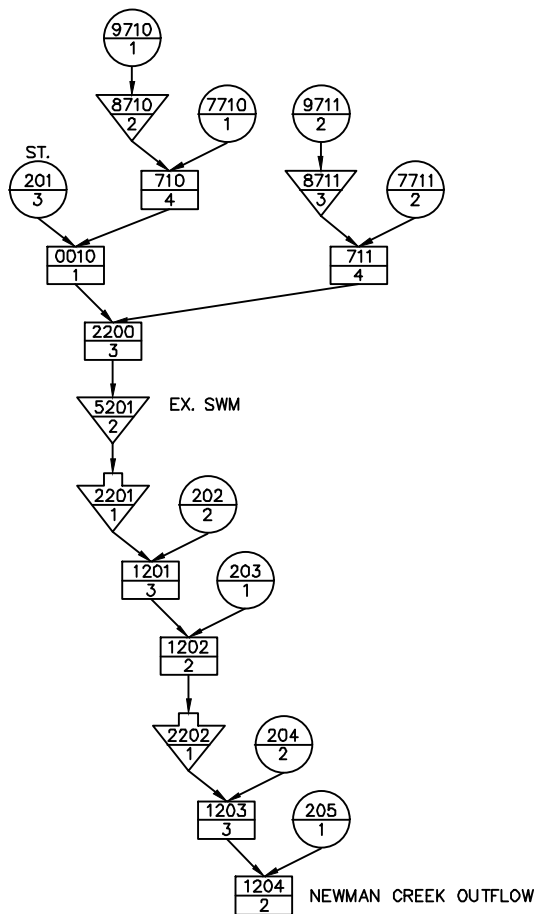
Date: 12/3/20
Scale: N/A

BARRIE'S LAKE GAWSER MODEL



Engineers, Scientists, Surveyors

Project No.: 44719-114



LEGEND



HYDROGRAPH GENERATION NUMBER
GAWSER STORAGE LOCATION NUMBER



HYDROGRAPH ROUTING NUMBER
GAWSER STORAGE LOCATION NUMBER



HYDROGRAPH ADDITION NUMBER
GAWSER STORAGE LOCATION NUMBER

FIGURE D3

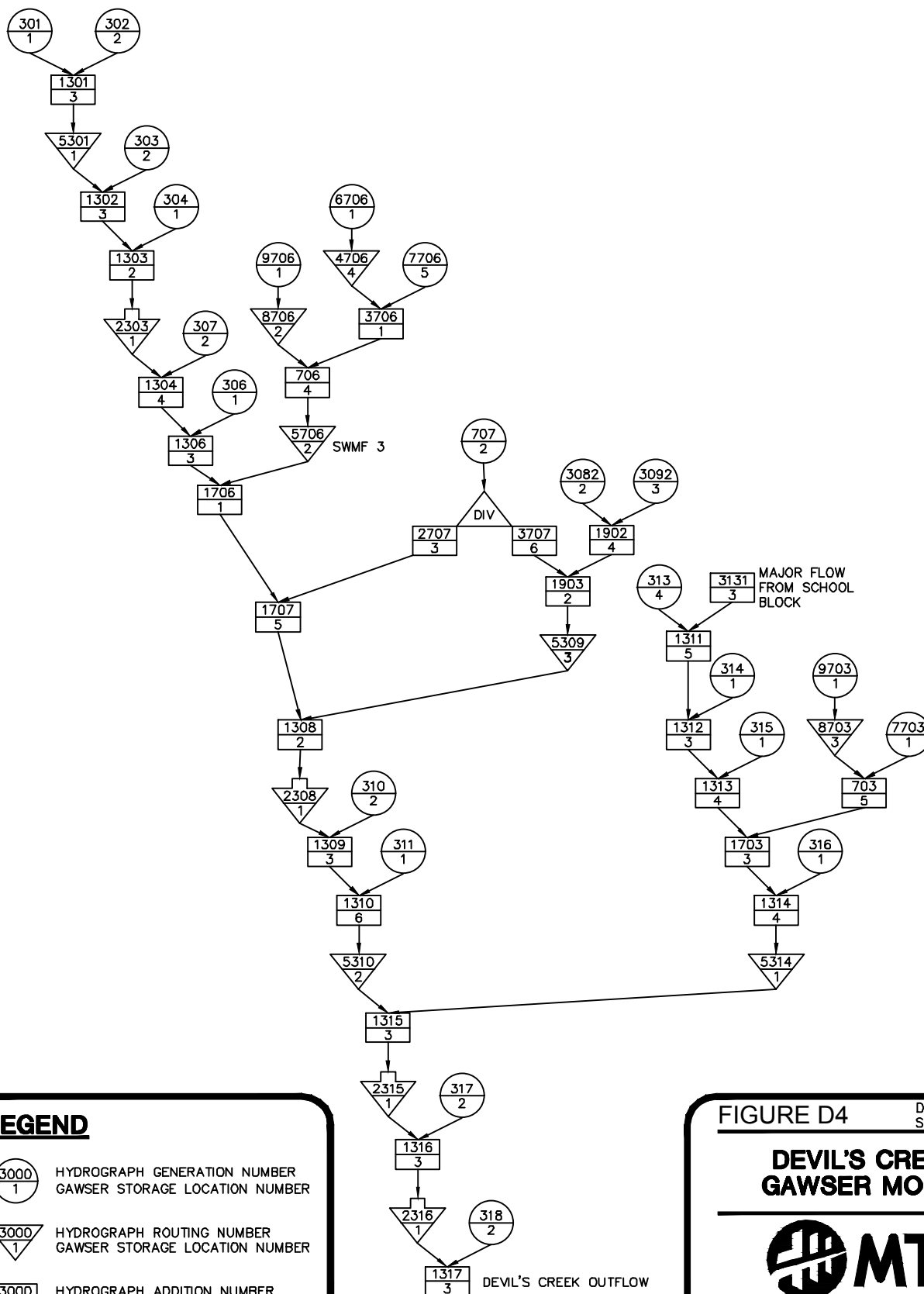
Date: 12/3/20
Scale: N/A

NEWMAN CREEK GAWSER MODEL



Engineers, Scientists, Surveyors

Project No.: 02534-800



LEGEND



HYDROGRAPH GENERATION NUMBER
GAWSER STORAGE LOCATION NUMBER



HYDROGRAPH ROUTING NUMBER
GAWSER STORAGE LOCATION NUMBER



HYDROGRAPH ADDITION NUMBER
GAWSER STORAGE LOCATION NUMBER

FIGURE D4

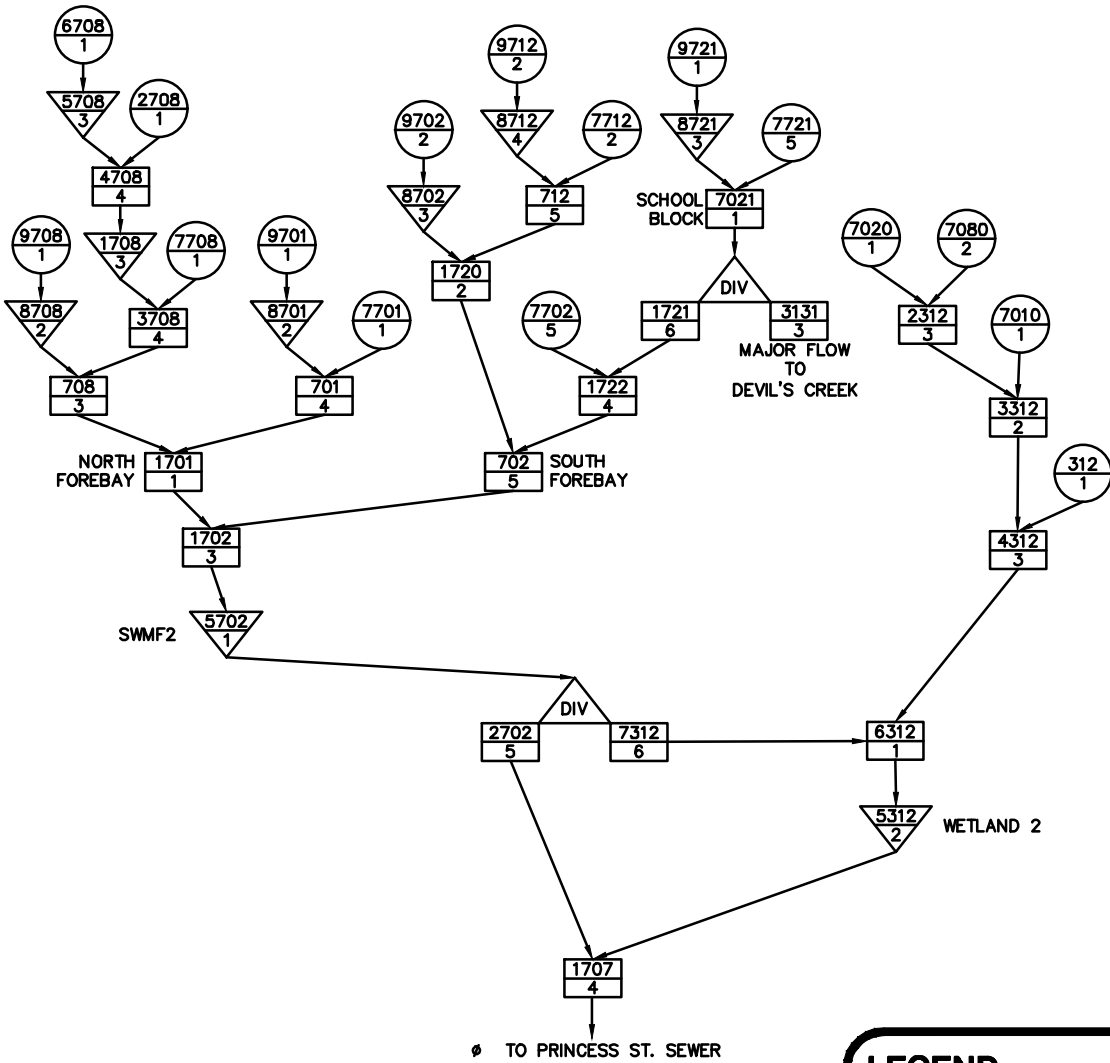
Date: 12/3/20
Scale: N/A

DEVIL'S CREEK GAWSER MODEL



Engineers, Scientists, Surveyors

Project No.: 02534-800



LEGEND

-  HYDROGRAPH GENERATION NUMBER
GAWSER STORAGE LOCATION NUMBER
-  HYDROGRAPH ROUTING NUMBER
GAWSER STORAGE LOCATION NUMBER
-  HYDROGRAPH ADDITION NUMBER
GAWSER STORAGE LOCATION NUMBER

FIGURE D5

Date: 12/3/20
Scale: N/A

GRAND RIVER GAWSER MODEL



Engineers, Scientists, Surveyors

Project No.: 02534-800

**GAWSER Proposed Conditions Model
(*.WAT)**

READ SOIL PARAMETERS NZONE=9

*
* 5% Typical off-channel (Steep areas)
*

COMPUTE RATING CURVE	ID=6	VS=	100.005	NSEGS=3			
	MIN EL=	100.70	MAX EL=	103.00			
	CHNSLP=	0.00500	FLNSLP=	0.005000			
	N= 0.080	DIST=	20.00				
	N=-0.050	DIST=	30.00				
	N= 0.080	DIST=	50.00				
	DIST	ELEV	DIST	ELEV	DIST	ELEV	
	0.00	103.00	20.00	101.00	23.00	100.80	

25.00100.7027.00100.8030.00101.00

50.00103.00

RFN=0.0000PCODE=1

*

* CRUICKSTON CREEK
*
*
*
* Catchment 106
* VS= 100.005 is main channel & VS= 2.02 is off-channel
*
COMPUTE FLOWRATEID=1 NHD= 106 AREA= 0.0215 Sq km L= 220 m W= 100 m
SOIL ZONE I II III IV V VI VII VIII IX
0.00.00.00.020.00.00.00.080.00.0
RATING CURVES: IDMC=6 IDOC=5 QRCM= 0.05 QROC= 0.01
ROUTING MODEL=2 CONSTANTS: OVERLAND FTB= 3.0 TLO= 0.0
SUBSURFACE: KSS= 5.0 KGW= 384 h PCODE=1 WQPCODE=1
RBASIN=0 IDA=0 IDB=0 IDC=0 IDD=0 RBDUMP=0
GWFACT=1.00 GWON=1
SWQTH= 0.0 L/s SWPUMP= 0.0 L/s SWCODE=0

*
* Route flows from 106 through a depression
*
ROUTE SPECIAL PONDID=2 HYD NO=5106 INFLOW=1 PCODE=0 OPTION=15
Inflow controls:
USPCT=100% USDIV=0 PCTA= 0% ADIV=0
GWPCT= 0% GWDIV=0
Maximum level for Routing Tables: ZMAX= 317.000
Recharge characteristics for Compartment A
LEVELA= 315.000 EVAPA= 0.0 mm/d ACODE=0
CDA= 0.000 mm/h DZA= 23.00 m
Recharge characteristics for Compartment B
LEVELB= 315.000 CCBA= 0.00000 EVAPB= 1.4 mm/d BCODE=1
CDB= 25.000 mm/h DZB= 10.00 m
Irrigation Pond Controls: IPOND=0
Number of points= 5

Compartment A				Compartment B			
Elevation	Outflow	Storage	SFArea	Outflow	Storage	SFArea	
(m)	(cms)	(ha*m)	(ha)	(cms)	(ha*m)	(ha)	
315.000	0.000	0.000	0.000	0.000	0.000	0.000	0.018
315.500	0.000	0.000	0.000	0.000	0.000	0.043	0.155
316.000	0.000	0.000	0.000	0.000	0.155	0.291	
316.500	0.000	0.000	0.000	0.000	0.355	0.511	
317.000	0.000	0.000	0.000	5.000	0.693	0.839	

*
PRINT HYDID=2 PCODE=1 MODE=10
*
* Catchment 107
* VS= 100.035 is main channel & VS= 2.050 is off-channel
*
COMPUTE FLOWRATEID=3 NHD= 107 AREA= 0.1510 Sq km L= 150 m W= 325 m
SOIL ZONE I II III IV V VI VII VIII IX
0.00.00.00.00.00.00.00.0100.00.0
RATING CURVES: IDMC=3 IDOC=2 QRCM= 0.05 QROC= 0.01
ROUTING MODEL=2 CONSTANTS: OVERLAND FTB= 3.0 TLO= 0.0
SUBSURFACE: KSS= 5.0 KGW= 384 h PCODE=1 WQPCODE=1
RBASIN=0 IDA=0 IDB=0 IDC=0 IDD=0 RBDUMP=0
GWFACT=1.00 GWON=1
SWQTH= 0.0 L/s SWPUMP= 0.0 L/s SWCODE=0

*
PRINT HYDID=3 PCODE=1 MODE=10

*
* Sum hydr. 107 & 5106, call result 1103
*
ADD HYDID=4 HYD NO= 1103 IDA=3 IDB=2 ICODE=0
*
* Catchment 104 - reduced to 0ha (mar 3/20)
* VS= 100.020 is main channel & VS= 2.050 is off-channel
*
COMPUTE FLOWRATEID=2 NHD= 104 AREA= 0.00001 Sq km L= 40 m W= 40 m
SOIL ZONE I II III IV V VI VII VIII IX
0.00.00.00.040.00.00.00.060.00.0
RATING CURVES: IDMC=4 IDOC=2 QRCM= 0.05 QROC= 0.01
ROUTING MODEL=2 CONSTANTS: OVERLAND FTB= 3.0 TLO= 0.0
SUBSURFACE: KSS= 5.0 KGW= 384 h PCODE=1 WQPCODE=1
RBASIN=0 IDA=0 IDB=0 IDC=0 IDD=0 RBDUMP=0
GWFACT=1.00 GWON=1
SWQTH= 0.0 L/s SWPUMP= 0.0 L/s SWCODE=0

*
PRINT HYDID=2 PCODE=1 MODE=10
*
* Sum hydr. 1103, 104, call result 1104
*
ADD HYDID=3 HYD NO= 1104 IDA=2 IDB=4 ICODE=0
*
* Typical Roof section
*
COMPUTE RATING CURVEID=5 VS= 101.000 NSEGS=3
MIN EL= 295.00 MAX EL= 295.70
CHNSLP= 0.2500 FLNSLP= 0.2500
N= 0.018 DIST= 100.00
N=-0.018 DIST= 400.00
N= 0.018 DIST= 500.00
DIST ELEV DIST ELEV DIST ELEV
0.00 295.70 100.00 295.50 100.10 295.00
399.90 295.00 400.00 295.50 500.00 295.70
RFN=0.0000PCODE=1

*
* Typical Urban section
*
COMPUTE RATING CURVEID=6 VS= 3.200 NSEGS=3
MIN EL= 295.00 MAX EL= 295.70
CHNSLP= 0.02000 FLNSLP= 0.02000
N= 0.015 DIST= 200.00
N=-0.015 DIST= 300.00
N= 0.015 DIST= 500.00
DIST ELEV DIST ELEV DIST ELEV
0.00 295.70 200.00 295.50 200.10 295.00
299.90 295.00 300.00 295.50 500.00 295.70

*
* buffer areas from 708 to Cruickston Creek (pre 105), hydrograph 1050
* Mar 5/20 add rear yards of multires blocks
*
*
COMPUTE FLOWRATEID=1 NHD= 105 AREA= 0.0323 Sq km L= 30 m W= 50 m
SOIL ZONE I II III IV V VI VII VIII IX
0.00.00.00.15.50.00.04.00.84.20.0
RATING CURVES: IDMC=6 IDOC=5 QRCM= 0.50 QROC= 0.25
ROUTING MODEL=2 CONSTANTS: OVERLAND FTB= 1.2 TLO= 0.0
SUBSURFACE: KSS= 5.0 KGW= 384 h PCODE=1 WQPCODE=1
RBASIN=0 IDA=0 IDB=0 IDC=0 IDD=0 RBDUMP=0
GWFACT=1.0 GWON=1
SWQTH= 0.0 L/s SWPUMP= 0.0 L/s SWCODE=0

*
PRINT HYD ID=1 PCODE=1 MODE=10
*
* Sum hydr. 1104 and 1051, call result 1051
*
ADD HYD ID=2 HYD NO= 1051 IDA=3 IDB=1 ICODE=0
PRINT HYD ID=2 PCODE=1 MODE=10
*
* Catchment 1050 - Roofs from adjacent 708 MR to Cruickston for surface WB
* VS= 100.020 is main channel & VS= 2.035 is off-channel
*
COMPUTE FLOWRATE ID=1 NHD= 1050 AREA= 0.0108 Sq km L= 20 m W= 10 m
SOIL ZONE I II III IV V VI VII VIII IX
100.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
RATING CURVES: IDMC=4 IDOC=1 QRCM= 0.05 QROC= 0.01
ROUTING MODEL=2 CONSTANTS: OVERLAND FTB= 3.0 TLO= 0.0
SUBSURFACE: KSS= 5.0 KGW= 384 h PCODE=1 WQPCODE=1
RBASIN=0 IDA=0 IDB=0 IDC=0 IDD=0 RBDUMP=0
GWFACT=1.00 GWON=1
SWQTH= 0.0 L/s SWPUMP= 0.0 L/s SWCODE=0

*
PRINT HYD ID=1 PCODE=1 MODE=10
*
* Sum hydr. 1050, 1051, call result 1105
*
ADD HYD ID=5 HYD NO= 1105 IDA=2 IDB=1 ICODE=0
*
* Catchment 101
* VS= 100.035 is main channel & VS= 2.035 is off-channel
*
COMPUTE FLOWRATE ID=1 NHD= 101 AREA= 0.0032 Sq km L= 40 m W= 100 m
SOIL ZONE I II III IV V VI VII VIII IX
0.0 0.0 0.0 10.0 0.0 80.0 0.0 10.0 0.0
RATING CURVES: IDMC=3 IDOC=1 QRCM= 0.05 QROC= 0.01
ROUTING MODEL=2 CONSTANTS: OVERLAND FTB= 2.0 TLO= 0.0
SUBSURFACE: KSS= 5.0 KGW= 384 h PCODE=1 WQPCODE=1
RBASIN=0 IDA=0 IDB=0 IDC=0 IDD=0 RBDUMP=0
GWFACT=1.00 GWON=1
SWQTH= 0.0 L/s SWPUMP= 0.0 L/s SWCODE=0

*
PRINT HYD ID=1 PCODE=1 MODE=10
*
* Catchment 102
* VS= 100.035 is main channel & VS= 2.035 is off-channel
*
COMPUTE FLOWRATE ID=2 NHD= 102 AREA= 0.0214 Sq km L= 180 m W= 120 m
SOIL ZONE I II III IV V VI VII VIII IX
0.0 0.0 0.0 0.0 0.0 0.0 0.0 100.0 0.0
RATING CURVES: IDMC=3 IDOC=1 QRCM= 0.05 QROC= 0.01
ROUTING MODEL=2 CONSTANTS: OVERLAND FTB= 2.0 TLO= 0.0
SUBSURFACE: KSS= 5.0 KGW= 384 h PCODE=1 WQPCODE=1
RBASIN=0 IDA=0 IDB=0 IDC=0 IDD=0 RBDUMP=0
GWFACT=1.00 GWON=1
SWQTH= 0.0 L/s SWPUMP= 0.0 L/s SWCODE=0

*
PRINT HYD ID=2 PCODE=1 MODE=10
*
* Sum hydr. 101, 102, call result 1101
*
ADD HYD ID=4 HYD NO= 1101 IDA=1 IDB=2 ICODE=0
*
* Catchment 103

* VS= 100.020 is main channel & VS= 2.035 is off-channel
*
COMPUTE FLOWRATE ID=1 NHD= 103 AREA= 0.0259 Sq km L= 280 m W= 90 m
SOIL ZONE I II III IV V VI VII VIII IX
0.0 10.0 10.0 0.0 0.0 0.0 0.0 0.0 80.0
RATING CURVES: IDMC=4 IDOC=1 QRCM= 0.05 QROC= 0.01
ROUTING MODEL=2 CONSTANTS: OVERLAND FTB= 5.0 TLO= 0.0
SUBSURFACE: KSS= 5.0 KGW= 384 h PCODE=1 WQPCODE=1
RBASIN=0 IDA=0 IDB=0 IDC=0 IDD=0 RBDUMP=0
GWFACT=1.00 GWON=1
SWQTH= 0.0 L/s SWPUMP= 0.0 L/s SWCODE=0

*
PRINT HYD ID=1 PCODE=1 MODE=10
*
* Sum hydr. 103, 1101, call result 1102
*
ADD HYD ID=2 HYD NO= 1102 IDA=1 IDB=4 ICODE=0
*
PRINT HYD ID=2 PCODE=1 MODE=10
*
* Route flows from 1102 through a depression
*
ROUTE SPECIAL POND ID=1 HYD NO=5103 INFLOW=2 PCODE=0 OPTION=15
Inflow controls:
USPCT=100% USDIV=0 PCTA= 0% ADIV=0
GWPCT= 0% GWDIV=0
Maximum level for Routing Tables: ZMAX= 308.000
Recharge characteristics for Compartment A
LEVELA= 307.300 EVAPA= 0.0 mm/d ACODE=0
CDA= 0.000 mm/h DZA= 23.00 m
Recharge characteristics for Compartment B
LEVELB= 307.300 CCBA= 0.00000 EVAPB= 1.4 mm/d BCODE=1
CDB= 4.000 mm/h DZB= 10.00 m
Irrigation Pond Controls: IPOND=0
Number of points= 4

		Compartment A			Compartment B		
Elevation	Outflow	Storage	SFArea	Outflow	Storage	SFArea	
(m)	(cms)	(ha*m)	(ha)	(cms)	(ha*m)	(ha)	
307.300	0.000	0.000	0.000	0.000	0.000	0.000	0.200
307.500	0.000	0.000	0.000	0.000	0.055	0.347	
307.600	0.000	0.000	0.000	0.000	0.093	0.415	
308.000	0.000	0.000	0.000	5.000	0.312	0.680	

*
PRINT HYD ID=1 PCODE=1 MODE=10
*
* Sum hydr. 5103, 1105, call result 1106
*
ADD HYD ID=2 HYD NO= 1106 IDA=1 IDB=5 ICODE=0
*
* 0.5% Off-channel (Flat areas)
*
COMPUTE RATING CURVE ID=5 VS= 2.005 NSEGS=3
MIN EL= 100.00 MAX EL= 100.60
CHNSLP= 0.00500 FLNSLP= 0.00500
N= 0.350 DIST= 39.15
N=-0.150 DIST= 40.85
N= 0.350 DIST= 80.00
DIST ELEV DIST ELEV DIST ELEV
0.00 100.60 39.15 100.20 39.75 100.00
40.25 100.00 40.85 100.20 80.00 100.60
RFN=0.0000 PCODE=1

*


```
*      Catchment 0.5% Main channel Parabolic Swale
*
COMPUTE RATING CURVE ID=6 VS= 100.005 NSEGS=3
      MIN EL= 100.70 MAX EL= 103.00
      CHNSLP= 0.00500 FLNSLP= 0.005000
      N= 0.080 DIST= 20.00
      N=-0.050 DIST= 30.00
      N= 0.080 DIST= 50.00
      DIST ELEV DIST ELEV DIST ELEV
      0.00 103.00 20.00 101.00 23.00 100.80
      25.00 100.70 27.00 100.80 30.00 101.00
      50.00 103.00
      RFN=0.0000 PCODE=1

*
* Catchment 108
* VS= 100.005 is main channel & VS= 2.005 is off-channel
*
COMPUTE FLOWRATE ID=1 NHD= 108 AREA= 0.124 Sq km L= 300 m W= 250 m
      SOIL ZONE I II III IV V VI VII VIII IX
      0.0 10.0 45.0 0.0 15.0 0.0 0.0 0.0 30.0
      RATING CURVES: IDMC=6 IDOC=5 GRMC= 0.05 QROC= 0.01
      ROUTING MODEL=2 CONSTANTS: OVERLAND FTB= 5.0 TLO= 0.0
      SUBSURFACE: KSS= 5.0 KGW= 384 h PCODE=1 WQPCODE=1
      RBASIN=0 IDA=0 IDB=0 IDC=0 IDD=0 RBDUMP=0
      GWFACT=0.00 GWON=1
      SWQTH= 0.0 L/s SWPUMP= 0.0 L/s SWCODE=0

*
PRINT HYD ID=1 PCODE=1 MODE=10
*
* Sum hydr. 108, 1106, call result 1107
*
ADD HYD ID=3 HYD NO= 1107 IDA=1 IDB=2 ICODE=0
*
PRINT HYD ID=3 PCODE=1 MODE=10
*
* Route flows from 1107 through small wetland storage area
*
ROUTE RESERVOIR ID=1 HYD NO=5108 INFLOW=3 PCODE=0 OPTION=5
      OUTFLOW STORAGE OUTFLOW STORAGE
      CMS HA-M CMS HA-M
      0.0 0.0 0.003 0.010
      0.005 0.030 5.000 0.200

*
PRINT HYD ID=1 PCODE=1 MODE=10
*
COMPUTE RATING CURVE ID=6 VS= 9.000 NSEGS=3
      MIN EL= 294.25 MAX EL= 297.00
      CHNSLP= 0.03500 FLNSLP= 0.03500
      N= 0.080 DIST= 95.70
      N=-0.035 DIST= 99.50
      N= 0.080 DIST= 130.00
      DIST ELEV DIST ELEV DIST ELEV
      70.00 297.00 78.00 296.00 94.00 295.00
      95.70 294.40 97.60 294.25 99.50 294.40
      100.00 295.00 115.00 296.00 130.00 297.00
      RFN=0.0000 PCODE=1

*
* Route through reach 2108
* Using Valley Section 9.000 As channel Rating Curve
*
ROUTE CHANNEL ID=3 HYD NO= 2108 INFLOW=1 LENGTH= 600 m SLOPE=0.03500
      RCID=6 NS=1 PCODE=1 INDEX=1 PIPE=0 CANOPY= 75.0%
```

```
*
*      5% Main channel Parabolic Swale
*
COMPUTE RATING CURVE ID=6 VS= 100.050 NSEGS=3
      MIN EL= 100.70 MAX EL= 103.00
      CHNSLP= 0.05000 FLNSLP= 0.050000
      N= 0.080 DIST= 20.00
      N=-0.050 DIST= 30.00
      N= 0.080 DIST= 50.00
      DIST ELEV DIST ELEV DIST ELEV
      0.00 103.00 20.00 101.00 23.00 100.80
      25.00 100.70 27.00 100.80 30.00 101.00
      50.00 103.00
      RFN=0.0000 PCODE=1

* Catchment 109
* VS= 100.050 is main channel & VS= 2.050 is off-channel
*
COMPUTE FLOWRATE ID=2 NHD= 109 AREA= 0.1252 Sq km L= 600 m W= 100 m
      SOIL ZONE I II III IV V VI VII VIII IX
      5.0 0.0 0.0 0.0 15.0 0.0 80.0 0.0 0.0
      RATING CURVES: IDMC=6 IDOC=2 GRMC= 0.05 QROC= 0.01
      ROUTING MODEL=2 CONSTANTS: OVERLAND FTB= 3.0 TLO= 0.0
      SUBSURFACE: KSS= 5.0 KGW= 384 h PCODE=1 WQPCODE=1
      RBASIN=0 IDA=0 IDB=0 IDC=0 IDD=0 RBDUMP=0
      GWFACT=0.00 GWON=1
      SWQTH= 0.0 L/s SWPUMP= 0.0 L/s SWCODE=0

*
PRINT HYD ID=2 PCODE=1 MODE=10
*
* Sum hydr. 109, 2108, call result 1108
*
ADD HYD ID=1 HYD NO= 1108 IDA=3 IDB=2 ICODE=0
*
PRINT HYD ID=1 PCODE=1 MODE=10
*
* Catchment 110
* VS= 100.050 is main channel & VS= 2.050 is off-channel
*
COMPUTE FLOWRATE ID=2 NHD= 110 AREA= 0.0201 Sq km L= 60 m W= 60 m
      SOIL ZONE I II III IV V VI VII VIII IX
      0.0 0.0 0.0 0.0 0.0 100.0 0.0 0.0 0.0
      RATING CURVES: IDMC=6 IDOC=2 GRMC= 0.05 QROC= 0.01
      ROUTING MODEL=2 CONSTANTS: OVERLAND FTB= 2.0 TLO= 0.0
      SUBSURFACE: KSS= 5.0 KGW= 384 h PCODE=1 WQPCODE=1
      RBASIN=0 IDA=0 IDB=0 IDC=0 IDD=0 RBDUMP=0
      GWFACT=1.00 GWON=1
      SWQTH= 0.0 L/s SWPUMP= 0.0 L/s SWCODE=0

*
PRINT HYD ID=2 PCODE=1 MODE=10
*
* Sum hydr. 110, 1108, call result 1109
*
ADD HYD ID=3 HYD NO= 1109 IDA=2 IDB=1 ICODE=0
*
PRINT HYD ID=3 PCODE=1 MODE=10
*
* Catchment 10% Typical off-channel (Steep areas)
*
COMPUTE RATING CURVE ID=5 VS= 2.100 NSEGS=3
      MIN EL= 100.00 MAX EL= 100.80
      CHNSLP= 0.10000 FLNSLP= 0.10000
      N= 0.350 DIST= 24.45
```

```

N=-0.150 DIST= 25.55
N= 0.350 DIST= 50.00
DIST ELEV DIST ELEV DIST ELEV
0.00 100.80 24.45 100.30 24.75 100.00
25.50 100.00 25.55 100.30 50.00 100.80
RFN=0.0000 PCODE=1
    
```

*
 * Catchment 111
 * VS= 100.050 is main channel & VS= 1.10 is off-channel
 *

```

COMPUTE FLOWRATE ID=1 NHD= 111 AREA= 0.0498 Sq km L= 10 m W= 250 m
SOIL ZONE I II III IV V VI VII VIII IX
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 100.0 0.0
RATING CURVES: IDMC=6 IDOC=5 QRCM= 0.05 QROC= 0.01
ROUTING MODEL=2 CONSTANTS: OVERLAND FTB= 2.0 TLO= 0.0
SUBSURFACE: KSS= 5.0 KGW= 384 h PCODE=1 WQPCODE=1
RBASIN=0 IDA=0 IDB=0 IDC=0 IDD=0 RBDUMP=0
GWFACT=1.00 GWON=1
SWQTH= 0.0 L/s SWPUMP= 0.0 L/s SWCODE=0
    
```

*
 PRINT HYD ID=1 PCODE=1 MODE=10
 *
 * Sum hydr. 111, 1109, call result 1110
 *

```

ADD HYD ID=2 HYD NO= 1110 IDA=1 IDB=3 ICODE=0
    
```

*
 * Cruickston Creek at Blair Road
 *

```

PRINT HYD ID=2 PCODE=1 MODE=10
KEEP HYD ID=2 CUTOFF=24 ICODE=5 ISTEP=1 IFORM=0 IDB=2 IMET=1
    
```

```

COMPUTE RATING CURVE ID=5 VS= 7.000 NSEGS=3
MIN EL= 279.10 MAX EL= 281.00
CHNSLP= 0.01500 FLNSLP= 0.01700
N= 0.080 DIST= 98.95
N=-0.035 DIST= 100.95
N= 0.080 DIST= 165.00
DIST ELEV c DIST ELEV DIST ELEV
40.00 281.00 60.00 280.00 98.95 279.50
100.00 279.10 100.95 279.50 125.00 280.00
165.00 281.00
RFN=0.0000 PCODE=1
    
```

*
 * Route through reach 2110
 * Using Valley Section 7.000 As channel Rating Curve
 *

```

ROUTE CHANNEL ID=5 HYD NO= 2110 INFLOW=2 LENGTH= 800 m SLOPE=0.01600
RCID=5 NS=1 PCODE=1 INDEX=1 PIPE=0 CANOPY= 50.0%
    
```

```

PRINT HYD ID=5 PCODE=1 MODE=10
KEEP HYD ID=5 CUTOFF=24 ICODE=5 ISTEP=1 IFORM=0 IDB=5 IMET=1
NEW DUMP OUTPUT MODE=10 ID=5 IOPT=4 FTYPE=0
    
```

*

 * BARRIE'S LAKE
 *

*
 *
 *
 * 2% Typical Main channel Parabolic Swale
 *

```

COMPUTE RATING CURVE ID=1 VS= 100.020 NSEGS=3
    
```

```

MIN EL= 100.70 MAX EL= 103.00
CHNSLP= 0.02000 FLNSLP= 0.02000
N= 0.080 DIST= 20.00
N=-0.050 DIST= 30.00
N= 0.080 DIST= 50.00
DIST ELEV DIST ELEV DIST ELEV
0.00 103.00 20.00 101.00 23.00 100.80
25.00 100.70 27.00 100.80 30.00 101.00
50.00 103.00
RFN=0.0000 PCODE=1
    
```

*
 * 3.5% Typical Main channel Parabolic Swale
 *

```

COMPUTE RATING CURVE ID=2 VS= 100.035 NSEGS=3
MIN EL= 100.70 MAX EL= 103.00
CHNSLP= 0.03500 FLNSLP= 0.03500
N= 0.080 DIST= 20.00
N=-0.050 DIST= 30.00
N= 0.080 DIST= 50.00
DIST ELEV DIST ELEV DIST ELEV
0.00 103.00 20.00 101.00 23.00 100.80
25.00 100.70 27.00 100.80 30.00 101.00
50.00 103.00
RFN=0.0000 PCODE=1
    
```

*
 * Catchment 2% Typical off-channel (Steep areas)
 *

```

COMPUTE RATING CURVE ID=3 VS= 2.020 NSEGS=3
MIN EL= 100.00 MAX EL= 100.80
CHNSLP= 0.02000 FLNSLP= 0.02000
N= 0.350 DIST= 24.45
N=-0.150 DIST= 25.55
N= 0.350 DIST= 50.00
DIST ELEV DIST ELEV DIST ELEV
0.00 100.80 24.45 100.30 24.75 100.00
25.50 100.00 25.55 100.30 50.00 100.80
RFN=0.0000 PCODE=1
    
```

*
 * 3.5% Typical off-channel (Steep areas)
 *

```

COMPUTE RATING CURVE ID=4 VS= 2.035 NSEGS=3
MIN EL= 100.00 MAX EL= 100.80
CHNSLP= 0.03500 FLNSLP= 0.03500
N= 0.350 DIST= 24.45
N=-0.150 DIST= 25.55
N= 0.350 DIST= 50.00
DIST ELEV DIST ELEV DIST ELEV
0.00 100.80 24.45 100.30 24.75 100.00
25.50 100.00 25.55 100.30 50.00 100.80
RFN=0.0000 PCODE=1
    
```

*
 * 10% Typical Main channel Parabolic Swale
 *

```

COMPUTE RATING CURVE ID=5 VS= 100.100 NSEGS=3
MIN EL= 100.70 MAX EL= 103.00
CHNSLP= 0.10000 FLNSLP= 0.10000
N= 0.080 DIST= 20.00
N=-0.050 DIST= 30.00
N= 0.080 DIST= 50.00
DIST ELEV DIST ELEV DIST ELEV
0.00 103.00 20.00 101.00 23.00 100.80
25.00 100.70 27.00 100.80 30.00 101.00
    
```

```

50.00 103.00
RFN=0.0000 PCODE=1
*
* Catchment 10% Typical off-channel (Steep areas)
*
COMPUTE RATING CURVE ID=6 VS= 2.100 NSEGS=3
MIN EL= 100.00 MAX EL= 100.80
CHNSLP= 0.10000 FLNSLP= 0.10000
N= 0.350 DIST= 24.45
N=-0.150 DIST= 25.55
N= 0.350 DIST= 50.00
DIST ELEV DIST ELEV DIST ELEV
0.00 100.80 24.45 100.30 24.75 100.00
25.50 100.00 25.55 100.30 50.00 100.80
RFN=0.0000 PCODE=1
*
* Catchment 305
* VS= 100.020 is main channel & VS= 2.020 is off-channel
*
COMPUTE FLOWRATE ID=5 NHD= 305 AREA= 0.0015 Sq km L= 80 m W= 80 m
SOIL ZONE I II III IV V VI VII VIII IX
0.0 0.0 0.0 9.4 0.0 0.0 0.0 90.6 0.0
RATING CURVES: IDMC=1 IDOC=3 QRC= 0.05 QROC= 0.01
ROUTING MODEL=2 CONSTANTS: OVERLAND FTB= 2.0 TLO= 0.0
SUBSURFACE: KSS= 5.0 KGW= 384 h PCODE=1 WQPCODE=1
RBASIN=0 IDA=0 IDB=0 IDC=0 IDD=0 RBDUMP=0
GWFACT=1.00 GWON=1
SWQTH= 0.0 L/s SWPUMP= 0.0 L/s SWCODE=0
*
PRINT HYD ID=5 PCODE=1 MODE=10
*
* Typical Roof section
*
COMPUTE RATING CURVE ID=5 VS= 101.000 NSEGS=3
MIN EL= 295.00 MAX EL= 295.70
CHNSLP= 0.2500 FLNSLP= 0.2500
N= 0.018 DIST= 100.00
N=-0.018 DIST= 400.00
N= 0.018 DIST= 500.00
DIST ELEV DIST ELEV DIST ELEV
0.00 295.70 100.00 295.50 100.10 295.00
399.90 295.00 400.00 295.50 500.00 295.70
RFN=0.0000 PCODE=1
*
* Typical Urban section
*
COMPUTE RATING CURVE ID=6 VS= 3.200 NSEGS=3
MIN EL= 295.00 MAX EL= 295.70
CHNSLP= 0.02000 FLNSLP= 0.02000
N= 0.015 DIST= 200.00
N=-0.015 DIST= 300.00
N= 0.015 DIST= 500.00
DIST ELEV DIST ELEV DIST ELEV
0.00 295.70 200.00 295.50 200.10 295.00
299.90 295.00 300.00 295.50 500.00 295.70
*
*
* Roof areas within 709, hydrograph 9709
* VS=101.000 MC, VS=3.200 OC
*
```

```

COMPUTE FLOWRATE ID=1 NHD= 9709 AREA= 0.0064 Sq km L= 20 m W= 10 m
SOIL ZONE I II III IV V VI VII VIII IX
100.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
RATING CURVES: IDMC=6 IDOC=5 QRC= 0.50 QROC= 0.25
ROUTING MODEL=2 CONSTANTS: OVERLAND FTB= 1.2 TLO= 0.0
SUBSURFACE: KSS= 5.0 KGW= 384 h PCODE=1 WQPCODE=1
RBASIN=0 IDA=0 IDB=0 IDC=0 IDD=0 RBDUMP=0
GWFACT=1.0 GWON=1
SWQTH= 0.0 L/s SWPUMP= 0.0 L/s SWCODE=0
*
* Roof infiltration gallery within 709; hydrograph 8709
*
ROUTE SPECIAL POND ID=2 HYD NO=8709 INFLOW=1 PCODE=0 OPTION= 5
Inflow controls:
USPCT=100% USDIV=0 PCTA= 0% ADIV=0
GWPCT= 0% GWDIV=0
Maximum level for Routing Tables: ZMAX= 101.100
Recharge characteristics for Compartment A
LEVELA= 100.000 EVAPA= 0.0 mm/d ACODE=0
CDA= 0.000 mm/h DZA= 10.00 m
Recharge characteristics for Compartment B
LEVELB= 100.000 CCBA= 0.00000 EVAPB= 0.0 mm/d BCODE=1
CDB= 15.000 mm/h DZB= 10.00 m
Irrigation Pond Controls: IPOND=0
Number of points= 3
Compartment A Compartment B
Elevation Outflow Storage SFArea Outflow Storage SFArea
(m) (cms) (ha*m) (ha) (cms) (ha*m) (ha)
100.000 0.000 0.0000 0.0000 0.000 0.0000 0.0399
101.000 0.000 0.0000 0.0000 0.000 0.0160 0.0399
101.100 0.000 0.0000 0.0000 1.000 0.0175 0.0399
*
PRINT HYD ID=2 PCODE=1 MODE=10
*
* Area of 709 to conveyance infiltration system, hydrograph 6709
*
COMPUTE FLOWRATE ID=1 NHD= 6709 AREA= 0.0230 Sq km L= 120 m W= 120 m
SOIL ZONE I II III IV V VI VII VIII IX
42.9 0.0 0.0 8.8 0.0 0.2 0.0 48.1 0.0
RATING CURVES: IDMC=6 IDOC=6 QRC= 0.50 QROC= 0.25
ROUTING MODEL=2 CONSTANTS: OVERLAND FTB= 1.2 TLO= 0.0
SUBSURFACE: KSS= 5.0 KGW= 384 h PCODE=1 WQPCODE=1
RBASIN=0 IDA=0 IDB=0 IDC=0 IDD=0 RBDUMP=0
GWFACT=1.0 GWON=1
SWQTH= 0.0 L/s SWPUMP= 0.0 L/s SWCODE=0
*
PRINT HYD ID=1 PCODE=1 MODE=10
*
* Route 6709 through reservoir 4709 - conveyance infiltration system
*
ROUTE SPECIAL POND ID=3 HYD NO=4709 INFLOW=1 PCODE=0 OPTION= 5
Inflow controls:
USPCT=100% USDIV=0 PCTA= 0% ADIV=0
GWPCT= 0% GWDIV=0
Maximum level for Routing Tables: ZMAX= 101.100
Recharge characteristics for Compartment A
LEVELA= 100.000 EVAPA= 0.0 mm/d ACODE=0
CDA= 0.000 mm/h DZA= 23.00 m
Recharge characteristics for Compartment B
LEVELB= 100.000 CCBA= 0.00000 EVAPB= 0.0 mm/d BCODE=1
CDB= 15.000 mm/h DZB= 10.00 m
Irrigation Pond Controls: IPOND=0
```

```
Number of points= 3
      Compartment A      Compartment B
Elevation Outflow Storage SFArea Outflow Storage SFArea
(m) (cms) (ha*m) (ha) (cms) (ha*m) (ha)
100.000 0.000 0.0000 0.0000 0.000 0.0000 0.0385
101.000 0.000 0.0000 0.0000 0.000 0.0275 0.0385
101.100 0.000 0.0000 0.0000 1.000 0.0315 0.0385
*
PRINT HYD ID=3 PCODE=1 MODE=10
*
*
* Remainder of catchment 709, hydr. 7709
*
COMPUTE FLOWRATE ID=1 NHD= 7709 AREA= 0.0082 Sq km L= 120 m W= 120 m
SOIL ZONE I II III IV V VI VII VIII IX
42.9 0.0 0.0 8.8 0.0 0.2 0.0 48.1 0.0
RATING CURVES: IDMC=6 IDOC=6 QRCM= 0.50 QROC= 0.25
ROUTING MODEL=2 CONSTANTS: OVERLAND FTB= 1.2 TLO= 0.0
SUBSURFACE: KSS= 5.0 KGW= 384 h PCODE=1 WQPCODE=1
RBASIN=0 IDA=0 IDB=0 IDC=0 IDD=0 RBDUMP=0
GWFACT=1.0 GWON=1
SWQTH= 0.0 L/s SWPUMP= 0.0 L/s SWCODE=0
*
* Sum hydr. 4709, 7709, call result 7709, total non-roof area of 709
*
ADD HYD ID=4 HYD NO= 3709 IDA=3 IDB=1 ICODE=0
PRINT HYD ID=4 PCODE=1 MODE=10
*
*
* Sum components of 709 (3709, 8709), call result 709
*
ADD HYD ID=1 HYD NO= 709 IDA=2 IDB=4 ICODE=0
PRINT HYD ID=1 PCODE=1 MODE=10
*
*
*
*COMPUTE FLOWRATE ID=1 NHD= 709 AREA= 0.0371 Sq km L= 120 m W= 120 m
SOIL ZONE I II III IV V VI VII VIII IX
57.9 0.0 0.0 6.5 0.0 0.2 0.0 35.4 0.0
RATING CURVES: IDMC=6 IDOC=6 QRCM= 0.50 QROC= 0.25
ROUTING MODEL=2 CONSTANTS: OVERLAND FTB= 1.2 TLO= 0.0
SUBSURFACE: KSS= 5.0 KGW= 384 h PCODE=1 WQPCODE=1
RBASIN=0 IDA=0 IDB=0 IDC=0 IDD=0 RBDUMP=0
GWFACT=1.0 GWON=1
SWQTH= 0.0 L/s SWPUMP= 0.0 L/s SWCODE=0
*
*PRINT HYD ID=1 PCODE=1 MODE=10
*
*
* Sum hydr. 305 and 709, call result 1709
*
ADD HYD ID=2 HYD NO= 1709 IDA=5 IDB=1 ICODE=0
PRINT HYD ID=2 PCODE=1 MODE=10
*
* Roof areas within 704, hydrograph 9704
* VS=101.000 MC, VS=3.200 OC
*
COMPUTE FLOWRATE ID=1 NHD= 9704 AREA= 0.0053 Sq km L= 20 m W= 10 m
SOIL ZONE I II III IV V VI VII VIII IX
100.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
RATING CURVES: IDMC=6 IDOC=5 QRCM= 0.50 QROC= 0.25
```

```
ROUTING MODEL=2 CONSTANTS: OVERLAND FTB= 1.2 TLO= 0.0
SUBSURFACE: KSS= 5.0 KGW= 384 h PCODE=1 WQPCODE=1
RBASIN=0 IDA=0 IDB=0 IDC=0 IDD=0 RBDUMP=0
GWFACT=1.0 GWON=1
SWQTH= 0.0 L/s SWPUMP= 0.0 L/s SWCODE=0
*
* Roof infiltration gallery within 704; hydrograph 8704
*
ROUTE SPECIAL POND ID=3 HYD NO=8704 INFLOW=1 PCODE=0 OPTION= 5
Inflow controls:
USPCT=100% USDIV=0 PCTA= 0% ADIV=0
GWPCT= 0% GWDIV=0
Maximum level for Routing Tables: ZMAX= 101.100
Recharge characteristics for Compartment A
LEVELA= 100.000 EVAPA= 0.0 mm/d ACODE=0
CDA= 0.000 mm/h DZA= 10.00 m
Recharge characteristics for Compartment B
LEVELB= 100.000 CCBA= 0.00000 EVAPB= 0.0 mm/d BCODE=1
CDB= 15.000 mm/h DZB= 10.00 m
Irrigation Pond Controls: IPOND=0
Number of points= 3
      Compartment A      Compartment B
Elevation Outflow Storage SFArea Outflow Str orage SFArea
(m) (cms) (ha*m) (ha) (cms) (ha*m) (ha)
100.000 0.000 0.0000 0.0000 0.000 0.0000 0.0332
101.000 0.000 0.0000 0.0000 0.000 0.0133 0.0332
101.100 0.000 0.0000 0.0000 1.000 0.0146 0.0332
*
PRINT HYD ID=3 PCODE=1 MODE=10
*
*
* Area of 704 to conveyance infiltration system, hydrograph 6704
*
COMPUTE FLOWRATE ID=6 NHD= 6704 AREA= 0.0170 Sq km L= 100 m W= 100 m
SOIL ZONE I II III IV V VI VII VIII IX
50.3 0.0 0.0 7.7 0.0 0.2 0.0 41.9 0.0
RATING CURVES: IDMC=6 IDOC=6 QRCM= 0.50 QROC= 0.25
ROUTING MODEL=2 CONSTANTS: OVERLAND FTB= 1.2 TLO= 0.0
SUBSURFACE: KSS= 5.0 KGW= 384 h PCODE=1 WQPCODE=1
RBASIN=0 IDA=0 IDB=0 IDC=0 IDD=0 RBDUMP=0
GWFACT=1.0 GWON=1
SWQTH= 0.0 L/s SWPUMP= 0.0 L/s SWCODE=0
*
PRINT HYD ID=6 PCODE=1 MODE=10
*
* Route 6704 through reservoir 4704 - conveyance infiltration system
*
ROUTE SPECIAL POND ID=5 HYD NO=4704 INFLOW=6 PCODE=0 OPTION= 5
Inflow controls:
USPCT=100% USDIV=0 PCTA= 0% ADIV=0
GWPCT= 0% GWDIV=0
Maximum level for Routing Tables: ZMAX= 101.100
Recharge characteristics for Compartment A
LEVELA= 100.000 EVAPA= 0.0 mm/d ACODE=0
CDA= 0.000 mm/h DZA= 23.00 m
Recharge characteristics for Compartment B
LEVELB= 100.000 CCBA= 0.00000 EVAPB= 0.0 mm/d BCODE=1
CDB= 15.000 mm/h DZB= 10.00 m
Irrigation Pond Controls: IPOND=0
Number of points= 3
      Compartment A      Compartment B
Elevation Outflow Storage SFArea Outflow Storage SFArea
```

	(m)	(cms)	(ha*m)	(ha)	(cms)	(ha*m)	(ha)
100.000	0.000	0.0000	0.0000	0.000	0.0000	0.0260	
101.000	0.000	0.0000	0.0000	0.000	0.0185	0.0260	
101.100	0.000	0.0000	0.0000	1.000	0.0210	0.0260	

*
PRINT HYD ID=5 PCODE=1 MODE=10
*

*
* Remainder of catchment 704, hydr. 7704
*

* VS=3.200 MC, VS=3.200 OC
*

COMPUTE FLOWRATE ID=6 NHD= 7704 AREA= 0.0115 Sq km L= 165 m W= 165 m
SOIL ZONE I II III IV V VI VII VIII IX
50.3 0.0 0.0 7.7 0.0 0.2 0.0 41.9 0.0
RATING CURVES: IDMC=6 IDOC=6 QRCM= 0.50 QROC= 0.25
ROUTING MODEL=2 CONSTANTS: OVERLAND FTB= 1.2 TLO= 0.0
SUBSURFACE: KSS= 5.0 KGW= 384 h PCODE=1 WQPCODE=1
RBASIN=0 IDA=0 IDB=0 IDC=0 IDD=0 RBDUMP=0
GWFACT=1.0 GWON=1
SWQTH= 0.0 L/s SWPUMP= 0.0 L/s SWCODE=0

*
* Sum catchment 704 component hydrographs
*

ADD HYD ID=1 HYD NO= 3704 IDA=6 IDB=5 ICODE=0
PRINT HYD ID=1 PCODE=1 MODE=10
*

* Sum components of 704 (3704, 8704), call result 704
*

ADD HYD ID=4 HYD NO= 704 IDA=1 IDB=3 ICODE=0
PRINT HYD ID=4 PCODE=1 MODE=10
*

* Add catchment 704 to catchments 709 and 305, call result 1704
*

ADD HYD ID=1 HYD NO= 1704 IDA=2 IDB=4 ICODE=0
PRINT HYD ID=1 PCODE=1 MODE=10
*

* SWM Facility 1 (Southwest SWM Facility)

* Route 1704 through reservoir 5704

* Revised May '18 to allow Regional Water Station to remain adjacent to SWM Block

* Revised Mar '19
*

ROUTE SPECIAL POND ID=2 HYD NO=5704 INFLOW=1 PCODE=0 OPTION=15
Inflow controls:
USPCT=100% USDIV=0 PCTA= 0% ADIV=0
GWPCT= 0% GWDIV=0
Maximum level for Routing Tables: ZMAX= 310.700
Recharge characteristics for Compartment A
LEVELA= 309.600 EVAPA= 0.0 mm/d ACODE=0
CDA= 0.000 mm/h DZA= 10.00 m
Recharge characteristics for Compartment B
LEVELB= 309.600 CCBA= 0.00000 EVAPB= 1.4 mm/d BCODE=1
CDB= 0.000 mm/h DZB= 10.00 m
Irrigation Pond Controls: IPOND=0
Number of points= 12

	Compartment A			Compartment B		
Elevation	Outflow	Storage	SFArea	Outflow	Storage	SFArea
(m)	(cms)	(ha*m)	(ha)	(cms)	(ha*m)	(ha)
309.600	0.000	0.000	0.000	0.000	0.000	0.222
309.700	0.000	0.000	0.000	0.003	0.023	0.236
309.800	0.000	0.000	0.000	0.005	0.047	0.250
309.900	0.000	0.000	0.000	0.006	0.073	0.264

310.000	0.000	0.000	0.000	0.101	0.100	0.278
310.100	0.000	0.000	0.000	0.273	0.129	0.293
310.200	0.000	0.000	0.000	0.494	0.159	0.311
310.300	0.000	0.000	0.000	0.757	0.190	0.322
310.400	0.000	0.000	0.000	1.055	0.223	0.332
310.500	0.000	0.000	0.000	1.384	0.257	0.344
310.600	0.000	0.000	0.000	1.742	0.292	0.356
310.700	0.000	0.000	0.000	2.126	0.328	0.370

*
PRINT HYD ID=2 PCODE=1 MODE=10
KEEP HYD ID=2 CUTOFF=24 ICODE=5 ISTEP=1 IFORM=0 IDB=2 IMET=1
*

* Catchment 705, uncontrolled area of Blenheim road draining to Wetland 3
*

COMPUTE FLOWRATE ID=1 NHD= 705 AREA= 0.0043 Sq km L= 60 m W= 20 m
SOIL ZONE I II III IV V VI VII VIII IX
80.0 0.0 0.0 3.1 0.0 0.1 0.0 16.8 0.0
RATING CURVES: IDMC=6 IDOC=6 QRCM= 0.50 QROC= 0.25
ROUTING MODEL=2 CONSTANTS: OVERLAND FTB= 1.2 TLO= 0.0
SUBSURFACE: KSS= 5.0 KGW= 384 h PCODE=1 WQPCODE=1
RBASIN=0 IDA=0 IDB=0 IDC=0 IDD=0 RBDUMP=0
GWFACT=1.0 GWON=1
SWQTH= 0.0 L/s SWPUMP= 0.0 L/s SWCODE=0

*
PRINT HYD ID=1 PCODE=1 MODE=10
KEEP HYD ID=1 CUTOFF=24 ICODE=5 ISTEP=1 IFORM=0 IDB=1 IMET=1
*

* Sum hydr. 5704 and 705, call result 1705
*

ADD HYD ID=4 HYD NO= 1705 IDA=2 IDB=1 ICODE=0
PRINT HYD ID=4 PCODE=1 MODE=10
*

* Catchment 402

* VS= 100.020 is main channel & VS= 2.035 is off-channel
*

COMPUTE FLOWRATE ID=1 NHD= 402 AREA= 0.0514 Sq km L= 55 m W= 270 m
SOIL ZONE I II III IV V VI VII VIII IX
7.3 0.0 0.0 30.6 0.0 0.0 0.0 62.1 0.0
RATING CURVES: IDMC=1 IDOC=4 QRCM= 0.05 QROC= 0.01
ROUTING MODEL=2 CONSTANTS: OVERLAND FTB= 2.0 TLO= 0.0
SUBSURFACE: KSS= 5.0 KGW= 384 h PCODE=1 WQPCODE=1
RBASIN=0 IDA=0 IDB=0 IDC=0 IDD=0 RBDUMP=0
GWFACT=1.00 GWON=1
SWQTH= 0.0 L/s SWPUMP= 0.0 L/s SWCODE=0

*
PRINT HYD ID=1 PCODE=1 MODE=10
*

* Sum hydr. 1705, 402, call result 1401
*

ADD HYD ID=3 HYD NO= 1401 IDA=4 IDB=1 ICODE=0
PRINT HYD ID=3 PCODE=1 MODE=10
*

* 5% Typical Main channel Parabolic Swale
*

COMPUTE RATING CURVE ID=5 VS= 100.050 NSEGS=3
MIN EL= 100.70 MAX EL= 103.00
CHNSLP= 0.05000 FLNSLP= 0.05000
N= 0.080 DIST= 20.00
N=-0.050 DIST= 30.00
N= 0.080 DIST= 50.00

DIST	ELEV	DIST	ELEV	DIST	ELEV
0.00	103.00	20.00	101.00	23.00	100.80

25.00 100.70 27.00 100.80 30.00 101.00
50.00 103.00
RFN=0.0000 PCODE=1

*
* Catchment 5% Typical off-channel (Steep areas)
*

COMPUTE RATING CURVE ID=6 VS= 2.050 NSEGS=3
MIN EL= 100.00 MAX EL= 100.80
CHNSLP= 0.05000 FLNSLP= 0.05000
N= 0.350 DIST= 24.45
N=-0.150 DIST= 25.55
N= 0.350 DIST= 50.00
DIST ELEV DIST ELEV DIST ELEV
0.00 100.80 24.45 100.30 24.75 100.00
25.50 100.00 25.55 100.30 50.00 100.80
RFN=0.0000 PCODE=1

*
* Catchment 403
* HRU was 1.0 41.0 18.7 8.8 0.0 0.0 0.0 30.5 0.0
* VS= 100.050 is main channel & VS= 2.050 is off-channel
*

COMPUTE FLOWRATE ID=1 NHD= 403 AREA= 0.1073 Sq km L= 140 m W= 180 m
SOIL ZONE I II III IV V VI VII VIII IX
1.0 26.0 33.7 8.8 0.0 0.0 0.0 30.5 0.0
RATING CURVES: IDMC=5 IDOC=6 GRMC= 0.05 QROC= 0.01
ROUTING MODEL=2 CONSTANTS: OVERLAND FTB= 5.0 TLO= 0.0
SUBSURFACE: KSS= 5.0 KGW= 384 h PCODE=1 WQPCODE=1
RBASIN=0 IDA=0 IDB=0 IDC=0 IDD=0 RBDUMP=0
GWFACT=1.00 GWON=1
SWQTH= 0.0 L/s SWPUMP= 0.0 L/s SWCODE=0

*
PRINT HYD ID=1 PCODE=1 MODE=10

*
* Sum hydr. 1401, 403, call result 1402
*

ADD HYD ID=2 HYD NO= 1402 IDA=1 IDB=3 ICODE=0

*
PRINT HYD ID=2 PCODE=1 MODE=10

*
* Route flows from 1402 through a depression
* Revised Sept 27/17 to include storage down to 307.9 to match monitored data
*

ROUTE SPECIAL POND ID=6 HYD NO=5403 INFLOW=2 PCODE=0 OPTION=15
Inflow controls:
USPCT=100% USDIV=0 PCTA= 0% ADIV=0
GWPCT= 0% GWDIV=0
Maximum level for Routing Tables: ZMAX= 309.500
Recharge characteristics for Compartment A
LEVELA= 307.900 EVAPA= 0.0 mm/d ACODE=0
CDA= 0.000 mm/h DZA= 23.00 m
Recharge characteristics for Compartment B
LEVELB= 307.900 CCBA= 0.00000 EVAPB= 1.4 mm/d BCODE=1
CDB= 4.000 mm/h DZB= 10.00 m
Irrigation Pond Controls: IPOND=0
Number of points= 7

Compartment A				Compartment B			
Elevation	Outflow	Storage	SFArea	Outflow	Storage	SFArea	
(m)	(cms)	(ha*m)	(ha)	(cms)	(ha*m)	(ha)	
307.900	0.000	0.000	0.000	0.000	0.000	0.745	
308.200	0.000	0.000	0.000	0.000	0.235	0.824	
308.500	0.000	0.000	0.000	0.000	0.986	4.184	
309.000	0.000	0.000	0.000	0.000	3.497	5.859	

309.200 0.000 0.000 0.000 0.000 4.673 5.902
309.400 0.000 0.000 0.000 0.000 6.726 7.784
309.500 0.000 0.000 0.000 5.000 6.726 7.784

*
PRINT HYD ID=6 PCODE=1 MODE=10

*
* Catchment 405
* VS= 100.020 is main channel & VS= 2.020 is off-channel
*

COMPUTE FLOWRATE ID=1 NHD= 405 AREA= 0.0966 Sq km L= 230 m W= 210 m
SOIL ZONE I II III IV V VI VII VIII IX
1.0 0.0 0.0 19.8 0.0 0.0 0.0 79.2 0.0
RATING CURVES: IDMC=1 IDOC=3 GRMC= 0.05 QROC= 0.01
ROUTING MODEL=2 CONSTANTS: OVERLAND FTB= 3.0 TLO= 0.0
SUBSURFACE: KSS= 5.0 KGW= 384 h PCODE=1 WQPCODE=1
RBASIN=0 IDA=0 IDB=0 IDC=0 IDD=0 RBDUMP=0
GWFACT=1.00 GWON=1
SWQTH= 0.0 L/s SWPUMP= 0.0 L/s SWCODE=0

*
* Route flows from 405 through a depression
*

ROUTE SPECIAL POND ID=2 HYD NO=5405 INFLOW=1 PCODE=0 OPTION=15
Inflow controls:
USPCT=100% USDIV=0 PCTA= 0% ADIV=0
GWPCT= 0% GWDIV=0
Maximum level for Routing Tables: ZMAX= 315.000
Recharge characteristics for Compartment A
LEVELA= 313.600 EVAPA= 0.0 mm/d ACODE=0
CDA= 0.000 mm/h DZA= 23.00 m
Recharge characteristics for Compartment B
LEVELB= 313.600 CCBA= 0.00000 EVAPB= 1.4 mm/d BCODE=1
CDB= 25.000 mm/h DZB= 10.00 m
Irrigation Pond Controls: IPOND=0
Number of points= 9

Compartment A				Compartment B			
Elevation	Outflow	Storage	SFArea	Outflow	Storage	SFArea	
(m)	(cms)	(ha*m)	(ha)	(cms)	(ha*m)	(ha)	
313.600	0.000	0.000	0.000	0.000	0.000	0.001	
313.700	0.000	0.000	0.000	0.000	0.002	0.042	
313.800	0.000	0.000	0.000	0.000	0.012	0.159	
313.900	0.000	0.000	0.000	0.000	0.034	0.275	
314.000	0.000	0.000	0.000	0.000	0.068	0.400	
314.200	0.000	0.000	0.000	0.000	0.173	0.657	
314.400	0.000	0.000	0.000	0.000	0.347	1.079	
314.700	0.000	0.000	0.000	0.000	0.778	1.793	
315.000	0.000	0.000	0.000	5.000	1.430	2.554	

*
PRINT HYD ID=2 PCODE=1 MODE=10

*
* Catchment 406
* VS= 100.020 is main channel & VS= 2.035 is off-channel
*

COMPUTE FLOWRATE ID=1 NHD= 406 AREA= 0.093 Sq km L= 180 m W= 275 m
SOIL ZONE I II III IV V VI VII VIII IX
0.0 0.0 0.0 15.0 0.0 0.0 0.0 85.0 0.0
RATING CURVES: IDMC=1 IDOC=4 GRMC= 0.05 QROC= 0.01
ROUTING MODEL=2 CONSTANTS: OVERLAND FTB= 3.0 TLO= 0.0
SUBSURFACE: KSS= 5.0 KGW= 384 h PCODE=1 WQPCODE=1
RBASIN=0 IDA=0 IDB=0 IDC=0 IDD=0 RBDUMP=0
GWFACT=1.00 GWON=1
SWQTH= 0.0 L/s SWPUMP= 0.0 L/s SWCODE=0

*

* Sum hydr. 5405, 406, call result 1403
*
ADD HYD ID=3 HYD NO= 1403 IDA=1 IDB=2 ICODE=0
*
* Route flows from 1403 through a depression
*
ROUTE SPECIAL POND ID=1 HYD NO=5406 INFLOW=3 PCODE=0 OPTION=15
Inflow controls:
USPCT=100% USDIV=0 PCTA= 0% ADIV=0
GWPCT= 0% GWDIV=0
Maximum level for Routing Tables: ZMAX= 101.000
Recharge characteristics for Compartment A
LEVELA= 98.800 EVAPA= 0.0 mm/d ACODE=0
CDA= 0.000 mm/h DZA= 23.00 m
Recharge characteristics for Compartment B
LEVELB= 98.800 CCBA= 0.00000 EVAPB= 1.4 mm/d BCODE=1
CDB= 25.000 mm/h DZB= 10.00 m
Irrigation Pond Controls: IPOND=0
Number of points= 4

Compartment A		Compartment B	
Elevation	Outflow Storage	SFArea	Outflow Storage
(m)	(cms)	(ha*m)	(ha)
98.800	0.000	0.000	0.000
100.000	0.000	0.000	0.000
100.500	0.000	0.000	0.000
101.000	0.000	0.000	0.000

PRINT HYD ID=1 PCODE=1 MODE=10
*
* Typical Roof section
*
COMPUTE RATING CURVE ID=5 VS= 101.000 NSEGS=3
MIN EL= 295.00 MAX EL= 295.70
CHNSLP= 0.2500 FLNSLP= 0.2500
N= 0.018 DIST= 100.00
N=-0.018 DIST= 400.00
N= 0.018 DIST= 500.00

DIST	ELEV	DIST	ELEV	DIST	ELEV
0.00	295.70	100.00	295.50	100.10	295.00
399.90	295.00	400.00	295.50	500.00	295.70

RFN=0.0000 PCODE=1
*
* Typical Urban section
*
COMPUTE RATING CURVE ID=6 VS= 3.200 NSEGS=3
MIN EL= 295.00 MAX EL= 295.70
CHNSLP= 0.02000 FLNSLP= 0.02000
N= 0.015 DIST= 200.00
N=-0.015 DIST= 300.00
N= 0.015 DIST= 500.00

DIST	ELEV	DIST	ELEV	DIST	ELEV
0.00	295.70	200.00	295.50	200.10	295.00
299.90	295.00	300.00	295.50	500.00	295.70

*
* Roof areas within 712, hydrograph 7120
* VS=101.000 MC, VS=3.200 OC
*
COMPUTE FLOWRATE ID=2 NHD= 7120 AREA= 0.0095 Sq km L= 20 m W= 10 m
SOIL ZONE I II III IV V VI VII VIII IX
100.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
RATING CURVES: IDMC=6 IDOC=5 QRMG= 0.50 QROC= 0.25
ROUTING MODEL=2 CONSTANTS: OVERLAND FTB= 1.2 TLO= 0.0

SUBSURFACE: KSS= 5.0 KGW= 384 h PCODE=1 WQPCODE=1
RBASIN=0 IDA=0 IDB=0 IDC=0 IDD=0 RBDUMP=0
GWFACT=1.0 GWON=1
SWQTH= 0.0 L/s SWPUMP= 0.0 L/s SWCODE=0
*
PRINT HYD ID=2 PCODE=1 MODE=10
*
* Catchment 404
* VS= 100.020 is main channel & VS= 2.020 is off-channel
*
COMPUTE FLOWRATE ID=3 NHD= 404 AREA= 0.0523 Sq km L= 50 m W= 70 m
SOIL ZONE I II III IV V VI VII VIII IX
0.0 0.0 0.0 30.0 0.0 0.0 0.0 70.0 0.0
RATING CURVES: IDMC=1 IDOC=3 QRMG= 0.05 QROC= 0.01
ROUTING MODEL=2 CONSTANTS: OVERLAND FTB= 3.0 TLO= 0.0
SUBSURFACE: KSS= 5.0 KGW= 384 h PCODE=1 WQPCODE=1
RBASIN=0 IDA=0 IDB=0 IDC=0 IDD=0 RBDUMP=0
GWFACT=1.0 GWON=1
SWQTH= 0.0 L/s SWPUMP= 0.0 L/s SWCODE=0
*
PRINT HYD ID=3 PCODE=1 MODE=10
*
* Sum hydr. 7120, 404, call result 1712
*
ADD HYD ID=4 HYD NO= 1712 IDA=2 IDB=3 ICODE=0
PRINT HYD ID=4 PCODE=1 MODE=10
*
* Sum hydr. 5406, 1712, call result 1404
*
ADD HYD ID=3 HYD NO= 1404 IDA=1 IDB=4 ICODE=0
PRINT HYD ID=3 PCODE=1 MODE=10
*
* Catchment 407
* VS= 100.035 is main channel & VS= 2.035 is off-channel
*
COMPUTE FLOWRATE ID=1 NHD= 407 AREA= 0.2555 Sq km L= 100 m W= 100 m
SOIL ZONE I II III IV V VI VII VIII IX
0.5 30.0 14.9 14.9 0.0 0.0 0.0 9.2 30.5
RATING CURVES: IDMC=2 IDOC=4 QRMG= 0.05 QROC= 0.01
ROUTING MODEL=2 CONSTANTS: OVERLAND FTB= 5.0 TLO= 0.0
SUBSURFACE: KSS= 5.0 KGW= 384 h PCODE=1 WQPCODE=1
RBASIN=0 IDA=0 IDB=0 IDC=0 IDD=0 RBDUMP=0
GWFACT=1.0 GWON=1
SWQTH= 0.0 L/s SWPUMP= 0.0 L/s SWCODE=0
*
PRINT HYD ID=1 PCODE=1 MODE=10
*
* Sum hydr. 1404, 407, call result 1405
*
ADD HYD ID=2 HYD NO= 1405 IDA=1 IDB=3 ICODE=0
*
PRINT HYD ID=2 PCODE=1 MODE=10
*
* WETLAND 4 SURFACE RUNOFF WATER BALANCE POINT OF ASSESSMENT (1405)
*
* Route flows from 1405 through a depression (Wetland 4/5)
*
*
ROUTE SPECIAL POND ID=1 HYD NO=5407 INFLOW=2 PCODE=0 OPTION=15
Inflow controls:
USPCT=100% USDIV=0 PCTA= 0% ADIV=0
GWPCT= 0% GWDIV=0

Maximum level for Routing Tables: ZMAX= 309.300
Recharge characteristics for Compartment A
LEVELA= 308.800 EVAPA= 0.0 mm/d ACODE=0
CDA= 0.000 mm/h DZA= 23.00 m
Recharge characteristics for Compartment B
LEVELB= 308.800 CCBA= 0.00000 EVAPB= 1.4 mm/d BCODE=1
CDB= 4.000 mm/h DZB= 10.00 m
Irrigation Pond Controls: IPOND=0
Number of points= 4

	Compartment A			Compartment B		
Elevation (m)	Outflow (cms)	Storage (ha*m)	SFArea (ha)	Outflow (cms)	Storage (ha*m)	SFArea (ha)
308.800	0.000	0.000	0.000	0.000	0.000	3.600
309.000	0.000	0.000	0.000	0.000	0.953	5.932
309.200	0.000	0.000	0.000	0.000	2.292	7.459
309.300	0.000	0.000	0.000	5.000	2.750	8.225

*
PRINT HYD ID=1 PCODE=1 MODE=10
*
* Sum hydr. 5403, 5407, call result 1406
*
ADD HYD ID=2 HYD NO= 1406 IDA=1 IDB=6 ICODE=0
*
PRINT HYD ID=2 PCODE=1 MODE=10
*
* Route flows from 1406 through a depression
*
ROUTE SPECIAL POND ID=6 HYD NO=5437 INFLOW=2 PCODE=0 OPTION=15

Inflow controls:
USPCT=100% USDIV=0 PCTA= 0% ADIV=0
GWPCT= 0% GWDIV=0
Maximum level for Routing Tables: ZMAX= 310.900
Recharge characteristics for Compartment A
LEVELA= 309.200 EVAPA= 0.0 mm/d ACODE=0
CDA= 0.000 mm/h DZA= 23.00 m
Recharge characteristics for Compartment B
LEVELB= 309.200 CCBA= 0.00000 EVAPB= 1.4 mm/d BCODE=1
CDB= 4.000 mm/h DZB= 10.00 m
Irrigation Pond Controls: IPOND=0
Number of points= 6

	Compartment A			Compartment B		
Elevation (m)	Outflow (cms)	Storage (ha*m)	SFArea (ha)	Outflow (cms)	Storage (ha*m)	SFArea (ha)
309.200	0.000	0.000	0.000	0.000	0.000	13.36
309.500	0.000	0.000	0.000	0.000	4.501	16.65
310.000	0.000	0.000	0.000	0.000	14.54	23.50
310.500	0.000	0.000	0.000	0.000	27.30	27.54
310.800	0.000	0.000	0.000	0.000	35.96	30.21
310.900	0.000	0.000	0.000	5.000	36.50	31.99

*
PRINT HYD ID=6 PCODE=1 MODE=10
*
* Typical Roof section
*
COMPUTE RATING CURVE ID=5 VS= 101.000 NSEGS=3

MIN EL=	295.00	MAX EL=	295.70
CHNSLP=	0.2500	FLNSLP=	0.2500
N=	0.018	DIST=	100.00
N=-	0.018	DIST=	400.00
N=	0.018	DIST=	500.00
DIST	ELEV	DIST	ELEV
0.00	295.70	100.00	295.50
		100.10	295.00

399.90 295.00 400.00 295.50 500.00 295.70
RFN=0.0000 PCODE=1

*
* Typical Urban section
*
COMPUTE RATING CURVE ID=6 VS= 3.200 NSEGS=3
MIN EL= 295.00 MAX EL= 295.70
CHNSLP= 0.02000 FLNSLP= 0.02000
N= 0.015 DIST= 200.00
N=-0.015 DIST= 300.00
N= 0.015 DIST= 500.00
DIST ELEV DIST ELEV DIST ELEV
0.00 295.70 200.00 295.50 200.10 295.00
299.90 295.00 300.00 295.50 500.00 295.70
*
* Roof (NOT rear yard areas and buffer areas) from 709 to Barrie's Lake
*
COMPUTE FLOWRATE ID=4 NHD= 7090 AREA= 0.0070 Sq km L= 20 m W= 10 m
SOIL ZONE I II III IV V VI VII VIII IX
100.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
RATING CURVES: IDMC=6 IDOC=5 QRC= 0.50 QROC= 0.25
ROUTING MODEL=2 CONSTANTS: OVERLAND FTB= 1.2 TLO= 0.0
SUBSURFACE: KSS= 5.0 KGW= 384 h PCODE=1 WQPCODE=1
RBASIN=0 IDA=0 IDB=0 IDC=0 IDD=0 RBDUMP=0
GWFACT=1.0 GWON=1
SWQTH= 0.0 L/s SWPUMP= 0.0 L/s SWCODE=0
*
PRINT HYD ID=4 PCODE=1 MODE=10
*
* Sum hydr. 5437 and 7090, call result 7091
*
ADD HYD ID=5 HYD NO= 7091 IDA=6 IDB=4 ICODE=0
PRINT HYD ID=5 PCODE=1 MODE=10
*
* Catchment 10% Typical off-channel (Steep areas)
*
COMPUTE RATING CURVE ID=5 VS= 2.100 NSEGS=3
MIN EL= 100.00 MAX EL= 100.80
CHNSLP= 0.10000 FLNSLP= 0.10000
N= 0.350 DIST= 24.45
N=-0.150 DIST= 25.55
N= 0.350 DIST= 50.00
DIST ELEV DIST ELEV DIST ELEV
0.00 100.80 24.45 100.30 24.75 100.00
25.50 100.00 25.55 100.30 50.00 100.80
RFN=0.0000 PCODE=1

*
* Catchment 408
* VS= 100.020 is main channel & VS= 2.100 is off-channel
*
COMPUTE FLOWRATE ID=1 NHD= 408 AREA= 0.0148 Sq km L= 50 m W= 120 m
SOIL ZONE I II III IV V VI VII VIII IX
3.0 0.0 0.0 9.7 0.0 0.0 0.0 87.3 0.0
RATING CURVES: IDMC=1 IDOC=5 QRC= 0.05 QROC= 0.01
ROUTING MODEL=2 CONSTANTS: OVERLAND FTB= 3.0 TLO= 0.0
SUBSURFACE: KSS= 5.0 KGW= 384 h PCODE=1 WQPCODE=1
RBASIN=0 IDA=0 IDB=0 IDC=0 IDD=0 RBDUMP=0
GWFACT=1.00 GWON=1
SWQTH= 0.0 L/s SWPUMP= 0.0 L/s SWCODE=0
*
PRINT HYD ID=1 PCODE=1 MODE=10
*

* Catchment 5% Typical off-channel (Steep areas)
*
COMPUTE RATING CURVE ID=6 VS= 2.050 NSEGS=3
MIN EL= 100.00 MAX EL= 100.80
CHNSLP= 0.05000 FLNSLP= 0.05000
N= 0.350 DIST= 24.45
N=-0.150 DIST= 25.55
N= 0.350 DIST= 50.00
DIST ELEV DIST ELEV DIST ELEV
0.00 100.80 24.45 100.30 24.75 100.00
25.50 100.00 25.55 100.30 50.00 100.80
RFN=0.0000 PCODE=1

*
* Catchment 409
* VS= 100.035 is main channel & VS= 2.050 is off-channel
*
COMPUTE FLOWRATE ID=2 NHD= 409 AREA= 0.884 Sq km L= 300 m W= 200 m
SOIL ZONE I II III IV V VI VII VIII IX
3.0 28.0 0.0 0.0 5.8 0.0 24.9 0.0 38.3
RATING CURVES: IDMC=2 IDOC=6 GRMC= 0.05 QROC= 0.01
ROUTING MODEL=2 CONSTANTS: OVERLAND FTB= 4.0 TLO= 0.0
SUBSURFACE: KSS= 5.0 KGW= 384 h PCODE=1 WQPCODE=1
RBASIN=0 IDA=0 IDB=0 IDC=0 IDD=0 RBDUMP=0
GWFACT=1.00 GWON=1
SWQTH= 0.0 L/s SWPUMP= 0.0 L/s SWCODE=0

*
PRINT HYD ID=2 PCODE=1 MODE=10
*
* Sum hydr. 408, 409, call result 1407
*
ADD HYD ID=3 HYD NQ= 1407 IDA=1 IDB=2 ICODE=0
*
PRINT HYD ID=3 PCODE=1 MODE=10
*
* Sum hydr. 1407, 7091, call result 1408
*
ADD HYD ID=1 HYD NQ= 1408 IDA=3 IDB=5 ICODE=0
*
PRINT HYD ID=1 PCODE=1 MODE=10
*
* Route flows from 1408 through Barrie's Lake
*
ROUTE SPECIAL POND ID=2 HYD NQ=5409 INFLOW=1 PCODE=0 OPTION=15
Inflow controls:
USPCT=100% USDIV=0 PCTA= 0% ADIV=0
GWPCT= 0% GWDIV=0
Maximum level for Routing Tables: ZMAX= 310.500
Recharge characteristics for Compartment A
LEVELA= 308.500 EVAPA= 0.0 mm/d ACODE=0
CDA= 0.000 mm/h DZA= 23.00 m
Recharge characteristics for Compartment B
LEVELB= 308.500 CCBA= 0.00000 EVAPB= 1.4 mm/d BCODE=1
CDB= 4.000 mm/h DZB= 10.00 m
Irrigation Pond Controls: IPOND=0
Number of points= 3

Compartment A Compartment B
Elevation Outflow Storage SFArea Outflow Storage SFArea
(m) (cms) (ha*m) (ha) (cms) (ha*m) (ha)
308.500 0.000 0.000 0.000 0.000 0.000 27.00
309.500 0.000 0.000 0.000 0.000 28.50 30.00
310.500 0.000 0.000 0.000 0.000 61.50 36.00

*

PRINT HYD ID=2 PCODE=1 MODE=10
*

* NEWMAN CREEK
*
*
* 2.0% Typical off-channel (Steep areas)
*
COMPUTE RATING CURVE ID=1 VS= 2.020 NSEGS=3
MIN EL= 100.00 MAX EL= 100.80
CHNSLP= 0.02000 FLNSLP= 0.02000
N= 0.350 DIST= 24.45
N=-0.150 DIST= 25.55
N= 0.350 DIST= 50.00
DIST ELEV DIST ELEV DIST ELEV
0.00 100.80 24.45 100.30 24.75 100.00
25.50 100.00 25.55 100.30 50.00 100.80
RFN=0.0000 PCODE=1

*
* 10.0% Typical off-channel (Steep areas)
*
COMPUTE RATING CURVE ID=2 VS= 2.100 NSEGS=3
MIN EL= 100.00 MAX EL= 100.80
CHNSLP= 0.10000 FLNSLP= 0.10000
N= 0.350 DIST= 24.45
N=-0.150 DIST= 25.55
N= 0.350 DIST= 50.00
DIST ELEV DIST ELEV DIST ELEV
0.00 100.80 24.45 100.30 24.75 100.00
25.50 100.00 25.55 100.30 50.00 100.80
RFN=0.0000 PCODE=1

*
* 1.0% Typical Main channel Parabolic Swale
*
COMPUTE RATING CURVE ID=3 VS= 100.010 NSEGS=3
MIN EL= 100.70 MAX EL= 103.00
CHNSLP= 0.01000 FLNSLP= 0.01000
N= 0.080 DIST= 20.00
N=-0.050 DIST= 30.00
N= 0.080 DIST= 50.00
DIST ELEV DIST ELEV DIST ELEV
0.00 103.00 20.00 101.00 23.00 100.80
25.00 100.70 27.00 100.80 30.00 101.00
50.00 103.00
RFN=0.0000 PCODE=1

*
* Typical Urban section
*
COMPUTE RATING CURVE ID=5 VS= 3.200 NSEGS=3
MIN EL= 295.00 MAX EL= 295.70
CHNSLP= 0.01000 FLNSLP= 0.01000
N= 0.015 DIST= 200.00
N=-0.015 DIST= 300.00
N= 0.015 DIST= 500.00
DIST ELEV DIST ELEV DIST ELEV
0.00 295.70 200.00 295.50 200.10 295.00
299.90 295.00 300.00 295.50 500.00 295.70

*
* Typical Urban section
*

COMPUTE RATING CURVE ID=6 VS= 3.200 NSEGS=3
MIN EL= 295.00 MAX EL= 295.70
CHNSLP= 0.02000 FLNSLP= 0.02000
N= 0.015 DIST= 200.00
N= 0.015 DIST= 300.00
N= 0.015 DIST= 500.00
DIST ELEV DIST ELEV DIST ELEV
0.00 295.70 200.00 295.50 200.10 295.00
299.90 295.00 300.00 295.50 500.00 295.70

*
* Catchment 201
* VS= 100.010 is main channel & VS= 2.020 is off-channel
*

COMPUTE FLOWRATE ID=3 NHD= 201 AREA= 0.0639 Sq km L= 260 m W= 245 m
SOIL ZONE I II III IV V VI VII VIII IX
44.0 2.6 0.0 0.0 0.0 0.0 0.0 0.0 53.2 0.0
RATING CURVES: IDMC=5 IDOC=6 QRC= 0.5 QROC= 0.05
ROUTING MODEL=2 CONSTANTS: OVERLAND FTB= 1.2 TLO= 0.0
SUBSURFACE: KSS= 5.0 KGW= 384 h PCODE=1 WQPCODE=1
RBASIN=0 IDA=0 IDB=0 IDC=0 IDD=0 RBDUMP=0
GWFACT=1.0 GWON=1
SWQTH= 0.0 L/s SWPUMP= 0.0 L/s SWCODE=0

PRINT HYD ID=3 PCODE=1 MODE=10

*
* Typical Roof section
*

COMPUTE RATING CURVE ID=5 VS= 101.000 NSEGS=3
MIN EL= 295.00 MAX EL= 295.70
CHNSLP= 0.2500 FLNSLP= 0.2500
N= 0.018 DIST= 100.00
N= 0.018 DIST= 400.00
N= 0.018 DIST= 500.00
DIST ELEV DIST ELEV DIST ELEV
0.00 295.70 100.00 295.50 100.10 295.00
399.90 295.00 400.00 295.50 500.00 295.70
RFN=0.0000 PCODE=1

*
***** Cambridge West Area to Newman Pond *****

*
* Roof areas within 710
*

COMPUTE FLOWRATE ID=1 NHD= 9710 AREA= 0.0186 Sq km L= 20 m W= 10 m
SOIL ZONE I II III IV V VI VII VIII IX
100.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
RATING CURVES: IDMC=6 IDOC=5 QRC= 0.50 QROC= 0.25
ROUTING MODEL=2 CONSTANTS: OVERLAND FTB= 1.2 TLO= 0.0
SUBSURFACE: KSS= 5.0 KGW= 384 h PCODE=1 WQPCODE=1
RBASIN=0 IDA=0 IDB=0 IDC=0 IDD=0 RBDUMP=0
GWFACT=1.0 GWON=1
SWQTH= 0.0 L/s SWPUMP= 0.0 L/s SWCODE=0

*
* Route 9710 through reservoir 8710
*

ROUTE SPECIAL POND ID=2 HYD NO=8710 INFLOW=1 PCODE=0 OPTION= 5
Inflow controls:
USPCT=100% USDIV=0 PCTA= 0% ADIV=0
GWPCT= 0% GWDIV=0
Maximum level for Routing Tables: ZMAX= 101.100
Recharge characteristics for Compartment A
LEVELA= 100.000 EVAPA= 0.0 mm/d ACODE=0
CDA= 0.000 mm/h DZA= 10.00 m

Recharge characteristics for Compartment B
LEVELB= 100.000 CCBA= 0.00000 EVAPB= 0.0 mm/d BCODE=1
CDB= 15.000 mm/h DZB= 10.00 m
Irrigation Pond Controls: IPOND=0
Number of points= 3

Compartment A				Compartment B			
Elevation (m)	Outflow (cms)	Storage (ha*m)	SFArea (ha)	Outflow (cms)	Storage (ha*m)	SFArea (ha)	
100.000	0.000	0.0000	0.0000	0.000	0.0000	0.1161	
101.000	0.000	0.0000	0.0000	0.000	0.0464	0.1161	
101.100	0.000	0.0000	0.0000	1.000	0.0511	0.1161	

*
* Remaining area within 710
*

COMPUTE FLOWRATE ID=1 NHD= 7710 AREA= 0.0478 Sq km L= 60 m W= 230 m
SOIL ZONE I II III IV V VI VII VIII IX
43.1 0.0 0.0 8.8 0.0 0.2 0.0 47.9 0.0
RATING CURVES: IDMC=6 IDOC=6 QRC= 0.50 QROC= 0.25
ROUTING MODEL=2 CONSTANTS: OVERLAND FTB= 1.2 TLO= 0.0
SUBSURFACE: KSS= 5.0 KGW= 384 h PCODE=1 WQPCODE=1
RBASIN=0 IDA=0 IDB=0 IDC=0 IDD=0 RBDUMP=0
GWFACT=1.0 GWON=1
SWQTH= 0.0 L/s SWPUMP= 0.0 L/s SWCODE=0

*
ADD HYD ID=4 HYD NO= 710 IDA=2 IDB=1 ICODE=0

*
PRINT HYD ID=4 PCODE=1 MODE=10

*
* Add 710 to 201
*

ADD HYD ID=1 HYD NO= 0010 IDA=3 IDB=4 ICODE=0

*
* Roof areas within 711
*

COMPUTE FLOWRATE ID=2 NHD= 9711 AREA= 0.0051 Sq km L= 20 m W= 10 m
SOIL ZONE I II III IV V VI VII VIII IX
100.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
RATING CURVES: IDMC=6 IDOC=5 QRC= 0.50 QROC= 0.25
ROUTING MODEL=2 CONSTANTS: OVERLAND FTB= 1.2 TLO= 0.0
SUBSURFACE: KSS= 5.0 KGW= 384 h PCODE=1 WQPCODE=1
RBASIN=0 IDA=0 IDB=0 IDC=0 IDD=0 RBDUMP=0
GWFACT=0.0 GWON=1
SWQTH= 0.0 L/s SWPUMP= 0.0 L/s SWCODE=0

*
* Route 9711 through reservoir 8711
*

ROUTE SPECIAL POND ID=3 HYD NO=8711 INFLOW=2 PCODE=0 OPTION= 5
Inflow controls:
USPCT=100% USDIV=0 PCTA= 0% ADIV=0
GWPCT= 0% GWDIV=0
Maximum level for Routing Tables: ZMAX= 101.100
Recharge characteristics for Compartment A
LEVELA= 100.000 EVAPA= 0.0 mm/d ACODE=0
CDA= 0.000 mm/h DZA= 23.00 m
Recharge characteristics for Compartment B
LEVELB= 100.000 CCBA= 0.00000 EVAPB= 0.0 mm/d BCODE=1
CDB= 15.000 mm/h DZB= 10.00 m
Irrigation Pond Controls: IPOND=0
Number of points= 3

Compartment A				Compartment B			
Elevation (m)	Outflow (cms)	Storage (ha*m)	SFArea (ha)	Outflow (cms)	Storage (ha*m)	SFArea (ha)	

100.000 0.000 0.0000 0.0000 0.000 0.0000 0.0316
 101.000 0.000 0.0000 0.0000 0.000 0.0126 0.0316
 101.100 0.000 0.0000 0.0000 1.000 0.0139 0.0316

*
 * Remaining area within 711

COMPUTE FLOWRATE ID=2 NHD= 7711 AREA= 0.0209 Sq km L= 60 m W= 100 m
 SOIL ZONE I II III IV V VI VII VIII IX
 38.2 0.0 0.0 9.6 0.0 0.2 0.0 52.0 0.0
 RATING CURVES: IDMC=6 IDOC=6 QRC= 0.50 QROC= 0.25
 ROUTING MODEL=2 CONSTANTS: OVERLAND FTB= 1.2 TLO= 0.0
 SUBSURFACE: KSS= 5.0 KGW= 384 h PCODE=1 WQPCODE=1
 RBASIN=0 IDA=0 IDB=0 IDC=0 IDD=0 RBDUMP=0
 GWFACT=0.0 GWON=1
 SWQTH= 0.0 L/s SWPUMP= 0.0 L/s SWCODE=0

*
 ADD HYD ID=4 HYD NO= 711 IDA=3 IDB=2 ICODE=0

*
 PRINT HYD ID=4 PCODE=1 MODE=10

*
 * Add 711 to 710 & 210

*
 ADD HYD ID=3 HYD NO= 2200 IDA=1 IDB=4 ICODE=0

*
 PRINT HYD ID=3 PCODE=1 MODE=10

*
 ***** End Cambridge West Area to Newman Pond *****

*
 * Route flows from 201 through existing Grandview Hills SWM Facility (Newman)

*
 ROUTE SPECIAL POND ID=2 HYD NO=5201 INFLOW=3 PCODE=0 OPTION=15
 Inflow controls:
 USPCT=100% USDIV=0 PCTA= 0% ADIV=0
 GWPCT= 0% GWDIV=0
 Maximum level for Routing Tables: ZMAX= 306.200
 Recharge characteristics for Compartment A
 LEVELA= 304.000 EVAPA= 0.0 mm/d ACODE=0
 CDA= 0.000 mm/h DZA= 23.00 m
 Recharge characteristics for Compartment B
 LEVELB= 304.000 CCBA= 0.00000 EVAPB= 1.4 mm/d BCODE=1
 CDB= 0.000 mm/h DZB= 10.00 m
 Irrigation Pond Controls: IPOND=0
 Number of points= 12

Elevation (m)	Compartment A			Compartment B		
	Outflow (cms)	Storage (ha*m)	SFArea (ha)	Outflow (cms)	Storage (ha*m)	SFArea (ha)
304.000	0.000	0.000	0.000	0.000	0.000	0.290
304.200	0.000	0.000	0.000	0.005	0.043	0.290
304.400	0.000	0.000	0.000	0.007	0.090	0.290
304.600	0.000	0.000	0.000	0.009	0.150	0.290
304.800	0.000	0.000	0.000	0.011	0.227	0.290
305.000	0.000	0.000	0.000	0.012	0.316	0.290
305.200	0.000	0.000	0.000	0.013	0.411	0.290
305.400	0.000	0.000	0.000	0.014	0.515	0.290
305.600	0.000	0.000	0.000	0.015	0.626	0.290
305.800	0.000	0.000	0.000	0.205	0.746	0.290
306.000	0.000	0.000	0.000	0.581	0.874	0.290
306.200	0.000	0.000	0.000	0.639	1.012	0.290

*
 *
 PRINT HYD ID=2 PCODE=1 MODE=10
 KEEP HYD ID=2 CUTOFF=24 ICODE=5 ISTEP=1 IFORM=0 IDB=2 IMET=1

NEW DUMP OUTPUT MODE=10 ID=2 IOPT=4 FTYPE=0

*
 COMPUTE RATING CURVE ID=4 VS= 6.000 NSEGS=3
 MIN EL= 298.40 MAX EL= 300.00
 CHNSLP= 0.06600 FLNSLP= 0.07400
 N= 0.080 DIST= 98.90
 N=-0.035 DIST= 101.10
 N= 0.080 DIST= 125.00
 DIST ELEV DIST ELEV DIST ELEV
 75.00 300.00 85.00 299.50 95.00 299.00
 98.90 298.90 99.30 298.40 100.70 298.40
 101.10 298.90 105.00 299.00 115.00 299.50
 125.00 300.00
 RFN=0.0000 PCODE=1

*
 * Route through reach 2201
 * Using Valley Section 6.0 As channel Rating Curve

*
 ROUTE CHANNEL ID=1 HYD NO= 2201 INFLOW=2 LENGTH= 350 m SLOPE=0.07
 RCID=4 NS=1 PCODE=1 INDEX=1 PIPE=0 CANOPY= 75.0%

*
 * 0.5% Typical Main channel Parabolic Swale

*
 COMPUTE RATING CURVE ID=4 VS= 100.005 NSEGS=3
 MIN EL= 100.70 MAX EL= 103.00
 CHNSLP= 0.00500 FLNSLP= 0.00500
 N= 0.080 DIST= 20.00
 N=-0.050 DIST= 30.00
 N= 0.080 DIST= 50.00
 DIST ELEV DIST ELEV DIST ELEV
 0.00 103.00 20.00 101.00 23.00 100.80
 25.00 100.70 27.00 100.80 30.00 101.00
 50.00 103.00
 RFN=0.0000 PCODE=1

*
 * Catchment 202
 * VS= 100.005 is main channel & VS= 2.100 is off-channel

*
 COMPUTE FLOWRATE ID=2 NHD= 202 AREA= 0.1043 Sq km L= 400 m W= 200 m
 SOIL ZONE I II III IV V VI VII VIII IX
 0.0 0.0 0.0 0.0 30.0 0.0 50.0 0.0 20.0
 RATING CURVES: IDMC=4 IDOC=2 QRC= 0.05 QROC= 0.01
 ROUTING MODEL=2 CONSTANTS: OVERLAND FTB= 3.0 TLO= 0.0
 SUBSURFACE: KSS= 5.0 KGW= 384 h PCODE=1 WQPCODE=1
 RBASIN=0 IDA=0 IDB=0 IDC=0 IDD=0 RBDUMP=0
 GWFACT=0.00 GWON=1
 SWQTH= 0.0 L/s SWPUMP= 0.0 L/s SWCODE=0

*
 PRINT HYD ID=2 PCODE=1 MODE=10

*
 * Sum hydr. 2201, 202, call result 1201

*
 ADD HYD ID=3 HYD NO= 1201 IDA=1 IDB=2 ICODE=0

*
 * 5.0% Main channel Parabolic Swale

*
 COMPUTE RATING CURVE ID=4 VS= 100.050 NSEGS=3
 MIN EL= 100.70 MAX EL= 103.00
 CHNSLP= 0.05000 FLNSLP= 0.05000
 N= 0.080 DIST= 20.00
 N=-0.050 DIST= 30.00
 N= 0.080 DIST= 50.00

```

      DIST      ELEV      DIST      ELEV      DIST      ELEV
      0.00    103.00    20.00    101.00    23.00    100.80
      25.00    100.70    27.00    100.80    30.00    101.00
      50.00    103.00
      RFN=0.0000 PCODE=1

*
* Catchment 203
* VS= 100.050 is main channel & VS= 2.100 is off-channel
*
COMPUTE FLOWRATE ID=1 NHD= 203 AREA= 0.0368 Sq km L= 380 m W= 100 m
      SOIL ZONE I II III IV V VI VII VIII IX
      0.0 0.0 0.0 0.0 0.0 100.0 0.0 0.0 0.0
      RATING CURVES: IDMC=4 IDOC=2 QRCM= 0.05 QROC= 0.01
      ROUTING MODEL=2 CONSTANTS: OVERLAND FTB= 2.0 TLO= 0.0
      SUBSURFACE: KSS= 5.0 KGW= 384 h PCODE=1 WQPCODE=1
      RBASIN=0 IDA=0 IDB=0 IDC=0 IDD=0 RBDUMP=0
      GWFACT=0.00 GWON=1
      SWQTH= 0.0 L/s SWPUMP= 0.0 L/s SWCODE=0

*
PRINT HYD ID=1 PCODE=1 MODE=10
*
* Sum hydr. 1201, 203, call result 1202
*
ADD HYD ID=2 HYD NO= 1202 IDA=3 IDB=1 ICODE=0
*
* Newman Creek at Blair Road
*
PRINT HYD ID=2 PCODE=1 MODE=10
*
COMPUTE RATING CURVE ID=4 VS= 5.000 NSEGS=3
      MIN EL= 277.20 MAX EL= 280.00
      CHNSLP= 0.02500 FLNSLP= 0.02700
      N= 0.080 DIST= 98.95
      N=-0.035 DIST= 100.95
      N= 0.080 DIST= 165.00
      DIST ELEV DIST ELEV DIST ELEV
      85.00 280.00 95.00 278.00 98.00 277.50
      100.00 277.20 102.00 277.50 105.00 278.00
      115.00 280.00
      RFN=0.0000 PCODE=1

*
* Route through reach 2202
* Using Valley Section 5.0 as channel Rating Curve
*
ROUTE CHANNEL ID=1 HYD NO= 2202 INFLOW=2 LENGTH= 520 m SLOPE=0.025
      RCID=4 NS=1 PCODE=1 INDEX=1 PIPE=0 CANOPY= 75.0%

*
* 1% Off-channel (Flat areas)
*
COMPUTE RATING CURVE ID=4 VS= 1.010 NSEGS=3
      MIN EL= 100.00 MAX EL= 100.60
      CHNSLP= 0.01000 FLNSLP= 0.01000
      N= 0.350 DIST= 39.15
      N=-0.150 DIST= 40.85
      N= 0.350 DIST= 80.00
      DIST ELEV DIST ELEV DIST ELEV
      0.00 100.60 39.15 100.20 39.75 100.00
      40.25 100.00 40.85 100.20 80.00 100.60
      RFN=0.0000 PCODE=1

*
* Catchment 204
* VS= 100.010 is main channel & VS= 2.010 is off-channel
```

```

*
COMPUTE FLOWRATE ID=2 NHD= 204 AREA= 0.0453 Sq km L= 200 m W= 115 m
      SOIL ZONE I II III IV V VI VII VIII IX
      0.0 0.0 0.0 10.0 0.0 50.0 0.0 40.0 0.0
      RATING CURVES: IDMC=3 IDOC=4 QRCM= 0.05 QROC= 0.01
      ROUTING MODEL=2 CONSTANTS: OVERLAND FTB= 2.0 TLO= 0.0
      SUBSURFACE: KSS= 5.0 KGW= 384 h PCODE=1 WQPCODE=1
      RBASIN=0 IDA=0 IDB=0 IDC=0 IDD=0 RBDUMP=0
      GWFACT=0.00 GWON=1
      SWQTH= 0.0 L/s SWPUMP= 0.0 L/s SWCODE=0

*
PRINT HYD ID=2 PCODE=1 MODE=10
*
* Sum 204, 2202, call result 1203
*
ADD HYD ID=3 HYD NO= 1203 IDA=1 IDB=2 ICODE=0
*
* 2% off-channel (Steep areas)
*
COMPUTE RATING CURVE ID=4 VS= 2.020 NSEGS=3
      MIN EL= 100.00 MAX EL= 100.80
      CHNSLP= 0.02000 FLNSLP= 0.02000
      N= 0.350 DIST= 24.45
      N=-0.150 DIST= 25.55
      N= 0.350 DIST= 50.00
      DIST ELEV DIST ELEV DIST ELEV
      0.00 100.80 24.45 100.30 24.75 100.00
      25.50 100.00 25.55 100.30 50.00 100.80
      RFN=0.0000 PCODE=1

*
* 2.0% Main channel Parabolic Swale
*
COMPUTE RATING CURVE ID=5 VS= 100.020 NSEGS=3
      MIN EL= 100.70 MAX EL= 103.00
      CHNSLP= 0.02000 FLNSLP= 0.02000
      N= 0.080 DIST= 20.00
      N=-0.050 DIST= 30.00
      N= 0.080 DIST= 50.00
      DIST ELEV DIST ELEV DIST ELEV
      0.00 103.00 20.00 101.00 23.00 100.80
      25.00 100.70 27.00 100.80 30.00 101.00
      50.00 103.00
      RFN=0.0000 PCODE=1

*
* Catchment 205
* VS= 100.020 is main channel & VS= 2.020 is off-channel
*
COMPUTE FLOWRATE ID=1 NHD= 205 AREA= 0.07 Sq km L= 500 m W= 140 m
      SOIL ZONE I II III IV V VI VII VIII IX
      0.0 0.0 35.0 0.0 0.0 0.0 65.0 0.0 0.0
      RATING CURVES: IDMC=5 IDOC=4 QRCM= 0.05 QROC= 0.01
      ROUTING MODEL=2 CONSTANTS: OVERLAND FTB= 5.0 TLO= 0.0
      SUBSURFACE: KSS= 5.0 KGW= 384 h PCODE=1 WQPCODE=1
      RBASIN=0 IDA=0 IDB=0 IDC=0 IDD=0 RBDUMP=0
      GWFACT=0.00 GWON=1
      SWQTH= 0.0 L/s SWPUMP= 0.0 L/s SWCODE=0

*
PRINT HYD ID=1 PCODE=1 MODE=10
*
* Sum 205, 1203, call result 1204
*
ADD HYD ID=2 HYD NO= 1204 IDA=3 IDB=1 ICODE=0
```

```
*
* NEWMAN CREEK AT GRAND RIVER
*
PRINT HYD          ID=2 PCODE=1 MODE=10
*
*****
* DEVIL'S CREEK
*
*
* 2% Typical off-channel (Steep areas)
*
COMPUTE RATING CURVE ID=1 VS=      2.020  NSEGS=3
MIN EL= 100.00  MAX EL= 100.80
CHNSLP= 0.02000  FLNSLP= 0.02000
N= 0.350  DIST= 24.45
N=-0.150  DIST= 25.55
N= 0.350  DIST= 50.00
DIST      ELEV      DIST      ELEV      DIST      ELEV
0.00 100.80 24.45 100.30 24.75 100.00
25.50 100.00 25.55 100.30 50.00 100.80
RFN=0.0000 PCODE=1
*
* 3.5% Typical off-channel (Steep areas)
*
COMPUTE RATING CURVE ID=2 VS=      2.035  NSEGS=3
MIN EL= 100.00  MAX EL= 100.80
CHNSLP= 0.03500  FLNSLP= 0.03500
N= 0.350  DIST= 24.45
N=-0.150  DIST= 25.55
N= 0.350  DIST= 50.00
DIST      ELEV      DIST      ELEV      DIST      ELEV
0.00 100.80 24.45 100.30 24.75 100.00
25.50 100.00 25.55 100.30 50.00 100.80
RFN=0.0000 PCODE=1
*
* 10.0% Typical off-channel (Steep areas)
*
COMPUTE RATING CURVE ID=3 VS=      2.100  NSEGS=3
MIN EL= 100.00  MAX EL= 100.80
CHNSLP= 0.10000  FLNSLP= 0.10000
N= 0.350  DIST= 24.45
N=-0.150  DIST= 25.55
N= 0.350  DIST= 50.00
DIST      ELEV      DIST      ELEV      DIST      ELEV
0.00 100.80 24.45 100.30 24.75 100.00
25.50 100.00 25.55 100.30 50.00 100.80
RFN=0.0000 PCODE=1
*
* 1.0% Typical Main channel Parabolic Swale
*
COMPUTE RATING CURVE ID=4 VS= 100.010  NSEGS=3
MIN EL= 100.70  MAX EL= 103.00
CHNSLP= 0.01000  FLNSLP= 0.01000
N= 0.080  DIST= 20.00
N=-0.050  DIST= 30.00
N= 0.080  DIST= 50.00
DIST      ELEV      DIST      ELEV      DIST      ELEV
0.00 103.00 20.00 101.00 23.00 100.80
25.00 100.70 27.00 100.80 30.00 101.00
50.00 103.00
RFN=0.0000 PCODE=1
```

```
*
* 2.0% Typical Main channel Parabolic Swale
*
COMPUTE RATING CURVE ID=5 VS= 100.020  NSEGS=3
MIN EL= 100.70  MAX EL= 103.00
CHNSLP= 0.02000  FLNSLP= 0.02000
N= 0.080  DIST= 20.00
N=-0.050  DIST= 30.00
N= 0.080  DIST= 50.00
DIST      ELEV      DIST      ELEV      DIST      ELEV
0.00 103.00 20.00 101.00 23.00 100.80
25.00 100.70 27.00 100.80 30.00 101.00
50.00 103.00
RFN=0.0000 PCODE=1
*
* Typical Urban section
*
COMPUTE RATING CURVE ID=6 VS=      3.200  NSEGS=3
MIN EL= 295.00  MAX EL= 295.70
CHNSLP= 0.02000  FLNSLP= 0.02000
N= 0.015  DIST= 200.00
N=-0.015  DIST= 300.00
N= 0.015  DIST= 500.00
DIST      ELEV      DIST      ELEV      DIST      ELEV
0.00 295.70 200.00 295.50 200.10 295.00
299.90 295.00 300.00 295.50 500.00 295.70
*
*
* Catchment 301
* VS= 100.010 is main channel & VS= 2.020 is off-channel
*
COMPUTE FLOWRATE ID=1 NHD= 301 AREA= 0.1662 Sq km L= 350 m W= 520 m
SOIL ZONE I II III IV V VI VII VIII IX
30.0 0.0 0.0 3.5 0.0 66.5 0.0 0.0 0.0
RATING CURVES: IDMC=6 IDOC=6 GRMC= 0.50 QROC= 0.05
ROUTING MODEL=2 CONSTANTS: OVERLAND FTB= 1.2 TLO= 0.0
SUBSURFACE: KSS= 5.0 KGW= 384 h PCODE=1 WQPCODE=1
RBASIN=0 IDA=0 IDB=0 IDC=0 IDD=0 RBDUMP=0
GWFACT=0.00 GWON=1
SWQTH= 0.0 L/s SWPUMP= 0.0 L/s SWCODE=0
*
PRINT HYD          ID=1 PCODE=1 MODE=10
*
* Catchment 302
* VS= 100.010 is main channel & VS= 2.020 is off-channel
*
COMPUTE FLOWRATE ID=2 NHD= 302 AREA= 0.1347 Sq km L= 180 m W= 240 m
SOIL ZONE I II III IV V VI VII VIII IX
20.0 5.0 11.8 0.0 0.0 63.2 0.0 0.0 0.0
RATING CURVES: IDMC=6 IDOC=6 GRMC= 0.50 QROC= 0.05
ROUTING MODEL=2 CONSTANTS: OVERLAND FTB= 1.2 TLO= 0.0
SUBSURFACE: KSS= 5.0 KGW= 384 h PCODE=1 WQPCODE=1
RBASIN=0 IDA=0 IDB=0 IDC=0 IDD=0 RBDUMP=0
GWFACT=0.00 GWON=1
SWQTH= 0.0 L/s SWPUMP= 0.0 L/s SWCODE=0
*
PRINT HYD          ID=2 PCODE=1 MODE=10
*
* Sum hydr. 301, 302, call result 1301
*
ADD HYD            ID=3 HYD NO= 1301 IDA=1 IDB=2 ICODE=0
*
```

```
* Route flows from 1301 through the Grand Ridge Estates SWM Facility
*
ROUTE SPECIAL POND ID=1 HYD NO=5301 INFLOW=3 PCODE=0 OPTION=15
Inflow controls:
    USPCT=100% USDIV=0    PCTA= 0% ADIV=0
    GWPCT= 0% GWDIV=0
Maximum level for Routing Tables: ZMAX= 311.600
Recharge characteristics for Compartment A
    LEVELA= 309.390          EVAPA= 0.0 mm/d ACODE=0
    CDA= 0.000 mm/h DZA= 23.00 m
Recharge characteristics for Compartment B
    LEVELB= 309.390 CCBA= 0.00000 EVAPB= 1.4 mm/d BCODE=1
    CDB= 0.000 mm/h DZB= 10.00 m
Irrigation Pond Controls: IPOND=0
Number of points= 17
      Compartment A      Compartment B
Elevation Outflow Storage SFArea Outflow Storage SFArea
(m) (cms) (ha*m) (ha) (cms) (ha*m) (ha)
309.390 0.000 0.000 0.000 0.000 0.000 0.790
309.590 0.000 0.000 0.000 0.037 0.240 0.790
309.690 0.000 0.000 0.000 0.046 0.370 0.790
309.730 0.000 0.000 0.000 0.049 0.410 0.790
309.820 0.000 0.000 0.000 0.055 0.530 0.790
309.940 0.000 0.000 0.000 0.062 0.690 0.790
309.950 0.000 0.000 0.000 0.391 0.710 0.790
310.030 0.000 0.000 0.000 0.417 0.820 0.790
310.400 0.000 0.000 0.000 0.524 1.320 0.790
310.820 0.000 0.000 0.000 0.624 1.920 0.790
310.850 0.000 0.000 0.000 0.631 1.970 0.790
311.000 0.000 0.000 0.000 0.662 2.210 0.790
311.200 0.000 0.000 0.000 1.494 2.530 0.790
311.300 0.000 0.000 0.000 2.177 2.690 0.790
311.400 0.000 0.000 0.000 2.981 2.850 0.790
311.500 0.000 0.000 0.000 3.890 3.000 0.790
311.600 0.000 0.000 0.000 4.893 3.160 0.790
*
PRINT HYD ID=1 PCODE=1 MODE=10
*
* Catchment 303
* VS= 100.020 is main channel & VS= 2.020 is off-channel
*
COMPUTE FLOWRATE ID=2 NHD= 303 AREA= 0.3216 Sq km L= 300 m W= 300 m
SOIL ZONE I II III IV V VI VII VIII IX
25.0 0.0 0.0 15.0 0.0 60.0 0.0 0.0 0.0
RATING CURVES: IDMC=6 IDOC=6 QRCM= 0.50 QROC= 0.05
ROUTING MODEL=2 CONSTANTS: OVERLAND FTB= 1.2 TLO= 0.0
SUBSURFACE: KSS= 5.0 KGW= 384 h PCODE=1 WQPCODE=1
RBASIN=0 IDA=0 IDB=0 IDC=0 IDD=0 RBDUMP=0
GWFACT=0.00 GWON=1
SWQTH= 0.0 L/s SWPUMP= 0.0 L/s SWCODE=0
*
PRINT HYD ID=2 PCODE=1 MODE=10
*
* Sum hydr. 303, 5301, call result 1302
*
ADD HYD ID=3 HYD NO= 1302 IDA=1 IDB=2 ICODE=0
*
* Catchment 304
* VS= 100.035 is main channel & VS= 2.020 is off-channel
*
COMPUTE FLOWRATE ID=1 NHD= 304 AREA= 0.1193 Sq km L= 300 m W= 420 m
SOIL ZONE I II III IV V VI VII VIII IX
```

```
30.0 0.0 0.0 3.5 0.0 31.5 0.0 35.0 0.0
RATING CURVES: IDMC=6 IDOC=6 QRCM= 0.50 QROC= 0.05
ROUTING MODEL=2 CONSTANTS: OVERLAND FTB= 1.2 TLO= 0.0
SUBSURFACE: KSS= 5.0 KGW= 384 h PCODE=1 WQPCODE=1
RBASIN=0 IDA=0 IDB=0 IDC=0 IDD=0 RBDUMP=0
GWFACT=0.00 GWON=1
SWQTH= 0.0 L/s SWPUMP= 0.0 L/s SWCODE=0
*
PRINT HYD ID=1 PCODE=1 MODE=10
*
* Sum hydr. 304, 1302, call result 1303
*
ADD HYD ID=2 HYD NO= 1303 IDA=1 IDB=3 ICODE=0
*
COMPUTE RATING CURVE ID=6 VS= 1.000 NSEGS=3
MIN EL= 301.00 MAX EL= 303.00
CHNSLP= 0.01300 FLNSLP= 0.01400
N= 0.080 DIST= 97.00
N=-0.035 DIST= 103.00
N= 0.080 DIST= 140.00
DIST ELEV DIST ELEV DIST ELEV
60.00 303.00 85.00 302.50 97.00 301.50
100.00 301.00 103.00 301.50 115.00 302.50
140.00 303.00
RFN=0.0000 PCODE=1
*
* Route through reach 2303
* Using Valley Section 1.0 As channel Rating Curve
*
ROUTE CHANNEL ID=1 HYD NO= 2303 INFLOW=2 LENGTH= 900 m SLOPE=0.013
RCID=6 NS=1 PCODE=1 INDEX=1 PIPE=0 CANOPY= 90.0%
*
* Catchment 307
* VS= 100.010 is main channel & VS= 2.100 is off-channel
*
COMPUTE FLOWRATE ID=2 NHD= 307 AREA= 0.1653 Sq km L= 850 m W= 200 m
SOIL ZONE I II III IV V VI VII VIII IX
0.0 0.0 85.0 0.0 0.0 0.0 5.0 0.0 10.0
RATING CURVES: IDMC=4 IDOC=3 QRCM= 0.05 QROC= 0.01
ROUTING MODEL=2 CONSTANTS: OVERLAND FTB= 3.0 TLO= 0.0
SUBSURFACE: KSS= 5.0 KGW= 384 h PCODE=1 WQPCODE=1
RBASIN=0 IDA=0 IDB=0 IDC=0 IDD=0 RBDUMP=0
GWFACT=0.00 GWON=1
SWQTH= 0.0 L/s SWPUMP= 0.0 L/s SWCODE=0
*
PRINT HYD ID=2 PCODE=1 MODE=10
*
* Sum hydr. 307, 2303, call result 1304
*
ADD HYD ID=4 HYD NO= 1304 IDA=1 IDB=2 ICODE=0
*
REMOVE FLOW FROM GW ID=4 OPTION=2 PCODE=0 QPCT=00% KGW=384 h QSOUT= 0.004
*
PRINT HYD ID=4 PCODE=1 MODE=10
*
* Catchment 306
* VS= 100.020 is main channel & VS= 2.100 is off-channel
*
COMPUTE FLOWRATE ID=1 NHD= 306 AREA= 0.0490 Sq km L= 500 m W= 50 m
SOIL ZONE I II III IV V VI VII VIII IX
0.0 0.0 0.0 9.7 0.0 0.0 0.0 80.3 10.0
RATING CURVES: IDMC=5 IDOC=3 QRCM= 0.05 QROC= 0.01
```

```
ROUTING MODEL=2 CONSTANTS: OVERLAND FTB= 2.0 TLO= 0.0
SUBSURFACE: KSS= 5.0 KGW= 384 h PCODE=1 WQPCODE=1
RBASIN=0 IDA=0 IDB=0 IDC=0 IDD=0 RBDUMP=0
GWFACT=0.00 GWON=1
SWQTH= 0.0 L/s SWPUMP= 0.0 L/s SWCODE=0

*
PRINT HYD ID=1 PCODE=1 MODE=10
*
* Sum hydr. 306, 1304, call result 1306
*
ADD HYD ID=3 HYD NO= 1306 IDA=1 IDB=4 ICODE=0
KEEP HYD ID=3 CUTOFF=24 ICODE=5 ISTEP=1 IFORM=0 IDB=3 IMET=1
NEW DUMP OUTPUT MODE=10 ID=3 IOPT=4 FTYPE=0
*
* Devil's Creek at Blenheim Road
*
PRINT HYD ID=3 PCODE=1 MODE=10
*
* Typical Roof section
*
COMPUTE RATING CURVE ID=5 VS= 101.000 NSEGS=3
MIN EL= 295.00 MAX EL= 295.70
CHNSLP= 0.2500 FLNSLP= 0.2500
N= 0.018 DIST= 100.00
N=-0.018 DIST= 400.00
N= 0.018 DIST= 500.00
DIST ELEV DIST ELEV DIST ELEV
0.00 295.70 100.00 295.50 100.10 295.00
399.90 295.00 400.00 295.50 500.00 295.70
RFN=0.0000 PCODE=1

*
* Typical Urban section
*
COMPUTE RATING CURVE ID=6 VS= 3.200 NSEGS=3
MIN EL= 295.00 MAX EL= 295.70
CHNSLP= 0.02000 FLNSLP= 0.02000
N= 0.015 DIST= 200.00
N=-0.015 DIST= 300.00
N= 0.015 DIST= 500.00
DIST ELEV DIST ELEV DIST ELEV
0.00 295.70 200.00 295.50 200.10 295.00
299.90 295.00 300.00 295.50 500.00 295.70

*
* Roof areas within 706, hydrograph 9706
* VS=101.000 MC, VS=3.200 OC
*
COMPUTE FLOWRATE ID=1 NHD= 9706 AREA= 0.0090 Sq km L= 20 m W= 10 m
SOIL ZONE I II III IV V VI VII VIII IX
100.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
RATING CURVES: IDMC=6 IDOC=5 QRMG= 0.50 QROC= 0.25
ROUTING MODEL=2 CONSTANTS: OVERLAND FTB= 1.2 TLO= 0.0
SUBSURFACE: KSS= 5.0 KGW= 384 h PCODE=1 WQPCODE=1
RBASIN=0 IDA=0 IDB=0 IDC=0 IDD=0 RBDUMP=0
GWFACT=0.0 GWON=1
SWQTH= 0.0 L/s SWPUMP= 0.0 L/s SWCODE=0

*
* Roof infiltration gallery within 706; hydrograph 8706
*
ROUTE SPECIAL POND ID=2 HYD NO=8706 INFLOW=1 PCODE=0 OPTION= 5
Inflow controls:
USPCT=100% USDIV=0 PCTA= 0% ADIV=0
GWPCT= 0% GWDIV=0
Maximum level for Routing Tables: ZMAX= 101.100
Recharge characteristics for Compartment A
LEVELA= 100.000 EVAPA= 0.0 mm/d ACODE=0
CDA= 0.000 mm/h DZA= 10.00 m
Recharge characteristics for Compartment B
LEVELB= 100.000 CCBA= 0.00000 EVAPB= 0.0 mm/d BCODE=1
CDB= 15.000 mm/h DZB= 10.00 m
Irrigation Pond Controls: IPOND=0
Number of points= 3
Compartment A Compartment B
Elevation Outflow Storage SFArea Outflow Storage SFArea
(m) (cms) (ha*m) (ha) (cms) (ha*m) (ha)
100.000 0.000 0.0000 0.0000 0.000 0.0000 0.0137
101.000 0.000 0.0000 0.0000 0.000 0.0137 0.0137
101.100 0.000 0.0000 0.0000 1.000 0.0150 0.0137

PRINT HYD ID=4 PCODE=1 MODE=10

*
* Remainder of catchment 706, hydr. 7706
* VS=3.200 MC, VS=3.200 OC
*
COMPUTE FLOWRATE ID=5 NHD= 7706 AREA= 0.0323 Sq km L= 60 m W= 210 m
SOIL ZONE I II III IV V VI VII VIII IX
46.6 0.0 0.0 8.3 0.0 0.2 0.0 45.0 0.0
RATING CURVES: IDMC=6 IDOC=6 QRMG= 0.50 QROC= 0.25
ROUTING MODEL=2 CONSTANTS: OVERLAND FTB= 1.2 TLO= 0.0
```

```
Maximum level for Routing Tables: ZMAX= 101.100
Recharge characteristics for Compartment A
LEVELA= 100.000 EVAPA= 0.0 mm/d ACODE=0
CDA= 0.000 mm/h DZA= 10.00 m
Recharge characteristics for Compartment B
LEVELB= 100.000 CCBA= 0.00000 EVAPB= 0.0 mm/d BCODE=1
CDB= 15.000 mm/h DZB= 10.00 m
Irrigation Pond Controls: IPOND=0
Number of points= 3
Compartment A Compartment B
Elevation Outflow Storage SFArea Outflow Storage SFArea
(m) (cms) (ha*m) (ha) (cms) (ha*m) (ha)
100.000 0.000 0.0000 0.0000 0.000 0.0000 0.0560
101.000 0.000 0.0000 0.0000 0.000 0.0224 0.0560
101.100 0.000 0.0000 0.0000 1.000 0.0246 0.0560

*
* Area of 706 to conveyance infiltration system, hydrograph 6706
*
COMPUTE FLOWRATE ID=1 NHD= 6706 AREA= 0.0055 Sq km L= 60 m W= 140 m
SOIL ZONE I II III IV V VI VII VIII IX
46.6 0.0 0.0 8.3 0.0 0.2 0.0 45.0 0.0
RATING CURVES: IDMC=6 IDOC=6 QRMG= 0.50 QROC= 0.25
ROUTING MODEL=2 CONSTANTS: OVERLAND FTB= 1.2 TLO= 0.0
SUBSURFACE: KSS= 5.0 KGW= 384 h PCODE=1 WQPCODE=1
RBASIN=0 IDA=0 IDB=0 IDC=0 IDD=0 RBDUMP=0
GWFACT=0.0 GWON=1
SWQTH= 0.0 L/s SWPUMP= 0.0 L/s SWCODE=0

PRINT HYD ID=1 PCODE=1 MODE=10

*
* Route 6706 through reservoir 4706 - conveyance infiltration system
*
ROUTE SPECIAL POND ID=4 HYD NO=4706 INFLOW=1 PCODE=0 OPTION= 5
Inflow controls:
USPCT=100% USDIV=0 PCTA= 0% ADIV=0
GWPCT= 0% GWDIV=0
Maximum level for Routing Tables: ZMAX= 101.100
Recharge characteristics for Compartment A
LEVELA= 100.000 EVAPA= 0.0 mm/d ACODE=0
CDA= 0.000 mm/h DZA= 23.00 m
Recharge characteristics for Compartment B
LEVELB= 100.000 CCBA= 0.00000 EVAPB= 0.0 mm/d BCODE=1
CDB= 15.000 mm/h DZB= 10.00 m
Irrigation Pond Controls: IPOND=0
Number of points= 3
Compartment A Compartment B
Elevation Outflow Storage SFArea Outflow Storage SFArea
(m) (cms) (ha*m) (ha) (cms) (ha*m) (ha)
100.000 0.000 0.0000 0.0000 0.000 0.0000 0.0137
101.000 0.000 0.0000 0.0000 0.000 0.0137 0.0137
101.100 0.000 0.0000 0.0000 1.000 0.0150 0.0137

PRINT HYD ID=4 PCODE=1 MODE=10

*
* Remainder of catchment 706, hydr. 7706
* VS=3.200 MC, VS=3.200 OC
*
COMPUTE FLOWRATE ID=5 NHD= 7706 AREA= 0.0323 Sq km L= 60 m W= 210 m
SOIL ZONE I II III IV V VI VII VIII IX
46.6 0.0 0.0 8.3 0.0 0.2 0.0 45.0 0.0
RATING CURVES: IDMC=6 IDOC=6 QRMG= 0.50 QROC= 0.25
ROUTING MODEL=2 CONSTANTS: OVERLAND FTB= 1.2 TLO= 0.0
```


SUBSURFACE: KSS= 5.0 KGW= 384 h PCODE=1 WQPCODE=1
RBASIN=0 IDA=0 IDB=0 IDC=0 IDD=0 RBDUMP=0
GWFACT=0.0 GWON=1
SWQTH= 0.0 L/s SWPUMP= 0.0 L/s SWCODE=0

*
* Sum hydr. 4706, 7706, call result 3706, total non-roof area of 702

*
ADD HYD ID=1 HYD NO= 3706 IDA=4 IDB=5 ICODE=0
PRINT HYD ID=1 PCODE=1 MODE=10

*
* Sum components of 706 (8706, 3706), call result 706

*
ADD HYD ID=4 HYD NO= 706 IDA=2 IDB=1 ICODE=0
PRINT HYD ID=4 PCODE=1 MODE=10

*
* SWM Facility 3 (Devil's Creek SWM Facility)
* Route 706 through resevoir 5706

ROUTE SPECIAL POND ID=2 HYD NO=5706 INFLOW=4 PCODE=0 OPTION=15

Inflow controls:
USPCT=100% USDIV=0 PCTA= 0% ADIV=0
GWPCCT= 0% GWDIV=0

Maximum level for Routing Tables: ZMAX= 307.200

Recharge characteristics for Compartment A

LEVELA= 304.800 EVAPA= 0.0 mm/d ACODE=0
CDA= 0.000 mm/h DZA= 10.00 m

Recharge characteristics for Compartment B

LEVELB= 304.800 CCBA= 0.00000 EVAPB= 1.4 mm/d BCODE=1
CDB= 0.000 mm/h DZB= 10.00 m

Irrigation Pond Controls: IPOND=0

Number of points= 25

Compartment A				Compartment B			
Elevation (m)	Outflow (cms)	Storage (ha*m)	SFArea (ha)	Outflow (cms)	Storage (ha*m)	SFArea (ha)	
304.800	0.000	0.000	0.000	0.000	0.000	0.132	
304.900	0.000	0.000	0.000	0.002	0.014	0.138	
305.000	0.000	0.000	0.000	0.003	0.028	0.145	
305.100	0.000	0.000	0.000	0.004	0.043	0.152	
305.200	0.000	0.000	0.000	0.005	0.058	0.159	
305.300	0.000	0.000	0.000	0.012	0.074	0.166	
305.400	0.000	0.000	0.000	0.013	0.093	0.201	
305.500	0.000	0.000	0.000	0.013	0.113	0.207	
305.600	0.000	0.000	0.000	0.013	0.134	0.213	
305.700	0.000	0.000	0.000	0.014	0.156	0.220	
305.800	0.000	0.000	0.000	0.014	0.178	0.226	
305.900	0.000	0.000	0.000	0.015	0.201	0.232	
306.000	0.000	0.000	0.000	0.015	0.224	0.238	
306.100	0.000	0.000	0.000	0.015	0.249	0.245	
306.200	0.000	0.000	0.000	0.016	0.273	0.251	
306.300	0.000	0.000	0.000	0.016	0.299	0.258	
306.400	0.000	0.000	0.000	0.054	0.325	0.264	
306.500	0.000	0.000	0.000	0.123	0.352	0.271	
306.600	0.000	0.000	0.000	0.211	0.379	0.278	
306.700	0.000	0.000	0.000	0.316	0.407	0.285	
306.800	0.000	0.000	0.000	0.435	0.436	0.292	
306.900	0.000	0.000	0.000	0.567	0.466	0.300	
307.000	0.000	0.000	0.000	0.710	0.496	0.308	
307.100	0.000	0.000	0.000	0.864	0.527	0.316	
307.200	0.000	0.000	0.000	1.028	0.561	0.362	

*
PRINT HYD ID=2 PCODE=1 MODE=10
KEEP HYD ID=2 CUTOFF=96 ICODE=3 ISTEP=1 IFORM=0 IDB=2 IMET=1

*
* Add outflow from SWM3 to flows at Blenheim Road

*
ADD HYD ID=1 HYD NO= 1706 IDA=3 IDB=2 ICODE=0
PRINT HYD ID=1 PCODE=1 MODE=10
KEEP HYD ID=1 CUTOFF=24 ICODE=5 ISTEP=1 IFORM=0 IDB=1 IMET=1
NEW DUMP OUTPUT MODE=10 ID=1 IOPT=4 FTYPE=0

*
* 2.0% Typical Main channel Parabolic Swale

*
COMPUTE RATING CURVE ID=5 VS= 100.020 NSEGS=3
MIN EL= 100.70 MAX EL= 103.00
CHNSLP= 0.02000 FLNSLP= 0.02000
N= 0.080 DIST= 20.00
N=-0.050 DIST= 30.00
N= 0.080 DIST= 50.00
DIST ELEV DIST ELEV DIST ELEV
0.00 103.00 20.00 101.00 23.00 100.80
25.00 100.70 27.00 100.80 30.00 101.00
50.00 103.00
RFN=0.0000 PCODE=1

*
* Area of 308 south (upstream) of Blenheim Road; 308a or 3081 for GAWSER
* VS=100.020 MC, VS=2.035 OC

*
*COMPUTE FLOWRATE ID=1 NHD= 3081 AREA= 0.0001 Sq km L= 43 m W= 100 m
* SOIL ZONE I II III IV V VI VII VIII IX
* 2.0 0.0 0.0 12.3 0.0 0.0 0.0 85.8 0.0
* RATING CURVES: IDMC=5 IDOC=2 QRCM= 0.05 QROC= 0.01
* ROUTING MODEL=2 CONSTANTS: OVERLAND FTB= 3.0 TLO= 0.0
* SUBSURFACE: KSS= 5.0 KGW= 384 h PCODE=1 WQPCODE=1
* RBASIN=0 IDA=0 IDB=0 IDC=0 IDD=0 RBDUMP=0
* GWFACT=0.00 GWON=1
* SWQTH= 0.0 L/s SWPUMP= 0.0 L/s SWCODE=0

*
*PRINT HYD ID=1 PCODE=1 MODE=10

*
* Area of 309 south (upstream) of Blenheim Road; 309a or 3091 for GAWSER
* Area blended with 306
* VS=100.010 MC, VS=2.100 OC

*
*COMPUTE FLOWRATE ID=3 NHD= 3091 AREA= 0.0000 Sq km L= 20 m W= 100 m
* SOIL ZONE I II III IV V VI VII VIII IX
* 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 100.0
* RATING CURVES: IDMC=4 IDOC=3 QRCM= 0.05 QROC= 0.01
* ROUTING MODEL=2 CONSTANTS: OVERLAND FTB= 3.0 TLO= 0.0
* SUBSURFACE: KSS= 5.0 KGW= 384 h PCODE=1 WQPCODE=1
* RBASIN=0 IDA=0 IDB=0 IDC=0 IDD=0 RBDUMP=0
* GWFACT=0.00 GWON=1
* SWQTH= 0.0 L/s SWPUMP= 0.0 L/s SWCODE=0

*
*PRINT HYD ID=3 PCODE=1 MODE=10

*
* Sum 308a & 309a and call result 1900

*
*ADD HYD ID=4 HYD NO= 1900 IDA=1 IDB=3 ICODE=0
*PRINT HYD ID=4 PCODE=1 MODE=10
*KEEP HYD ID=4 CUTOFF=24 ICODE=5 ISTEP=1 IFORM=0 IDB=4 IMET=1

*
* Sum total flows at Blenheim Road crossing

*
*ADD HYD ID=1 HYD NO= 1901 IDA=2 IDB=4 ICODE=0

```
*PRINT HYD          ID=1 PCODE=1 MODE=10
*NEW DUMP OUTPUT    MODE=10 ID=1 IOPT=4 FTYPE=0
*
*
* Catchment 707, uncontrolled area of Blenheim Road draining to Devil's Creek
*
COMPUTE FLOWRATE    ID=2 NHD= 707 AREA=  0.0077 Sq km L=  60 m W=  15 m
SOIL ZONE I   II  III   IV   V   VI  VII  VIII  IX
      38.3   0.0  0.0   9.5  0.0   0.2  0.0  51.9  0.0
RATING CURVES: IDMC=6 IDOC=6 GRMC=  0.50 QROC=  0.25
ROUTING MODEL=2 CONSTANTS: OVERLAND FTB= 1.2 TLO= 0.0
SUBSURFACE: KSS= 5.0 KGW= 384 h PCODE=1 WQPCODE=1
RBASIN=0 IDA=0 IDB=0 IDC=0 IDD=0 RBDUMP=0
GWFACT=0.0 GWON=1
SWQTH=  0.0 L/s SWPUMP=  0.0 L/s SWCODE=0
*
PRINT HYD          ID=2 PCODE=1 MODE=10
KEEP HYD          ID=2 CUTOFF=24 ICODE=5 ISTEP=1 IFORM=0 IDB=2 IMET=1
*
*
* 707 -> 2707 / 3707 Split Flow from realigned Blenheim to Minor (2707)
* and Major (3707) components. minor to creek via storm, major to 5309 depression
*
*-----1-----2-----3-----4-----5-----6-----7-----8
DIVERT FLOWS      INFLOW=2 DIVERT=6 HYD NO=3707 PCODE=1 OPTION=2
                  INLET CAP=0.148 CMS THRUFLW ID=3 HYD NOB=2707
                  IDFLAG=0 IDSTOR=0 IGWT=0
*
PRINT HYD          ID=3 PCODE=1 MODE=10
KEEP HYD          ID=3 CUTOFF=0 ICODE=5 ISTEP=1 IFORM=0 IDB=3 IMET=0
PRINT HYD          ID=6 PCODE=1 MODE=10
KEEP HYD          ID=6 CUTOFF=0 ICODE=5 ISTEP=1 IFORM=0 IDB=6 IMET=0
*
* Sum 1901 & 2707 and call result 1707
*
ADD HYD            ID=5 HYD NO= 1707 IDA=1 IDB=3 ICODE=0
PRINT HYD          ID=5 PCODE=1 MODE=10
KEEP HYD          ID=5 CUTOFF=24 ICODE=5 ISTEP=1 IFORM=0 IDB=5 IMET=1
*
* Area of 308 north (downstream) of Blenheim Road; 308b or 3082 for GAWSER
* VS=100.020 MC, VS=2.035 OC
*
COMPUTE FLOWRATE    ID=2 NHD= 3082 AREA=  0.0028 Sq km L=  34 m W= 100 m
SOIL ZONE I   II  III   IV   V   VI  VII  VIII  IX
      2.0   0.0  0.0  12.3  0.0   0.0  0.0  85.8  0.0
RATING CURVES: IDMC=5 IDOC=2 GRMC=  0.05 QROC=  0.01
ROUTING MODEL=2 CONSTANTS: OVERLAND FTB= 3.0 TLO= 0.0
SUBSURFACE: KSS= 5.0 KGW= 384 h PCODE=1 WQPCODE=1
RBASIN=0 IDA=0 IDB=0 IDC=0 IDD=0 RBDUMP=0
GWFACT=0.00 GWON=1
SWQTH=  0.0 L/s SWPUMP=  0.0 L/s SWCODE=0
*
PRINT HYD          ID=2 PCODE=1 MODE=10
*
* Area of 309 north (downstream) of Blenheim Road; 309b or 3092 for GAWSER
* VS=100.010 MC, VS=2.100 OC
*
COMPUTE FLOWRATE    ID=3 NHD= 3092 AREA=  0.0119 Sq km L=  60 m W= 200 m
SOIL ZONE I   II  III   IV   V   VI  VII  VIII  IX
      0.0   0.0  0.0   0.0  0.0   0.0  0.0  100.0
RATING CURVES: IDMC=4 IDOC=3 GRMC=  0.05 QROC=  0.01
```

```
ROUTING MODEL=2 CONSTANTS: OVERLAND FTB= 3.0 TLO= 0.0
SUBSURFACE: KSS= 5.0 KGW= 384 h PCODE=1 WQPCODE=1
RBASIN=0 IDA=0 IDB=0 IDC=0 IDD=0 RBDUMP=0
GWFACT=0.00 GWON=1
SWQTH=  0.0 L/s SWPUMP=  0.0 L/s SWCODE=0
*
PRINT HYD          ID=3 PCODE=1 MODE=10
*
* Sum 308b & 309b and call result 1902
*
ADD HYD            ID=4 HYD NO= 1902 IDA=2 IDB=3 ICODE=0
*
* Sum 1902 & Diverted Majors from Blenheim (3707) and call result 1903
*
ADD HYD            ID=2 HYD NO= 1903 IDA=4 IDB=6 ICODE=0
*
* Route flows from 1903 through a depression
*
ROUTE SPECIAL POND ID=3 HYD NO=5309 INFLOW=2 PCODE=0 OPTION=15
Inflow controls:
  USPCT=100% USDIV=0      PCTA=  0% ADIV=0
  GWPCT=  0% GWDIV=0
Maximum level for Routing Tables: ZMAX= 300.500
Recharge characteristics for Compartment A
  LEVELA= 298.500          EVAPA= 0.0 mm/d ACODE=0
  CDA=  0.000 mm/h DZA= 23.00 m
Recharge characteristics for Compartment B
  LEVELB= 298.500 CCBA= 0.00000 EVAPB= 1.4 mm/d BCODE=1
  CDB= 25.000 mm/h DZB= 10.00 m
Irrigation Pond Controls: IPOND=0
Number of points=  5
      Compartment A          Compartment B
Elevation Outflow Storage SFArea Outflow Storage SFArea
(m) (cms) (ha*m) (ha) (cms) (ha*m) (ha)
298.500  0.000  0.000  0.000  0.000  0.000  0.001
299.000  0.000  0.000  0.000  0.000  0.005  0.017
299.500  0.000  0.000  0.000  0.000  0.028  0.077
300.000  0.000  0.000  0.000  0.000  0.083  0.143
300.500  0.000  0.000  0.000  5.000  0.171  0.209
*
PRINT HYD          ID=3 PCODE=1 MODE=10
KEEP HYD          ID=3 CUTOFF=24 ICODE=5 ISTEP=1 IFORM=0 IDB=3 IMET=1
*
* Sum hydr. 706, 707, 308, 309, and 1306 and call result 1308
*
ADD HYD            ID=2 HYD NO= 1308 IDA=5 IDB=3 ICODE=0
*
PRINT HYD          ID=2 PCODE=1 MODE=10
KEEP HYD          ID=2 CUTOFF=24 ICODE=5 ISTEP=1 IFORM=0 IDB=2 IMET=1
NEW DUMP OUTPUT    MODE=10 ID=2 IOPT=4 FTYPE=0
*
COMPUTE RATING CURVE ID=6 VS=  2.000 NSEGS=3
MIN EL= 290.00 MAX EL= 291.50
CHNSLP= 0.0030 FLNSLP= 0.0035
N= 0.080 DIST=  99.50
N=-0.035 DIST= 100.50
N= 0.080 DIST= 165.00
DIST ELEV DIST ELEV DIST ELEV
35.00 291.50 75.00 291.00 98.50 290.50
99.50 290.40 99.60 290.00 100.40 290.00
100.50 290.40 101.50 290.50 125.00 291.00
165.00 291.50
```

RFN=0.0000 PCODE=1

*
* Route through reach 2308
* Using Valley Section 2.0 As channel Rating Curve
*

ROUTE CHANNEL ID=1 HYD NO= 2308 INFLOW=2 LENGTH= 1400 m SLOPE=0.003
RCID=6 NS=1 PCODE=1 INDEX=1 PIPE=0 CANOPY= 75.0%

*
* Catchment 310
* VS= 100.010 is main channel & VS= 2.035 is off-channel
*

COMPUTE FLOWRATE ID=2 NHD= 310 AREA= 0.0682 Sq km L= 450 m W= 140 m
SOIL ZONE I II III IV V VI VII VIII IX
25.0 0.0 0.0 0.0 0.0 26.3 0.0 48.8 0.0
RATING CURVES: IDMC=4 IDOC=2 GRMC= 0.50 QROC= 0.05
ROUTING MODEL=2 CONSTANTS: OVERLAND FTB= 1.2 TLO= 0.0
SUBSURFACE: KSS= 5.0 KGW= 384 h PCODE=1 WQPCODE=1
RBASIN=0 IDA=0 IDB=0 IDC=0 IDD=0 RBDUMP=0
GWFACT=0.00 GWON=1
SWQTH= 0.0 L/s SWPUMP= 0.0 L/s SWCODE=0

*
PRINT HYD ID=2 PCODE=1 MODE=10
*
* Sum hydr. 310, 2308, call result 1309
*

ADD HYD ID=3 HYD NO= 1309 IDA=1 IDB=2 ICODE=0

* Catchment 0.5% Main channel Parabolic Swale
*

COMPUTE RATING CURVE ID=6 VS= 100.005 NSEGS=3
MIN EL= 100.70 MAX EL= 103.00
CHNSLP= 0.00500 FLNSLP= 0.005000
N= 0.080 DIST= 20.00
N=-0.050 DIST= 30.00
N= 0.080 DIST= 50.00
DIST ELEV DIST ELEV DIST ELEV
0.00 103.00 20.00 101.00 23.00 100.80
25.00 100.70 27.00 100.80 30.00 101.00
50.00 103.00
RFN=0.0000 PCODE=1

*
* Catchment 311
* VS= 100.005 is main channel & VS= 2.020 is off-channel
*

COMPUTE FLOWRATE ID=1 NHD= 311 AREA= 0.4793 Sq km L= 1200 m W= 390 m
SOIL ZONE I II III IV V VI VII VIII IX
0.0 2.0 64.0 0.0 0.0 0.0 34.0 0.0 0.0
RATING CURVES: IDMC=6 IDOC=1 GRMC= 0.05 QROC= 0.01
ROUTING MODEL=2 CONSTANTS: OVERLAND FTB= 5.0 TLO= 0.0
SUBSURFACE: KSS= 5.0 KGW= 384 h PCODE=1 WQPCODE=1
RBASIN=0 IDA=0 IDB=0 IDC=0 IDD=0 RBDUMP=0
GWFACT=0.00 GWON=1
SWQTH= 0.0 L/s SWPUMP= 0.0 L/s SWCODE=0

*
PRINT HYD ID=1 PCODE=1 MODE=10
*
* Sum hydr. 311, 1309, call result 1310
*

ADD HYD ID=6 HYD NO= 1310 IDA=1 IDB=3 ICODE=0

*
REMOVE FLOW FROM GW ID=6 OPTION=2 PCODE=0 QPCT=00% KGW=384 h QSOUT= 0.001
*

PRINT HYD ID=6 PCODE=1 MODE=10

*
* Route flows from 1310 through the Devil's Creek wetland area
*

ROUTE SPECIAL POND ID=2 HYD NO=5310 INFLOW=6 PCODE=0 OPTION=5
Inflow controls:
USPCT=100% USDIV=0 PCTA= 0% ADIV=0
GWPCT= 0% GWDIV=0
Maximum level for Routing Tables: ZMAX= 292.500
Recharge characteristics for Compartment A
LEVELA= 289.300 EVAPA= 0.0 mm/d ACODE=0
CDA= 0.000 mm/h DZA= 23.00 m
Recharge characteristics for Compartment B
LEVELB= 289.300 CCBA= 0.00000 EVAPB= 1.4 mm/d BCODE=1
CDB= 4.000 mm/h DZB= 10.00 m
Irrigation Pond Controls: IPOND=0
Number of points= 11

Elevation (m)	Compartment A			Compartment B		
	Outflow (cms)	Storage (ha*m)	SFArea (ha)	Outflow (cms)	Storage (ha*m)	SFArea (ha)
289.300	0.000	0.000	0.000	0.000	0.000	0.00
289.600	0.000	0.000	0.000	0.090	0.500	10.00
289.700	0.000	0.000	0.000	0.110	1.495	10.00
289.800	0.000	0.000	0.000	0.130	2.492	10.00
289.900	0.000	0.000	0.000	0.230	3.489	10.00
290.000	0.000	0.000	0.000	1.200	3.515	10.00
290.500	0.000	0.000	0.000	4.200	3.815	10.00
291.000	0.000	0.000	0.000	8.200	4.648	10.00
291.500	0.000	0.000	0.000	13.00	7.048	10.00
292.000	0.000	0.000	0.000	18.40	12.448	10.00
292.500	0.000	0.000	0.000	24.40	20.998	10.00

*
PRINT HYD ID=2 PCODE=1 MODE=10
KEEP HYD ID=2 CUTOFF=24 ICODE=5 ISTEP=1 IFORM=0 IDB=2 IMET=1
NEW DUMP OUTPUT MODE=10 ID=2 IOPT=4 FTYPE=0
*
* 3.5% Main channel Parabolic Swale
*

COMPUTE RATING CURVE ID=6 VS= 100.035 NSEGS=3
MIN EL= 100.70 MAX EL= 103.00
CHNSLP= 0.03500 FLNSLP= 0.03500
N= 0.080 DIST= 20.00
N=-0.050 DIST= 30.00
N= 0.080 DIST= 50.00
DIST ELEV DIST ELEV DIST ELEV
0.00 103.00 20.00 101.00 23.00 100.80
25.00 100.70 27.00 100.80 30.00 101.00
50.00 103.00
RFN=0.0000 PCODE=1

*
* 5% off-channel (Steep areas)
*

COMPUTE RATING CURVE ID=1 VS= 2.050 NSEGS=3
MIN EL= 100.00 MAX EL= 100.80
CHNSLP= 0.05000 FLNSLP= 0.05000
N= 0.350 DIST= 24.45
N=-0.150 DIST= 25.55
N= 0.350 DIST= 50.00
DIST ELEV DIST ELEV DIST ELEV
0.00 100.80 24.45 100.30 24.75 100.00
25.50 100.00 25.55 100.30 50.00 100.80
RFN=0.0000 PCODE=1

*
* Catchment 313
* VS= 100.035 is main channel & VS= 2.050 is off-channel
*
COMPUTE FLOWRATE ID=4 NHD= 313 AREA= 0.0492 Sq km L= 55 m W= 580 m
SOIL ZONE I II III IV V VI VII VIII IX
0.0 0.0 0.0 10.0 0.0 0.0 0.0 90.0 0.0
RATING CURVES: IDMC=6 IDOC=1 QRCM= 0.05 QROC= 0.01
ROUTING MODEL=2 CONSTANTS: OVERLAND FTB= 2.0 TLO= 0.0
SUBSURFACE: KSS= 5.0 KGW= 384 h PCODE=1 WQPCODE=1
RBASIN=0 IDA=0 IDB=0 IDC=0 IDD=0 RBDUMP=0
GWFACT=0.00 GWON=1
SWQTH= 0.0 L/s SWPUMP= 0.0 L/s SWCODE=0

*
PRINT HYD ID=4 PCODE=1 MODE=10
*

* This portion is part of the development area (school block) in SWM 2 Cmt
* Major flow would continue to Devils creek and minor flow will be diverted
* to SWMF2 (and ultimately the Grand)
*
* Roof area of school blk
*
COMPUTE FLOWRATE ID=1 NHD= 9721 AREA= 0.0039 Sq km L= 20 m W= 10 m
SOIL ZONE I II III IV V VI VII VIII IX
100.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
RATING CURVES: IDMC=6 IDOC=5 QRCM= 0.50 QROC= 0.25
ROUTING MODEL=2 CONSTANTS: OVERLAND FTB= 1.2 TLO= 0.0
SUBSURFACE: KSS= 5.0 KGW= 384 h PCODE=1 WQPCODE=1
RBASIN=0 IDA=0 IDB=0 IDC=0 IDD=0 RBDUMP=0
GWFACT=0.0 GWON=1
SWQTH= 0.0 L/s SWPUMP= 0.0 L/s SWCODE=0

*
* Roof infiltration gallery within 7021; hydrograph 8721
*
ROUTE SPECIAL POND ID=3 HYD NO=8721 INFLOW=1 PCODE=0 OPTION= 5
Inflow controls:
USPCT=100% USDIV=0 PCTA= 0% ADIV=0
GWPCT= 0% GWDIV=0
Maximum level for Routing Tables: ZMAX= 101.100
Recharge characteristics for Compartment A
LEVELA= 100.000 EVAPA= 0.0 mm/d ACODE=0
CDA= 0.000 mm/h DZA= 10.00 m
Recharge characteristics for Compartment B
LEVELB= 100.000 CCBA= 0.00000 EVAPB= 0.0 mm/d BCODE=1
CDB= 15.000 mm/h DZB= 10.00 m
Irrigation Pond Controls: IPOND=0
Number of points= 3

Compartment A		Compartment B	
Outflow	Storage	SFArea	Outflow
(m)	(cms)	(ha*m)	(ha)
100.000	0.000	0.0000	0.0000
101.000	0.000	0.0000	0.0000
101.100	0.000	0.0000	0.0000

*
* Non-roof areas within 7021; hydrograph 7721
* VS=3.200 MC, VS=3.200 OC
*
COMPUTE FLOWRATE ID=5 NHD= 7721 AREA= 0.0231 Sq km L= 60 m W= 150 m
SOIL ZONE I II III IV V VI VII VIII IX
27.1 0.0 0.0 11.3 0.0 0.3 0.0 61.4 0.0
RATING CURVES: IDMC=6 IDOC=6 QRCM= 0.50 QROC= 0.25

ROUTING MODEL=2 CONSTANTS: OVERLAND FTB= 1.2 TLO= 0.0
SUBSURFACE: KSS= 5.0 KGW= 384 h PCODE=1 WQPCODE=1
RBASIN=0 IDA=0 IDB=0 IDC=0 IDD=0 RBDUMP=0
GWFACT=0.75 GWON=1

*
* Sum hydr. 8721,7721 call result 7021
*
ADD HYD ID=1 HYD NO= 7021 IDA=3 IDB=5 ICODE=0
*
* Divert minor flow to SWMF2 and major flow to Devils creek (313)
*
DIVERT FLOWS INFLOW=1 DIVERT=3 HYD NO=3131 PCODE=1 OPTION=2
INLET CAP=0.7872 CMS THRUFLW ID=6 HYD NOB=1721
IDFLAG=0 IDSTOR=0 IGWT=0

*
* Sum hydr. 3131,313 call result 1311
*
ADD HYD ID=5 HYD NO= 1311 IDA=3 IDB=4 ICODE=0
*

*
* Catchment 314
* VS= 100.010 is main channel & VS= 2.100 is off-channel
*
COMPUTE FLOWRATE ID=1 NHD= 314 AREA= 0.1142 Sq km L= 500 m W= 240 m
SOIL ZONE I II III IV V VI VII VIII IX
0.0 0.0 20.0 0.0 0.0 0.0 10.0 0.0 70.0
RATING CURVES: IDMC=4 IDOC=3 QRCM= 0.05 QROC= 0.01
ROUTING MODEL=2 CONSTANTS: OVERLAND FTB= 3.0 TLO= 0.0
SUBSURFACE: KSS= 5.0 KGW= 384 h PCODE=1 WQPCODE=1
RBASIN=0 IDA=0 IDB=0 IDC=0 IDD=0 RBDUMP=0
GWFACT=0.00 GWON=1
SWQTH= 0.0 L/s SWPUMP= 0.0 L/s SWCODE=0

*
PRINT HYD ID=1 PCODE=1 MODE=10
*
* Sum hydr. 1311,314 call result 1312
*
ADD HYD ID=3 HYD NO= 1312 IDA=1 IDB=5 ICODE=0
*
* Catchment 315
* VS= 100.020 is main channel & VS= 2.100 is off-channel
*
COMPUTE FLOWRATE ID=1 NHD= 315 AREA= 0.0158 Sq km L= 60 m W= 150 m
SOIL ZONE I II III IV V VI VII VIII IX
0.0 0.0 0.0 30.0 0.0 0.0 0.0 70.0 0.0
RATING CURVES: IDMC=5 IDOC=3 QRCM= 0.05 QROC= 0.01
ROUTING MODEL=2 CONSTANTS: OVERLAND FTB= 3.0 TLO= 0.0
SUBSURFACE: KSS= 5.0 KGW= 384 h PCODE=1 WQPCODE=1
RBASIN=0 IDA=0 IDB=0 IDC=0 IDD=0 RBDUMP=0
GWFACT=0.00 GWON=1
SWQTH= 0.0 L/s SWPUMP= 0.0 L/s SWCODE=0

*
PRINT HYD ID=1 PCODE=1 MODE=10
*
* Sum hydr. 1312,315 call result 1313
*
ADD HYD ID=4 HYD NO= 1313 IDA=1 IDB=3 ICODE=0
*
* Typical Roof section
*

COMPUTE RATING CURVE ID=5 VS= 101.000 NSEGS=3
MIN EL= 295.00 MAX EL= 295.70
CHNSLP= 0.2500 FLNSLP= 0.2500
N= 0.018 DIST= 100.00
N= 0.018 DIST= 400.00
N= 0.018 DIST= 500.00
DIST ELEV DIST ELEV DIST ELEV
0.00 295.70 100.00 295.50 100.10 295.00
399.90 295.00 400.00 295.50 500.00 295.70
RFN=0.0000 PCODE=1

*
* Typical Urban section
*

COMPUTE RATING CURVE ID=6 VS= 3.200 NSEGS=3
MIN EL= 295.00 MAX EL= 295.70
CHNSLP= 0.02000 FLNSLP= 0.02000
N= 0.015 DIST= 200.00
N= 0.015 DIST= 300.00
N= 0.015 DIST= 500.00
DIST ELEV DIST ELEV DIST ELEV
0.00 295.70 200.00 295.50 200.10 295.00
299.90 295.00 300.00 295.50 500.00 295.70

*
* Roof areas within 703, hydrograph 9703
* VS=101.000 MC, VS=3.200 OC
*

COMPUTE FLOWRATE ID=1 NHD= 9703 AREA= 0.0082 Sq km L= 20 m W= 10 m
SOIL ZONE I II III IV V VI VII VIII IX
100.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
RATING CURVES: IDMC=6 IDOC=5 QRCM= 0.50 QROC= 0.25
ROUTING MODEL=2 CONSTANTS: OVERLAND FTB= 1.2 TLO= 0.0
SUBSURFACE: KSS= 5.0 KGW= 384 h PCODE=1 WQPCODE=1
RBASIN=0 IDA=0 IDB=0 IDC=0 IDD=0 RBDUMP=0
GWFACT=0.0 GWON=1
SWQTH= 0.0 L/s SWPUMP= 0.0 L/s SWCODE=0

*
* Roof infiltration gallery within 703; hydrograph 8703
*

ROUTE SPECIAL POND ID=3 HYD NO=8703 INFLOW=1 PCODE=0 OPTION= 5
Inflow controls:
USPCT=100% USDIV=0 PCTA= 0% ADIV=0
GWPCT= 0% GWDIV=0
Maximum level for Routing Tables: ZMAX= 101.100
Recharge characteristics for Compartment A
LEVELA= 100.000 EVAPA= 0.0 mm/d ACODE=0
CDA= 0.000 mm/h DZA= 10.00 m
Recharge characteristics for Compartment B
LEVELB= 100.000 CCBA= 0.00000 EVAPB= 0.0 mm/d BCODE=1
CDB= 15.000 mm/h DZB= 10.00 m
Irrigation Pond Controls: IPOND=0
Number of points= 3
Compartment A Compartment B
Elevation Outflow Storage SFArea Outflow Storage SFArea
(m) (cms) (ha*m) (ha) (cms) (ha*m) (ha)
100.000 0.000 0.0000 0.0000 0.000 0.0000 0.0515
101.000 0.000 0.0000 0.0000 0.000 0.0206 0.0515
101.100 0.000 0.0000 0.0000 1.000 0.0226 0.0515

*
* Non-roof areas within 703; hydrograph 7703
* VS=3.200 MC, VS=3.200 OC
*

COMPUTE FLOWRATE ID=1 NHD= 7703 AREA= 0.0224 Sq km L= 60 m W= 170 m

SOIL ZONE I II III IV V VI VII VIII IX
48.9 0.0 0.0 7.9 0.0 0.2 0.0 43.0 0.0
RATING CURVES: IDMC=6 IDOC=6 QRCM= 0.50 QROC= 0.25
ROUTING MODEL=2 CONSTANTS: OVERLAND FTB= 1.2 TLO= 0.0
SUBSURFACE: KSS= 5.0 KGW= 384 h PCODE=1 WQPCODE=1
RBASIN=0 IDA=0 IDB=0 IDC=0 IDD=0 RBDUMP=0
GWFACT=0.0 GWON=1
SWQTH= 0.0 L/s SWPUMP= 0.0 L/s SWCODE=0

*
* Sum catchment 703 component hydrographs
*

ADD HYD ID=5 HYD NO= 703 IDA=3 IDB=1 ICODE=0
PRINT HYD ID=5 PCODE=1 MODE=10
KEEP HYD ID=5 CUTOFF=24 ICODE=5 ISTEP=1 IFORM=0 IDB=5 IMET=1

*
* Sum hydr. 1313 and 703, call result 1703
*

ADD HYD ID=3 HYD NO= 1703 IDA=4 IDB=5 ICODE=0
PRINT HYD ID=3 PCODE=1 MODE=10

*
* Catchment 316
*

COMPUTE FLOWRATE ID=1 NHD= 316 AREA= 0.2101 Sq km L= 650 m W= 330 m
SOIL ZONE I II III IV V VI VII VIII IX
20.0 0.0 8.0 16.0 0.0 8.0 0.0 48.0 0.0
RATING CURVES: IDMC=6 IDOC=6 QRCM= 0.50 QROC= 0.05
ROUTING MODEL=2 CONSTANTS: OVERLAND FTB= 1.2 TLO= 0.0
SUBSURFACE: KSS= 5.0 KGW= 384 h PCODE=1 WQPCODE=1
RBASIN=0 IDA=0 IDB=0 IDC=0 IDD=0 RBDUMP=0
GWFACT=0.00 GWON=1
SWQTH= 0.0 L/s SWPUMP= 0.0 L/s SWCODE=0

*
PRINT HYD ID=1 PCODE=1 MODE=10
*

* Sum hydr. 1703 and 316, call result 1314
*

ADD HYD ID=4 HYD NO= 1314 IDA=3 IDB=1 ICODE=0

*
PRINT HYD ID=4 PCODE=1 MODE=10

*
* Route flows from 1314 through Grandview Hills SWM Facility (Devil's)
*

ROUTE SPECIAL POND ID=1 HYD NO=5314 INFLOW=4 PCODE=0 OPTION=15
Inflow controls:
USPCT=100% USDIV=0 PCTA= 0% ADIV=0
GWPCT= 0% GWDIV=0
Maximum level for Routing Tables: ZMAX= 291.000
Recharge characteristics for Compartment A
LEVELA= 289.800 EVAPA= 0.0 mm/d ACODE=0
CDA= 0.000 mm/h DZA= 23.00 m
Recharge characteristics for Compartment B
LEVELB= 289.800 CCBA= 0.00000 EVAPB= 1.4 mm/d BCODE=1
CDB= 4.000 mm/h DZB= 10.00 m
Irrigation Pond Controls: IPOND=0
Number of points= 9
Compartment A Compartment B
Elevation Outflow Storage SFArea Outflow Storage SFArea
(m) (cms) (ha*m) (ha) (cms) (ha*m) (ha)
289.800 0.000 0.000 0.000 0.000 0.000 0.600
289.900 0.000 0.000 0.000 0.059 0.087 0.600
290.000 0.000 0.000 0.000 0.084 0.185 0.600
290.100 0.000 0.000 0.000 0.103 0.295 0.600

290.200	0.000	0.000	0.000	0.119	0.417	0.600
290.300	0.000	0.000	0.000	0.502	0.549	0.600
290.400	0.000	0.000	0.000	1.191	0.691	0.600
290.500	0.000	0.000	0.000	2.078	0.860	0.600
291.000	0.000	0.000	0.000	5.000	1.200	0.600

*
REMOVE FLOW FROM GW ID=1 OPTION=2 PCODE=0 QPCT=00% KGW=384 h QSOUT= 0.004

*
PRINT HYD ID=1 PCODE=1 MODE=10

*
* Sum hydr. 5314,5310 call result 1315

*
ADD HYD ID=3 HYD NO= 1315 IDA=1 IDB=2 ICODE=0

*
COMPUTE RATING CURVE ID=6 VS= 3.000 NSEGS=3
MIN EL= 285.20 MAX EL= 287.00
CHNSLP= 0.01100 FLNSLP= 0.01200
N= 0.080 DIST= 99.30
N=-0.035 DIST= 100.70
N= 0.080 DIST= 120.00
DIST ELEV DIST ELEV DIST ELEV
80.00 287.00 85.00 286.00 90.00 285.70
99.30 285.50 99.40 285.20 100.60 285.20
100.70 285.50 110.00 285.70 115.00 286.00
120.00 287.00
RFN=0.0000 PCODE=1

*
* Route through reach 2315
* Using Valley Section 3.0 As channel Rating Curve

*
ROUTE CHANNEL ID=1 HYD NO= 2315 INFLOW=3 LENGTH= 420 m SLOPE=0.011
RCID=6 NS=1 PCODE=1 INDEX=1 PIPE=0 CANOPY= 25.0%

*
* Typical Urban section

*
COMPUTE RATING CURVE ID=6 VS= 3.200 NSEGS=3
MIN EL= 295.00 MAX EL= 295.70
CHNSLP= 0.02000 FLNSLP= 0.02000
N= 0.015 DIST= 200.00
N=-0.015 DIST= 300.00
N= 0.015 DIST= 500.00
DIST ELEV DIST ELEV DIST ELEV
0.00 295.70 200.00 295.50 200.10 295.00
299.90 295.00 300.00 295.50 500.00 295.70

*
* Catchment 317

*
COMPUTE FLOWRATE ID=2 NHD= 317 AREA= 0.118 Sq km L= 150 m W= 200 m
SOIL ZONE I II III IV V VI VII VIII IX
20.0 0.0 0.0 0.0 0.0 40.0 0.0 40.0 0.0
RATING CURVES: IDMC=6 IDOC=6 QRC= 0.50 QROC= 0.05
ROUTING MODEL=2 CONSTANTS: OVERLAND FTB= 1.2 TLO= 0.0
SUBSURFACE: KSS= 5.0 KGW= 384 h PCODE=1 WQPCODE=1
RBASIN=0 IDA=0 IDB=0 IDC=0 IDD=0 RBDUMP=0
GWFACT=0.00 GWON=1
SWQTH= 0.0 L/s SWPUMP= 0.0 L/s SWCODE=0

*
PRINT HYD ID=2 PCODE=1 MODE=10

*
* Sum hydr. 2315,317 call result 1316

*
ADD HYD ID=3 HYD NO= 1316 IDA=1 IDB=2 ICODE=0

*
REMOVE FLOW FROM GW ID=3 OPTION=2 PCODE=0 QPCT=00% KGW=384 h QSOUT= 0.003

*
* Devil's Creek at Blair Road

*
PRINT HYD ID=3 PCODE=1 MODE=10

*
COMPUTE RATING CURVE ID=6 VS= 4.000 NSEGS=3
MIN EL= 282.00 MAX EL= 285.00
CHNSLP= 0.01900 FLNSLP= 0.02100
N= 0.080 DIST= 99.30
N=-0.035 DIST= 100.70
N= 0.080 DIST= 120.00
DIST ELEV DIST ELEV DIST ELEV
80.00 285.00 90.00 284.00 96.00 283.00
99.30 282.30 99.40 282.00 100.60 282.00
100.70 282.30 104.00 283.00 110.00 284.00
120.00 285.00
RFN=0.0000 PCODE=1

*
* Route through reach 2316
* Using Valley Section 4.0 As channel Rating Curve

*
ROUTE CHANNEL ID=1 HYD NO= 2316 INFLOW=3 LENGTH= 270 m SLOPE=0.019
RCID=6 NS=1 PCODE=1 INDEX=1 PIPE=0 CANOPY= 50.0%

*
* Typical Urban section

*
COMPUTE RATING CURVE ID=6 VS= 3.200 NSEGS=3
MIN EL= 295.00 MAX EL= 295.70
CHNSLP= 0.02000 FLNSLP= 0.02000
N= 0.015 DIST= 200.00
N=-0.015 DIST= 300.00
N= 0.015 DIST= 500.00
DIST ELEV DIST ELEV DIST ELEV
0.00 295.70 200.00 295.50 200.10 295.00
299.90 295.00 300.00 295.50 500.00 295.70

*
* Catchment 318

*
COMPUTE FLOWRATE ID=2 NHD= 318 AREA= 0.1539 Sq km L= 450 m W= 340 m
SOIL ZONE I II III IV V VI VII VIII IX
30.0 0.0 0.0 0.0 0.0 10.5 0.0 59.5 0.0
RATING CURVES: IDMC=6 IDOC=6 QRC= 0.50 QROC= 0.05
ROUTING MODEL=2 CONSTANTS: OVERLAND FTB= 1.2 TLO= 0.0
SUBSURFACE: KSS= 5.0 KGW= 384 h PCODE=1 WQPCODE=1
RBASIN=0 IDA=0 IDB=0 IDC=0 IDD=0 RBDUMP=0
GWFACT=0.00 GWON=1
SWQTH= 0.0 L/s SWPUMP= 0.0 L/s SWCODE=0

*
PRINT HYD ID=2 PCODE=1 MODE=10

*
* Sum hydr. 2316,318 call result 1317

*
ADD HYD ID=3 HYD NO= 1317 IDA=1 IDB=2 ICODE=0

*
* Devil's Creek at Grand River

*
PRINT HYD ID=3 PCODE=1 MODE=10

*

* GRAND RIVER

*
*
* Roof areas within 708, hydrograph 9708
* VS=101.000 MC, VS=3.200 OC
*
COMPUTE FLOWRATE ID=1 NHD= 9708 AREA= 0.0197 Sq km L= 20 m W= 10 m
SOIL ZONE I II III IV V VI VII VIII IX
100.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
RATING CURVES: IDMC=6 IDOC=5 QRCM= 0.50 QROC= 0.25
ROUTING MODEL=2 CONSTANTS: OVERLAND FTB= 1.2 TLO= 0.0
SUBSURFACE: KSS= 5.0 KGW= 384 h PCODE=1 WQPCODE=1
RBASIN=0 IDA=0 IDB=0 IDC=0 IDD=0 RBDUMP=0
GWFACT=1.0 GWON=1
SWQTH= 0.0 L/s SWPUMP= 0.0 L/s SWCODE=0

*
* Roof infiltration gallery within 708; hydrograph 8708
*

ROUTE SPECIAL POND ID=2 HYD NO=8708 INFLOW=1 PCODE=0 OPTION= 5
Inflow controls:
USPCT=100% USDIV=0 PCTA= 0% ADIV=0
GWPCT= 0% GWDIV=0
Maximum level for Routing Tables: ZMAX= 101.100
Recharge characteristics for Compartment A
LEVELA= 100.000 EVAPA= 0.0 mm/d ACODE=0
CDA= 0.000 mm/h DZA= 10.00 m
Recharge characteristics for Compartment B
LEVELB= 100.000 CCBA= 0.00000 EVAPB= 0.0 mm/d BCODE=1
CDB= 15.000 mm/h DZB= 10.00 m
Irrigation Pond Controls: IPOND=0
Number of points= 3
Compartment A Compartment B
Elevation Outflow Storage SFArea Outflow Storage SFArea
(m) (cms) (ha*m) (ha) (cms) (ha*m) (ha)
100.000 0.000 0.0000 0.0000 0.000 0.0000 0.1231
101.000 0.000 0.0000 0.0000 0.000 0.0493 0.1231
101.100 0.000 0.0000 0.0000 1.000 0.0543 0.1231

*
*-----
*
* Areas within 708 to CIF, hydrograph 6708
* VS=101.000 MC, VS=3.200 OC
*

COMPUTE FLOWRATE ID=1 NHD= 6708 AREA= 0.0025 Sq km L= 20 m W= 10 m
SOIL ZONE I II III IV V VI VII VIII IX
100.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
RATING CURVES: IDMC=6 IDOC=5 QRCM= 0.50 QROC= 0.25
ROUTING MODEL=2 CONSTANTS: OVERLAND FTB= 1.2 TLO= 0.0
SUBSURFACE: KSS= 5.0 KGW= 384 h PCODE=1 WQPCODE=1
RBASIN=0 IDA=0 IDB=0 IDC=0 IDD=0 RBDUMP=0
GWFACT=1.0 GWON=1
SWQTH= 0.0 L/s SWPUMP= 0.0 L/s SWCODE=0

*
* Roof infiltration gallery in areas within 708 to CIF; hydrograph 5708
*

ROUTE SPECIAL POND ID=3 HYD NO=5708 INFLOW=1 PCODE=0 OPTION= 5
Inflow controls:
USPCT=100% USDIV=0 PCTA= 0% ADIV=0
GWPCT= 0% GWDIV=0
Maximum level for Routing Tables: ZMAX= 101.100
Recharge characteristics for Compartment A
LEVELA= 100.000 EVAPA= 0.0 mm/d ACODE=0
CDA= 0.000 mm/h DZA= 10.00 m

Recharge characteristics for Compartment B
LEVELB= 100.000 CCBA= 0.00000 EVAPB= 0.0 mm/d BCODE=1
CDB= 15.000 mm/h DZB= 10.00 m
Irrigation Pond Controls: IPOND=0
Number of points= 3
Compartment A Compartment B
Elevation Outflow Storage SFArea Outflow Storage SFArea
(m) (cms) (ha*m) (ha) (cms) (ha*m) (ha)
100.000 0.000 0.0000 0.0000 0.000 0.0000 0.0158
101.000 0.000 0.0000 0.0000 0.000 0.0063 0.0158
101.100 0.000 0.0000 0.0000 1.000 0.0072 0.0158

*
* Non-roof areas in areas within 708 to CIF; hydrograph 2708
* VS=3.200 MC, VS=3.200 OC
*

COMPUTE FLOWRATE ID=1 NHD= 2708 AREA= 0.0381 Sq km L= 60 m W= 60 m
SOIL ZONE I II III IV V VI VII VIII IX
46.1 0.0 0.0 8.3 0.0 0.2 0.0 45.3 0.0
RATING CURVES: IDMC=6 IDOC=6 QRCM= 0.50 QROC= 0.25
ROUTING MODEL=2 CONSTANTS: OVERLAND FTB= 1.2 TLO= 0.0
SUBSURFACE: KSS= 5.0 KGW= 384 h PCODE=1 WQPCODE=1
RBASIN=0 IDA=0 IDB=0 IDC=0 IDD=0 RBDUMP=0
GWFACT=1.0 GWON=1
SWQTH= 0.0 L/s SWPUMP= 0.0 L/s SWCODE=0

*
ADD HYD ID=4 HYD NO= 4708 IDA=3 IDB=1 ICODE=0
PRINT HYD ID=4 PCODE=1 MODE=10
*
* Conveyance infiltration gallery within 708, sized by 25mm,15% safety faactor; hydrograph 4708
*

ROUTE SPECIAL POND ID=3 HYD NO=1708 INFLOW=4 PCODE=0 OPTION= 5
Inflow controls:
USPCT=100% USDIV=0 PCTA= 0% ADIV=0
GWPCT= 0% GWDIV=0
Maximum level for Routing Tables: ZMAX= 101.100
Recharge characteristics for Compartment A
LEVELA= 100.000 EVAPA= 0.0 mm/d ACODE=0
CDA= 0.000 mm/h DZA= 10.00 m
Recharge characteristics for Compartment B
LEVELB= 100.000 CCBA= 0.00000 EVAPB= 0.0 mm/d BCODE=1
CDB= 15.000 mm/h DZB= 10.00 m
Irrigation Pond Controls: IPOND=0
Number of points= 3
Compartment A Compartment B
Elevation Outflow Storage SFArea Outflow Storage SFArea
(m) (cms) (ha*m) (ha) (cms) (ha*m) (ha)
100.000 0.000 0.0000 0.0000 0.000 0.0000 0.0813
101.000 0.000 0.0000 0.0000 0.000 0.0813 0.0813
101.100 0.000 0.0000 0.0000 1.000 0.0935 0.0813

*
PRINT HYD ID=3 PCODE=1 MODE=10
*
*-----
*

* Non-roof areas within 708; hydrograph 7708
* VS=3.200 MC, VS=3.200 OC
*

COMPUTE FLOWRATE ID=1 NHD= 7708 AREA= 0.0912 Sq km L= 60 m W= 340 m
SOIL ZONE I II III IV V VI VII VIII IX
49.7 0.0 0.0 7.8 0.0 0.2 0.0 42.4 0.0
RATING CURVES: IDMC=6 IDOC=6 QRCM= 0.50 QROC= 0.25
ROUTING MODEL=2 CONSTANTS: OVERLAND FTB= 1.2 TLO= 0.0
SUBSURFACE: KSS= 5.0 KGW= 384 h PCODE=1 WQPCODE=1

RBASIN=0 IDA=0 IDB=0 IDC=0 IDD=0 RBDUMP=0

GWFACT=1.0 GWON=1

SWQTH= 0.0 L/s SWPUMP= 0.0 L/s SWCODE=0

*

* Sum catchment 7708 and 4708 component hydrographs

*

ADD HYD ID=4 HYD NO= 3708 IDA=3 IDB=1 ICODE=0

PRINT HYD ID=4 PCODE=1 MODE=10

KEEP HYD

*

* Sum catchment 708 component hydrographs

*

ADD HYD ID=3 HYD NO= 708 IDA=2 IDB=4 ICODE=0

PRINT HYD ID=3 PCODE=1 MODE=10

KEEP HYD ID=3 CUTOFF=24 ICODE=5 ISTEP=1 IFORM=0 IDB=3 IMET=1

*

* Roof areas within 701, hydrograph 9701

* VS=101.000 MC, VS=3.200 OC

*

COMPUTE FLOWRATE ID=1 NHD= 9701 AREA= 0.0187 Sq km L= 20 m W= 10 m

SOIL ZONE I II III IV V VI VII VIII IX

100.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

RATING CURVES: IDMC=6 IDOC=5 QRMG= 0.50 QROC= 0.25

ROUTING MODEL=2 CONSTANTS: OVERLAND FTB= 1.2 TLO= 0.0

SUBSURFACE: KSS= 5.0 KGW= 384 h PCODE=1 WQPCODE=1

RBASIN=0 IDA=0 IDB=0 IDC=0 IDD=0 RBDUMP=0

GWFACT=0.75 GWON=1

SWQTH= 0.0 L/s SWPUMP= 0.0 L/s SWCODE=0

*

* Roof infiltration gallery within 701; hydrograph 8701

*

ROUTE SPECIAL POND ID=2 HYD NO=8701 INFLOW=1 PCODE=0 OPTION= 5

Inflow controls:

USPCT=100% USDIV=0 PCTA= 0% ADIV=0

GWPCCT= 0% GWDIV=0

Maximum level for Routing Tables: ZMAX= 101.100

Recharge characteristics for Compartment A

LEVELA= 100.000 EVAPA= 0.0 mm/d ACODE=0

CDA= 0.000 mm/h DZA= 10.00 m

Recharge characteristics for Compartment B

LEVELB= 100.000 CCBA= 0.00000 EVAPB= 0.0 mm/d BCODE=1

CDB= 15.000 mm/h DZB= 10.00 m

Irrigation Pond Controls: IPOND=0

Number of points= 3

Compartment A Compartment B

Elevation Outflow Storage SFArea Outflow Storage SFArea

(m) (cms) (ha*m) (ha) (cms) (ha*m) (ha)

100.000 0.000 0.0000 0.0000 0.000 0.0000 0.1166

101.000 0.000 0.0000 0.0000 0.000 0.0467 0.1166

101.100 0.000 0.0000 0.0000 1.000 0.0513 0.1166

*

* Non-roof areas within 701; hydrograph 7701

* VS=3.200 MC, VS=3.200 OC

*

COMPUTE FLOWRATE ID=1 NHD= 7701 AREA= 0.0661 Sq km L= 60 m W= 265 m

SOIL ZONE I II III IV V VI VII VIII IX

43.7 0.0 0.0 8.7 0.0 0.2 0.0 47.4 0.0

RATING CURVES: IDMC=6 IDOC=6 QRMG= 0.50 QROC= 0.25

ROUTING MODEL=2 CONSTANTS: OVERLAND FTB= 1.2 TLO= 0.0

SUBSURFACE: KSS= 5.0 KGW= 384 h PCODE=1 WQPCODE=1

RBASIN=0 IDA=0 IDB=0 IDC=0 IDD=0 RBDUMP=0

GWFACT=0.75 GWON=1

SWQTH= 0.0 L/s SWPUMP= 0.0 L/s SWCODE=0

*

* Sum catchment 701 component hydrographs

*

ADD HYD ID=4 HYD NO= 701 IDA=2 IDB=1 ICODE=0

PRINT HYD ID=4 PCODE=1 MODE=10

KEEP HYD ID=4 CUTOFF=24 ICODE=5 ISTEP=1 IFORM=0 IDB=4 IMET=1

*

* Sum catchments 708 and 701, call result 1701

*

ADD HYD ID=1 HYD NO= 1701 IDA=3 IDB=4 ICODE=0

PRINT HYD ID=1 PCODE=1 MODE=10

*

* Parameters for Catchment 702 got updated, school blk major flows to the creek

*

*

* Roof areas within 702, hydrograph 9702

* VS=101.000 MC, VS=3.200 OC

*

COMPUTE FLOWRATE ID=2 NHD= 9702 AREA= 0.0486 Sq km L= 20 m W= 10 m

SOIL ZONE I II III IV V VI VII VIII IX

100.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

RATING CURVES: IDMC=6 IDOC=5 QRMG= 0.50 QROC= 0.25

ROUTING MODEL=2 CONSTANTS: OVERLAND FTB= 1.2 TLO= 0.0

SUBSURFACE: KSS= 5.0 KGW= 384 h PCODE=1 WQPCODE=1

RBASIN=0 IDA=0 IDB=0 IDC=0 IDD=0 RBDUMP=0

GWFACT=0.7 GWON=1

SWQTH= 0.0 L/s SWPUMP= 0.0 L/s SWCODE=0

*

* Roof infiltration gallery within 702; hydrograph 8702

*

ROUTE SPECIAL POND ID=3 HYD NO=8702 INFLOW=2 PCODE=0 OPTION= 5

Inflow controls:

USPCT=100% USDIV=0 PCTA= 0% ADIV=0

GWPCCT= 0% GWDIV=0

Maximum level for Routing Tables: ZMAX= 101.100

Recharge characteristics for Compartment A

LEVELA= 100.000 EVAPA= 0.0 mm/d ACODE=0

CDA= 0.000 mm/h DZA= 10.00 m

Recharge characteristics for Compartment B

LEVELB= 100.000 CCBA= 0.00000 EVAPB= 0.0 mm/d BCODE=1

CDB= 15.000 mm/h DZB= 10.00 m

Irrigation Pond Controls: IPOND=0

Number of points= 3

Compartment A Compartment B

Elevation Outflow Storage SFArea Outflow Storage SFArea

(m) (cms) (ha*m) (ha) (cms) (ha*m) (ha)

100.000 0.000 0.0000 0.0000 0.000 0.0000 0.3035

101.000 0.000 0.0000 0.0000 0.000 0.1214 0.3035

101.100 0.000 0.0000 0.0000 1.000 0.1336 0.3035

*

PRINT HYD ID=3 PCODE=1 MODE=10

*

*

* Area of 702 to conveyance infiltration system, hydrograph 6702

*

*COMPUTE FLOWRATE ID=2 NHD= 6702 AREA= 0.02 Sq km L= 140 m W= 140 m

* SOIL ZONE I II III IV V VI VII VIII IX

* 33.6 0.0 0.0 10.3 0.0 0.2 0.0 55.9 0.0

* RATING CURVES: IDMC=6 IDOC=6 QRMG= 0.50 QROC= 0.25

* ROUTING MODEL=2 CONSTANTS: OVERLAND FTB= 1.2 TLO= 0.0

* SUBSURFACE: KSS= 5.0 KGW= 384 h PCODE=1 WQPCODE=1

*

```
*
* RBASIN=0 IDA=0 IDB=0 IDC=0 IDD=0 RBDUMP=0
* GWFACT=0.7 GWON=1
* SWQTH= 0.0 L/s SWPUMP= 0.0 L/s SWCODE=0
*
*PRINT HYD ID=2 PCODE=1 MODE=10
*
* Route 6702 through reservoir 4702 - conveyance infiltration system
*
*ROUTE SPECIAL POND ID=4 HYD NO=4702 INFLOW=2 PCODE=0 OPTION= 5
* Inflow controls:
* USPCT=100% USDIV=0 PCTA= 0% ADIV=0
* GWPCT= 0% GWDIV=0
* Maximum level for Routing Tables: ZMAX= 101.100
* Recharge characteristics for Compartment A
* LEVELA= 100.000 EVAPA= 0.0 mm/d ACODE=0
* CDA= 0.000 mm/h DZA= 23.00 m
* Recharge characteristics for Compartment B
* LEVELB= 100.000 CCBA= 0.00000 EVAPB= 0.0 mm/d BCODE=1
* CDB= 15.000 mm/h DZB= 10.00 m
* Irrigation Pond Controls: IPOND=0
* Number of points= 3
*
*      Compartment A      Compartment B
* Elevation Outflow Storage SFArea Outflow Storage SFArea
* (m) (cms) (ha*m) (ha) (cms) (ha*m) (ha)
* 100.000 0.000 0.0000 0.0000 0.000 0.0000 0.1250
* 101.000 0.000 0.0000 0.0000 0.000 0.0500 0.1250
* 101.100 0.000 0.0000 0.0000 1.000 0.0550 0.1250
*
*PRINT HYD ID=4 PCODE=1 MODE=10
*
* Remainder of catchment 702, hydr. 7702
*
*COMPUTE FLOWRATE ID=2 NHD= 7702 AREA= 0.2096 Sq km L= 495 m W= 500 m
* SOIL ZONE I II III IV V VI VII VIII IX
* 48.4 0.0 0.0 8.0 0.0 0.2 0.0 43.5 0.0
* RATING CURVES: IDMC=6 IDOC=6 QRCM= 0.50 QROC= 0.25
* ROUTING MODEL=2 CONSTANTS: OVERLAND FTB= 1.2 TLO= 0.0
* SUBSURFACE: KSS= 5.0 KGW= 384 h PCODE=1 WQPCODE=1
* RBASIN=0 IDA=0 IDB=0 IDC=0 IDD=0 RBDUMP=0
* GWFACT=0.7 GWON=1
* SWQTH= 0.0 L/s SWPUMP= 0.0 L/s SWCODE=0
*
* Sum hydr. 4702, 7702, call result 3702, total non-roof area of 702
*
*ADD HYD ID=5 HYD NO= 3702 IDA=4 IDB=2 ICODE=0
*
*
*****
* ADD 1721 runoff to catchment 702 then to SWMF2 South FB
*****
*
* Roof areas within 712, hydrograph 9702
* VS=101.000 MC, VS=3.200 OC
*
*COMPUTE FLOWRATE ID=2 NHD= 9712 AREA= 0.00001 Sq km L= 20 m W= 10 m
* SOIL ZONE I II III IV V VI VII VIII IX
* 100.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
* RATING CURVES: IDMC=6 IDOC=5 QRCM= 0.50 QROC= 0.25
* ROUTING MODEL=2 CONSTANTS: OVERLAND FTB= 1.2 TLO= 0.0
* SUBSURFACE: KSS= 5.0 KGW= 384 h PCODE=1 WQPCODE=1
* RBASIN=0 IDA=0 IDB=0 IDC=0 IDD=0 RBDUMP=0
* GWFACT=0.7 GWON=1
```

```

* SWQTH= 0.0 L/s SWPUMP= 0.0 L/s SWCODE=0
*
* Roof infiltration gallery within 702; hydrograph 8702
*
ROUTE SPECIAL POND ID=4 HYD NO=8712 INFLOW=2 PCODE=0 OPTION= 5
Inflow controls:
USPCT=100% USDIV=0 PCTA= 0% ADIV=0
GWPCT= 0% GWDIV=0
Maximum level for Routing Tables: ZMAX= 101.100
Recharge characteristics for Compartment A
LEVELA= 100.000 EVAPA= 0.0 mm/d ACODE=0
CDA= 0.000 mm/h DZA= 10.00 m
Recharge characteristics for Compartment B
LEVELB= 100.000 CCBA= 0.00000 EVAPB= 0.0 mm/d BCODE=1
CDB= 15.000 mm/h DZB= 10.00 m
Irrigation Pond Controls: IPOND=0
Number of points= 3
*
*      Compartment A      Compartment B
* Elevation Outflow Storage SFArea Outflow Storage SFArea
* (m) (cms) (ha*m) (ha) (cms) (ha*m) (ha)
* 100.000 0.000 0.0000 0.0000 0.000 0.0000 0.0001
* 101.000 0.000 0.0000 0.0000 0.000 0.0001 0.0001
* 101.100 0.000 0.0000 0.0000 1.000 0.0001 0.0001
*
*PRINT HYD ID=3 PCODE=1 MODE=10
* Non-roof areas within 712 (Hallman MR Blk); hydrograph 7712
* VS=3.200 MC, VS=3.200 OC
*
*COMPUTE FLOWRATE ID=2 NHD= 7712 AREA= 0.0098 Sq km L= 60 m W= 50 m
* SOIL ZONE I II III IV V VI VII VIII IX
* 54.0 0.0 0.0 7.1 0.0 0.2 0.0 38.7 0.0
* RATING CURVES: IDMC=6 IDOC=6 QRCM= 0.50 QROC= 0.25
* ROUTING MODEL=2 CONSTANTS: OVERLAND FTB= 1.2 TLO= 0.0
* SUBSURFACE: KSS= 5.0 KGW= 384 h PCODE=1 WQPCODE=1
* RBASIN=0 IDA=0 IDB=0 IDC=0 IDD=0 RBDUMP=0
* GWFACT=1.0 GWON=1
* SWQTH= 0.0 L/s SWPUMP= 0.0 L/s SWCODE=0
*
*
*ADD HYD ID=5 HYD NO= 712 IDA=4 IDB=2 ICODE=0
*PRINT HYD ID=5 PCODE=1 MODE=10
*
* Sum catchment 7712 and surplus from roof inf. galleries (8702) hydrographs
*
*ADD HYD ID=2 HYD NO= 1720 IDA=3 IDB=5 ICODE=0
*
*-----
*
*COMPUTE FLOWRATE ID=5 NHD= 7702 AREA= 0.1967 Sq km L= 65 m W= 500 m
* SOIL ZONE I II III IV V VI VII VIII IX
* 48.3 0.0 0.0 8.0 0.0 0.2 0.0 43.5 0.0
* RATING CURVES: IDMC=6 IDOC=6 QRCM= 0.50 QROC= 0.25
* ROUTING MODEL=2 CONSTANTS: OVERLAND FTB= 1.2 TLO= 0.0
* SUBSURFACE: KSS= 5.0 KGW= 384 h PCODE=1 WQPCODE=1
* RBASIN=0 IDA=0 IDB=0 IDC=0 IDD=0 RBDUMP=0
* GWFACT=0.7 GWON=1
* SWQTH= 0.0 L/s SWPUMP= 0.0 L/s SWCODE=0
*
*-----
*
*PRINT HYD ID=5 PCODE=1 MODE=10
*****
```

```
* Add minor flow from school block 7021
*
* Sum hydr. 1721, 7702, call result 1722
*
ADD HYD          ID=4 HYD NO= 1722 IDA=5 IDB=6 ICODE=0
*****
* Sum components of 702 (1722, 1720), call result 702
*
ADD HYD          ID=5 HYD NO= 702 IDA=2 IDB=4 ICODE=0
PRINT HYD        ID=5 PCODE=1 MODE=10
*
* Sum hydr. 1701, 702, call result 1702
*
ADD HYD          ID=3 HYD NO= 1702 IDA=1 IDB=5 ICODE=0
PRINT HYD        ID=3 PCODE=1 MODE=10
*
* SWM Facility 2 (Central SWM Facility)
* Route 1702 through resevoir 5702
*
ROUTE SPECIAL POND ID=1 HYD NO=5702 INFLOW=3 PCODE=0 OPTION=15
Inflow controls:
    USPCT=100% USDIV=0    PCTA= 0% ADIV=0
    GWPCCT= 0% GWDIV=0
Maximum level for Routing Tables: ZMAX= 310.400
Recharge characteristics for Compartment A
    LEVELA= 308.300      EVAPA= 0.0 mm/d ACODE=0
    CDA= 0.000 mm/h DZA= 10.00 m
Recharge characteristics for Compartment B
    LEVELB= 308.300 CCBA= 0.00000 EVAPB= 1.4 mm/d BCODE=1
    CDB= 0.000 mm/h DZB= 10.00 m
Irrigation Pond Controls: IPOND=0
Number of points= 22

      Compartment A      Compartment B
Elevation Outflow Storage SFArea Outflow Storage SFArea
(m)        (cms)  (ha*m)  (ha)  (cms)  (ha*m)  (ha)
308.300    0.000  0.0000  0.0000  0.0000  0.0000  1.6687
308.400    0.000  0.0000  0.0000  0.0110  0.1696  1.7233
308.500    0.000  0.0000  0.0000  0.0347  0.3447  1.7784
308.600    0.000  0.0000  0.0000  0.0517  0.5253  1.8339
308.700    0.000  0.0000  0.0000  0.0643  0.7115  1.8898
308.800    0.000  0.0000  0.0000  0.0749  0.9033  1.9462
308.900    0.000  0.0000  0.0000  0.0841  1.1019  2.0268
309.000    0.000  0.0000  0.0000  0.0924  1.3062  2.0585
309.100    0.000  0.0000  0.0000  0.1000  1.5136  2.0901
309.200    0.000  0.0000  0.0000  0.1071  1.7242  2.1218
309.300    0.000  0.0000  0.0000  0.4790  1.9370  2.1328
309.400    0.000  0.0000  0.0000  1.1847  2.1520  2.1679
309.500    0.000  0.0000  0.0000  2.1398  2.3705  2.2030
309.600    0.000  0.0000  0.0000  3.3212  2.5926  2.2381
309.700    0.000  0.0000  0.0000  4.7191  2.8182  2.2732
309.800    0.000  0.0000  0.0000  6.3292  3.0472  2.3083
309.900    0.000  0.0000  0.0000  8.1499  3.2798  2.3434
310.000    0.000  0.0000  0.0000  10.029  3.5159  2.3785
310.100    0.000  0.0000  0.0000  12.268  3.7555  2.4135
310.200    0.000  0.0000  0.0000  14.720  3.9986  2.4486
310.300    0.000  0.0000  0.0000  17.388  4.2452  2.4837
310.400    0.000  0.0000  0.0000  20.275  4.4954  2.5188

*
PRINT HYD        ID=1 PCODE=1 MODE=10
KEEP HYD        ID=1 CUTOFF=24 ICODE=5 ISTEP=1 IFORM=0 IDB=1 IMET=1
*
*
```

```
* 5702 -> 7312 / 2702 Split Pond 2 Outflow (5702) into Wetland DIVERT (7312)
*      and Sewer (2702) components
*
*-----1-----2-----3-----4-----5-----6-----7-----8
DIVERT FLOWS      INFLOW=1  DIVERT=6  HYD NO=7312 PCODE=1 OPTION=4
                  THRUFL0=5  HYD NOB=2702 THROUGHFLOW DIVERSION
                                           0.000  0.000
                                           0.011  0.000
                                           0.035  0.000
                                           0.052  0.000
                                           0.064  0.000
                                           0.075  0.000
                                           0.084  0.000
                                           0.092  0.000
                                           0.100  0.000
                                           0.107  0.000
                                           0.114  0.365
                                           0.120  1.065
                                           0.126  2.014
                                           0.152  10.03
                                           0.170  10.50
                  IDFLAG=0 IDSTOR=0 IGWT=0
*
*KEEP HYD        ID=5 CUTOFF=0 ICODE=5 ISTEP=1 IFORM=0 IDB=5 IMET=0
*PRINT HYD       ID=5 PCODE=1 MODE=10
*KEEP HYD        ID=6 CUTOFF=0 ICODE=5 ISTEP=1 IFORM=0 IDB=6 IMET=0
*PRINT HYD       ID=6 PCODE=1 MODE=10
*
*-----
*-----
*
*
* Typical Roof section
*
COMPUTE RATING CURVE ID=5 VS= 101.000 NSEGS=3
      MIN EL= 295.00 MAX EL= 295.70
      CHNSLP= 0.2500 FLNSLP= 0.2500
      N= 0.018 DIST= 100.00
      N=-0.018 DIST= 400.00
      N= 0.018 DIST= 500.00
      DIST  ELEV  DIST  ELEV  DIST  ELEV
      0.00 295.70 100.00 295.50 100.10 295.00
      399.90 295.00 400.00 295.50 500.00 295.70
      RFN=0.0000 PCODE=1
*
* Typical Urban section
*
COMPUTE RATING CURVE ID=6 VS= 3.200 NSEGS=3
      MIN EL= 295.00 MAX EL= 295.70
      CHNSLP= 0.02000 FLNSLP= 0.02000
      N= 0.015 DIST= 200.00
      N=-0.015 DIST= 300.00
      N= 0.015 DIST= 500.00
      DIST  ELEV  DIST  ELEV  DIST  ELEV
      0.00 295.70 200.00 295.50 200.10 295.00
      299.90 295.00 300.00 295.50 500.00 295.70
*
* Roof & Park areas within 702 directed to Wetland, hydrograph 7020
* VS=101.000 MC, VS=3.200 OC
*
COMPUTE FLOWRATE ID=1 NHD= 7020 AREA= 0.0065 Sq km L= 20 m W= 10 m
      SOIL ZONE I II III IV V VI VII VIII IX
```

100.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

RATING CURVES: IDMC=6 IDOC=5 QRCM= 0.50 QROC= 0.25

ROUTING MODEL=2 CONSTANTS: OVERLAND FTB= 1.2 TLO= 0.0

SUBSURFACE: KSS= 5.0 KGW= 384 h PCODE=1 WQPCODE=1

RBASIN=0 IDA=0 IDB=0 IDC=0 IDD=0 RBDUMP=0

GWFACT=1.0 GWON=1

SWQTH= 0.0 L/s SWPUMP= 0.0 L/s SWCODE=0

ID=1 PCODE=1 MODE=10

PRINT HYD

*

* Roof areas within 708 directed to Wetland, hydrograph 7080

* VS=101.000 MC, VS=3.200 OC

*

COMPUTE FLOWRATE ID=2 NHD= 7080 AREA= 0.0154 Sq km L= 20 m W= 10 m

SOIL ZONE I II III IV V VI VII VIII IX

100.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

RATING CURVES: IDMC=6 IDOC=5 QRCM= 0.50 QROC= 0.25

ROUTING MODEL=2 CONSTANTS: OVERLAND FTB= 1.2 TLO= 0.0

SUBSURFACE: KSS= 5.0 KGW= 384 h PCODE=1 WQPCODE=1

RBASIN=0 IDA=0 IDB=0 IDC=0 IDD=0 RBDUMP=0

GWFACT=1.0 GWON=1

SWQTH= 0.0 L/s SWPUMP= 0.0 L/s SWCODE=0

ID=2 PCODE=1 MODE=10

PRINT HYD

*

* Sum catchments 7020 and 7080, call result 2312

*

ADD HYD ID=3 HYD NO= 2312 IDA=1 IDB=2 ICODE=0

PRINT HYD ID=3 PCODE=1 MODE=10

*

* Roof areas within 701 directed to Wetland, hydrograph 7010

* VS=101.000 MC, VS=3.200 OC

*

COMPUTE FLOWRATE ID=1 NHD= 7010 AREA= 0.0034 Sq km L= 20 m W= 10 m

SOIL ZONE I II III IV V VI VII VIII IX

100.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

RATING CURVES: IDMC=6 IDOC=5 QRCM= 0.50 QROC= 0.25

ROUTING MODEL=2 CONSTANTS: OVERLAND FTB= 1.2 TLO= 0.0

SUBSURFACE: KSS= 5.0 KGW= 384 h PCODE=1 WQPCODE=1

RBASIN=0 IDA=0 IDB=0 IDC=0 IDD=0 RBDUMP=0

GWFACT=1.0 GWON=1

SWQTH= 0.0 L/s SWPUMP= 0.0 L/s SWCODE=0

ID=1 PCODE=1 MODE=10

PRINT HYD

*

* Sum 2312 and 7010, call result 3312

*

ADD HYD ID=2 HYD NO= 3312 IDA=3 IDB=1 ICODE=0

PRINT HYD ID=2 PCODE=1 MODE=10

*

*

* 2.0% Typical Main channel Parabolic Swale

*

COMPUTE RATING CURVE ID=4 VS= 100.020 NSEGS=3

MIN EL= 100.70 MAX EL= 103.00

CHNSLP= 0.02000 FLNSLP= 0.02000

N= 0.080 DIST= 20.00

N=-0.050 DIST= 30.00

N= 0.080 DIST= 50.00

DIST ELEV DIST ELEV DIST ELEV

0.00 103.00 20.00 101.00 23.00 100.80

25.00 100.70 27.00 100.80 30.00 101.00

50.00 103.00

RFN=0.0000 PCODE=1

*

* Catchment 312, existing wetland area for water balancing

* Percentage wetland increased from 4 to 20%

* This area has been spliced from drainage area 702 above

* VS= 100.020 is main channel & VS= 2.035 is off-channel

*

COMPUTE FLOWRATE ID=1 NHD= 312 AREA= 0.0552 Sq km L= 280 m W= 180 m

SOIL ZONE I II III IV V VI VII VIII IX

0.0 20.0 1.0 5.0 0.0 0.0 0.0 74.0 0.0

RATING CURVES: IDMC=4 IDOC=2 QRCM= 0.05 QROC= 0.01

ROUTING MODEL=2 CONSTANTS: OVERLAND FTB= 3.0 TLO= 0.0

SUBSURFACE: KSS= 5.0 KGW= 384 h PCODE=1 WQPCODE=1

RBASIN=0 IDA=0 IDB=0 IDC=0 IDD=0 RBDUMP=0

GWFACT=1.0 GWON=1

SWQTH= 0.0 L/s SWPUMP= 0.0 L/s SWCODE=0

*

PRINT HYD ID=1 PCODE=1 MODE=10

*

* Sum hydr. 3312 and 312, call result 4312

*

ADD HYD ID=3 HYD NO= 4312 IDA=2 IDB=1 ICODE=0

PRINT HYD ID=3 PCODE=1 MODE=10

*

*

* Sum hydr. 4312 and Diversion from SWM 2 (7312) call result 6312

*

ADD HYD ID=1 HYD NO= 6312 IDA=3 IDB=6 ICODE=0

PRINT HYD ID=1 PCODE=1 MODE=10

KEEP HYD ID=1 CUTOFF=0 ICODE=5 ISTEP=1 IFORM=0 IDB=1 IMET=0

*

*

* Central Wetland

* Route 6312 through Wetland 2 Depression - Revised per MTE Survey April 2017

* Min Ponding set to 307.9 to be more in line with monitoring data

* Modfy infil area for wetland 5312, same as Model Oct20, 2017

*

ROUTE SPECIAL POND ID=2 HYD NO=5312 INFLOW=1 PCODE=0 OPTION=15

Inflow controls:

USPCT=100% USDIV=0 PCTA= 0% ADIV=0

GWPCT= 0% GWDIV=0

Maximum level for Routing Tables: ZMAX= 311.000

Recharge characteristics for Compartment A

LEVELA= 307.900 EVAPA= 0.0 mm/d ACODE=0

CDA= 0.000 mm/h DZA= 10.00 m

Recharge characteristics for Compartment B

LEVELB= 307.900 CCBA= 0.00000 EVAPB= 1.4 mm/d BCODE=1

CDB= 50.000 mm/h DZB= 10.00 m

Irrigation Pond Controls: IPOND=0

Number of points= 11

Compartment A Compartment B

Elevation Outflow Storage SFArea Outflow Storage SFArea

(m) (cms) (ha*m) (ha) (cms) (ha*m) (ha)

307.900 0.000 0.0000 0.0000 0.0000 0.000 0.0000

308.100 0.000 0.0000 0.0000 0.0000 0.229 0.0090

308.400 0.000 0.0000 0.0000 0.0000 0.609 0.0050

308.500 0.000 0.0000 0.0000 0.0000 0.751 0.0090

308.510 0.000 0.0000 0.0000 0.0000 0.766 0.3950

309.000 0.000 0.0000 0.0000 0.0000 1.656 1.0491

309.500 0.000 0.0000 0.0000 0.1259 3.009 2.1717

310.000 0.000 0.0000 0.0000 0.1523 5.043 3.7746

310.500	0.000	0.0000	0.0000	0.1747	7.912	5.5009
310.700	0.000	0.0000	0.0000	0.1829	9.300	6.1970
311.000	0.000	0.0000	0.0000	0.1945	11.62	7.0741

*
PRINT HYD ID=2 PCODE=1 MODE=10
KEEP HYD ID=2 CUTOFF=24 ICODE=5 ISTEP=1 IFORM=0 IDB=2 IMET=1
*~
*~
*~
CHANGE INPUT FILE
*
* Go to event file
*
CHANGE INPUT FILE
*
FINISH

1	106	0.0215	7.46	0.0195	0.	RCFLAGS	0	0	endchi.dat	cn
1	5106	0.0215	0.00	0.0000	110.	RCFLAGS	0	0		
1	107	0.1510	6.28	0.1089	0.	RCFLAGS	0	0		
1	1103	0.1725	5.50	0.1089	0.	RCFLAGS	0	0		
1	104	0.0000	0.00	0.0000	0.	RCFLAGS	0	0		
1	1104	0.1725	5.50	0.1089	0.	RCFLAGS	0	0		
1	105	0.0323	7.22	0.3728	0.	RCFLAGS	0	0		
1	1051	0.2048	5.77	0.4024	0.	RCFLAGS	0	0		
1	1050	0.0108	30.36	0.1665	0.	RCFLAGS	0	0		
1	1105	0.2156	7.00	0.5357	0.	RCFLAGS	0	0		
1	101	0.0032	6.83	0.0086	0.	RCFLAGS	0	0		
1	102	0.0214	6.27	0.0362	0.	RCFLAGS	0	0		
1	1101	0.0246	6.34	0.0448	0.	RCFLAGS	0	0		
1	103	0.0259	0.09	0.0000	0.	RCFLAGS	0	0		
1	1102	0.0505	3.14	0.0448	0.	RCFLAGS	0	0		
1	5103	0.0505	0.00	0.0000	144.	RCFLAGS	0	0		
1	1106	0.2661	5.67	0.5357	0.	RCFLAGS	0	0		
1	108	0.1240	0.70	0.0007	0.	RCFLAGS	0	0		
1	1107	0.3901	4.09	0.5359	0.	RCFLAGS	0	0		
1	5108	0.3901	4.03	0.2593	387.	RCFLAGS	0	0		
1	2108	0.3901	4.03	0.2564	0.	RCFLAGS	0	0		
1	109	0.1252	2.05	0.0178	0.	RCFLAGS	0	0		
1	1108	0.5153	3.55	0.2741	0.	RCFLAGS	0	0		
1	110	0.0201	6.28	0.0691	0.	RCFLAGS	0	0		
1	1109	0.5354	3.65	0.3225	0.	RCFLAGS	0	0		
1	111	0.0498	6.28	0.0889	0.	RCFLAGS	0	0		
1	1110	0.5852	3.87	0.4040	0.	RCFLAGS	0	0		
1	2110	0.5852	3.88	0.3751	0.	RCFLAGS	0	0		
1	305	0.0015	6.72	0.0036	0.	RCFLAGS	0	0		
1	9709	0.0064	30.37	0.1766	0.	RCFLAGS	0	0		
1	8709	0.0064	3.55	0.0147	160.	RCFLAGS	0	0		
1	6709	0.0230	17.14	0.2004	0.	RCFLAGS	0	0		
1	4709	0.0230	4.60	0.0990	279.	RCFLAGS	0	0		
1	7709	0.0082	17.14	0.0715	0.	RCFLAGS	0	0		
1	3709	0.0312	7.90	0.1197	0.	RCFLAGS	0	0		
1	709	0.0376	7.16	0.1197	0.	RCFLAGS	0	0		
1	1709	0.0391	7.14	0.1220	0.	RCFLAGS	0	0		
1	9704	0.0053	30.37	0.1463	0.	RCFLAGS	0	0		
1	8704	0.0053	3.46	0.0129	133.	RCFLAGS	0	0		
1	6704	0.0170	18.85	0.1729	0.	RCFLAGS	0	0		
1	4704	0.0170	7.42	0.1542	189.	RCFLAGS	0	0		
1	7704	0.0115	18.84	0.0902	0.	RCFLAGS	0	0		
1	3704	0.0285	12.03	0.2135	0.	RCFLAGS	0	0		
1	704	0.0338	10.69	0.2135	0.	RCFLAGS	0	0		
1	1704	0.0729	8.78	0.2540	0.	RCFLAGS	0	0		
1	5704	0.0729	7.53	0.0055	605.	RCFLAGS	0	0		
1	705	0.0043	25.74	0.1049	0.	RCFLAGS	0	0	endchi.dat	cn
1	1705	0.0772	8.55	0.1055	0.	RCFLAGS	0	0		
1	402	0.0514	9.88	0.0841	0.	RCFLAGS	0	0		
1	1401	0.1286	9.08	0.1351	0.	RCFLAGS	0	0		
1	403	0.1073	3.54	0.0375	0.	RCFLAGS	0	0		
1	1402	0.2359	6.56	0.1462	0.	RCFLAGS	0	0		
1	5403	0.2359	0.00	0.0000	1038.	RCFLAGS	0	0		
1	405	0.0966	7.69	0.0774	0.	RCFLAGS	0	0		
1	5405	0.0966	0.00	0.0000	374.	RCFLAGS	0	0		
1	406	0.0930	7.18	0.0713	0.	RCFLAGS	0	0		
1	1403	0.1896	3.52	0.0713	0.	RCFLAGS	0	0		
1	5406	0.1896	0.00	0.0000	306.	RCFLAGS	0	0		
1	7120	0.0095	30.37	0.2622	0.	RCFLAGS	0	0		
1	404	0.0523	8.09	0.1201	0.	RCFLAGS	0	0		
1	1712	0.0618	11.52	0.3021	0.	RCFLAGS	0	0		
1	1404	0.2514	2.83	0.3021	0.	RCFLAGS	0	0		

1	407	0.2555	2.79	0.0947	0.	RCFLAGS	0	0		
1	1405	0.5069	2.81	0.3318	0.	RCFLAGS	0	0		
1	5407	0.5069	0.00	0.0000	1221.	RCFLAGS	0	0		
1	1406	0.7428	0.00	0.0000	0.	RCFLAGS	0	0		
1	5437	0.7428	0.00	0.0000	0.	RCFLAGS	0	0		
1	7090	0.0070	30.37	0.1932	0.	RCFLAGS	0	0		
1	7091	0.7498	0.28	0.1932	0.	RCFLAGS	0	0		
1	408	0.0148	7.54	0.0319	0.	RCFLAGS	0	0		
1	409	0.8840	1.17	0.0603	0.	RCFLAGS	0	0		
1	1407	0.8988	1.28	0.0894	0.	RCFLAGS	0	0		
1	1408	1.6486	0.82	0.2369	0.	RCFLAGS	0	0		
1	5409	1.6486	0.00	0.0000	1131.	RCFLAGS	0	0		
1	201	0.0639	16.75	0.3172	0.	RCFLAGS	0	0		
1	9710	0.0186	30.37	0.5134	0.	RCFLAGS	0	0		
1	8710	0.0186	3.57	0.0351	466.	RCFLAGS	0	0		
1	7710	0.0478	17.19	0.3768	0.	RCFLAGS	0	0		
1	710	0.0664	13.38	0.3768	0.	RCFLAGS	0	0		
1	10	0.1303	15.03	0.6748	0.	RCFLAGS	0	0		
1	9711	0.0051	30.61	0.1408	0.	RCFLAGS	0	0		
1	8711	0.0051	3.84	0.0114	126.	RCFLAGS	0	0		
1	7711	0.0209	16.31	0.2089	0.	RCFLAGS	0	0		
1	711	0.0260	13.87	0.2089	0.	RCFLAGS	0	0		
1	2200	0.1563	14.84	0.8838	0.	RCFLAGS	0	0		
1	5201	0.1563	9.52	0.0109	2213.	RCFLAGS	0	0		
1	2201	0.1563	9.50	0.0109	0.	RCFLAGS	0	0		
1	202	0.1043	0.77	0.0007	0.	RCFLAGS	0	0		
1	1201	0.2606	6.00	0.0110	0.	RCFLAGS	0	0		
1	203	0.0368	6.54	0.0588	0.	RCFLAGS	0	0		
1	1202	0.2974	6.07	0.0648	0.	RCFLAGS	0	0		
1	2202	0.2974	6.07	0.0647	0.	RCFLAGS	0	0		
1	204	0.0453	7.14	0.0548	0.	RCFLAGS	0	0	endchi.dat	cn
1	1203	0.3427	6.21	0.1195	0.	RCFLAGS	0	0		
1	205	0.0700	0.40	0.0002	0.	RCFLAGS	0	0		
1	1204	0.4127	5.23	0.1196	0.	RCFLAGS	0	0		
1	301	0.1662	13.98	0.5657	0.	RCFLAGS	0	0		
1	302	0.1347	10.37	0.5591	0.	RCFLAGS	0	0		
1	1301	0.3009	12.36	1.1248	0.	RCFLAGS	0	0		
1	5301	0.3009	11.26	0.0428	3242.	RCFLAGS	0	0		
1	303	0.3216	13.47	1.3922	0.	RCFLAGS	0	0		
1	1302	0.6225	12.40	1.4048	0.	RCFLAGS	0	0		
1	304	0.1193	13.98	0.4652	0.	RCFLAGS	0	0		
1	1303	0.7418	12.66	1.8700	0.	RCFLAGS	0	0		
1	2303	0.7418	12.65	1.7830	0.	RCFLAGS	0	0		
1	307	0.1653	0.52	0.0008	0.	RCFLAGS	0	0		
1	1304	0.9071	10.44	1.7833	0.	RCFLAGS	0	0		
1	306	0.0490	6.50	0.0584	0.	RCFLAGS	0	0		
1	1306	0.9561	10.96	1.8437	0.	RCFLAGS	0	0		
1	9706	0.0090	30.61	0.2484	0.	RCFLAGS	0	0		
1	8706	0.0090	3.66	0.0155	224.	RCFLAGS	0	0		
1	6706	0.0055	18.24	0.0541	0.	RCFLAGS	0	0		
1	4706	0.0055	0.00	0.0000	96.	RCFLAGS	0	0		
1	7706	0.0323	18.25	0.2741	0.	RCFLAGS	0	0		
1	3706	0.0378	15.59	0.2741	0.	RCFLAGS	0	0		
1	706	0.0468	13.30	0.2741	0.	RCFLAGS	0	0		
1	5706	0.0468	11.14	0.0050	580.	RCFLAGS	0	0		
1	1706	1.0029	10.97	1.8472	0.	RCFLAGS	0	0		
1	707	0.0077	16.34	0.1363	0.	RCFLAGS	0	0		
1	2707	0.0077	16.34	0.1363	0.	RCFLAGS	0	0		
1	3707	0.0077	0.00	0.0000	0.	RCFLAGS	0	0		
1	1707	1.0106	11.01	1.8588	0.	RCFLAGS	0	0		
1	3082	0.0028	7.56	0.0057	0.	RCFLAGS	0	0		
1	3092	0.0119	0.30	0.0000	0.	RCFLAGS	0	0		

1 1902	0.0147	1.68	0.0057	0.	RCFLAGS	0	0
1 1903	0.0147	1.68	0.0057	0.	RCFLAGS	0	0
1 5309	0.0147	0.00	0.0000	17.	RCFLAGS	0	0
1 1308	1.0253	10.86	1.8588	0.	RCFLAGS	0	0
1 2308	1.0253	13.21	1.4387	0.	RCFLAGS	0	0
1 310	0.0682	12.55	0.2157	0.	RCFLAGS	0	0
1 1309	1.0935	13.17	1.5301	0.	RCFLAGS	0	0
1 311	0.4793	0.48	0.0021	0.	RCFLAGS	0	0
1 1310	1.5728	9.30	1.5308	0.	RCFLAGS	0	0
1 5310	1.5728	4.01	0.0955	7748.	RCFLAGS	0	0
1 313	0.0492	7.13	0.0369	0.	RCFLAGS	0	0
1 9721	0.0039	30.61	0.1077	0.	RCFLAGS	0	0
1 8721	0.0039	5.03	0.0076	96.	RCFLAGS	0	0
1 7721	0.0231	13.55	0.1906	0.	RCFLAGS	0	0
1 7021	0.0270	12.32	0.1906	0.	RCFLAGS	0	0 cndchi.dat
1 1721	0.0270	12.32	0.1906	0.	RCFLAGS	0	0
1 3131	0.0270	0.00	0.0000	96.	RCFLAGS	0	0
1 1311	0.0492	7.13	0.0369	0.	RCFLAGS	0	0
1 314	0.1142	0.35	0.0003	0.	RCFLAGS	0	0
1 1312	0.1634	2.39	0.0371	0.	RCFLAGS	0	0
1 315	0.0158	8.34	0.0306	0.	RCFLAGS	0	0
1 1313	0.1792	2.92	0.0671	0.	RCFLAGS	0	0
1 9703	0.0082	30.61	0.2263	0.	RCFLAGS	0	0
1 8703	0.0082	3.42	0.0183	206.	RCFLAGS	0	0
1 7703	0.0224	18.79	0.2110	0.	RCFLAGS	0	0
1 703	0.0306	14.67	0.2110	0.	RCFLAGS	0	0
1 1703	0.2098	4.63	0.2566	0.	RCFLAGS	0	0
1 316	0.2101	11.84	0.5683	0.	RCFLAGS	0	0
1 1314	0.4199	8.24	0.8180	0.	RCFLAGS	0	0
1 5314	0.4199	7.50	0.0930	2370.	RCFLAGS	0	0
1 1315	1.9927	5.10	0.1912	0.	RCFLAGS	0	0
1 2315	1.9927	5.09	0.1912	0.	RCFLAGS	0	0
1 317	0.1180	11.36	0.6139	0.	RCFLAGS	0	0
1 1316	2.1107	5.44	0.6414	0.	RCFLAGS	0	0
1 2316	2.1107	5.69	0.6329	0.	RCFLAGS	0	0
1 318	0.1539	13.76	0.5547	0.	RCFLAGS	0	0
1 1317	2.2646	6.24	1.1876	0.	RCFLAGS	0	0
1 9708	0.0197	30.37	0.5437	0.	RCFLAGS	0	0
1 8708	0.0197	3.49	0.0407	495.	RCFLAGS	0	0
1 6708	0.0025	30.37	0.0690	0.	RCFLAGS	0	0
1 5708	0.0025	3.34	0.0045	63.	RCFLAGS	0	0
1 2708	0.0381	17.90	0.4469	0.	RCFLAGS	0	0
1 4708	0.0406	17.00	0.4469	0.	RCFLAGS	0	0
1 1708	0.0406	0.00	0.0000	671.	RCFLAGS	0	0
1 7708	0.0912	18.71	0.6313	0.	RCFLAGS	0	0
1 3708	0.1318	12.95	0.6313	0.	RCFLAGS	0	0
1 708	0.1515	11.72	0.6313	0.	RCFLAGS	0	0
1 9701	0.0187	30.43	0.5162	0.	RCFLAGS	0	0
1 8701	0.0187	3.55	0.0365	469.	RCFLAGS	0	0
1 7701	0.0661	17.40	0.4905	0.	RCFLAGS	0	0
1 701	0.0848	14.34	0.4905	0.	RCFLAGS	0	0
1 1701	0.2363	12.66	1.1219	0.	RCFLAGS	0	0
1 9702	0.0486	30.44	1.3414	0.	RCFLAGS	0	0
1 8702	0.0486	3.52	0.0755	1223.	RCFLAGS	0	0
1 9712	0.0000	11.76	0.0003	0.	RCFLAGS	0	0
1 8712	0.0000	0.00	0.0000	0.	RCFLAGS	0	0
1 7712	0.0098	19.72	0.1981	0.	RCFLAGS	0	0
1 712	0.0098	19.70	0.1981	0.	RCFLAGS	0	0
1 1720	0.0584	6.24	0.1981	0.	RCFLAGS	0	0
1 7702	0.1967	18.47	1.1139	0.	RCFLAGS	0	0
1 1722	0.2237	17.73	1.2801	0.	RCFLAGS	0	0 cndchi.dat
1 702	0.2821	15.35	1.3451	0.	RCFLAGS	0	0

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1 1702	0.5184	14.12	2.4670	0.	RCFLAGS	0	0
1 5702	0.5184	10.88	0.0623	6825.	RCFLAGS	0	0
1 2702	0.5184	10.88	0.0623	0.	RCFLAGS	0	0
1 7312	0.5184	0.00	0.0000	0.	RCFLAGS	0	0
1 7020	0.0065	30.37	0.1794	0.	RCFLAGS	0	0
1 7080	0.0154	30.37	0.4251	0.	RCFLAGS	0	0
1 2312	0.0219	30.37	0.6045	0.	RCFLAGS	0	0
1 7010	0.0034	30.37	0.0938	0.	RCFLAGS	0	0
1 3312	0.0253	30.37	0.6983	0.	RCFLAGS	0	0
1 312	0.0552	5.38	0.0357	0.	RCFLAGS	0	0
1 4312	0.0805	13.23	0.7082	0.	RCFLAGS	0	0
1 6312	0.0805	13.23	0.7082	0.	RCFLAGS	0	0
1 5312	0.0805	0.00	0.0000	1039.	RCFLAGS	0	0
2 106	0.0215	20.59	0.0501	0.	RCFLAGS	0	0 cndchi.dat
2 5106	0.0215	0.00	0.0000	303.	RCFLAGS	0	0
2 107	0.1510	18.85	0.3014	0.	RCFLAGS	0	0
2 1103	0.1725	16.50	0.3014	0.	RCFLAGS	0	0
2 104	0.0000	0.00	0.0000	0.	RCFLAGS	0	0
2 1104	0.1725	16.50	0.3014	0.	RCFLAGS	0	0
2 105	0.0323	20.22	0.9813	0.	RCFLAGS	0	0
2 1051	0.2048	17.08	1.0671	0.	RCFLAGS	0	0
2 1050	0.0108	46.65	0.2364	0.	RCFLAGS	0	0
2 1105	0.2156	18.56	1.2587	0.	RCFLAGS	0	0
2 101	0.0032	19.68	0.0215	0.	RCFLAGS	0	0
2 102	0.0214	18.84	0.0968	0.	RCFLAGS	0	0
2 1101	0.0246	18.95	0.1180	0.	RCFLAGS	0	0
2 103	0.0259	0.78	0.0016	0.	RCFLAGS	0	0
2 1102	0.0505	9.63	0.1180	0.	RCFLAGS	0	0
2 5103	0.0505	0.00	0.0000	441.	RCFLAGS	0	0
2 1106	0.2661	15.04	1.2587	0.	RCFLAGS	0	0
2 108	0.1240	2.43	0.0063	0.	RCFLAGS	0	0
2 1107	0.3901	11.03	1.2589	0.	RCFLAGS	0	0
2 5108	0.3901	10.93	0.7632	558.	RCFLAGS	0	0
2 2108	0.3901	10.93	0.7488	0.	RCFLAGS	0	0
2 109	0.1252	3.90	0.0417	0.	RCFLAGS	0	0
2 1108	0.5153	9.22	0.7868	0.	RCFLAGS	0	0
2 110	0.0201	18.84	0.1769	0.	RCFLAGS	0	0
2 1109	0.5354	9.59	0.9497	0.	RCFLAGS	0	0
2 111	0.0498	18.84	0.2366	0.	RCFLAGS	0	0
2 1110	0.5852	10.37	1.1864	0.	RCFLAGS	0	0
2 2110	0.5852	10.96	1.0075	0.	RCFLAGS	0	0
2 305	0.0015	19.43	0.0089	0.	RCFLAGS	0	0
2 9709	0.0064	46.65	0.2273	0.	RCFLAGS	0	0
2 8709	0.0064	19.65	0.1326	162.	RCFLAGS	0	0
2 6709	0.0230	31.55	0.3573	0.	RCFLAGS	0	0
2 4709	0.0230	18.13	0.2597	291.	RCFLAGS	0	0
2 7709	0.0082	31.55	0.1274	0.	RCFLAGS	0	0
2 3709	0.0312	21.66	0.3557	0.	RCFLAGS	0	0
2 709	0.0376	21.31	0.3557	0.	RCFLAGS	0	0
2 1709	0.0391	21.24	0.3646	0.	RCFLAGS	0	0
2 9704	0.0053	46.65	0.1882	0.	RCFLAGS	0	0
2 8704	0.0053	19.54	0.1129	134.	RCFLAGS	0	0
2 6704	0.0170	33.50	0.2969	0.	RCFLAGS	0	0
2 4704	0.0170	22.04	0.2551	195.	RCFLAGS	0	0
2 7704	0.0115	33.49	0.1547	0.	RCFLAGS	0	0
2 3704	0.0285	26.66	0.3887	0.	RCFLAGS	0	0
2 704	0.0338	25.54	0.4649	0.	RCFLAGS	0	0
2 1704	0.0729	23.24	0.7814	0.	RCFLAGS	0	0
2 5704	0.0729	21.45	0.1919	1153.	RCFLAGS	0	0
2 705	0.0043	41.36	0.1483	0.	RCFLAGS	0	0 cndchi.dat
2 1705	0.0772	22.55	0.2004	0.	RCFLAGS	0	0
2 402	0.0514	23.58	0.1909	0.	RCFLAGS	0	0

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2 1401	0.1286	22.97	0.3620	0.	RCFLAGS	0	0
2 403	0.1073	10.85	0.0940	0.	RCFLAGS	0	0
2 1402	0.2359	17.45	0.4549	0.	RCFLAGS	0	0
2 5403	0.2359	0.00	0.0000	3219.	RCFLAGS	0	0
2 405	0.0966	20.85	0.1989	0.	RCFLAGS	0	0
2 5405	0.0966	0.00	0.0000	1216.	RCFLAGS	0	0
2 406	0.0930	20.17	0.1883	0.	RCFLAGS	0	0
2 1403	0.1896	9.89	0.1883	0.	RCFLAGS	0	0
2 5406	0.1896	0.00	0.0000	1087.	RCFLAGS	0	0
2 7120	0.0095	46.65	0.3373	0.	RCFLAGS	0	0
2 404	0.0523	21.50	0.2895	0.	RCFLAGS	0	0
2 1712	0.0618	25.37	0.4473	0.	RCFLAGS	0	0
2 1404	0.2514	6.24	0.4473	0.	RCFLAGS	0	0
2 407	0.2555	8.57	0.2116	0.	RCFLAGS	0	0
2 1405	0.5069	7.41	0.5798	0.	RCFLAGS	0	0
2 5407	0.5069	0.00	0.0000	3277.	RCFLAGS	0	0
2 1406	0.7428	0.00	0.0000	0.	RCFLAGS	0	0
2 5437	0.7428	0.00	0.0000	0.	RCFLAGS	0	0
2 7090	0.0070	46.65	0.2486	0.	RCFLAGS	0	0
2 7091	0.7498	0.44	0.2486	0.	RCFLAGS	0	0
2 408	0.0148	20.49	0.0789	0.	RCFLAGS	0	0
2 409	0.8840	4.15	0.2502	0.	RCFLAGS	0	0
2 1407	0.8988	4.42	0.2620	0.	RCFLAGS	0	0
2 1408	1.6486	2.61	0.3289	0.	RCFLAGS	0	0
2 5409	1.6486	0.00	0.0000	3862.	RCFLAGS	0	0
2 201	0.0639	30.83	0.5745	0.	RCFLAGS	0	0
2 9710	0.0186	46.65	0.6605	0.	RCFLAGS	0	0
2 8710	0.0186	19.70	0.3517	481.	RCFLAGS	0	0
2 7710	0.0478	31.61	0.6706	0.	RCFLAGS	0	0
2 710	0.0664	28.27	1.0016	0.	RCFLAGS	0	0
2 10	0.1303	29.52	1.5761	0.	RCFLAGS	0	0
2 9711	0.0051	46.89	0.1811	0.	RCFLAGS	0	0
2 8711	0.0051	19.96	0.0983	127.	RCFLAGS	0	0
2 7711	0.0209	30.57	0.3830	0.	RCFLAGS	0	0
2 711	0.0260	28.49	0.4279	0.	RCFLAGS	0	0
2 2200	0.1563	29.35	1.9929	0.	RCFLAGS	0	0
2 5201	0.1563	13.28	0.0133	4448.	RCFLAGS	0	0
2 2201	0.1563	13.25	0.0133	0.	RCFLAGS	0	0
2 202	0.1043	2.79	0.0157	0.	RCFLAGS	0	0
2 1201	0.2606	9.06	0.0274	0.	RCFLAGS	0	0
2 203	0.0368	19.11	0.1575	0.	RCFLAGS	0	0
2 1202	0.2974	10.31	0.1771	0.	RCFLAGS	0	0
2 2202	0.2974	10.31	0.1769	0.	RCFLAGS	0	0
2 204	0.0453	19.99	0.1427	0.	RCFLAGS	0	0 cndchi.dat
2 1203	0.3427	11.59	0.3197	0.	RCFLAGS	0	0
2 205	0.0700	0.42	0.0003	0.	RCFLAGS	0	0
2 1204	0.4127	9.69	0.3198	0.	RCFLAGS	0	0
2 301	0.1662	27.76	1.1126	0.	RCFLAGS	0	0
2 302	0.1347	21.95	1.1526	0.	RCFLAGS	0	0
2 1301	0.3009	25.16	2.2591	0.	RCFLAGS	0	0
2 5301	0.3009	22.18	0.0619	6869.	RCFLAGS	0	0
2 303	0.3216	27.39	2.7645	0.	RCFLAGS	0	0
2 1302	0.6225	24.87	2.7891	0.	RCFLAGS	0	0
2 304	0.1193	27.76	0.9111	0.	RCFLAGS	0	0
2 1303	0.7418	25.34	3.7002	0.	RCFLAGS	0	0
2 2303	0.7418	25.33	3.5882	0.	RCFLAGS	0	0
2 307	0.1653	0.53	0.0008	0.	RCFLAGS	0	0
2 1304	0.9071	20.81	3.5884	0.	RCFLAGS	0	0
2 306	0.0490	18.08	0.1511	0.	RCFLAGS	0	0
2 1306	0.9561	21.39	3.7435	0.	RCFLAGS	0	0
2 9706	0.0090	46.89	0.3196	0.	RCFLAGS	0	0
2 8706	0.0090	19.79	0.1787	228.	RCFLAGS	0	0

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2 6706	0.0055	32.77	0.0947	0.	RCFLAGS	0	0
2 4706	0.0055	6.80	0.0239	137.	RCFLAGS	0	0
2 7706	0.0323	32.78	0.4791	0.	RCFLAGS	0	0
2 3706	0.0378	29.00	0.4791	0.	RCFLAGS	0	0
2 706	0.0468	27.23	0.6349	0.	RCFLAGS	0	0
2 5706	0.0468	22.84	0.0130	1179.	RCFLAGS	0	0
2 1706	1.0029	21.46	3.7545	0.	RCFLAGS	0	0
2 707	0.0077	30.61	0.2491	0.	RCFLAGS	0	0
2 2707	0.0077	26.67	0.1480	0.	RCFLAGS	0	0
2 3707	0.0077	3.94	0.1011	0.	RCFLAGS	0	0
2 1707	1.0106	21.50	3.7849	0.	RCFLAGS	0	0
2 3082	0.0028	20.53	0.0142	0.	RCFLAGS	0	0
2 3092	0.0119	0.33	0.0000	0.	RCFLAGS	0	0
2 1902	0.0147	4.18	0.0143	0.	RCFLAGS	0	0
2 1903	0.0147	6.24	0.1062	0.	RCFLAGS	0	0
2 5309	0.0147	0.00	0.0000	73.	RCFLAGS	0	0
2 1308	1.0253	21.19	3.7849	0.	RCFLAGS	0	0
2 2308	1.0253	24.63	3.0301	0.	RCFLAGS	0	0
2 310	0.0682	26.05	0.4413	0.	RCFLAGS	0	0
2 1309	1.0935	24.72	3.2404	0.	RCFLAGS	0	0
2 311	0.4793	0.61	0.0022	0.	RCFLAGS	0	0
2 1310	1.5728	17.37	3.2411	0.	RCFLAGS	0	0
2 5310	1.5728	7.75	0.1129	16396.	RCFLAGS	0	0
2 313	0.0492	19.98	0.0990	0.	RCFLAGS	0	0
2 9721	0.0039	46.89	0.1385	0.	RCFLAGS	0	0
2 8721	0.0039	21.30	0.0719	97.	RCFLAGS	0	0
2 7721	0.0231	27.44	0.3745	0.	RCFLAGS	0	0
2 7021	0.0270	26.55	0.4148	0.	RCFLAGS	0	0 cndchi.dat
2 1721	0.0270	26.55	0.4148	0.	RCFLAGS	0	0
2 3131	0.0270	0.00	0.0000	97.	RCFLAGS	0	0
2 1311	0.0492	19.98	0.0990	0.	RCFLAGS	0	0
2 314	0.1142	0.38	0.0004	0.	RCFLAGS	0	0
2 1312	0.1634	6.28	0.0992	0.	RCFLAGS	0	0
2 315	0.0158	21.75	0.0740	0.	RCFLAGS	0	0
2 1313	0.1792	7.64	0.1708	0.	RCFLAGS	0	0
2 9703	0.0082	46.89	0.2912	0.	RCFLAGS	0	0
2 8703	0.0082	19.54	0.1721	209.	RCFLAGS	0	0
2 7703	0.0224	33.39	0.3646	0.	RCFLAGS	0	0
2 703	0.0306	29.68	0.5061	0.	RCFLAGS	0	0
2 1703	0.2098	10.86	0.6589	0.	RCFLAGS	0	0
2 316	0.2101	24.60	1.1678	0.	RCFLAGS	0	0
2 1314	0.4199	17.73	1.8054	0.	RCFLAGS	0	0
2 5314	0.4199	16.65	0.3477	4958.	RCFLAGS	0	0
2 1315	1.9927	9.97	0.4567	0.	RCFLAGS	0	0
2 2315	1.9927	9.97	0.4563	0.	RCFLAGS	0	0
2 317	0.1180	24.67	1.3058	0.	RCFLAGS	0	0
2 1316	2.1107	10.79	1.3551	0.	RCFLAGS	0	0
2 2316	2.1107	11.04	1.3284	0.	RCFLAGS	0	0
2 318	0.1539	27.45	1.0918	0.	RCFLAGS	0	0
2 1317	2.2646	12.15	2.4202	0.	RCFLAGS	0	0
2 9708	0.0197	46.65	0.6995	0.	RCFLAGS	0	0
2 8708	0.0197	19.61	0.3735	512.	RCFLAGS	0	0
2 6708	0.0025	46.65	0.0888	0.	RCFLAGS	0	0
2 5708	0.0025	19.44	0.0553	63.	RCFLAGS	0	0
2 2708	0.0381	32.41	0.7853	0.	RCFLAGS	0	0
2 4708	0.0406	31.61	0.8000	0.	RCFLAGS	0	0
2 1708	0.0406	10.93	0.3671	858.	RCFLAGS	0	0
2 7708	0.0912	33.34	1.1112	0.	RCFLAGS	0	0
2 3708	0.1318	26.44	1.2358	0.	RCFLAGS	0	0
2 708	0.1515	25.55	1.4847	0.	RCFLAGS	0	0
2 9701	0.0187	46.71	0.6640	0.	RCFLAGS	0	0
2 8701	0.0187	19.68	0.3558	483.	RCFLAGS	0	0

2	7701	0.0661	31.83	0.8698	0.	RCFLAGS	0	0
2	701	0.0848	29.15	1.2178	0.	RCFLAGS	0	0
2	1701	0.2363	26.84	2.7025	0.	RCFLAGS	0	0
2	9702	0.0486	46.72	1.7258	0.	RCFLAGS	0	0
2	8702	0.0486	19.66	0.7552	1306.	RCFLAGS	0	0
2	9712	0.0000	24.45	0.0004	0.	RCFLAGS	0	0
2	8712	0.0000	0.00	0.0000	0.	RCFLAGS	0	0
2	7712	0.0098	34.49	0.3249	0.	RCFLAGS	0	0
2	712	0.0098	34.46	0.3249	0.	RCFLAGS	0	0
2	1720	0.0584	22.15	0.8481	0.	RCFLAGS	0	0
2	7702	0.1967	33.06	1.9708	0.	RCFLAGS	0	0
2	1722	0.2237	32.28	2.3739	0.	RCFLAGS	0	0 cndchi.dat
2	702	0.2821	30.18	3.2220	0.	RCFLAGS	0	0
2	1702	0.5184	28.66	5.9245	0.	RCFLAGS	0	0
2	5702	0.5184	21.83	0.0961	14066.	RCFLAGS	0	0
2	2702	0.5184	21.83	0.0961	0.	RCFLAGS	0	0
2	7312	0.5184	0.00	0.0000	0.	RCFLAGS	0	0
2	7020	0.0065	46.65	0.2308	0.	RCFLAGS	0	0
2	7080	0.0154	46.65	0.5468	0.	RCFLAGS	0	0
2	2312	0.0219	46.65	0.7777	0.	RCFLAGS	0	0
2	7010	0.0034	46.65	0.1207	0.	RCFLAGS	0	0
2	3312	0.0253	46.65	0.8984	0.	RCFLAGS	0	0
2	312	0.0552	16.95	0.0961	0.	RCFLAGS	0	0
2	4312	0.0805	26.28	0.9267	0.	RCFLAGS	0	0
2	6312	0.0805	26.28	0.9267	0.	RCFLAGS	0	0
2	5312	0.0805	0.00	0.0000	2067.	RCFLAGS	0	0
3	106	0.0215	29.82	0.0699	0.	RCFLAGS	0	0 cndchi.dat
3	5106	0.0215	0.00	0.0000	439.	RCFLAGS	0	0
3	107	0.1510	27.82	0.4269	0.	RCFLAGS	0	0
3	1103	0.1725	24.35	0.4269	0.	RCFLAGS	0	0
3	104	0.0000	0.00	0.0000	0.	RCFLAGS	0	0
3	1104	0.1725	24.35	0.4269	0.	RCFLAGS	0	0
3	105	0.0323	29.40	1.1672	0.	RCFLAGS	0	0
3	1051	0.2048	25.15	1.3087	0.	RCFLAGS	0	0
3	1050	0.0108	57.22	0.2746	0.	RCFLAGS	0	0
3	1105	0.2156	26.75	1.5334	0.	RCFLAGS	0	0
3	101	0.0032	28.79	0.0291	0.	RCFLAGS	0	0
3	102	0.0214	27.81	0.1339	0.	RCFLAGS	0	0
3	1101	0.0246	27.94	0.1628	0.	RCFLAGS	0	0
3	103	0.0259	2.83	0.0056	0.	RCFLAGS	0	0
3	1102	0.0505	15.06	0.1635	0.	RCFLAGS	0	0
3	5103	0.0505	0.00	0.0000	685.	RCFLAGS	0	0
3	1106	0.2661	21.68	1.5334	0.	RCFLAGS	0	0
3	108	0.1240	8.69	0.0296	0.	RCFLAGS	0	0
3	1107	0.3901	17.55	1.5336	0.	RCFLAGS	0	0
3	5108	0.3901	17.35	1.0301	649.	RCFLAGS	0	0
3	2108	0.3901	17.35	1.0113	0.	RCFLAGS	0	0
3	109	0.1252	5.90	0.0682	0.	RCFLAGS	0	0
3	1108	0.5153	14.57	1.0726	0.	RCFLAGS	0	0
3	110	0.0201	27.82	0.2388	0.	RCFLAGS	0	0
3	1109	0.5354	15.07	1.2959	0.	RCFLAGS	0	0
3	111	0.0498	27.82	0.3270	0.	RCFLAGS	0	0
3	1110	0.5852	16.15	1.6229	0.	RCFLAGS	0	0
3	2110	0.5852	16.73	1.3952	0.	RCFLAGS	0	0
3	305	0.0015	28.63	0.0123	0.	RCFLAGS	0	0
3	9709	0.0064	57.22	0.2523	0.	RCFLAGS	0	0
3	8709	0.0064	30.21	0.1281	164.	RCFLAGS	0	0
3	6709	0.0230	41.33	0.4420	0.	RCFLAGS	0	0
3	4709	0.0230	28.71	0.4189	298.	RCFLAGS	0	0
3	7709	0.0082	41.32	0.1576	0.	RCFLAGS	0	0
3	3709	0.0312	32.03	0.5417	0.	RCFLAGS	0	0
3	709	0.0376	31.72	0.6087	0.	RCFLAGS	0	0

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3	1709	0.0391	31.60	0.6210	0.	RCFLAGS	0	0
3	9704	0.0053	57.22	0.2089	0.	RCFLAGS	0	0
3	8704	0.0053	30.11	0.1049	136.	RCFLAGS	0	0
3	6704	0.0170	43.38	0.3627	0.	RCFLAGS	0	0
3	4704	0.0170	31.90	0.3248	196.	RCFLAGS	0	0
3	7704	0.0115	43.37	0.1908	0.	RCFLAGS	0	0
3	3704	0.0285	36.53	0.5155	0.	RCFLAGS	0	0
3	704	0.0338	35.52	0.6204	0.	RCFLAGS	0	0
3	1704	0.0729	33.42	1.1944	0.	RCFLAGS	0	0
3	5704	0.0729	31.61	0.3860	1443.	RCFLAGS	0	0
3	705	0.0043	51.66	0.1667	0.	RCFLAGS	0	0 cndchi.dat
3	1705	0.0772	32.73	0.4009	0.	RCFLAGS	0	0
3	402	0.0514	33.07	0.2580	0.	RCFLAGS	0	0
3	1401	0.1286	32.86	0.6421	0.	RCFLAGS	0	0
3	403	0.1073	20.22	0.1749	0.	RCFLAGS	0	0
3	1402	0.2359	27.11	0.8093	0.	RCFLAGS	0	0
3	5403	0.2359	0.00	0.0000	5230.	RCFLAGS	0	0
3	405	0.0966	30.10	0.2769	0.	RCFLAGS	0	0
3	5405	0.0966	0.00	0.0000	1843.	RCFLAGS	0	0
3	406	0.0930	29.34	0.2637	0.	RCFLAGS	0	0
3	1403	0.1896	14.39	0.2637	0.	RCFLAGS	0	0
3	5406	0.1896	0.00	0.0000	1707.	RCFLAGS	0	0
3	7120	0.0095	57.22	0.3745	0.	RCFLAGS	0	0
3	404	0.0523	30.87	0.3925	0.	RCFLAGS	0	0
3	1712	0.0618	34.92	0.5471	0.	RCFLAGS	0	0
3	1404	0.2514	8.58	0.5471	0.	RCFLAGS	0	0
3	407	0.2555	15.49	0.4152	0.	RCFLAGS	0	0
3	1405	0.5069	12.06	0.7994	0.	RCFLAGS	0	0
3	5407	0.5069	0.00	0.0000	5354.	RCFLAGS	0	0
3	1406	0.7428	0.00	0.0000	0.	RCFLAGS	0	0
3	5437	0.7428	0.00	0.0000	0.	RCFLAGS	0	0
3	7090	0.0070	57.22	0.2759	0.	RCFLAGS	0	0
3	7091	0.7498	0.53	0.2759	0.	RCFLAGS	0	0
3	408	0.0148	29.66	0.1077	0.	RCFLAGS	0	0
3	409	0.8840	8.06	0.4937	0.	RCFLAGS	0	0
3	1407	0.8988	8.41	0.5410	0.	RCFLAGS	0	0
3	1408	1.6486	4.83	0.5589	0.	RCFLAGS	0	0
3	5409	1.6486	0.00	0.0000	7332.	RCFLAGS	0	0
3	201	0.0639	40.55	0.7254	0.	RCFLAGS	0	0
3	9710	0.0186	57.22	0.7332	0.	RCFLAGS	0	0
3	8710	0.0186	30.21	0.6230	493.	RCFLAGS	0	0
3	7710	0.0478	41.39	0.8324	0.	RCFLAGS	0	0
3	710	0.0664	38.26	1.4554	0.	RCFLAGS	0	0
3	10	0.1303	39.38	2.1185	0.	RCFLAGS	0	0
3	9711	0.0051	57.47	0.2011	0.	RCFLAGS	0	0
3	8711	0.0051	30.55	0.1071	129.	RCFLAGS	0	0
3	7711	0.0209	40.28	0.4720	0.	RCFLAGS	0	0
3	711	0.0260	38.37	0.5791	0.	RCFLAGS	0	0
3	2200	0.1563	39.21	2.6976	0.	RCFLAGS	0	0
3	5201	0.1563	14.81	0.0147	5971.	RCFLAGS	0	0
3	2201	0.1563	14.78	0.0147	0.	RCFLAGS	0	0
3	202	0.1043	5.57	0.0371	0.	RCFLAGS	0	0
3	1201	0.2606	11.09	0.0501	0.	RCFLAGS	0	0
3	203	0.0368	28.09	0.2178	0.	RCFLAGS	0	0
3	1202	0.2974	13.19	0.2588	0.	RCFLAGS	0	0
3	2202	0.2974	13.19	0.2584	0.	RCFLAGS	0	0
3	204	0.0453	29.10	0.1985	0.	RCFLAGS	0	0 cndchi.dat
3	1203	0.3427	15.29	0.4570	0.	RCFLAGS	0	0
3	205	0.0700	3.47	0.0113	0.	RCFLAGS	0	0
3	1204	0.4127	13.29	0.4573	0.	RCFLAGS	0	0
3	301	0.1662	37.26	1.4503	0.	RCFLAGS	0	0
3	302	0.1347	31.27	1.4944	0.	RCFLAGS	0	0

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3	1301	0.3009	34.58	2.9229	0.	RCFLAGS	0	0
3	5301	0.3009	31.52	0.4148	8109.	RCFLAGS	0	0
3	303	0.3216	36.96	3.5689	0.	RCFLAGS	0	0
3	1302	0.6225	34.33	3.6019	0.	RCFLAGS	0	0
3	304	0.1193	37.26	1.1745	0.	RCFLAGS	0	0
3	1303	0.7418	34.80	4.7764	0.	RCFLAGS	0	0
3	2303	0.7418	34.79	4.6594	0.	RCFLAGS	0	0
3	307	0.1653	7.75	0.0627	0.	RCFLAGS	0	0
3	1304	0.9071	29.87	4.6596	0.	RCFLAGS	0	0
3	306	0.0490	26.30	0.2101	0.	RCFLAGS	0	0
3	1306	0.9561	30.41	4.8738	0.	RCFLAGS	0	0
3	9706	0.0090	57.47	0.3548	0.	RCFLAGS	0	0
3	8706	0.0090	30.31	0.3486	232.	RCFLAGS	0	0
3	6706	0.0055	42.60	0.1162	0.	RCFLAGS	0	0
3	4706	0.0055	16.60	0.0934	138.	RCFLAGS	0	0
3	7706	0.0323	42.60	0.5913	0.	RCFLAGS	0	0
3	3706	0.0378	38.82	0.5913	0.	RCFLAGS	0	0
3	706	0.0468	37.18	0.9400	0.	RCFLAGS	0	0
3	5706	0.0468	30.80	0.0140	1635.	RCFLAGS	0	0
3	1706	1.0029	30.43	4.8868	0.	RCFLAGS	0	0
3	707	0.0077	40.32	0.2880	0.	RCFLAGS	0	0
3	2707	0.0077	34.36	0.1480	0.	RCFLAGS	0	0
3	3707	0.0077	5.95	0.1400	0.	RCFLAGS	0	0
3	1707	1.0106	30.46	4.9303	0.	RCFLAGS	0	0
3	3082	0.0028	29.65	0.0194	0.	RCFLAGS	0	0
3	3092	0.0119	0.47	0.0004	0.	RCFLAGS	0	0
3	1902	0.0147	6.03	0.0197	0.	RCFLAGS	0	0
3	1903	0.0147	9.14	0.1481	0.	RCFLAGS	0	0
3	5309	0.0147	0.00	0.0000	109.	RCFLAGS	0	0
3	1308	1.0253	30.02	4.9303	0.	RCFLAGS	0	0
3	2308	1.0253	34.43	3.8279	0.	RCFLAGS	0	0
3	310	0.0682	35.42	0.5806	0.	RCFLAGS	0	0
3	1309	1.0935	34.49	4.1594	0.	RCFLAGS	0	0
3	311	0.4793	6.03	0.0472	0.	RCFLAGS	0	0
3	1310	1.5728	25.82	4.1665	0.	RCFLAGS	0	0
3	5310	1.5728	11.69	0.1394	25860.	RCFLAGS	0	0
3	313	0.0492	29.09	0.1392	0.	RCFLAGS	0	0
3	9721	0.0039	57.47	0.1537	0.	RCFLAGS	0	0
3	8721	0.0039	31.89	0.0865	98.	RCFLAGS	0	0
3	7721	0.0231	36.99	0.4702	0.	RCFLAGS	0	0
3	7021	0.0270	36.26	0.5567	0.	RCFLAGS	0	0
3	1721	0.0270	36.26	0.5567	0.	RCFLAGS	0	0
3	3131	0.0270	0.00	0.0000	98.	RCFLAGS	0	0
3	1311	0.0492	29.09	0.1392	0.	RCFLAGS	0	0
3	314	0.1142	2.20	0.0142	0.	RCFLAGS	0	0
3	1312	0.1634	10.30	0.1419	0.	RCFLAGS	0	0
3	315	0.0158	31.12	0.1006	0.	RCFLAGS	0	0
3	1313	0.1792	12.13	0.2369	0.	RCFLAGS	0	0
3	9703	0.0082	57.47	0.3233	0.	RCFLAGS	0	0
3	8703	0.0082	30.07	0.3101	212.	RCFLAGS	0	0
3	7703	0.0224	43.25	0.4474	0.	RCFLAGS	0	0
3	703	0.0306	39.72	0.7575	0.	RCFLAGS	0	0
3	1703	0.2098	16.16	0.9178	0.	RCFLAGS	0	0
3	316	0.2101	34.07	1.5335	0.	RCFLAGS	0	0
3	1314	0.4199	25.12	2.2514	0.	RCFLAGS	0	0
3	5314	0.4199	23.98	0.7353	5971.	RCFLAGS	0	0
3	1315	1.9927	14.63	0.8448	0.	RCFLAGS	0	0
3	2315	1.9927	14.60	0.8395	0.	RCFLAGS	0	0
3	317	0.1180	33.97	1.6983	0.	RCFLAGS	0	0
3	1316	2.1107	15.68	1.7312	0.	RCFLAGS	0	0
3	2316	2.1107	15.93	1.6953	0.	RCFLAGS	0	0
3	318	0.1539	36.90	1.4191	0.	RCFLAGS	0	0

3	1317	2.2646	17.35	3.1057	0.	RCFLAGS	0	0
3	9708	0.0197	57.22	0.7766	0.	RCFLAGS	0	0
3	8708	0.0197	30.13	0.6421	525.	RCFLAGS	0	0
3	6708	0.0025	57.22	0.0986	0.	RCFLAGS	0	0
3	5708	0.0025	30.04	0.0499	64.	RCFLAGS	0	0
3	2708	0.0381	42.23	0.9533	0.	RCFLAGS	0	0
3	4708	0.0406	41.48	1.0032	0.	RCFLAGS	0	0
3	1708	0.0406	20.77	0.7078	899.	RCFLAGS	0	0
3	7708	0.0912	43.21	1.3876	0.	RCFLAGS	0	0
3	3708	0.1318	36.30	1.9809	0.	RCFLAGS	0	0
3	708	0.1515	35.50	2.2142	0.	RCFLAGS	0	0
3	9701	0.0187	57.28	0.7372	0.	RCFLAGS	0	0
3	8701	0.0187	30.19	0.6271	496.	RCFLAGS	0	0
3	7701	0.0661	41.62	1.0819	0.	RCFLAGS	0	0
3	701	0.0848	39.10	1.7083	0.	RCFLAGS	0	0
3	1701	0.2363	36.79	3.6947	0.	RCFLAGS	0	0
3	9702	0.0486	57.30	1.9159	0.	RCFLAGS	0	0
3	8702	0.0486	30.18	1.1733	1357.	RCFLAGS	0	0
3	9712	0.0000	31.96	0.0004	0.	RCFLAGS	0	0
3	8712	0.0000	0.00	0.0000	0.	RCFLAGS	0	0
3	7712	0.0098	44.42	0.3715	0.	RCFLAGS	0	0
3	712	0.0098	44.38	0.3715	0.	RCFLAGS	0	0
3	1720	0.0584	32.57	1.3827	0.	RCFLAGS	0	0
3	7702	0.1967	42.91	2.4709	0.	RCFLAGS	0	0
3	1722	0.2237	42.11	2.9790	0.	RCFLAGS	0	0
3	702	0.2821	40.13	4.2264	0.	RCFLAGS	0	0
3	1702	0.5184	38.61	7.9211	0.	RCFLAGS	0	0
3	5702	0.5184	28.80	0.3354	18548.	RCFLAGS	0	0
3	2702	0.5184	26.38	0.1113	0.	RCFLAGS	0	0
3	7312	0.5184	2.42	0.2241	0.	RCFLAGS	0	0
3	7020	0.0065	57.22	0.2562	0.	RCFLAGS	0	0
3	7080	0.0154	57.22	0.6071	0.	RCFLAGS	0	0
3	2312	0.0219	57.22	0.8633	0.	RCFLAGS	0	0
3	7010	0.0034	57.22	0.1340	0.	RCFLAGS	0	0
3	3312	0.0253	57.22	0.9974	0.	RCFLAGS	0	0
3	312	0.0552	26.31	0.1459	0.	RCFLAGS	0	0
3	4312	0.0805	36.03	1.0436	0.	RCFLAGS	0	0
3	6312	0.0805	51.64	1.0436	0.	RCFLAGS	0	0
3	5312	0.0805	0.00	0.0000	4105.	RCFLAGS	0	0
4	106	0.0215	38.82	0.0880	0.	RCFLAGS	0	0
4	5106	0.0215	0.00	0.0000	585.	RCFLAGS	0	0
4	107	0.1510	36.63	0.5432	0.	RCFLAGS	0	0
4	1103	0.1725	32.06	0.5432	0.	RCFLAGS	0	0
4	104	0.0000	0.00	0.0000	0.	RCFLAGS	0	0
4	1104	0.1725	32.06	0.5432	0.	RCFLAGS	0	0
4	105	0.0323	38.35	1.2785	0.	RCFLAGS	0	0
4	1051	0.2048	33.05	1.4789	0.	RCFLAGS	0	0
4	1050	0.0108	67.20	0.3070	0.	RCFLAGS	0	0
4	1105	0.2156	34.77	1.7323	0.	RCFLAGS	0	0
4	101	0.0032	37.69	0.0359	0.	RCFLAGS	0	0
4	102	0.0214	36.62	0.1673	0.	RCFLAGS	0	0
4	1101	0.0246	36.76	0.2031	0.	RCFLAGS	0	0
4	103	0.0259	9.76	0.0205	0.	RCFLAGS	0	0
4	1102	0.0505	22.91	0.2192	0.	RCFLAGS	0	0
4	5103	0.0505	2.20	0.0272	942.	RCFLAGS	0	0
4	1106	0.2661	28.59	1.7323	0.	RCFLAGS	0	0
4	108	0.1240	17.25	0.0605	0.	RCFLAGS	0	0
4	1107	0.3901	24.98	1.7327	0.	RCFLAGS	0	0
4	5108	0.3901	24.68	1.2633	728.	RCFLAGS	0	0
4	2108	0.3901	24.68	1.2420	0.	RCFLAGS	0	0
4	109	0.1252	12.63	0.1695	0.	RCFLAGS	0	0
4	1108	0.5153	21.75	1.3976	0.	RCFLAGS	0	0

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4	110	0.0201	36.63	0.2933	0.	RCFLAGS	0	0		
4	1109	0.5354	22.31	1.6742	0.	RCFLAGS	0	0		
4	111	0.0498	36.63	0.4084	0.	RCFLAGS	0	0		
4	1110	0.5852	23.53	2.0826	0.	RCFLAGS	0	0		
4	2110	0.5852	24.26	1.8288	0.	RCFLAGS	0	0		
4	305	0.0015	37.45	0.0152	0.	RCFLAGS	0	0		
4	9709	0.0064	67.20	0.2731	0.	RCFLAGS	0	0		
4	8709	0.0064	40.14	0.2032	165.	RCFLAGS	0	0		
4	6709	0.0230	50.72	0.5139	0.	RCFLAGS	0	0		
4	4709	0.0230	38.09	0.4924	301.	RCFLAGS	0	0		
4	7709	0.0082	50.72	0.1832	0.	RCFLAGS	0	0		
4	3709	0.0312	41.41	0.6386	0.	RCFLAGS	0	0		
4	709	0.0376	41.19	0.7925	0.	RCFLAGS	0	0		
4	1709	0.0391	41.05	0.8074	0.	RCFLAGS	0	0		
4	9704	0.0053	67.20	0.2262	0.	RCFLAGS	0	0		
4	8704	0.0053	40.05	0.1697	137.	RCFLAGS	0	0		
4	6704	0.0170	52.84	0.4181	0.	RCFLAGS	0	0		
4	4704	0.0170	41.35	0.4128	198.	RCFLAGS	0	0		
4	7704	0.0115	52.84	0.2234	0.	RCFLAGS	0	0		
4	3704	0.0285	45.98	0.6362	0.	RCFLAGS	0	0		
4	704	0.0338	45.05	0.7869	0.	RCFLAGS	0	0		
4	1704	0.0729	42.90	1.5942	0.	RCFLAGS	0	0		
4	5704	0.0729	41.09	0.5751	1686.	RCFLAGS	0	0		
4	705	0.0043	61.43	0.1809	0.	RCFLAGS	0	0	cn	endchi.dat
4	1705	0.0772	42.22	0.5942	0.	RCFLAGS	0	0		
4	402	0.0514	42.25	0.3189	0.	RCFLAGS	0	0		
4	1401	0.1286	42.23	0.9002	0.	RCFLAGS	0	0		
4	403	0.1073	29.77	0.2657	0.	RCFLAGS	0	0		
4	1402	0.2359	36.57	1.1563	0.	RCFLAGS	0	0		
4	5403	0.2359	0.00	0.0000	7201.	RCFLAGS	0	0		
4	405	0.0966	39.11	0.3501	0.	RCFLAGS	0	0		
4	5405	0.0966	0.00	0.0000	2457.	RCFLAGS	0	0		
4	406	0.0930	38.29	0.3342	0.	RCFLAGS	0	0		
4	1403	0.1896	18.78	0.3342	0.	RCFLAGS	0	0		
4	5406	0.1896	0.00	0.0000	2319.	RCFLAGS	0	0		
4	7120	0.0095	67.20	0.4054	0.	RCFLAGS	0	0		
4	404	0.0523	39.96	0.4846	0.	RCFLAGS	0	0		
4	1712	0.0618	44.15	0.6498	0.	RCFLAGS	0	0		
4	1404	0.2514	10.85	0.6498	0.	RCFLAGS	0	0		
4	407	0.2555	24.13	0.6862	0.	RCFLAGS	0	0		
4	1405	0.5069	17.54	1.1811	0.	RCFLAGS	0	0		
4	5407	0.5069	0.00	0.0000	7808.	RCFLAGS	0	0		
4	1406	0.7428	0.00	0.0000	0.	RCFLAGS	0	0		
4	5437	0.7428	0.00	0.0000	0.	RCFLAGS	0	0		
4	7090	0.0070	67.20	0.2987	0.	RCFLAGS	0	0		
4	7091	0.7498	0.63	0.2987	0.	RCFLAGS	0	0		
4	408	0.0148	38.59	0.1334	0.	RCFLAGS	0	0		
4	409	0.8840	15.54	1.0233	0.	RCFLAGS	0	0		
4	1407	0.8988	15.91	1.1195	0.	RCFLAGS	0	0		
4	1408	1.6486	8.96	1.1516	0.	RCFLAGS	0	0		
4	5409	1.6486	0.00	0.0000	13794.	RCFLAGS	0	0		
4	201	0.0639	49.90	0.8624	0.	RCFLAGS	0	0		
4	9710	0.0186	67.20	0.7938	0.	RCFLAGS	0	0		
4	8710	0.0186	40.14	0.5145	506.	RCFLAGS	0	0		
4	7710	0.0478	50.78	0.9714	0.	RCFLAGS	0	0		
4	710	0.0664	47.80	1.4849	0.	RCFLAGS	0	0		
4	10	0.1303	48.83	2.3348	0.	RCFLAGS	0	0		
4	9711	0.0051	67.45	0.2177	0.	RCFLAGS	0	0		
4	8711	0.0051	40.48	0.1643	130.	RCFLAGS	0	0		
4	7711	0.0209	49.63	0.5455	0.	RCFLAGS	0	0		
4	711	0.0260	47.84	0.7097	0.	RCFLAGS	0	0		
4	2200	0.1563	48.67	2.9786	0.	RCFLAGS	0	0		

4	5201	0.1563	21.73	0.1387	7041.	RCFLAGS	0	0		
4	2201	0.1563	21.71	0.1384	0.	RCFLAGS	0	0		
4	202	0.1043	12.48	0.0921	0.	RCFLAGS	0	0		
4	1201	0.2606	18.02	0.2029	0.	RCFLAGS	0	0		
4	203	0.0368	36.90	0.2725	0.	RCFLAGS	0	0		
4	1202	0.2974	20.35	0.3677	0.	RCFLAGS	0	0		
4	2202	0.2974	20.35	0.3677	0.	RCFLAGS	0	0		
4	204	0.0453	38.00	0.2493	0.	RCFLAGS	0	0	cn	endchi.dat
4	1203	0.3427	22.68	0.6167	0.	RCFLAGS	0	0		
4	205	0.0700	10.96	0.0364	0.	RCFLAGS	0	0		
4	1204	0.4127	20.70	0.6428	0.	RCFLAGS	0	0		
4	301	0.1662	46.46	1.7526	0.	RCFLAGS	0	0		
4	302	0.1347	40.49	1.8160	0.	RCFLAGS	0	0		
4	1301	0.3009	43.79	3.5316	0.	RCFLAGS	0	0		
4	5301	0.3009	40.53	0.4599	10207.	RCFLAGS	0	0		
4	303	0.3216	46.21	4.2773	0.	RCFLAGS	0	0		
4	1302	0.6225	43.46	4.3162	0.	RCFLAGS	0	0		
4	304	0.1193	46.45	1.4134	0.	RCFLAGS	0	0		
4	1303	0.7418	43.94	5.7246	0.	RCFLAGS	0	0		
4	2303	0.7418	43.94	5.6098	0.	RCFLAGS	0	0		
4	307	0.1653	17.07	0.1359	0.	RCFLAGS	0	0		
4	1304	0.9071	39.04	5.6307	0.	RCFLAGS	0	0		
4	306	0.0490	34.94	0.2696	0.	RCFLAGS	0	0		
4	1306	0.9561	39.55	5.9043	0.	RCFLAGS	0	0		
4	9706	0.0090	67.45	0.3841	0.	RCFLAGS	0	0		
4	8706	0.0090	40.24	0.2774	235.	RCFLAGS	0	0		
4	6706	0.0055	52.03	0.1343	0.	RCFLAGS	0	0		
4	4706	0.0055	25.98	0.1221	139.	RCFLAGS	0	0		
4	7706	0.0323	52.04	0.6873	0.	RCFLAGS	0	0		
4	3706	0.0378	48.25	0.6976	0.	RCFLAGS	0	0		
4	706	0.0468	46.71	0.9647	0.	RCFLAGS	0	0		
4	5706	0.0468	38.10	0.0150	2072.	RCFLAGS	0	0		
4	1706	1.0029	39.49	5.9173	0.	RCFLAGS	0	0		
4	707	0.0077	49.66	0.3139	0.	RCFLAGS	0	0		
4	2707	0.0077	41.64	0.1480	0.	RCFLAGS	0	0		
4	3707	0.0077	8.03	0.1659	0.	RCFLAGS	0	0		
4	1707	1.0106	39.50	5.9736	0.	RCFLAGS	0	0		
4	3082	0.0028	38.62	0.0241	0.	RCFLAGS	0	0		
4	3092	0.0119	6.64	0.0155	0.	RCFLAGS	0	0		
4	1902	0.0147	12.73	0.0394	0.	RCFLAGS	0	0		
4	1903	0.0147	16.94	0.1772	0.	RCFLAGS	0	0		
4	5309	0.0147	0.00	0.0000	200.	RCFLAGS	0	0		
4	1308	1.0253	38.94	5.9736	0.	RCFLAGS	0	0		
4	2308	1.0253	44.30	4.7873	0.	RCFLAGS	0	0		
4	310	0.0682	44.53	0.7055	0.	RCFLAGS	0	0		
4	1309	1.0935	44.31	5.1057	0.	RCFLAGS	0	0		
4	311	0.4793	14.20	0.1138	0.	RCFLAGS	0	0		
4	1310	1.5728	35.13	5.1813	0.	RCFLAGS	0	0		
4	5310	1.5728	15.97	0.4362	34945.	RCFLAGS	0	0		
4	313	0.0492	37.99	0.1767	0.	RCFLAGS	0	0		
4	9721	0.0039	67.45	0.1664	0.	RCFLAGS	0	0		
4	8721	0.0039	41.86	0.1283	98.	RCFLAGS	0	0		
4	7721	0.0231	46.23	0.5500	0.	RCFLAGS	0	0		
4	7021	0.0270	45.59	0.6783	0.	RCFLAGS	0	0	cn	endchi.dat
4	1721	0.0270	45.59	0.6783	0.	RCFLAGS	0	0		
4	3131	0.0270	0.00	0.0000	98.	RCFLAGS	0	0		
4	1311	0.0492	37.99	0.1767	0.	RCFLAGS	0	0		
4	314	0.1142	9.12	0.0661	0.	RCFLAGS	0	0		
4	1312	0.1634	17.81	0.2405	0.	RCFLAGS	0	0		
4	315	0.0158	40.21	0.1244	0.	RCFLAGS	0	0		
4	1313	0.1792	19.79	0.3554	0.	RCFLAGS	0	0		
4	9703	0.0082	67.45	0.3500	0.	RCFLAGS	0	0		

4 8703	0.0082	40.00	0.2537	215.	RCFLAGS	0	0
4 7703	0.0224	52.71	0.5175	0.	RCFLAGS	0	0
4 703	0.0306	49.30	0.7713	0.	RCFLAGS	0	0
4 1703	0.2098	24.09	0.9874	0.	RCFLAGS	0	0
4 316	0.2101	43.34	1.8729	0.	RCFLAGS	0	0
4 1314	0.4199	33.72	2.7894	0.	RCFLAGS	0	0
4 5314	0.4199	32.52	1.1739	6874.	RCFLAGS	0	0
4 1315	1.9927	19.80	1.2849	0.	RCFLAGS	0	0
4 2315	1.9927	19.76	1.2781	0.	RCFLAGS	0	0
4 317	0.1180	43.01	2.0402	0.	RCFLAGS	0	0
4 1316	2.1107	21.06	2.0831	0.	RCFLAGS	0	0
4 2316	2.1107	21.30	2.0406	0.	RCFLAGS	0	0
4 318	0.1539	46.06	1.7158	0.	RCFLAGS	0	0
4 1317	2.2646	22.98	3.7347	0.	RCFLAGS	0	0
4 9708	0.0197	67.20	0.8408	0.	RCFLAGS	0	0
4 8708	0.0197	40.06	0.5492	540.	RCFLAGS	0	0
4 6708	0.0025	67.20	0.1067	0.	RCFLAGS	0	0
4 5708	0.0025	39.94	0.0815	64.	RCFLAGS	0	0
4 2708	0.0381	51.66	1.0898	0.	RCFLAGS	0	0
4 4708	0.0406	50.94	1.1714	0.	RCFLAGS	0	0
4 1708	0.0406	30.21	0.9029	923.	RCFLAGS	0	0
4 7708	0.0912	52.68	1.6279	0.	RCFLAGS	0	0
4 3708	0.1318	45.76	2.5308	0.	RCFLAGS	0	0
4 708	0.1515	45.01	3.0800	0.	RCFLAGS	0	0
4 9701	0.0187	67.26	0.7981	0.	RCFLAGS	0	0
4 8701	0.0187	40.12	0.5179	509.	RCFLAGS	0	0
4 7701	0.0661	51.02	1.2718	0.	RCFLAGS	0	0
4 701	0.0848	48.62	1.7882	0.	RCFLAGS	0	0
4 1701	0.2363	46.31	4.8682	0.	RCFLAGS	0	0
4 9702	0.0486	67.28	2.0742	0.	RCFLAGS	0	0
4 8702	0.0486	40.11	1.8077	1435.	RCFLAGS	0	0
4 9712	0.0000	39.91	0.0004	0.	RCFLAGS	0	0
4 8712	0.0000	0.00	0.0000	0.	RCFLAGS	0	0
4 7712	0.0098	53.93	0.4043	0.	RCFLAGS	0	0
4 712	0.0098	53.87	0.4043	0.	RCFLAGS	0	0
4 1720	0.0584	42.42	2.0516	0.	RCFLAGS	0	0
4 7702	0.1967	52.36	2.9105	0.	RCFLAGS	0	0
4 1722	0.2237	51.55	3.5150	0.	RCFLAGS	0	0 cndchi.dat
4 702	0.2821	49.66	5.4159	0.	RCFLAGS	0	0
4 1702	0.5184	48.13	9.4791	0.	RCFLAGS	0	0
4 5702	0.5184	38.00	1.0196	21017.	RCFLAGS	0	0
4 2702	0.5184	26.93	0.1186	0.	RCFLAGS	0	0
4 7312	0.5184	11.07	0.9010	0.	RCFLAGS	0	0
4 7020	0.0065	67.20	0.2774	0.	RCFLAGS	0	0
4 7080	0.0154	67.20	0.6572	0.	RCFLAGS	0	0
4 2312	0.0219	67.20	0.9346	0.	RCFLAGS	0	0
4 7010	0.0034	67.20	0.1451	0.	RCFLAGS	0	0
4 3312	0.0253	67.20	1.0798	0.	RCFLAGS	0	0
4 312	0.0552	35.41	0.1938	0.	RCFLAGS	0	0
4 4312	0.0805	45.40	1.1447	0.	RCFLAGS	0	0
4 6312	0.0805	116.69	1.1447	0.	RCFLAGS	0	0
4 5312	0.0805	0.00	0.0000	8666.	RCFLAGS	0	0
5 106	0.0215	50.19	0.1089	0.	RCFLAGS	0	0 cndchi.dat
5 5106	0.0215	0.00	0.0000	778.	RCFLAGS	0	0
5 107	0.1510	47.98	0.6770	0.	RCFLAGS	0	0
5 1103	0.1725	42.00	0.6770	0.	RCFLAGS	0	0
5 104	0.0000	0.00	0.0000	0.	RCFLAGS	0	0
5 1104	0.1725	42.00	0.6770	0.	RCFLAGS	0	0
5 105	0.0323	49.72	1.4165	0.	RCFLAGS	0	0
5 1051	0.2048	43.22	1.6878	0.	RCFLAGS	0	0
5 1050	0.0108	78.89	0.3440	0.	RCFLAGS	0	0
5 1105	0.2156	45.00	1.9737	0.	RCFLAGS	0	0

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5 101	0.0032	49.01	0.0436	0.	RCFLAGS	0	0
5 102	0.0214	47.97	0.2050	0.	RCFLAGS	0	0
5 1101	0.0246	48.11	0.2486	0.	RCFLAGS	0	0
5 103	0.0259	18.07	0.0407	0.	RCFLAGS	0	0
5 1102	0.0505	32.70	0.2846	0.	RCFLAGS	0	0
5 5103	0.0505	11.49	0.1186	982.	RCFLAGS	0	0
5 1106	0.2661	38.64	1.9737	0.	RCFLAGS	0	0
5 108	0.1240	27.41	0.0972	0.	RCFLAGS	0	0
5 1107	0.3901	35.07	1.9743	0.	RCFLAGS	0	0
5 5108	0.3901	34.69	1.5264	818.	RCFLAGS	0	0
5 2108	0.3901	34.68	1.4972	0.	RCFLAGS	0	0
5 109	0.1252	20.76	0.2860	0.	RCFLAGS	0	0
5 1108	0.5153	31.30	1.7473	0.	RCFLAGS	0	0
5 110	0.0201	47.98	0.3542	0.	RCFLAGS	0	0
5 1109	0.5354	31.93	2.0829	0.	RCFLAGS	0	0
5 111	0.0498	47.98	0.5003	0.	RCFLAGS	0	0
5 1110	0.5852	33.29	2.5832	0.	RCFLAGS	0	0
5 2110	0.5852	34.19	2.3155	0.	RCFLAGS	0	0
5 305	0.0015	48.86	0.0185	0.	RCFLAGS	0	0
5 9709	0.0064	78.90	0.2994	0.	RCFLAGS	0	0
5 8709	0.0064	51.77	0.2546	164.	RCFLAGS	0	0
5 6709	0.0230	62.23	0.5951	0.	RCFLAGS	0	0
5 4709	0.0230	49.55	0.5854	299.	RCFLAGS	0	0
5 7709	0.0082	62.22	0.2122	0.	RCFLAGS	0	0
5 3709	0.0312	52.88	0.7875	0.	RCFLAGS	0	0
5 709	0.0376	52.69	0.8626	0.	RCFLAGS	0	0
5 1709	0.0391	52.55	0.8808	0.	RCFLAGS	0	0
5 9704	0.0053	78.90	0.2479	0.	RCFLAGS	0	0
5 8704	0.0053	51.69	0.2117	136.	RCFLAGS	0	0
5 6704	0.0170	64.37	0.4804	0.	RCFLAGS	0	0
5 4704	0.0170	52.84	0.4854	201.	RCFLAGS	0	0
5 7704	0.0115	64.37	0.2595	0.	RCFLAGS	0	0
5 3704	0.0285	57.50	0.7449	0.	RCFLAGS	0	0
5 704	0.0338	56.58	0.8517	0.	RCFLAGS	0	0
5 1704	0.0729	54.42	1.6853	0.	RCFLAGS	0	0
5 5704	0.0729	52.59	0.7905	1937.	RCFLAGS	0	0
5 705	0.0043	73.06	0.1986	0.	RCFLAGS	0	0 cndchi.dat
5 1705	0.0772	53.73	0.8186	0.	RCFLAGS	0	0
5 402	0.0514	53.65	0.3876	0.	RCFLAGS	0	0
5 1401	0.1286	53.70	1.2002	0.	RCFLAGS	0	0
5 403	0.1073	41.32	0.3685	0.	RCFLAGS	0	0
5 1402	0.2359	48.07	1.5544	0.	RCFLAGS	0	0
5 5403	0.2359	0.00	0.0000	9598.	RCFLAGS	0	0
5 405	0.0966	50.49	0.4332	0.	RCFLAGS	0	0
5 5405	0.0966	0.00	0.0000	3231.	RCFLAGS	0	0
5 406	0.0930	49.65	0.4145	0.	RCFLAGS	0	0
5 1403	0.1896	24.36	0.4145	0.	RCFLAGS	0	0
5 5406	0.1896	0.00	0.0000	3099.	RCFLAGS	0	0
5 7120	0.0095	78.90	0.4444	0.	RCFLAGS	0	0
5 404	0.0523	51.33	0.5882	0.	RCFLAGS	0	0
5 1712	0.0618	55.57	0.7737	0.	RCFLAGS	0	0
5 1404	0.2514	13.66	0.7737	0.	RCFLAGS	0	0
5 407	0.2555	34.47	1.0031	0.	RCFLAGS	0	0
5 1405	0.5069	24.15	1.6213	0.	RCFLAGS	0	0
5 5407	0.5069	0.00	0.0000	10811.	RCFLAGS	0	0
5 1406	0.7428	0.00	0.0000	0.	RCFLAGS	0	0
5 5437	0.7428	0.00	0.0000	0.	RCFLAGS	0	0
5 7090	0.0070	78.90	0.3274	0.	RCFLAGS	0	0
5 7091	0.7498	0.74	0.3274	0.	RCFLAGS	0	0
5 408	0.0148	49.96	0.1625	0.	RCFLAGS	0	0
5 409	0.8840	24.50	1.6905	0.	RCFLAGS	0	0
5 1407	0.8988	24.92	1.8262	0.	RCFLAGS	0	0

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5	1408	1. 6486	13. 92	1. 8732	0.	RCFLAGS	0	0		
5	5409	1. 6486	0. 00	0. 0000	21552.	RCFLAGS	0	0		
5	201	0. 0639	61. 42	1. 0184	0.	RCFLAGS	0	0		
5	9710	0. 0186	78. 90	0. 8701	0.	RCFLAGS	0	0		
5	8710	0. 0186	51. 79	0. 7823	501.	RCFLAGS	0	0		
5	7710	0. 0478	62. 29	1. 1288	0.	RCFLAGS	0	0		
5	710	0. 0664	59. 35	1. 9111	0.	RCFLAGS	0	0		
5	10	0. 1303	60. 36	2. 8366	0.	RCFLAGS	0	0		
5	9711	0. 0051	79. 14	0. 2386	0.	RCFLAGS	0	0		
5	8711	0. 0051	52. 10	0. 1948	129.	RCFLAGS	0	0		
5	7711	0. 0209	61. 12	0. 6277	0.	RCFLAGS	0	0		
5	711	0. 0260	59. 35	0. 8211	0.	RCFLAGS	0	0		
5	2200	0. 1563	60. 19	3. 6576	0.	RCFLAGS	0	0		
5	5201	0. 1563	32. 95	0. 3530	7964.	RCFLAGS	0	0		
5	2201	0. 1563	32. 94	0. 3524	0.	RCFLAGS	0	0		
5	202	0. 1043	20. 84	0. 1571	0.	RCFLAGS	0	0		
5	1201	0. 2606	28. 10	0. 4804	0.	RCFLAGS	0	0		
5	203	0. 0368	48. 26	0. 3355	0.	RCFLAGS	0	0		
5	1202	0. 2974	30. 59	0. 6372	0.	RCFLAGS	0	0		
5	2202	0. 2974	30. 59	0. 6367	0.	RCFLAGS	0	0		
5	204	0. 0453	49. 36	0. 3076	0.	RCFLAGS	0	0	endchii. dat	cn
5	1203	0. 3427	33. 07	0. 8582	0.	RCFLAGS	0	0		
5	205	0. 0700	19. 87	0. 0680	0.	RCFLAGS	0	0		
5	1204	0. 4127	30. 83	0. 9262	0.	RCFLAGS	0	0		
5	301	0. 1662	57. 92	2. 0916	0.	RCFLAGS	0	0		
5	302	0. 1347	51. 96	2. 2382	0.	RCFLAGS	0	0		
5	1301	0. 3009	55. 25	4. 2798	0.	RCFLAGS	0	0		
5	5301	0. 3009	51. 69	0. 5184	12941.	RCFLAGS	0	0		
5	303	0. 3216	57. 66	5. 0749	0.	RCFLAGS	0	0		
5	1302	0. 6225	54. 77	5. 1185	0.	RCFLAGS	0	0		
5	304	0. 1193	57. 91	1. 6845	0.	RCFLAGS	0	0		
5	1303	0. 7418	55. 28	6. 7914	0.	RCFLAGS	0	0		
5	2303	0. 7418	55. 27	6. 6744	0.	RCFLAGS	0	0		
5	307	0. 1653	28. 02	0. 2221	0.	RCFLAGS	0	0		
5	1304	0. 9071	50. 30	6. 7574	0.	RCFLAGS	0	0		
5	306	0. 0490	45. 92	0. 3365	0.	RCFLAGS	0	0		
5	1306	0. 9561	50. 80	7. 0980	0.	RCFLAGS	0	0		
5	9706	0. 0090	79. 14	0. 4210	0.	RCFLAGS	0	0		
5	8706	0. 0090	51. 87	0. 3619	232.	RCFLAGS	0	0		
5	6706	0. 0055	63. 55	0. 1546	0.	RCFLAGS	0	0		
5	4706	0. 0055	37. 47	0. 1237	139.	RCFLAGS	0	0		
5	7706	0. 0323	63. 55	0. 7959	0.	RCFLAGS	0	0		
5	3706	0. 0378	59. 76	0. 8133	0.	RCFLAGS	0	0		
5	706	0. 0468	58. 24	1. 1578	0.	RCFLAGS	0	0		
5	5706	0. 0468	46. 40	0. 0155	2601.	RCFLAGS	0	0		
5	1706	1. 0029	50. 60	7. 1118	0.	RCFLAGS	0	0		
5	707	0. 0077	61. 16	0. 3463	0.	RCFLAGS	0	0		
5	2707	0. 0077	49. 10	0. 1480	0.	RCFLAGS	0	0		
5	3707	0. 0077	12. 06	0. 1983	0.	RCFLAGS	0	0		
5	1707	1. 0106	50. 59	7. 1820	0.	RCFLAGS	0	0		
5	3082	0. 0028	49. 99	0. 0294	0.	RCFLAGS	0	0		
5	3092	0. 0119	14. 12	0. 0318	0.	RCFLAGS	0	0		
5	1902	0. 0147	20. 95	0. 0610	0.	RCFLAGS	0	0		
5	1903	0. 0147	27. 27	0. 2144	0.	RCFLAGS	0	0		
5	5309	0. 0147	0. 00	0. 0000	324.	RCFLAGS	0	0		
5	1308	1. 0253	49. 86	7. 1820	0.	RCFLAGS	0	0		
5	2308	1. 0253	55. 64	5. 8591	0.	RCFLAGS	0	0		
5	310	0. 0682	55. 96	0. 8457	0.	RCFLAGS	0	0		
5	1309	1. 0935	55. 66	6. 2740	0.	RCFLAGS	0	0		
5	311	0. 4793	23. 85	0. 1923	0.	RCFLAGS	0	0		
5	1310	1. 5728	45. 97	6. 4214	0.	RCFLAGS	0	0		
5	5310	1. 5728	24. 85	1. 8959	35846.	RCFLAGS	0	0		

5	313	0. 0492	49. 35	0. 2193	0.	RCFLAGS	0	0		
5	9721	0. 0039	79. 14	0. 1824	0.	RCFLAGS	0	0		
5	8721	0. 0039	53. 50	0. 1581	98.	RCFLAGS	0	0		
5	7721	0. 0231	57. 68	0. 6394	0.	RCFLAGS	0	0		
5	7021	0. 0270	57. 07	0. 7805	0.	RCFLAGS	0	0	endchii. dat	cn
5	1721	0. 0270	57. 07	0. 7805	0.	RCFLAGS	0	0		
5	3131	0. 0270	0. 00	0. 0000	98.	RCFLAGS	0	0		
5	1311	0. 0492	49. 35	0. 2193	0.	RCFLAGS	0	0		
5	314	0. 1142	17. 41	0. 1357	0.	RCFLAGS	0	0		
5	1312	0. 1634	27. 03	0. 3550	0.	RCFLAGS	0	0		
5	315	0. 0158	51. 58	0. 1518	0.	RCFLAGS	0	0		
5	1313	0. 1792	29. 19	0. 4955	0.	RCFLAGS	0	0		
5	9703	0. 0082	79. 14	0. 3836	0.	RCFLAGS	0	0		
5	8703	0. 0082	51. 63	0. 3362	213.	RCFLAGS	0	0		
5	7703	0. 0224	64. 24	0. 5967	0.	RCFLAGS	0	0		
5	703	0. 0306	60. 86	0. 9329	0.	RCFLAGS	0	0		
5	1703	0. 2098	33. 81	1. 1985	0.	RCFLAGS	0	0		
5	316	0. 2101	54. 79	2. 2837	0.	RCFLAGS	0	0		
5	1314	0. 4199	44. 31	3. 3591	0.	RCFLAGS	0	0		
5	5314	0. 4199	43. 05	1. 6804	7842.	RCFLAGS	0	0		
5	1315	1. 9927	29. 03	2. 5300	0.	RCFLAGS	0	0		
5	2315	1. 9927	29. 00	2. 5059	0.	RCFLAGS	0	0		
5	317	0. 1180	54. 43	2. 4199	0.	RCFLAGS	0	0		
5	1316	2. 1107	30. 42	2. 5075	0.	RCFLAGS	0	0		
5	2316	2. 1107	30. 66	2. 4981	0.	RCFLAGS	0	0		
5	318	0. 1539	57. 52	2. 0480	0.	RCFLAGS	0	0		
5	1317	2. 2646	32. 49	4. 4588	0.	RCFLAGS	0	0		
5	9708	0. 0197	78. 90	0. 9215	0.	RCFLAGS	0	0		
5	8708	0. 0197	51. 71	0. 8335	535.	RCFLAGS	0	0		
5	6708	0. 0025	78. 90	0. 1169	0.	RCFLAGS	0	0		
5	5708	0. 0025	51. 66	0. 0996	64.	RCFLAGS	0	0		
5	2708	0. 0381	63. 18	1. 2425	0.	RCFLAGS	0	0		
5	4708	0. 0406	62. 47	1. 3421	0.	RCFLAGS	0	0		
5	1708	0. 0406	41. 71	1. 2575	966.	RCFLAGS	0	0		
5	7708	0. 0912	64. 20	1. 8954	0.	RCFLAGS	0	0		
5	3708	0. 1318	57. 27	3. 1529	0.	RCFLAGS	0	0		
5	708	0. 1515	56. 55	3. 4558	0.	RCFLAGS	0	0		
5	9701	0. 0187	78. 96	0. 8748	0.	RCFLAGS	0	0		
5	8701	0. 0187	51. 77	0. 7874	503.	RCFLAGS	0	0		
5	7701	0. 0661	62. 53	1. 4820	0.	RCFLAGS	0	0		
5	701	0. 0848	60. 16	2. 2584	0.	RCFLAGS	0	0		
5	1701	0. 2363	57. 84	5. 3489	0.	RCFLAGS	0	0		
5	9702	0. 0486	78. 97	2. 2734	0.	RCFLAGS	0	0		
5	8702	0. 0486	51. 76	1. 9295	1449.	RCFLAGS	0	0		
5	9712	0. 0000	48. 64	0. 0005	0.	RCFLAGS	0	0		
5	8712	0. 0000	0. 00	0. 0000	0.	RCFLAGS	0	0		
5	7712	0. 0098	65. 47	0. 4452	0.	RCFLAGS	0	0		
5	712	0. 0098	65. 40	0. 4452	0.	RCFLAGS	0	0		
5	1720	0. 0584	54. 05	2. 2098	0.	RCFLAGS	0	0		
5	7702	0. 1967	63. 88	3. 4036	0.	RCFLAGS	0	0		
5	1722	0. 2237	63. 06	4. 0409	0.	RCFLAGS	0	0	endchii. dat	cn
5	702	0. 2821	61. 20	6. 1342	0.	RCFLAGS	0	0		
5	1702	0. 5184	59. 67	11. 4831	0.	RCFLAGS	0	0		
5	5702	0. 5184	49. 42	2. 0247	23442.	RCFLAGS	0	0		
5	2702	0. 5184	27. 21	0. 1253	0.	RCFLAGS	0	0		
5	7312	0. 5184	22. 20	1. 8994	0.	RCFLAGS	0	0		
5	7020	0. 0065	78. 90	0. 3041	0.	RCFLAGS	0	0		
5	7080	0. 0154	78. 90	0. 7204	0.	RCFLAGS	0	0		
5	2312	0. 0219	78. 90	1. 0244	0.	RCFLAGS	0	0		
5	7010	0. 0034	78. 90	0. 1590	0.	RCFLAGS	0	0		
5	3312	0. 0253	78. 90	1. 1835	0.	RCFLAGS	0	0		
5	312	0. 0552	46. 85	0. 2482	0.	RCFLAGS	0	0		

5 4312	0.0805	56.92	1.2710	0.	RCFLAGS	0	0
5 6312	0.0805	199.91	2.1951	0.	RCFLAGS	0	0
5 5312	0.0805	0.00	0.0000	14347.	RCFLAGS	0	0
6 106	0.0215	58.80	0.1244	0.	RCFLAGS	0	0 cndchi.dat
6 5106	0.0215	0.00	0.0000	926.	RCFLAGS	0	0
6 107	0.1510	56.60	0.7762	0.	RCFLAGS	0	0
6 1103	0.1725	49.54	0.7762	0.	RCFLAGS	0	0
6 104	0.0000	0.00	0.0000	0.	RCFLAGS	0	0
6 1104	0.1725	49.54	0.7762	0.	RCFLAGS	0	0
6 105	0.0323	58.33	1.4979	0.	RCFLAGS	0	0
6 1051	0.2048	50.93	1.8232	0.	RCFLAGS	0	0
6 1050	0.0108	87.67	0.3684	0.	RCFLAGS	0	0
6 1105	0.2156	52.77	2.1311	0.	RCFLAGS	0	0
6 101	0.0032	57.67	0.0491	0.	RCFLAGS	0	0
6 102	0.0214	56.59	0.2329	0.	RCFLAGS	0	0
6 1101	0.0246	56.73	0.2813	0.	RCFLAGS	0	0
6 103	0.0259	24.68	0.0564	0.	RCFLAGS	0	0
6 1102	0.0505	40.29	0.3324	0.	RCFLAGS	0	0
6 5103	0.0505	18.82	0.1832	1010.	RCFLAGS	0	0
6 1106	0.2661	46.32	2.1311	0.	RCFLAGS	0	0
6 108	0.1240	35.23	0.1256	0.	RCFLAGS	0	0
6 1107	0.3901	42.80	2.1322	0.	RCFLAGS	0	0
6 5108	0.3901	42.36	1.7025	878.	RCFLAGS	0	0
6 2108	0.3901	42.36	1.6697	0.	RCFLAGS	0	0
6 109	0.1252	27.30	0.3735	0.	RCFLAGS	0	0
6 1108	0.5153	38.70	2.0019	0.	RCFLAGS	0	0
6 110	0.0201	56.60	0.3961	0.	RCFLAGS	0	0
6 1109	0.5354	39.37	2.3789	0.	RCFLAGS	0	0
6 111	0.0498	56.60	0.5663	0.	RCFLAGS	0	0
6 1110	0.5852	40.84	2.9452	0.	RCFLAGS	0	0
6 2110	0.5852	41.68	2.6669	0.	RCFLAGS	0	0
6 305	0.0015	57.41	0.0209	0.	RCFLAGS	0	0
6 9709	0.0064	87.67	0.3149	0.	RCFLAGS	0	0
6 8709	0.0064	60.46	0.2689	165.	RCFLAGS	0	0
6 6709	0.0230	70.91	0.6482	0.	RCFLAGS	0	0
6 4709	0.0230	58.21	0.6877	311.	RCFLAGS	0	0
6 7709	0.0082	70.90	0.2311	0.	RCFLAGS	0	0
6 3709	0.0312	61.55	0.9089	0.	RCFLAGS	0	0
6 709	0.0376	61.36	1.0799	0.	RCFLAGS	0	0
6 1709	0.0391	61.21	1.1003	0.	RCFLAGS	0	0
6 9704	0.0053	87.67	0.2608	0.	RCFLAGS	0	0
6 8704	0.0053	60.36	0.2218	137.	RCFLAGS	0	0
6 6704	0.0170	73.07	0.5208	0.	RCFLAGS	0	0
6 4704	0.0170	61.52	0.5089	199.	RCFLAGS	0	0
6 7704	0.0115	73.06	0.2842	0.	RCFLAGS	0	0
6 3704	0.0285	66.18	0.7931	0.	RCFLAGS	0	0
6 704	0.0338	65.27	0.9482	0.	RCFLAGS	0	0
6 1704	0.0729	63.09	2.0348	0.	RCFLAGS	0	0
6 5704	0.0729	61.26	0.9527	2117.	RCFLAGS	0	0
6 705	0.0043	81.80	0.2091	0.	RCFLAGS	0	0 cndchi.dat
6 1705	0.0772	62.40	0.9850	0.	RCFLAGS	0	0
6 402	0.0514	62.28	0.4389	0.	RCFLAGS	0	0
6 1401	0.1286	62.35	1.4182	0.	RCFLAGS	0	0
6 403	0.1073	50.00	0.4444	0.	RCFLAGS	0	0
6 1402	0.2359	56.73	1.8472	0.	RCFLAGS	0	0
6 5403	0.2359	0.00	0.0000	11474.	RCFLAGS	0	0
6 405	0.0966	59.11	0.4951	0.	RCFLAGS	0	0
6 5405	0.0966	0.00	0.0000	3828.	RCFLAGS	0	0
6 406	0.0930	58.27	0.4741	0.	RCFLAGS	0	0
6 1403	0.1896	28.58	0.4741	0.	RCFLAGS	0	0
6 5406	0.1896	0.85	0.0397	3581.	RCFLAGS	0	0
6 7120	0.0095	87.67	0.4674	0.	RCFLAGS	0	0

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6 404	0.0523	59.95	0.6625	0.	RCFLAGS	0	0
6 1712	0.0618	64.21	0.8610	0.	RCFLAGS	0	0
6 1404	0.2514	16.43	0.8610	0.	RCFLAGS	0	0
6 407	0.2555	42.36	1.2404	0.	RCFLAGS	0	0
6 1405	0.5069	29.50	1.9427	0.	RCFLAGS	0	0
6 5407	0.5069	0.00	0.0000	13357.	RCFLAGS	0	0
6 1406	0.7428	0.00	0.0000	0.	RCFLAGS	0	0
6 5437	0.7428	0.00	0.0000	0.	RCFLAGS	0	0
6 7090	0.0070	87.67	0.3444	0.	RCFLAGS	0	0
6 7091	0.7498	0.82	0.3444	0.	RCFLAGS	0	0
6 408	0.0148	58.59	0.1833	0.	RCFLAGS	0	0
6 409	0.8840	31.54	2.2187	0.	RCFLAGS	0	0
6 1407	0.8988	31.98	2.3741	0.	RCFLAGS	0	0
6 1408	1.6486	17.81	2.4233	0.	RCFLAGS	0	0
6 5409	1.6486	0.00	0.0000	27632.	RCFLAGS	0	0
6 201	0.0639	70.10	1.1272	0.	RCFLAGS	0	0
6 9710	0.0186	87.67	0.9151	0.	RCFLAGS	0	0
6 8710	0.0186	60.52	0.8926	506.	RCFLAGS	0	0
6 7710	0.0478	70.97	1.2332	0.	RCFLAGS	0	0
6 710	0.0664	68.05	1.9142	0.	RCFLAGS	0	0
6 10	0.1303	69.06	2.9391	0.	RCFLAGS	0	0
6 9711	0.0051	87.91	0.2509	0.	RCFLAGS	0	0
6 8711	0.0051	60.79	0.2144	130.	RCFLAGS	0	0
6 7711	0.0209	69.80	0.6799	0.	RCFLAGS	0	0
6 711	0.0260	68.03	0.8943	0.	RCFLAGS	0	0
6 2200	0.1563	68.88	3.8334	0.	RCFLAGS	0	0
6 5201	0.1563	41.55	0.5329	8576.	RCFLAGS	0	0
6 2201	0.1563	41.54	0.5320	0.	RCFLAGS	0	0
6 202	0.1043	27.55	0.2076	0.	RCFLAGS	0	0
6 1201	0.2606	35.94	0.7120	0.	RCFLAGS	0	0
6 203	0.0368	56.87	0.3813	0.	RCFLAGS	0	0
6 1202	0.2974	38.53	0.9264	0.	RCFLAGS	0	0
6 2202	0.2974	38.53	0.9261	0.	RCFLAGS	0	0
6 204	0.0453	57.98	0.3507	0.	RCFLAGS	0	0 cndchi.dat
6 1203	0.3427	41.10	1.2016	0.	RCFLAGS	0	0
6 205	0.0700	26.87	0.0935	0.	RCFLAGS	0	0
6 1204	0.4127	38.69	1.2950	0.	RCFLAGS	0	0
6 301	0.1662	66.58	2.3342	0.	RCFLAGS	0	0
6 302	0.1347	60.62	2.5430	0.	RCFLAGS	0	0
6 1301	0.3009	63.91	4.8151	0.	RCFLAGS	0	0
6 5301	0.3009	60.13	0.5555	15092.	RCFLAGS	0	0
6 303	0.3216	66.31	5.6321	0.	RCFLAGS	0	0
6 1302	0.6225	63.32	5.6795	0.	RCFLAGS	0	0
6 304	0.1193	66.57	1.8777	0.	RCFLAGS	0	0
6 1303	0.7418	63.84	7.5384	0.	RCFLAGS	0	0
6 2303	0.7418	63.83	7.4269	0.	RCFLAGS	0	0
6 307	0.1653	36.33	0.2880	0.	RCFLAGS	0	0
6 1304	0.9071	58.82	7.5624	0.	RCFLAGS	0	0
6 306	0.0490	54.28	0.3857	0.	RCFLAGS	0	0
6 1306	0.9561	59.31	7.9519	0.	RCFLAGS	0	0
6 9706	0.0090	87.91	0.4428	0.	RCFLAGS	0	0
6 8706	0.0090	60.59	0.3818	235.	RCFLAGS	0	0
6 6706	0.0055	72.24	0.1677	0.	RCFLAGS	0	0
6 4706	0.0055	46.12	0.1445	140.	RCFLAGS	0	0
6 7706	0.0323	72.24	0.8677	0.	RCFLAGS	0	0
6 3706	0.0378	68.44	0.9451	0.	RCFLAGS	0	0
6 706	0.0468	66.93	1.2495	0.	RCFLAGS	0	0
6 5706	0.0468	51.34	0.0174	2999.	RCFLAGS	0	0
6 1706	1.0029	58.94	7.9659	0.	RCFLAGS	0	0
6 707	0.0077	69.83	0.3654	0.	RCFLAGS	0	0
6 2707	0.0077	55.29	0.1480	0.	RCFLAGS	0	0
6 3707	0.0077	14.55	0.2174	0.	RCFLAGS	0	0

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6 1707	1. 0106	58. 91	8. 0471	0. RCFLAGS	0	0	
6 3082	0. 0028	58. 58	0. 0332	0. RCFLAGS	0	0	
6 3092	0. 0119	20. 21	0. 0439	0. RCFLAGS	0	0	
6 1902	0. 0147	27. 52	0. 0769	0. RCFLAGS	0	0	
6 1903	0. 0147	35. 14	0. 2401	0. RCFLAGS	0	0	
6 5309	0. 0147	0. 00	0. 0000	423. RCFLAGS	0	0	
6 1308	1. 0253	58. 07	8. 0471	0. RCFLAGS	0	0	
6 2308	1. 0253	63. 98	6. 6494	0. RCFLAGS	0	0	
6 310	0. 0682	64. 62	0. 9460	0. RCFLAGS	0	0	
6 1309	1. 0935	64. 02	7. 1416	0. RCFLAGS	0	0	
6 311	0. 4793	31. 26	0. 2525	0. RCFLAGS	0	0	
6 1310	1. 5728	54. 03	7. 3434	0. RCFLAGS	0	0	
6 5310	1. 5728	31. 71	2. 9697	36920. RCFLAGS	0	0	
6 313	0. 0492	57. 97	0. 2514	0. RCFLAGS	0	0	
6 9721	0. 0039	87. 91	0. 1919	0. RCFLAGS	0	0	
6 8721	0. 0039	62. 29	0. 1640	98. RCFLAGS	0	0	
6 7721	0. 0231	66. 34	0. 6966	0. RCFLAGS	0	0	
6 7021	0. 0270	65. 75	0. 8606	0. RCFLAGS	0	0	cn
6 1721	0. 0270	64. 94	0. 7872	0. RCFLAGS	0	0	
6 3131	0. 0270	0. 82	0. 0734	98. RCFLAGS	0	0	
6 1311	0. 0492	58. 41	0. 2514	0. RCFLAGS	0	0	
6 314	0. 1142	24. 03	0. 1912	0. RCFLAGS	0	0	
6 1312	0. 1634	34. 38	0. 4424	0. RCFLAGS	0	0	
6 315	0. 0158	60. 20	0. 1718	0. RCFLAGS	0	0	
6 1313	0. 1792	36. 66	0. 6004	0. RCFLAGS	0	0	
6 9703	0. 0082	87. 91	0. 4035	0. RCFLAGS	0	0	
6 8703	0. 0082	60. 35	0. 3459	215. RCFLAGS	0	0	
6 7703	0. 0224	72. 93	0. 6485	0. RCFLAGS	0	0	
6 703	0. 0306	69. 56	0. 9943	0. RCFLAGS	0	0	
6 1703	0. 2098	41. 46	1. 3867	0. RCFLAGS	0	0	
6 316	0. 2101	63. 45	2. 5768	0. RCFLAGS	0	0	
6 1314	0. 4199	52. 46	3. 7813	0. RCFLAGS	0	0	
6 5314	0. 4199	51. 16	2. 0572	8560. RCFLAGS	0	0	
6 1315	1. 9927	36. 16	3. 9914	0. RCFLAGS	0	0	
6 2315	1. 9927	36. 13	3. 9677	0. RCFLAGS	0	0	
6 317	0. 1180	63. 08	2. 6790	0. RCFLAGS	0	0	
6 1316	2. 1107	37. 64	3. 9777	0. RCFLAGS	0	0	
6 2316	2. 1107	37. 88	3. 9727	0. RCFLAGS	0	0	
6 318	0. 1539	66. 18	2. 2852	0. RCFLAGS	0	0	
6 1317	2. 2646	39. 80	4. 9536	0. RCFLAGS	0	0	
6 9708	0. 0197	87. 67	0. 9693	0. RCFLAGS	0	0	
6 8708	0. 0197	60. 44	0. 9235	539. RCFLAGS	0	0	
6 6708	0. 0025	87. 67	0. 1230	0. RCFLAGS	0	0	
6 5708	0. 0025	60. 29	0. 1037	64. RCFLAGS	0	0	
6 2708	0. 0381	71. 87	1. 3388	0. RCFLAGS	0	0	
6 4708	0. 0406	71. 15	1. 4425	0. RCFLAGS	0	0	
6 1708	0. 0406	50. 38	1. 3411	977. RCFLAGS	0	0	
6 7708	0. 0912	72. 90	2. 0800	0. RCFLAGS	0	0	
6 3708	0. 1318	65. 96	3. 4211	0. RCFLAGS	0	0	
6 708	0. 1515	65. 24	3. 8419	0. RCFLAGS	0	0	
6 9701	0. 0187	87. 73	0. 9201	0. RCFLAGS	0	0	
6 8701	0. 0187	60. 50	0. 8996	508. RCFLAGS	0	0	
6 7701	0. 0661	71. 21	1. 6259	0. RCFLAGS	0	0	
6 701	0. 0848	68. 85	2. 2921	0. RCFLAGS	0	0	
6 1701	0. 2363	66. 54	5. 8902	0. RCFLAGS	0	0	
6 9702	0. 0486	87. 74	2. 3912	0. RCFLAGS	0	0	
6 8702	0. 0486	60. 49	1. 9985	1458. RCFLAGS	0	0	
6 9712	0. 0000	56. 25	0. 0005	0. RCFLAGS	0	0	
6 8712	0. 0000	0. 00	0. 0000	1. RCFLAGS	0	0	
6 7712	0. 0098	74. 17	0. 4694	0. RCFLAGS	0	0	
6 712	0. 0098	74. 10	0. 4694	0. RCFLAGS	0	0	
6 1720	0. 0584	62. 77	2. 3041	0. RCFLAGS	0	0	

6 7702	0. 1967	72. 58	3. 7479	0. RCFLAGS	0	0	
6 1722	0. 2237	71. 65	4. 4888	0. RCFLAGS	0	0	cn
6 702	0. 2821	69. 82	6. 5518	0. RCFLAGS	0	0	
6 1702	0. 5184	68. 32	12. 4420	0. RCFLAGS	0	0	
6 5702	0. 5184	58. 02	2. 8537	25047. RCFLAGS	0	0	
6 2702	0. 5184	27. 35	0. 1283	0. RCFLAGS	0	0	
6 7312	0. 5184	30. 67	2. 7254	0. RCFLAGS	0	0	
6 7020	0. 0065	87. 67	0. 3198	0. RCFLAGS	0	0	
6 7080	0. 0154	87. 67	0. 7577	0. RCFLAGS	0	0	
6 2312	0. 0219	87. 67	1. 0775	0. RCFLAGS	0	0	
6 7010	0. 0034	87. 67	0. 1673	0. RCFLAGS	0	0	
6 3312	0. 0253	87. 67	1. 2448	0. RCFLAGS	0	0	
6 312	0. 0552	55. 49	0. 2886	0. RCFLAGS	0	0	
6 4312	0. 0805	65. 60	1. 3518	0. RCFLAGS	0	0	
6 6312	0. 0805	263. 11	3. 0867	0. RCFLAGS	0	0	
6 5312	0. 0805	3. 06	0. 0191	18612. RCFLAGS	0	0	
7 106	0. 0215	189. 52	0. 1862	0. RCFLAGS	0	0	cn
7 5106	0. 0215	0. 00	0. 0000	2954. RCFLAGS	0	0	
7 107	0. 1510	177. 82	1. 2401	0. RCFLAGS	0	0	
7 1103	0. 1725	155. 66	1. 2401	0. RCFLAGS	0	0	
7 104	0. 0000	0. 00	0. 0000	0. RCFLAGS	0	0	
7 1104	0. 1725	155. 65	1. 2401	0. RCFLAGS	0	0	
7 105	0. 0323	187. 87	0. 4585	0. RCFLAGS	0	0	
7 1051	0. 2048	160. 73	1. 5640	0. RCFLAGS	0	0	
7 1050	0. 0108	283. 00	0. 1590	0. RCFLAGS	0	0	
7 1105	0. 2156	166. 86	1. 6794	0. RCFLAGS	0	0	
7 101	0. 0032	186. 95	0. 0416	0. RCFLAGS	0	0	
7 102	0. 0214	177. 82	0. 2334	0. RCFLAGS	0	0	
7 1101	0. 0246	179. 00	0. 2745	0. RCFLAGS	0	0	
7 103	0. 0259	109. 04	0. 1618	0. RCFLAGS	0	0	
7 1102	0. 0505	143. 12	0. 4164	0. RCFLAGS	0	0	
7 5103	0. 0505	118. 47	0. 4098	1109. RCFLAGS	0	0	
7 1106	0. 2661	157. 67	2. 0878	0. RCFLAGS	0	0	
7 108	0. 1240	175. 03	0. 4888	0. RCFLAGS	0	0	
7 1107	0. 3901	163. 19	2. 5704	0. RCFLAGS	0	0	
7 5108	0. 3901	162. 55	2. 5486	1166. RCFLAGS	0	0	
7 2108	0. 3901	162. 55	2. 5373	0. RCFLAGS	0	0	
7 109	0. 1252	108. 32	0. 8715	0. RCFLAGS	0	0	
7 1108	0. 5153	149. 37	3. 4088	0. RCFLAGS	0	0	
7 110	0. 0201	185. 06	0. 2838	0. RCFLAGS	0	0	
7 1109	0. 5354	150. 71	3. 6244	0. RCFLAGS	0	0	
7 111	0. 0498	177. 82	0. 5538	0. RCFLAGS	0	0	
7 1110	0. 5852	153. 02	4. 1381	0. RCFLAGS	0	0	
7 2110	0. 5852	153. 01	4. 1432	0. RCFLAGS	0	0	
7 305	0. 0015	179. 79	0. 0180	0. RCFLAGS	0	0	
7 9709	0. 0064	283. 00	0. 0942	0. RCFLAGS	0	0	
7 8709	0. 0064	217. 52	0. 0925	161. RCFLAGS	0	0	
7 6709	0. 0230	228. 65	0. 3304	0. RCFLAGS	0	0	
7 4709	0. 0230	205. 70	0. 3287	288. RCFLAGS	0	0	
7 7709	0. 0082	228. 65	0. 1178	0. RCFLAGS	0	0	
7 3709	0. 0312	211. 73	0. 4464	0. RCFLAGS	0	0	
7 709	0. 0376	212. 72	0. 5387	0. RCFLAGS	0	0	
7 1709	0. 0391	211. 46	0. 5568	0. RCFLAGS	0	0	
7 9704	0. 0053	283. 00	0. 0780	0. RCFLAGS	0	0	
7 8704	0. 0053	217. 27	0. 0766	134. RCFLAGS	0	0	
7 6704	0. 0170	235. 67	0. 2458	0. RCFLAGS	0	0	
7 4704	0. 0170	214. 50	0. 2455	191. RCFLAGS	0	0	
7 7704	0. 0115	235. 66	0. 1636	0. RCFLAGS	0	0	
7 3704	0. 0285	223. 04	0. 4077	0. RCFLAGS	0	0	
7 704	0. 0338	222. 13	0. 4841	0. RCFLAGS	0	0	
7 1704	0. 0729	216. 41	1. 0409	0. RCFLAGS	0	0	
7 5704	0. 0729	214. 78	0. 9679	2134. RCFLAGS	0	0	

7	705	0.0043	263.98	0.0629	0.	RCFLAGS	0	0	regional.dat	cn
7	1705	0.0772	217.52	1.0170	0.	RCFLAGS	0	0		
7	402	0.0514	205.29	0.5085	0.	RCFLAGS	0	0		
7	1401	0.1286	212.63	1.5076	0.	RCFLAGS	0	0		
7	403	0.1073	214.98	0.9278	0.	RCFLAGS	0	0		
7	1402	0.2359	213.70	2.3487	0.	RCFLAGS	0	0		
7	5403	0.2359	0.00	0.0000	45747.	RCFLAGS	0	0		
7	405	0.0966	191.37	0.7934	0.	RCFLAGS	0	0		
7	5405	0.0966	49.66	0.5344	8477.	RCFLAGS	0	0		
7	406	0.0930	187.52	0.7623	0.	RCFLAGS	0	0		
7	1403	0.1896	117.28	1.2082	0.	RCFLAGS	0	0		
7	5406	0.1896	76.34	1.0583	4883.	RCFLAGS	0	0		
7	7120	0.0095	283.00	0.1399	0.	RCFLAGS	0	0		
7	404	0.0523	197.23	0.6077	0.	RCFLAGS	0	0		
7	7172	0.0618	210.41	0.7403	0.	RCFLAGS	0	0		
7	1404	0.2514	109.30	1.3998	0.	RCFLAGS	0	0		
7	407	0.2555	184.40	2.3076	0.	RCFLAGS	0	0		
7	1405	0.5069	147.16	3.6568	0.	RCFLAGS	0	0		
7	5407	0.5069	91.01	3.4913	26117.	RCFLAGS	0	0		
7	1406	0.7428	62.11	3.4913	0.	RCFLAGS	0	0		
7	5437	0.7428	0.00	0.0000	43004.	RCFLAGS	0	0		
7	7090	0.0070	283.00	0.1031	0.	RCFLAGS	0	0		
7	7091	0.7498	2.64	0.1031	0.	RCFLAGS	0	0		
7	408	0.0148	186.29	0.1700	0.	RCFLAGS	0	0		
7	409	0.8840	139.26	5.8210	0.	RCFLAGS	0	0		
7	1407	0.8988	140.04	5.9755	0.	RCFLAGS	0	0		
7	1408	1.6486	77.55	6.0494	0.	RCFLAGS	0	0		
7	5409	1.6486	0.00	0.0000	119852.	RCFLAGS	0	0		
7	201	0.0639	225.93	0.8316	0.	RCFLAGS	0	0		
7	9710	0.0186	283.00	0.2738	0.	RCFLAGS	0	0		
7	8710	0.0186	217.58	0.2712	478.	RCFLAGS	0	0		
7	7710	0.0478	228.86	0.6828	0.	RCFLAGS	0	0		
7	710	0.0664	225.70	0.9503	0.	RCFLAGS	0	0		
7	710	0.1303	225.82	1.7819	0.	RCFLAGS	0	0		
7	9711	0.0051	283.47	0.0751	0.	RCFLAGS	0	0		
7	8711	0.0051	218.17	0.0737	127.	RCFLAGS	0	0		
7	7711	0.0209	224.80	0.3009	0.	RCFLAGS	0	0		
7	711	0.0260	223.50	0.3746	0.	RCFLAGS	0	0		
7	2200	0.1563	225.43	2.1564	0.	RCFLAGS	0	0		
7	5201	0.1563	198.06	0.9138	16658.	RCFLAGS	0	0		
7	2201	0.1563	198.05	0.9132	0.	RCFLAGS	0	0		
7	202	0.1043	113.73	0.5898	0.	RCFLAGS	0	0		
7	1201	0.2606	164.30	1.4959	0.	RCFLAGS	0	0		
7	203	0.0368	185.77	0.4103	0.	RCFLAGS	0	0		
7	1202	0.2974	166.96	1.8799	0.	RCFLAGS	0	0		
7	2202	0.2974	166.96	1.8787	0.	RCFLAGS	0	0		
7	204	0.0453	188.58	0.4458	0.	RCFLAGS	0	0	regional.dat	cn
7	1203	0.3427	169.82	2.3245	0.	RCFLAGS	0	0		
7	205	0.0700	130.11	0.3375	0.	RCFLAGS	0	0		
7	1204	0.4127	163.08	2.6603	0.	RCFLAGS	0	0		
7	301	0.1662	217.10	2.0311	0.	RCFLAGS	0	0		
7	302	0.1347	212.08	1.9091	0.	RCFLAGS	0	0		
7	1301	0.3009	214.85	3.9243	0.	RCFLAGS	0	0		
7	5301	0.3009	210.75	3.1523	28782.	RCFLAGS	0	0		
7	303	0.3216	218.81	4.3010	0.	RCFLAGS	0	0		
7	1302	0.6225	214.91	6.6600	0.	RCFLAGS	0	0		
7	304	0.1193	214.53	1.5044	0.	RCFLAGS	0	0		
7	1303	0.7418	214.85	7.9619	0.	RCFLAGS	0	0		
7	2303	0.7418	214.84	7.9609	0.	RCFLAGS	0	0		
7	307	0.1653	197.72	1.0321	0.	RCFLAGS	0	0		
7	1304	0.9071	211.72	8.9846	0.	RCFLAGS	0	0		
7	306	0.0490	175.16	0.4703	0.	RCFLAGS	0	0		

7	1306	0.9561	211.29	9.4588	0.	RCFLAGS	0	0		
7	9706	0.0090	283.47	0.1325	0.	RCFLAGS	0	0		
7	8706	0.0090	217.92	0.1303	227.	RCFLAGS	0	0		
7	6706	0.0055	232.73	0.0794	0.	RCFLAGS	0	0		
7	4706	0.0055	194.47	0.0789	138.	RCFLAGS	0	0		
7	7706	0.0323	232.73	0.4633	0.	RCFLAGS	0	0		
7	3706	0.0378	227.16	0.5420	0.	RCFLAGS	0	0		
7	706	0.0468	225.38	0.6717	0.	RCFLAGS	0	0		
7	5706	0.0468	209.28	0.5339	4585.	RCFLAGS	0	0		
7	1706	1.0029	211.20	9.9633	0.	RCFLAGS	0	0		
7	707	0.0077	224.89	0.1109	0.	RCFLAGS	0	0		
7	2707	0.0077	224.89	0.1109	0.	RCFLAGS	0	0		
7	3707	0.0077	0.00	0.0000	43004.	RCFLAGS	0	0		
7	1707	1.0106	211.30	10.0421	0.	RCFLAGS	0	0		
7	3082	0.0028	183.23	0.0317	0.	RCFLAGS	0	0		
7	3092	0.0119	82.71	0.0932	0.	RCFLAGS	0	0		
7	1902	0.0147	101.86	0.1224	0.	RCFLAGS	0	0		
7	1903	0.0147	101.86	0.1224	0.	RCFLAGS	0	0		
7	5309	0.0147	27.28	0.1063	852.	RCFLAGS	0	0		
7	1308	1.0253	208.66	10.0421	0.	RCFLAGS	0	0		
7	2308	1.0253	208.57	10.3548	0.	RCFLAGS	0	0		
7	310	0.0682	206.61	0.8167	0.	RCFLAGS	0	0		
7	1309	1.0935	208.45	10.8353	0.	RCFLAGS	0	0		
7	311	0.4793	165.79	1.1368	0.	RCFLAGS	0	0		
7	1310	1.5728	195.45	11.9574	0.	RCFLAGS	0	0		
7	5310	1.5728	159.51	9.8316	54638.	RCFLAGS	0	0		
7	313	0.0492	184.31	0.4036	0.	RCFLAGS	0	0		
7	9721	0.0039	283.47	0.0574	0.	RCFLAGS	0	0		
7	8721	0.0039	242.21	0.0570	97.	RCFLAGS	0	0		
7	7721	0.0231	213.77	0.3312	0.	RCFLAGS	0	0		
7	7021	0.0270	217.88	0.3882	0.	RCFLAGS	0	0	regional.dat	cn
7	1721	0.0270	217.88	0.3882	0.	RCFLAGS	0	0		
7	3131	0.0270	0.00	0.0000	97.	RCFLAGS	0	0		
7	1311	0.0492	184.31	0.4036	0.	RCFLAGS	0	0		
7	314	0.1142	109.79	0.6157	0.	RCFLAGS	0	0		
7	1312	0.1634	132.23	1.0193	0.	RCFLAGS	0	0		
7	315	0.0158	197.84	0.1722	0.	RCFLAGS	0	0		
7	1313	0.1792	138.01	1.1836	0.	RCFLAGS	0	0		
7	9703	0.0082	283.47	0.1207	0.	RCFLAGS	0	0		
7	8703	0.0082	217.40	0.1187	208.	RCFLAGS	0	0		
7	7703	0.0224	234.94	0.3238	0.	RCFLAGS	0	0		
7	703	0.0306	230.24	0.4424	0.	RCFLAGS	0	0		
7	1703	0.2098	151.47	1.4983	0.	RCFLAGS	0	0		
7	316	0.2101	213.57	2.4393	0.	RCFLAGS	0	0		
7	1314	0.4199	182.54	3.8207	0.	RCFLAGS	0	0		
7	5314	0.4199	179.37	3.7099	10499.	RCFLAGS	0	0		
7	1315	1.9927	164.39	12.4246	0.	RCFLAGS	0	0		
7	2315	1.9927	164.37	12.4124	0.	RCFLAGS	0	0		
7	317	0.1180	202.39	1.6725	0.	RCFLAGS	0	0		
7	1316	2.1107	166.49	13.0967	0.	RCFLAGS	0	0		
7	2316	2.1107	166.98	13.0535	0.	RCFLAGS	0	0		
7	318	0.1539	210.74	1.8713	0.	RCFLAGS	0	0		
7	1317	2.2646	169.95	14.5291	0.	RCFLAGS	0	0		
7	9708	0.0197	283.00	0.2900	0.	RCFLAGS	0	0		
7	8708	0.0197	217.49	0.2875	508.	RCFLAGS	0	0		
7	6708	0.0025	283.00	0.0368	0.	RCFLAGS	0	0		
7	5708	0.0025	216.88	0.0361	63.	RCFLAGS	0	0		
7	2708	0.0381	231.75	0.5501	0.	RCFLAGS	0	0		
7	4708	0.0406	230.83	0.5862	0.	RCFLAGS	0	0		
7	1708	0.0406	199.68	0.5966	890.	RCFLAGS	0	0		
7	7708	0.0912	235.10	1.2768	0.	RCFLAGS	0	0		
7	3708	0.1318	224.19	1.8582	0.	RCFLAGS	0	0		

7	708	0.1515	223.32	2.1414	0.	RCFLAGS	0	0		
7	9701	0.0187	283.12	0.2753	0.	RCFLAGS	0	0		
7	8701	0.0187	217.66	0.2726	480.	RCFLAGS	0	0		
7	7701	0.0661	229.57	0.9390	0.	RCFLAGS	0	0		
7	701	0.0848	226.94	1.2079	0.	RCFLAGS	0	0		
7	1701	0.2363	224.62	3.3493	0.	RCFLAGS	0	0		
7	9702	0.0486	283.14	0.7155	0.	RCFLAGS	0	0		
7	8702	0.0486	217.64	0.7206	1308.	RCFLAGS	0	0		
7	7712	0.0000	91.14	0.0001	0.	RCFLAGS	0	0		
7	8712	0.0000	0.00	0.0000	1.	RCFLAGS	0	0		
7	7712	0.0098	239.23	0.1419	0.	RCFLAGS	0	0		
7	712	0.0098	238.98	0.1419	0.	RCFLAGS	0	0		
7	1720	0.0584	221.22	0.8625	0.	RCFLAGS	0	0		
7	7702	0.1967	233.98	2.6153	0.	RCFLAGS	0	0		
7	1722	0.2237	232.04	3.0035	0.	RCFLAGS	0	0	regional.dat	
7	702	0.2821	229.80	3.8455	0.	RCFLAGS	0	0		cn
7	1702	0.5184	227.44	7.1948	0.	RCFLAGS	0	0		
7	5702	0.5184	218.01	6.2915	30418.	RCFLAGS	0	0		
7	2702	0.5184	47.38	0.1394	0.	RCFLAGS	0	0		
7	7312	0.5184	170.63	6.1521	0.	RCFLAGS	0	0		
7	7020	0.0065	283.00	0.0957	0.	RCFLAGS	0	0		
7	7080	0.0154	283.00	0.2267	0.	RCFLAGS	0	0		
7	2312	0.0219	283.00	0.3224	0.	RCFLAGS	0	0		
7	7010	0.0034	283.00	0.0501	0.	RCFLAGS	0	0		
7	3312	0.0253	283.00	0.3725	0.	RCFLAGS	0	0		
7	312	0.0552	194.62	0.4774	0.	RCFLAGS	0	0		
7	4312	0.0805	222.40	0.7868	0.	RCFLAGS	0	0		
7	6312	0.0805	1321.24	6.8643	0.	RCFLAGS	0	0		
7	5312	0.0805	203.84	0.1778	84294.	RCFLAGS	0	0		
8	106	0.0215	1.56	0.0042	0.	RCFLAGS	0	0	25mm.dat	
8	5106	0.0215	0.00	0.0000	23.	RCFLAGS	0	0		cn
8	107	0.1510	0.72	0.0132	0.	RCFLAGS	0	0		
8	1103	0.1725	0.63	0.0132	0.	RCFLAGS	0	0		
8	104	0.0000	0.00	0.0000	0.	RCFLAGS	0	0		
8	1104	0.1725	0.63	0.0132	0.	RCFLAGS	0	0		
8	105	0.0323	1.40	0.0867	0.	RCFLAGS	0	0		
8	1051	0.2048	0.75	0.0928	0.	RCFLAGS	0	0		
8	1050	0.0108	23.00	0.1208	0.	RCFLAGS	0	0		
8	1105	0.2156	1.87	0.2136	0.	RCFLAGS	0	0		
8	101	0.0032	1.10	0.0015	0.	RCFLAGS	0	0		
8	102	0.0214	0.71	0.0046	0.	RCFLAGS	0	0		
8	1101	0.0246	0.76	0.0062	0.	RCFLAGS	0	0		
8	103	0.0259	0.09	0.0000	0.	RCFLAGS	0	0		
8	1102	0.0505	0.42	0.0062	0.	RCFLAGS	0	0		
8	5103	0.0505	0.00	0.0000	18.	RCFLAGS	0	0		
8	1106	0.2661	1.51	0.2136	0.	RCFLAGS	0	0		
8	108	0.1240	0.63	0.0007	0.	RCFLAGS	0	0		
8	1107	0.3901	1.23	0.2138	0.	RCFLAGS	0	0		
8	5108	0.3901	1.18	0.0144	303.	RCFLAGS	0	0		
8	2108	0.3901	1.18	0.0143	0.	RCFLAGS	0	0		
8	109	0.1252	1.60	0.0127	0.	RCFLAGS	0	0		
8	1108	0.5153	1.28	0.0231	0.	RCFLAGS	0	0		
8	110	0.0201	0.72	0.0096	0.	RCFLAGS	0	0		
8	1109	0.5354	1.26	0.0231	0.	RCFLAGS	0	0		
8	111	0.0498	0.72	0.0114	0.	RCFLAGS	0	0		
8	1110	0.5852	1.21	0.0339	0.	RCFLAGS	0	0		
8	2110	0.5852	1.22	0.0303	0.	RCFLAGS	0	0		
8	305	0.0015	0.92	0.0006	0.	RCFLAGS	0	0		
8	9709	0.0064	23.00	0.1322	0.	RCFLAGS	0	0		
8	8709	0.0064	0.00	0.0000	135.	RCFLAGS	0	0		
8	6709	0.0230	10.66	0.1077	0.	RCFLAGS	0	0		
8	4709	0.0230	0.00	0.0000	232.	RCFLAGS	0	0		

8	7709	0.0082	10.65	0.0384	0.	RCFLAGS	0	0		
8	3709	0.0312	2.80	0.0384	0.	RCFLAGS	0	0		
8	709	0.0376	2.32	0.0384	0.	RCFLAGS	0	0		
8	1709	0.0391	2.27	0.0387	0.	RCFLAGS	0	0		
8	9704	0.0053	23.00	0.1095	0.	RCFLAGS	0	0		
8	8704	0.0053	0.00	0.0000	111.	RCFLAGS	0	0		
8	6704	0.0170	12.25	0.0985	0.	RCFLAGS	0	0		
8	4704	0.0170	0.74	0.0069	185.	RCFLAGS	0	0		
8	7704	0.0115	12.24	0.0520	0.	RCFLAGS	0	0		
8	3704	0.0285	5.38	0.0520	0.	RCFLAGS	0	0		
8	704	0.0338	4.54	0.0520	0.	RCFLAGS	0	0		
8	1704	0.0729	3.32	0.0907	0.	RCFLAGS	0	0		
8	5704	0.0729	2.91	0.0029	219.	RCFLAGS	0	0		
8	705	0.0043	18.68	0.0718	0.	RCFLAGS	0	0	25mm.dat	cn
8	1705	0.0772	3.79	0.0723	0.	RCFLAGS	0	0		
8	402	0.0514	3.66	0.0290	0.	RCFLAGS	0	0		
8	1401	0.1286	3.74	0.0816	0.	RCFLAGS	0	0		
8	403	0.1073	1.13	0.0096	0.	RCFLAGS	0	0		
8	1402	0.2359	2.55	0.0836	0.	RCFLAGS	0	0		
8	5403	0.2359	0.00	0.0000	406.	RCFLAGS	0	0		
8	405	0.0966	1.77	0.0177	0.	RCFLAGS	0	0		
8	5405	0.0966	0.00	0.0000	67.	RCFLAGS	0	0		
8	406	0.0930	1.37	0.0138	0.	RCFLAGS	0	0		
8	1403	0.1896	0.67	0.0138	0.	RCFLAGS	0	0		
8	5406	0.1896	0.00	0.0000	58.	RCFLAGS	0	0		
8	7120	0.0095	23.00	0.1962	0.	RCFLAGS	0	0		
8	404	0.0523	2.02	0.0311	0.	RCFLAGS	0	0		
8	1712	0.0618	5.24	0.2018	0.	RCFLAGS	0	0		
8	1404	0.2514	1.29	0.2018	0.	RCFLAGS	0	0		
8	407	0.2555	1.15	0.0354	0.	RCFLAGS	0	0		
8	1405	0.5069	1.22	0.2099	0.	RCFLAGS	0	0		
8	5407	0.5069	0.00	0.0000	503.	RCFLAGS	0	0		
8	1406	0.7428	0.00	0.0000	0.	RCFLAGS	0	0		
8	5437	0.7428	0.00	0.0000	0.	RCFLAGS	0	0		
8	7090	0.0070	23.00	0.1446	0.	RCFLAGS	0	0		
8	7091	0.7498	0.21	0.1446	0.	RCFLAGS	0	0		
8	408	0.0148	1.74	0.0069	0.	RCFLAGS	0	0		
8	409	0.8840	0.92	0.0429	0.	RCFLAGS	0	0		
8	1407	0.8988	0.94	0.0486	0.	RCFLAGS	0	0		
8	1408	1.6486	0.61	0.1694	0.	RCFLAGS	0	0		
8	5409	1.6486	0.00	0.0000	844.	RCFLAGS	0	0		
8	201	0.0639	10.54	0.1731	0.	RCFLAGS	0	0		
8	9710	0.0186	23.00	0.3842	0.	RCFLAGS	0	0		
8	8710	0.0186	0.00	0.0000	391.	RCFLAGS	0	0		
8	7710	0.0478	10.71	0.2039	0.	RCFLAGS	0	0		
8	710	0.0664	7.71	0.2039	0.	RCFLAGS	0	0		
8	10	0.1303	9.10	0.3693	0.	RCFLAGS	0	0		
8	9711	0.0051	23.24	0.1054	0.	RCFLAGS	0	0		
8	8711	0.0051	0.00	0.0000	107.	RCFLAGS	0	0		
8	7711	0.0209	9.90	0.1057	0.	RCFLAGS	0	0		
8	711	0.0260	7.96	0.1057	0.	RCFLAGS	0	0		
8	2200	0.1563	8.91	0.4750	0.	RCFLAGS	0	0		
8	5201	0.1563	6.80	0.0083	1298.	RCFLAGS	0	0		
8	2201	0.1563	6.79	0.0083	0.	RCFLAGS	0	0		
8	202	0.1043	0.62	0.0005	0.	RCFLAGS	0	0		
8	1201	0.2606	4.32	0.0085	0.	RCFLAGS	0	0		
8	203	0.0368	0.99	0.0075	0.	RCFLAGS	0	0		
8	1202	0.2974	3.91	0.0121	0.	RCFLAGS	0	0		
8	2202	0.2974	3.91	0.0121	0.	RCFLAGS	0	0		
8	204	0.0453	1.41	0.0095	0.	RCFLAGS	0	0	25mm.dat	cn
8	1203	0.3427	3.58	0.0213	0.	RCFLAGS	0	0		
8	205	0.0700	0.38	0.0002	0.	RCFLAGS	0	0		

8 1204	0. 4127	3. 04	0. 0214	0. RCFLAGS	0	0	
8 301	0. 1662	7. 82	0. 2656	0. RCFLAGS	0	0	
8 302	0. 1347	5. 38	0. 2288	0. RCFLAGS	0	0	
8 1301	0. 3009	6. 73	0. 4944	0. RCFLAGS	0	0	
8 5301	0. 3009	6. 10	0. 0260	1687. RCFLAGS	0	0	
8 303	0. 3216	7. 20	0. 6298	0. RCFLAGS	0	0	
8 1302	0. 6225	6. 67	0. 6361	0. RCFLAGS	0	0	
8 304	0. 1193	7. 81	0. 2173	0. RCFLAGS	0	0	
8 1303	0. 7418	6. 85	0. 8534	0. RCFLAGS	0	0	
8 2303	0. 7418	6. 85	0. 8032	0. RCFLAGS	0	0	
8 307	0. 1653	0. 51	0. 0008	0. RCFLAGS	0	0	
8 1304	0. 9071	5. 70	0. 8034	0. RCFLAGS	0	0	
8 306	0. 0490	1. 32	0. 0104	0. RCFLAGS	0	0	
8 1306	0. 9561	6. 20	0. 8174	0. RCFLAGS	0	0	
8 9706	0. 0090	23. 24	0. 1859	0. RCFLAGS	0	0	
8 8706	0. 0090	0. 00	0. 0000	189. RCFLAGS	0	0	
8 6706	0. 0055	11. 69	0. 0299	0. RCFLAGS	0	0	
8 4706	0. 0055	0. 00	0. 0000	61. RCFLAGS	0	0	
8 7706	0. 0323	11. 70	0. 1527	0. RCFLAGS	0	0	
8 3706	0. 0378	10. 00	0. 1527	0. RCFLAGS	0	0	
8 706	0. 0468	8. 08	0. 1527	0. RCFLAGS	0	0	
8 5706	0. 0468	7. 04	0. 0034	340. RCFLAGS	0	0	
8 1706	1. 0029	6. 24	0. 8199	0. RCFLAGS	0	0	
8 707	0. 0077	9. 93	0. 0653	0. RCFLAGS	0	0	
8 2707	0. 0077	9. 93	0. 0653	0. RCFLAGS	0	0	
8 3707	0. 0077	0. 00	0. 0000	0. RCFLAGS	0	0	
8 1707	1. 0106	6. 26	0. 8274	0. RCFLAGS	0	0	
8 3082	0. 0028	1. 78	0. 0012	0. RCFLAGS	0	0	
8 3092	0. 0119	0. 28	0. 0000	0. RCFLAGS	0	0	
8 1902	0. 0147	0. 57	0. 0012	0. RCFLAGS	0	0	
8 1903	0. 0147	0. 57	0. 0012	0. RCFLAGS	0	0	
8 5309	0. 0147	0. 00	0. 0000	4. RCFLAGS	0	0	
8 1308	1. 0253	6. 17	0. 8274	0. RCFLAGS	0	0	
8 2308	1. 0253	7. 47	0. 6353	0. RCFLAGS	0	0	
8 310	0. 0682	6. 54	0. 0920	0. RCFLAGS	0	0	
8 1309	1. 0935	7. 41	0. 6751	0. RCFLAGS	0	0	
8 311	0. 4793	0. 47	0. 0020	0. RCFLAGS	0	0	
8 1310	1. 5728	5. 30	0. 6758	0. RCFLAGS	0	0	
8 5310	1. 5728	2. 27	0. 0676	3756. RCFLAGS	0	0	
8 313	0. 0492	1. 40	0. 0064	0. RCFLAGS	0	0	
8 9721	0. 0039	23. 24	0. 0806	0. RCFLAGS	0	0	
8 8721	0. 0039	0. 00	0. 0000	87. RCFLAGS	0	0	
8 7721	0. 0231	7. 31	0. 0837	0. RCFLAGS	0	0	
8 7021	0. 0270	6. 25	0. 0837	0. RCFLAGS	0	0	25mm. dat
8 1721	0. 0270	6. 25	0. 0837	0. RCFLAGS	0	0	cn
8 3131	0. 0270	0. 00	0. 0000	87. RCFLAGS	0	0	
8 1311	0. 0492	1. 40	0. 0064	0. RCFLAGS	0	0	
8 314	0. 1142	0. 34	0. 0003	0. RCFLAGS	0	0	
8 1312	0. 1634	0. 66	0. 0065	0. RCFLAGS	0	0	
8 315	0. 0158	2. 27	0. 0079	0. RCFLAGS	0	0	
8 1313	0. 1792	0. 80	0. 0144	0. RCFLAGS	0	0	
8 9703	0. 0082	23. 24	0. 1694	0. RCFLAGS	0	0	
8 8703	0. 0082	0. 00	0. 0000	173. RCFLAGS	0	0	
8 7703	0. 0224	12. 21	0. 1193	0. RCFLAGS	0	0	
8 703	0. 0306	8. 94	0. 1193	0. RCFLAGS	0	0	
8 1703	0. 2098	1. 99	0. 1270	0. RCFLAGS	0	0	
8 316	0. 2101	6. 09	0. 2490	0. RCFLAGS	0	0	
8 1314	0. 4199	4. 04	0. 3669	0. RCFLAGS	0	0	
8 5314	0. 4199	3. 60	0. 0617	978. RCFLAGS	0	0	
8 1315	1. 9927	2. 90	0. 1295	0. RCFLAGS	0	0	
8 2315	1. 9927	2. 89	0. 1294	0. RCFLAGS	0	0	
8 317	0. 1180	5. 44	0. 2292	0. RCFLAGS	0	0	

8 1316	2. 1107	3. 04	0. 2463	0. RCFLAGS	0	0	
8 2316	2. 1107	3. 28	0. 2418	0. RCFLAGS	0	0	
8 318	0. 1539	7. 66	0. 2563	0. RCFLAGS	0	0	
8 1317	2. 2646	3. 58	0. 4982	0. RCFLAGS	0	0	
8 9708	0. 0197	23. 00	0. 4069	0. RCFLAGS	0	0	
8 8708	0. 0197	0. 00	0. 0000	414. RCFLAGS	0	0	
8 6708	0. 0025	23. 00	0. 0516	0. RCFLAGS	0	0	
8 5708	0. 0025	0. 00	0. 0000	53. RCFLAGS	0	0	
8 2708	0. 0381	11. 36	0. 2430	0. RCFLAGS	0	0	
8 4708	0. 0406	10. 66	0. 2430	0. RCFLAGS	0	0	
8 1708	0. 0406	0. 00	0. 0000	417. RCFLAGS	0	0	
8 7708	0. 0912	12. 12	0. 3638	0. RCFLAGS	0	0	
8 3708	0. 1318	8. 39	0. 3638	0. RCFLAGS	0	0	
8 708	0. 1515	7. 30	0. 3638	0. RCFLAGS	0	0	
8 9701	0. 0187	23. 06	0. 3863	0. RCFLAGS	0	0	
8 8701	0. 0187	0. 00	0. 0000	393. RCFLAGS	0	0	
8 7701	0. 0661	10. 90	0. 2678	0. RCFLAGS	0	0	
8 701	0. 0848	8. 49	0. 2678	0. RCFLAGS	0	0	
8 1701	0. 2363	7. 73	0. 6315	0. RCFLAGS	0	0	
8 9702	0. 0486	23. 07	1. 0039	0. RCFLAGS	0	0	
8 8702	0. 0486	0. 00	0. 0000	1022. RCFLAGS	0	0	
8 9712	0. 0000	6. 27	0. 0002	0. RCFLAGS	0	0	
8 8712	0. 0000	0. 00	0. 0000	0. RCFLAGS	0	0	
8 7712	0. 0098	13. 06	0. 1134	0. RCFLAGS	0	0	
8 712	0. 0098	13. 05	0. 1134	0. RCFLAGS	0	0	
8 1720	0. 0584	2. 19	0. 1134	0. RCFLAGS	0	0	
8 7702	0. 1967	11. 90	0. 6334	0. RCFLAGS	0	0	
8 1722	0. 2237	11. 22	0. 7078	0. RCFLAGS	0	0	25mm. dat
8 702	0. 2821	9. 35	0. 7466	0. RCFLAGS	0	0	cn
8 1702	0. 5184	8. 61	1. 3781	0. RCFLAGS	0	0	
8 5702	0. 5184	6. 25	0. 0406	4077. RCFLAGS	0	0	
8 2702	0. 5184	6. 25	0. 0406	0. RCFLAGS	0	0	
8 7312	0. 5184	0. 00	0. 0000	0. RCFLAGS	0	0	
8 7020	0. 0065	23. 00	0. 1343	0. RCFLAGS	0	0	
8 7080	0. 0154	23. 00	0. 3181	0. RCFLAGS	0	0	
8 2312	0. 0219	23. 00	0. 4524	0. RCFLAGS	0	0	
8 7010	0. 0034	23. 00	0. 0702	0. RCFLAGS	0	0	
8 3312	0. 0253	23. 00	0. 5226	0. RCFLAGS	0	0	
8 312	0. 0552	0. 90	0. 0055	0. RCFLAGS	0	0	
8 4312	0. 0805	7. 85	0. 5229	0. RCFLAGS	0	0	
8 6312	0. 0805	7. 85	0. 5229	0. RCFLAGS	0	0	
8 5312	0. 0805	0. 00	0. 0000	617. RCFLAGS	0	0	

GAWSER V6.9.18 - Released - Sep. 21, 2016

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Upper River Watershed Model

Generalized Water Balance Summary

Demonstration

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Input file 1=wbsum1.dat

Input file 2=

Output file =wbsum1.lst

* =====

* File created by Dr. H.O. Schroeter, January 10, 2000

* =====

START

KUNITS=2 TOTAL WATERSHED AREA=167 SQ KM

INITIAL BASEFLOW AT OUTLET: QBSS= 0.0000 QBGW= 0.000

PRINT OPTIONS: ECHO=3 OUTPUT=1 PLOTS=0 RCS=1 SUBW=1

PLOT CUTOFF=576 SUM=6 FREE=0

PARAMETER ADJUSTMENT FACTORS: FDS=1.00 FKEFF=0.25

FCS=0.30 FD=0.30 FSAV=1.0 FKO=1.00 FKSS=1.0 FKMf=1.00

INITIAL SOIL/SNOW WATER FACTORS:

FIMCI=1.00 FIMCII=1.00 FIWE=0.0000

GLOBAL RAINFALL SCALING FACTOR: GFRF=1.0000

SIMULATION CONTROLS: TTI=1.00000 IDEL=2 HOURS=576

SUBWATERSHED INITIAL BASEFLOWS: -999

WATER BALANCE SUMMARY FOR HYDROGRAPH 1050

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Location: Hydrograph 1050

Scenario File: wbsum1.dat

Period: 1960/11/01 to 1999/10/30 Area: 0.0108 km^2

Water Balance Quantities (in mm)						
Infiltration						Total
Month	Precip	ET	Runoff	(Baseflow)	(Losses)	Flow
JAN	50.2	7.8	29.1	0.0	13.4	29.1
FEB	45.5	6.9	40.6	0.0	-2.0	40.6
MAR	64.8	8.3	79.9	0.0	-23.4	79.9
APR	78.8	18.3	65.9	0.0	-5.3	65.9
MAY	76.0	19.5	56.8	0.0	-0.3	56.8
JUN	83.3	19.1	64.7	0.0	-0.5	64.7
JUL	87.2	17.9	69.1	0.0	0.1	69.1
AUG	86.5	18.4	68.5	0.0	-0.4	68.5
SEP	82.8	16.7	65.5	0.0	0.6	65.5
OCT	73.5	15.7	57.9	0.0	-0.1	57.9
NOV	86.7	11.9	71.6	0.0	3.2	71.6
DEC	67.0	7.1	46.1	0.0	13.7	46.1
Total	882.0	167.6	715.5	0.0	-1.1	715.5

WATER BALANCE SUMMARY FOR HYDROGRAPH 105

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Location: Hydrograph 105

Scenario File: wbsum1.dat

Period: 1960/11/01 to 1999/10/30 Area: 0.0323 km^2

Water Balance Quantities (in mm)						
Infiltration						Total
Month	Precip	ET	Runoff	(Baseflow)	(Losses)	Flow
JAN	50.2	7.8	14.2	15.7	12.5	29.9
FEB	45.5	6.9	22.1	13.2	3.2	35.4
MAR	64.8	9.0	46.6	14.7	-5.6	61.3
APR	78.8	41.2	33.6	17.1	-13.1	50.6
MAY	76.0	68.6	22.8	18.5	-34.0	41.3
JUN	83.3	73.1	25.5	14.1	-29.4	39.6
JUL	87.2	64.5	27.2	8.6	-13.3	35.9
AUG	86.5	56.5	28.3	4.8	-3.1	33.1
SEP	82.8	38.2	25.8	3.6	15.1	29.5

Month	Precip	ET	Runoff	(Baseflow)	(Losses)	Flow
JAN	50.2	7.8	4.9	0.0	37.6	4.9
FEB	45.5	6.9	10.6	0.0	28.0	10.6
MAR	64.8	9.5	25.8	0.0	29.5	25.8
APR	78.8	55.5	13.5	0.0	9.8	13.5
MAY	76.0	99.1	1.7	0.0	-24.8	1.7
JUN	83.3	106.7	1.1	0.0	-24.5	1.1
JUL	87.2	93.5	1.2	0.0	-7.6	1.2
AUG	86.5	80.2	3.2	0.0	3.0	3.2
SEP	82.8	51.5	1.1	0.0	30.1	1.1
OCT	73.5	37.7	1.1	0.0	34.7	1.1
NOV	86.7	17.5	5.5	0.0	63.7	5.5
DEC	67.0	7.2	8.1	0.0	51.7	8.1
Total	882.0	573.1	77.7	0.0	231.2	77.7

WATER BALANCE SUMMARY FOR HYDROGRAPH 5706

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Location: Hydrograph 5706

Scenario File: wbsum1.dat

Period: 1960/11/01 to 1999/10/30 Area: 0.0468 km^2

Water Balance Quantities (in mm)

Infiltration						Total
Month	Precip	ET	Runoff	(Baseflow)	(Losses)	Flow
JAN	50.2	7.8	11.8	9.1	21.6	20.9
FEB	45.5	6.9	17.7	7.6	13.4	25.2
MAR	64.8	9.0	34.1	9.6	12.1	43.7
APR	78.8	35.1	26.5	9.9	7.3	36.4
MAY	76.0	54.9	18.4	10.6	-7.9	29.0
JUN	83.3	58.1	21.7	8.1	-4.5	29.7
JUL	87.2	51.6	23.1	4.9	7.6	28.0
AUG	86.5	45.9	25.9	3.0	11.7	28.9
SEP	82.8	32.2	21.5	2.5	26.6	24.0
OCT	73.5	25.5	19.4	3.3	25.3	22.8
NOV	86.7	14.5	24.5	6.0	41.6	30.6
DEC	67.0	7.2	17.5	9.2	33.1	26.7
Total	882.0	348.5	262.1	83.8	187.7	345.9

WATER BALANCE SUMMARY FOR HYDROGRAPH 707

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Location: Hydrograph 707

Scenario File: wbsum1.dat

Period: 1960/11/01 to 1999/10/30 Area: 0.0077 km^2

Water Balance Quantities (in mm)

Infiltration						Total
Month	Precip	ET	Runoff	(Baseflow)	(Losses)	Flow
JAN	50.2	7.8	14.2	15.7	12.5	29.9
FEB	45.5	6.9	22.1	13.2	3.2	35.4
MAR	64.8	9.0	46.6	14.7	-5.6	61.3
APR	78.8	41.2	33.6	17.1	-13.1	50.6
MAY	76.0	68.6	22.8	18.5	-34.0	41.3
JUN	83.3	73.1	25.5	14.1	-29.4	39.6
JUL	87.2	64.5	27.2	8.6	-13.3	35.9
AUG	86.5	56.5	28.3	4.8	-3.1	33.1
SEP	82.8	38.2	25.8	3.6	15.1	29.5

OCT	73.5	29.2	22.9	5.9	15.5	28.7
NOV	86.7	15.3	30.9	9.6	30.9	40.5
DEC	67.0	7.2	22.8	14.7	22.4	37.5
Total	882.0	417.7	322.6	140.6	1.2	463.2

File=DUMP1900.WTB Does not exist

WATER BALANCE SUMMARY FOR HYDROGRAPH 5309

Location: Hydrograph 5309
Scenario File: wbsum1.dat
Period: 1960/11/01 to 1999/10/30 Area: 0.0147 km²

Water Balance Quantities (in mm)						
Infiltration						Total
Month	Precip	ET	Runoff	(Baseflow)	(Losses)	Flow
JAN	50.2	7.8	0.0	0.0	42.5	0.0
FEB	45.5	6.9	0.0	0.0	38.6	0.0
MAR	64.8	10.2	0.0	0.0	54.5	0.0
APR	78.8	57.7	0.0	0.0	21.0	0.0
MAY	76.0	100.1	0.0	0.0	-24.2	0.0
JUN	83.3	105.3	0.0	0.0	-22.0	0.0
JUL	87.2	90.2	0.0	0.0	-3.0	0.0
AUG	86.5	77.7	0.0	0.0	8.8	0.0
SEP	82.8	52.2	0.0	0.0	30.6	0.0
OCT	73.5	37.5	0.0	0.0	36.0	0.0
NOV	86.7	17.7	0.0	0.0	69.0	0.0
DEC	67.0	7.3	0.0	0.0	59.7	0.0
Total	882.0	570.6	0.0	0.0	311.5	0.0

WATER BALANCE SUMMARY FOR HYDROGRAPH 311

Location: Hydrograph 311
Scenario File: wbsum1.dat
Period: 1960/11/01 to 1999/10/30 Area: 0.4793 km²

Water Balance Quantities (in mm)						
Infiltration						Total
Month	Precip	ET	Runoff	(Baseflow)	(Losses)	Flow
JAN	50.2	7.8	12.3	15.2	15.0	27.5
FEB	45.5	6.9	26.3	12.2	0.0	38.5
MAR	64.8	9.5	52.1	16.9	-13.7	69.0
APR	78.8	55.4	11.9	22.0	-10.6	34.0
MAY	76.0	99.0	3.4	20.3	-46.7	23.7
JUN	83.3	103.9	1.7	10.6	-32.9	12.2
JUL	87.2	96.1	0.3	5.3	-14.7	5.7
AUG	86.5	81.2	0.5	3.9	0.9	4.4
SEP	82.8	52.7	1.4	4.4	24.2	5.8
OCT	73.5	37.6	6.6	7.6	21.7	14.2
NOV	86.7	17.5	23.2	10.5	35.5	33.7
DEC	67.0	7.2	21.0	15.3	23.5	36.3
Total	882.0	574.8	160.8	144.3	2.2	305.1

WATER BALANCE SUMMARY FOR HYDROGRAPH 313

Location: Hydrograph 313
Scenario File: wbsum1.dat
Period: 1960/11/01 to 1999/10/30 Area: 0.0492 km²

Water Balance Quantities (in mm)						
Infiltration						Total
Month	Precip	ET	Runoff	(Baseflow)	(Losses)	Flow
JAN	50.2	7.8	4.3	26.0	12.2	30.3
FEB	45.5	6.9	9.7	21.7	7.2	31.4
MAR	64.8	9.5	23.4	24.1	7.8	47.5
APR	78.8	55.5	12.5	28.0	-17.2	40.5
MAY	76.0	99.3	1.4	30.5	-55.2	31.9
JUN	83.3	108.0	1.0	23.6	-49.3	24.6
JUL	87.2	94.3	1.0	14.6	-22.8	15.6
AUG	86.5	80.4	3.1	8.6	-5.6	11.7
SEP	82.8	51.6	0.9	6.7	23.6	7.6
OCT	73.5	37.7	0.7	10.0	25.1	10.7
NOV	86.7	17.5	4.2	15.6	49.3	19.8
DEC	67.0	7.2	7.0	24.1	28.8	31.0
Total	882.0	575.6	69.1	233.6	3.8	302.7

WATER BALANCE SUMMARY FOR HYDROGRAPH 315

Location: Hydrograph 315
Scenario File: wbsum1.dat
Period: 1960/11/01 to 1999/10/30 Area: 0.0158 km²

Water Balance Quantities (in mm)						
Infiltration						Total
Month	Precip	ET	Runoff	(Baseflow)	(Losses)	Flow
JAN	50.2	7.8	6.3	24.6	11.6	30.8
FEB	45.5	6.9	12.7	20.3	5.6	33.0
MAR	64.8	9.5	30.8	22.3	2.2	53.1
APR	78.8	55.5	15.9	25.5	-18.0	41.3
MAY	76.0	98.7	2.3	27.1	-52.1	29.3
JUN	83.3	103.2	1.5	20.2	-41.7	21.7
JUL	87.2	91.6	1.6	12.3	-18.4	13.9
AUG	86.5	79.6	3.6	7.3	-4.1	11.0
SEP	82.8	51.4	1.8	6.0	23.6	7.7
OCT	73.5	37.6	2.0	9.4	24.4	11.4
NOV	86.7	17.5	8.6	15.1	45.5	23.7
DEC	67.0	7.2	10.7	23.1	26.0	33.8
Total	882.0	566.6	97.7	213.1	4.6	310.8

WATER BALANCE SUMMARY FOR HYDROGRAPH 703

Location: Hydrograph 703
Scenario File: wbsum1.dat
Period: 1960/11/01 to 1999/10/30 Area: 0.0306 km²

Water Balance Quantities (in mm)						
Infiltration						Total
Month	Precip	ET	Runoff	(Baseflow)	(Losses)	Flow

JAN	50.2	7.8	12.3	9.6	20.5	22.0
FEB	45.5	6.9	19.2	8.0	11.4	27.2
MAR	64.8	8.8	38.3	8.8	8.9	47.1
APR	78.8	32.2	29.2	10.2	7.2	39.4
MAY	76.0	49.3	21.4	11.0	-5.8	32.4
JUN	83.3	51.9	25.0	8.5	-2.1	33.5
JUL	87.2	46.2	27.4	5.2	8.3	32.6
AUG	86.5	41.5	28.8	3.0	13.2	31.8
SEP	82.8	29.7	25.3	2.3	25.4	27.7
OCT	73.5	23.9	21.3	3.6	24.7	24.9
NOV	86.7	14.0	28.1	5.8	38.8	33.9
DEC	67.0	7.1	19.8	8.9	31.1	28.7
Total	882.0	319.3	296.3	85.0	181.5	381.3

WATER BALANCE SUMMARY FOR HYDROGRAPH 316

Location: Hydrograph 316
Scenario File: wbsum1.dat
Period: 1960/11/01 to 1999/10/30 Area: 0.2101 km²

Water Balance Quantities (in mm)						
Infiltration						Total
Month	Precip	ET	Runoff	(Baseflow)	(Losses)	Flow
JAN	50.2	7.8	11.3	18.9	12.2	30.2
FEB	45.5	6.9	19.9	15.6	3.1	35.5
MAR	64.8	9.2	43.0	17.3	-4.8	60.3
APR	78.8	48.1	25.4	19.8	-14.5	45.2
MAY	76.0	83.1	13.2	21.0	-41.3	34.1
JUN	83.3	87.3	14.1	15.4	-33.6	29.5
JUL	87.2	77.1	14.8	9.3	-14.1	24.1
AUG	86.5	67.7	16.2	5.6	-3.0	21.8
SEP	82.8	44.6	14.3	4.8	19.1	19.1
OCT	73.5	33.3	13.4	7.5	19.2	21.0
NOV	86.7	16.4	22.3	11.8	36.2	34.1
DEC	67.0	7.2	18.7	17.9	23.2	36.6
Total	882.0	488.6	226.7	164.9	1.8	391.6

WATER BALANCE SUMMARY FOR HYDROGRAPH 5704

Location: Hydrograph 5704
Scenario File: wbsum1.dat
Period: 1960/11/01 to 1999/10/30 Area: 0.0729 km²

Water Balance Quantities (in mm)						
Infiltration						Total
Month	Precip	ET	Runoff	(Baseflow)	(Losses)	Flow
JAN	50.2	7.8	5.7	0.0	36.7	5.7
FEB	45.5	6.9	10.6	0.0	28.0	10.6
MAR	64.8	8.9	18.9	0.0	36.9	18.9
APR	78.8	35.6	14.3	0.0	28.9	14.3
MAY	76.0	56.4	8.7	0.0	10.9	8.7
JUN	83.3	59.8	11.2	0.0	12.2	11.2
JUL	87.2	53.1	12.9	0.0	21.1	12.9
AUG	86.5	47.2	15.5	0.0	23.8	15.5
SEP	82.8	32.9	11.3	0.0	38.5	11.3
OCT	73.5	25.9	8.4	0.0	39.2	8.4

NOV	86.7	14.6	11.8	0.0	60.3	11.8
DEC	67.0	7.2	9.5	0.0	50.3	9.5
Total	882.0	356.4	138.8	0.0	386.9	138.9

WATER BALANCE SUMMARY FOR HYDROGRAPH 7090

Location: Hydrograph 7090
Scenario File: wbsum1.dat
Period: 1960/11/01 to 1999/10/30 Area: 0.0070 km²

Water Balance Quantities (in mm)						
Infiltration						Total
Month	Precip	ET	Runoff	(Baseflow)	(Losses)	Flow
JAN	50.2	7.8	29.2	0.0	13.3	29.2
FEB	45.5	6.9	40.7	0.0	-2.1	40.7
MAR	64.8	8.3	80.1	0.0	-23.6	80.1
APR	78.8	18.3	65.9	0.0	-5.4	65.9
MAY	76.0	19.5	56.8	0.0	-0.4	56.8
JUN	83.3	19.1	64.7	0.0	-0.6	64.7
JUL	87.2	17.9	69.1	0.0	0.1	69.1
AUG	86.5	18.4	68.5	0.0	-0.4	68.5
SEP	82.8	16.7	65.5	0.0	0.5	65.5
OCT	73.5	15.7	58.0	0.0	-0.1	58.0
NOV	86.7	11.9	71.8	0.0	3.0	71.8
DEC	67.0	7.1	46.4	0.0	13.5	46.4
Total	882.0	167.6	716.5	0.0	-2.1	716.5

WATER BALANCE SUMMARY FOR HYDROGRAPH 705

Location: Hydrograph 705
Scenario File: wbsum1.dat
Period: 1960/11/01 to 1999/10/30 Area: 0.0043 km²

Water Balance Quantities (in mm)						
Infiltration						Total
Month	Precip	ET	Runoff	(Baseflow)	(Losses)	Flow
JAN	50.2	7.8	24.3	0.0	18.1	24.3
FEB	45.5	6.9	34.7	0.0	3.9	34.7
MAR	64.8	8.6	69.2	0.0	-13.0	69.2
APR	78.8	25.7	55.4	0.0	-2.4	55.4
MAY	76.0	35.5	45.8	0.0	-5.3	45.8
JUN	83.3	36.6	52.0	0.0	-5.3	52.0
JUL	87.2	33.0	55.5	0.0	-1.4	55.5
AUG	86.5	30.8	55.4	0.0	0.3	55.4
SEP	82.8	23.7	52.6	0.0	6.5	52.6
OCT	73.5	20.1	46.6	0.0	6.8	46.6
NOV	86.7	13.0	58.5	0.0	15.2	58.5
DEC	67.0	7.1	38.7	0.0	21.1	38.7
Total	882.0	248.7	588.8	0.0	44.6	588.8

WATER BALANCE SUMMARY FOR HYDROGRAPH 709

Location: Hydrograph 709

Scenario File: wbsum1.dat
Period: 1960/11/01 to 1999/10/30 Area: 0.0376 km²

Water Balance Quantities (in mm)						
Month	Precip	ET	Runoff	Infiltration		Total
				(Baseflow)	(Losses)	
JAN	50.2	7.8	4.5	0.0	38.0	4.5
FEB	45.5	6.9	9.3	0.0	29.3	9.3
MAR	64.8	8.9	15.5	0.0	40.4	15.5
APR	78.8	35.9	11.5	0.0	31.3	11.5
MAY	76.0	57.2	6.8	0.0	11.9	6.8
JUN	83.3	60.6	9.1	0.0	13.5	9.1
JUL	87.2	53.8	10.8	0.0	22.6	10.8
AUG	86.5	47.7	13.0	0.0	25.8	13.0
SEP	82.8	33.2	9.2	0.0	40.4	9.2
OCT	73.5	26.1	6.1	0.0	41.3	6.1
NOV	86.7	14.5	9.2	0.0	63.0	9.2
DEC	67.0	7.1	7.7	0.0	52.2	7.7
Total	882.0	359.7	112.6	0.0	409.7	112.6

WATER BALANCE SUMMARY FOR HYDROGRAPH 710

Location: Hydrograph 710
Scenario File: wbsum1.dat
Period: 1960/11/01 to 1999/10/30 Area: 0.0664 km²

Water Balance Quantities (in mm)						
Month	Precip	ET	Runoff	Infiltration		Total
				(Baseflow)	(Losses)	
JAN	50.2	7.8	11.2	0.0	31.3	11.2
FEB	45.5	6.9	17.7	0.0	20.9	17.7
MAR	64.8	8.8	35.5	0.0	20.5	35.5
APR	78.8	33.5	26.6	0.0	18.7	26.6
MAY	76.0	52.1	18.8	0.0	5.1	18.8
JUN	83.3	55.0	22.1	0.0	6.2	22.1
JUL	87.2	48.9	24.3	0.0	14.0	24.3
AUG	86.5	43.7	25.8	0.0	17.0	25.8
SEP	82.8	31.0	22.3	0.0	29.5	22.3
OCT	73.5	24.7	18.6	0.0	30.2	18.6
NOV	86.7	14.2	24.9	0.0	47.6	24.9
DEC	67.0	7.1	18.0	0.0	41.8	18.0
Total	882.0	333.7	265.8	0.0	282.6	265.8

WATER BALANCE SUMMARY FOR HYDROGRAPH 402

Location: Hydrograph 402
Scenario File: wbsum1.dat
Period: 1960/11/01 to 1999/10/30 Area: 0.0514 km²

Water Balance Quantities (in mm)						
Month	Precip	ET	Runoff	Infiltration		Total
				(Baseflow)	(Losses)	
JAN	50.2	7.8	8.1	0.0	34.3	8.1
FEB	45.5	6.9	15.2	0.0	23.4	15.2
MAR	64.8	9.4	35.3	0.0	20.1	35.3
APR	78.8	52.8	19.9	0.0	6.1	19.9

MAY	76.0	92.8	6.3	0.0	-23.1	6.3
JUN	83.3	96.5	6.1	0.0	-19.3	6.1
JUL	87.2	85.8	6.5	0.0	-5.2	6.5
AUG	86.5	75.1	8.3	0.0	3.1	8.3
SEP	82.8	48.8	6.4	0.0	27.5	6.4
OCT	73.5	36.0	6.2	0.0	31.3	6.2
NOV	86.7	17.1	13.7	0.0	55.9	13.7
DEC	67.0	7.2	13.7	0.0	46.1	13.7
Total	882.0	536.2	145.7	0.0	200.1	145.7

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Does not exist

WATER BALANCE SUMMARY FOR HYDROGRAPH 404

Location: Hydrograph 404
Scenario File: wbsum1.dat
Period: 1960/11/01 to 1999/10/30 Area: 0.0523 km²

Water Balance Quantities (in mm)						
Month	Precip	ET	Runoff	Infiltration		Total
				(Baseflow)	(Losses)	
JAN	50.2	7.8	6.3	0.0	36.1	6.3
FEB	45.5	6.9	12.9	0.0	25.7	12.9
MAR	64.8	9.5	31.0	0.0	24.3	31.0
APR	78.8	55.5	15.9	0.0	7.4	15.9
MAY	76.0	98.7	2.3	0.0	-25.0	2.3
JUN	83.3	103.2	1.5	0.0	-21.5	1.5
JUL	87.2	91.6	1.6	0.0	-6.1	1.6
AUG	86.5	79.6	3.6	0.0	3.2	3.6
SEP	82.8	51.4	1.8	0.0	29.6	1.8
OCT	73.5	37.6	2.0	0.0	33.8	2.0
NOV	86.7	17.5	8.6	0.0	60.5	8.6
DEC	67.0	7.2	10.8	0.0	49.0	10.8
Total	882.0	566.6	98.3	0.0	217.2	98.3

WATER BALANCE SUMMARY FOR HYDROGRAPH 408

Location: Hydrograph 408
Scenario File: wbsum1.dat
Period: 1960/11/01 to 1999/10/30 Area: 0.0148 km²

Water Balance Quantities (in mm)						
Month	Precip	ET	Runoff	Infiltration		Total
				(Baseflow)	(Losses)	
JAN	50.2	7.8	4.7	0.0	37.7	4.7
FEB	45.5	6.9	10.3	0.0	28.3	10.3
MAR	64.8	9.4	24.8	0.0	30.6	24.8
APR	78.8	54.4	13.8	0.0	10.6	13.8
MAY	76.0	96.9	2.9	0.0	-23.8	2.9
JUN	83.3	105.3	2.8	0.0	-24.8	2.8
JUL	87.2	92.0	3.0	0.0	-7.8	3.0
AUG	86.5	78.6	4.9	0.0	3.0	4.9
SEP	82.8	50.5	2.6	0.0	29.6	2.6
OCT	73.5	37.0	2.2	0.0	34.3	2.2
NOV	86.7	17.3	5.8	0.0	63.5	5.8

DEC	67.0	7.2	7.8	0.0	52.0	7.8
Total	882.0	563.4	85.6	0.0	233.1	85.6

WATER BALANCE SUMMARY FOR HYDROGRAPH 5702

Location: Hydrograph 5702
 Scenario File: wbsum1.dat
 Period: 1960/11/01 to 1999/10/30 Area: 0.5184 km²

Water Balance Quantities (in mm)						
Month	Precip	ET	Runoff	Infiltration (Baseflow)	Losses	Total Flow
JAN	50.2	7.8	12.4	2.1	27.9	14.5
FEB	45.5	6.9	18.6	1.7	18.3	20.3
MAR	64.8	9.1	37.4	2.3	16.0	39.7
APR	78.8	35.6	28.4	2.3	12.5	30.7
MAY	76.0	55.7	19.4	2.4	-1.5	21.8
JUN	83.3	59.1	22.5	1.8	-0.1	24.3
JUL	87.2	52.6	23.9	1.1	9.5	25.0
AUG	86.5	46.8	27.1	0.8	11.8	27.8
SEP	82.8	32.8	23.0	0.6	26.5	23.5
OCT	73.5	25.8	20.7	0.7	26.1	21.5
NOV	86.7	14.7	26.4	1.5	44.1	27.9
DEC	67.0	7.2	19.4	2.5	37.9	21.9
Total	882.0	354.2	279.1	19.7	228.9	298.9

WATER BALANCE SUMMARY FOR HYDROGRAPH 4312

Location: Hydrograph 4312
 Scenario File: wbsum1.dat
 Period: 1960/11/01 to 1999/10/30 Area: 0.0805 km²

Water Balance Quantities (in mm)						
Month	Precip	ET	Runoff	Infiltration (Baseflow)	Losses	Total Flow
JAN	50.2	7.8	14.4	0.6	27.4	15.0
FEB	45.5	6.9	24.1	0.5	14.0	24.6
MAR	64.8	9.1	48.6	0.6	6.4	49.3
APR	78.8	43.2	29.9	1.0	4.7	30.8
MAY	76.0	70.4	19.4	1.0	-14.8	20.3
JUN	83.3	74.7	21.8	1.0	-14.2	22.7
JUL	87.2	66.8	23.0	1.2	-3.8	24.2
AUG	86.5	59.3	24.2	1.5	1.5	25.7
SEP	82.8	39.9	22.7	1.5	18.6	24.2
OCT	73.5	30.6	22.0	1.9	19.0	23.9
NOV	86.7	15.7	31.6	1.6	37.8	33.2
DEC	67.0	7.2	23.5	1.0	35.3	24.5
Total	882.0	431.6	305.2	13.3	132.0	318.5

WATER BALANCE SUMMARY FOR HYDROGRAPH 5312

Location: Hydrograph 5312
 Scenario File: wbsum1.dat

Period: 1960/11/01 to 1999/10/30 Area: 0.0805 km²

Water Balance Quantities (in mm)						
Month	Precip	ET	Runoff	Infiltration (Baseflow)	Losses	Total Flow
JAN	50.2	7.8	0.0	0.0	42.5	0.0
FEB	45.5	6.9	0.0	0.0	38.6	0.0
MAR	64.8	9.5	0.0	0.0	55.3	0.0
APR	78.8	43.9	0.0	0.0	34.9	0.0
MAY	76.0	70.6	0.0	0.0	5.4	0.0
JUN	83.3	74.9	0.0	0.0	8.3	0.0
JUL	87.2	67.0	0.0	0.0	20.2	0.0
AUG	86.5	59.4	0.8	0.0	26.2	0.8
SEP	82.8	40.0	0.0	0.0	42.7	0.0
OCT	73.5	30.6	0.0	0.0	42.8	0.0
NOV	86.7	15.9	0.0	0.0	70.8	0.0
DEC	67.0	7.2	0.0	0.0	59.8	0.0
Total	882.0	433.7	0.8	0.0	447.5	0.8

WATER BALANCE SUMMARY FOR HYDROGRAPH 101

Location: Hydrograph 101
 Scenario File: wbsum1.dat
 Period: 1960/11/01 to 1999/10/30 Area: 0.0032 km²

Water Balance Quantities (in mm)						
Month	Precip	ET	Runoff	Infiltration (Baseflow)	Losses	Total Flow
JAN	50.2	7.8	3.9	0.0	38.5	3.9
FEB	45.5	6.9	9.9	0.0	28.7	9.9
MAR	64.8	9.5	25.7	0.0	29.6	25.7
APR	78.8	55.5	15.4	0.0	7.9	15.4
MAY	76.0	99.3	1.4	0.0	-24.7	1.4
JUN	83.3	106.5	1.2	0.0	-24.5	1.2
JUL	87.2	92.2	1.0	0.0	-6.1	1.0
AUG	86.5	80.8	3.1	0.0	2.6	3.1
SEP	82.8	51.7	0.9	0.0	30.2	0.9
OCT	73.5	37.7	0.6	0.0	35.2	0.6
NOV	86.7	17.5	4.8	0.0	64.4	4.8
DEC	67.0	7.2	7.9	0.0	51.9	7.9
Total	882.0	572.5	75.8	0.0	233.7	75.8

GAWSER V6.9.18 - Released - Sep. 21, 2016

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Upper River Watershed Model

Generalized Water Balance Summary

Demonstration

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Input file 1=wbsum2.dat

Input file 2=

Output file =wbsum2.lst

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* File created by Dr. H.O. Schroeter, January 10, 2000

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START

KUNITS=2 TOTAL WATERSHED AREA=167 SQ KM

INITIAL BASEFLOW AT OUTLET: QBSS= 0.0000 QBGW= 0.000

PRINT OPTIONS: ECHO=3 OUTPUT=1 PLOTS=0 RCS=1 SUBW=1

PLOT CUTOFF=576 SUM=4 FREE=0

PARAMETER ADJUSTMENT FACTORS: FDS=1.00 FKEFF=0.25

FCS=0.30 FD=0.30 FSAV=1.0 FKO=1.00 FKSS=1.0 FKMf=1.00

INITIAL SOIL/SNOW WATER FACTORS:

FIMCI=1.00 FIMCII=1.00 FIWE=0.0000

GLOBAL RAINFALL SCALING FACTOR: GFRF=1.0000

SIMULATION CONTROLS: TTI=1.00000 IDEL=2 HOURS=576

SUBWATERSHED INITIAL BASEFLOWS: -999

WATER BALANCE SUMMARY FOR HYDROGRAPH 105

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Location: Hydrograph 105

Scenario File: wbsum2.dat

Period: 1960/11/01 to 1999/10/30 Area: 0.0323 km^2

Water Balance Quantities (in mm)						
Infiltration						Total
Month	Precip	ET	Runoff	(Baseflow)	(Losses)	Flow
JAN	50.2	7.8	4.9	0.0	37.6	4.9
FEB	45.5	6.9	10.6	0.0	28.0	10.6
MAR	64.8	9.5	25.8	0.0	29.5	25.8
APR	78.8	55.5	13.5	0.0	9.8	13.5
MAY	76.0	99.1	1.7	0.0	-24.8	1.7
JUN	83.3	106.7	1.1	0.0	-24.5	1.1
JUL	87.2	93.5	1.2	0.0	-7.6	1.2
AUG	86.5	80.2	3.2	0.0	3.0	3.2
SEP	82.8	51.5	1.1	0.0	30.1	1.1
OCT	73.5	37.7	1.1	0.0	34.7	1.1
NOV	86.7	17.5	5.5	0.0	63.7	5.5
DEC	67.0	7.2	8.1	0.0	51.7	8.1
Total	882.0	573.1	77.7	0.0	231.2	77.7

WATER BALANCE SUMMARY FOR HYDROGRAPH 702

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Location: Hydrograph 702

Scenario File: wbsum2.dat

Period: 1960/11/01 to 1999/10/30 Area: 0.2821 km^2

Water Balance Quantities (in mm)						
Infiltration						Total
Month	Precip	ET	Runoff	(Baseflow)	(Losses)	Flow

Month	Precip	ET	Runoff	(Baseflow)	(Losses)	Flow
JAN	50.2	7.8	13.3	3.1	26.1	16.4
FEB	45.5	6.9	20.5	2.6	15.4	23.2
MAR	64.8	8.8	41.6	3.0	11.4	44.5
APR	78.8	34.5	31.2	3.4	9.7	34.6
MAY	76.0	54.2	22.5	3.7	-4.4	26.2
JUN	83.3	57.3	26.0	2.8	-2.8	28.8
JUL	87.2	50.9	28.2	1.7	6.3	29.9
AUG	86.5	45.4	29.4	1.0	10.7	30.4
SEP	82.8	31.9	26.3	0.8	23.8	27.1
OCT	73.5	25.3	22.5	1.2	24.5	23.8
NOV	86.7	14.3	29.8	1.9	40.6	31.7
DEC	67.0	7.1	21.2	3.0	35.6	24.2
Total	882.0	344.5	312.6	28.1	196.8	340.8

WATER BALANCE SUMMARY FOR HYDROGRAPH 312

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Location: Hydrograph 312

Scenario File: wbsum2.dat

Period: 1960/11/01 to 1999/10/30 Area: 0.0552 km^2

Water Balance Quantities (in mm)

Infiltration						Total
Month	Precip	ET	Runoff	(Baseflow)	(Losses)	Flow
JAN	50.2	7.8	7.6	0.9	33.9	8.5
FEB	45.5	6.9	16.6	0.6	21.4	17.2
MAR	64.8	9.4	34.2	0.9	20.2	35.2
APR	78.8	54.7	13.4	1.4	9.3	14.8
MAY	76.0	93.7	2.2	1.4	-21.4	3.6
JUN	83.3	100.2	2.1	1.4	-20.4	3.5
JUL	87.2	89.2	1.9	1.7	-5.6	3.6
AUG	86.5	78.0	3.9	2.2	2.4	6.1
SEP	82.8	50.6	3.0	2.2	26.9	5.2
OCT	73.5	37.4	5.5	2.7	27.8	8.3
NOV	86.7	17.4	13.2	2.4	53.7	15.6
DEC	67.0	7.2	13.0	1.4	45.4	14.4
Total	882.0	552.6	116.7	19.3	193.5	136.0

WATER BALANCE SUMMARY FOR HYDROGRAPH 5702

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Location: Hydrograph 5702

Scenario File: wbsum2.dat

Period: 1960/11/01 to 1999/10/30 Area: 0.5184 km^2

Water Balance Quantities (in mm)

Infiltration						Total
Month	Precip	ET	Runoff	(Baseflow)	(Losses)	Flow
JAN	50.2	7.8	12.4	2.1	27.9	14.5
FEB	45.5	6.9	18.6	1.7	18.3	20.3
MAR	64.8	9.1	37.4	2.3	16.0	39.7
APR	78.8	35.6	28.4	2.3	12.5	30.7
MAY	76.0	55.7	19.4	2.4	-1.5	21.8
JUN	83.3	59.1	22.5	1.8	-0.1	24.3
JUL	87.2	52.6	23.9	1.1	9.5	25.0
AUG	86.5	46.8	27.1	0.8	11.8	27.8
SEP	82.8	32.8	23.0	0.6	26.5	23.5

OCT	73.5	25.8	20.7	0.7	26.1	21.5
NOV	86.7	14.7	26.4	1.5	44.1	27.9
DEC	67.0	7.2	19.4	2.5	37.9	21.9
Total	882.0	354.2	279.1	19.7	228.9	298.9

WATER BALANCE SUMMARY FOR HYDROGRAPH 5704

Location: Hydrograph 5704
 Scenario File: wbsum2.dat
 Period: 1960/11/01 to 1999/10/30 Area: 0.0729 km²

Water Balance Quantities (in mm)						
Month	Precip	ET	Runoff	(Baseflow)	(Losses)	Total Flow
JAN	50.2	7.8	5.7	0.0	36.7	5.7
FEB	45.5	6.9	10.6	0.0	28.0	10.6
MAR	64.8	8.9	18.9	0.0	36.9	18.9
APR	78.8	35.6	14.3	0.0	28.9	14.3
MAY	76.0	56.4	8.7	0.0	10.9	8.7
JUN	83.3	59.8	11.2	0.0	12.2	11.2
JUL	87.2	53.1	12.9	0.0	21.1	12.9
AUG	86.5	47.2	15.5	0.0	23.8	15.5
SEP	82.8	32.9	11.3	0.0	38.5	11.3
OCT	73.5	25.9	8.4	0.0	39.2	8.4
NOV	86.7	14.6	11.8	0.0	60.3	11.8
DEC	67.0	7.2	9.5	0.0	50.3	9.5
Total	882.0	356.4	138.8	0.0	386.9	138.9

WATER BALANCE SUMMARY FOR HYDROGRAPH 1402

Location: Hydrograph 1402
 Scenario File: wbsum2.dat
 Period: 1960/11/01 to 1999/10/30 Area: 0.2359 km²

Water Balance Quantities (in mm)						
Month	Precip	ET	Runoff	(Baseflow)	(Losses)	Total Flow
JAN	50.2	7.8	10.5	1.7	30.2	12.2
FEB	45.5	6.9	21.1	1.2	16.3	22.3
MAR	64.8	9.2	41.7	1.6	12.2	43.3
APR	78.8	47.6	17.6	2.0	11.6	19.6
MAY	76.0	79.7	6.9	1.9	-12.6	8.8
JUN	83.3	82.2	7.4	1.3	-7.7	8.8
JUL	87.2	73.9	7.6	1.3	4.4	8.9
AUG	86.5	66.1	9.5	1.7	9.2	11.2
SEP	82.8	44.0	8.1	2.0	28.7	10.1
OCT	73.5	33.1	9.8	2.8	27.9	12.5
NOV	86.7	16.4	20.6	2.8	46.9	23.4
DEC	67.0	7.2	18.0	2.4	39.5	20.3
Total	882.0	474.0	178.8	22.8	206.5	201.6

WATER BALANCE SUMMARY FOR HYDROGRAPH 1308

Location: Hydrograph 1308
 Scenario File: wbsum2.dat
 Period: 1960/11/01 to 1999/10/30 Area: 1.0253 km²

Water Balance Quantities (in mm)						
Month	Precip	ET	Runoff	(Baseflow)	(Losses)	Total Flow
JAN	50.2	7.8	12.1	27.5	2.8	39.6
FEB	45.5	6.9	21.4	23.8	-6.6	45.2
MAR	64.8	9.3	43.8	28.1	-16.4	71.9
APR	78.8	47.6	25.7	29.3	-23.8	55.0
MAY	76.0	82.0	13.2	30.1	-49.4	43.3
JUN	83.3	86.4	14.5	22.8	-40.4	37.3
JUL	87.2	75.5	15.0	17.1	-20.5	32.1
AUG	86.5	67.0	16.3	14.6	-11.3	30.9
SEP	82.8	44.2	14.0	14.3	10.2	28.3
OCT	73.5	32.9	14.4	16.8	9.4	31.2
NOV	86.7	16.3	23.2	21.4	25.7	44.6
DEC	67.0	7.2	19.2	28.0	12.6	47.2
Total	882.0	483.0	232.8	274.0	-107.8	506.8

WATER BALANCE SUMMARY FOR HYDROGRAPH 7090

Location: Hydrograph 7090
 Scenario File: wbsum2.dat
 Period: 1960/11/01 to 1999/10/30 Area: 0.0070 km²

Water Balance Quantities (in mm)						
Month	Precip	ET	Runoff	(Baseflow)	(Losses)	Total Flow
JAN	50.2	7.8	29.2	0.0	13.3	29.2
FEB	45.5	6.9	40.7	0.0	-2.1	40.7
MAR	64.8	8.3	80.1	0.0	-23.6	80.1
APR	78.8	18.3	65.9	0.0	-5.4	65.9
MAY	76.0	19.5	56.8	0.0	-0.4	56.8
JUN	83.3	19.1	64.7	0.0	-0.6	64.7
JUL	87.2	17.9	69.1	0.0	0.1	69.1
AUG	86.5	18.4	68.5	0.0	-0.4	68.5
SEP	82.8	16.7	65.5	0.0	0.5	65.5
OCT	73.5	15.7	58.0	0.0	-0.1	58.0
NOV	86.7	11.9	71.8	0.0	3.0	71.8
DEC	67.0	7.1	46.4	0.0	13.5	46.4
Total	882.0	167.6	716.5	0.0	-2.1	716.5

WATER BALANCE SUMMARY FOR HYDROGRAPH 1408

Location: Hydrograph 1408
 Scenario File: wbsum2.dat
 Period: 1960/11/01 to 1999/10/30 Area: 1.6486 km²

Water Balance Quantities (in mm)						
Month	Precip	ET	Runoff	(Baseflow)	(Losses)	Total Flow
JAN	50.2	7.8	4.0	1.5	37.0	5.4
FEB	45.5	6.9	8.0	1.1	29.5	9.1
MAR	64.8	10.5	14.6	2.0	37.7	16.5

APR	78.8	57.1	4.5	2.5	14.7	7.0
MAY	76.0	89.5	2.1	1.9	-17.5	4.0
JUN	83.3	92.9	2.4	1.2	-13.2	3.6
JUL	87.2	85.3	2.3	1.3	-1.8	3.6
AUG	86.5	74.1	2.6	1.8	8.1	4.4
SEP	82.8	49.3	3.2	1.7	28.5	4.9
OCT	73.5	36.3	5.0	2.3	29.8	7.4
NOV	86.7	17.6	9.2	2.4	57.5	11.5
DEC	67.0	7.3	7.0	2.1	50.6	9.1
Total	882.0	534.6	64.6	21.8	261.1	86.4

WATER BALANCE SUMMARY FOR HYDROGRAPH 1102

Location: Hydrograph 1102
Scenario File: wbsum2.dat
Period: 1960/11/01 to 1999/10/30 Area: 0.0505 km²

Water Balance Quantities (in mm)						
Infiltration						Total
Month	Precip	ET	Runoff	(Baseflow)	(Losses)	Flow
JAN	50.2	7.8	3.6	0.6	38.3	4.2
FEB	45.5	6.9	8.4	0.5	29.7	8.9
MAR	64.8	9.5	18.1	0.6	36.6	18.7
APR	78.8	55.3	7.4	0.7	15.4	8.1
MAY	76.0	98.1	1.1	0.7	-23.9	1.8
JUN	83.3	105.0	0.8	0.5	-23.1	1.4
JUL	87.2	91.0	0.7	0.5	-5.1	1.2
AUG	86.5	78.7	1.8	0.7	5.3	2.5
SEP	82.8	51.7	1.0	0.8	29.3	1.7
OCT	73.5	37.5	1.8	1.1	33.2	2.8
NOV	86.7	17.5	5.4	1.1	62.7	6.5
DEC	67.0	7.2	6.2	0.9	52.7	7.1
Total	882.0	566.1	56.2	8.7	251.1	64.9

File=DUMP5712. WTB Does not exist

WATER BALANCE SUMMARY FOR HYDROGRAPH 1405

Location: Hydrograph 1405
Scenario File: wbsum2.dat
Period: 1960/11/01 to 1999/10/30 Area: 0.5069 km²

Water Balance Quantities (in mm)						
Infiltration						Total
Month	Precip	ET	Runoff	(Baseflow)	(Losses)	Flow
JAN	50.2	7.8	7.2	1.3	34.0	8.4
FEB	45.5	6.9	14.4	0.9	23.3	15.3
MAR	64.8	9.6	28.5	1.1	25.6	29.6
APR	78.8	54.3	9.8	1.6	13.1	11.4
MAY	76.0	92.9	3.1	1.5	-21.6	4.7
JUN	83.3	95.9	3.0	1.3	-16.9	4.3
JUL	87.2	85.7	2.8	1.4	-2.8	4.2
AUG	86.5	76.1	3.6	1.9	4.9	5.5
SEP	82.8	50.1	4.0	1.9	26.8	5.9
OCT	73.5	36.9	6.5	2.6	27.5	9.1

NOV	86.7	17.3	14.6	2.4	52.3	17.1
DEC	67.0	7.2	12.4	1.8	45.6	14.2
Total	882.0	540.7	109.9	19.7	211.8	129.6

WATER BALANCE SUMMARY FOR HYDROGRAPH 7080

Location: Hydrograph 7080
Scenario File: wbsum2.dat
Period: 1960/11/01 to 1999/10/30 Area: 0.0154 km²

Water Balance Quantities (in mm)						
Infiltration						Total
Month	Precip	ET	Runoff	(Baseflow)	(Losses)	Flow
JAN	50.2	7.8	29.2	0.0	13.3	29.2
FEB	45.5	6.9	40.7	0.0	-2.1	40.7
MAR	64.8	8.3	80.1	0.0	-23.6	80.1
APR	78.8	18.3	65.9	0.0	-5.4	65.9
MAY	76.0	19.5	56.8	0.0	-0.4	56.8
JUN	83.3	19.1	64.7	0.0	-0.6	64.7
JUL	87.2	17.9	69.1	0.0	0.1	69.1
AUG	86.5	18.4	68.5	0.0	-0.4	68.5
SEP	82.8	16.7	65.5	0.0	0.5	65.5
OCT	73.5	15.7	58.0	0.0	-0.1	58.0
NOV	86.7	11.9	71.8	0.0	3.0	71.8
DEC	67.0	7.1	46.4	0.0	13.5	46.4
Total	882.0	167.6	716.5	0.0	-2.1	716.5

WATER BALANCE SUMMARY FOR HYDROGRAPH 1110

Location: Hydrograph 1110
Scenario File: wbsum2.dat
Period: 1960/11/01 to 1999/10/30 Area: 0.5852 km²

Water Balance Quantities (in mm)						
Infiltration						Total
Month	Precip	ET	Runoff	(Baseflow)	(Losses)	Flow
JAN	50.2	7.8	5.0	9.5	28.0	14.5
FEB	45.5	6.9	10.2	8.0	20.4	18.2
MAR	64.8	9.5	21.8	12.4	21.0	34.2
APR	78.8	54.6	9.6	15.5	-1.0	25.1
MAY	76.0	96.5	2.7	13.6	-36.9	16.4
JUN	83.3	105.3	2.6	6.7	-31.3	9.3
JUL	87.2	95.0	2.5	3.3	-13.6	5.8
AUG	86.5	79.0	3.5	2.0	2.0	5.5
SEP	82.8	51.3	2.5	2.1	27.0	4.5
OCT	73.5	36.9	3.4	3.5	29.7	6.9
NOV	86.7	17.3	7.5	6.0	55.8	13.5
DEC	67.0	7.2	7.6	10.1	42.1	17.7
Total	882.0	567.3	78.9	92.8	143.0	171.7

File=DUMP7312. WTB Does not exist

File=DUMP2702. WTB Does not exist

WATER BALANCE SUMMARY FOR HYDROGRAPH 4312
 =====

Location: Hydrograph 4312
 Scenario File: wbsum2.dat
 Period: 1960/11/01 to 1999/10/30 Area: 0.0805 km²

Water Balance Quantities (in mm)						
Month	Precip	ET	Runoff	Infiltration (Baseflow)	(Losses)	Total Flow
JAN	50.2	7.8	14.4	0.6	27.4	15.0
FEB	45.5	6.9	24.1	0.5	14.0	24.6
MAR	64.8	9.1	48.6	0.6	6.4	49.3
APR	78.8	43.2	29.9	1.0	4.7	30.8
MAY	76.0	70.4	19.4	1.0	-14.8	20.3
JUN	83.3	74.7	21.8	1.0	-14.2	22.7
JUL	87.2	66.8	23.0	1.2	-3.8	24.2
AUG	86.5	59.3	24.2	1.5	1.5	25.7
SEP	82.8	39.9	22.7	1.5	18.6	24.2
OCT	73.5	30.6	22.0	1.9	19.0	23.9
NOV	86.7	15.7	31.6	1.6	37.8	33.2
DEC	67.0	7.2	23.5	1.0	35.3	24.5
Total	882.0	431.6	305.2	13.3	132.0	318.5

WATER BALANCE SUMMARY FOR HYDROGRAPH 6312
 =====

Location: Hydrograph 6312
 Scenario File: wbsum2.dat
 Period: 1960/11/01 to 1999/10/30 Area: 0.0805 km²

Water Balance Quantities (in mm)						
Month	Precip	ET	Runoff	Infiltration (Baseflow)	(Losses)	Total Flow
JAN	50.2	7.8	14.4	0.6	27.4	15.0
FEB	45.5	6.9	25.5	0.5	12.6	26.0
MAR	64.8	9.1	48.6	0.6	6.4	49.3
APR	78.8	43.2	31.1	1.0	3.5	32.1
MAY	76.0	70.4	19.4	1.0	-14.8	20.3
JUN	83.3	74.7	23.1	1.0	-15.6	24.1
JUL	87.2	66.8	25.2	1.2	-6.1	26.4
AUG	86.5	59.3	32.2	1.5	-6.5	33.7
SEP	82.8	39.9	23.3	1.5	18.0	24.8
OCT	73.5	30.6	22.0	1.9	19.0	23.9
NOV	86.7	15.7	31.8	1.6	37.6	33.4
DEC	67.0	7.2	23.5	1.0	35.3	24.5
Total	882.0	431.6	320.1	13.5	116.9	333.6

WATER BALANCE SUMMARY FOR HYDROGRAPH 4709
 =====

Location: Hydrograph 4709
 Scenario File: wbsum2.dat
 Period: 1960/11/01 to 1999/10/30 Area: 0.0230 km²

Water Balance Quantities (in mm)

Infiltration						
Month	Precip	ET	Runoff	(Baseflow)	(Losses)	Total Flow
JAN	50.2	7.8	1.9	0.0	40.5	1.9
FEB	45.5	6.9	6.2	0.0	32.4	6.2
MAR	64.8	9.0	7.9	0.0	47.9	7.9
APR	78.8	39.5	5.5	0.0	33.7	5.5
MAY	76.0	65.0	1.6	0.0	9.3	1.6
JUN	83.3	69.1	3.3	0.0	10.9	3.3
JUL	87.2	61.1	4.5	0.0	21.5	4.5
AUG	86.5	53.7	6.9	0.0	25.9	6.9
SEP	82.8	36.6	3.3	0.0	42.9	3.3
OCT	73.5	28.2	0.7	0.0	44.5	0.7
NOV	86.7	15.1	2.6	0.0	68.9	2.6
DEC	67.0	7.2	3.7	0.0	56.1	3.7
Total	882.0	399.2	48.3	0.0	434.5	48.3

WATER BALANCE SUMMARY FOR HYDROGRAPH 4704
 =====

Location: Hydrograph 4704
 Scenario File: wbsum2.dat
 Period: 1960/11/01 to 1999/10/30 Area: 0.0170 km²

Water Balance Quantities (in mm)						
Month	Precip	ET	Runoff	Infiltration (Baseflow)	(Losses)	Total Flow
JAN	50.2	7.8	2.4	0.0	40.0	2.4
FEB	45.5	6.9	7.2	0.0	31.4	7.2
MAR	64.8	8.9	10.3	0.0	45.5	10.3
APR	78.8	36.8	7.2	0.0	34.8	7.2
MAY	76.0	59.1	3.2	0.0	13.6	3.2
JUN	83.3	62.7	5.6	0.0	15.0	5.6
JUL	87.2	55.5	8.1	0.0	23.5	8.1
AUG	86.5	49.2	9.8	0.0	27.5	9.8
SEP	82.8	34.0	5.9	0.0	42.9	5.9
OCT	73.5	26.6	2.0	0.0	44.9	2.0
NOV	86.7	14.7	4.7	0.0	67.3	4.7
DEC	67.0	7.2	5.0	0.0	54.8	5.0
Total	882.0	369.4	71.6	0.0	441.1	71.6

WATER BALANCE SUMMARY FOR HYDROGRAPH 3312
 =====

Location: Hydrograph 3312
 Scenario File: wbsum2.dat
 Period: 1960/11/01 to 1999/10/30 Area: 0.0253 km²

Water Balance Quantities (in mm)						
Month	Precip	ET	Runoff	Infiltration (Baseflow)	(Losses)	Total Flow
JAN	50.2	7.8	29.2	0.0	13.3	29.2
FEB	45.5	6.9	40.7	0.0	-2.1	40.7
MAR	64.8	8.3	80.1	0.0	-23.6	80.1
APR	78.8	18.3	65.9	0.0	-5.4	65.9
MAY	76.0	19.5	56.8	0.0	-0.4	56.8
JUN	83.3	19.1	64.7	0.0	-0.6	64.7
JUL	87.2	17.9	69.1	0.0	0.1	69.1
AUG	86.5	18.4	68.5	0.0	-0.4	68.5

SEP	82.8	16.7	65.5	0.0	0.5	65.5
OCT	73.5	15.7	58.0	0.0	-0.1	58.0
NOV	86.7	11.9	71.8	0.0	3.0	71.8
DEC	67.0	7.1	46.4	0.0	13.5	46.4
Total	882.0	167.6	716.5	0.0	-2.1	716.5

WATER BALANCE SUMMARY FOR HYDROGRAPH 5312

Location: Hydrograph 5312
 Scenario File: wbsum2.dat
 Period: 1960/11/01 to 1999/10/30 Area: 0.0805 km²

Water Balance Quantities (in mm)						
Month	Precip	ET	Runoff	Infiltration		Total
				(Baseflow)	(Losses)	
JAN	50.2	7.8	0.0	0.0	42.5	0.0
FEB	45.5	6.9	0.0	0.0	38.6	0.0
MAR	64.8	9.5	0.0	0.0	55.3	0.0
APR	78.8	43.9	0.0	0.0	34.9	0.0
MAY	76.0	70.6	0.0	0.0	5.4	0.0
JUN	83.3	74.9	0.0	0.0	8.3	0.0
JUL	87.2	67.0	0.0	0.0	20.2	0.0
AUG	86.5	59.4	0.8	0.0	26.2	0.8
SEP	82.8	40.0	0.0	0.0	42.7	0.0
OCT	73.5	30.6	0.0	0.0	42.8	0.0
NOV	86.7	15.9	0.0	0.0	70.8	0.0
DEC	67.0	7.2	0.0	0.0	59.8	0.0
Total	882.0	433.7	0.8	0.0	447.5	0.8

WATER BALANCE SUMMARY FOR HYDROGRAPH 5706

Location: Hydrograph 5706
 Scenario File: wbsum2.dat
 Period: 1960/11/01 to 1999/10/30 Area: 0.0468 km²

Water Balance Quantities (in mm)						
Month	Precip	ET	Runoff	Infiltration		Total
				(Baseflow)	(Losses)	
JAN	50.2	7.8	11.8	9.1	21.6	20.9
FEB	45.5	6.9	17.7	7.6	13.4	25.2
MAR	64.8	9.0	34.1	9.6	12.1	43.7
APR	78.8	35.1	26.5	9.9	7.3	36.4
MAY	76.0	54.9	18.4	10.6	-7.9	29.0
JUN	83.3	58.1	21.7	8.1	-4.5	29.7
JUL	87.2	51.6	23.1	4.9	7.6	28.0
AUG	86.5	45.9	25.9	3.0	11.7	28.9
SEP	82.8	32.2	21.5	2.5	26.6	24.0
OCT	73.5	25.5	19.4	3.3	25.3	22.8
NOV	86.7	14.5	24.5	6.0	41.6	30.6
DEC	67.0	7.2	17.5	9.2	33.1	26.7
Total	882.0	348.5	262.1	83.8	187.7	345.9

WATER BALANCE SUMMARY FOR HYDROGRAPH 101

Location: Hydrograph 101
 Scenario File: wbsum2.dat
 Period: 1960/11/01 to 1999/10/30 Area: 0.0032 km²

Water Balance Quantities (in mm)						
Month	Precip	ET	Runoff	Infiltration		Total
				(Baseflow)	(Losses)	
JAN	50.2	7.8	3.9	0.0	38.5	3.9
FEB	45.5	6.9	9.9	0.0	28.7	9.9
MAR	64.8	9.5	25.7	0.0	29.6	25.7
APR	78.8	55.5	15.4	0.0	7.9	15.4
MAY	76.0	99.3	1.4	0.0	-24.7	1.4
JUN	83.3	106.5	1.2	0.0	-24.5	1.2
JUL	87.2	92.2	1.0	0.0	-6.1	1.0
AUG	86.5	80.8	3.1	0.0	2.6	3.1
SEP	82.8	51.7	0.9	0.0	30.2	0.9
OCT	73.5	37.7	0.6	0.0	35.2	0.6
NOV	86.7	17.5	4.8	0.0	64.4	4.8
DEC	67.0	7.2	7.9	0.0	51.9	7.9
Total	882.0	572.5	75.8	0.0	233.7	75.8

WATER BALANCE SUMMARY FOR HYDROGRAPH 103

Location: Hydrograph 103
 Scenario File: wbsum2.dat
 Period: 1960/11/01 to 1999/10/30 Area: 0.0259 km²

Water Balance Quantities (in mm)						
Month	Precip	ET	Runoff	Infiltration		Total
				(Baseflow)	(Losses)	
JAN	50.2	7.8	3.8	1.2	37.4	5.0
FEB	45.5	6.9	8.3	0.9	29.4	9.2
MAR	64.8	9.5	15.4	1.1	38.7	16.6
APR	78.8	55.1	3.5	1.4	18.7	5.0
MAY	76.0	96.7	1.1	1.4	-23.2	2.4
JUN	83.3	100.4	0.9	1.0	-19.1	1.9
JUL	87.2	87.1	0.6	1.0	-1.5	1.6
AUG	86.5	76.6	0.8	1.4	7.7	2.2
SEP	82.8	51.8	1.4	1.6	28.1	2.9
OCT	73.5	37.3	3.3	2.1	30.8	5.4
NOV	86.7	17.4	8.2	2.1	58.9	10.3
DEC	67.0	7.2	6.9	1.7	51.3	8.5
Total	882.0	553.7	54.1	16.9	257.2	71.1

WATER BALANCE SUMMARY FOR HYDROGRAPH 1050

Location: Hydrograph 1050
 Scenario File: wbsum2.dat
 Period: 1960/11/01 to 1999/10/30 Area: 0.0108 km²

Water Balance Quantities (in mm)						
Month	Precip	ET	Runoff	Infiltration		Total
				(Baseflow)	(Losses)	
JAN	50.2	7.8	29.1	0.0	13.4	29.1
FEB	45.5	6.9	40.6	0.0	-2.0	40.6

MAR	64.8	8.3	79.9	0.0	-23.4	79.9
APR	78.8	18.3	65.9	0.0	-5.3	65.9
MAY	76.0	19.5	56.8	0.0	-0.3	56.8
JUN	83.3	19.1	64.7	0.0	-0.5	64.7
JUL	87.2	17.9	69.1	0.0	0.1	69.1
AUG	86.5	18.4	68.5	0.0	-0.4	68.5
SEP	82.8	16.7	65.5	0.0	0.6	65.5
OCT	73.5	15.7	57.9	0.0	-0.1	57.9
NOV	86.7	11.9	71.6	0.0	3.2	71.6
DEC	67.0	7.1	46.1	0.0	13.7	46.1
Total	882.0	167.6	715.5	0.0	-1.1	715.5

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WATER BALANCE SUMMARY FOR HYDROGRAPH 108

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Location: Hydrograph 108
 Scenario File: wbsum2.dat
 Period: 1960/11/01 to 1999/10/30 Area: 0.1240 km²

Water Balance Quantities (in mm)						
Infiltration						Total
Month	Precip	ET	Runoff	(Baseflow)	(Losses)	Flow
JAN	50.2	7.8	10.6	18.7	13.2	29.3
FEB	45.5	6.9	23.3	14.7	0.5	38.1
MAR	64.8	9.5	45.3	21.1	-11.1	66.4
APR	78.8	55.1	10.6	25.9	-12.8	36.5
MAY	76.0	96.7	2.9	22.5	-46.1	25.4
JUN	83.3	100.1	1.8	11.2	-29.8	12.9
JUL	87.2	90.1	0.7	5.9	-9.6	6.6
AUG	86.5	78.4	1.0	4.9	2.2	5.9
SEP	82.8	51.9	2.1	5.8	23.0	7.9
OCT	73.5	37.4	6.8	10.0	19.3	16.8
NOV	86.7	17.5	20.9	14.6	33.7	35.5
DEC	67.0	7.2	18.4	20.8	20.6	39.2
Total	882.0	558.4	144.3	176.2	3.2	320.5

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WATER BALANCE SUMMARY FOR HYDROGRAPH 109

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Location: Hydrograph 109
 Scenario File: wbsum2.dat
 Period: 1960/11/01 to 1999/10/30 Area: 0.1252 km²

Water Balance Quantities (in mm)						
Infiltration						Total
Month	Precip	ET	Runoff	(Baseflow)	(Losses)	Flow
JAN	50.2	7.8	1.6	27.1	13.8	28.7
FEB	45.5	6.9	2.8	23.0	12.8	25.8
MAR	64.8	9.4	6.2	35.1	14.0	41.3
APR	78.8	53.6	3.9	47.7	-26.4	51.5
MAY	76.0	95.6	2.8	41.2	-63.7	44.0
JUN	83.3	108.9	3.2	20.1	-49.0	23.3
JUL	87.2	107.8	3.4	9.8	-33.8	13.1
AUG	86.5	81.2	3.4	4.7	-2.8	8.1
SEP	82.8	52.5	3.2	3.7	23.4	6.9
OCT	73.5	36.4	2.8	7.1	27.2	9.9
NOV	86.7	17.2	3.6	13.1	52.8	16.7
DEC	67.0	7.2	2.6	25.6	31.5	28.3

Total	882.0	584.5	39.5	258.2	-0.1	297.7
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WATER BALANCE SUMMARY FOR HYDROGRAPH 5103

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Location: Hydrograph 5103
 Scenario File: wbsum2.dat
 Period: 1960/11/01 to 1999/10/30 Area: 0.0505 km²

Water Balance Quantities (in mm)						
Infiltration						Total
Month	Precip	ET	Runoff	(Baseflow)	(Losses)	Flow
JAN	50.2	7.8	0.9	0.0	41.6	0.9
FEB	45.5	6.9	2.4	0.0	36.2	2.4
MAR	64.8	10.5	7.6	0.2	46.5	7.7
APR	78.8	58.8	1.4	0.0	18.6	1.5
MAY	76.0	98.5	0.0	0.0	-22.5	0.0
JUN	83.3	105.1	0.0	0.0	-21.9	0.0
JUL	87.2	91.1	0.0	0.0	-4.0	0.0
AUG	86.5	78.8	0.2	0.0	7.5	0.2
SEP	82.8	51.8	0.0	0.0	31.0	0.0
OCT	73.5	37.7	0.0	0.0	35.8	0.0
NOV	86.7	17.8	0.0	0.0	68.8	0.0
DEC	67.0	7.3	0.6	0.0	59.0	0.7
Total	882.0	572.0	13.0	0.3	296.7	13.3

SWMF2 (Major Event) Sub-Model

* Sub Model Grand River - Proposed Cond.
* USE FOR 10yr to Regional EVENTS in SWMF 2, WL2
* ITERATION 3 - Eliminate Pond 4
*
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* MTE Consultants Inc., 2011
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* Hydrologic Response Units
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*
* Unit Response Unit Descriptions
* 1 = Impervious
* 2 = Wetland (Open water)
* 3 = Organic Soils
* 4 = Silt tills-poor and imperfectly draining
* 5 = Silt tills high vegetation cover
* 6 = Sand tills-sandy clay to fine sand loams
* 7 = Sand tills high vegetation cover
* 8 = Sand/gravel tills-gravelly sandy clay to gravelly sandy silt loams
* 9 = Sand/gravel tills high vegetation cover
*
* Soil drainage parameters taken from "Hydrology of Floods in Canada", 1989.
* Edited by Watt, W.E., National Research Council of Canada
*
READ SOIL PARAMETERS NZONE=9

	IMP	WET	ORG	SILT TILL		SAND TILL		SAND/GRAV	
				LOW	HIGH	LOW	HIGH	LOW	HIGH
DS=	2.0	40.0	40.0	5.0	15.0	5.0	15.0	5.0	15.0
KEFF=	0	0.2	2.0	5.0	15.0	10.0	40.0	10.0	40.0
CS=	0	0.2	1.5	3.8	11.2	7.5	30.0	7.5	30.0
D=	0	0.2	0.2	0.5	1.5	1.0	4.0	1.0	4.0
SAV=	0	200	200	200	200	200	200	200	200
HI=	0	0.01	100	100	200	100	200	100	200
SMCI=	0	0.56	0.56	0.54	0.54	0.46	0.46	0.46	0.46
IMCI=	0	0.46	0.46	0.40	0.40	0.23	0.23	0.23	0.23
FCAPI=	0	0.46	0.46	0.40	0.40	0.23	0.23	0.23	0.23
WILTI=	0	0.27	0.27	0.19	0.19	0.07	0.07	0.07	0.07
HII=	0	0.01	150	150	400	300	600	400	600
SMCII=	0	0.56	0.56	0.54	0.54	0.46	0.46	0.40	0.40
IMCII=	0	0.46	0.46	0.40	0.40	0.23	0.23	0.10	0.10
FCAPII=	0	0.46	0.46	0.40	0.40	0.23	0.23	0.10	0.10
WILTII=	0	0.27	0.27	0.19	0.19	0.07	0.07	0.04	0.04
X=	0	1	1	0	1	0	0	0	0
FATR=	1	1	1	1	1	1	1	1	1
INCS=	0	1	3	1	5	1	5	1	5

*
* Go to event file
*
CHANGE INPUT FILE
*
* 3.5% Typical off-channel (Steep areas)
*
=====

COMPUTE RATING CURVE ID=1 VS= 2.035 NSEGS=3
MIN EL= 100.00 MAX EL= 100.80
CHNSLP= 0.03500 FLNSLP= 0.03500
N= 0.350 DIST= 24.45
N=-0.150 DIST= 25.55
N= 0.350 DIST= 50.00
DIST ELEV DIST ELEV DIST ELEV
0.00 100.80 24.45 100.30 24.75 100.00
25.50 100.00 25.55 100.30 50.00 100.80
RFN=0.0000 PCODE=1

*
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* 5% Typical off-channel (Steep areas)
*
=====

COMPUTE RATING CURVE ID=2 VS= 2.050 NSEGS=3
MIN EL= 100.00 MAX EL= 100.80
CHNSLP= 0.05000 FLNSLP= 0.05000
N= 0.350 DIST= 24.45
N=-0.150 DIST= 25.55
N= 0.350 DIST= 50.00
DIST ELEV DIST ELEV DIST ELEV
0.00 100.80 24.45 100.30 24.75 100.00
25.50 100.00 25.55 100.30 50.00 100.80
RFN=0.0000 PCODE=1

*
* 3.5% Typical Main channel Parabolic Swale
*
=====

COMPUTE RATING CURVE ID=3 VS= 100.035 NSEGS=3
MIN EL= 100.70 MAX EL= 103.00
CHNSLP= 0.03500 FLNSLP= 0.03500
N= 0.080 DIST= 20.00
N=-0.050 DIST= 30.00
N= 0.080 DIST= 50.00
DIST ELEV DIST ELEV DIST ELEV
0.00 103.00 20.00 101.00 23.00 100.80
25.00 100.70 27.00 100.80 30.00 101.00
50.00 103.00
RFN=0.0000 PCODE=1

*
* 2% Typical Main channel Parabolic Swale
*
=====

COMPUTE RATING CURVE ID=4 VS= 100.020 NSEGS=3
MIN EL= 100.70 MAX EL= 103.00
CHNSLP= 0.02000 FLNSLP= 0.02000
N= 0.080 DIST= 20.00
N=-0.050 DIST= 30.00
N= 0.080 DIST= 50.00
DIST ELEV DIST ELEV DIST ELEV
0.00 103.00 20.00 101.00 23.00 100.80
25.00 100.70 27.00 100.80 30.00 101.00
50.00 103.00
RFN=0.0000 PCODE=1

*
* Catchment 2% Typical off-channel (Steep areas)
*
=====

COMPUTE RATING CURVE ID=5 VS= 2.020 NSEGS=3
MIN EL= 100.00 MAX EL= 100.80
CHNSLP= 0.02000 FLNSLP= 0.02000
N= 0.350 DIST= 24.45
N=-0.150 DIST= 25.55
N= 0.350 DIST= 50.00
DIST ELEV DIST ELEV DIST ELEV
0.00 100.80 24.45 100.30 24.75 100.00
25.50 100.00 25.55 100.30 50.00 100.80
RFN=0.0000 PCODE=1

*
* Catchment 0.5% Main channel Parabolic Swale
*
=====

COMPUTE RATING CURVE ID=6 VS= 100.005 NSEGS=3
MIN EL= 100.70 MAX EL= 103.00
CHNSLP= 0.00500 FLNSLP= 0.005000
N= 0.080 DIST= 20.00
N=-0.050 DIST= 30.00
N= 0.080 DIST= 50.00

DIST	ELEV	DIST	ELEV	DIST	ELEV
0.00	103.00	20.00	101.00	23.00	100.80
25.00	100.70	27.00	100.80	30.00	101.00
50.00	103.00				

RFN=0.0000 PCODE=1

* NEWMAN CREEK

*

*

*

* 2.0% Typical off-channel (Steep areas)

*

COMPUTE RATING CURVE ID=1 VS= 2.020 NSEGS=3

MIN EL=	100.00	MAX EL=	100.80
CHNSLP=	0.02000	FLNSLP=	0.02000
N= 0.350	DIST= 24.45		
N=-0.150	DIST= 25.55		
N= 0.350	DIST= 50.00		

DIST	ELEV	DIST	ELEV	DIST	ELEV
0.00	100.80	24.45	100.30	24.75	100.00
25.50	100.00	25.55	100.30	50.00	100.80

RFN=0.0000 PCODE=1

*

* 10.0% Typical off-channel (Steep areas)

*

COMPUTE RATING CURVE ID=2 VS= 2.100 NSEGS=3

MIN EL=	100.00	MAX EL=	100.80
CHNSLP=	0.10000	FLNSLP=	0.10000
N= 0.350	DIST= 24.45		
N=-0.150	DIST= 25.55		
N= 0.350	DIST= 50.00		

DIST	ELEV	DIST	ELEV	DIST	ELEV
0.00	100.80	24.45	100.30	24.75	100.00
25.50	100.00	25.55	100.30	50.00	100.80

RFN=0.0000 PCODE=1

*

* 1.0% Typical Main channel Parabolic Swale

*

COMPUTE RATING CURVE ID=3 VS= 100.010 NSEGS=3

MIN EL=	100.70	MAX EL=	103.00
CHNSLP=	0.01000	FLNSLP=	0.01000
N= 0.080	DIST= 20.00		
N=-0.050	DIST= 30.00		
N= 0.080	DIST= 50.00		

DIST	ELEV	DIST	ELEV	DIST	ELEV
0.00	103.00	20.00	101.00	23.00	100.80
25.00	100.70	27.00	100.80	30.00	101.00
50.00	103.00				

RFN=0.0000 PCODE=1

*

* Typical Urban section

*

COMPUTE RATING CURVE ID=5 VS= 3.200 NSEGS=3

MIN EL=	295.00	MAX EL=	295.70
CHNSLP=	0.01000	FLNSLP=	0.01000
N= 0.015	DIST= 200.00		
N=-0.015	DIST= 300.00		
N= 0.015	DIST= 500.00		

DIST	ELEV	DIST	ELEV	DIST	ELEV
0.00	295.70	200.00	295.50	200.10	295.00
299.90	295.00	300.00	295.50	500.00	295.70

*

* Typical Urban section

*

COMPUTE RATING CURVE ID=6 VS= 3.200 NSEGS=3

MIN EL=	295.00	MAX EL=	295.70
CHNSLP=	0.02000	FLNSLP=	0.02000
N= 0.015	DIST= 200.00		
N=-0.015	DIST= 300.00		
N= 0.015	DIST= 500.00		

DIST	ELEV	DIST	ELEV	DIST	ELEV
0.00	295.70	200.00	295.50	200.10	295.00
299.90	295.00	300.00	295.50	500.00	295.70

*

* Catchment 201

* VS= 100.010 is main channel & VS= 2.020 is off-channel

*

COMPUTE FLOWRATE ID=3 NHD= 201 AREA= 0.0639 Sq km L= 260 m W= 245 m

SOIL ZONE	I	II	III	IV	V	VI	VII	VIII	IX
	46.0	0.0	0.0	0.0	0.0	0.0	0.0	54.0	0.0

RATING CURVES: IDMC=5 IDOC=6 GRMC= 0.5 QROC= 0.05

ROUTING MODEL=2 CONSTANTS: OVERLAND FTB= 1.2 TLO= 0.0

SUBSURFACE: KSS= 5.0 KGW= 384 h PCODE=1 WQPCODE=1

RBASIN=0 IDA=0 IDB=0 IDC=0 IDD=0 RBDUMP=0

GWFACT=1.00 GWON=1

SWQTH= 0.0 L/s SWPUMP= 0.0 L/s SWCODE=0

*

PRINT HYD ID=3 PCODE=1 MODE=10

*

* Typical Roof section

*

COMPUTE RATING CURVE ID=5 VS= 101.000 NSEGS=3

MIN EL=	295.00	MAX EL=	295.70
CHNSLP=	0.2500	FLNSLP=	0.2500
N= 0.018	DIST= 100.00		
N=-0.018	DIST= 400.00		
N= 0.018	DIST= 500.00		

DIST	ELEV	DIST	ELEV	DIST	ELEV
0.00	295.70	100.00	295.50	100.10	295.00
399.90	295.00	400.00	295.50	500.00	295.70

RFN=0.0000 PCODE=1

*

* GRAND RIVER

* This portion is part of the development area (school block) in SWM 2 Cmt

* Major flow would continue to Devils creek and minor flow will be diverted

* to SWMF2 (and ultimately the Grand), edited by XSP, Feb 21, 2019

*

* Roof area of school blk

*

COMPUTE FLOWRATE ID=1 NHD= 9721 AREA= 0.0039 Sq km L= 20 m W= 10 m

SOIL ZONE	I	II	III	IV	V	VI	VII	VIII	IX
	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

RATING CURVES: IDMC=6 IDOC=5 GRMC= 0.50 QROC= 0.25

ROUTING MODEL=2 CONSTANTS: OVERLAND FTB= 1.2 TLO= 0.0

SUBSURFACE: KSS= 5.0 KGW= 384 h PCODE=1 WQPCODE=1

RBASIN=0 IDA=0 IDB=0 IDC=0 IDD=0 RBDUMP=0

GWFACT=0.0 GWON=1

SWQTH= 0.0 L/s SWPUMP= 0.0 L/s SWCODE=0

*

* Roof infiltration gallery within 7021; hydrograph 8721

*

ROUTE SPECIAL POND ID=3 HYD NO=8721 INFLOW=1 PCODE=0 OPTION= 5
Inflow controls:
USPCT=100% USDIV=0 PCTA= 0% ADIV=0
GWPCT= 0% GWDIV=0
Maximum level for Routing Tables: ZMAX= 101.100
Recharge characteristics for Compartment A
LEVELA= 100.000 EVAPA= 0.0 mm/d ACODE=0
CDA= 0.000 mm/h DZA= 10.00 m
Recharge characteristics for Compartment B
LEVELB= 100.000 CCBA= 0.00000 EVAPB= 0.0 mm/d BCODE=1
CDB= 15.000 mm/h DZB= 10.00 m
Irrigation Pond Controls: IPOND=0
Number of points= 3

Compartment A			Compartment B		
Elevation	Outflow	Storage	SFArea	Outflow	Storage
(m)	(cms)	(ha*m)	(ha)	(cms)	(ha*m)
100.000	0.000	0.0000	0.0000	0.000	0.0000
101.000	0.000	0.0000	0.0000	0.000	0.0096
101.100	0.000	0.0000	0.0000	1.000	0.0106

*
* Non-roof areas within 7021; hydrograph 7721
* VS=3.200 MC, VS=3.200 OC
*

COMPUTE FLOWRATE ID=5 NHD= 7721 AREA= 0.0231 Sq km L= 60 m W= 150 m
SOIL ZONE I II III IV V VI VII VIII IX
27.1 0.0 0.0 11.3 0.0 0.3 0.0 61.4 0.0
RATING CURVES: IDMC=6 IDOC=6 QRCM= 0.50 QROC= 0.25
ROUTING MODEL=2 CONSTANTS: OVERLAND FTB= 1.2 TLO= 0.0
SUBSURFACE: KSS= 5.0 KGW= 384 h PCODE=1 WQPCODE=1
RBASIN=0 IDA=0 IDB=0 IDC=0 IDD=0 RBDUMP=0
GWFACT=0.75 GWON=1

*
* Sum hydr. 8721,7721 call result 7021
*
ADD HYD ID=1 HYD NO= 7021 IDA=3 IDB=5 ICODE=0
*
* Divert minor flow to SWMF2 and major flow to Devils creek (313)
*

DIVERT FLOWS INFLOW=1 DIVERT=3 HYD NO=3131 PCODE=1 OPTION=2
INLET CAP=0.7872 CMS THRUFLW ID=6 HYD NOB=1721
IDFLAG=0 IDSTOR=0 IGWT=0

*
*

* GRAND RIVER
*
*
*
*

* Roof areas within 708, hydrograph 9708
* VS=101.000 MC, VS=3.200 OC
*

COMPUTE FLOWRATE ID=1 NHD= 9708 AREA= 0.0197 Sq km L= 20 m W= 10 m
SOIL ZONE I II III IV V VI VII VIII IX
100.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
RATING CURVES: IDMC=6 IDOC=5 QRCM= 0.50 QROC= 0.25
ROUTING MODEL=2 CONSTANTS: OVERLAND FTB= 1.2 TLO= 0.0
SUBSURFACE: KSS= 5.0 KGW= 384 h PCODE=1 WQPCODE=1
RBASIN=0 IDA=0 IDB=0 IDC=0 IDD=0 RBDUMP=0
GWFACT=1.0 GWON=1
SWQTH= 0.0 L/s SWPUMP= 0.0 L/s SWCODE=0

*

* Roof infiltration gallery within 708; hydrograph 8708
*
ROUTE SPECIAL POND ID=2 HYD NO=8708 INFLOW=1 PCODE=0 OPTION= 5
Inflow controls:
USPCT=100% USDIV=0 PCTA= 0% ADIV=0
GWPCT= 0% GWDIV=0
Maximum level for Routing Tables: ZMAX= 101.100
Recharge characteristics for Compartment A
LEVELA= 100.000 EVAPA= 0.0 mm/d ACODE=0
CDA= 0.000 mm/h DZA= 10.00 m
Recharge characteristics for Compartment B
LEVELB= 100.000 CCBA= 0.00000 EVAPB= 0.0 mm/d BCODE=1
CDB= 15.000 mm/h DZB= 10.00 m
Irrigation Pond Controls: IPOND=0
Number of points= 3

Compartment A			Compartment B		
Elevation	Outflow	Storage	SFArea	Outflow	Storage
(m)	(cms)	(ha*m)	(ha)	(cms)	(ha*m)
100.000	0.000	0.0000	0.0000	0.000	0.0000
101.000	0.000	0.0000	0.0000	0.000	0.0493
101.100	0.000	0.0000	0.0000	1.000	0.0543

*
*-----
*
* Areas within 708 to CIF, hydrograph 6708
* VS=101.000 MC, VS=3.200 OC
*

COMPUTE FLOWRATE ID=1 NHD= 6708 AREA= 0.0025 Sq km L= 20 m W= 10 m
SOIL ZONE I II III IV V VI VII VIII IX
100.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
RATING CURVES: IDMC=6 IDOC=6 QRCM= 0.50 QROC= 0.25
ROUTING MODEL=2 CONSTANTS: OVERLAND FTB= 1.2 TLO= 0.0
SUBSURFACE: KSS= 5.0 KGW= 384 h PCODE=1 WQPCODE=1
RBASIN=0 IDA=0 IDB=0 IDC=0 IDD=0 RBDUMP=0
GWFACT=1.0 GWON=1
SWQTH= 0.0 L/s SWPUMP= 0.0 L/s SWCODE=0

*
* Roof infiltration gallery in areas within 708 to CIF; hydrograph 5708
*

ROUTE SPECIAL POND ID=3 HYD NO=5708 INFLOW=1 PCODE=0 OPTION= 5
Inflow controls:
USPCT=100% USDIV=0 PCTA= 0% ADIV=0
GWPCT= 0% GWDIV=0
Maximum level for Routing Tables: ZMAX= 101.100
Recharge characteristics for Compartment A
LEVELA= 100.000 EVAPA= 0.0 mm/d ACODE=0
CDA= 0.000 mm/h DZA= 10.00 m
Recharge characteristics for Compartment B
LEVELB= 100.000 CCBA= 0.00000 EVAPB= 0.0 mm/d BCODE=1
CDB= 15.000 mm/h DZB= 10.00 m
Irrigation Pond Controls: IPOND=0
Number of points= 3

Compartment A			Compartment B		
Elevation	Outflow	Storage	SFArea	Outflow	Storage
(m)	(cms)	(ha*m)	(ha)	(cms)	(ha*m)
100.000	0.000	0.0000	0.0000	0.000	0.0000
101.000	0.000	0.0000	0.0000	0.000	0.0063
101.100	0.000	0.0000	0.0000	1.000	0.0072

*
* Non-roof areas in areas within 708 to CIF; hydrograph 2708
* VS=3.200 MC, VS=3.200 OC
*

```

COMPUTE FLOWRATE  ID=1 NHD= 2708 AREA=   0.0381 Sq km L=   60 m W=   60 m
SOIL ZONE I   II  III   IV   V   VI  VII  VIII  IX
                46.1   0.0 0.0   8.3   0.0 0.2 0.0 45.3 0.0
RATING CURVES: IDMC=6 IDOC=6 GRMC=   0.50 QROC=   0.25
ROUTING MODEL=2 CONSTANTS: OVERLAND FTB= 1.2 TLO= 0.0
SUBSURFACE: KSS= 5.0 KGW= 384 h PCODE=1 WQPCODE=1
RBASIN=0 IDA=0 IDB=0 IDC=0 IDD=0 RBDUMP=0
GWFACT=1.0 GWON=1
SWQTH=   0.0 L/s SWPUMP=   0.0 L/s SWCODE=0

```

```

*
ADD HYD            ID=4 HYD NO=   4708 IDA=3 IDB=1 ICODE=0
PRINT HYD          ID=4 PCODE=1 MODE=10
*
* Conveyance infiltration gallery within 708, sized by 25mm,15% safety faactor; hydrograph 4708
*

```

```

ROUTE SPECIAL POND ID=3 HYD NO=1708 INFLOW=4 PCODE=0 OPTION= 5
Inflow controls:
    USPCT=100% USDIV=0      PCTA=   0% ADIV=0
    GWPCT=   0% GWDIV=0
Maximum level for Routing Tables: ZMAX= 101.100
Recharge characteristics for Compartment A
    LEVELA= 100.000          EVAPA= 0.0 mm/d ACODE=0
    CDA=   0.000 mm/h DZA= 10.00 m
Recharge characteristics for Compartment B
    LEVELB= 100.000 CCBA= 0.00000 EVAPB= 0.0 mm/d BCODE=1
    CDB=  15.000 mm/h DZB= 10.00 m
Irrigation Pond Controls: IPOND=0
Number of points=   3

```

Compartment A			Compartment B			
Elevation (m)	Outflow (cms)	Storage (ha*m)	SFArea (ha)	Outflow (cms)	Storage (ha*m)	SFArea (ha)
100.000	0.000	0.0000	0.0000	0.000	0.0000	0.0813
101.000	0.000	0.0000	0.0000	0.000	0.0813	0.0813
101.100	0.000	0.0000	0.0000	1.000	0.0935	0.0813

```

*
PRINT HYD          ID=3 PCODE=1 MODE=10
*

```

```

* Non-roof areas within 708; hydrograph 7708
* VS=3.200 MC, VS=3.200 OC
*

```

```

COMPUTE FLOWRATE  ID=1 NHD= 7708 AREA=   0.0912 Sq km L=   60 m W=  340 m
SOIL ZONE I   II  III   IV   V   VI  VII  VIII  IX
                49.7   0.0 0.0   7.8   0.0 0.2 0.0 42.4 0.0
RATING CURVES: IDMC=6 IDOC=6 GRMC=   0.50 QROC=   0.25
ROUTING MODEL=2 CONSTANTS: OVERLAND FTB= 1.2 TLO= 0.0
SUBSURFACE: KSS= 5.0 KGW= 384 h PCODE=1 WQPCODE=1
RBASIN=0 IDA=0 IDB=0 IDC=0 IDD=0 RBDUMP=0
GWFACT=1.0 GWON=1
SWQTH=   0.0 L/s SWPUMP=   0.0 L/s SWCODE=0

```

```

*
* Sum catchment 7708 and 4708 component hydrographs
*
ADD HYD            ID=4 HYD NO=   3708 IDA=3 IDB=1 ICODE=0
PRINT HYD          ID=4 PCODE=1 MODE=10
*
* Sum catchment 708 component hydrographs
*
ADD HYD            ID=3 HYD NO=   708 IDA=2 IDB=4 ICODE=0
PRINT HYD          ID=3 PCODE=1 MODE=10
KEEP HYD           ID=3 CUTOFF=24 ICODE=5 ISTEP=1 IFORM=0 IDB=3 IMET=1
*

```

```

* Roof areas within 701, hydrograph 9701
* VS=101.000 MC, VS=3.200 OC
* Area adjusted XSP Dec 4, 2020
*
COMPUTE FLOWRATE  ID=1 NHD= 9701 AREA=   0.0187 Sq km L=   20 m W=   10 m
SOIL ZONE I   II  III   IV   V   VI  VII  VIII  IX
                100.0   0.0 0.0   0.0 0.0 0.0 0.0 0.0 0.0
RATING CURVES: IDMC=6 IDOC=5 GRMC=   0.50 QROC=   0.25
ROUTING MODEL=2 CONSTANTS: OVERLAND FTB= 1.2 TLO= 0.0
SUBSURFACE: KSS= 5.0 KGW= 384 h PCODE=1 WQPCODE=1
RBASIN=0 IDA=0 IDB=0 IDC=0 IDD=0 RBDUMP=0
GWFACT=0.75 GWON=1
SWQTH=   0.0 L/s SWPUMP=   0.0 L/s SWCODE=0

```

```

*
* Roof infiltration gallery within 701; hydrograph 8701
*

```

```

ROUTE SPECIAL POND ID=2 HYD NO=8701 INFLOW=1 PCODE=0 OPTION= 5
Inflow controls:
    USPCT=100% USDIV=0      PCTA=   0% ADIV=0
    GWPCT=   0% GWDIV=0
Maximum level for Routing Tables: ZMAX= 101.100
Recharge characteristics for Compartment A
    LEVELA= 100.000          EVAPA= 0.0 mm/d ACODE=0
    CDA=   0.000 mm/h DZA= 10.00 m
Recharge characteristics for Compartment B
    LEVELB= 100.000 CCBA= 0.00000 EVAPB= 0.0 mm/d BCODE=1
    CDB=  15.000 mm/h DZB= 10.00 m
Irrigation Pond Controls: IPOND=0
Number of points=   3

```

Compartment A			Compartment B			
Elevation (m)	Outflow (cms)	Storage (ha*m)	SFArea (ha)	Outflow (cms)	Storage (ha*m)	SFArea (ha)
100.000	0.000	0.0000	0.0000	0.000	0.0000	0.1166
101.000	0.000	0.0000	0.0000	0.000	0.0467	0.1166
101.100	0.000	0.0000	0.0000	1.000	0.0513	0.1166

```

*
* Non-roof areas within 701; hydrograph 7701
* VS=3.200 MC, VS=3.200 OC
*

```

```

COMPUTE FLOWRATE  ID=1 NHD= 7701 AREA=   0.0661 Sq km L=   60 m W=  265 m
SOIL ZONE I   II  III   IV   V   VI  VII  VIII  IX
                43.7   0.0 0.0   8.7   0.0 0.2 0.0 47.4 0.0
RATING CURVES: IDMC=6 IDOC=6 GRMC=   0.50 QROC=   0.25
ROUTING MODEL=2 CONSTANTS: OVERLAND FTB= 1.2 TLO= 0.0
SUBSURFACE: KSS= 5.0 KGW= 384 h PCODE=1 WQPCODE=1
RBASIN=0 IDA=0 IDB=0 IDC=0 IDD=0 RBDUMP=0
GWFACT=0.75 GWON=1
SWQTH=   0.0 L/s SWPUMP=   0.0 L/s SWCODE=0

```

```

*
* Sum catchment 701 component hydrographs
*
ADD HYD            ID=4 HYD NO=   701 IDA=2 IDB=1 ICODE=0
PRINT HYD          ID=4 PCODE=1 MODE=10
KEEP HYD           ID=4 CUTOFF=24 ICODE=5 ISTEP=1 IFORM=0 IDB=4 IMET=1
*
* Sum catchments 708 and 701, call result 1701
*
ADD HYD            ID=1 HYD NO=  1701 IDA=3 IDB=4 ICODE=0
PRINT HYD          ID=1 PCODE=1 MODE=10
*
* Parameters for Catchment 702 got updated, school blk major flows to the creek
*

```

```
* edited by XSP  Feb 21, 2019
*
* Roof areas within 702, hydrograph 9702
* VS=101.000 MC, VS=3.200 OC
* Area adjusted XSP Dec 4, 2020
*
COMPUTE FLOWRATE  ID=2 NHD= 9702 AREA=  0.0486 Sq km L=  20 m W=  10 m
SOIL ZONE I  II III  IV  V  VI VII VIII IX
100.0  0.0 0.0  0.0 0.0  0.0 0.0  0.0 0.0
RATING CURVES: IDMC=6 IDOC=5 QRCM=  0.50 QROC=  0.25
ROUTING MODEL=2 CONSTANTS: OVERLAND FTB= 1.2 TLO= 0.0
SUBSURFACE: KSS= 5.0 KGW= 384 h PCODE=1 WQPCODE=1
RBASIN=0 IDA=0 IDB=0 IDC=0 IDD=0 RBDUMP=0
GWFACT=0.7 GWON=1
SWQTH=  0.0 L/s SWPUMP=  0.0 L/s SWCODE=0
*
* Roof infiltration gallery within 702; hydrograph 8702
*
ROUTE SPECIAL POND  ID=3 HYD NO=8702 INFLOW=2 PCODE=0 OPTION= 5
Inflow controls:
    USPCT=100% USDIV=0    PCTA=  0% ADIV=0
    GWPCT=  0% GWDIV=0
Maximum level for Routing Tables: ZMAX= 101.100
Recharge characteristics for Compartment A
    LEVELA= 100.000    EVAPA= 0.0 mm/d ACODE=0
    CDA=  0.000 mm/h DZA= 10.00 m
Recharge characteristics for Compartment B
    LEVELB= 100.000 CCBA= 0.00000 EVAPB= 0.0 mm/d BCODE=1
    CDB= 15.000 mm/h DZB= 10.00 m
Irrigation Pond Controls: IPOND=0
Number of points= 3
      Compartment A      Compartment B
Elevation Outflow Storage SFArea Outflow Storage SFArea
(m) (cms) (ha*m) (ha) (cms) (ha*m) (ha)
100.000  0.000 0.0000 0.0000 0.000 0.0000 0.3035
101.000  0.000 0.0000 0.0000 0.000 0.1214 0.3035
101.100  0.000 0.0000 0.0000 1.000 0.1336 0.3035
*
PRINT HYD  ID=3 PCODE=1 MODE=10
*
*-----
*
* Area of 702 to conveyance infiltration system, hydrograph 6702
*
COMPUTE FLOWRATE  ID=2 NHD= 6702 AREA=  0.02 Sq km L=  140 m W=  140 m
SOIL ZONE I  II III  IV  V  VI VII VIII IX
33.6  0.0 0.0  0.0 0.0  0.2 0.0  0.0 55.9 0.0
RATING CURVES: IDMC=6 IDOC=6 QRCM=  0.50 QROC=  0.25
ROUTING MODEL=2 CONSTANTS: OVERLAND FTB= 1.2 TLO= 0.0
SUBSURFACE: KSS= 5.0 KGW= 384 h PCODE=1 WQPCODE=1
RBASIN=0 IDA=0 IDB=0 IDC=0 IDD=0 RBDUMP=0
GWFACT=0.7 GWON=1
SWQTH=  0.0 L/s SWPUMP=  0.0 L/s SWCODE=0
*
*PRINT HYD  ID=2 PCODE=1 MODE=10
*
* Route 6702 through reservoir 4702 - conveyance infiltration system
*
ROUTE SPECIAL POND  ID=4 HYD NO=4702 INFLOW=2 PCODE=0 OPTION= 5
Inflow controls:
    USPCT=100% USDIV=0    PCTA=  0% ADIV=0
    GWPCT=  0% GWDIV=0
```

```
*
Maximum level for Routing Tables: ZMAX= 101.100
Recharge characteristics for Compartment A
    LEVELA= 100.000    EVAPA= 0.0 mm/d ACODE=0
    CDA=  0.000 mm/h DZA= 23.00 m
Recharge characteristics for Compartment B
    LEVELB= 100.000 CCBA= 0.00000 EVAPB= 0.0 mm/d BCODE=1
    CDB= 15.000 mm/h DZB= 10.00 m
Irrigation Pond Controls: IPOND=0
Number of points= 3
      Compartment A      Compartment B
Elevation Outflow Storage SFArea Outflow Storage SFArea
(m) (cms) (ha*m) (ha) (cms) (ha*m) (ha)
100.000  0.000 0.0000 0.0000 0.000 0.0000 0.1250
101.000  0.000 0.0000 0.0000 0.000 0.0500 0.1250
101.100  0.000 0.0000 0.0000 1.000 0.0550 0.1250
*
*PRINT HYD  ID=4 PCODE=1 MODE=10
*
* Remainder of catchment 702, hydr. 7702
*
COMPUTE FLOWRATE  ID=2 NHD= 7702 AREA=  0.2096 Sq km L=  495 m W=  500 m
SOIL ZONE I  II III  IV  V  VI VII VIII IX
48.4  0.0 0.0  0.0 0.0  0.2 0.0  0.0 43.5 0.0
RATING CURVES: IDMC=6 IDOC=6 QRCM=  0.50 QROC=  0.25
ROUTING MODEL=2 CONSTANTS: OVERLAND FTB= 1.2 TLO= 0.0
SUBSURFACE: KSS= 5.0 KGW= 384 h PCODE=1 WQPCODE=1
RBASIN=0 IDA=0 IDB=0 IDC=0 IDD=0 RBDUMP=0
GWFACT=0.7 GWON=1
SWQTH=  0.0 L/s SWPUMP=  0.0 L/s SWCODE=0
*
* Sum hydr. 4702, 7702, call result 3702, total non-roof area of 702
*
*ADD HYD  ID=5 HYD NO= 3702 IDA=4 IDB=2 ICODE=0
*
*****
* ADD 1721 runoff to catchment 702 then to SWMF2 South FB
*****
*
* Roof areas within 712, hydrograph 9702
* VS=101.000 MC, VS=3.200 OC
* Area adjusted XSP Dec 4, 2020
*
COMPUTE FLOWRATE  ID=2 NHD= 9712 AREA=  0.00001 Sq km L=  20 m W=  10 m
SOIL ZONE I  II III  IV  V  VI VII VIII IX
100.0  0.0 0.0  0.0 0.0  0.0 0.0  0.0 0.0 0.0
RATING CURVES: IDMC=6 IDOC=5 QRCM=  0.50 QROC=  0.25
ROUTING MODEL=2 CONSTANTS: OVERLAND FTB= 1.2 TLO= 0.0
SUBSURFACE: KSS= 5.0 KGW= 384 h PCODE=1 WQPCODE=1
RBASIN=0 IDA=0 IDB=0 IDC=0 IDD=0 RBDUMP=0
GWFACT=0.7 GWON=1
SWQTH=  0.0 L/s SWPUMP=  0.0 L/s SWCODE=0
*
* Roof infiltration gallery within 702; hydrograph 8702
*
ROUTE SPECIAL POND  ID=4 HYD NO=8712 INFLOW=2 PCODE=0 OPTION= 5
Inflow controls:
    USPCT=100% USDIV=0    PCTA=  0% ADIV=0
    GWPCT=  0% GWDIV=0
Maximum level for Routing Tables: ZMAX= 101.100
Recharge characteristics for Compartment A
    LEVELA= 100.000    EVAPA= 0.0 mm/d ACODE=0
```

```

CDA= 0.000 mm/h DZA= 10.00 m
Recharge characteristics for Compartment B
LEVELB= 100.000 CCBA= 0.00000 EVAPB= 0.0 mm/d BCODE=1
CDB= 15.000 mm/h DZB= 10.00 m
Irrigation Pond Controls: IPOND=0
Number of points= 3

      Compartment A      Compartment B
Elevation Outflow Storage SFArea Outflow Storage SFArea
(m) (cms) (ha*m) (ha) (cms) (ha*m) (ha)
100.000 0.000 0.0000 0.0000 0.000 0.0000 0.0001
101.000 0.000 0.0000 0.0000 0.000 0.0001 0.0001
101.100 0.000 0.0000 0.0000 1.000 0.0001 0.0001

*
PRINT HYD ID=3 PCODE=1 MODE=10
* Non-roof areas within 712 (Hallman MR Bldg); hydrograph 7712
* VS=3.200 MC, VS=3.200 OC
*
COMPUTE FLOWRATE ID=2 NHD= 7712 AREA= 0.0098 Sq km L= 60 m W= 50 m
SOIL ZONE I II III IV V VI VII VIII IX
54.0 0.0 0.0 7.1 0.0 0.2 0.0 38.7 0.0
RATING CURVES: IDMC=6 IDOC=6 QRCM= 0.50 QROC= 0.25
ROUTING MODEL=2 CONSTANTS: OVERLAND FTB= 1.2 TLO= 0.0
SUBSURFACE: KSS= 5.0 KGW= 384 h PCODE=1 WQPCODE=1
RBASIN=0 IDA=0 IDB=0 IDC=0 IDD=0 RBDUMP=0
GWFACT=1.0 GWON=1
SWQTH= 0.0 L/s SWPUMP= 0.0 L/s SWCODE=0

*
*
ADD HYD ID=5 HYD NO= 712 IDA=4 IDB=2 ICODE=0
PRINT HYD ID=5 PCODE=1 MODE=10
*
* Sum catchment 7712 and surplus from roof inf. galleries (8702) hydrographs
*
ADD HYD ID=2 HYD NO= 1720 IDA=3 IDB=5 ICODE=0
*
*-----
*
COMPUTE FLOWRATE ID=5 NHD= 7702 AREA= 0.1967 Sq km L= 65 m W= 500 m
SOIL ZONE I II III IV V VI VII VIII IX
48.3 0.0 0.0 8.0 0.0 0.2 0.0 43.5 0.0
RATING CURVES: IDMC=6 IDOC=6 QRCM= 0.50 QROC= 0.25
ROUTING MODEL=2 CONSTANTS: OVERLAND FTB= 1.2 TLO= 0.0
SUBSURFACE: KSS= 5.0 KGW= 384 h PCODE=1 WQPCODE=1
RBASIN=0 IDA=0 IDB=0 IDC=0 IDD=0 RBDUMP=0
GWFACT=0.7 GWON=1
SWQTH= 0.0 L/s SWPUMP= 0.0 L/s SWCODE=0

*
*-----
*
PRINT HYD ID=5 PCODE=1 MODE=10
*****
* Add minor flow from school block 7021, edited by XSP Feb 21,2019
*
* Sum hydr. 1721, 7702, call result 1722
*
ADD HYD ID=4 HYD NO= 1722 IDA=5 IDB=6 ICODE=0
*****
* Sum components of 702 (1722, 1720), call result 702
*
ADD HYD ID=5 HYD NO= 702 IDA=2 IDB=4 ICODE=0
PRINT HYD ID=5 PCODE=1 MODE=10
*
```

```

* Sum hydr. 1701, 702, call result 1702
*
ADD HYD ID=3 HYD NO= 1702 IDA=1 IDB=5 ICODE=0
PRINT HYD ID=3 PCODE=1 MODE=10
*
*
* SWM Facility 2 (Central SWM Facility)
* Major Storms
* Route 1702 through resevoir 5702
*
ROUTE SPECIAL POND ID=1 HYD NO=5702 INFLOW=3 PCODE=0 OPTION=15
Inflow controls:
USPCT=100% USDIV=0 PCTA= 0% ADIV=0
GWPCT= 0% GWDIV=0
Maximum level for Routing Tables: ZMAX= 309.300
Recharge characteristics for Compartment A
LEVELA= 308.300 EVAPA= 0.0 mm/d ACODE=0
CDA= 0.000 mm/h DZA= 10.00 m
Recharge characteristics for Compartment B
LEVELB= 308.300 CCBA= 0.00000 EVAPB= 1.4 mm/d BCODE=1
CDB= 0.000 mm/h DZB= 10.00 m
Irrigation Pond Controls: IPOND=0
Number of points= 11

      Compartment A      Compartment B
Elevation Outflow Storage SFArea Outflow Storage SFArea
(m) (cms) (ha*m) (ha) (cms) (ha*m) (ha)
308.300 0.000 0.0000 0.0000 0.0000 0.0000 1.6687
308.400 0.000 0.0000 0.0000 0.0110 0.1696 1.7233
308.500 0.000 0.0000 0.0000 0.0347 0.3447 1.7784
308.600 0.000 0.0000 0.0000 0.0517 0.5253 1.8339
308.700 0.000 0.0000 0.0000 0.0643 0.7115 1.8898
308.800 0.000 0.0000 0.0000 0.0749 0.9033 1.9462
308.900 0.000 0.0000 0.0000 0.0841 1.1019 2.0268
309.000 0.000 0.0000 0.0000 0.0924 1.3062 2.0585
309.100 0.000 0.0000 0.0000 0.1000 1.5136 2.0901
309.200 0.000 0.0000 0.0000 0.1071 1.7242 2.1218
309.300 0.000 0.0000 0.0000 10.0000 2.0578 4.5506

*
PRINT HYD ID=1 PCODE=1 MODE=10
KEEP HYD ID=1 CUTOFF=24 ICODE=5 ISTEP=1 IFORM=0 IDB=1 IMET=1
*
*
* 5702 -> 7312 / 2702 Split Pond 2 Outflow (5702) into Wetland DIVERT (7312)
* and Sewer (2702) components
*
*-----1-----2-----3-----4-----5-----6-----7-----8
DIVERT FLOWS INFLOW=1 DIVERT=6 HYD NO=7312 PCODE=1 OPTION=4
THRUFL0=5 HYD NOB=2702 THROUGHFLOW DIVERSION
0.000 0.000
0.011 0.000
0.035 0.000
0.052 0.000
0.064 0.000
0.075 0.000
0.084 0.000
0.924 0.000
0.107 0.000
0.195 10.00
IDFLAG=0 IDSTOR=0 IGWT=0

*
KEEP HYD ID=5 CUTOFF=0 ICODE=5 ISTEP=1 IFORM=0 IDB=5 IMET=0
PRINT HYD ID=5 PCODE=1 MODE=10
```

```
*
*
*
*
*
```

- * Typical Urban section

*
* Roof & Park areas within 702 directed to Wetland, hydrograph 7020
* VS=101.000 MC, VS=3.200 OC

* Roof areas within 708 directed to Wetland, hydrograph 7080
* VS=101.000 MC, VS=3.200 OC

* Sum catchments 7020 and 7080, call result 2312

```
*
* Roof areas within 701 directed to Wetland, hydrograph 7010
* VS=101.000 MC, VS=3.200 OC
*
```

```
ADD HYD      ID=2 HYD NO= 3312 IDA=3 IDB=1 ICODE=0
PRINT HYD    ID=2 PCODE=1  MODE=10
```

```

*
*

```

- * Catchment 312, existing wetland area for water balancing
- * Percentage wetland increased from 4 to 20%
- * This area has been spliced from drainage area 702 above
- * VS= 100.020 is main channel & VS= 2.035 is off-channel

```
*
PRINT HYD          ID=1 PCODE=1 MODE=10
*
* Sum hydr. 3312 and 312, call result 4312
```

```
ADD HYD      ID=3  HYD NO= 4312  IDA=2  IDB=1  ICODE=0
PRINT HYD    ID=3  PCODE=1  MODE=10
```


*
* Sum hydr. 4312 and Diversion from SWM 2 (7312) call result 6312
*
ADD HYD ID=1 HYD NO= 6312 IDA=3 IDB=6 ICODE=0
PRINT HYD ID=1 PCODE=1 MODE=10
KEEP HYD ID=1 CUTOFF=0 ICODE=5 ISTEP=1 IFORM=0 IDB=1 IMET=0
*
*
* Central Wetland
* Route 6312 through Wetland 2 Depression - Revised per MTE Survey April 2017
* Min Ponding set to 308.4 to be more in line with spring high level monit data
* Added storage available in SWMF2 above 309.2 to establish ponding in WL2 with
* pond overflow and outflow to sewer
*
ROUTE SPECIAL POND ID=2 HYD NO=5312 INFLOW=1 PCODE=0 OPTION=15
Inflow controls:
USPCT=100% USDIV=0 PCTA= 0% ADIV=0
GWPCT= 0% GWDIV=0
Maximum level for Routing Tables: ZMAX= 311.300
Recharge characteristics for Compartment A
LEVELA= 308.400 EVAPA= 0.0 mm/d ACODE=0
CDA= 0.000 mm/h DZA= 10.00 m
Recharge characteristics for Compartment B
LEVELB= 308.400 CCBA= 0.00000 EVAPB= 1.4 mm/d BCODE=1
CDB= 4.000 mm/h DZB= 10.00 m
Irrigation Pond Controls: IPOND=0
Number of points= 13

Elevation (m)	Compartment A			Compartment B		
	Outflow (cms)	Storage (ha*m)	SFArea (ha)	Outflow (cms)	Storage (ha*m)	SFArea (ha)
308.400	0.000	0.0000	0.0000	0.0000	0.0000	0.0000
308.500	0.000	0.0000	0.0000	0.0000	0.1230	0.3400
309.000	0.000	0.0000	0.0000	0.0000	0.9710	0.9319
309.200	0.000	0.0000	0.0000	0.0000	0.9800	1.3000
309.300	0.000	0.0000	0.0000	0.1137	1.3110	1.3578
309.400	0.000	0.0000	0.0000	0.1200	1.7735	1.4721
309.500	0.000	0.0000	0.0000	0.1259	2.2501	1.5686
310.000	0.000	0.0000	0.0000	0.1523	4.8320	2.0600
310.500	0.000	0.0000	0.0000	0.1747	7.7513	2.5678
311.000	0.000	0.0000	0.0000	0.1945	11.017	3.0921
311.100	0.000	0.0000	0.0000	0.1982	11.712	3.1989
311.200	0.000	0.0000	0.0000	0.2019	12.421	3.3064
311.300	0.000	0.0000	0.0000	0.2055	13.145	3.4147

*
PRINT HYD ID=2 PCODE=1 MODE=10
KEEP HYD ID=2 CUTOFF=24 ICODE=5 ISTEP=1 IFORM=0 IDB=2 IMET=1
*
*
*
*
*
CHANGE INPUT FILE
*
* Go to event file
*
CHANGE INPUT FILE
*
FINISH

1	201	0.0639	17.36	0.3281	0.	RCFLAGS	0	0	cndchi.dat
1	9721	0.0039	30.61	0.1077	0.	RCFLAGS	0	0	
1	8721	0.0039	5.03	0.0076	96.	RCFLAGS	0	0	
1	7721	0.0231	13.55	0.1828	0.	RCFLAGS	0	0	
1	7021	0.0270	12.32	0.1828	0.	RCFLAGS	0	0	
1	1721	0.0270	12.32	0.1828	0.	RCFLAGS	0	0	
1	3131	0.0270	0.00	0.0000	96.	RCFLAGS	0	0	
1	9708	0.0197	30.37	0.5437	0.	RCFLAGS	0	0	
1	8708	0.0197	3.49	0.0407	495.	RCFLAGS	0	0	
1	6708	0.0025	30.37	0.0690	0.	RCFLAGS	0	0	
1	5708	0.0025	3.34	0.0045	63.	RCFLAGS	0	0	
1	2708	0.0381	17.90	0.4469	0.	RCFLAGS	0	0	
1	4708	0.0406	17.00	0.4469	0.	RCFLAGS	0	0	
1	1708	0.0406	0.00	0.0000	671.	RCFLAGS	0	0	
1	7708	0.0912	18.71	0.6313	0.	RCFLAGS	0	0	
1	3708	0.1318	12.95	0.6313	0.	RCFLAGS	0	0	
1	708	0.1515	11.72	0.6313	0.	RCFLAGS	0	0	
1	9701	0.0187	30.43	0.5162	0.	RCFLAGS	0	0	
1	8701	0.0187	3.55	0.0365	469.	RCFLAGS	0	0	
1	7701	0.0661	17.40	0.4905	0.	RCFLAGS	0	0	
1	701	0.0848	14.34	0.4905	0.	RCFLAGS	0	0	
1	1701	0.2363	12.66	1.1219	0.	RCFLAGS	0	0	
1	9702	0.0486	30.44	1.3414	0.	RCFLAGS	0	0	
1	8702	0.0486	3.52	0.0755	1223.	RCFLAGS	0	0	
1	9712	0.0000	11.76	0.0003	0.	RCFLAGS	0	0	
1	8712	0.0000	0.00	0.0000	0.	RCFLAGS	0	0	
1	7712	0.0098	19.72	0.1981	0.	RCFLAGS	0	0	
1	712	0.0098	19.70	0.1981	0.	RCFLAGS	0	0	
1	1720	0.0584	6.24	0.1981	0.	RCFLAGS	0	0	
1	7702	0.1967	18.47	1.1139	0.	RCFLAGS	0	0	
1	1722	0.2237	17.73	1.2773	0.	RCFLAGS	0	0	
1	702	0.2821	15.35	1.3373	0.	RCFLAGS	0	0	
1	1702	0.5184	14.12	2.4592	0.	RCFLAGS	0	0	
1	5702	0.5184	10.88	0.0623	6826.	RCFLAGS	0	0	
1	2702	0.5184	10.88	0.0623	0.	RCFLAGS	0	0	
1	7312	0.5184	0.00	0.0000	0.	RCFLAGS	0	0	
1	7020	0.0065	30.37	0.1794	0.	RCFLAGS	0	0	
1	7080	0.0154	30.37	0.4251	0.	RCFLAGS	0	0	
1	2312	0.0219	30.37	0.6045	0.	RCFLAGS	0	0	
1	7010	0.0034	30.37	0.0938	0.	RCFLAGS	0	0	
1	3312	0.0253	30.37	0.6983	0.	RCFLAGS	0	0	
1	312	0.0552	5.38	0.0418	0.	RCFLAGS	0	0	
1	4312	0.0805	13.23	0.7100	0.	RCFLAGS	0	0	
1	6312	0.0805	13.23	0.7100	0.	RCFLAGS	0	0	
1	5312	0.0805	0.00	0.0000	994.	RCFLAGS	0	0	
2	201	0.0639	31.64	0.5923	0.	RCFLAGS	0	0	cndchi.dat
2	9721	0.0039	46.89	0.1385	0.	RCFLAGS	0	0	
2	8721	0.0039	21.30	0.0719	97.	RCFLAGS	0	0	
2	7721	0.0231	27.44	0.3590	0.	RCFLAGS	0	0	
2	7021	0.0270	26.55	0.3993	0.	RCFLAGS	0	0	
2	1721	0.0270	26.55	0.3993	0.	RCFLAGS	0	0	
2	3131	0.0270	0.00	0.0000	97.	RCFLAGS	0	0	
2	9708	0.0197	46.65	0.6995	0.	RCFLAGS	0	0	
2	8708	0.0197	19.61	0.3735	512.	RCFLAGS	0	0	
2	6708	0.0025	46.65	0.0888	0.	RCFLAGS	0	0	
2	5708	0.0025	19.44	0.0553	63.	RCFLAGS	0	0	
2	2708	0.0381	32.41	0.7853	0.	RCFLAGS	0	0	
2	4708	0.0406	31.61	0.8000	0.	RCFLAGS	0	0	
2	1708	0.0406	10.93	0.3671	858.	RCFLAGS	0	0	
2	7708	0.0912	33.34	1.1112	0.	RCFLAGS	0	0	
2	3708	0.1318	26.44	1.2358	0.	RCFLAGS	0	0	
2	708	0.1515	25.55	1.4847	0.	RCFLAGS	0	0	

sw

2	9701	0.0187	46.71	0.6640	0.	RCFLAGS	0	0	
2	8701	0.0187	19.68	0.3558	483.	RCFLAGS	0	0	
2	7701	0.0661	31.83	0.8698	0.	RCFLAGS	0	0	
2	701	0.0848	29.15	1.2178	0.	RCFLAGS	0	0	
2	1701	0.2363	26.84	2.7025	0.	RCFLAGS	0	0	
2	9702	0.0486	46.72	1.7258	0.	RCFLAGS	0	0	
2	8702	0.0486	19.66	0.7552	1306.	RCFLAGS	0	0	
2	9712	0.0000	24.45	0.0004	0.	RCFLAGS	0	0	
2	8712	0.0000	0.00	0.0000	0.	RCFLAGS	0	0	
2	7712	0.0098	34.49	0.3249	0.	RCFLAGS	0	0	
2	712	0.0098	34.46	0.3249	0.	RCFLAGS	0	0	
2	1720	0.0584	22.15	0.8481	0.	RCFLAGS	0	0	
2	7702	0.1967	33.06	1.9708	0.	RCFLAGS	0	0	
2	1722	0.2237	32.28	2.3680	0.	RCFLAGS	0	0	
2	702	0.2821	30.18	3.2161	0.	RCFLAGS	0	0	
2	1702	0.5184	28.66	5.9186	0.	RCFLAGS	0	0	
2	5702	0.5184	21.83	0.0961	14066.	RCFLAGS	0	0	
2	2702	0.5184	21.83	0.0961	0.	RCFLAGS	0	0	
2	7312	0.5184	0.00	0.0000	0.	RCFLAGS	0	0	
2	7020	0.0065	46.65	0.2308	0.	RCFLAGS	0	0	
2	7080	0.0154	46.65	0.5468	0.	RCFLAGS	0	0	
2	2312	0.0219	46.65	0.7777	0.	RCFLAGS	0	0	
2	7010	0.0034	46.65	0.1207	0.	RCFLAGS	0	0	
2	3312	0.0253	46.65	0.8984	0.	RCFLAGS	0	0	
2	312	0.0552	16.95	0.1118	0.	RCFLAGS	0	0	
2	4312	0.0805	26.29	0.9321	0.	RCFLAGS	0	0	
2	6312	0.0805	26.29	0.9321	0.	RCFLAGS	0	0	
2	5312	0.0805	0.00	0.0000	1990.	RCFLAGS	0	0	
3	201	0.0639	41.34	0.7470	0.	RCFLAGS	0	0	cndchi.dat
3	9721	0.0039	57.47	0.1537	0.	RCFLAGS	0	0	
3	8721	0.0039	32.07	0.0888	98.	RCFLAGS	0	0	
3	7721	0.0231	36.99	0.4519	0.	RCFLAGS	0	0	
3	7021	0.0270	36.28	0.5407	0.	RCFLAGS	0	0	
3	1721	0.0270	36.28	0.5407	0.	RCFLAGS	0	0	
3	3131	0.0270	0.00	0.0000	98.	RCFLAGS	0	0	
3	9708	0.0197	57.22	0.7766	0.	RCFLAGS	0	0	
3	8708	0.0197	30.13	0.6421	525.	RCFLAGS	0	0	
3	6708	0.0025	57.22	0.0986	0.	RCFLAGS	0	0	
3	5708	0.0025	30.04	0.0499	64.	RCFLAGS	0	0	
3	2708	0.0381	42.23	0.9533	0.	RCFLAGS	0	0	
3	4708	0.0406	41.48	1.0032	0.	RCFLAGS	0	0	
3	1708	0.0406	20.77	0.7078	899.	RCFLAGS	0	0	
3	7708	0.0912	43.21	1.3876	0.	RCFLAGS	0	0	
3	3708	0.1318	36.30	1.9809	0.	RCFLAGS	0	0	
3	708	0.1515	35.50	2.2142	0.	RCFLAGS	0	0	
3	9701	0.0187	57.28	0.7372	0.	RCFLAGS	0	0	
3	8701	0.0187	30.19	0.6271	496.	RCFLAGS	0	0	
3	7701	0.0661	41.62	1.0819	0.	RCFLAGS	0	0	
3	701	0.0848	39.10	1.7083	0.	RCFLAGS	0	0	
3	1701	0.2363	36.79	3.6947	0.	RCFLAGS	0	0	
3	9702	0.0486	57.30	1.9159	0.	RCFLAGS	0	0	
3	8702	0.0486	30.18	1.1733	1357.	RCFLAGS	0	0	
3	9712	0.0000	31.96	0.0004	0.	RCFLAGS	0	0	
3	8712	0.0000	0.00	0.0000	0.	RCFLAGS	0	0	
3	7712	0.0098	44.42	0.3715	0.	RCFLAGS	0	0	
3	712	0.0098	44.38	0.3715	0.	RCFLAGS	0	0	
3	1720	0.0584	32.57	1.3827	0.	RCFLAGS	0	0	
3	7702	0.1967	42.91	2.4709	0.	RCFLAGS	0	0	
3	1722	0.2237	42.11	2.9719	0.	RCFLAGS	0	0	
3	702	0.2821	40.14	4.2105	0.	RCFLAGS	0	0	
3	1702	0.5184	38.61	7.9051	0.	RCFLAGS	0	0	
3	5702	0.5184	29.29	0.9047	17511.	RCFLAGS	0	0	

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3	2702	0.5184	29.29	0.9047	0.	RCFLAGS	0	0	
3	7312	0.5184	0.00	0.0000	0.	RCFLAGS	0	0	
3	7020	0.0065	57.22	0.2562	0.	RCFLAGS	0	0	
3	7080	0.0154	57.22	0.6071	0.	RCFLAGS	0	0	
3	2312	0.0219	57.22	0.8633	0.	RCFLAGS	0	0	
3	7010	0.0034	57.22	0.1340	0.	RCFLAGS	0	0	
3	3312	0.0253	57.22	0.9974	0.	RCFLAGS	0	0	
3	312	0.0552	26.32	0.1678	0.	RCFLAGS	0	0	
3	4312	0.0805	36.03	1.0523	0.	RCFLAGS	0	0	
3	6312	0.0805	36.03	1.0523	0.	RCFLAGS	0	0	
3	5312	0.0805	0.00	0.0000	2749.	RCFLAGS	0	0	
4	201	0.0639	50.69	0.8837	0.	RCFLAGS	0	0	cndchi.dat
4	9721	0.0039	67.45	0.1664	0.	RCFLAGS	0	0	
4	8721	0.0039	41.86	0.1283	98.	RCFLAGS	0	0	
4	7721	0.0231	46.23	0.5298	0.	RCFLAGS	0	0	
4	7021	0.0270	45.59	0.6581	0.	RCFLAGS	0	0	
4	1721	0.0270	45.59	0.6581	0.	RCFLAGS	0	0	
4	3131	0.0270	0.00	0.0000	98.	RCFLAGS	0	0	
4	9708	0.0197	67.20	0.8408	0.	RCFLAGS	0	0	
4	8708	0.0197	40.06	0.5492	540.	RCFLAGS	0	0	
4	6708	0.0025	67.20	0.1067	0.	RCFLAGS	0	0	
4	5708	0.0025	39.94	0.0815	64.	RCFLAGS	0	0	
4	2708	0.0381	51.66	1.0898	0.	RCFLAGS	0	0	
4	4708	0.0406	50.94	1.1714	0.	RCFLAGS	0	0	
4	1708	0.0406	30.21	0.9029	923.	RCFLAGS	0	0	
4	7708	0.0912	52.68	1.6279	0.	RCFLAGS	0	0	
4	3708	0.1318	45.76	2.5308	0.	RCFLAGS	0	0	
4	708	0.1515	45.01	3.0800	0.	RCFLAGS	0	0	
4	9701	0.0187	67.26	0.7981	0.	RCFLAGS	0	0	
4	8701	0.0187	40.12	0.5179	509.	RCFLAGS	0	0	
4	7701	0.0661	51.02	1.2718	0.	RCFLAGS	0	0	
4	701	0.0848	48.62	1.7882	0.	RCFLAGS	0	0	
4	1701	0.2363	46.31	4.8682	0.	RCFLAGS	0	0	
4	9702	0.0486	67.28	2.0742	0.	RCFLAGS	0	0	
4	8702	0.0486	40.11	1.8077	1435.	RCFLAGS	0	0	
4	9712	0.0000	39.91	0.0004	0.	RCFLAGS	0	0	
4	8712	0.0000	0.00	0.0000	0.	RCFLAGS	0	0	
4	7712	0.0098	53.93	0.4043	0.	RCFLAGS	0	0	
4	712	0.0098	53.87	0.4043	0.	RCFLAGS	0	0	
4	1720	0.0584	42.42	2.0516	0.	RCFLAGS	0	0	
4	7702	0.1967	52.36	2.9105	0.	RCFLAGS	0	0	
4	1722	0.2237	51.55	3.5070	0.	RCFLAGS	0	0	
4	702	0.2821	49.66	5.3957	0.	RCFLAGS	0	0	
4	1702	0.5184	48.13	9.4711	0.	RCFLAGS	0	0	
4	5702	0.5184	38.79	2.7097	18120.	RCFLAGS	0	0	
4	2702	0.5184	27.93	0.8646	0.	RCFLAGS	0	0	
4	7312	0.5184	10.85	2.5800	0.	RCFLAGS	0	0	
4	7020	0.0065	67.20	0.2774	0.	RCFLAGS	0	0	
4	7080	0.0154	67.20	0.6572	0.	RCFLAGS	0	0	
4	2312	0.0219	67.20	0.9346	0.	RCFLAGS	0	0	
4	7010	0.0034	67.20	0.1451	0.	RCFLAGS	0	0	
4	3312	0.0253	67.20	1.0798	0.	RCFLAGS	0	0	
4	312	0.0552	35.41	0.2229	0.	RCFLAGS	0	0	
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5	3131	0.0270	0.00	0.0000	98.	RCFLAGS	0	0	
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5	1701	0.2363	57.84	5.3489	0.	RCFLAGS	0	0	
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6 8702	0.0486	60.49	1.9985	1458.	RCFLAGS	0	0
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6 2312	0.0219	87.67	1.0775	0.	RCFLAGS	0	0
6 7010	0.0034	87.67	0.1673	0.	RCFLAGS	0	0
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sw

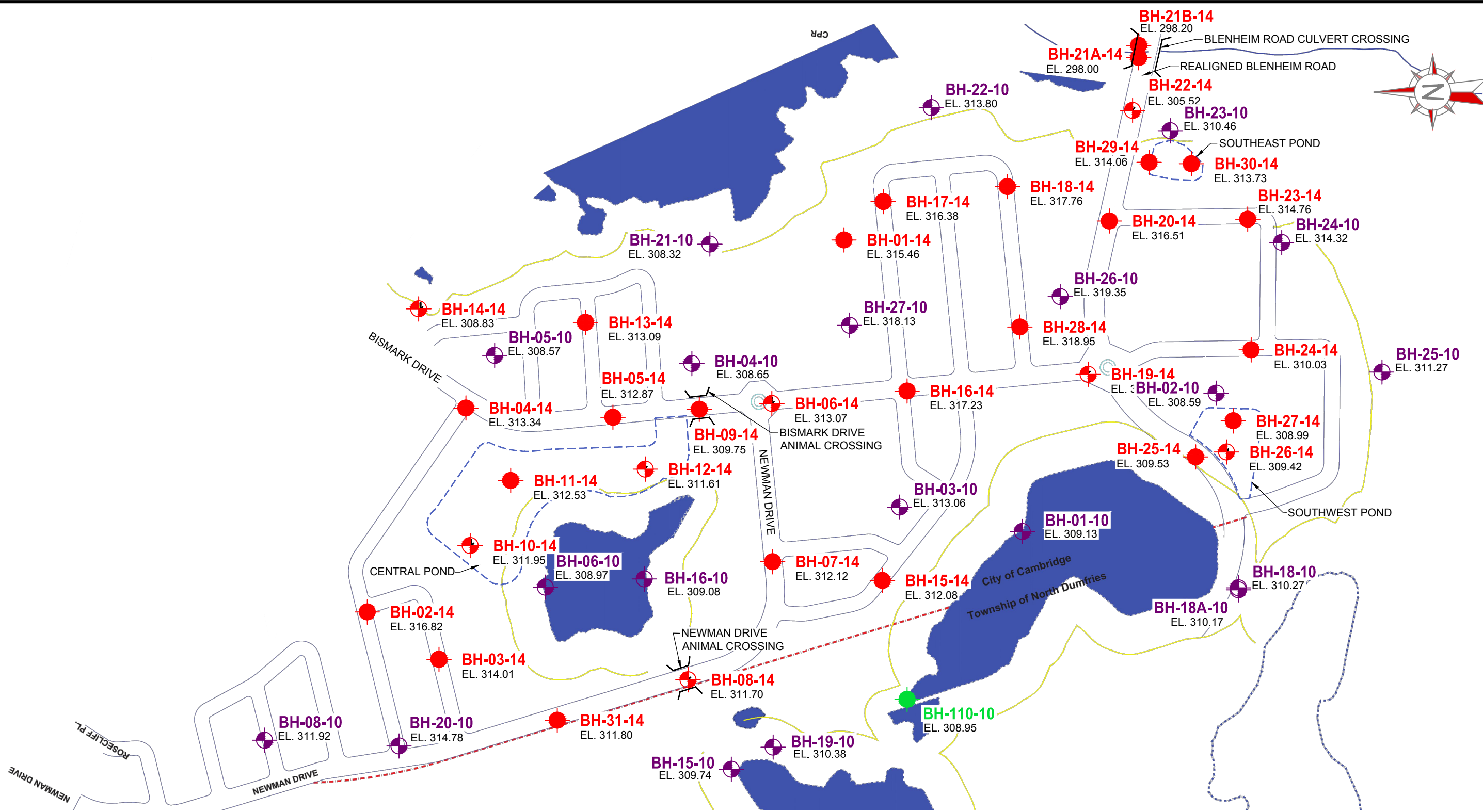
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8 9701	0.0187	23.06	0.3863	0.	RCFLAGS	0	0
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8 701	0.0848	8.49	0.2678	0.	RCFLAGS	0	0
8 1701	0.2363	7.73	0.6315	0.	RCFLAGS	0	0
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Appendix E

LVM Borehole Logs

G:\160\0003455_WAS P036589\75_CAD\100\0003455-0-09-100_DWG002.DWG

10 cm
5
4
3
2
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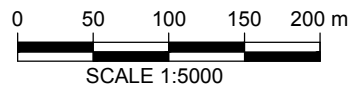


LEGEND :

- BOREHOLE LOCATION
- MONITORING WELL LOCATION
- BOREHOLE LOCATION INVESTIGATION P036589 (2010)
- BOREHOLE LOCATION INVESTIGATION P031655 (2010)

- EL. 298.00 GROUND SURFACE ELEVATION (m)
- PROPOSED SWM FACILITIES
- PROPOSED CULVERT STRUCTURE

NOTES :
1-REFERENCES: MHBC Cambridge West, Concept Plan, 2014-03-18.
2-Drawing scale may be distorted due to file conversion and/or copying. Measurements taken from the drawing must be verified in the field.



Project

Cambridge West Development

Blenheim Road, Cambridge, Ontario

Title

SITE PLAN



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Kitchener (Ontario) N2K 2Y5
Telephone : 519.741.1313
Fax : 519.741.5422

Prepared **E.Ciochon**
Drawn **E.Ciochon**
Checked **D.Gonser**

Discipline **GEOTECHNICAL**
Scale **1 : 5000**
Date **2016-02-17**

Project manager
D.Gonser
Sequence no.
02 of 04

M. dept.	Project	Disc.	Dwg no.	Rev.
160	P-0003455-0-09-100	GE	002	00

LIST OF ABBREVIATIONS

The abbreviations commonly employed on the borehole logs, on the figures, and in the text of the report, are as follows:

Sample Types		Soil Tests and Properties	
AS	Auger Sample	SPT	Standard Penetration Test
CS	Core Sample	UC	Unconfined Compression
RC	Rock Core	FV	Field Vane Test
SS	Split Spoon	ϕ	Angle of internal friction
TW	Thinwall, Open	γ	Unit weight
WS	Wash Sample	w_p	Plastic limit
BS	Bulk Sample	w	Water content
GS	Grab Sample	w_L	Liquid limit
WC	Water Content Sample	I_L	Liquidity index
TP	Thinwall, Piston	I_p	Plasticity index
		PP	Pocket penetrometer

Penetration Resistances	
Dynamic Penetration Resistance	The number of blows by a 63.5 kg (140 lb.) hammer dropped 760 mm (30 in.) required to drive a 50 mm (2 in.) diameter 60° cone a distance 300 mm (12 in.). The cone is attached to 'A' size drill rods and casing is not used.
Standard Penetration Resistance, N (ASTM D1586)	The number of blows by a 63.5 kg (140 lb.) hammer dropped 760 mm (30 in.) required to drive a standard split spoon sampler 300 mm (12 in.)
WH	sampler advanced by static weight of hammer
PH	sampler advanced by hydraulic pressure
PM	sampler advanced by manual pressure

Soil Description		
Cohesionless Soils	SPT N-Value	Relative Density (D_r)
Compactness Condition	(blows per 0.3 m)	(%)
Very Loose	0 to 4	0 to 20
Loose	4 to 10	20 to 40
Compact	10 to 30	40 to 60
Dense	30 to 50	60 to 80
Very Dense	over 50	80 to 100
Cohesive Soils	Undrained Shear Strength (C_u)	
Consistency	kPa	psf
Very Soft	less than 12	less than 250
Soft	12 to 25	250 to 500
Firm	25 to 50	500 to 1000
Stiff	50 to 100	1000 to 2000
Very Stiff	100 to 200	2000 to 4000
Hard	over 200	over 4000
DTPL	Drier than plastic limit	Low Plasticity, $W_L < 30$
APL	About plastic limit	Medium Plasticity, $30 < W_L < 50$
WTPL	Wetter than plastic limit	High Plasticity, $W_L > 50$



Ground Elevation: 315.46 m

Borehole Number: BH-01-14

Job N°: P-0003455-0-09-100

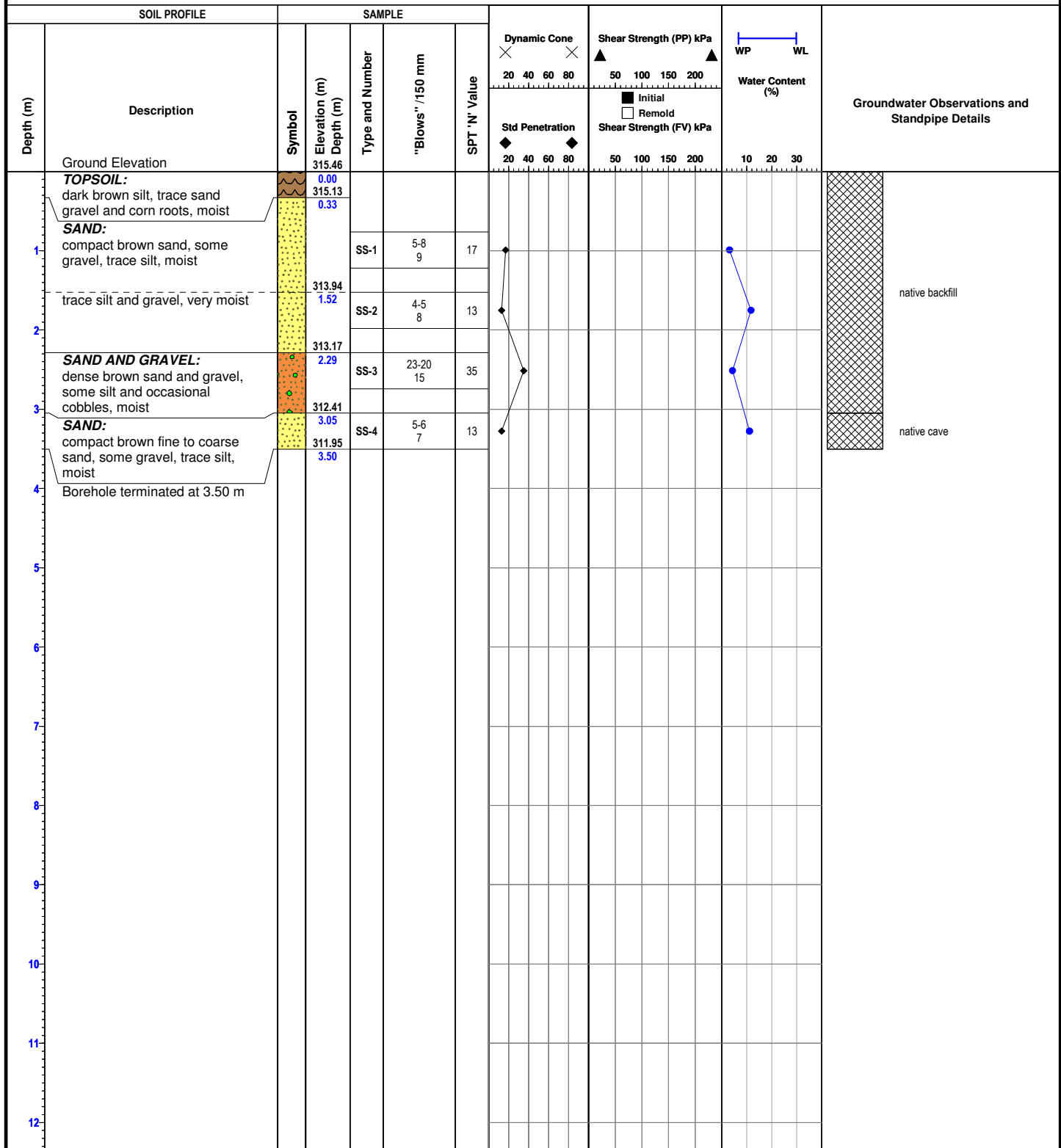
Drill Date: 2014-05-23

Project: Cambridge West Development

Field Tech: D.Souter

Location: Blenheim Road, Cambridge, Ontario

Drill Method: Hollow Stem Auger



Reviewed by: D.Gonser

Drafted by: E.Ciochon

Sheet: 1 of 1

Notes:



Ground Elevation: 316.82 m

Borehole Number: BH-02-14

Job N°: P-0003455-0-09-100

Drill Date: 2014-05-20

Field Tech: D.Souter

Drill Method: Hollow Stem Auger

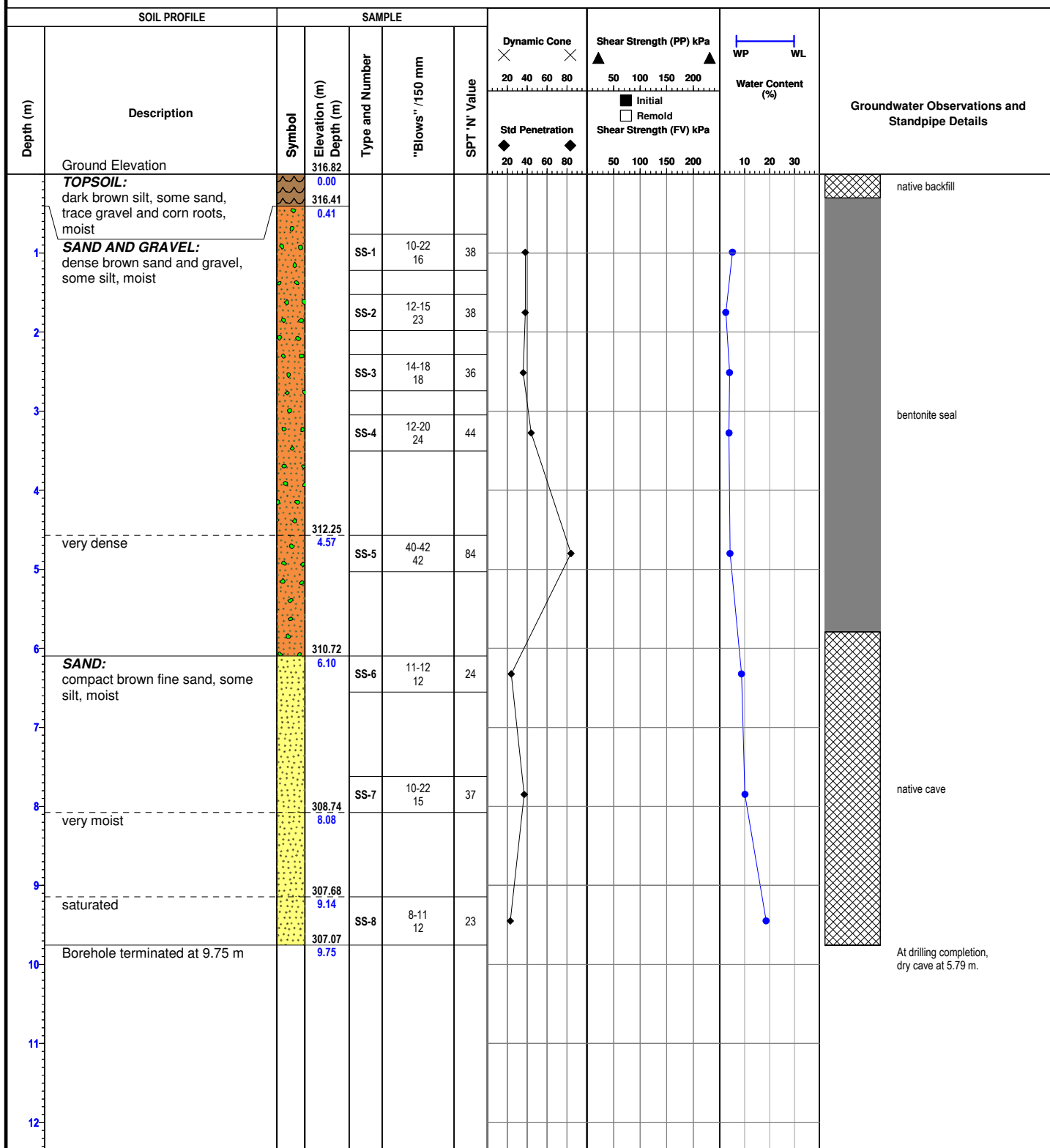
Project: Cambridge West Development

Location: Blenheim Road, Cambridge, Ontario

Y:\Style_LVM_Ontario\LogBorehole_Log_LVM_Ontario_NEW.sty- Printed : 2014-06-17 13h

Vertical Scale = 1 : 70.0

EQ-09-Ge-72 R.1 18.02.2011



Reviewed by: D.Gonser

Drafted by: E.Ciochon

Sheet: 1 of 1

Notes: Bulk sample AS-4A taken from 3.05 to 4.57 m.



Ground Elevation: 314.01 m

Borehole Number: BH-03-14

Job N°: P-0003455-0-09-100

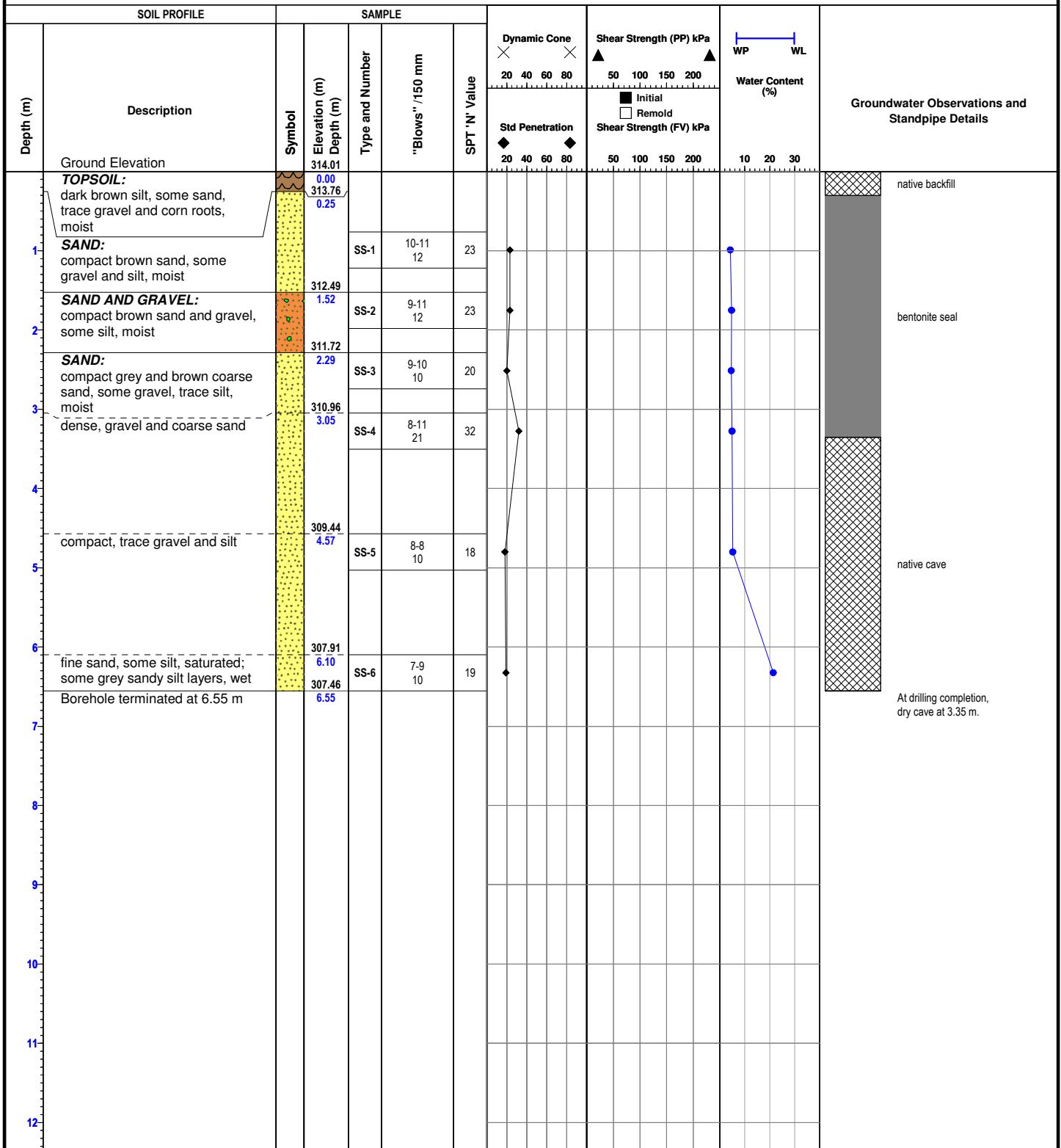
Drill Date: 2014-05-20

Project: Cambridge West Development

Field Tech: D.Souter

Location: Blenheim Road, Cambridge, Ontario

Drill Method: Hollow Stem Auger



Reviewed by: D.Gonser

Drafted by: E.Ciochon

Sheet: 1 of 1

Notes:



Ground Elevation: 313.34 m

Borehole Number: BH-04-14

Job N°: P-0003455-0-09-100

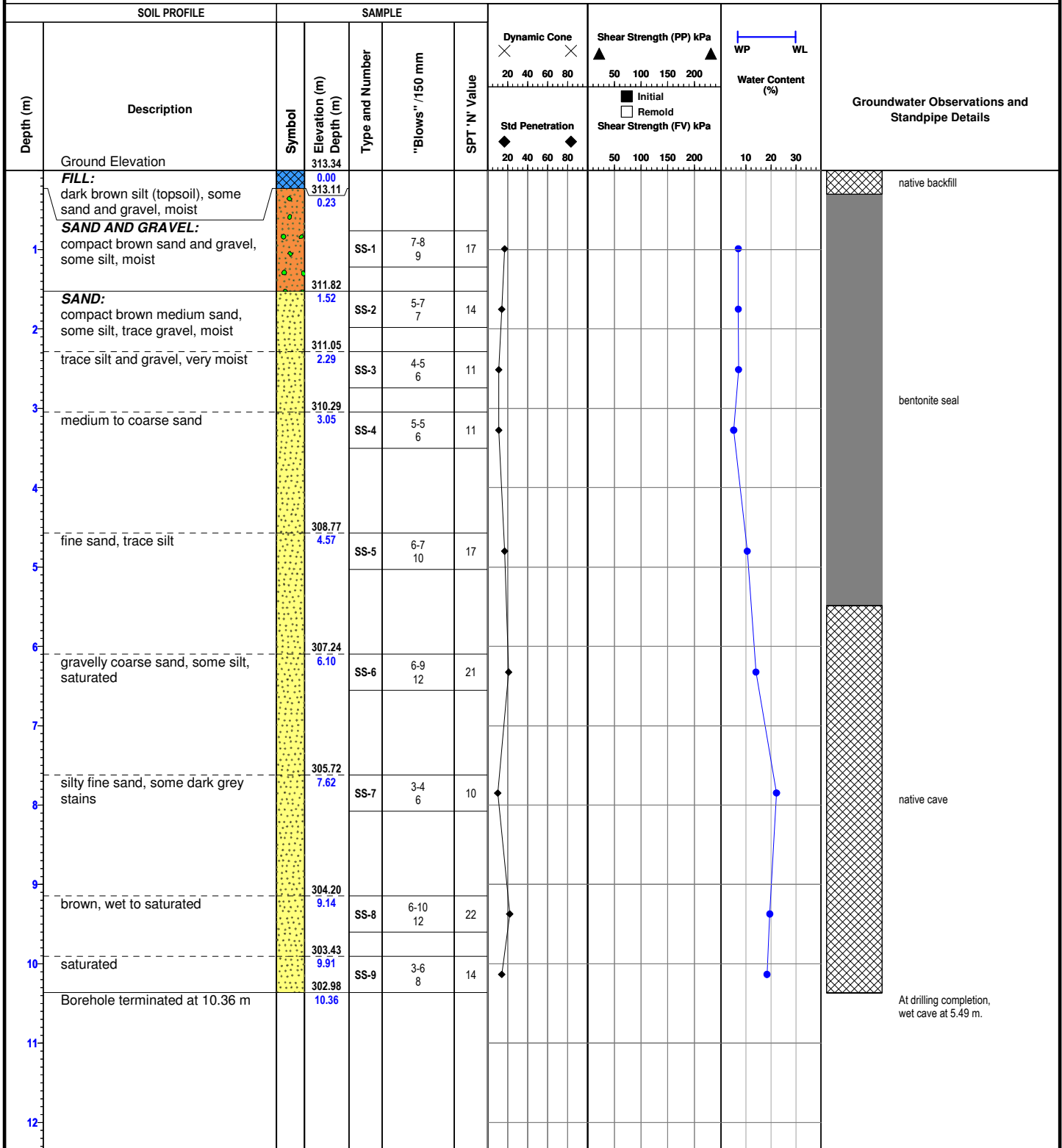
Drill Date: 2014-05-21

Field Tech: D.Souter

Drill Method: Hollow Stem Auger

Project: Cambridge West Development

Location: Blenheim Road, Cambridge, Ontario



Reviewed by: D.Gonser

Drafted by: E.Ciochon

Sheet: 1 of 1

Notes: Bulk sample AS-4A taken from 3.05 to 4.57 m.



Ground Elevation: 312.87 m

Borehole Number: BH-05-14

Job N°: P-0003455-0-09-100

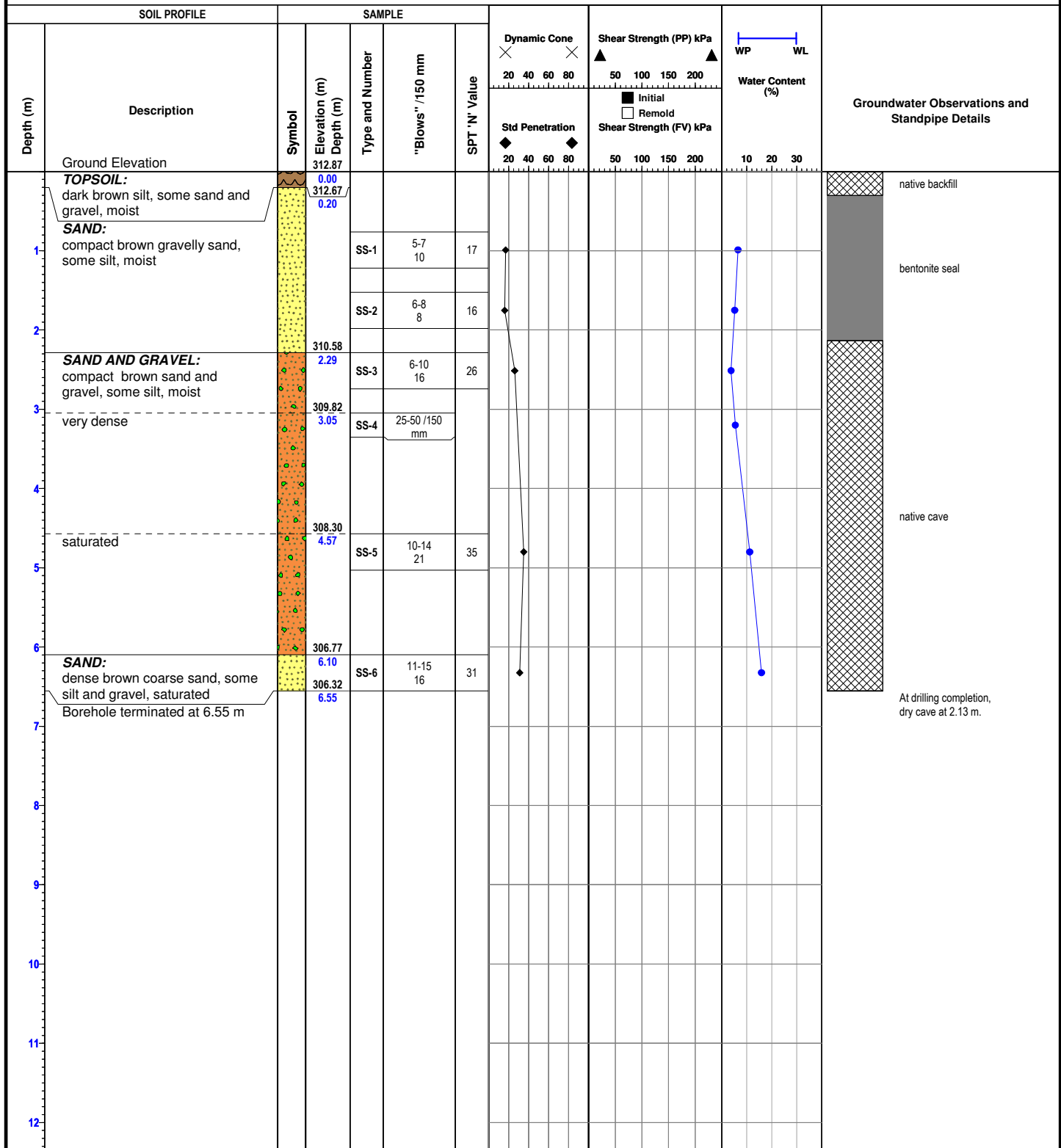
Drill Date: 2014-05-21

Project: Cambridge West Development

Field Tech: D.Souter

Location: Blenheim Road, Cambridge, Ontario

Drill Method: Hollow Stem Auger



Reviewed by: D.Gonser

Drafted by: E.Ciochon

Sheet: 1 of 1

Notes: Bulk sample AS-3A taken from 2.29 to 3.05 m.



Ground Elevation: 313.07 m

Borehole Number: BH-06-14

Job N°: P-0003455-0-09-100

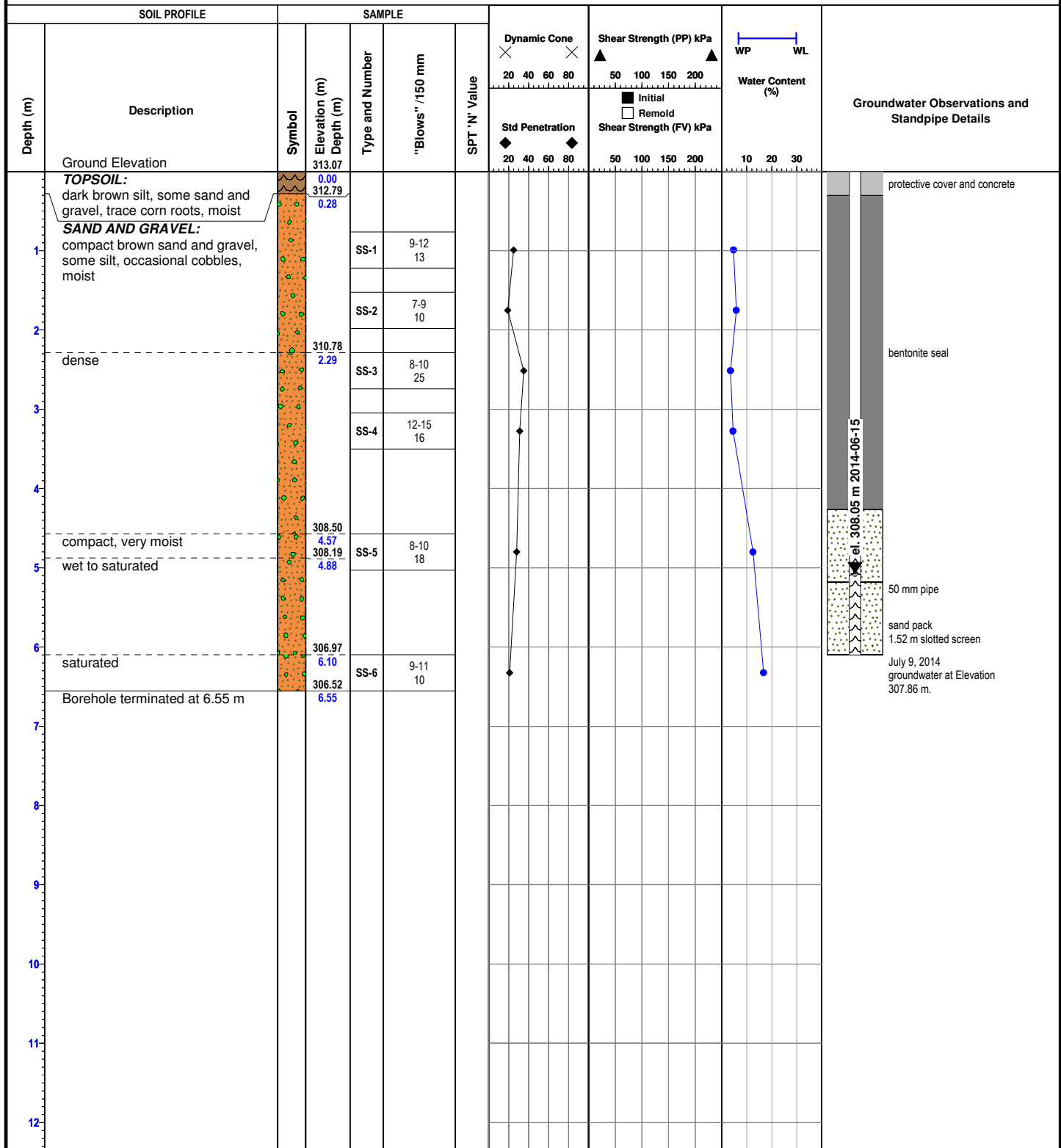
Drill Date: 2014-05-22

Project: Cambridge West Development

Field Tech: D.Souter

Location: Blenheim Road, Cambridge, Ontario

Drill Method: Hollow Stem Auger



Reviewed by: D.Gonser

Drafted by: E.Ciochon

Sheet: 1 of 1

Notes:



Ground Elevation: 312.12 m

Borehole Number: BH-07-14

Job N°: P-0003455-0-09-100

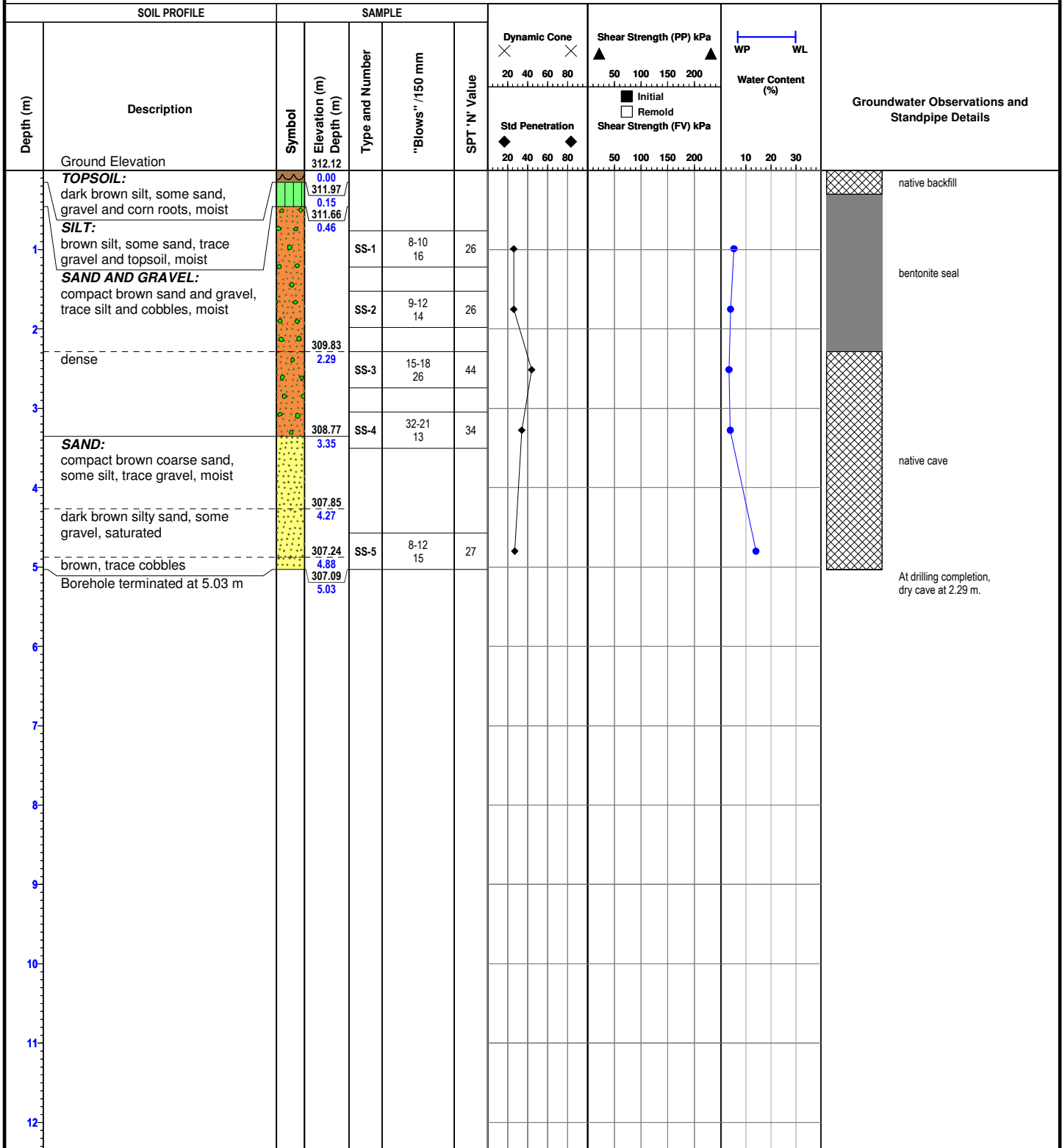
Drill Date: 2014-05-21

Project: Cambridge West Development

Field Tech: D.Souter

Location: Blenheim Road, Cambridge, Ontario

Drill Method: Hollow Stem Auger



Reviewed by: D.Gonser

Drafted by: E.Ciochon

Sheet: 1 of 1

Notes:



Ground Elevation: 311.70 m

Borehole Number: BH-08-14

Job N°: P-0003455-0-09-100

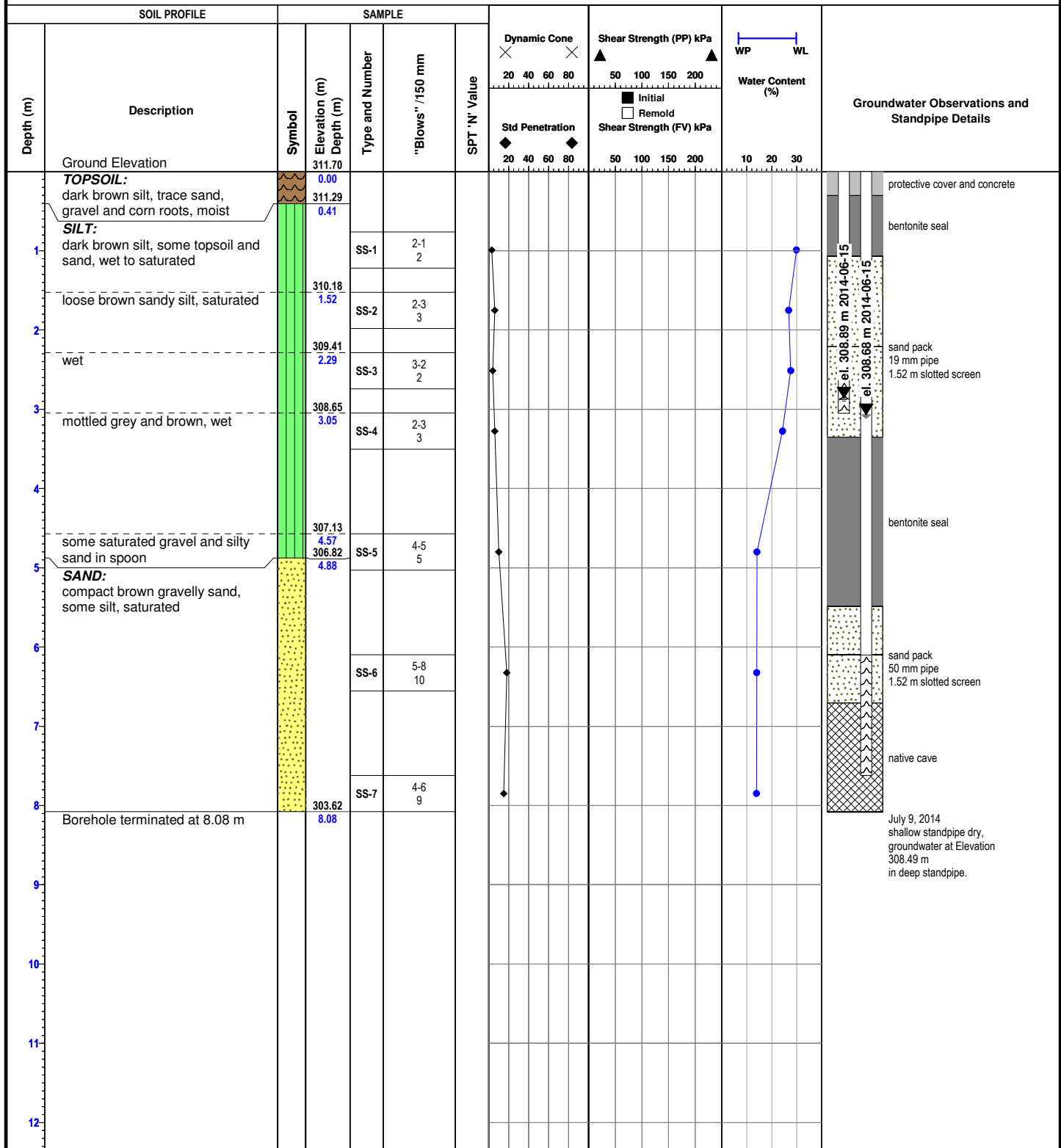
Drill Date: 2014-05-22

Project: Cambridge West Development

Field Tech: D.Souter

Location: Blenheim Road, Cambridge, Ontario

Drill Method: Hollow Stem Auger



Reviewed by: D.Gonser

Drafted by: E.Ciochon

Sheet: 1 of 1

Notes: Bulk sample AS-3A taken from 2.29 to 3.05 m.



Ground Elevation: 309.76 m

Borehole Number: BH-09-14

Job N°: P-0003455-0-09-100

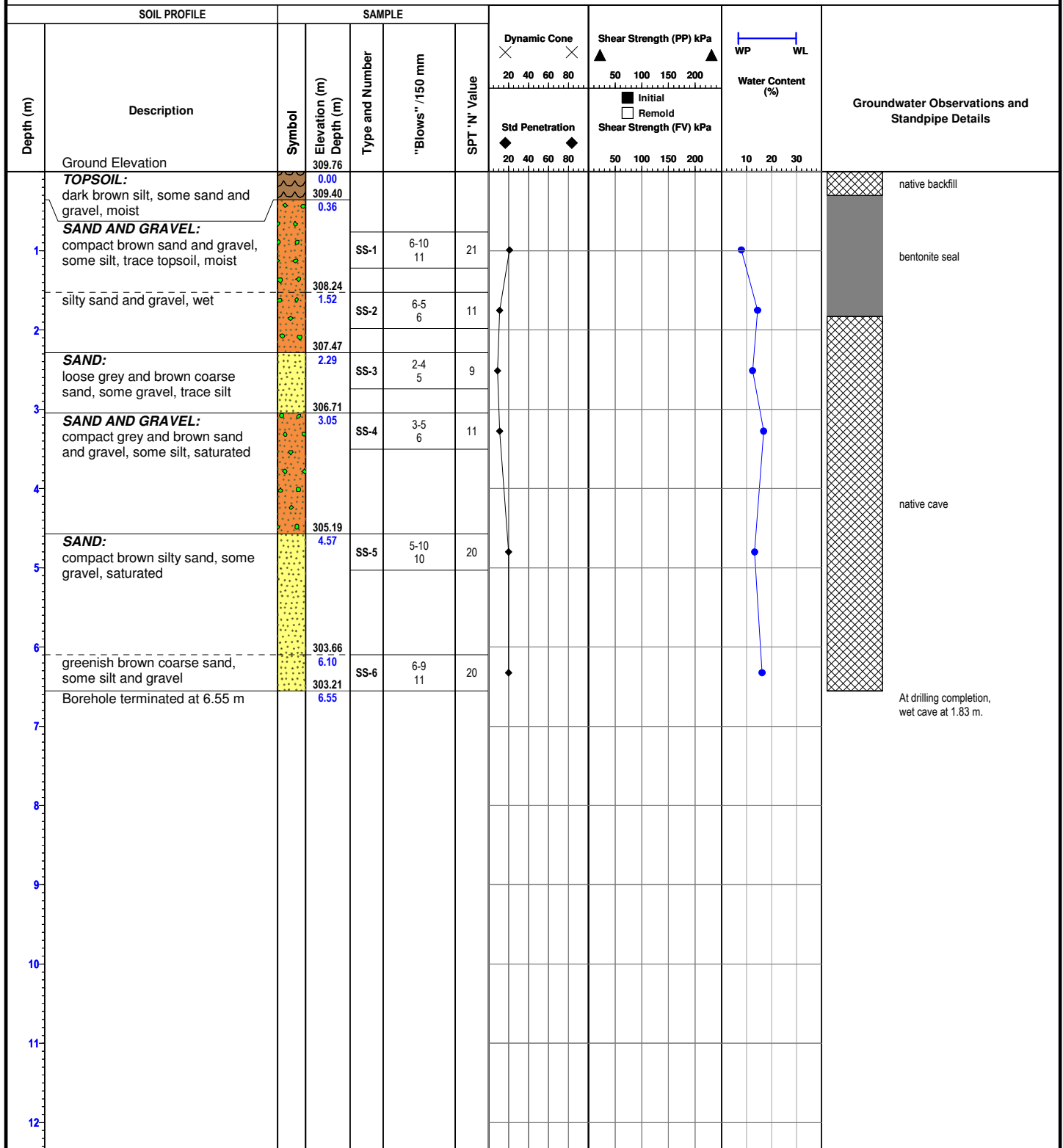
Drill Date: 2014-05-21

Project: Cambridge West Development

Field Tech: D.Souter

Location: Blenheim Road, Cambridge, Ontario

Drill Method: Hollow Stem Auger



Reviewed by: D.Gonser

Drafted by: E.Ciochon

Sheet: 1 of 1

Notes:



Ground Elevation: 311.95 m

Borehole Number: BH-10-14

Job N°: P-0003455-0-09-100

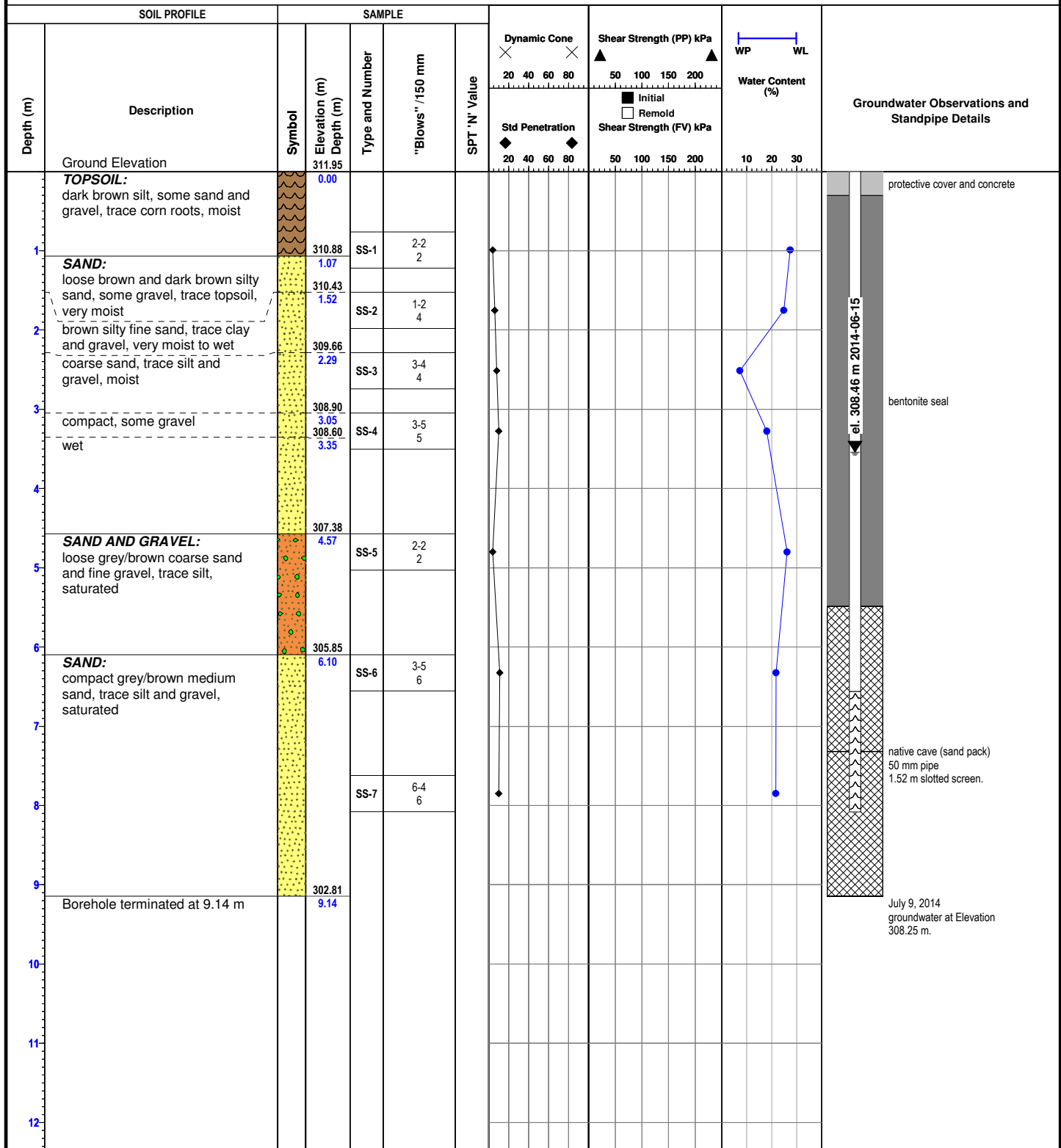
Drill Date: 2014-05-22

Project: Cambridge West Development

Field Tech: D.Souter

Location: Blenheim Road, Cambridge, Ontario

Drill Method: Hollow Stem Auger



Reviewed by: D.Gonser

Drafted by: E.Ciochon

Sheet: 1 of 1

Notes: Bulk sample AS-8 taken at 9.14 m (moisture content=14.2%).



Ground Elevation: 312.53 m

Borehole Number: BH-11-14

Job N°: P-0003455-0-09-100

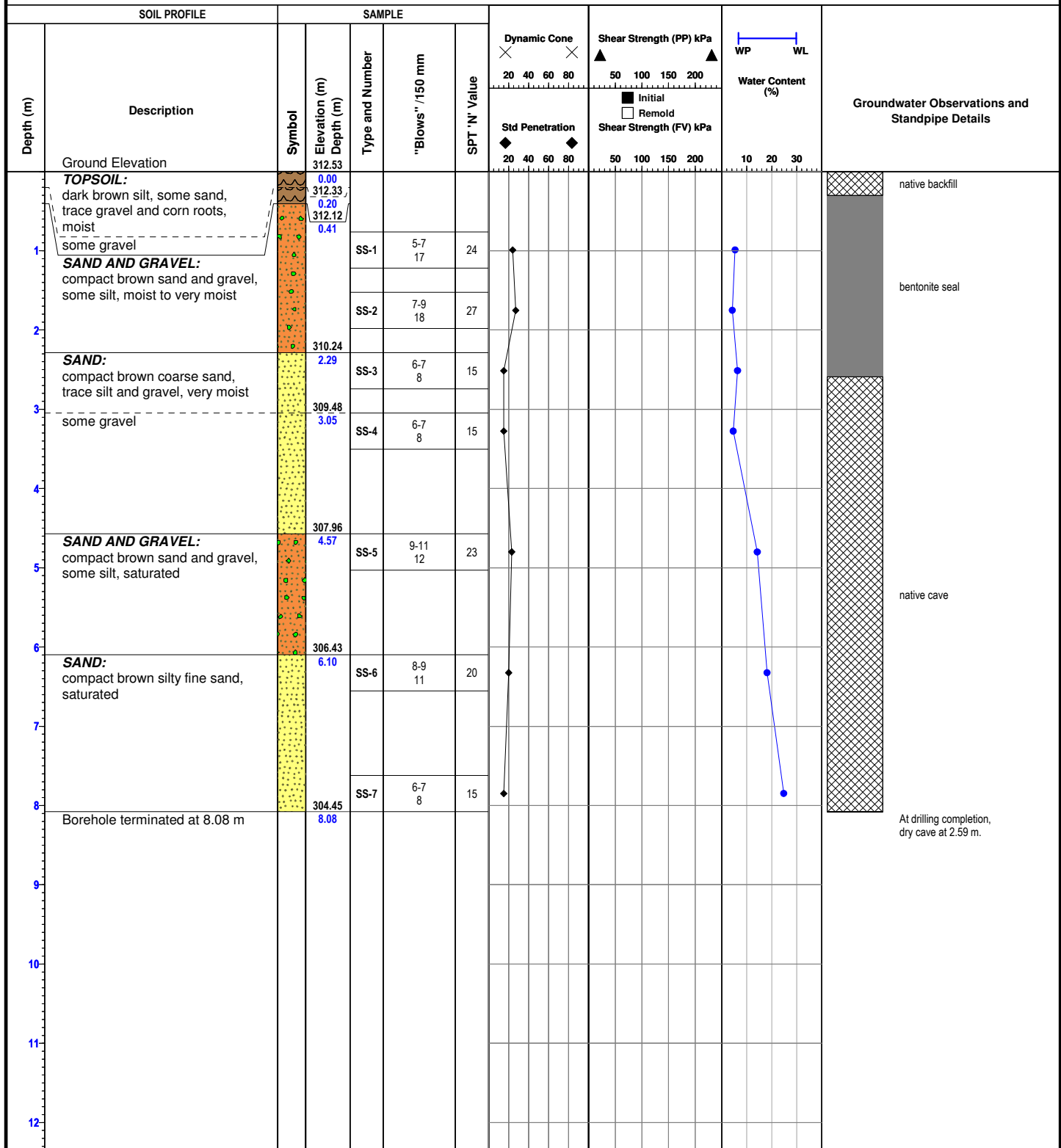
Drill Date: 2014-05-21

Project: Cambridge West Development

Field Tech: D.Souter

Location: Blenheim Road, Cambridge, Ontario

Drill Method: Hollow Stem Auger



Reviewed by: D.Gonser

Drafted by: E.Ciochon

Sheet: 1 of 1

Notes:



Ground Elevation: 311.61 m

Borehole Number: BH-12-14

Job N°: P-0003455-0-09-100

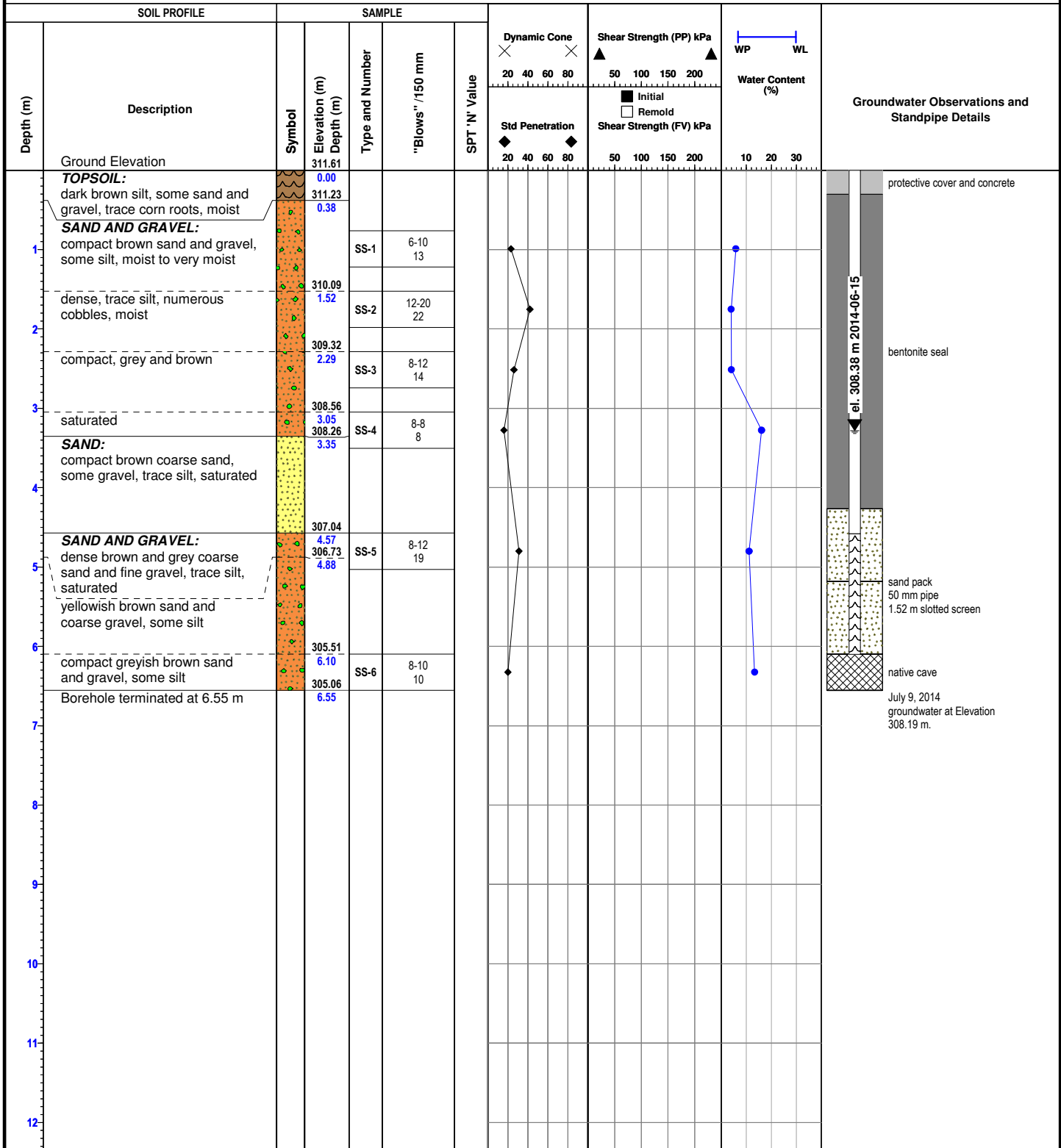
Drill Date: 2014-05-22

Project: Cambridge West Development

Field Tech: D.Souter

Location: Blenheim Road, Cambridge, Ontario

Drill Method: Hollow Stem Auger



Reviewed by: D.Gonser

Drafted by: E.Ciochon

Sheet: 1 of 1

Notes:



Ground Elevation: 313.09 m

Borehole Number: BH-13-14

Job N°: P-0003455-0-09-100

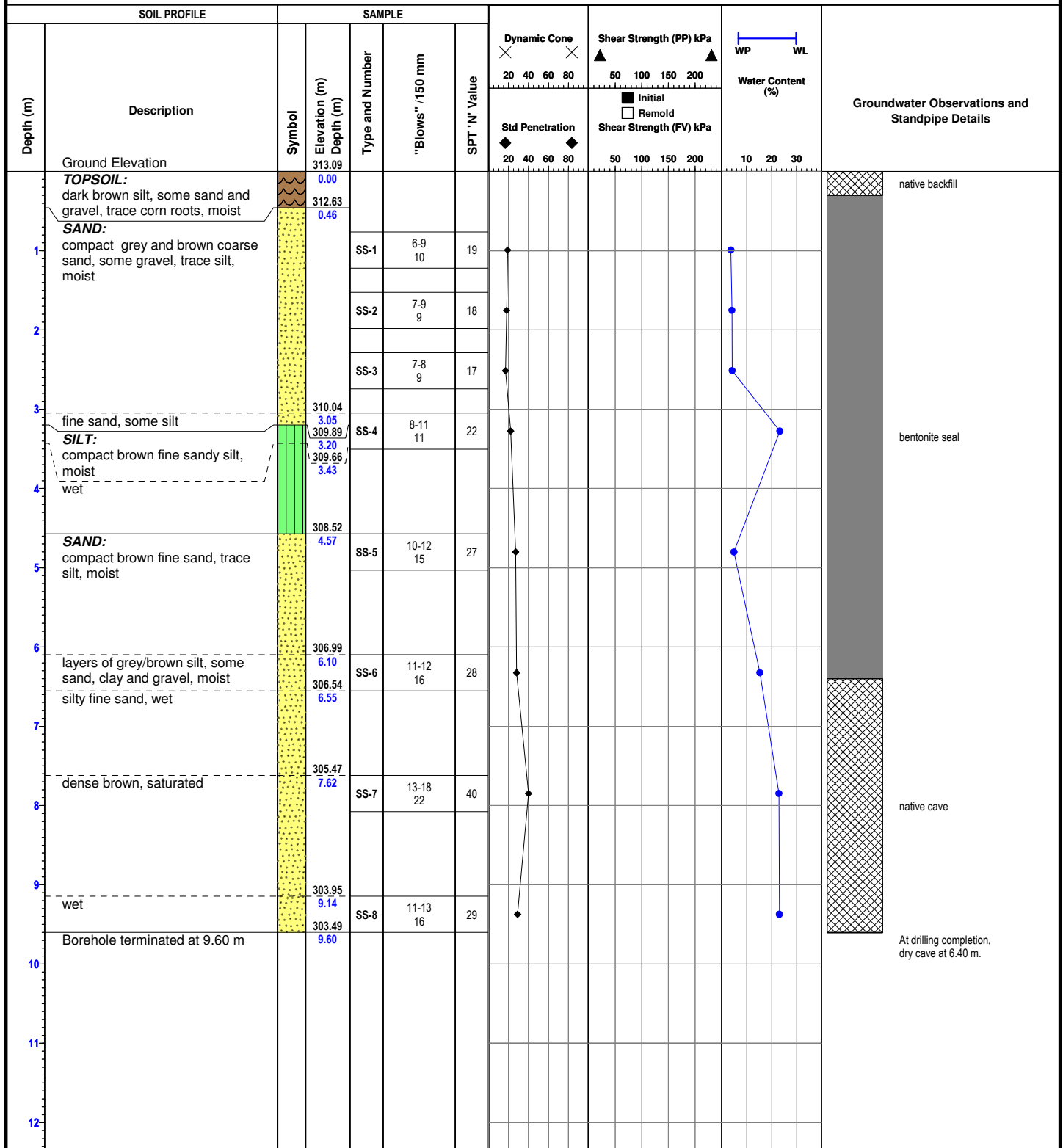
Drill Date: 2014-05-21

Project: Cambridge West Development

Field Tech: D.Souter

Location: Blenheim Road, Cambridge, Ontario

Drill Method: Hollow Stem Auger



Reviewed by: D.Gonser

Drafted by: E.Ciochon

Sheet: 1 of 1

Notes:



Ground Elevation: 308.83 m

Borehole Number: BH-14-14

Job N°: P-0003455-0-09-100

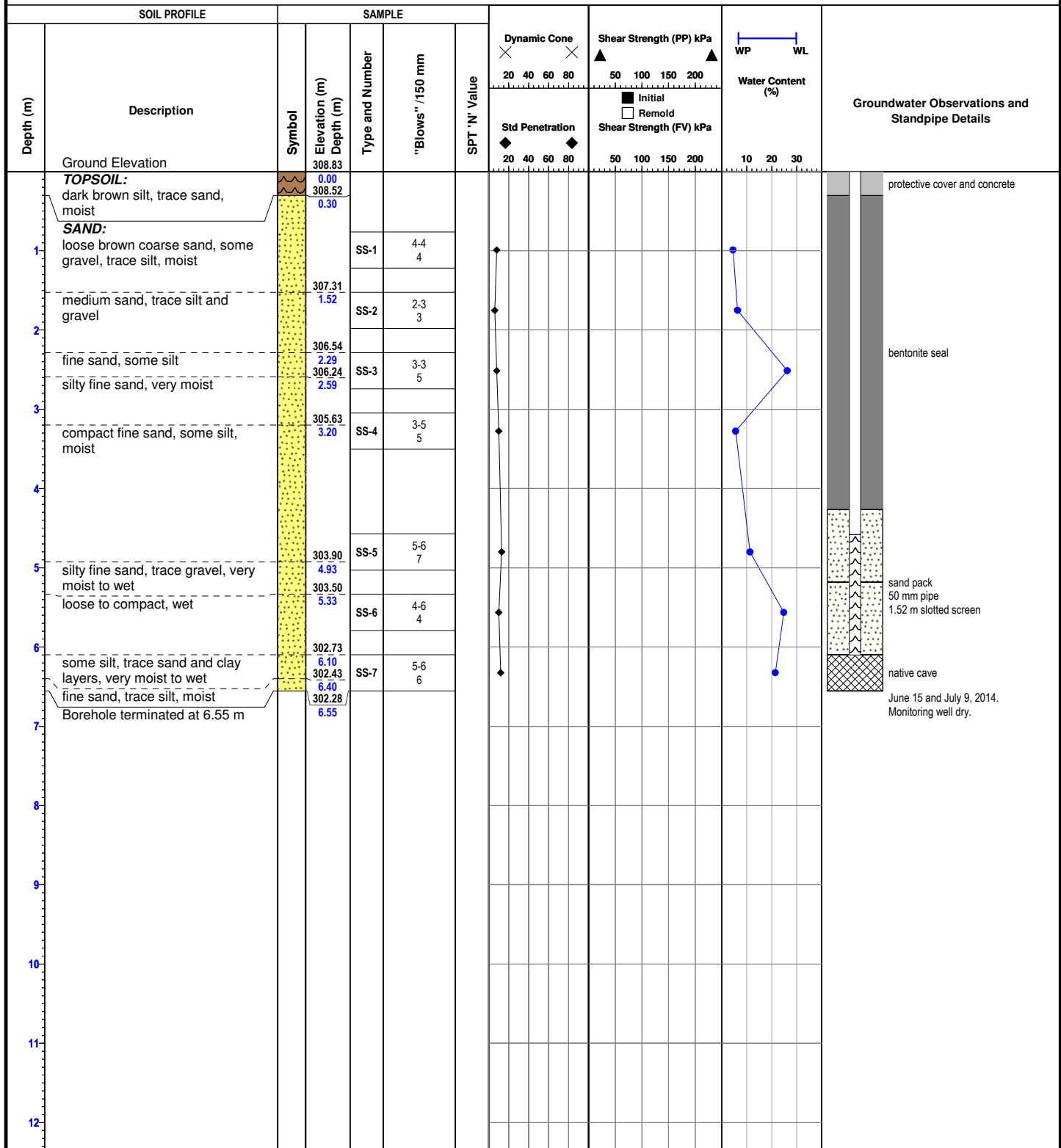
Drill Date: 2014-05-22

Project: Cambridge West Development

Field Tech: D.Souter

Location: Blenheim Road, Cambridge, Ontario

Drill Method: Hollow Stem Auger



Reviewed by: D.Gonser

Drafted by: E.Ciochon

Sheet: 1 of 1

Notes:



Ground Elevation: 312.08 m

Borehole Number: BH-15-14

Job N°: P-0003455-0-09-100

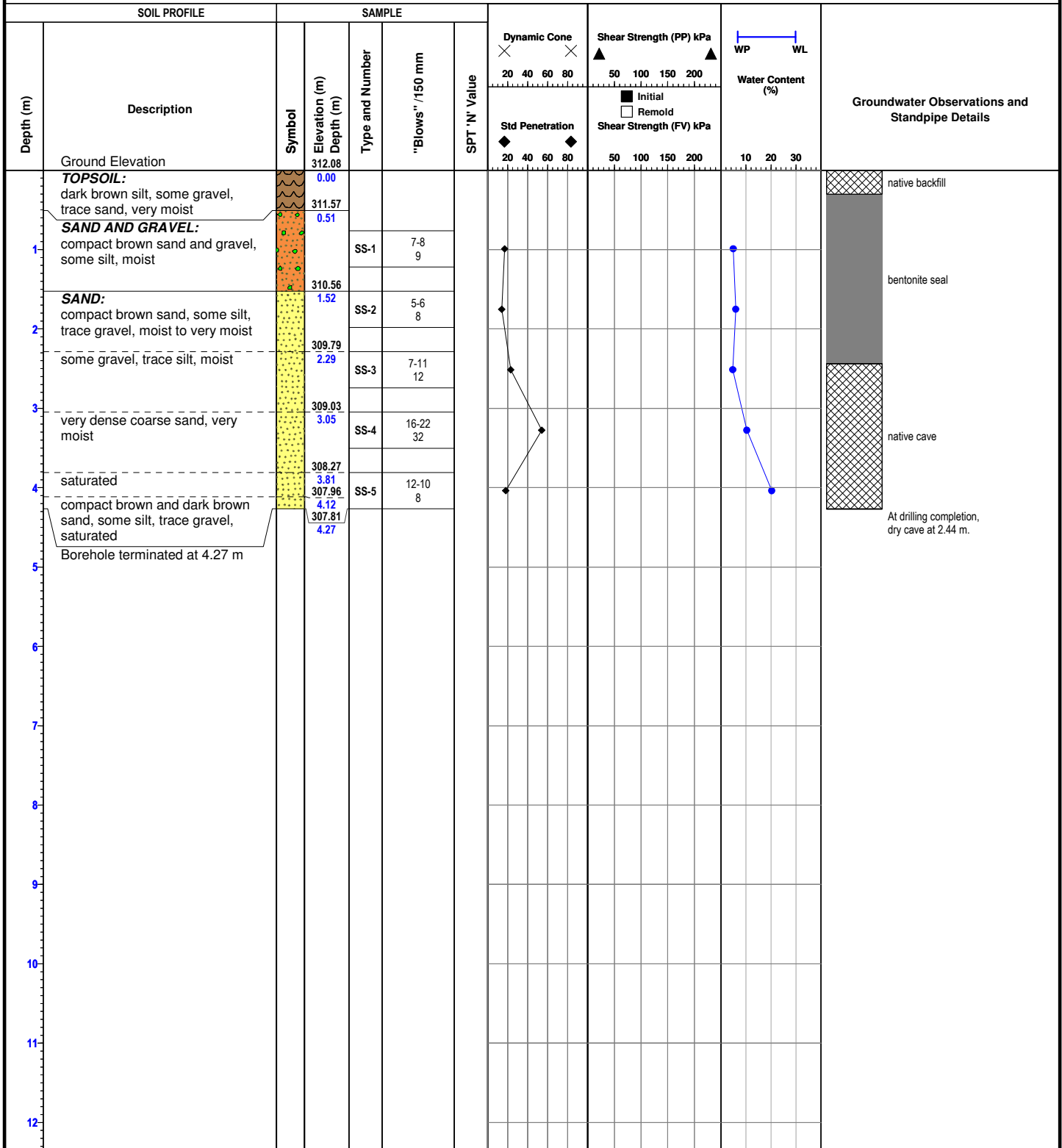
Drill Date: 2014-05-21

Project: Cambridge West Development

Field Tech: D.Souter

Location: Blenheim Road, Cambridge, Ontario

Drill Method: Hollow Stem Auger



Reviewed by: D.Gonser

Drafted by: E.Ciochon

Sheet: 1 of 1

Notes:



Ground Elevation: 317.23 m

Borehole Number: BH-16-14

Job N°: P-0003455-0-09-100

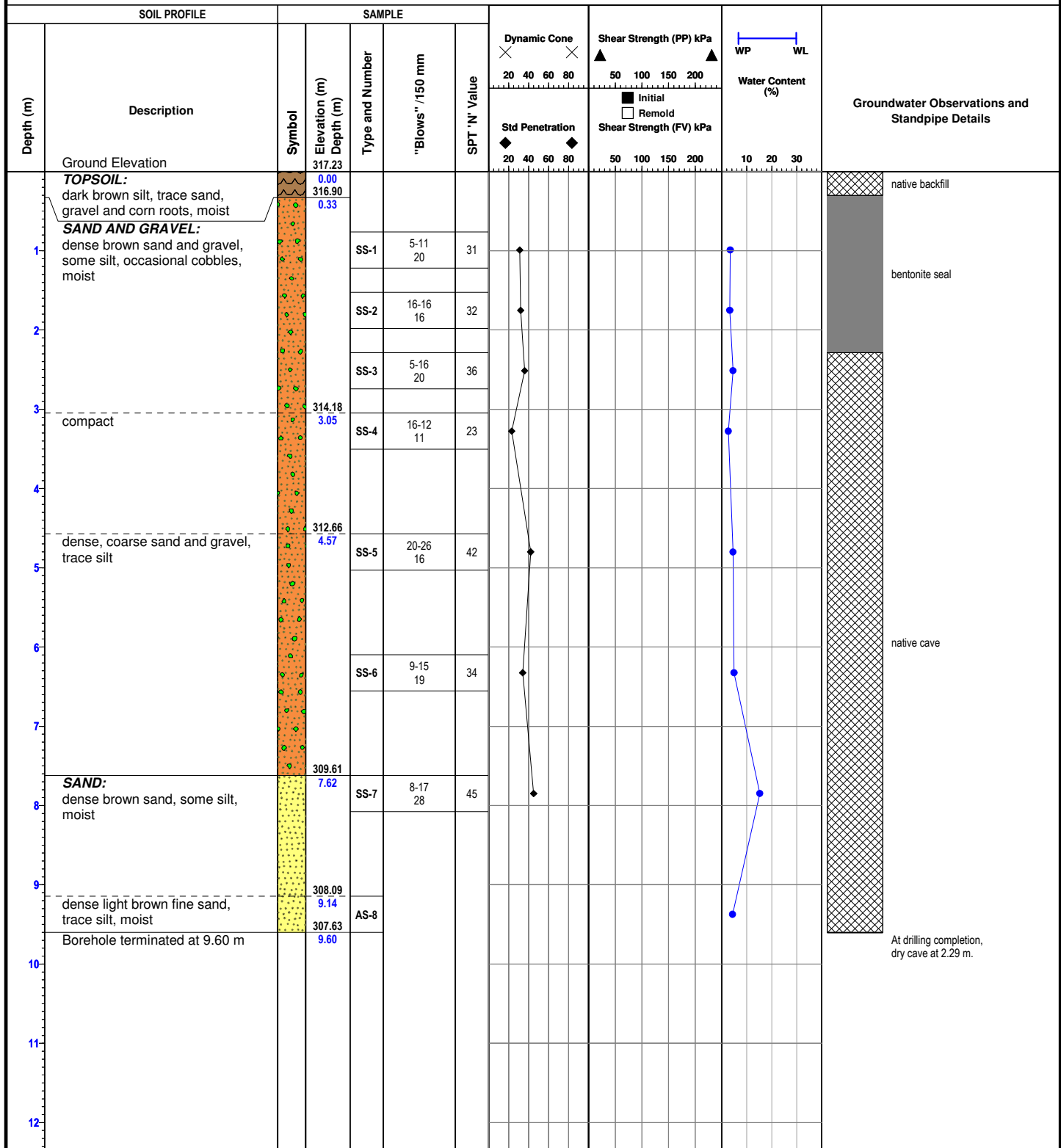
Drill Date: 2014-05-23

Project: Cambridge West Development

Field Tech: D.Souter

Location: Blenheim Road, Cambridge, Ontario

Drill Method: Hollow Stem Auger



Reviewed by: D.Gonser

Drafted by: E.Ciochon

Sheet: 1 of 1

Notes:



Ground Elevation: 316.38 m

Borehole Number: BH-17-14

Job N°: P-0003455-0-09-100

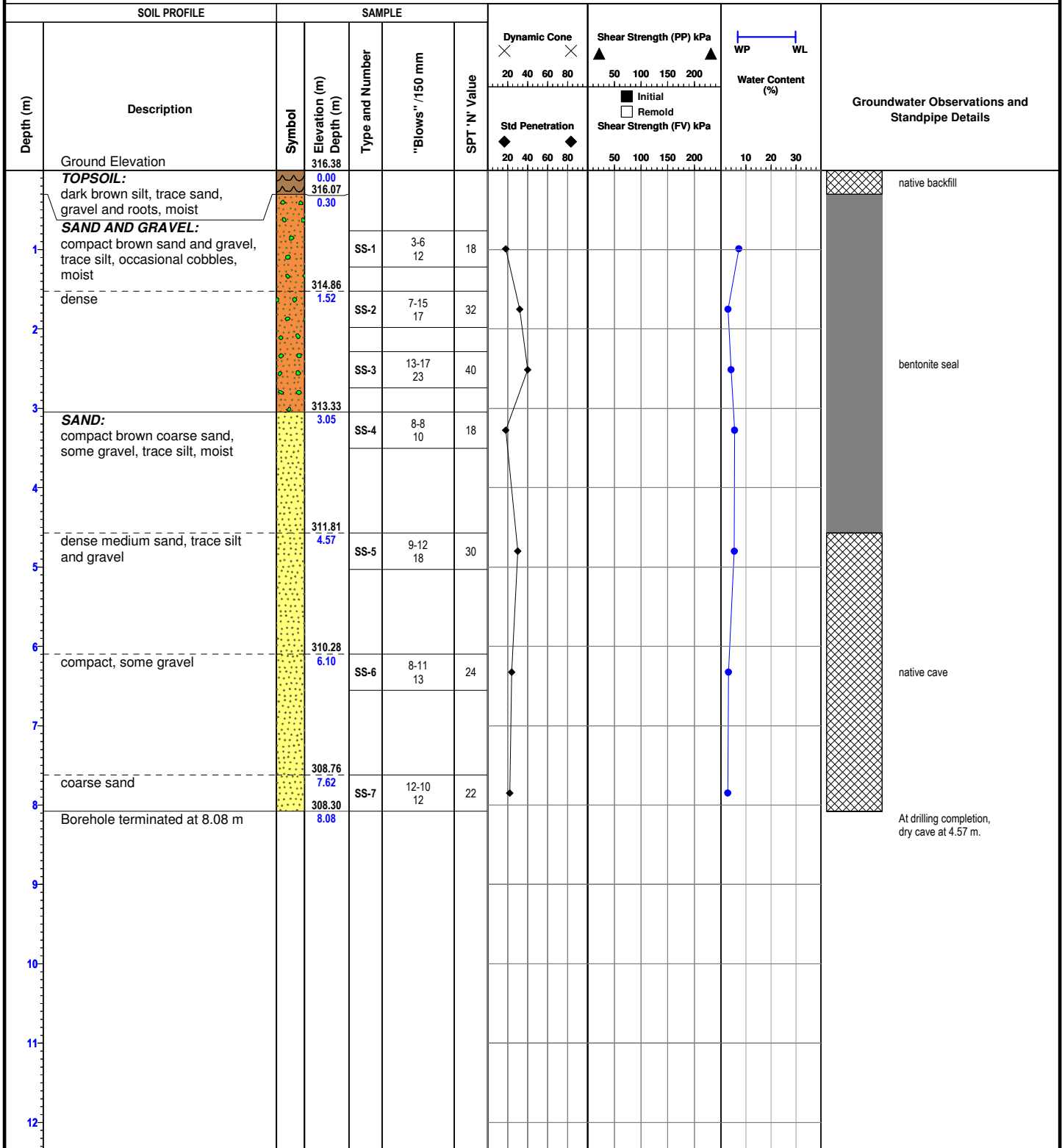
Drill Date: 2014-05-23

Project: Cambridge West Development

Field Tech: D.Souter

Location: Blenheim Road, Cambridge, Ontario

Drill Method: Hollow Stem Auger



Reviewed by: D.Gonser

Drafted by: E.Ciochon

Sheet: 1 of 1

Notes:



Ground Elevation: 317.76 m

Borehole Number: BH-18-14

Job N°: P-0003455-0-09-100

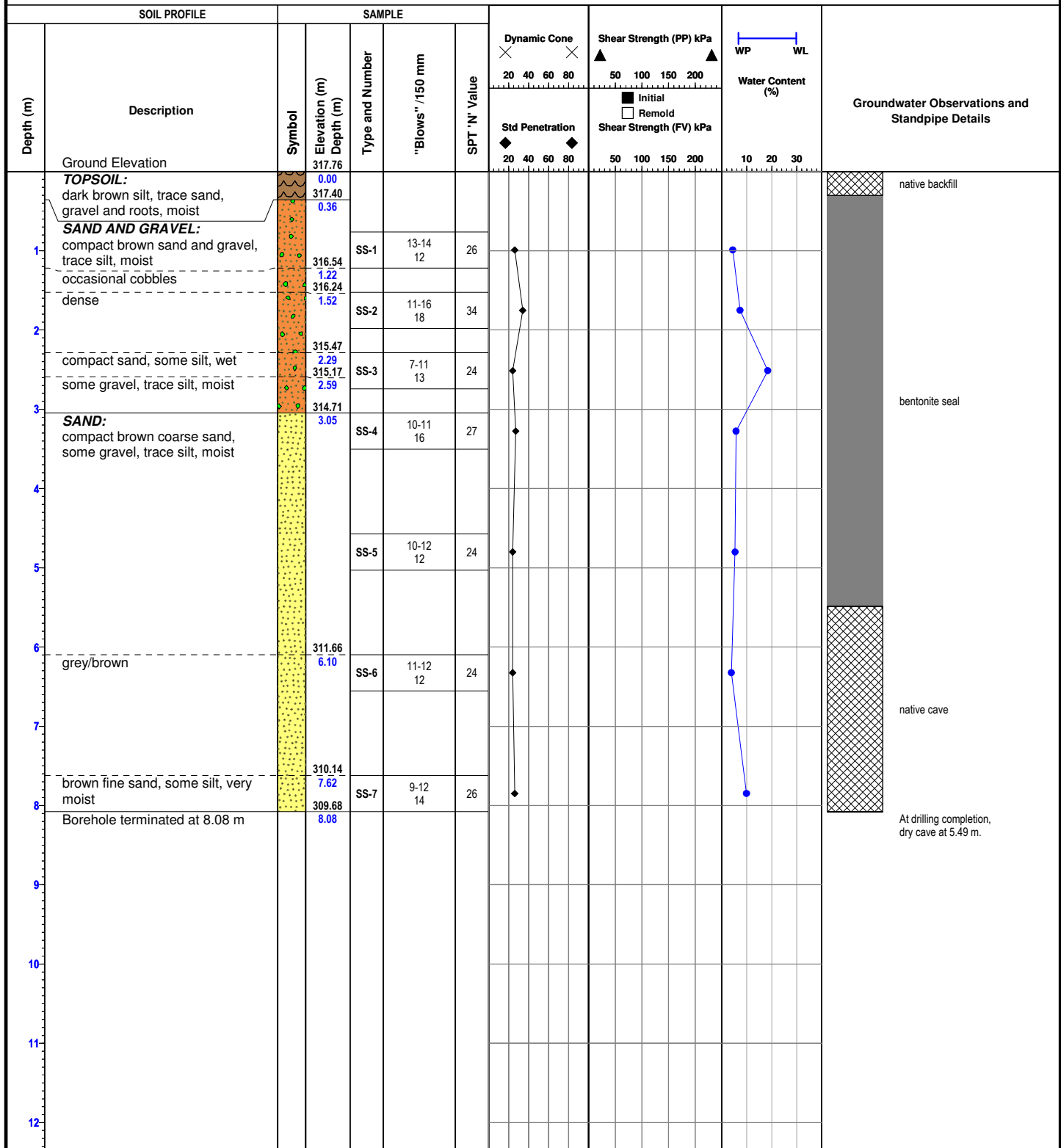
Drill Date: 2014-05-23

Project: Cambridge West Development

Field Tech: D.Souter

Location: Blenheim Road, Cambridge, Ontario

Drill Method: Hollow Stem Auger



Reviewed by: D.Gonser

Drafted by: E.Ciochon

Sheet: 1 of 1

Notes:



Ground Elevation: 312.99 m

Borehole Number: BH-19-14

Job N°: P-0003455-0-09-100

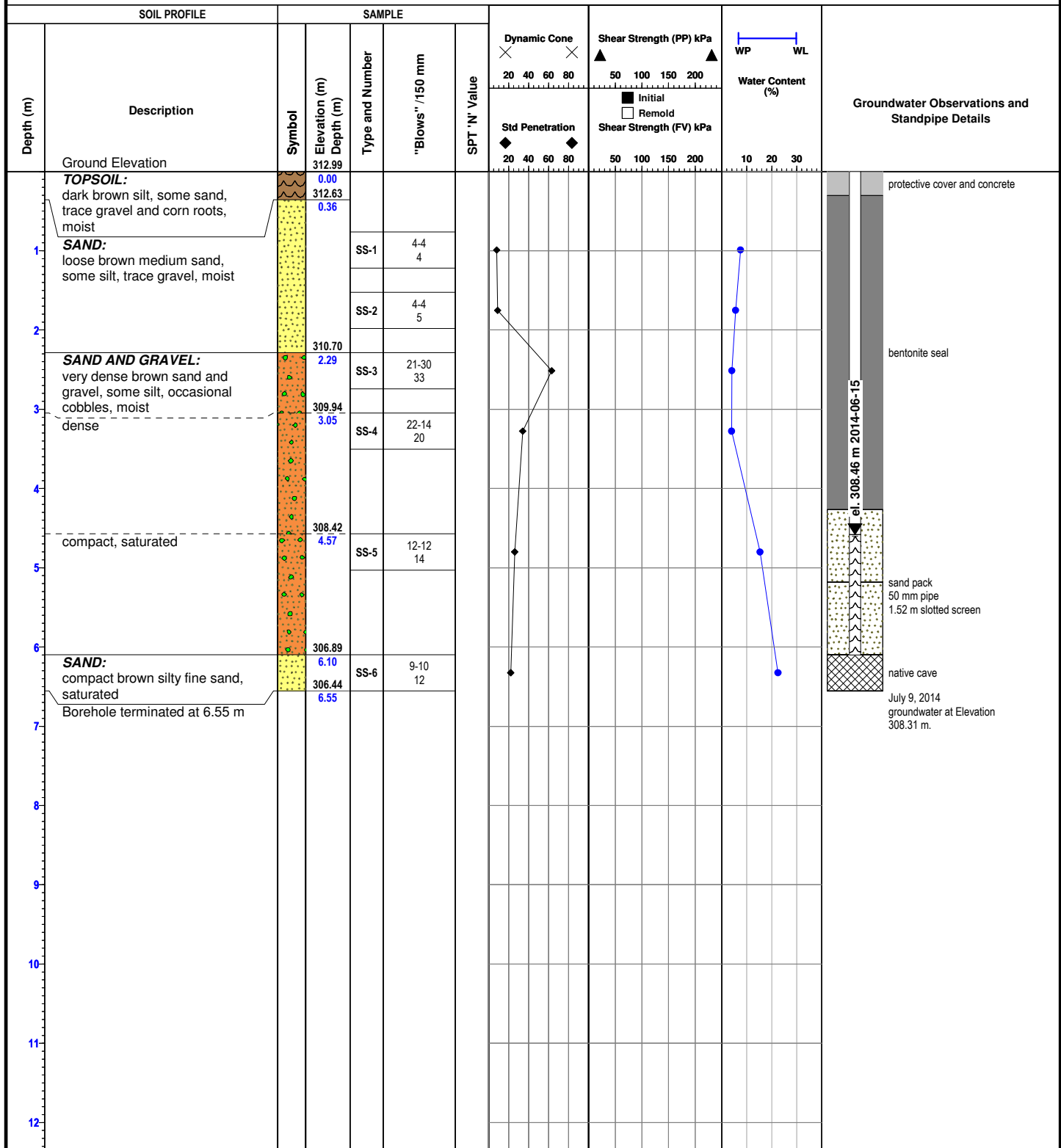
Drill Date: 2014-05-27

Project: Cambridge West Development

Field Tech: D.Souter

Location: Blenheim Road, Cambridge, Ontario

Drill Method: Hollow Stem Auger



Reviewed by: D.Gonser

Drafted by: E.Ciochon

Sheet: 1 of 1

Notes:



Ground Elevation: 316.51 m

Borehole Number: BH-20-14

Job N°: P-0003455-0-09-100

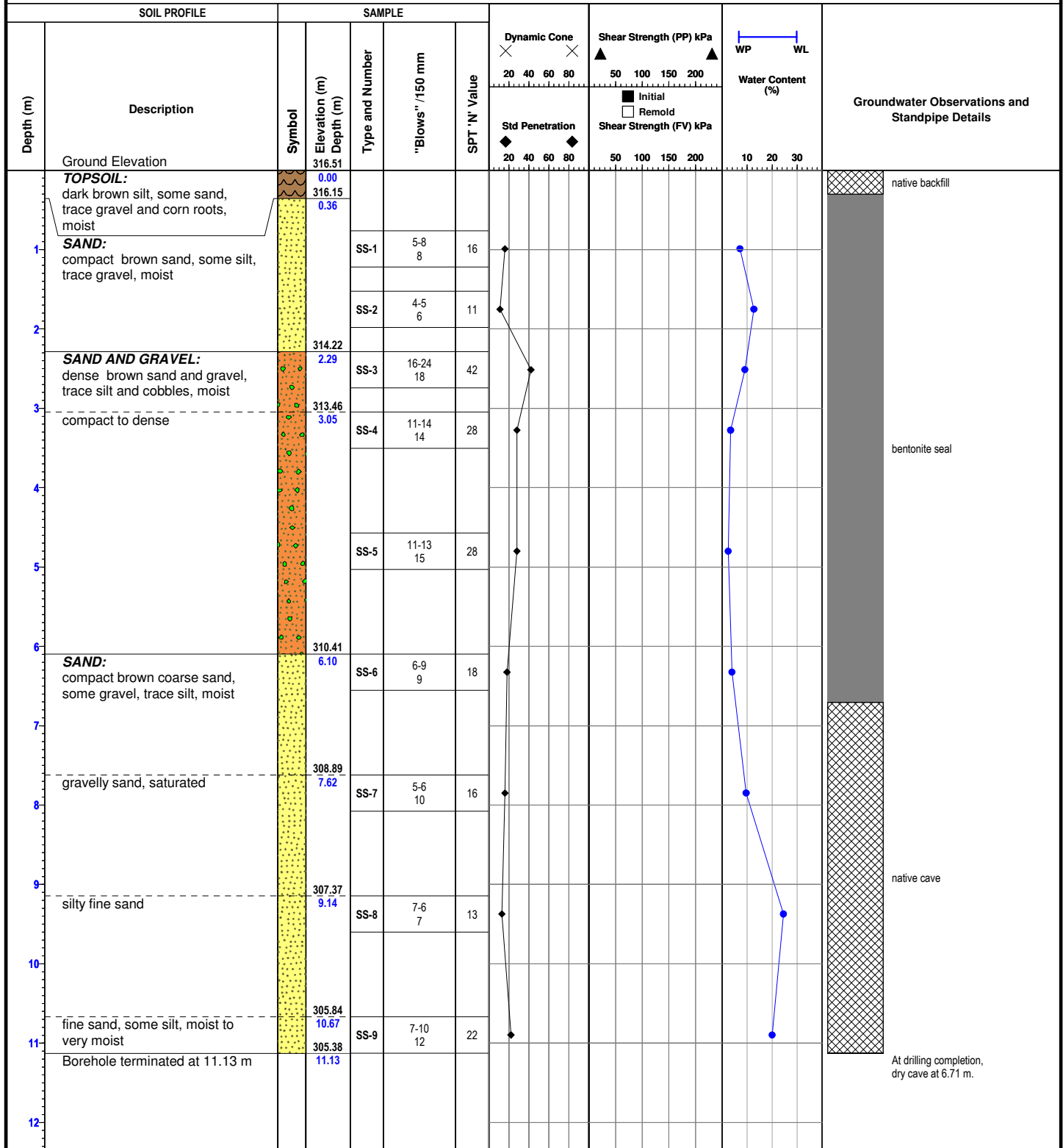
Drill Date: 2014-05-26

Project: Cambridge West Development

Field Tech: D.Souter

Location: Blenheim Road, Cambridge, Ontario

Drill Method: Hollow Stem Auger



Reviewed by: D.Gonser

Drafted by: E.Ciochon

Sheet: 1 of 1

Notes:



Ground Elevation: 298.00 m

Borehole Number: BH-21A-14

Job N°: P-0003455-0-09-100

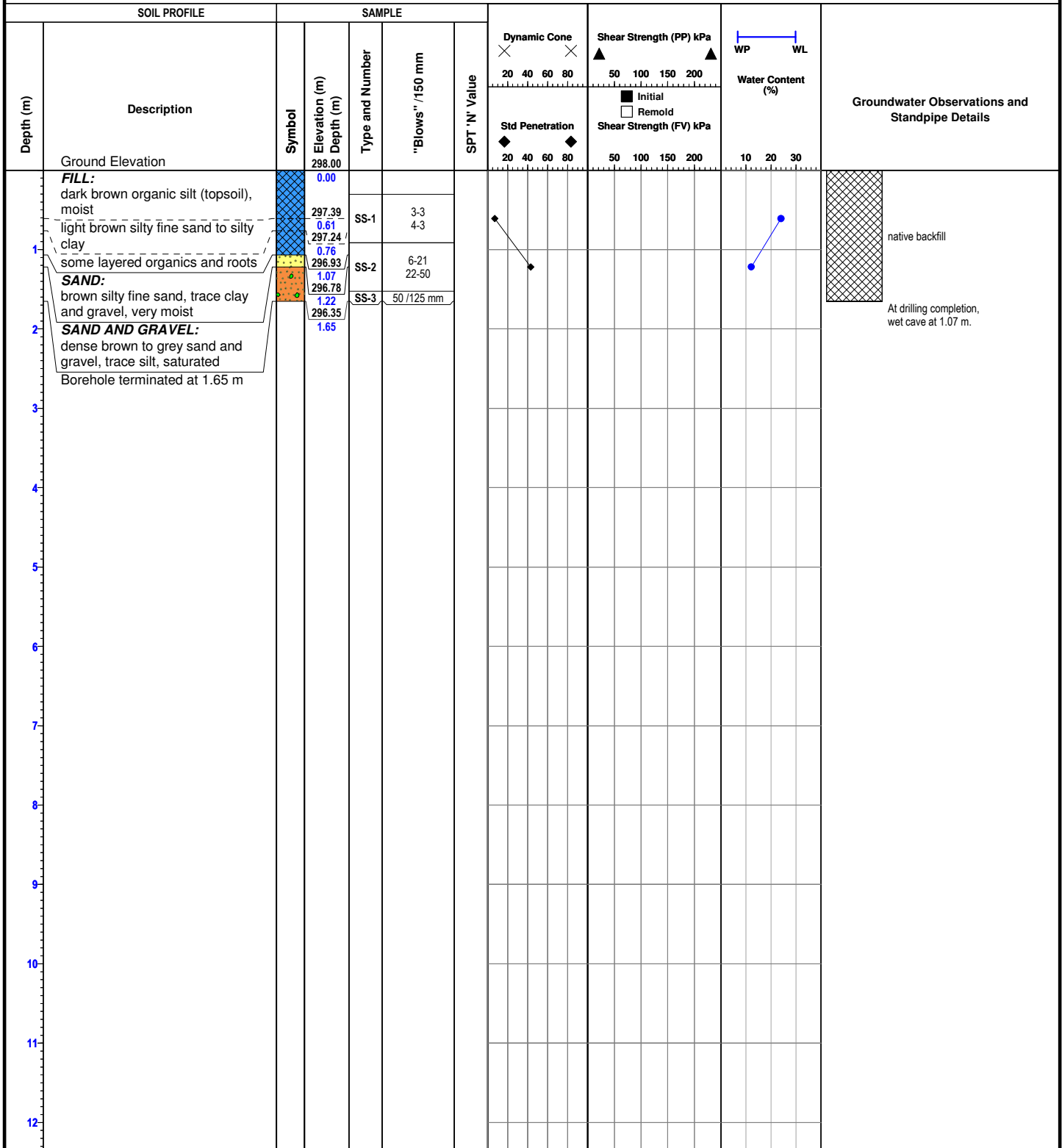
Drill Date: 2014-06-04

Project: Cambridge West Development

Field Tech: D.Gonser

Location: Blenheim Road, Cambridge, Ontario

Drill Method: Hand Sampled Borehole



Reviewed by: D.Gonser

Drafted by: E.Ciochon

Sheet: 1 of 1

Notes:



Ground Elevation: 298.20 m

Borehole Number: BH-21B-14

Job N°: P-0003455-0-09-100

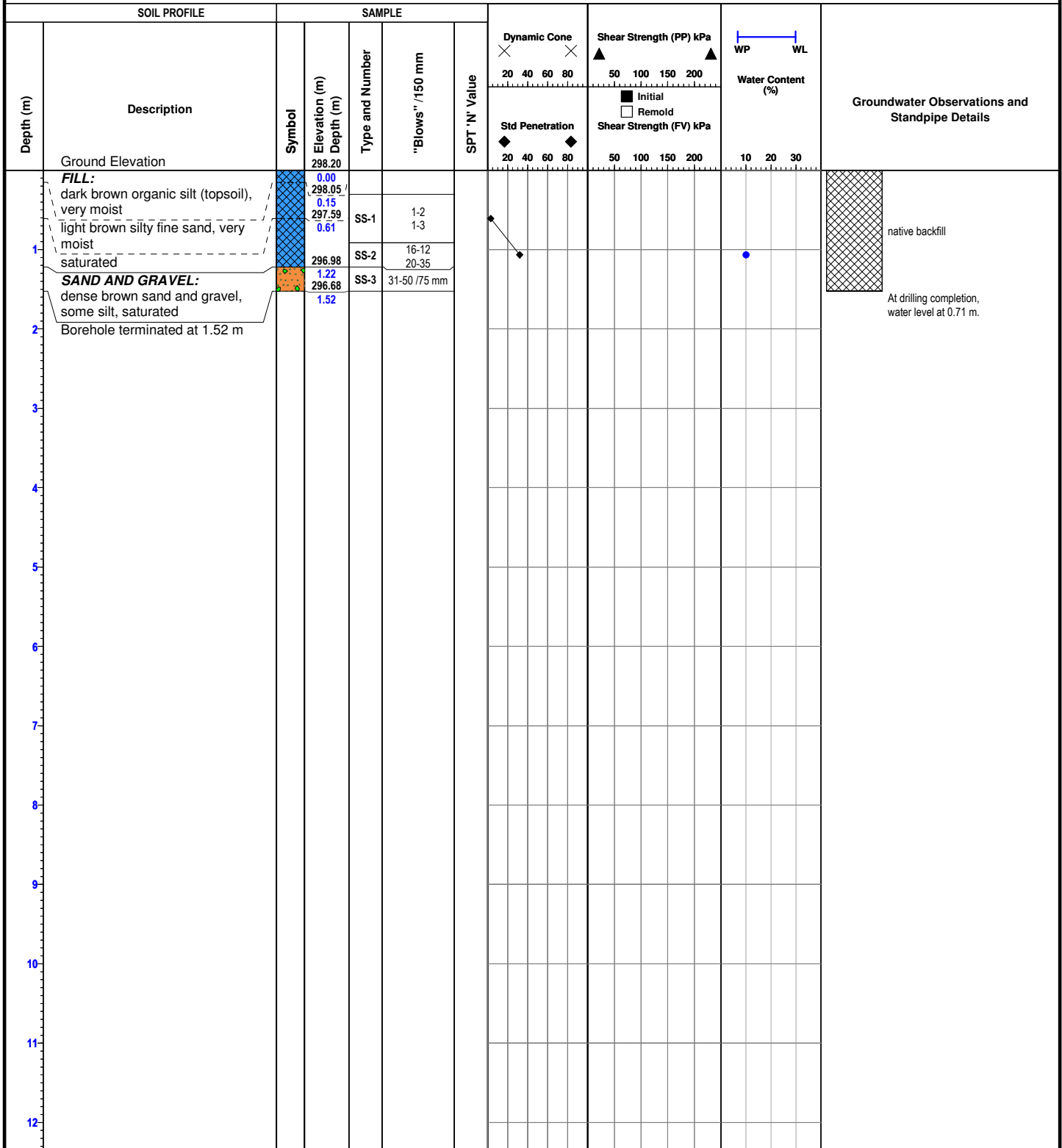
Drill Date: 2014-06-04

Project: Cambridge West Development

Field Tech: D.Gonser

Location: Blenheim Road, Cambridge, Ontario

Drill Method: Hand Sampled Borehole



Reviewed by: D.Gonser

Drafted by: E.Ciochon

Sheet: 1 of 1

Notes:



Ground Elevation: 305.52 m

Borehole Number: BH-22-14

Job N°: P-0003455-0-09-100

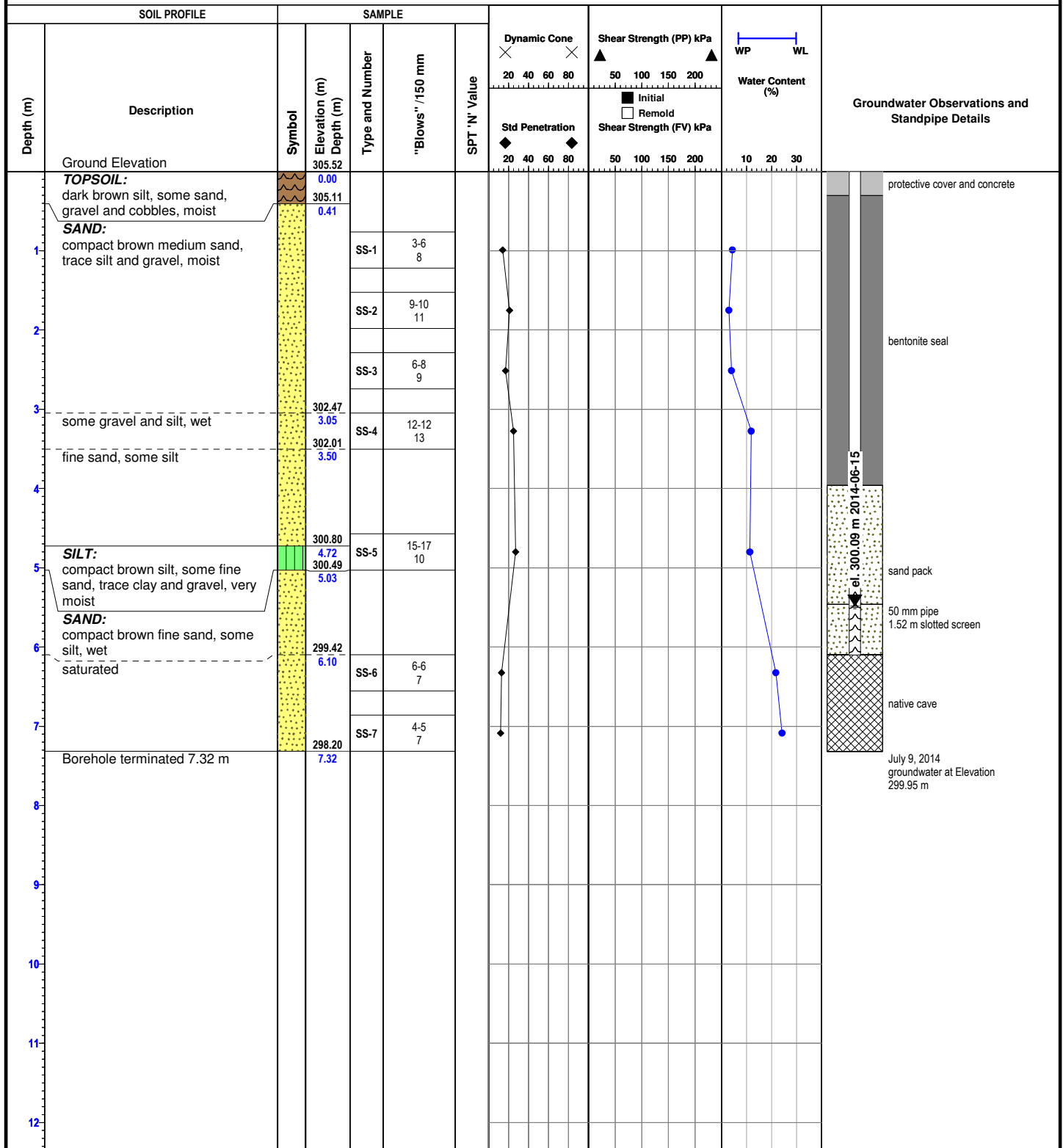
Drill Date: 2014-05-27

Project: Cambridge West Development

Field Tech: D.Souter

Location: Blenheim Road, Cambridge, Ontario

Drill Method: Hollow Stem Auger



Reviewed by: D.Gonser

Drafted by: E.Ciochon

Sheet: 1 of 1

Notes:



Ground Elevation: 314.76 m

Borehole Number: BH-23-14

Job N°: P-0003455-0-09-100

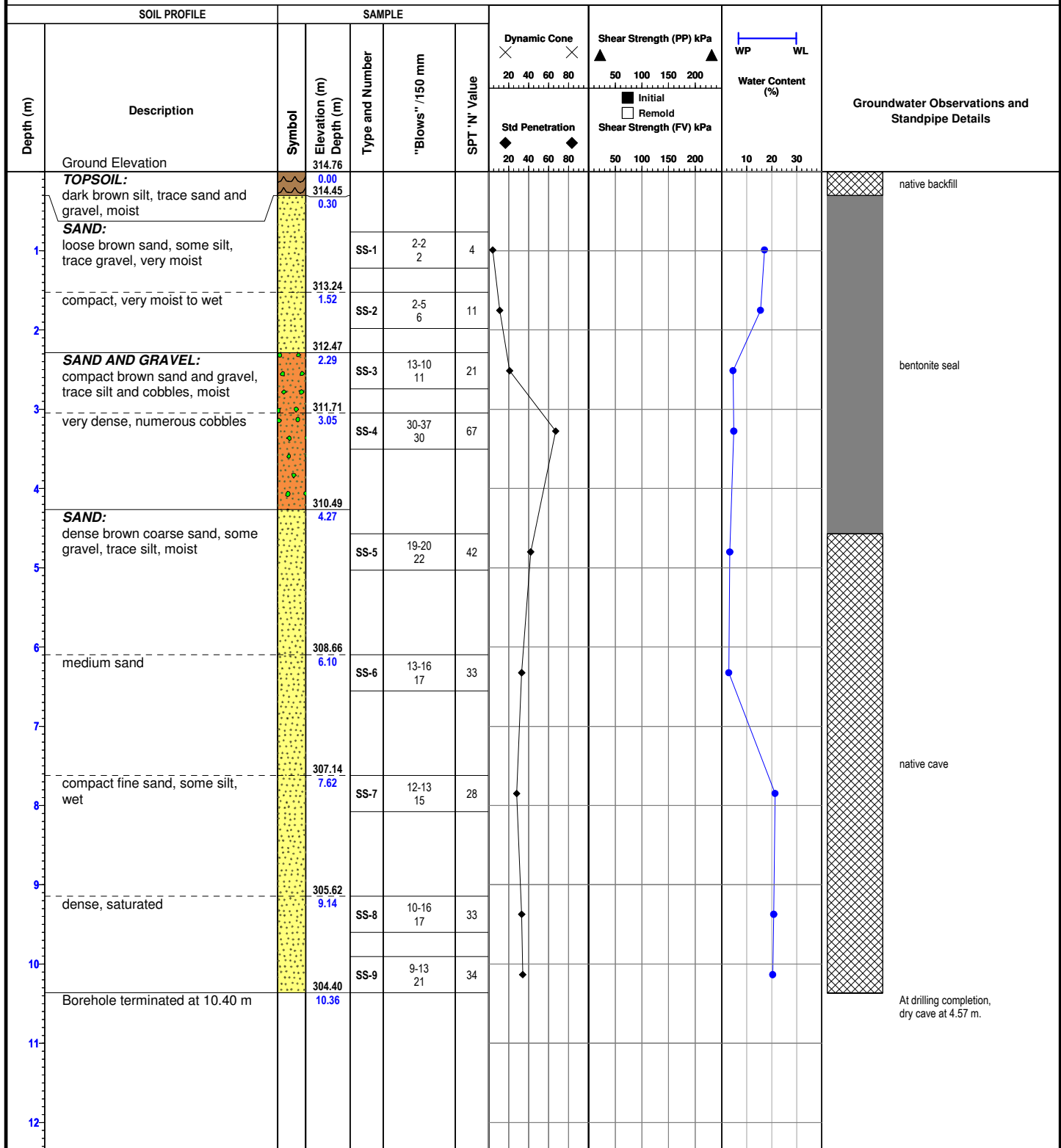
Drill Date: 2014-05-26

Project: Cambridge West Development

Field Tech: D.Souter

Location: Blenheim Road, Cambridge, Ontario

Drill Method: Hollow Stem Auger



Reviewed by: D.Gonser

Drafted by: E.Ciochon

Sheet: 1 of 1

Notes: Bulk sample AS-2A taken from 1.52 to 2.29 m.



Ground Elevation: 310.03 m

Borehole Number: BH-24-14

Job N°: P-0003455-0-09-100

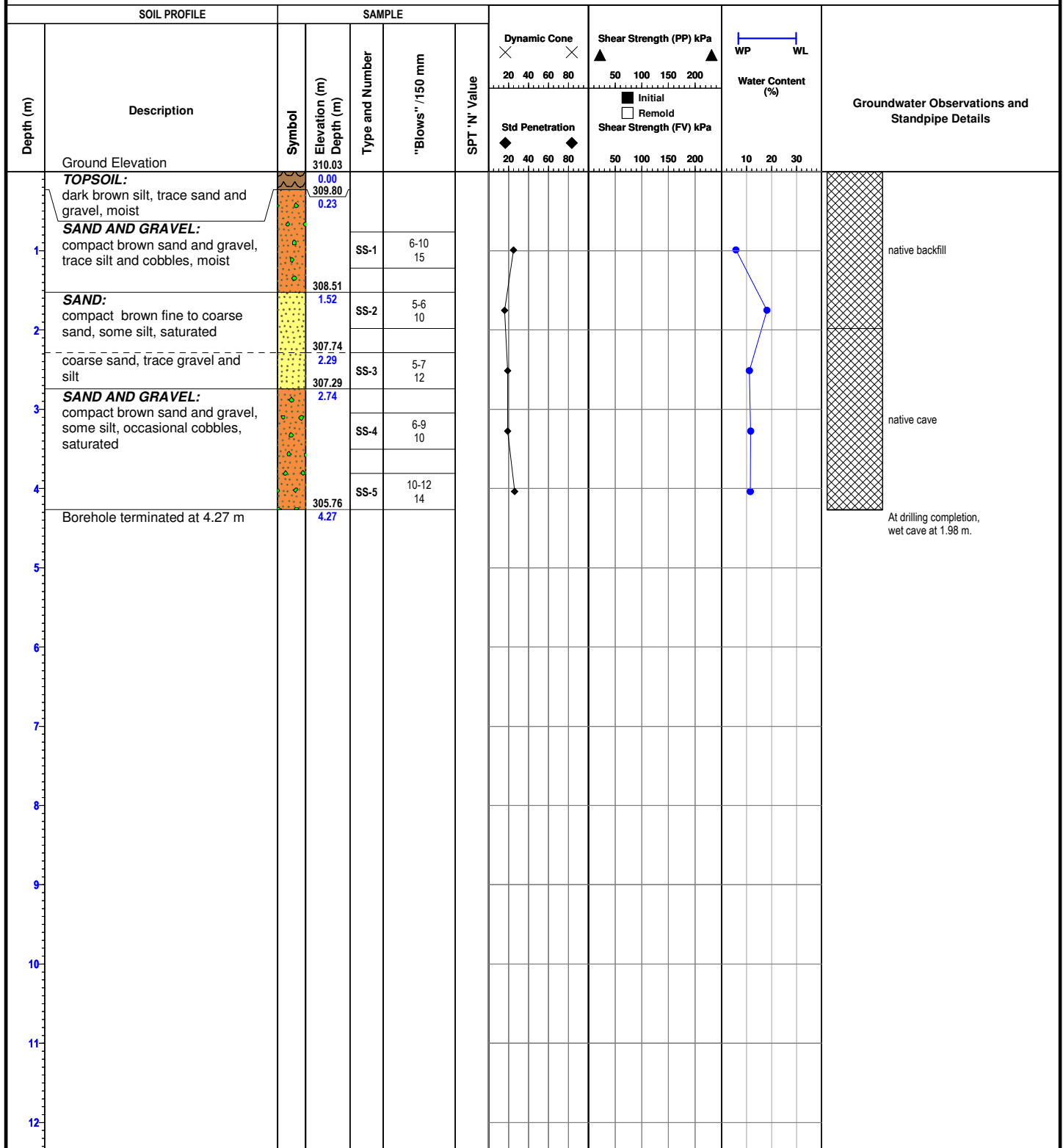
Drill Date: 2014-05-26

Project: Cambridge West Development

Field Tech: D.Souter

Location: Blenheim Road, Cambridge, Ontario

Drill Method: Hollow Stem Auger



Reviewed by: D.Gonser

Drafted by: E.Ciochon

Sheet: 1 of 1

Notes:



Ground Elevation: 309.53 m

Borehole Number: BH-25-14

Job N°: P-0003455-0-09-100

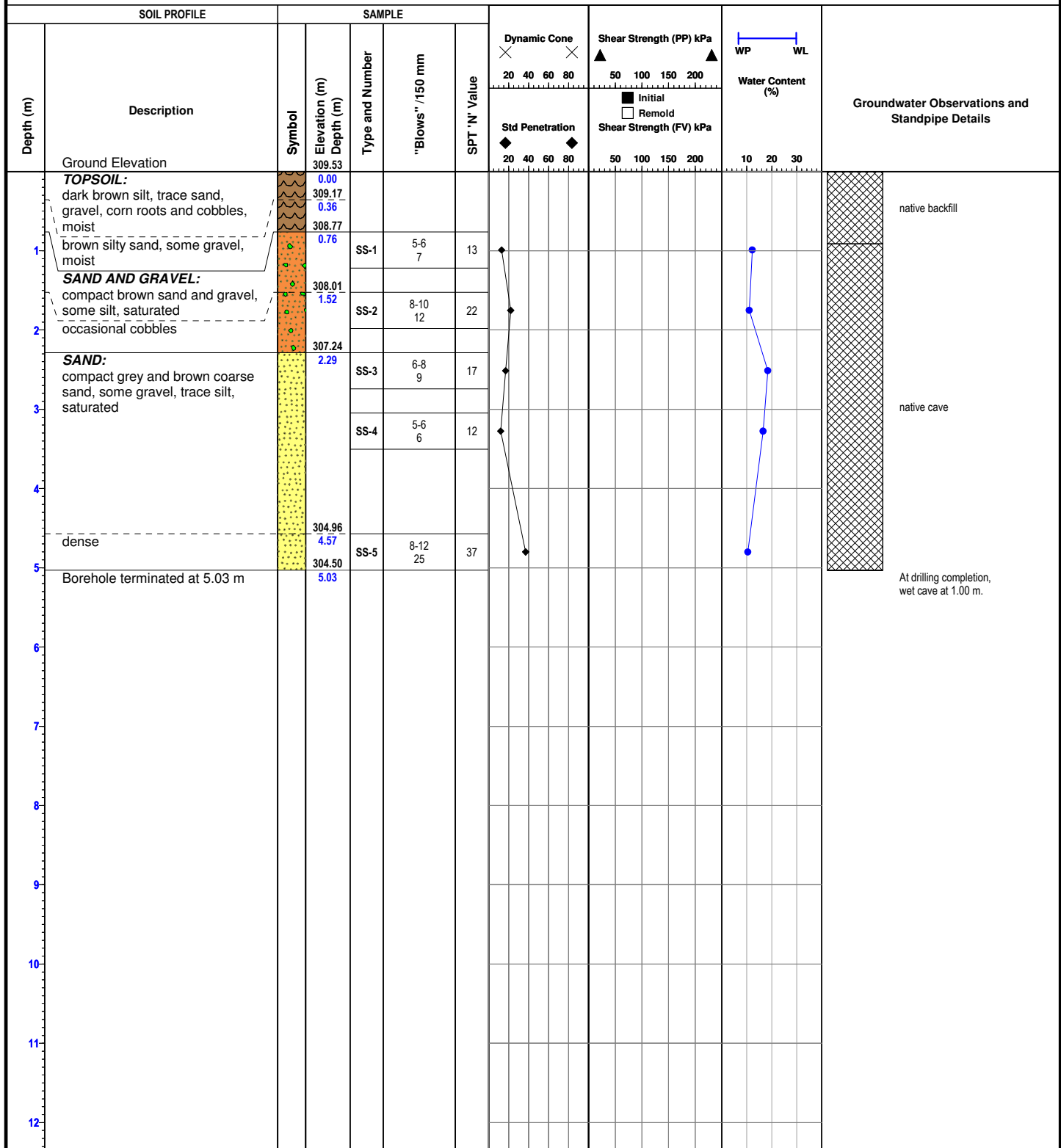
Drill Date: 2014-05-26

Project: Cambridge West Development

Field Tech: D.Souter

Location: Blenheim Road, Cambridge, Ontario

Drill Method: Hollow Stem Auger



Reviewed by: D.Gonser

Drafted by: E.Ciochon

Sheet: 1 of 1

Notes:



Ground Elevation: 309.42 m

Borehole Number: BH-26-14

Job N°: P-0003455-0-09-100

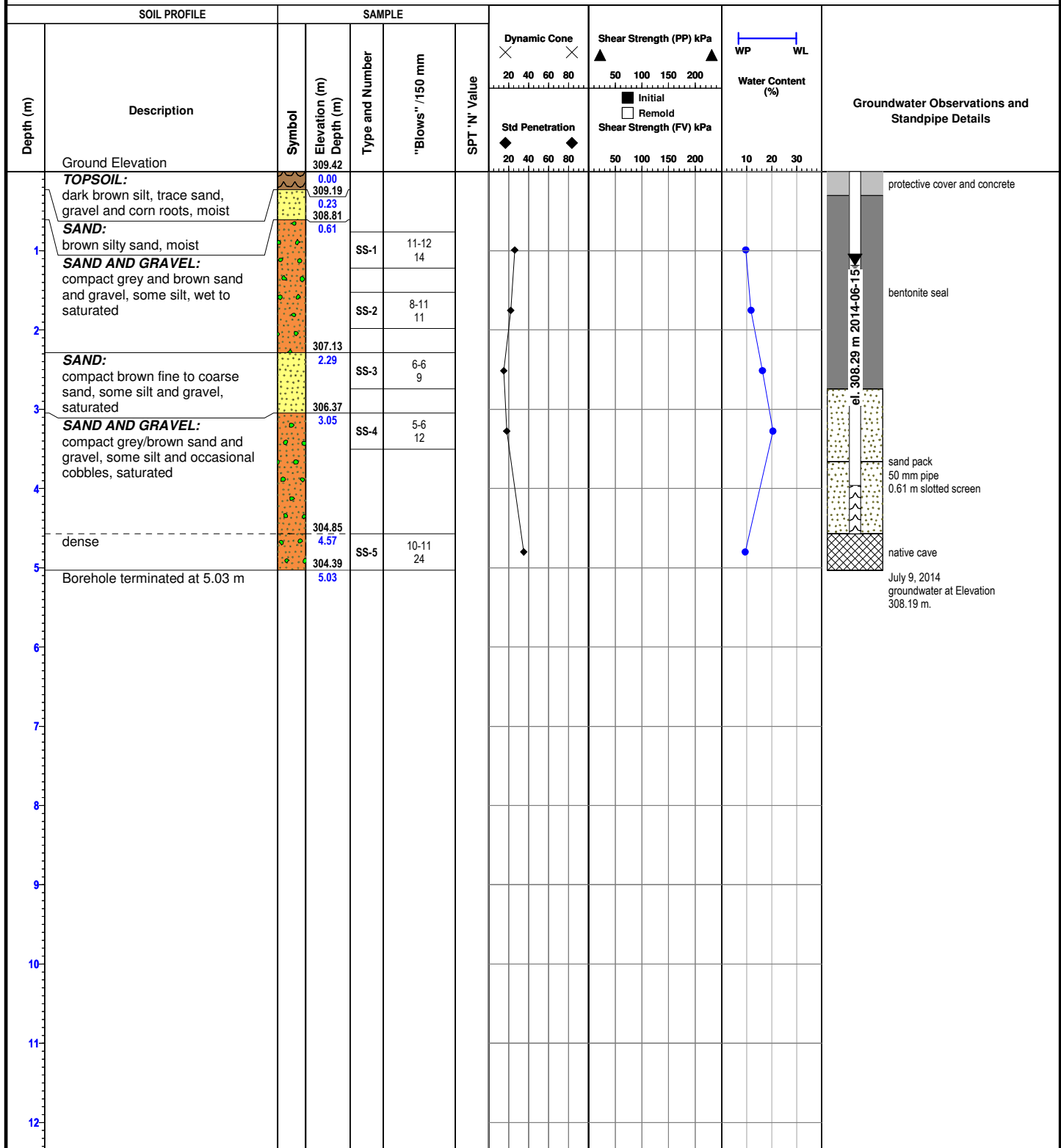
Drill Date: 2014-05-27

Project: Cambridge West Development

Field Tech: D.Souter

Location: Blenheim Road, Cambridge, Ontario

Drill Method: Hollow Stem Auger



Reviewed by: D.Gonser

Drafted by: E.Ciochon

Sheet: 1 of 1

Notes:



Ground Elevation: 308.99 m

Borehole Number: BH-27-14

Job N°: P-0003455-0-09-100

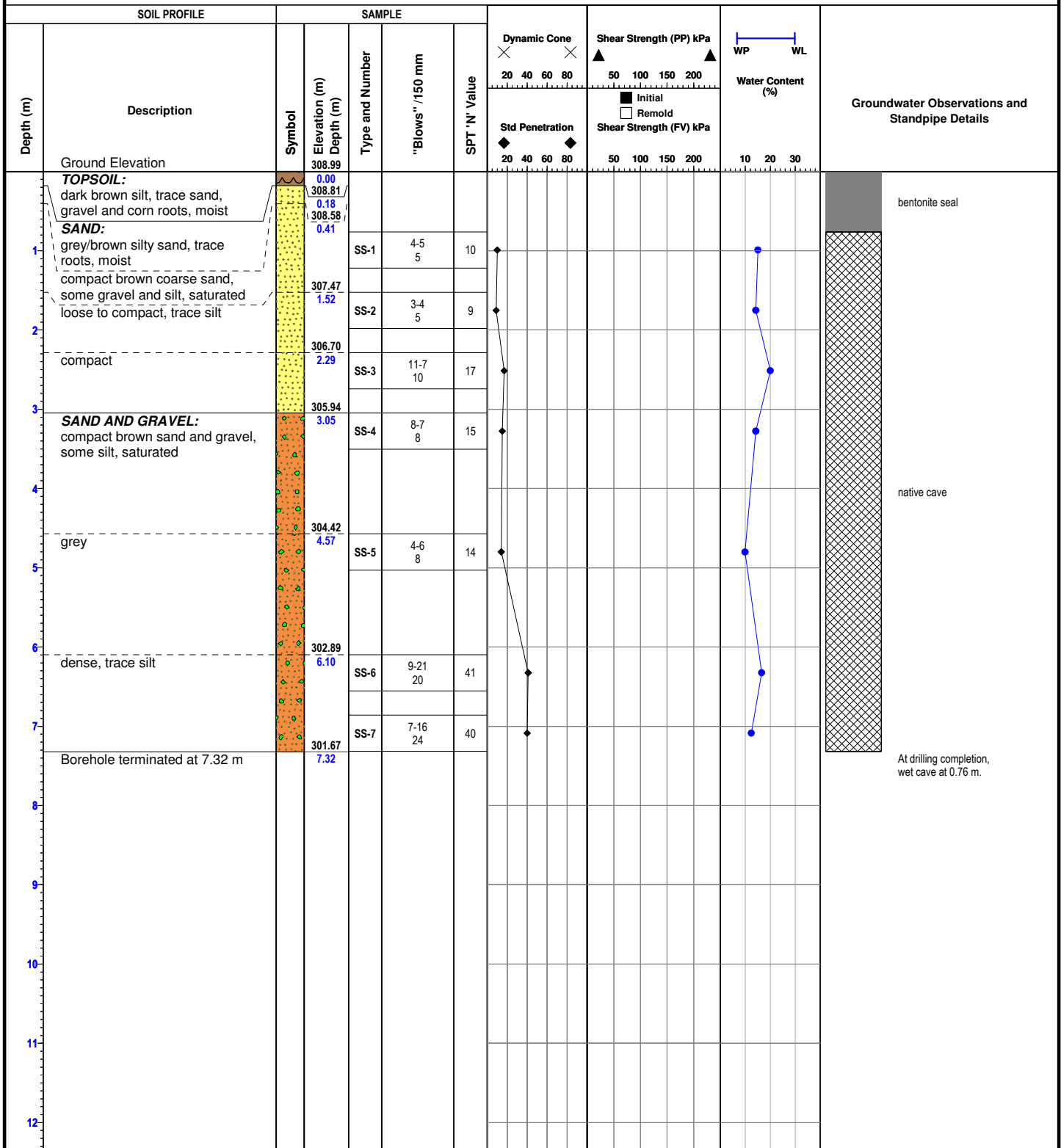
Drill Date: 2014-05-27

Project: Cambridge West Development

Field Tech: D.Souter

Location: Blenheim Road, Cambridge, Ontario

Drill Method: Hollow Stem Auger



Reviewed by: D.Gonser

Drafted by: E.Ciochon

Sheet: 1 of 1

Notes:



Ground Elevation: 318.95 m

Borehole Number: BH-28-14

Job N°: P-0003455-0-09-100

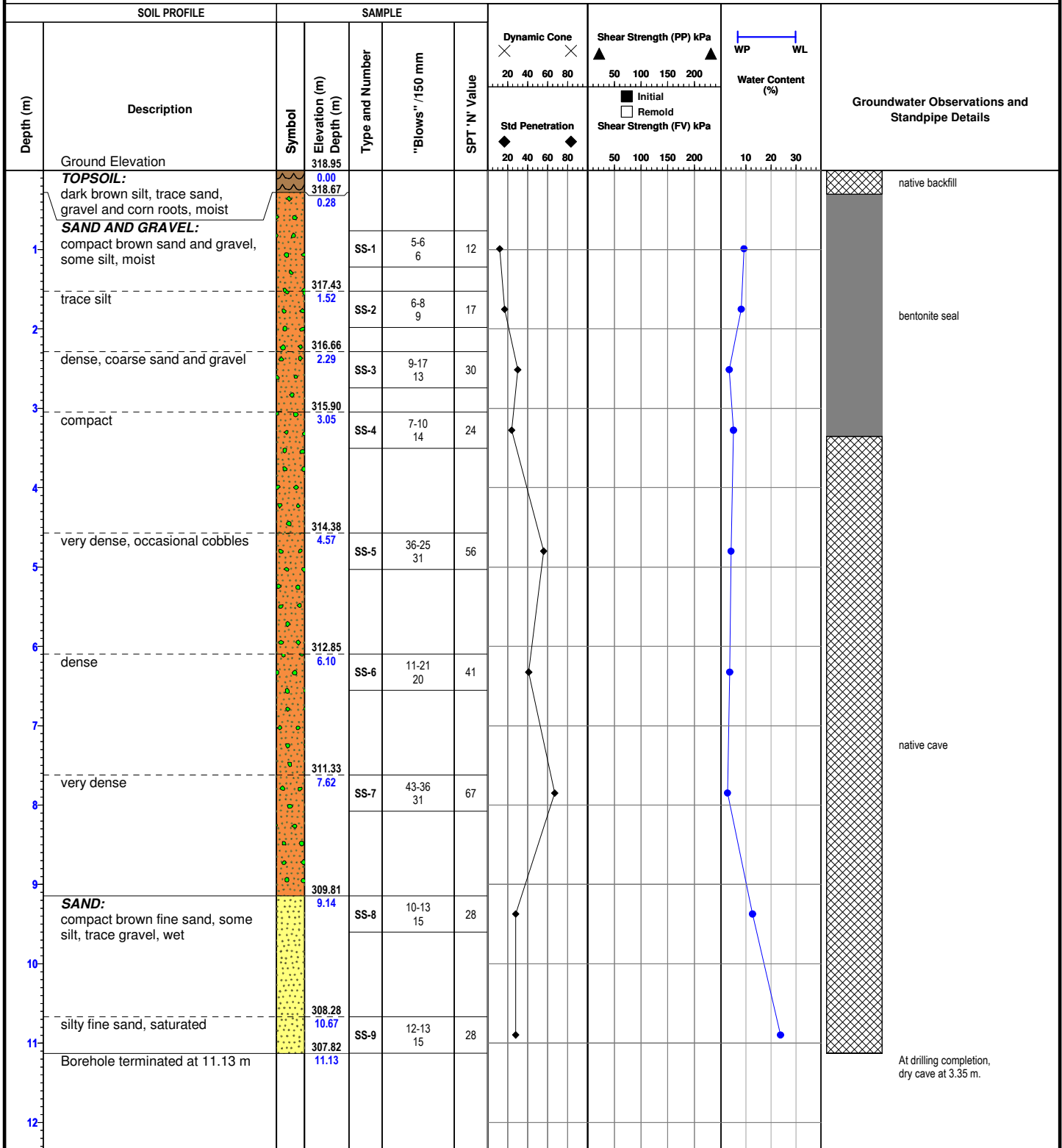
Drill Date: 2014-05-23

Field Tech: D.Souter

Drill Method: Hollow Stem Auger

Project: Cambridge West Development

Location: Blenheim Road, Cambridge, Ontario



Reviewed by: D.Gonser

Drafted by: E.Ciochon

Sheet: 1 of 1

Notes: Bulk sample AS-4A taken from 3.05 to 4.57 m.



Ground Elevation: 314.06 m

Borehole Number: BH-29-14

Job N°: P-0003455-0-09-100

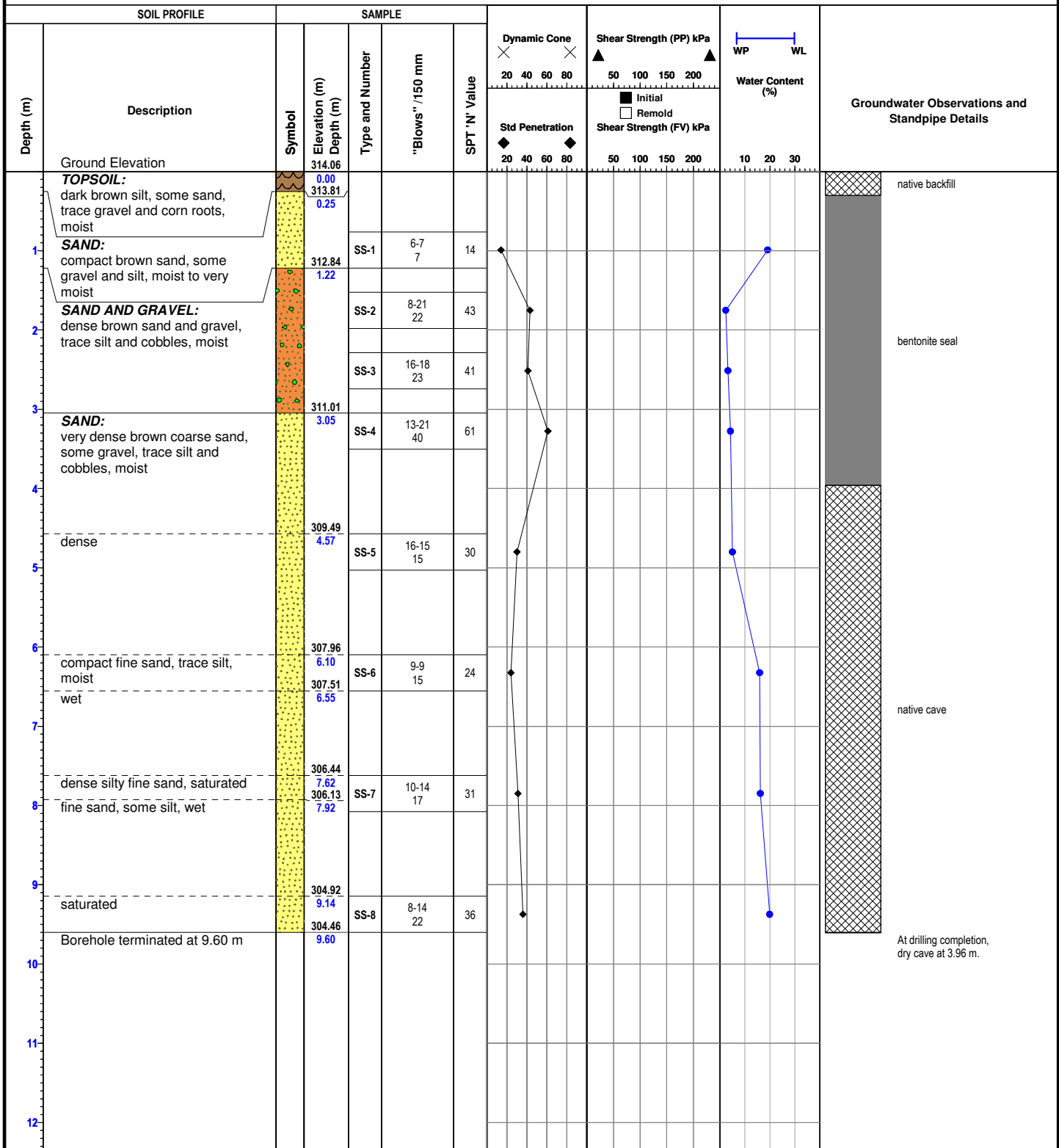
Drill Date: 2014-05-26

Project: Cambridge West Development

Field Tech: D.Souter

Location: Blenheim Road, Cambridge, Ontario

Drill Method: Hollow Stem Auger



Reviewed by: D.Gonser

Drafted by: E.Ciochon

Sheet: 1 of 1

Notes:



Ground Elevation: 313.73 m

Borehole Number: BH-30-14

Job N°: P-0003455-0-09-100

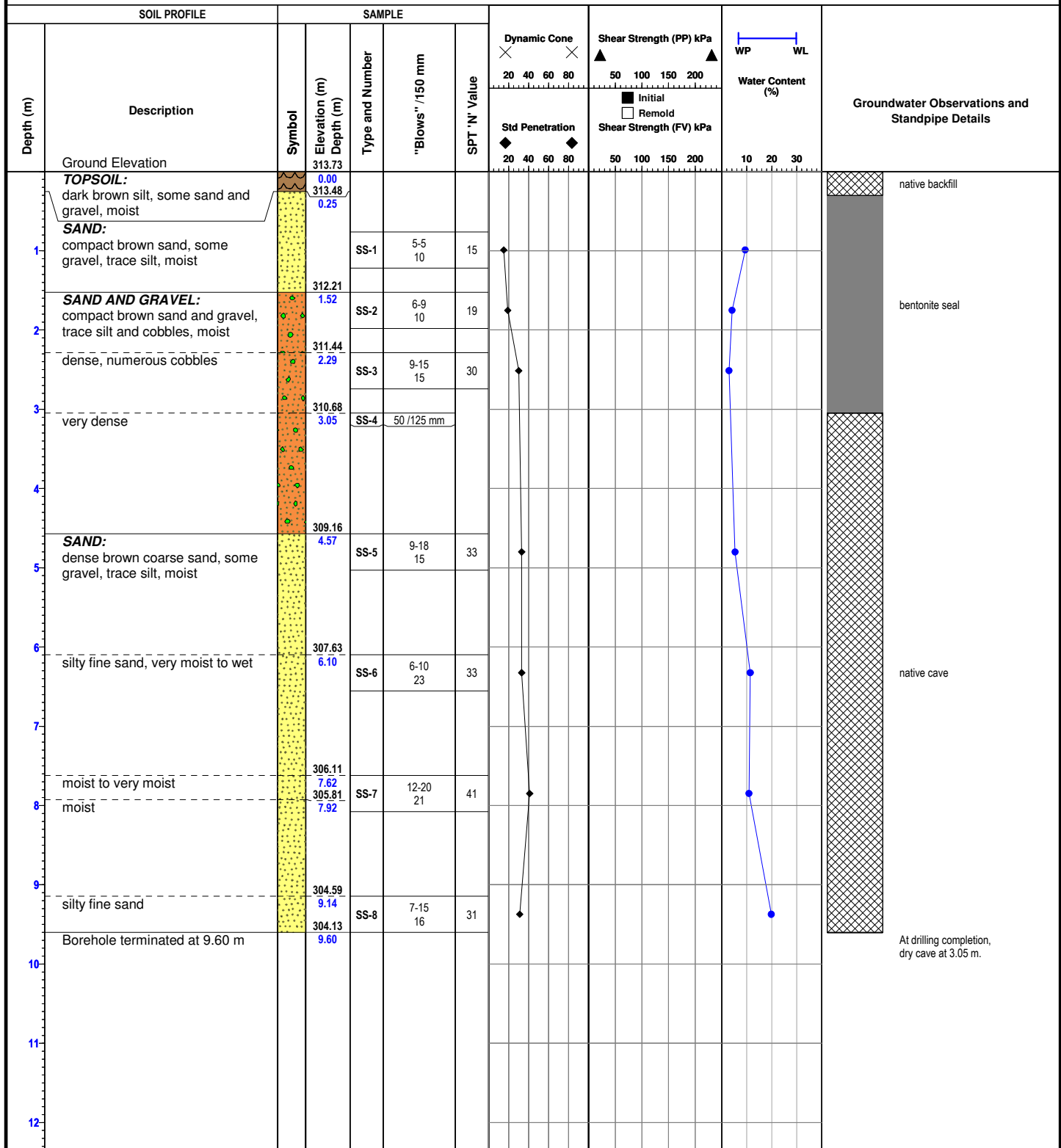
Drill Date: 2014-05-26

Project: Cambridge West Development

Field Tech: D.Souter

Location: Blenheim Road, Cambridge, Ontario

Drill Method: Hollow Stem Auger



Reviewed by: D.Gonser

Drafted by: E.Ciochon

Sheet: 1 of 1

Notes: Bulk sample AS-4A taken from 3.05 to 4.57 m, moisture content = 6.4%.



Ground Elevation: 311.80 m

Borehole Number: BH-31-14

Job N°: P-0003455-0-09-100

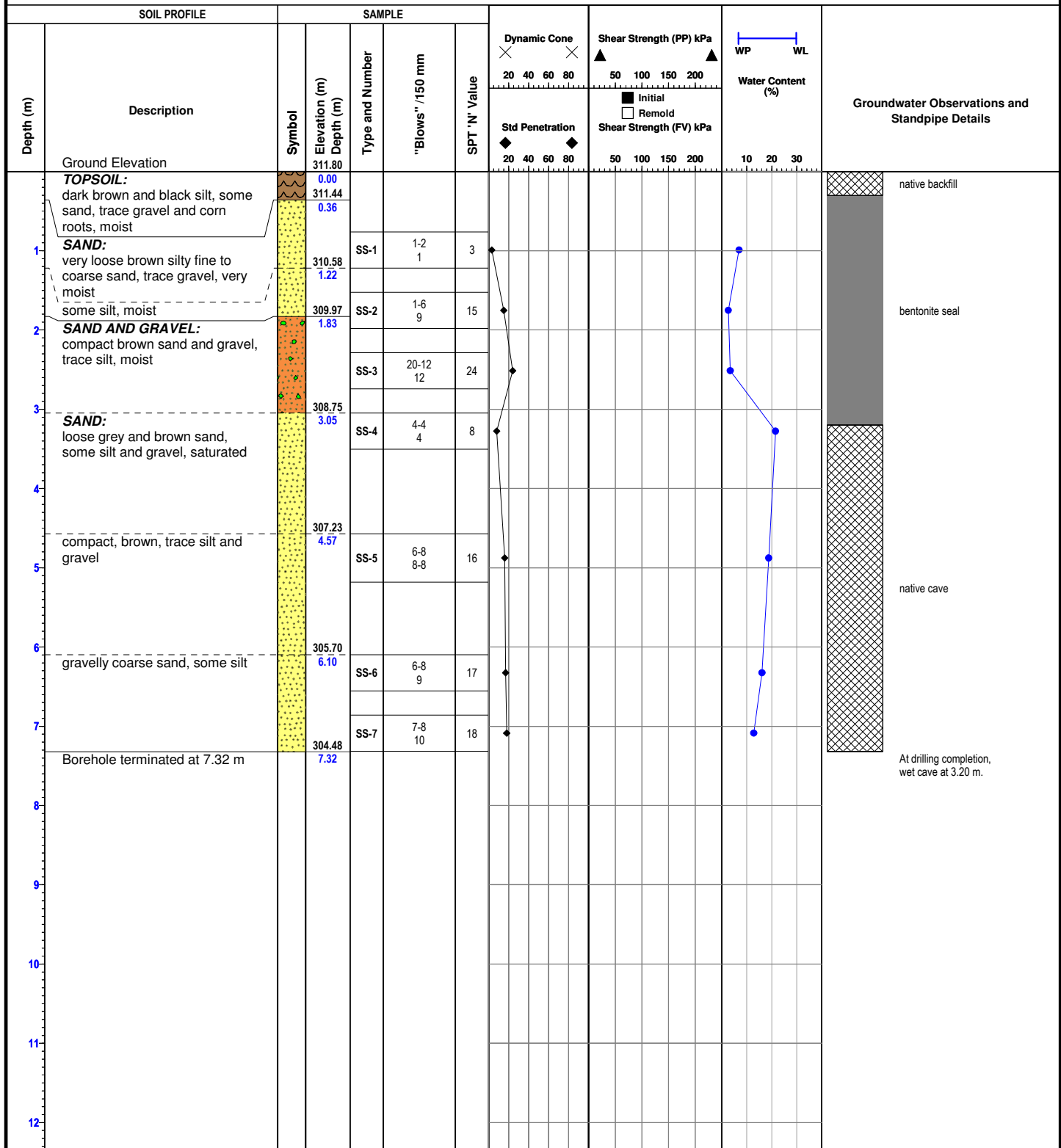
Drill Date: 2014-05-20

Project: Cambridge West Development

Field Tech: D.Souter

Location: Blenheim Road, Cambridge, Ontario

Drill Method: Hollow Stem Auger



Reviewed by: D.Gonser

Drafted by: E.Ciochon

Sheet: 1 of 1

Notes:



Borehole Number: 110-10

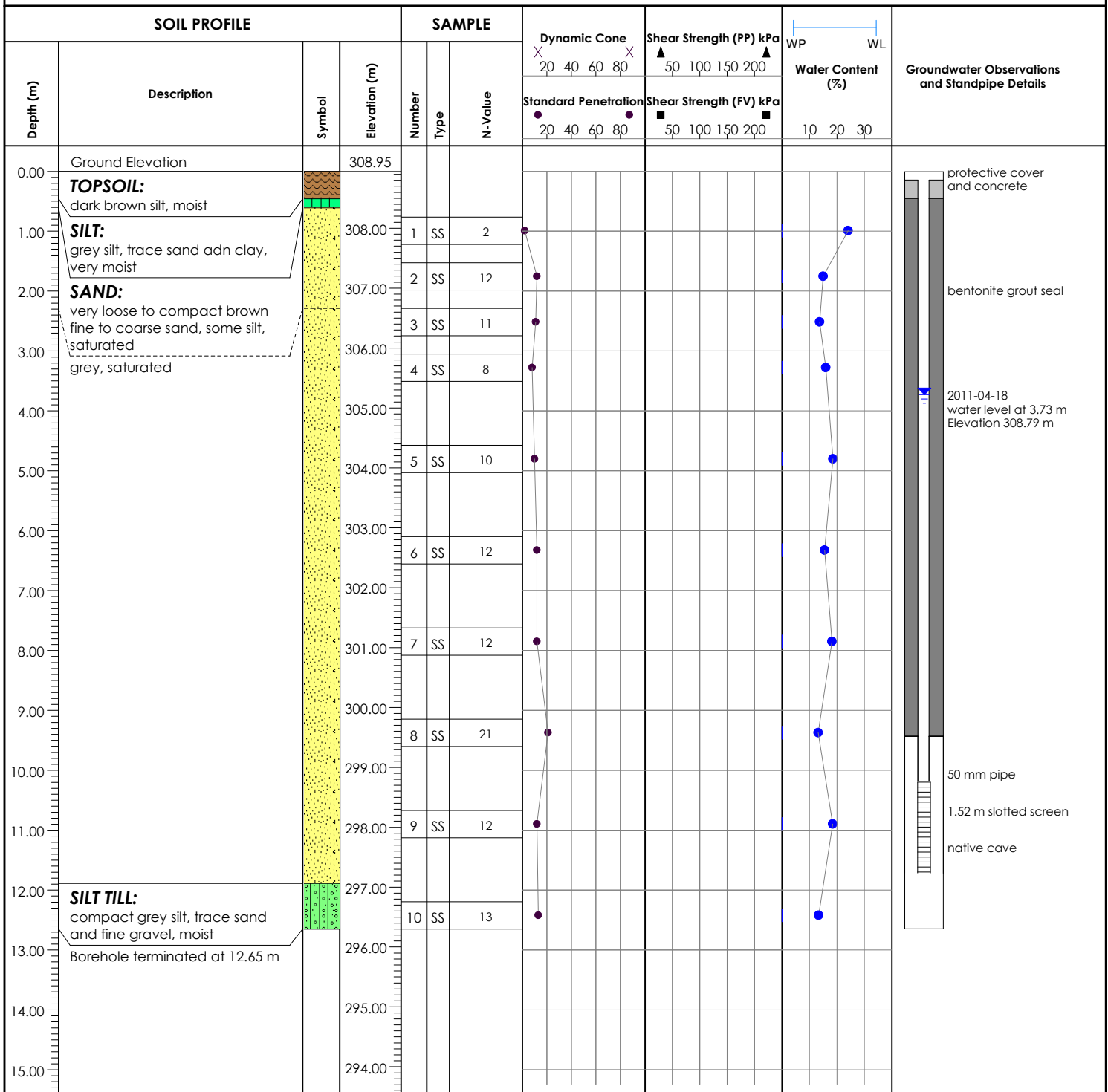
Ground Elevation: 308.95 m

Project: Supplementary Borehole Drilling - Cambridge West

Job No.: P036589-300

Location: Roseville Road / Blenheim Road, Cambridge, Ontario

Drill Date: 2010-10-18



Reviewed by: CHelmer
Drill Method: Hollow Stem Auger
Notes:

Field Tech.: RMcMillan
Sheet: 1 of 1
Drafted by: SMeteer



Borehole Number: 01-10

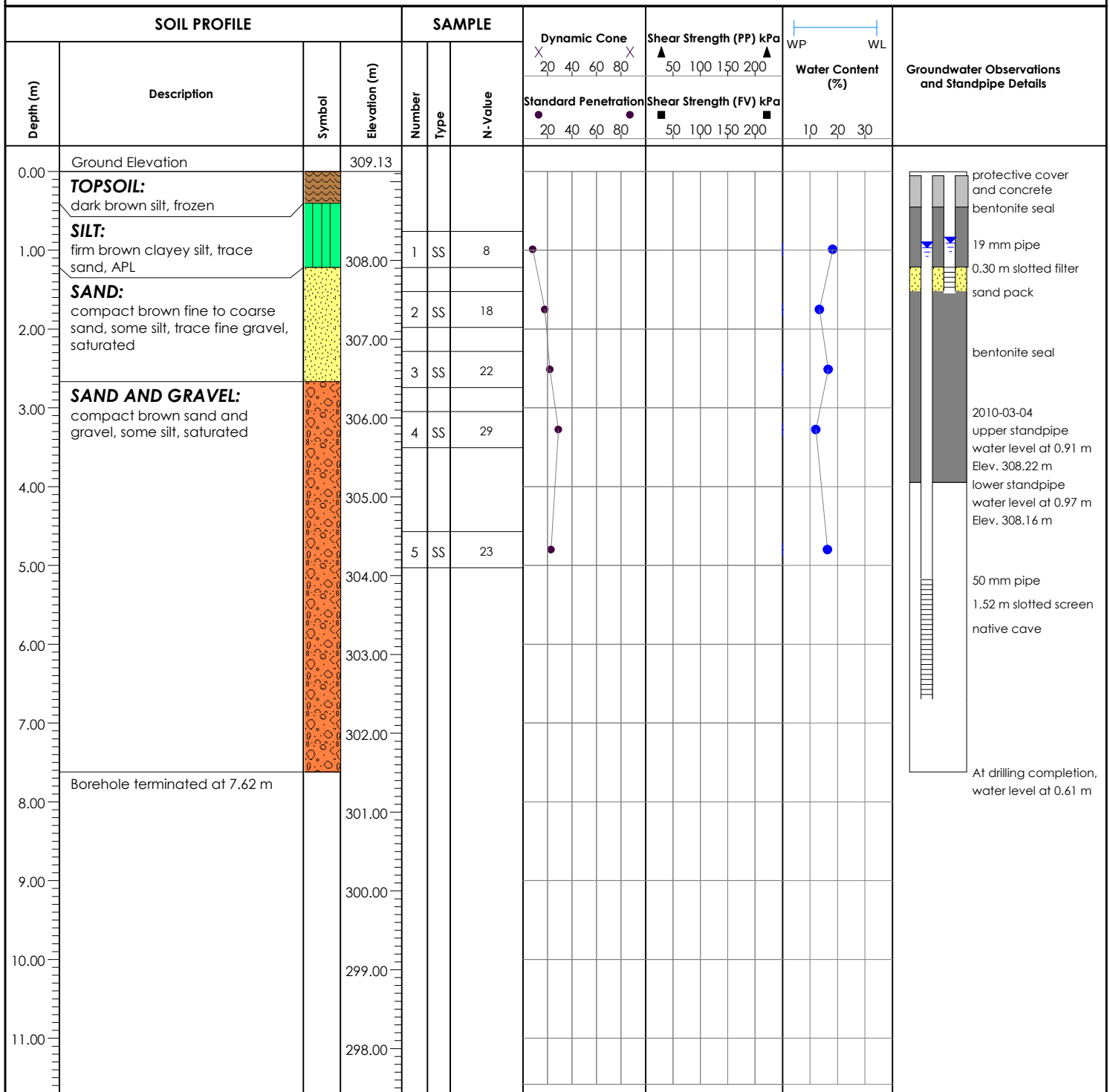
Ground Elevation: 309.13 mASL

Project: Scoped Hydrogeology Study - Cambridge West Community

Job No.: P031655-300

Location: Blenheim Road, Cambridge, Ontario

Drill Date: February 11, 2010



Reviewed by: CH
Drill Method: Hollow Stem Auger
Notes:

Field Tech.: RM
Sheet: 1 of 1
Drafted by: SM



Borehole Number: 02-10

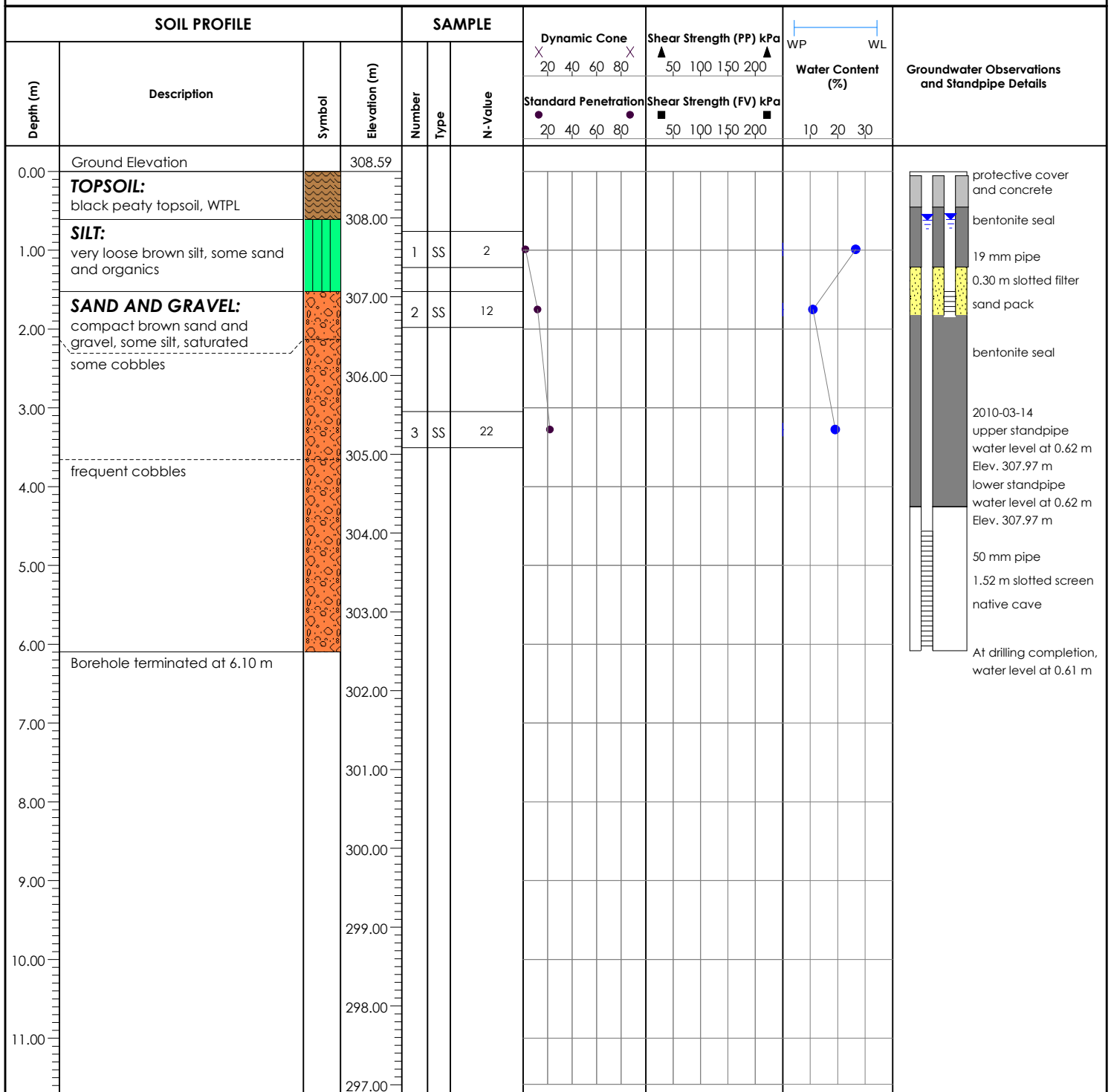
Ground Elevation: 308.59 mASL

Project: Scoped Hydrogeology Study - Cambridge West Community

Job No.: P031655-300

Location: Blenheim Road, Cambridge, Ontario

Drill Date: February 11, 2010



Reviewed by: CH
Drill Method: Hollow Stem Auger
Notes:

Field Tech.: RM
Sheet: 1 of 1
Drafted by: SM



Borehole Number: 03-10

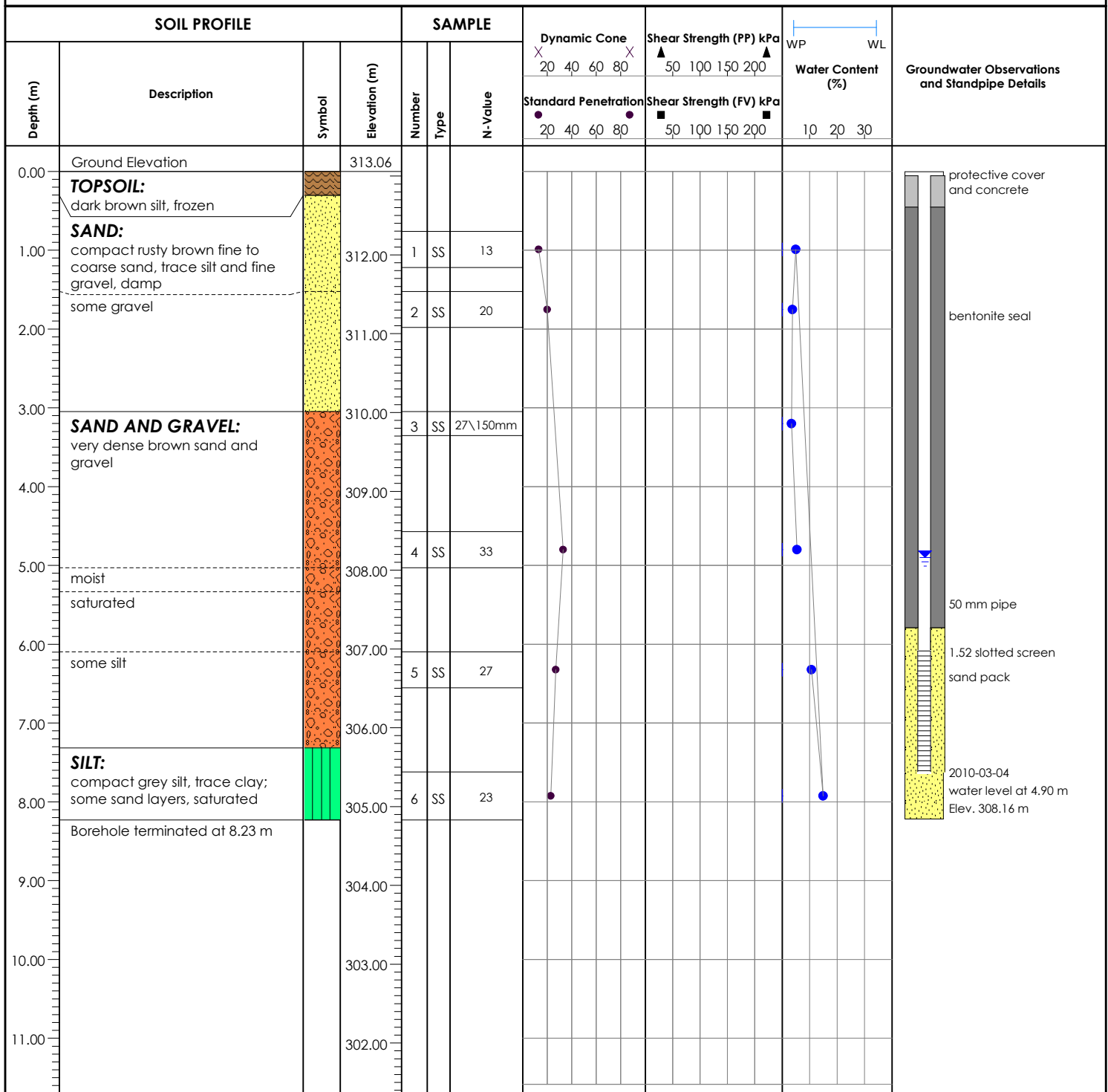
Ground Elevation: 313.06 mASL

Project: Scoped Hydrogeology Study - Cambridge West Community

Job No.: P031655-300

Location: Blenheim Road, Cambridge, Ontario

Drill Date: February 11-12, 2010



Reviewed by: CH
Drill Method: Hollow Stem Auger
Notes:

Field Tech.: RM
Sheet: 1 of 1
Drafted by: SM



Borehole Number: 04-10

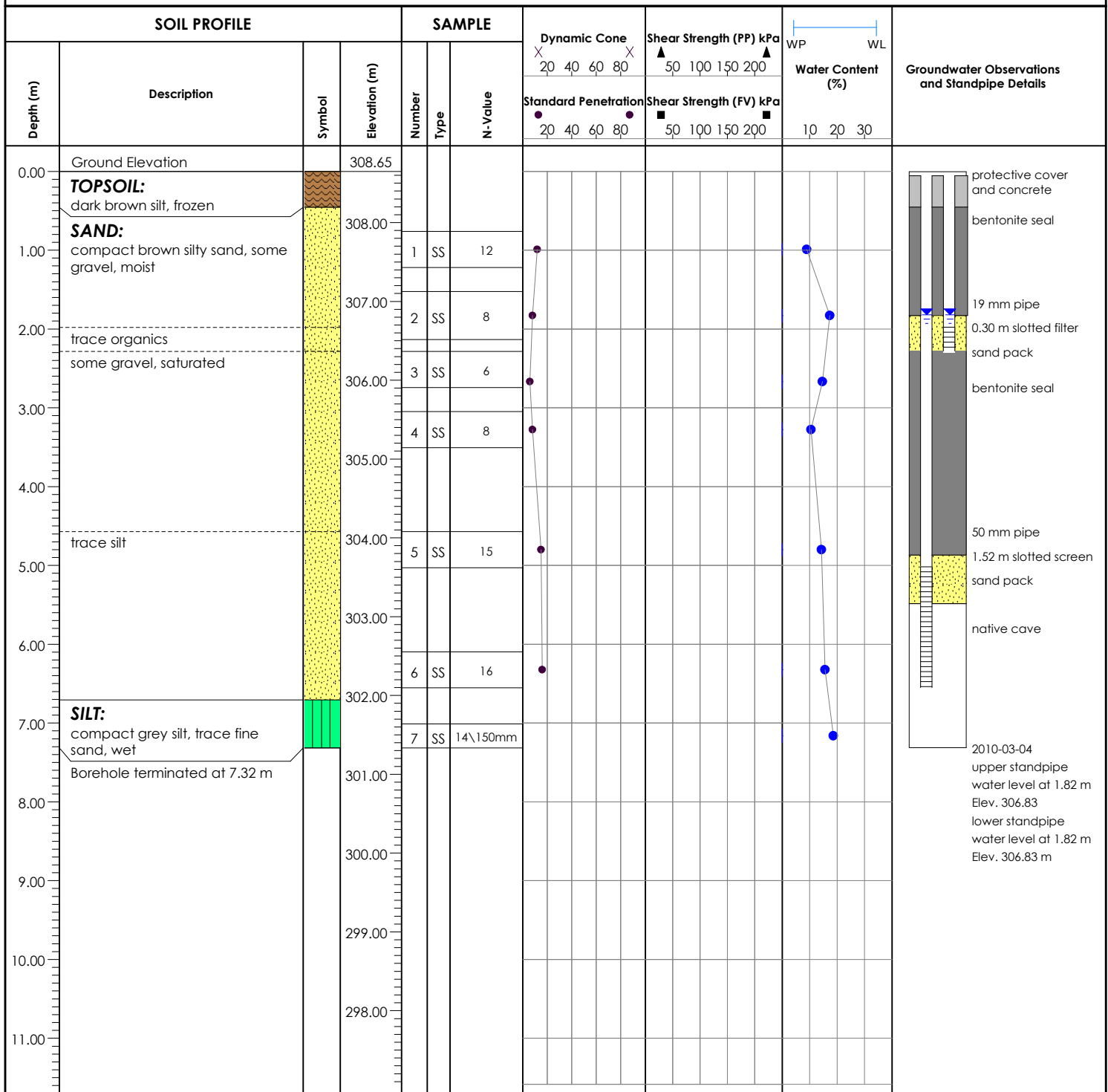
Ground Elevation: 308.65 mASL

Project: Scoped Hydrogeology Study - Cambridge West Community

Job No.: P031655-300

Location: Blenheim Road, Cambridge, Ontario

Drill Date: February 12, 2010



Reviewed by: CH
Drill Method: Hollow Stem Auger
Notes:

Field Tech.: RM
Sheet: 1 of 1
Drafted by: SM



Borehole Number: 05-10

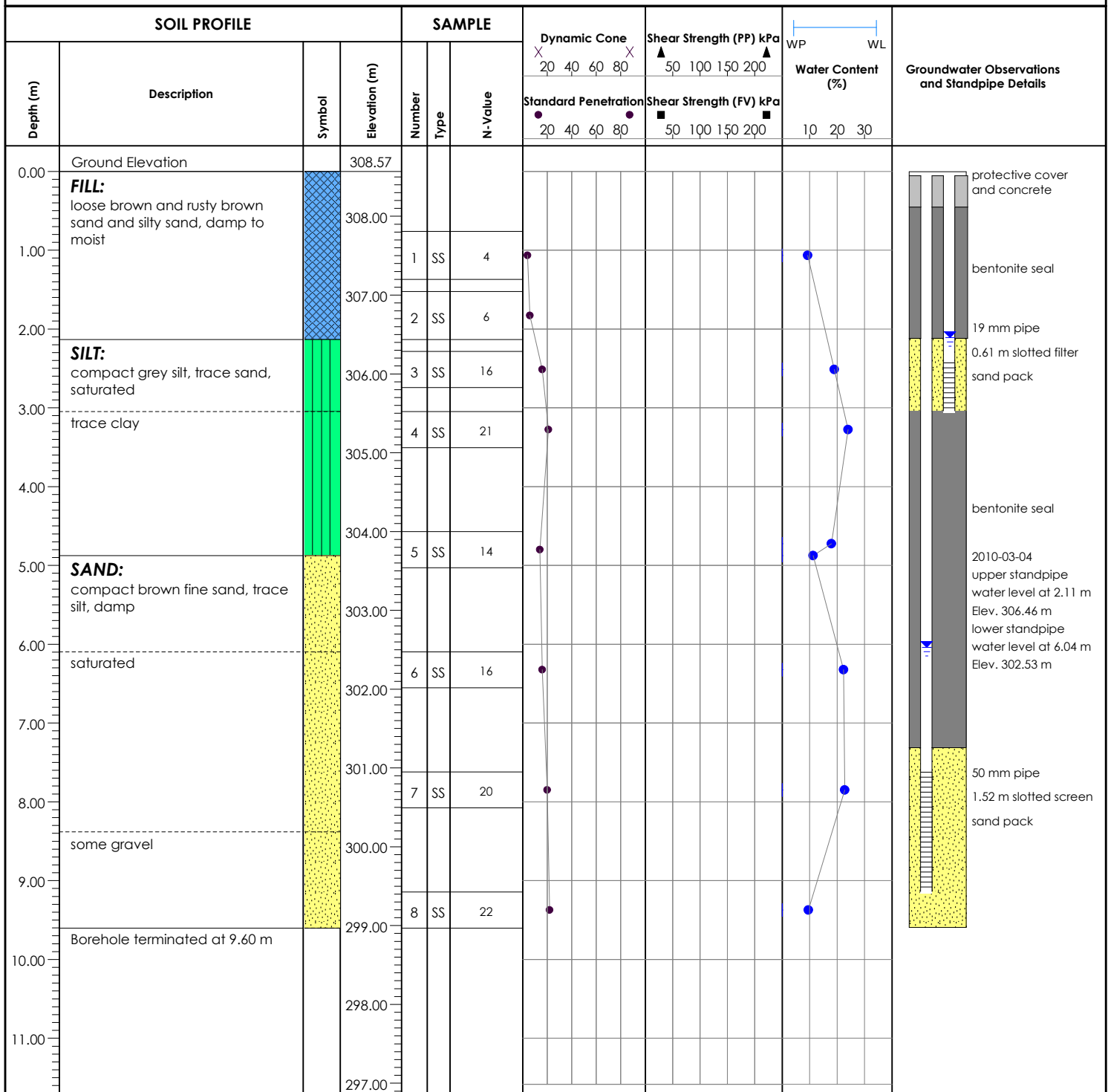
Ground Elevation: 308.57 mASL

Project: Scoped Hydrogeology Study - Cambridge West Community

Job No.: P031655-300

Location: Blenheim Road, Cambridge, Ontario

Drill Date: February 12, 2010



Reviewed by: CH
Drill Method: Hollow Stem Auger
Notes:

Field Tech.: RM
Sheet: 1 of 1
Drafted by: SM



Borehole Number: 06-10

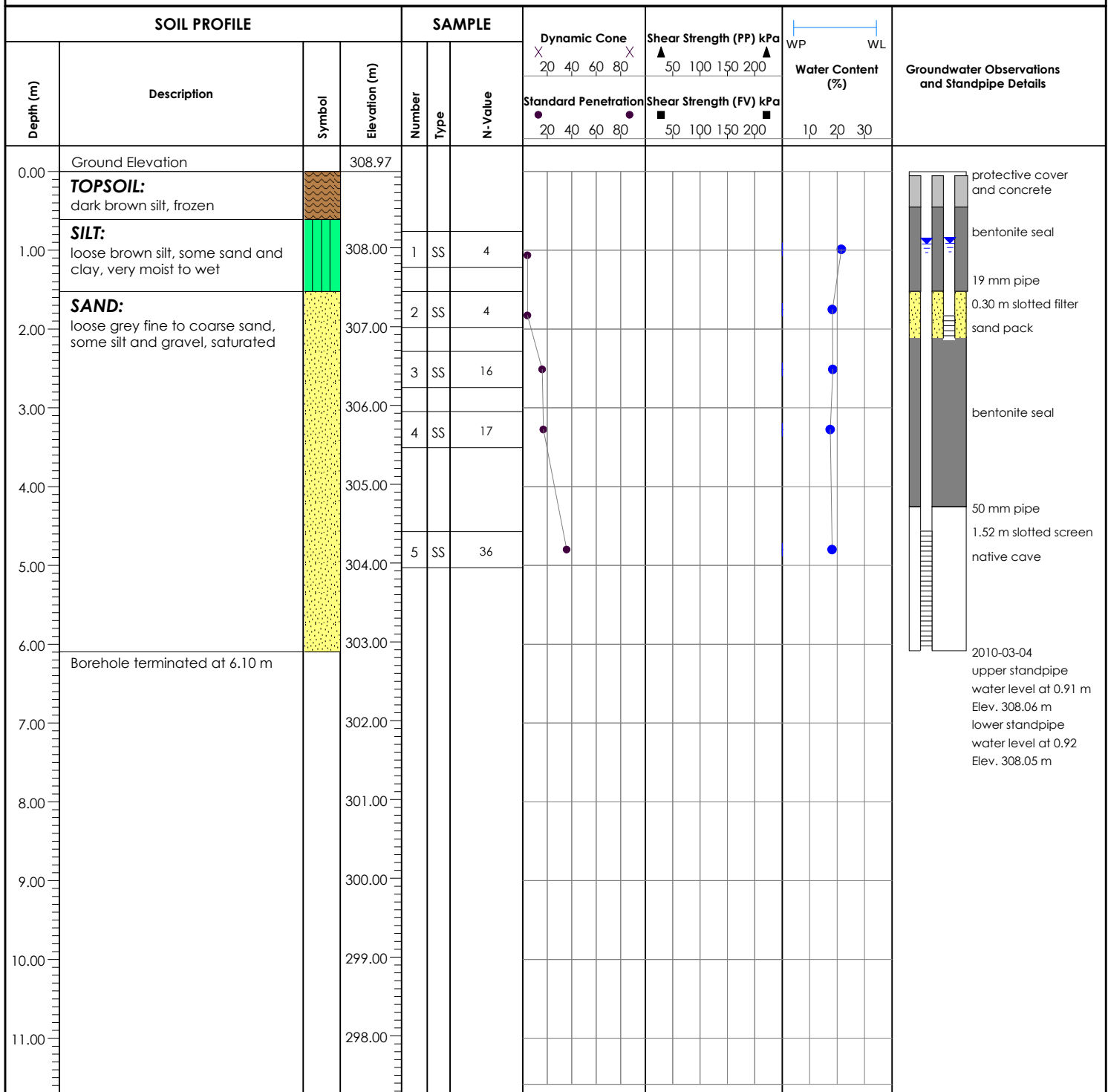
Ground Elevation: 308.97 mASL

Project: Scoped Hydrogeology Study - Cambridge West Community

Job No.: P031655-300

Location: Blenheim Road, Cambridge, Ontario

Drill Date: February 12, 2010



Reviewed by: CH
Drill Method: Hollow Stem Auger
Notes:

Field Tech.: RM
Sheet: 1 of 1
Drafted by: SM



Borehole Number: 08-10

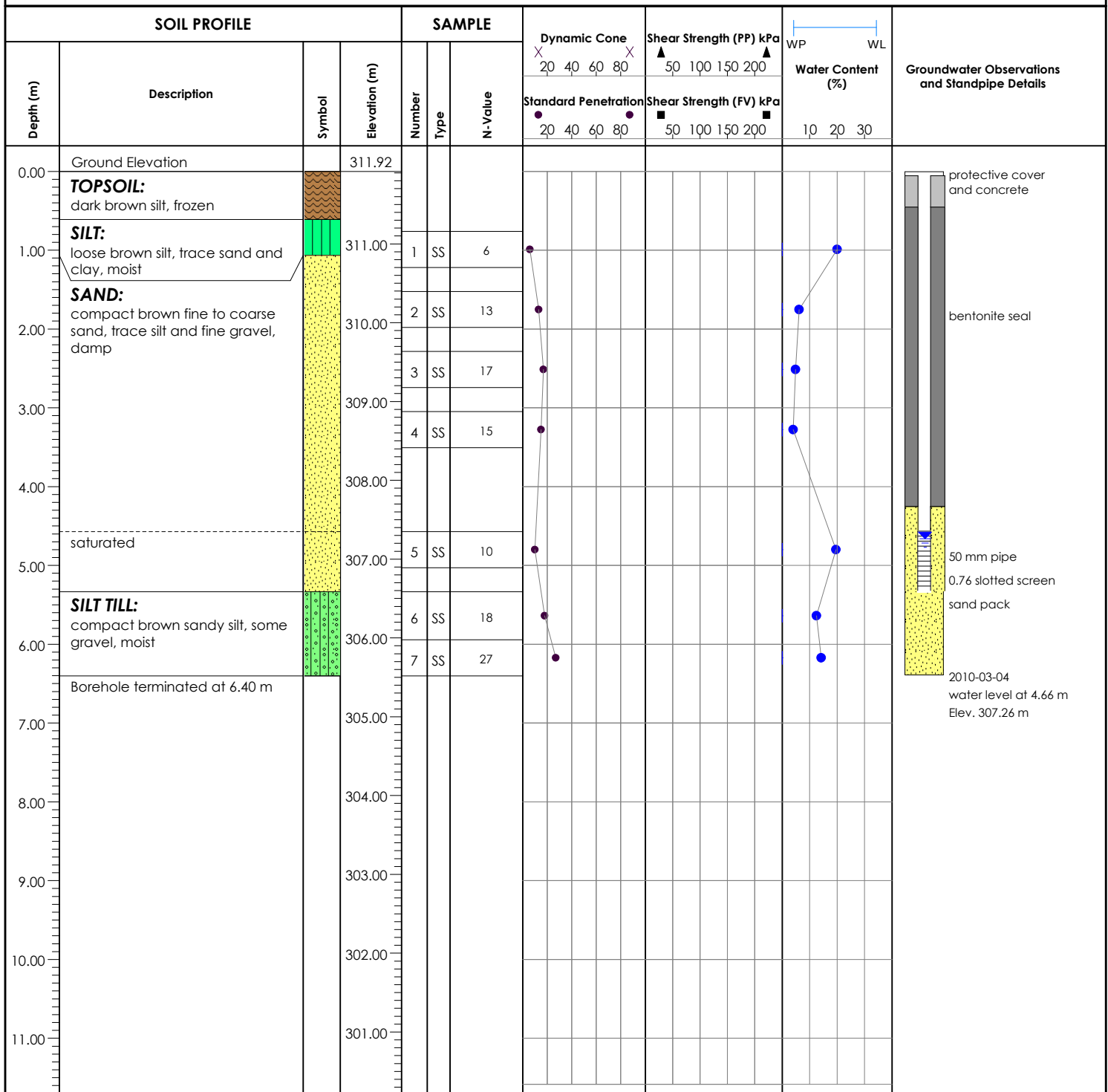
Ground Elevation: 311.92 mASL

Project: Scoped Hydrogeology Study - Cambridge West Community

Job No.: P031655-300

Location: Blenheim Road, Cambridge, Ontario

Drill Date: February 16, 2010



Reviewed by: CH
Drill Method: Hollow Stem Auger
Notes:

Field Tech.: RM
Sheet: 1 of 1
Drafted by: SM



Borehole Number: 15-10

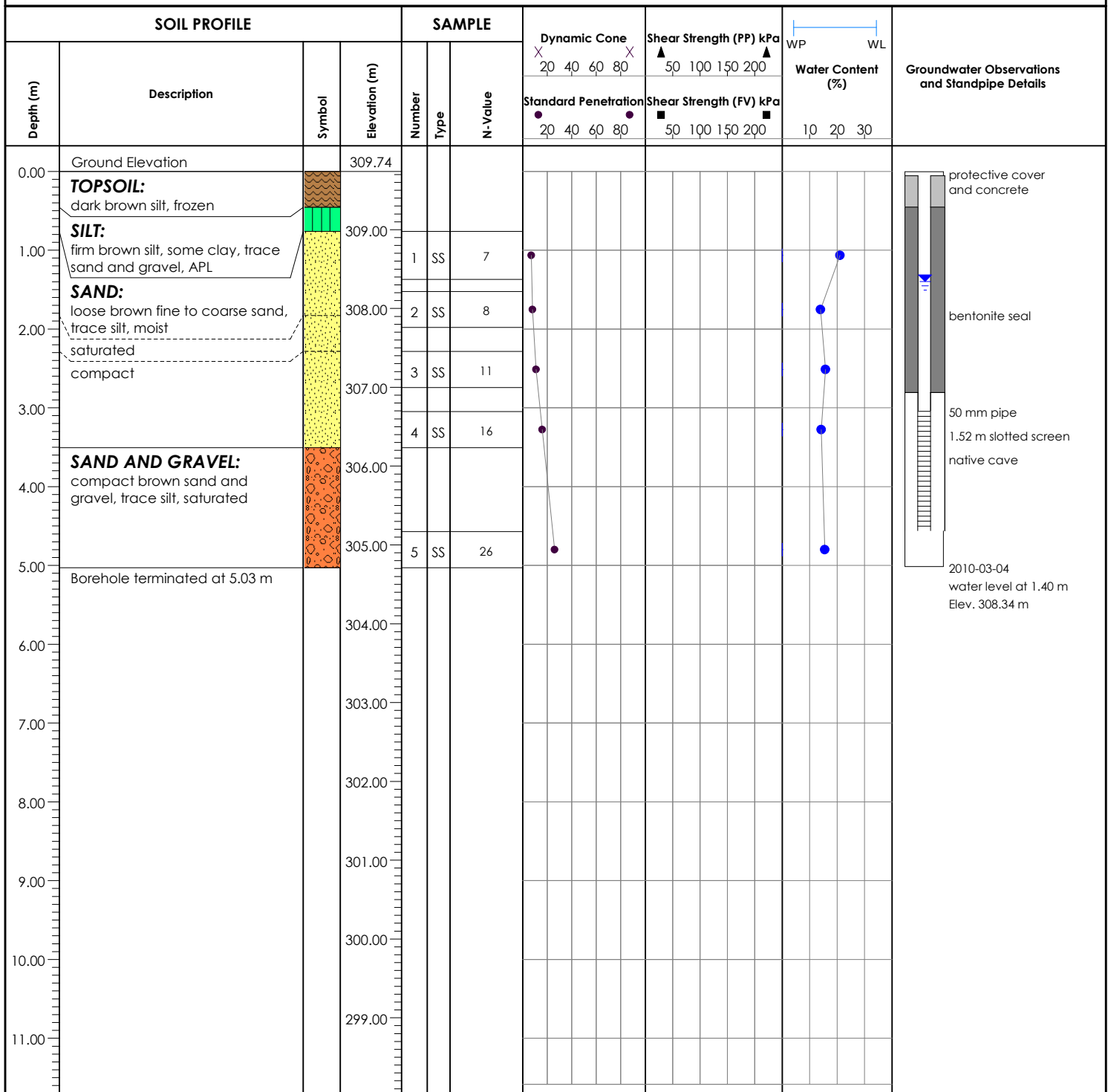
Ground Elevation: 309.74 mASL

Project: Scoped Hydrogeology Study - Cambridge West Community

Job No.: P031655-300

Location: Blenheim Road, Cambridge, Ontario

Drill Date: February 18, 2010



Reviewed by: CH
Drill Method: Hollow Stem Auger
Notes:

Field Tech.: RM
Sheet: 1 of 1
Drafted by: SM



Borehole Number: 16-10

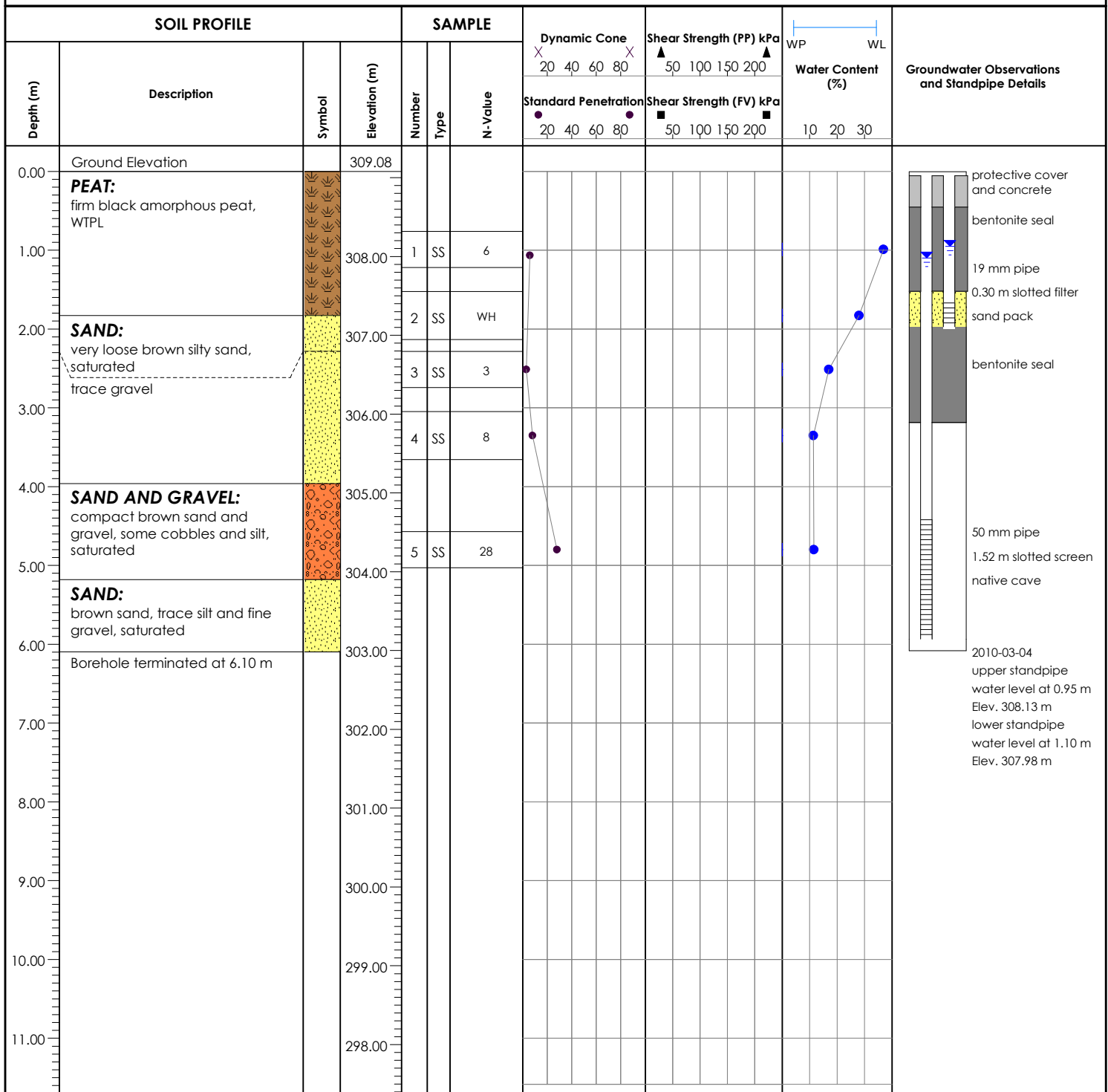
Ground Elevation: 309.08 mASL

Project: Scoped Hydrogeology Study - Cambridge West Community

Job No.: P031655-300

Location: Blenheim Road, Cambridge, Ontario

Drill Date: February 18, 2010



Reviewed by: CH
Drill Method: Hollow Stem Auger
Notes:

Field Tech.: RM
Sheet: 1 of 1
Drafted by: SM



Borehole Number: 18-10

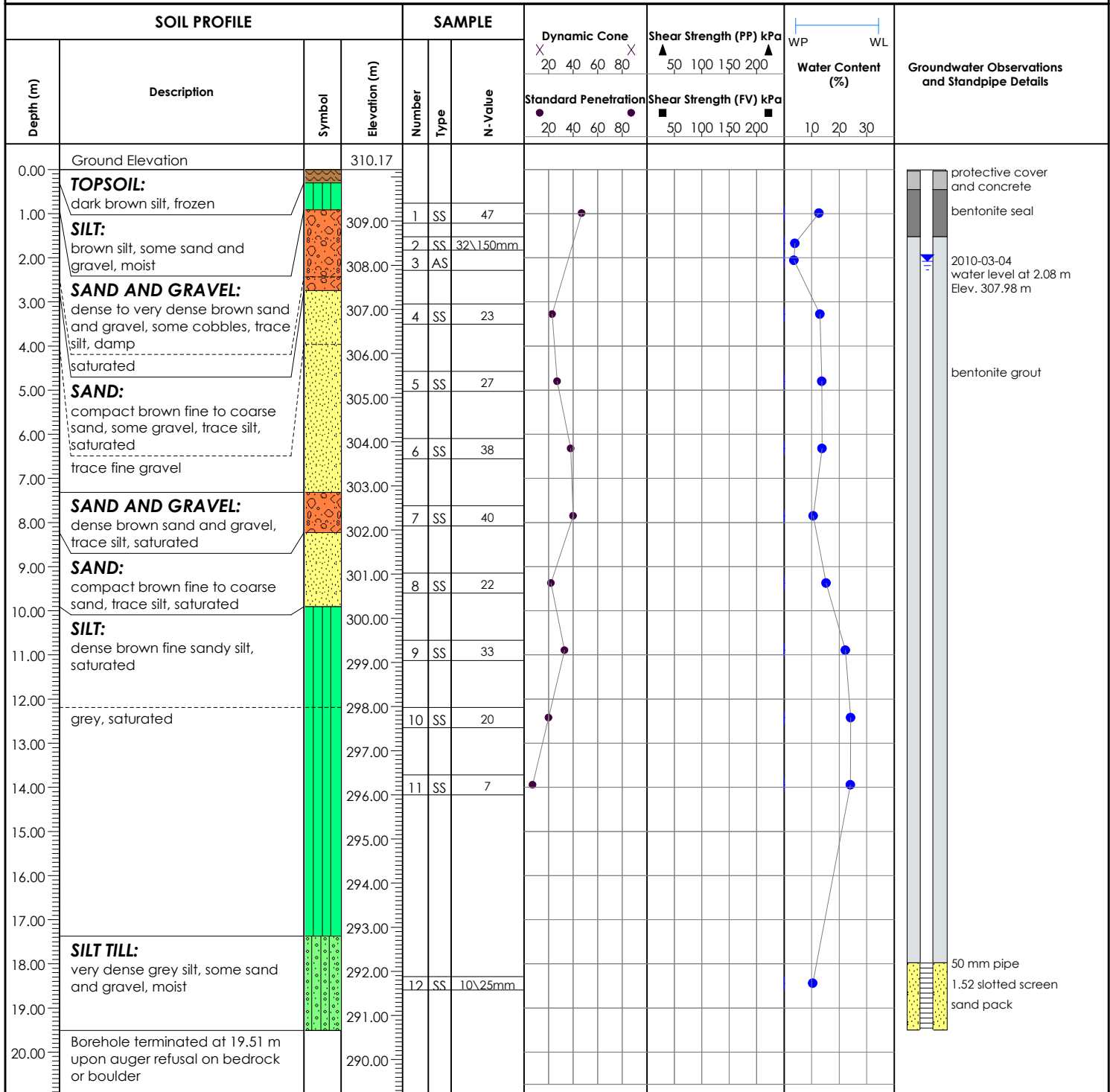
Ground Elevation: 310.17 mASL

Project: Scoped Hydrogeology Study - Cambridge West Community

Job No.: P031655-300

Location: Blenheim Road, Cambridge, Ontario

Drill Date: February 24, 2010



Reviewed by: CH

Drill Method: Hollow Stem Auger

Notes:

Field Tech.: RM

Sheet: 1 of 1

Drafted by: SM



Borehole Number: 18A-10

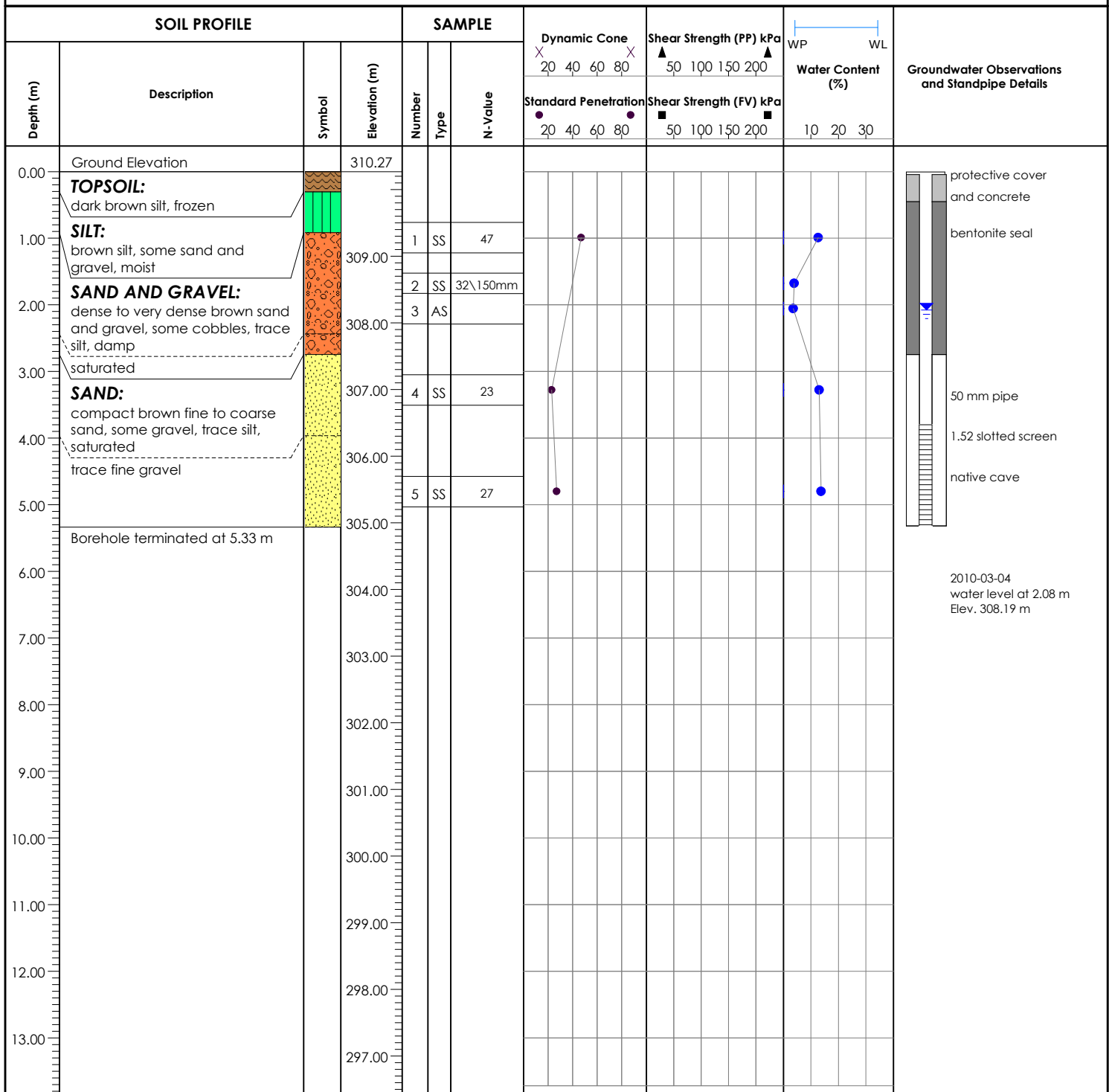
Ground Elevation: 310.27 mASL

Project: Scoped Hydrogeology Study - Cambridge West Community

Job No.: P031655-300

Location: Blenheim Road, Cambridge, Ontario

Drill Date: March 2, 2010



Reviewed by: CH

Drill Method: Hollow Stem Auger

Notes:

Field Tech.: RM/KT

Sheet: 1 of 1

Drafted by: SM



Borehole Number: 19-10

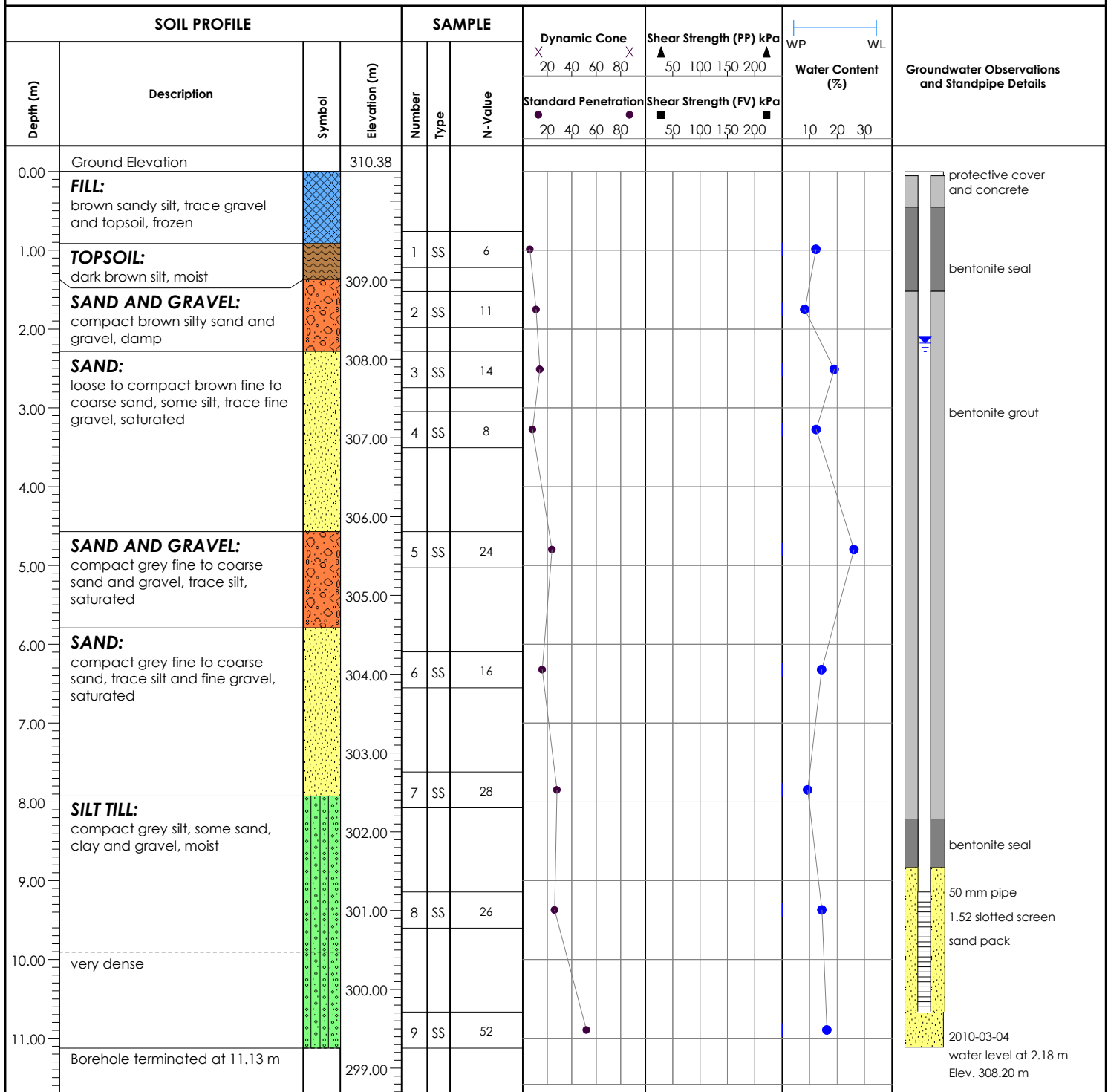
Ground Elevation: 310.38 mASL

Project: Scoped Hydrogeology Study - Cambridge West Community

Job No.: P031655-300

Location: Blenheim Road, Cambridge, Ontario

Drill Date: February 25, 2010



Reviewed by: CH
Drill Method: Hollow Stem Auger
Notes:

Field Tech.: RM
Sheet: 1 of 1
Drafted by: SM



Borehole Number: 20-10

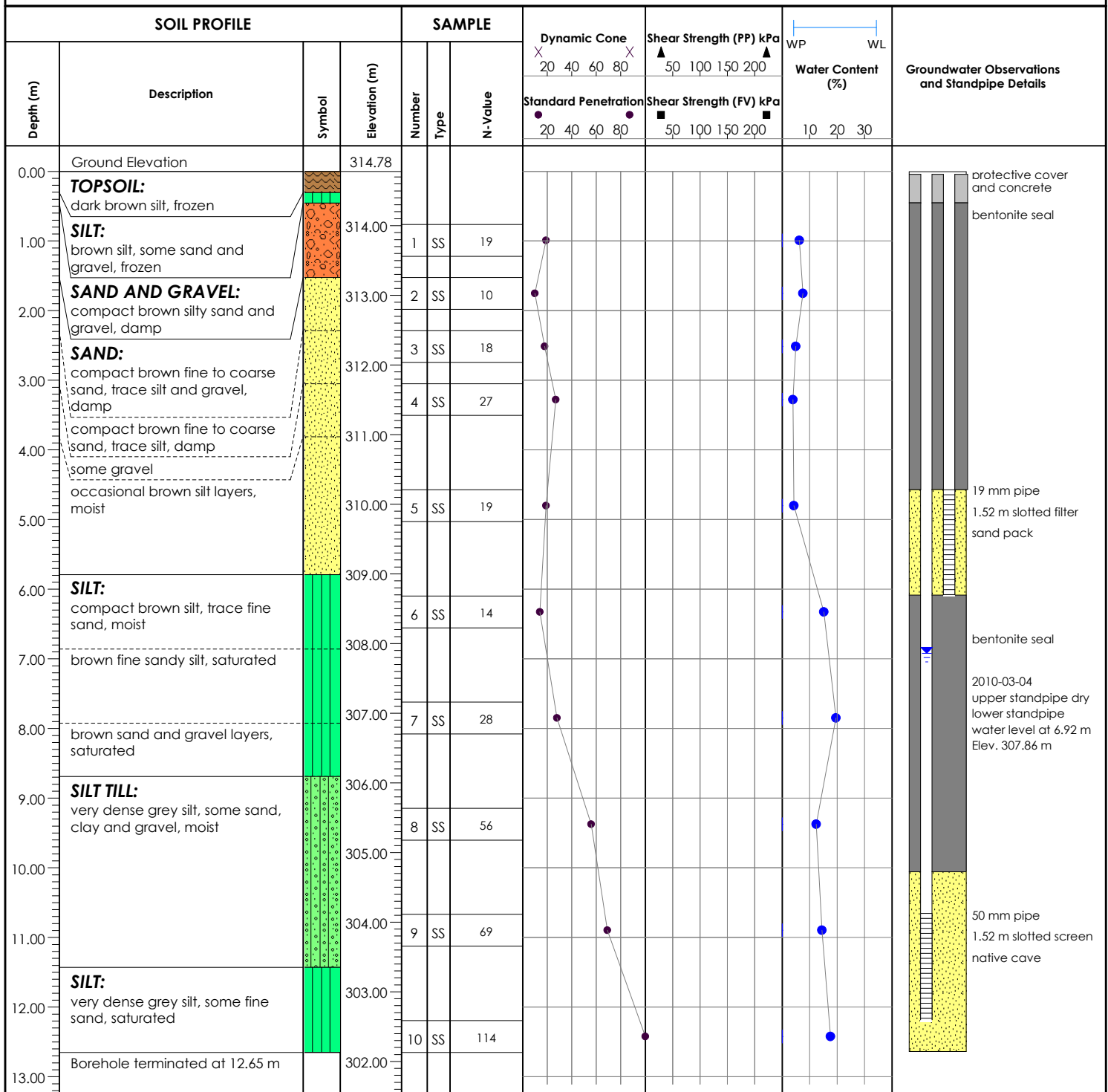
Ground Elevation: 314.78 mASL

Project: Scoped Hydrogeology Study - Cambridge West Community

Job No.: P031655-300

Location: Blenheim Road, Cambridge, Ontario

Drill Date: February 25, 2010



Reviewed by: CH

Drill Method: Hollow Stem Auger

Notes:

Field Tech.: RM

Sheet: 1 of 1

Drafted by: SM



Borehole Number: 21-10

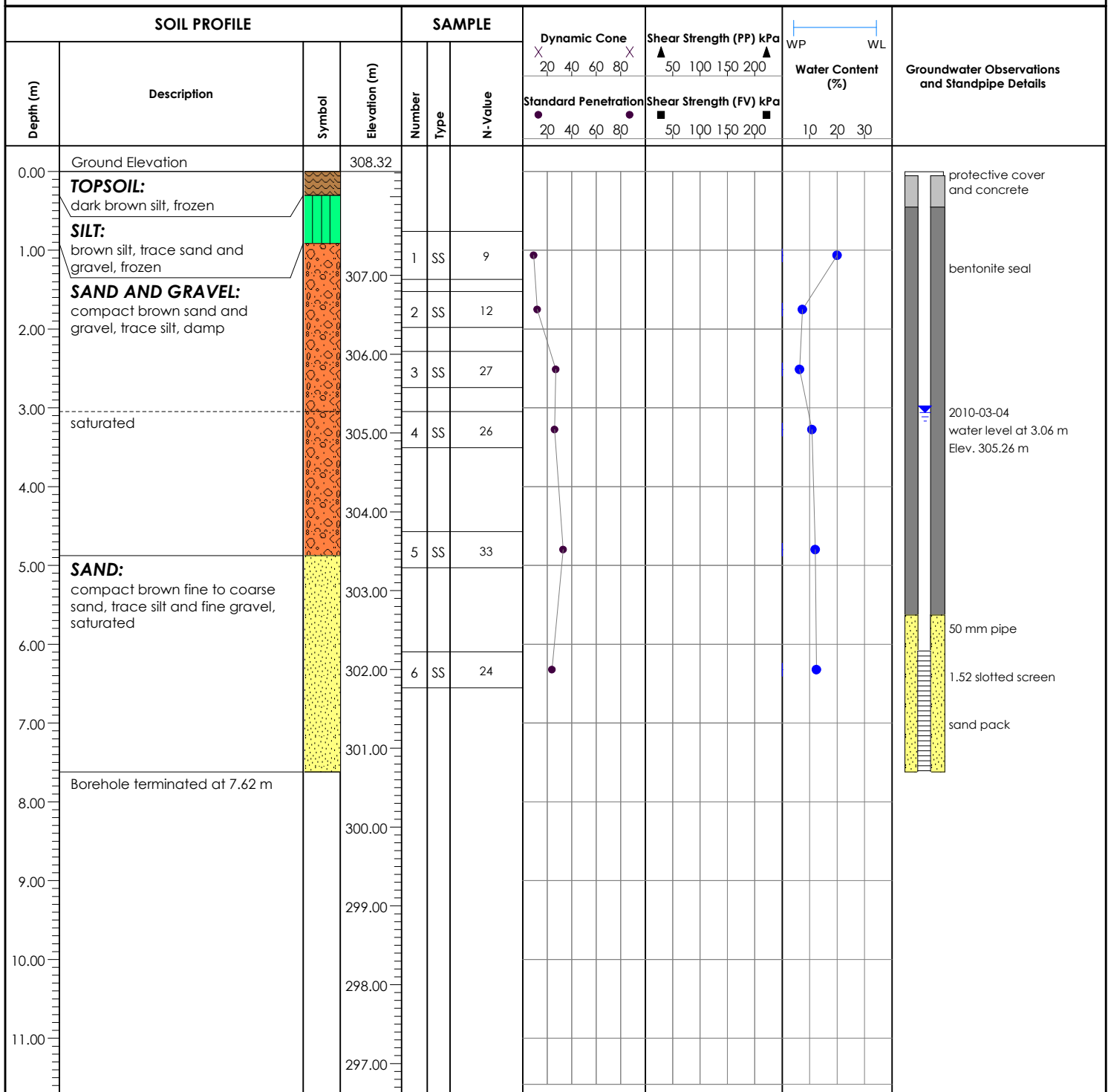
Ground Elevation: 308.32 mASL

Project: Scoped Hydrogeology Study - Cambridge West Community

Job No.: P031655-300

Location: Blenheim Road, Cambridge, Ontario

Drill Date: February 26, 2010



Reviewed by: CH
Drill Method: Hollow Stem Auger
Notes:

Field Tech.: RM
Sheet: 1 of 1
Drafted by: SM



Borehole Number: 22-10

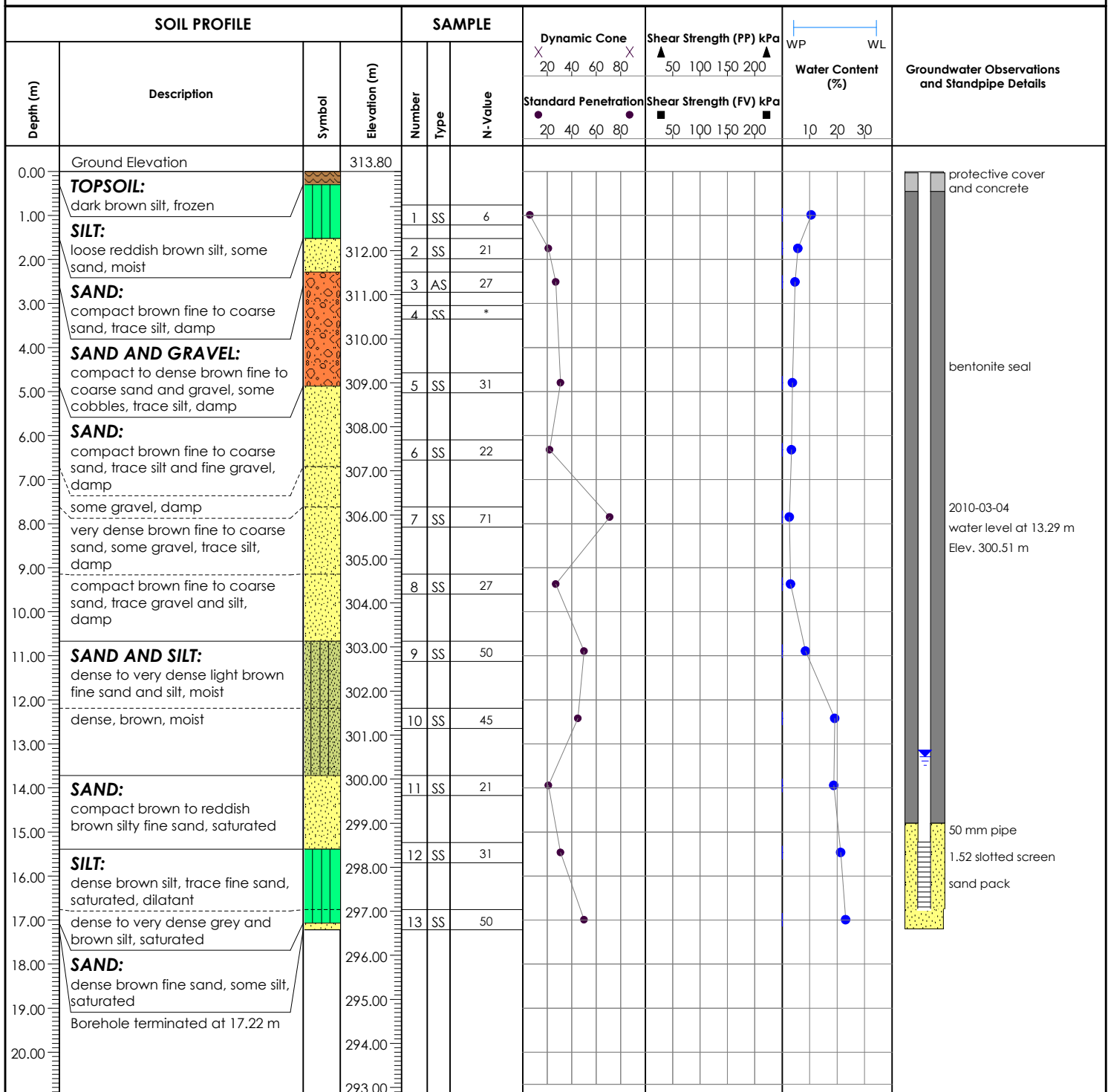
Ground Elevation: 313.80 mASL

Project: Scoped Hydrogeology Study - Cambridge West Community

Job No.: P031655-300

Location: Blenheim Road, Cambridge, Ontario

Drill Date: Feb 26 and Mar 1, 2010



Reviewed by: CH

Drill Method: Hollow Stem Auger

Notes: *Sampler bouncing on cobble

Field Tech.: RM/KT

Sheet: 1 of 1

Drafted by: SM



Borehole Number: 23-10

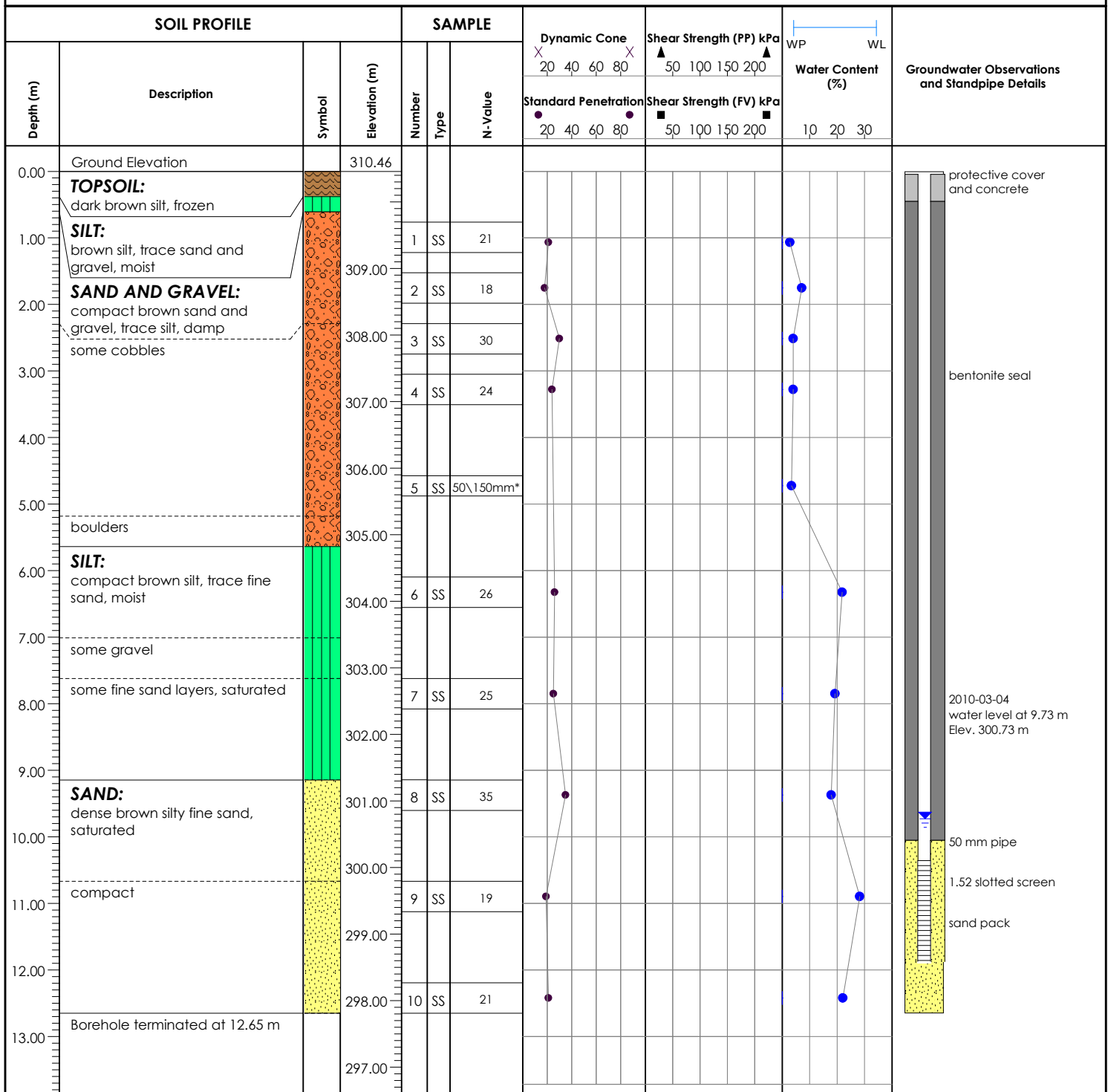
Ground Elevation: 310.46 mASL

Project: Scoped Hydrogeology Study - Cambridge West Community

Job No.: P031655-300

Location: Blenheim Road, Cambridge, Ontario

Drill Date: March 1, 2010



Reviewed by: CH

Drill Method: Hollow Stem Auger

Notes: *Sampler bouncing on gravel

Field Tech.: RM/KT

Sheet: 1 of 1

Drafted by: SM



Borehole Number: 24-10

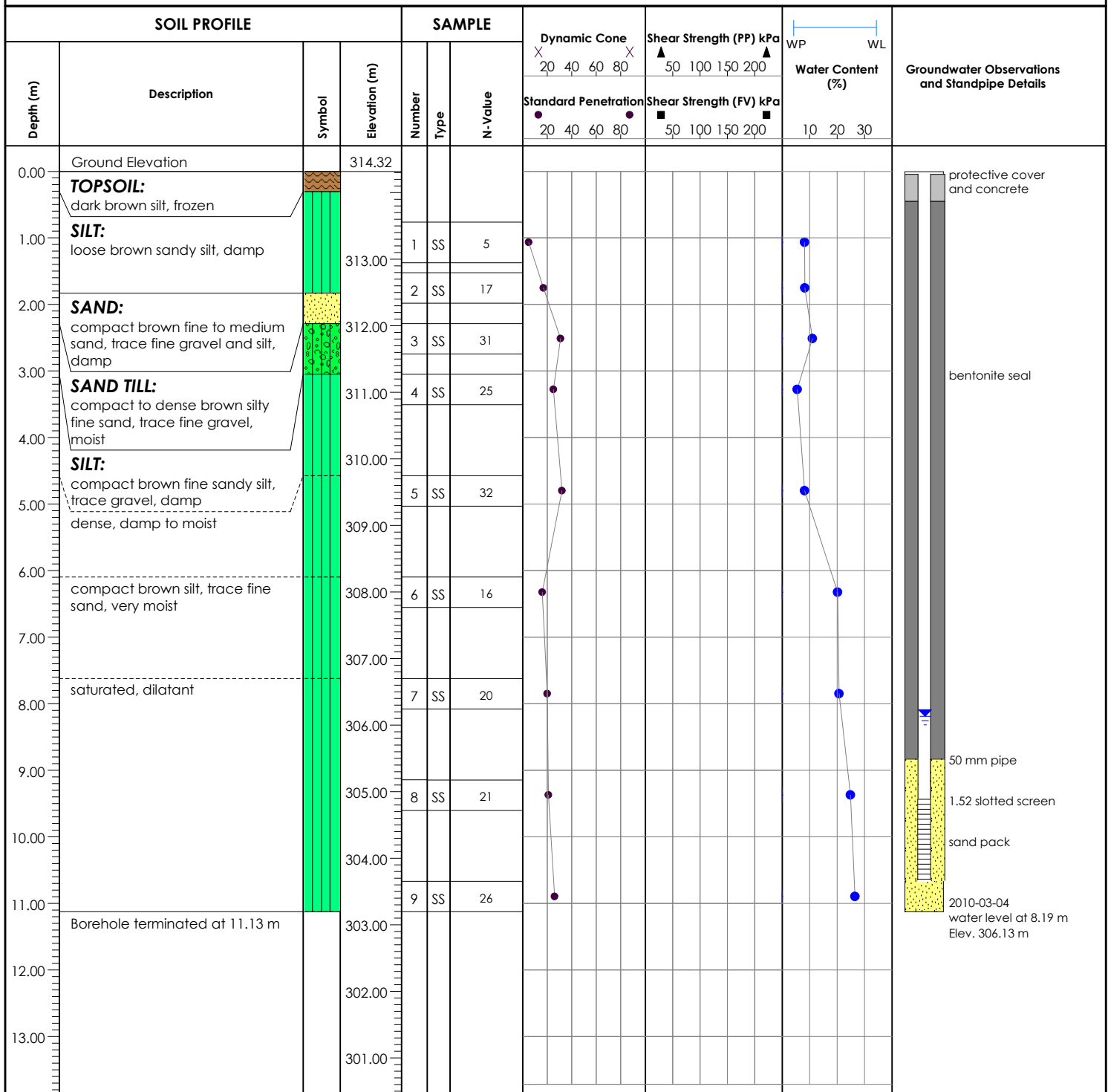
Ground Elevation: 314.32 mASL

Project: Scoped Hydrogeology Study - Cambridge West Community

Job No.: P031655-300

Location: Blenheim Road, Cambridge, Ontario

Drill Date: March 1, 2010



Reviewed by: CH
Drill Method: Hollow Stem Auger
Notes:

Field Tech.: RM/KT
Sheet: 1 of 1
Drafted by: SM



Borehole Number: 25-10

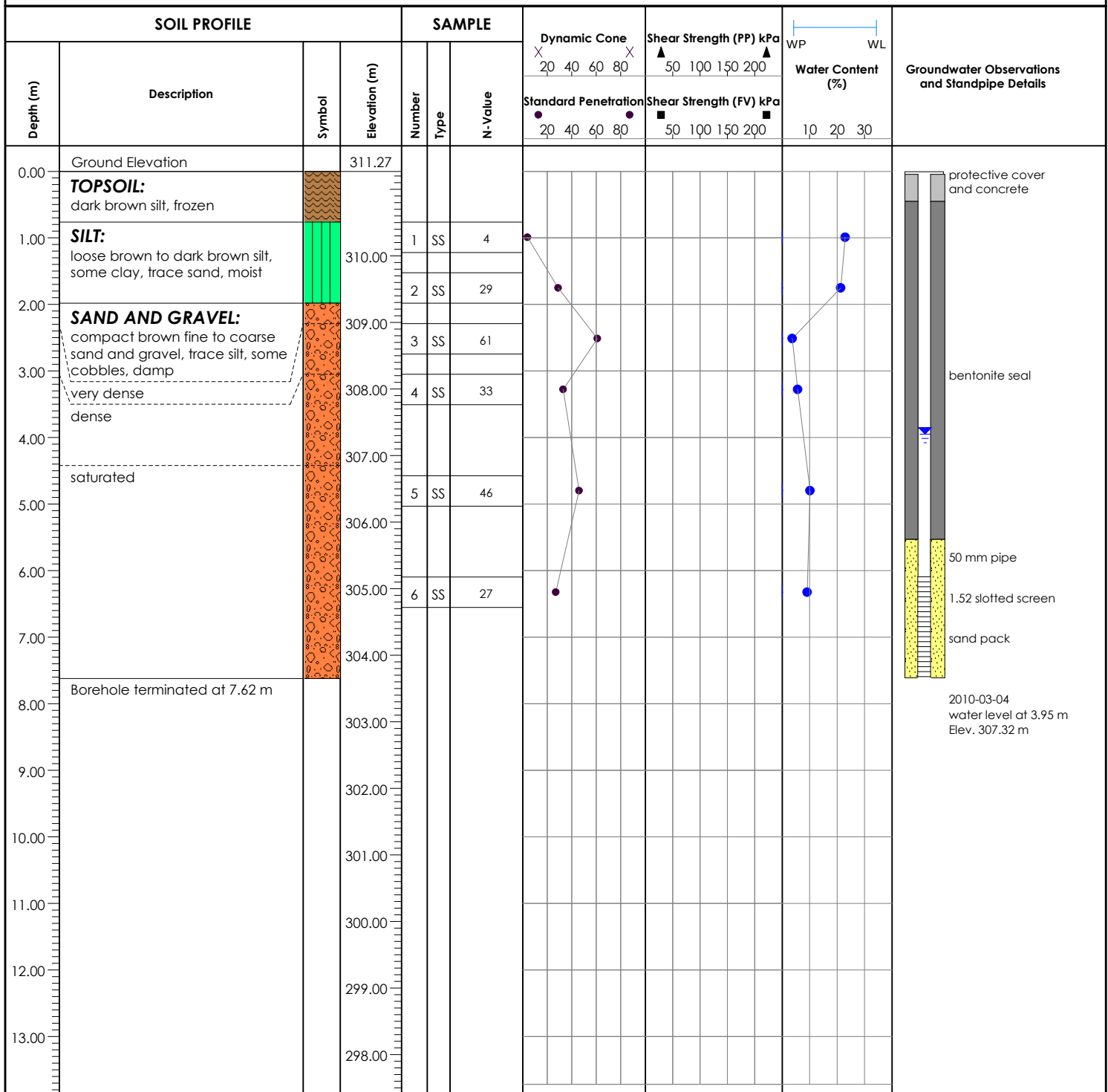
Ground Elevation: 311.27 mASL

Project: Scoped Hydrogeology Study - Cambridge West Community

Job No.: P031655-300

Location: Blenheim Road, Cambridge, Ontario

Drill Date: March 2, 2010



Reviewed by: CH

Drill Method: Hollow Stem Auger

Notes:

Field Tech.: RM/KT

Sheet: 1 of 1

Drafted by: SM



Borehole Number: 26-10

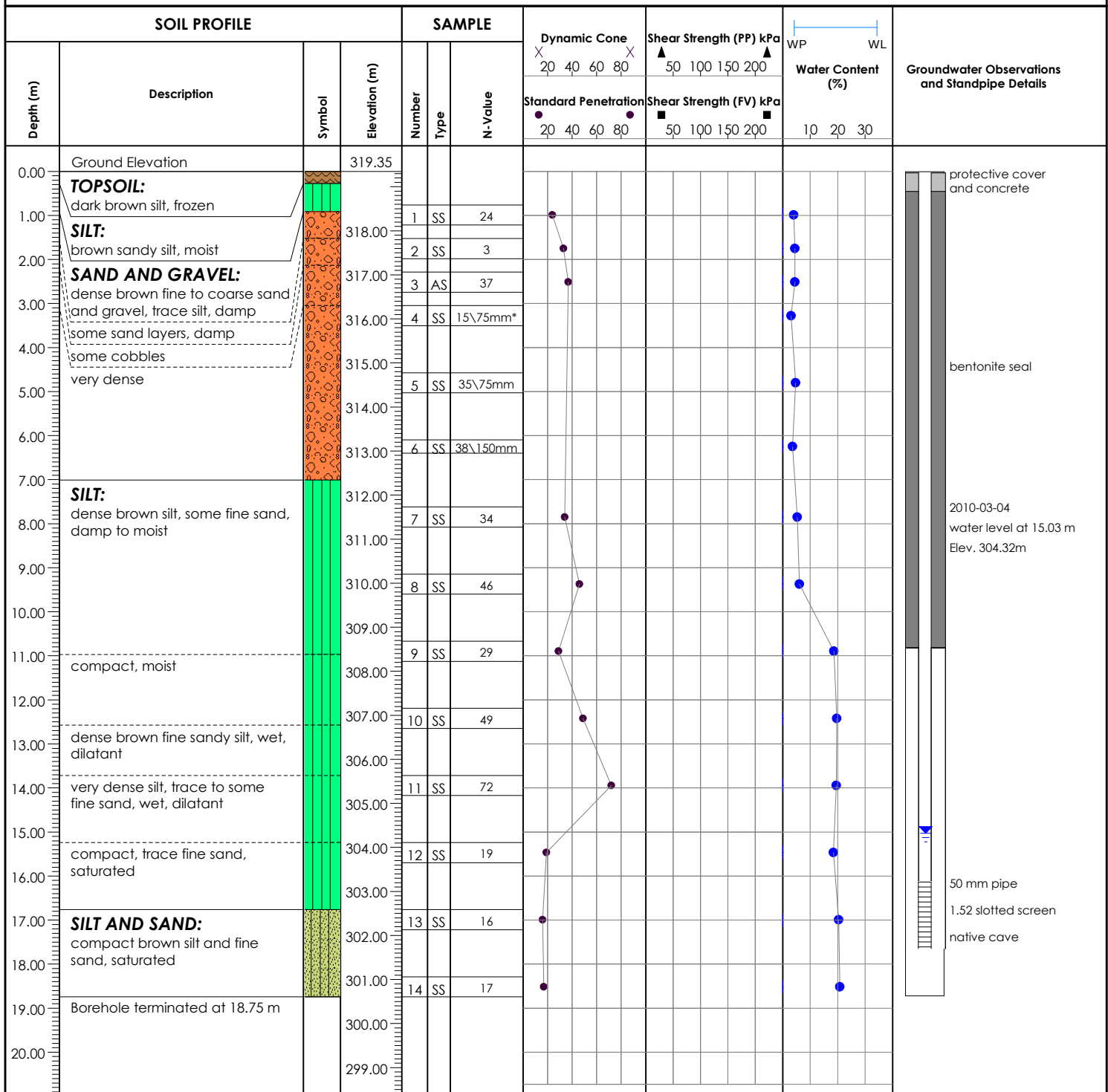
Ground Elevation: 319.35 mASL

Project: Scoped Hydrogeology Study - Cambridge West Community

Job No.: P031655-300

Location: Blenheim Road, Cambridge, Ontario

Drill Date: March 2, 2010



Reviewed by: CH

Drill Method: Hollow Stem Auger

Notes: *Sampler bouncing on gravel

Field Tech.: RM/KT

Sheet: 1 of 1

Drafted by: SM



Borehole Number: 27-10

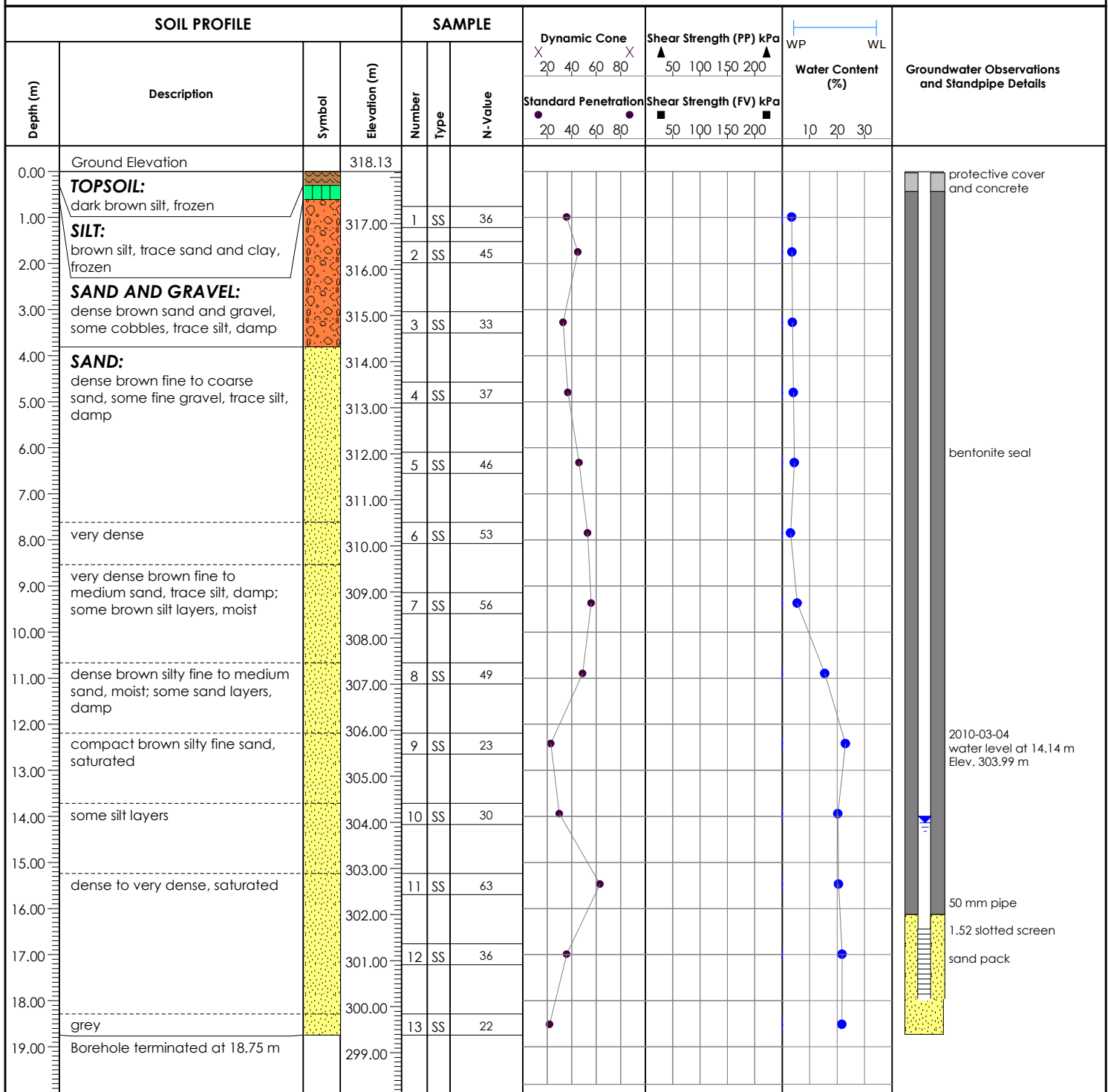
Ground Elevation: 318.13 mASL

Project: Scoped Hydrogeology Study - Cambridge West Community

Job No.: P031655-300

Location: Blenheim Road, Cambridge, Ontario

Drill Date: March 10, 2010



Reviewed by: CH

Drill Method: Hollow Stem Auger

Notes:

Field Tech.: RM

Sheet: 1 of 1

Drafted by: SM

Appendix F

Water Balance

WESTWOOD VILLAGE PHASE 2
PREMINARY STORMWATER MANAGEMENT DESIGN
GAWSER Model Water Balance
City of Cambridge, Ontario



Project Number: 02534-800
Date: April 1, 2026
Design By: JNJ/XSP
File: Q:\02534\800\SWM\02534-800 SWM Design 2026 March.xlsx

GAWSER Water Balance Calculations

EXISTING - MESP
Development Study Area

Subwatershed	Catchment	Hyd. No.	Area (ha)	Area in DSA (ha)	ET (mm)	I (mm)	Non-Winter R (mm)	Winter R (mm)	R (mm)	I (m ³)	R (m ³)	
Cruickston	105	105	16.56	6.56	577.8	242.2	21.9	40.4	62.3	15888	4087	
Devil's	305	305	0.64	0.64	551.2	222.6	54.6	53.9	108.5	1425	694	
	308	308	6.30	6.30	566.4	232.4	34.8	48.7	83.5	14641	5261	
	312	5312	31.80	31.80	605.8	276.5	0.0	0.0	0.0	87927	0	
	313	313	9.85	9.85	575.7	237.2	24.9	44.5	69.4	23364	6836	
	315	315	4.50	4.50	566.5	218.1	37.2	60.5	97.7	9815	4397	
Total Devil's				53.09	591.6	258.4	12.6	19.8	32.4	137172	17188	
Barrie's Lake	401	5401	2.35	2.35	556.2	326.1	0.0	0.0	0.0	7663	0	
	402	402	13.36	11.86	561.1	213.4	43.5	64.3	107.8	25309	12785	
	404	404	11.41	1.41	566.5	217.8	37.3	60.7	98.0	3071	1382	
	408	408	5.81	5.81	563.3	231.9	38.7	48.4	87.1	13473	5061	
Total Barrie's Lake				21.43	561.5	231.1	37.0	52.7	89.7	49516	19228	
Grand River				2.07	571.1	228.6	30.6	52.0	82.6	4732	1710	
Total Site in DSA					83.15	582.2	249.3	20.1	30.7	50.8	207308	42213

EXISTING
Subject Area for this SWM Plan + Freure/Township Lands Fully Developed

Subwatershed	Catchment	Hyd. No.	Area (ha)	Subject Area (ha)	ET (mm)	I (mm)	Non-Winter R (mm)	Winter R (mm)	R (mm)	I (m³)	R (m³)	
Cruickston		101	101	0.39	0.07	572.5	233.7	28.4	47.4	75.8	164	53
		104	5104	2.82	2.82	564.3	317.7	0.0	0.0	0.0	8959	0
		105	105	16.40	9.73	577.8	241.9	21.9	40.4	62.3	23537	6062
	Total Cruickston		19.22	12.62	574.8	258.8	17.0	31.4	48.5	32660	6115	
Devil's		305	305	0.65	0.65	551.1	231.1	50.3	49.5	99.8	1502	649
	308 & 309	5309	7.94	7.41	569.6	279.2	6.0	27.2	33.2	20689	2460	
		312	312	31.80	31.80	572.6	234.4	27.1	47.9	75.0	74539	23850
		312	5312	31.80	31.80	575.0	296.8	0.6	9.6	10.2	94382	3244
		313	313	9.85	9.85	575.6	237.0	25.0	44.5	69.5	23345	6846
		315	315	4.92	4.92	566.6	217.9	37.1	60.5	97.6	10721	4802
		316	316	21.20	0.19	488.6	166.7	133.8	92.9	226.7	317	431
	Total Devil's		76.36	54.82	573.0	275.4	10.0	23.6	33.6	150955	18431	
Barrie's Lake		401	5401	2.34	2.34	556.3	325.8	0.0	0.0	0.0	7624	0
		402	402	13.37	13.37	561.2	212.9	43.6	64.3	107.9	28465	14426
		404	404	11.41	11.41	566.6	217.5	37.3	60.7	98.0	24817	11182
		408	408	5.90	5.90	563.4	231.6	38.7	48.4	87.1	13664	5139
Total Barrie's Lake		33.02	33.02	563.1	225.8	37.5	55.7	93.1	74570	30747		
Grand River		501	501	2.07	2.07	571.1	228.2	30.8	52.0	82.8	4724	1714
Total Subject Area				102.53	570.0	256.4	20.2	35.4	55.6	262908	57007	

Note: catchment 105 pre-development areas in this table decreased to reflect the accomodation of the lands in the Newman Creek Pond (5711; 710 & 711) for this SWM plan.

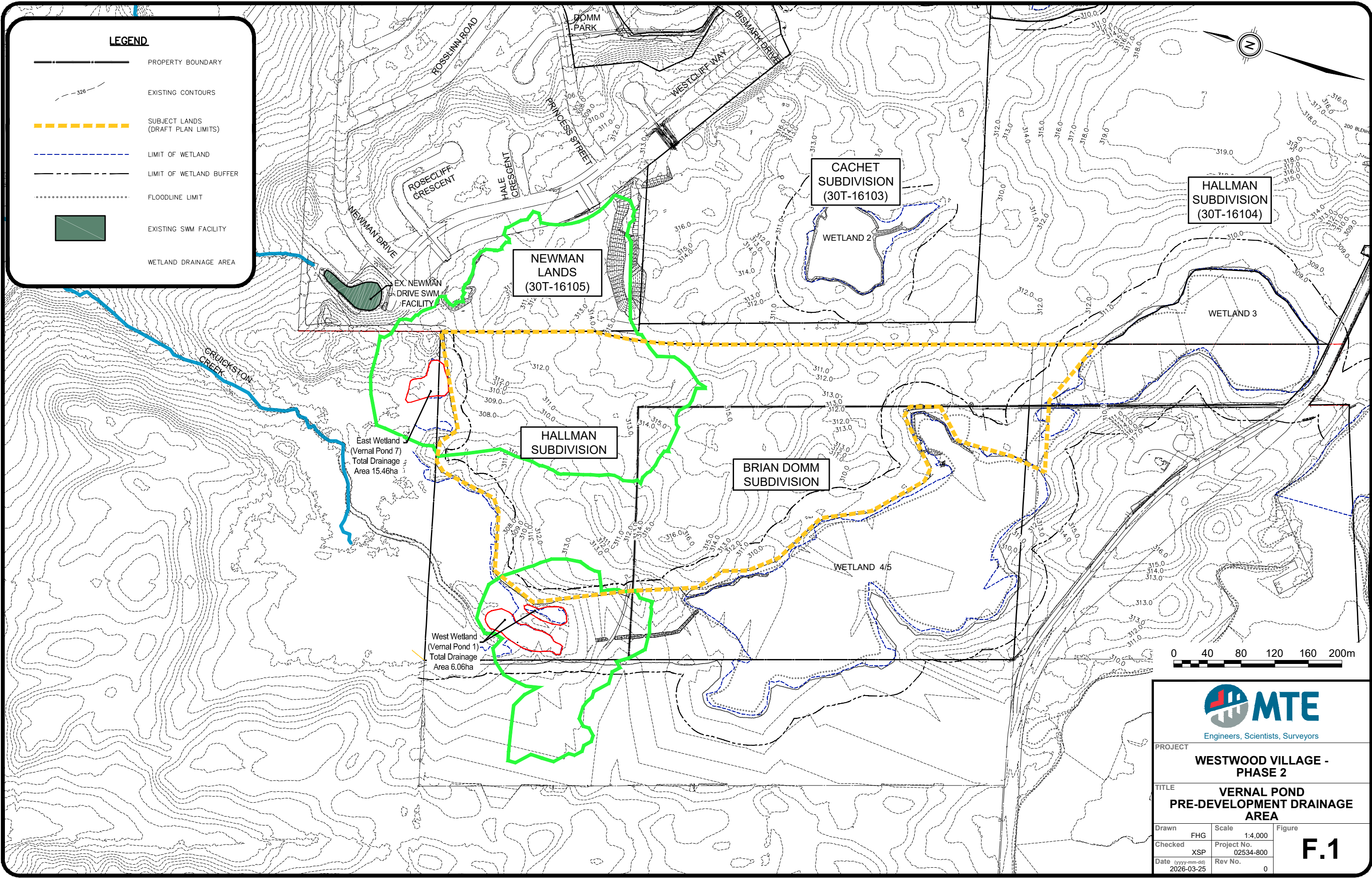
PROPOSED - FINAL SWM
Infiltration Balance

Subwatershed	Catchment	Hyd. No.	Area (ha)	Subject Area (ha)	ET (mm)	I (mm)	Non-Winter R (mm)	Winter R (mm)	R (mm)	I (m ³)	R (m ³)	
Cruickston		105	1050	1.08	1.08	167.6	0.0	520.1	196.4	716.5	0.0	7761
		105	105	3.23	3.23	573.1	231.2	28.3	49.4	77.7	7460	2507
	Total Cruickston			4.31	4.31	471.2	173.1	151.9	86.3	238.3	7460	10269
Newman		710	710	6.64	0.00	333.7	282.6	183.4	82.4	265.8	0	0
Devil's	706 (SWMF 3)	5706	4.68	4.68	348.5	271.5	181.0	81.1	262.1	12706	12266	Year-round CIF function
	707	707	0.77	0.77	417.7	141.8	216.9	105.7	322.6	1092	2484	
	308b & 309b	5309	1.47	1.47	570.6	311.5	0.0	0.0	0.0	4579	0	
	313	313	4.92	4.92	575.6	237.4	24.7	44.4	69.1	11680	3400	Year-round CIF function
	315	315	1.58	1.58	566.6	217.7	37.2	60.5	97.7	3440	1544	
	703	703	3.06	3.06	319.3	266.5	206.7	89.6	296.3	8155	9067	
	Total Devil's			16.48	16.48	454.8	252.7	110.9	63.7	174.5	41652	28760
Barrie's Lake	305, 709 & 704	5704	7.29	7.29	356.4	386.9	94.1	44.7	138.8	28205	10119	Year-round CIF function
	709	7090	0.70	0.70	167.6	0.0	520.1	196.4	716.5	0	5016	
	705	705	0.43	0.43	248.7	44.6	421.9	166.9	588.8	192	2532	
	402	402	5.14	5.14	536.2	200.1	73.4	72.3	145.7	10285	7489	
	404	404	5.23	5.23	566.6	217.2	37.3	61.0	98.3	11370	5146	
	404	7120	0.95	0.95	167.6	0.0	520.1	196.4	716.5	0.0	6796	
	408	408	1.48	1.48	563.4	233.1	38.0	47.6	85.6	3450	1267	
Total Barrie's Lake			21.22	21.22	449.4	252.1	110.9	69.9	180.8	53502	38364	
Grand River	312,7010,7020, 7080	4312	8.05	8.05	431.6	145.3	194.6	110.6	305.2	11697	24569	
	Wetland 2	5312	8.05	8.05	433.7	447.5	0.8	0.0	0.8	36024	64	
	701, 702, 708 & 712	5702	51.84	51.84	354.2	248.6	191.3	87.8	279.1	128874	144685	
Total Subject Area				101.90	401.4	262.5	160.1	81.9	242.0	267511	222143	

Surface Water (Runoff) Balance

Feature	Catchment	Hyd. No.	Area (ha)	Subject Area (ha)	ET (mm)	I (mm)	Non-Winter R (mm)	Winter R (mm)	R (mm)	I (m ³)	R (m ³)	Pre-Dev	Difference
Wetland 2	312	312	5.52		552.60	212.80	45.30	71.40	116.70	11747	6442	23850	-17408 -73%
	312 + Roof (3rd Pipe)	4312	8.05		431.60	145.30	194.60	110.60	305.20	11697	24569		719 3%
	SWMF 2	5702	51.84		354.20	248.60	191.30	87.80	279.10	128874	144685		
Wetland 3	CIF	4704	1.70		369.40	441.10	46.70	24.90	71.60	7499	1217		
	CIF	4709	2.30		399.20	434.50	28.60	19.70	48.30	9994	1111		
	SWMF 1	5704	7.29		356.40	386.90	94.10	44.70	138.80	28205	6860		
	1402	1402	23.59		474.00	229.30	87.50	91.30	178.80	54092	38920	37300	1620 4%
Devil's Creek	SWMF 3	5706	4.68		348.50	271.50	181.00	81.10	262.10	12706	12266		
	1308	1308	102.53		483.00	166.20	136.30	96.50	232.80	170405	234894	227830	7064 3%
Barrie's Lake*	709 Roof	7090	0.70		167.60	0.00	520.10	196.40	716.50	0	5016		
	1408	1408	164.86		534.60	282.90	31.00	33.60	64.60	466389	106500	106500	0 0%
Wetland 1	1102	1102	5.05		566.10	259.80	19.90	36.30	56.20	13120	2838	2900	-62 -2%
Wetland 4 & 5	SWMF 4	5712											
	1405	1405	50.69		540.70	231.50	47.40	62.50	109.90	117347	55708	55000	708 1%
East wetland (VP7)	109	109	2.25		584.50	258.10	26.30	13.20	39.50	5810	889		
	105	105	1.43		573.10	231.20	28.30	49.40	77.70	3303	1110		
	1050 (Roof)	1050	1.05		166.50	0.00	519.80	195.70	715.50	0	7536	9135	400 4%
West wetland (VP1)	105	105	0.36		573.10	231.20	28.30	49.40	77.70	832	280		
	108	108	0.39		558.40	179.40	46.70	97.60	144.30	705	567		
	Flow to Depression(101+102+103)	1102	5.02		566.10	259.80	19.90	36.30	56.20	13041	2821		
	1050	1050	0.03		166.50	0.00	519.80	195.70	715.50	0	215	3802	80 2%
Cruickston	1110	1110	58.52		567.30	235.80	34.30	44.60	78.90	137990	46172	46300	-128 0%

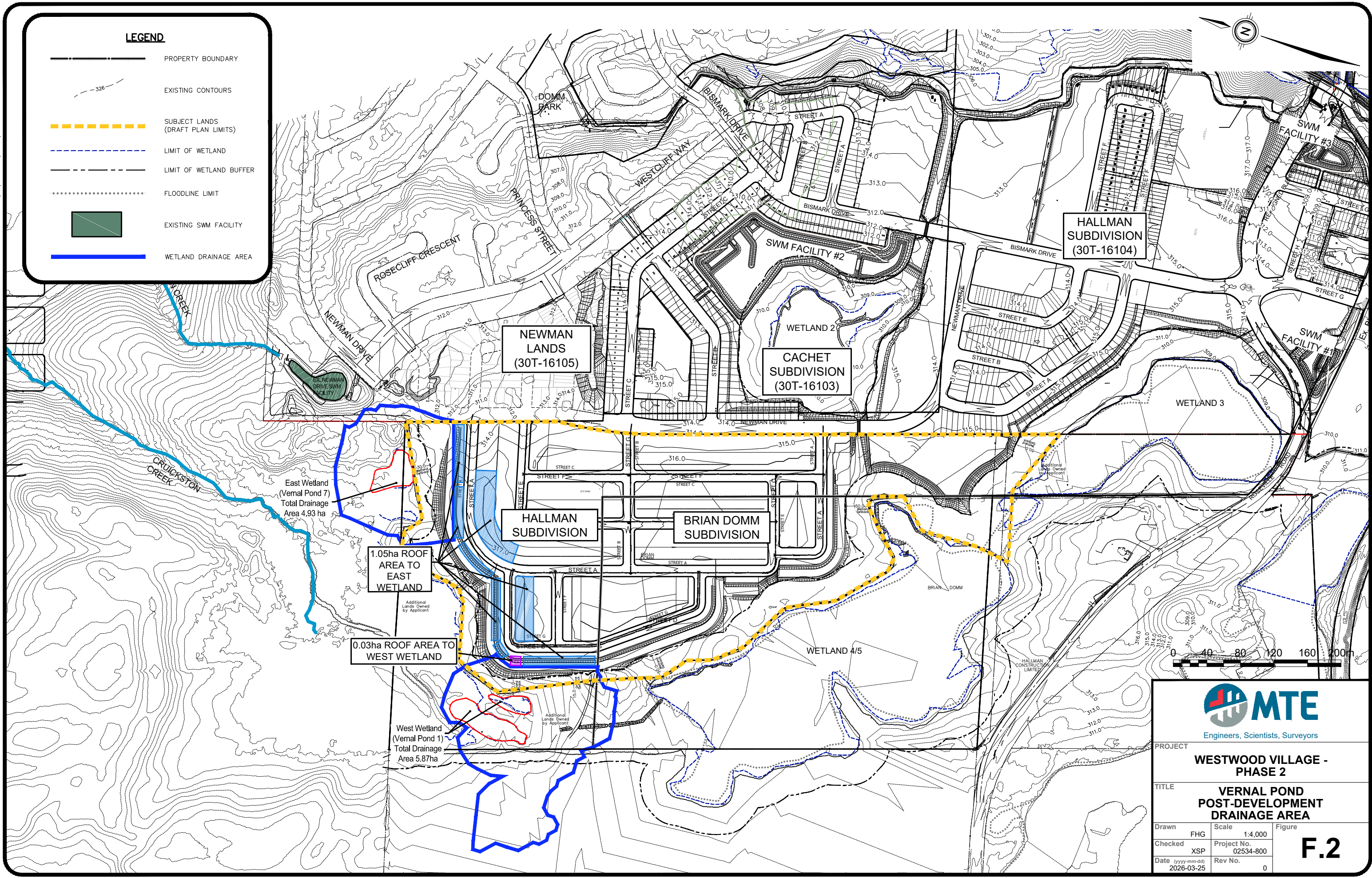
*0.7 ha roofs from catchment 709 conceptually diverted to Barries Lake to balance, this is not currently proposed as it is outside of the current development application
Wetland 3 surface contributions assume year-round conveyance infiltration facility (CIF) function, with winter by-pass of SWM facility 3





Engineers, Scientists, Surveyors

PROJECT		
WESTWOOD VILLAGE - PHASE 2		
TITLE		
VERNAL POND PRE-DEVELOPMENT DRAINAGE AREA		
Drawn	Scale	Figure
FHG	1:4,000	F.1
Checked	Project No.	
XSP	02534-800	
Date	Rev No.	
(yyyy-mm-dd)		
2026-03-25	0	





Engineers, Scientists, Surveyors

PROJECT			
WESTWOOD VILLAGE - PHASE 2			
TITLE			
VERNAL POND POST-DEVELOPMENT DRAINAGE AREA			
Drawn	FHG	Scale	1:4,000
Checked	XSP	Project No.	02534-800
Date	(yyyy-mm-dd)	Rev No.	0
			F.2

Appendix G

Chloride Impact Assessment

MASS BALANCE (CHLORIDE IMPACT) ANALYSIS
WESTWOOD VILLAGE PHASE 2
North Dumfries, Ontario



Project Number: 02534-800
 Date: April 1, 2026
 Design By: CJC/XSP
 File: Q:\02534\800\Chloride Impact\02534-800 Chloride Impact Mass Balance Mar 2026.xlsx

Legend

User inputs value

Excel calculates

Reasonable Use Concept Calculations

$$C_m = C_b + x(C_r - C_b)$$

**Maximum Allowable Concentration beneath the adjacent property
 (i.e. Reasonable Use Criteria)**

Where:

$C_b = 2.5$ (mg/L) Natural Uncontaminated Background Cl⁻ level⁽¹⁾
 $C_r = 250$ (mg/L) Ontario Drinking Water Standard (ODWS) Cl⁻
 $x = 0.5$ Constant for Non-Health Related Parameter

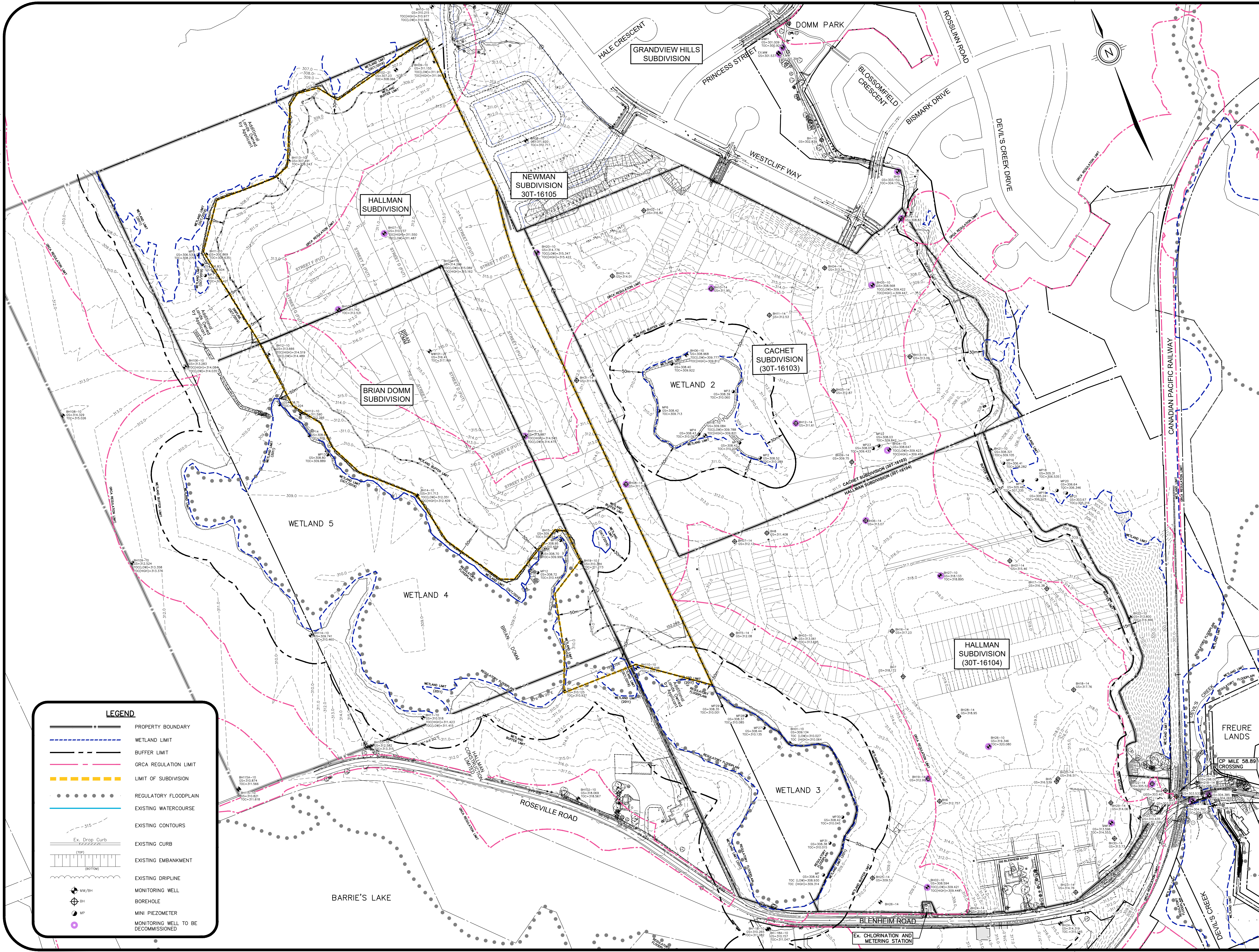
∴ $C_m = 126$ (mg/L)

	Calculation Factors	Length of Road ⁽²⁾ (km)	Private Parking Areas (ha)	Annual Salt Application ⁽³⁾ (tonne/2-lane km)-Roads (tonne/ha)-Parking Areas	Total Annual Salt Weight tonnes	Infiltration Volume m ³	Chloride Concentration mg/L	RUC Check
Salt Volume Calculations	Primary Road	0.00		44	0			
	Secondary Road	0.00		22	0.00			
	Local Road	2.26		1	2.26			
	Local Road to CIF ⁽⁴⁾	0.79		1	0.79			
	Private Parking Areas to CIF ⁽⁴⁾		0.00	15	0.00			
	Private Parking Areas		0.00	15	0.00			
	Total weight of salt applied to roads				3.05			
	Roads - Salt infiltration rate into subsurface ⁽⁵⁾				28%			
	Roads - Salt infiltration rate into subsurface by CIF ⁽⁶⁾				100%			
	Parking Areas - Salt infiltration rate into subsurface ⁽⁹⁾				10%			
	Annual volume of salt infiltrated to subsurface				1.43			
RUC Calculations	Total (passive & active) surface water infiltration ⁽⁷⁾					66,500		
	Additional Cl ⁻ input into subsurface from proposed development based on total surface water infiltration ⁽⁸⁾						13	OKAY

NOTES:

- (1) The natural uncontaminated background groundwater chloride level was assumed to be 2.5 mg/L, which is typical for ambient groundwater level in southwestern Ontario.
- (2) Primary, Secondary, and Local road lengths are based on the Draft Plan by MHBC, dated Mar. 25, 2026.
- (3) The salt application rates used in the analysis for Primary, Secondary, and Local Roads are based on values presented in the Region of Waterloo Report: "Road Salt Management and Chloride Reduction Study Phase 2: Evaluation of Chloride Reduction Options", Stantec Consulting Ltd., 2003.
- (4) Local road lengths and private parking areas are based on the contributing impervious surfaces to be captured by the proposed conveyance infiltration facility within the central park block.
- (5) The value of 28% of salt that will infiltrate into the subsurface is referenced from - "Evaluation of Road Salt Impacts and Management Strategies for Groundwater Supplies Using GIS and Mass Balance Modeling Techniques", C.T. Johnson, M. Bester, D.L. Rudolph, J.W. Robinson, E.W. Hodgins, 2004.
- (6) The value of 100% of salt that will infiltrate into the subsurface is due to the CIF operating year round, without a winter bypass. It is assumed that frequent melts that contain all the chlorides will be captured within the CIF and infiltrated.
- (7) For this analysis, it is assumed that the post-development infiltration volume will be meet , whereby an infiltration rate of 262.5mm/year for the developable area (25.33ha) is equal to 66,500m³ available for dilution.
- (8) On a simple dilution basis, this is the amount of additional chloride input based on the molecular weight ratio of Sodium to Chloride in the total volume of salt (0.606).
- (9) The value of 10% of salt that will infiltrate into the subsurface is based on an assumption that the majority of snow storage from private parking areas will be stored on an impervious surface.

Drawings



SITE

GEODETIC BM ELEV. =300.480m
CONCRETE CYPHER WITH TOPOGRAPHICAL TABLET ON NORTH SIDE OF GRANT STREET, 10.9m EAST OF INTERSECTION WITH KENMORE AVENUE, IN GRASSY AREA BETWEEN ROADWAY AND SIDEWALK, 1.6m NORTH OF ROADWAY, 1.0m WEST FROM CONCRETE LIGHT STANDARD AND 19.6m FROM CENTRELINE OF DRIVEWAY TO No. 56 GRANT STREET.

SITE BENCHMARK ELEV. =306.341m
CUT CROSS IN CONCRETE SIDEWALK ON EAST CORNER OF BISMARCK DRIVE AND WESTCLIFF WAY INTERSECTION, LOCATED APPROX. 14.7m SOUTH EAST ALONG WESTCLIFF WAY CENTRELINE FROM INTERSECTION AND 8.4m NORTH EAST ALONG BISMARCK DRIVE CENTRELINE FROM INTERSECTION.

NOTE TO CONTRACTOR :
DO NOT SCALE DRAWINGS.
CONTRACTORS MUST CHECK AND VERIFY ALL DIMENSIONS AND REPORT ANY DISCREPANCIES TO THE ENGINEER BEFORE PROCEEDING WITH THE WORK.
ALL DRAWINGS REMAIN THE PROPERTY OF THE ENGINEER AND SHALL NOT BE REPRODUCED OR REUSED WITHOUT THE ENGINEER'S WRITTEN PERMISSION.
THE OWNER/ARCHITECT/CONTRACTOR IS ADVISED THAT M.T.E. CONSULTANTS INC. CANNOT CERTIFY ANY COMPONENT OF THE SITE WORKS NOT INSPECTED DURING CONSTRUCTION. IT IS THE RESPONSIBILITY OF THE GENERAL CONTRACTOR TO NOTIFY M.T.E. CONSULTANTS INC. PRIOR TO COMMENCEMENT OF CONSTRUCTION TO ARRANGE FOR INSPECTION.

8.		
7.		
6.		
5.		
4.		
3.		
2.	ISSUED FOR DRAFT PLAN APPROVAL - PHASE 2	GMK 2026-04-02
1.	ISSUED FOR DRAFT PLAN APPROVAL	GMK 2021-04-19
No.	REVISION	BY

TOWNSHIP of NORTH DUMFRIES

Engineers, Scientists, Surveyors

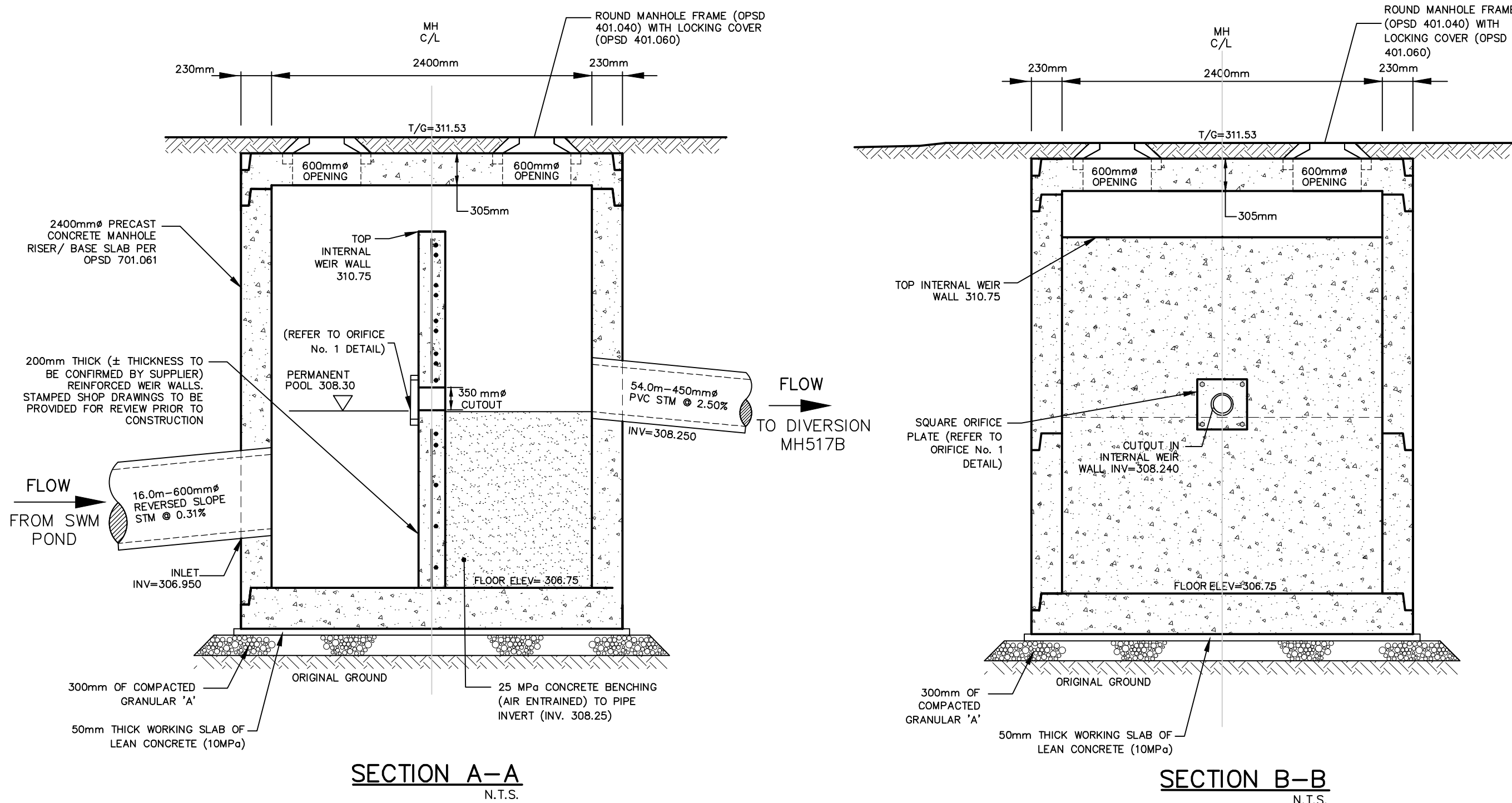
519-743-6500

OWNER **HALLMAN CONSTRUCTION LIMITED**
675 RIVERBEND DRIVE KITCHENER

PROJECT **WESTWOOD VILLAGE PHASE 2**
Cambridge Ontario

DRAWING **EXISTING CONDITIONS PLAN (OVERALL)**

Project Manager	G.KORBER	Project No.	02534-800
Design By	CJC	Checked By	
Drawn By	KAT	Checked By	CJC
Surveyed By	MTE	Drawing No.	
Date	Dec.02/20		EC1.1
Scale	1:2500	Sheet	of

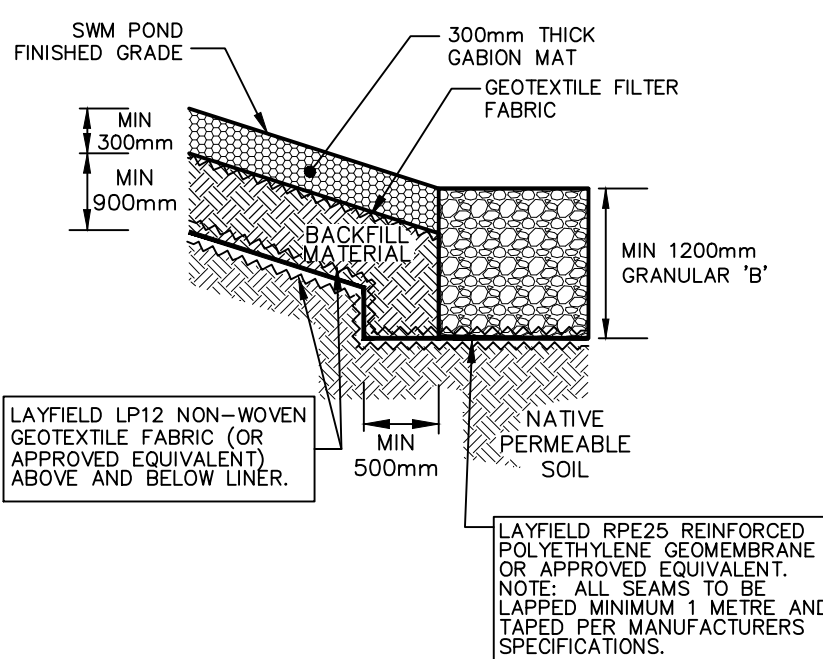


NOTE: CONTRACTOR TO PROVIDE STAMPED SHOP DRAWINGS FOR REVIEW PRIOR TO CONSTRUCTION FOR WEIRS, ORIFICES AND MANHOLE

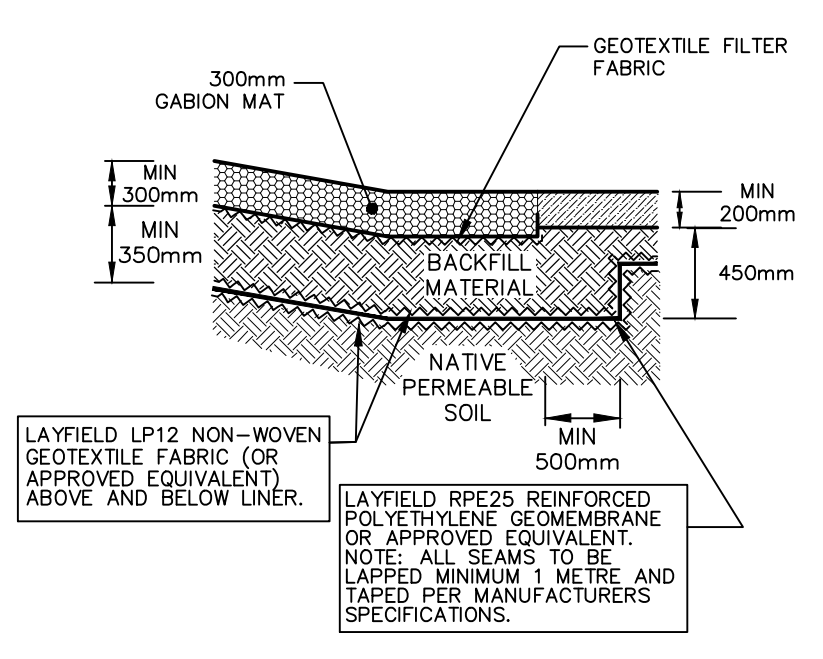
OUTLET CONTROL MANHOLE 515
N.T.S.

LINER CONSTRUCTION DETAILS AND SPECIFICATIONS

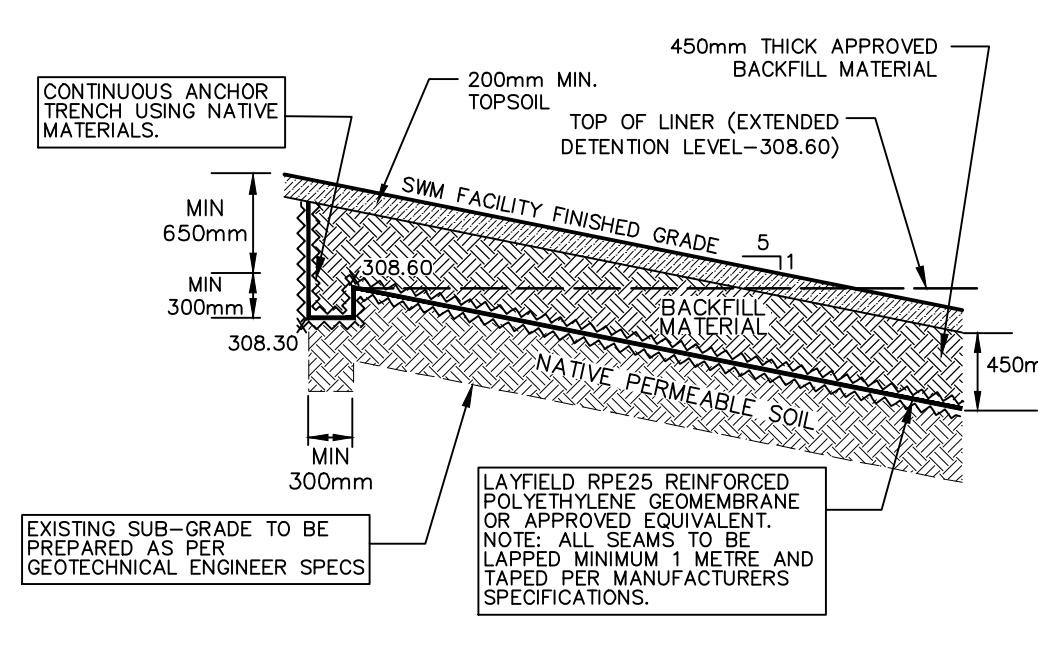
- THE LOCATION AND ELEVATION OF EXISTING INFRASTRUCTURE, SERVICES AND UTILITIES TO BE VERIFIED BY THE CONTRACTOR AT THEIR EXPENSE. CONTRACTOR IS RESPONSIBLE FOR THE RESTORATION AND/OR REPAIR OF DISTURBANCES TO SAME DURING CONSTRUCTION.
- FOLLOWING EXCAVATION TO SUBGRADE:
 - ALL STONES LARGER THAN 25mm, ALL ANGULAR OR SHARP ROCK OR STONE FRAGMENTS, ALL ROOTS, METALLIC OBJECTS, CONSTRUCTION DEBRIS, AND ANY OTHER DELETERIOUS MATTER TO BE REMOVED FROM POND SUB-GRADE.
 - SUB-GRADE TO BE PROOF-ROLLED.
- SUB-GRADE TO BE INSPECTED AND ACCEPTED BY SUPERVISING GEOTECHNICAL CONSULTANT PRIOR TO PLACEMENT OF LINER. SURFACE TO BE CORRECTED AS REQUIRED, AND MAINTAINED IN SUITABLE CONDITION, UNTIL PLACEMENT OF LINER. LINER MANUFACTURER ALSO TO APPROVE SUB-BASE PRIOR TO LINER PLACEMENT.
- SUB-GRADE TO BE PROTECTED FROM DESICCATION CRACKING, AND ANY MARKS, RUTS, WINDROWS, AND STANDING WATER TO BE REMOVED FROM SUBGRADE PRIOR TO LINER PLACEMENT.
- ACCEPTABLE LINER MATERIALS ARE LAYFIELD LP12 COMBINED WITH RPE25, OR ALTERNATE MATERIAL HAVING COMPARABLE SPECIFICATIONS. SUBMIT PROPOSED SPECIFICATIONS FOR REVIEW & APPROVAL PRIOR TO ORDERING OF POND LINER.
- LINER TO BE CAREFULLY PLACED, USING MANUFACTURER'S RECOMMENDATIONS FOR PLACEMENT, LAPPING (1m), ANCHORING AND TAPING. SUBMIT FULL COPY OF MANUFACTURER'S INSTALLATION AND MAINTENANCE GUIDELINES TO OWNER'S GEOTECHNICAL ENGINEER AND MTE CONSULTANTS INC. PRIOR TO ORDERING OF LINER. LINER TO BE PLACED ON LAYFIELD LP12 NON-WOVEN GEOTEXTILE (OR APPROVED EQUIVALENT). LINER TO BE COVERED WITH GEOTEXTILE (OR APPROVED EQUIVALENT).
- COMPLETED LINER INSTALLATION TO BE BACKFILLED WITH COVER MATERIAL APPROVED BY SUPERVISING GEOTECHNICAL CONSULTANT. ALL STONES LARGER THAN 25mm, ALL ANGULAR OR SHARP ROCK OR STONE FRAGMENTS, ALL ROOTS, METALLIC OBJECTS, CONSTRUCTION DEBRIS, AND ANY OTHER DELETERIOUS MATTER TO BE REMOVED PRIOR TO PLACEMENT.
- THE USE OF NATIVE COVER MATERIAL WILL REQUIRE SORTING AND STOCKPILING TO ENSURE SUFFICIENT QUANTITY IS AVAILABLE FOR PLACEMENT.
- BACKFILL MATERIAL TO BE PLACED USING EXTENDED-REACH BACKHOE/EXCAVATOR BUCKET WITHOUT TRACKING ONTO LINER SURFACE, OR LOW-GROUND-PRESSURE EQUIPMENT WITH MAXIMUM 200 kPa (30 psi) GROUND PRESSURE (i.e. CAT D3-LOP or D4-LOP, OR EQUIVALENT). SHOULDER EQUIPMENT NOT PERMITTED TO MAKE TURNS OVER LINER (STRAIGHT-RUNS ONLY). ALL MATERIAL TO BE GENTLY PLACED OR "ROLLED", NOT PUSHED ACROSS LINER CREATING SURFICIAL SHEAR FORCES. SPOTTER TO BE USED ADJACENT TO FILL PLACEMENT AREA TO VISUALLY MONITOR PLACEMENT, WHERE SHEAR FORCES HAVE BEEN TRANSMITTED TO LINER, CHECK FOR LINER DAMAGE UNDER MATERIAL. MATERIAL TO BE COVERED WITH TO 25% SPREAD USING ONLY WALK-BEHIND OR SMALL TWIN-DRUM ROLLING EQUIPMENT. COMPACTED LINER MATERIAL TO BE WITHIN +/- 30mm of SPECIFIED THICKNESS (AVERAGE, NOT UNIFORMLY THICK/THIN).



DETAIL 7A - TYPICAL LINER CONSTRUCTION
AT GABION MAT IN FOREBAY
N.T.S.



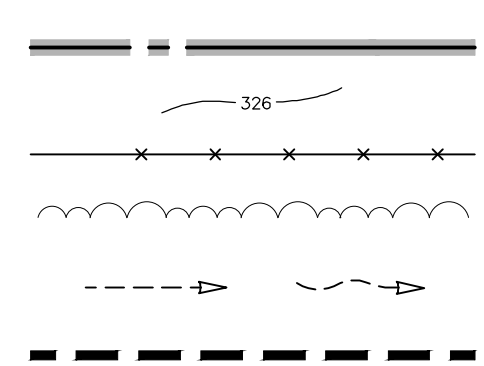
DETAIL 7B - TYPICAL LINER CONSTRUCTION
AT GABION MAT IN WETLAND CELL
N.T.S.



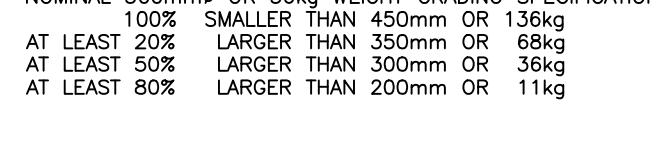
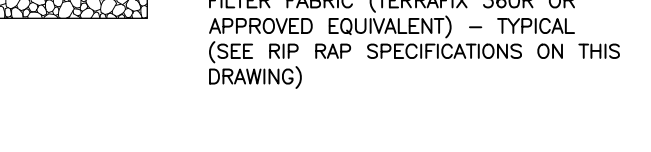
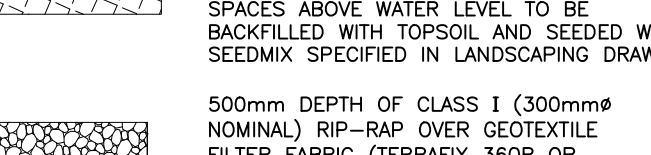
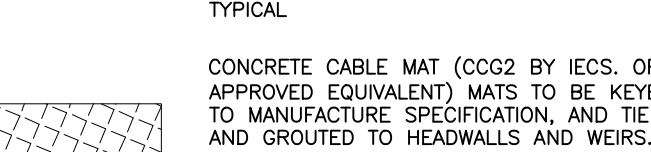
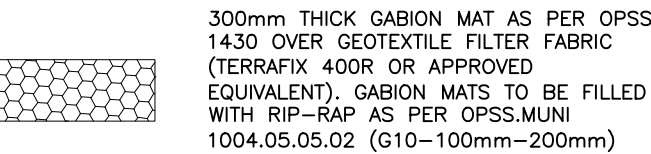
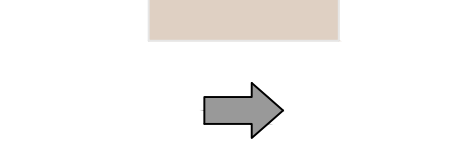
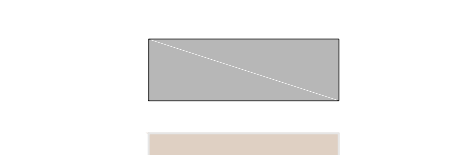
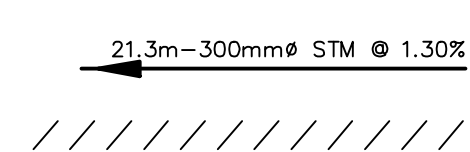
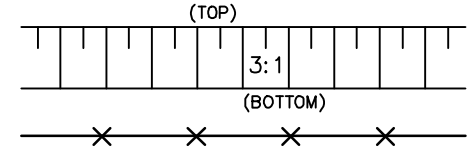
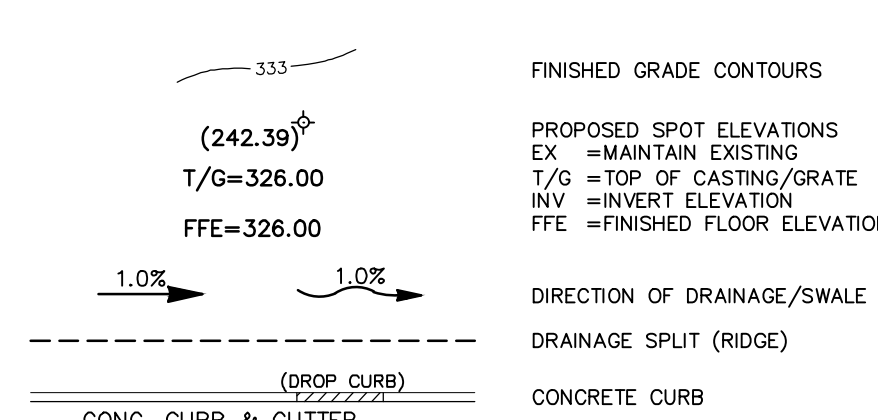
DETAIL 7C - TYPICAL ANCHOR STATE
N.T.S.

SWM POND FACILITIES GENERAL LEGEND:

LEGEND OF EXISTING FEATURES

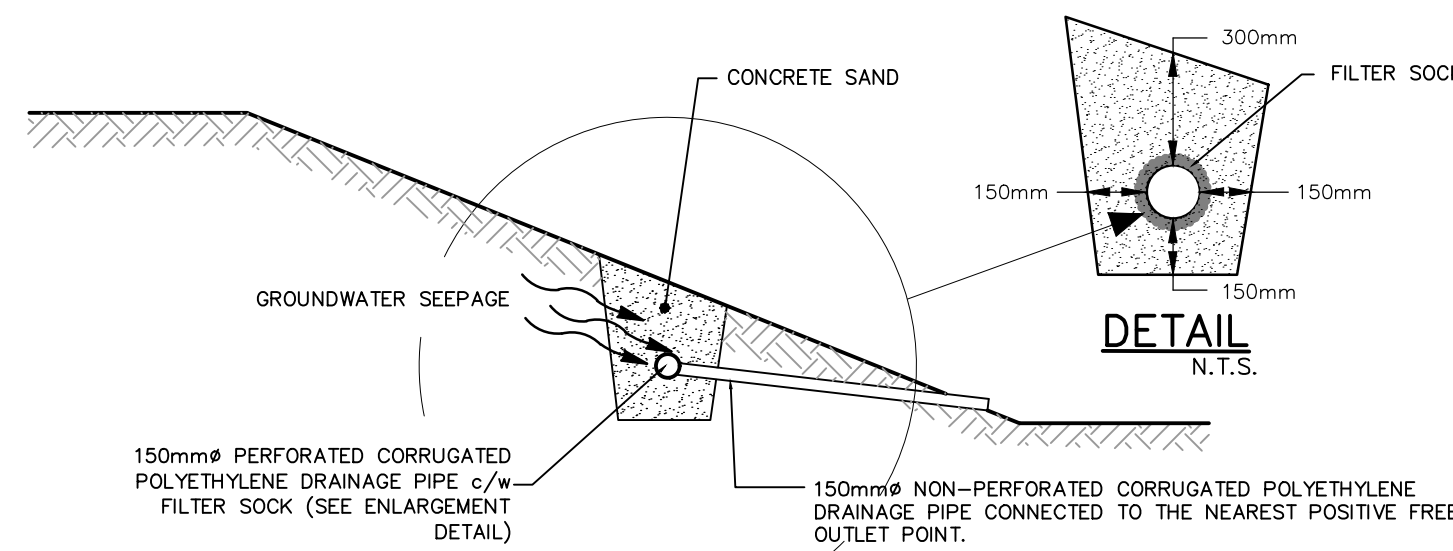


LEGEND OF PROPOSED FEATURES



RIP-RAP SPECIFICATIONS

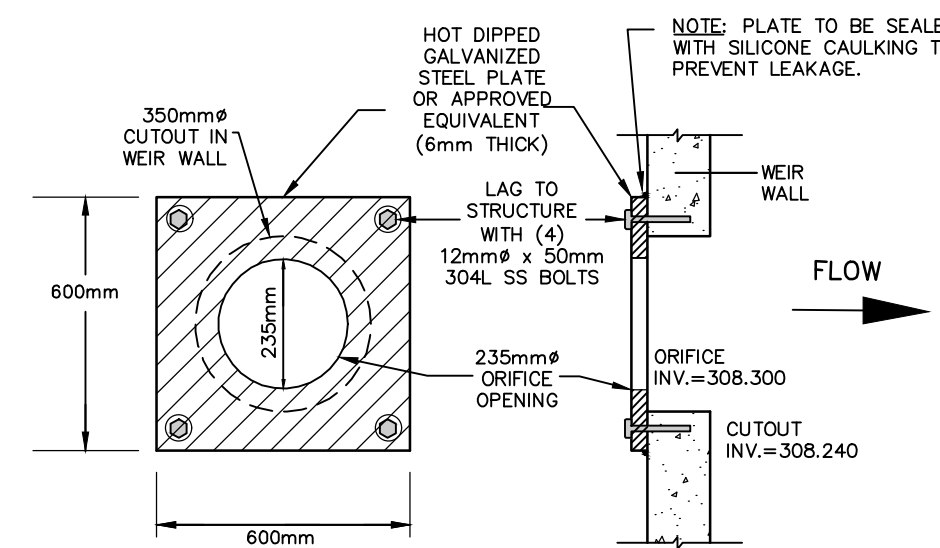
CLASS 1
NOMINAL 300mm Ø OR 36kg WEIGHT GRADING SPECIFICATIONS:
100% SMALLER THAN 450mm OR 136kg
AT LEAST 20% LARGER THAN 350mm OR 68kg
AT LEAST 50% LARGER THAN 300mm OR 36kg
AT LEAST 80% LARGER THAN 200mm OR 11kg



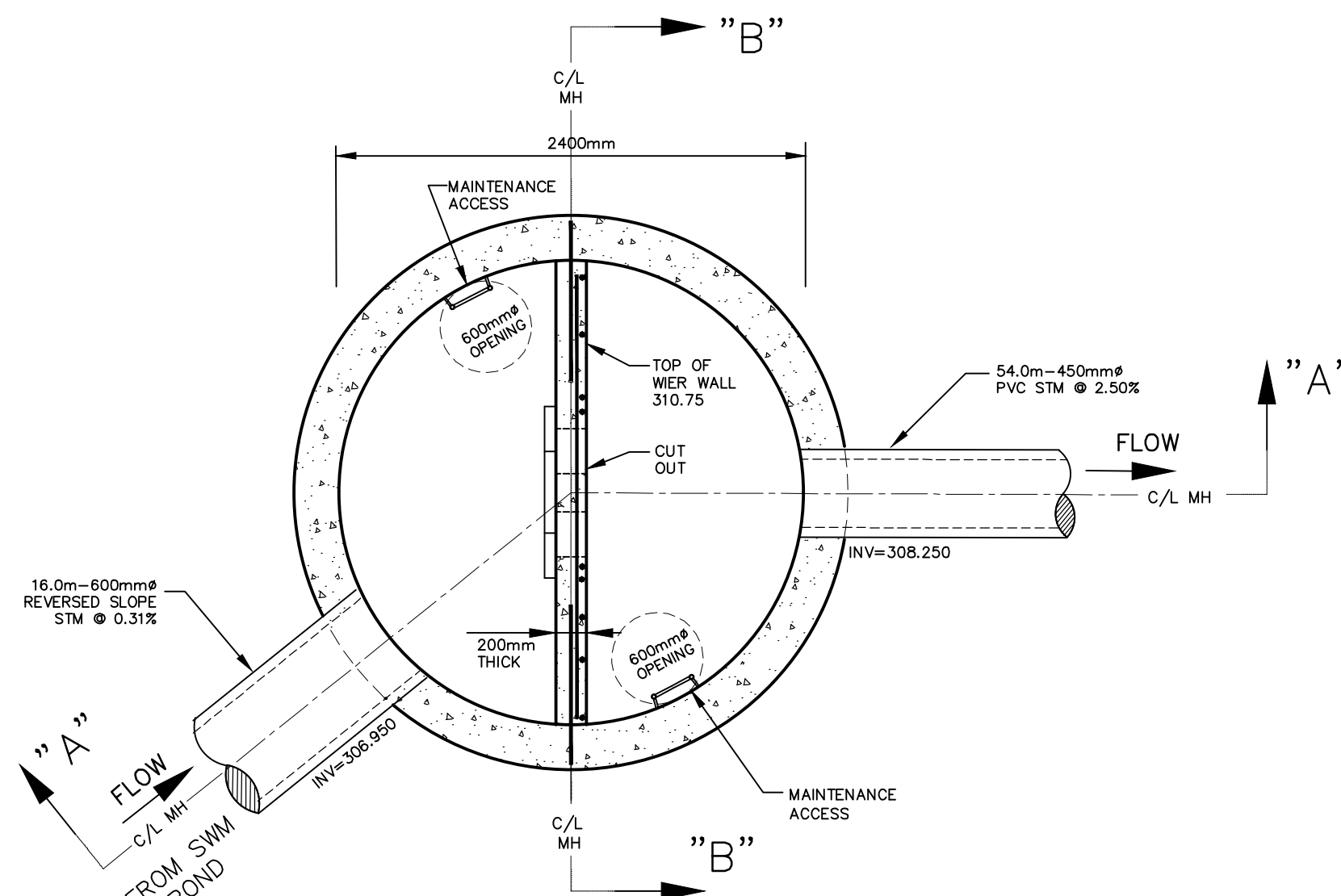
- TO BE INSTALLED AS REQUIRED AND AS DIRECTED BY THE GEOTECHNICAL ENGINEER.
- PERFORATED CORRUGATED POLYETHYLENE DRAINAGE PIPE (150mm DIAMETER) SHALL MEET THE REQUIREMENTS OF OPSS 1840.
- PIPE FILTER FABRIC CONFORMING TO OPSS 1860 FOR GEOTEXTILE CLASS 1 WITH A FILTRATION OPENING SIZE OF 150 TO 450 MICRONS SHALL BE SUPPLIED ON ALL SECTIONS OF PERFORATED PIPE.
- SUBDRAIN PIPES ARE TO BE SET ON AT LEAST A 1% GRADE AND ARE TO DRAIN TO A POSITIVE OUTLET. IF THE PIPE IS OUTLETTED TO THE POND, THEN THE LAST 1.5m SHOULD COMPRISE A CORRUGATED STEEL PIPE EQUIPPED WITH A ROUGH GATE.
- BEDDING AND BACKFILL MATERIAL SHALL BE CONCRETE SAND MEETING THE GRADATION REQUIREMENTS OF OPSS 1002 (FINE AGGREGATE FOR CONCRETE). THE FILTER SAND IS TO EXTEND 150mm BELOW AND ABOVE THE PIPE TO A MINIMUM OF 300mm FROM THE SURFACE. FILTER SAND TO BE COMPACTED TO 95% SPMD. ALL WORKS TO BE AS PER OPSS 410.
- THE OPEN UPSTREAM ENDS OF PIPES SHOULD BE CAPPED.
- THE SUBDRAIN ON THE ORIGINAL SURFACE SHOULD BE APPROVED AND APPROVED BY THE GEOTECHNICAL ENGINEER PRIOR TO CONSTRUCTION. FILL PLACEMENT AND COMPACTION OPERATIONS TO BE CARRIED OUT UNDER ENGINEERING SUPERVISION.

TYPICAL POND SUBDRAIN DETAIL
N.T.S.

DETAIL 10

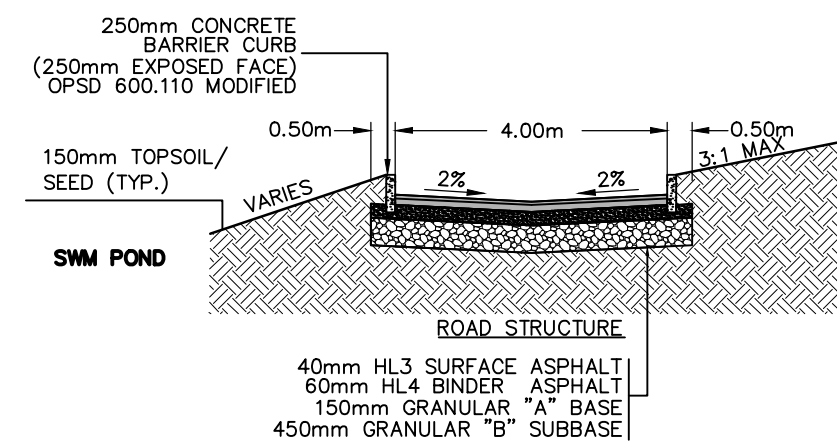


ORIFICE 1 DETAIL
N.T.S.

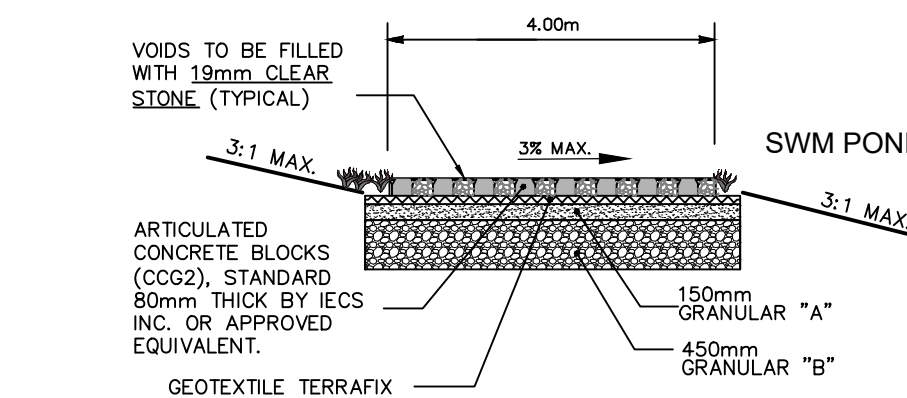


PLAN VIEW
N.T.S.

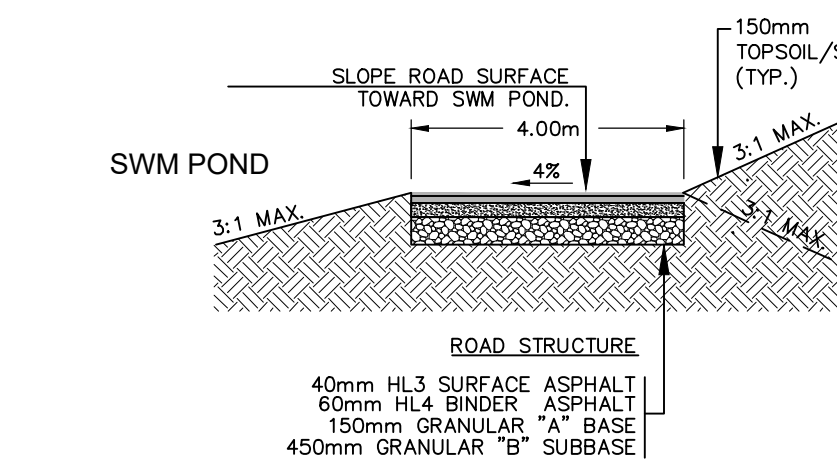
DETAIL 6



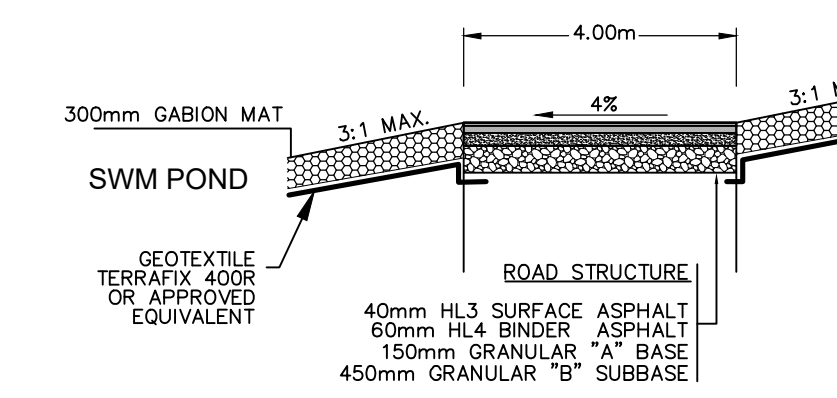
DETAIL 8D - CURBED ASPHALT
MAINTENANCE ACCESS SECTION
N.T.S.



DETAIL 8C - ARTICULATED CONCRETE
BLOCK MAT MAINTENANCE ACCESS SECTION
N.T.S.



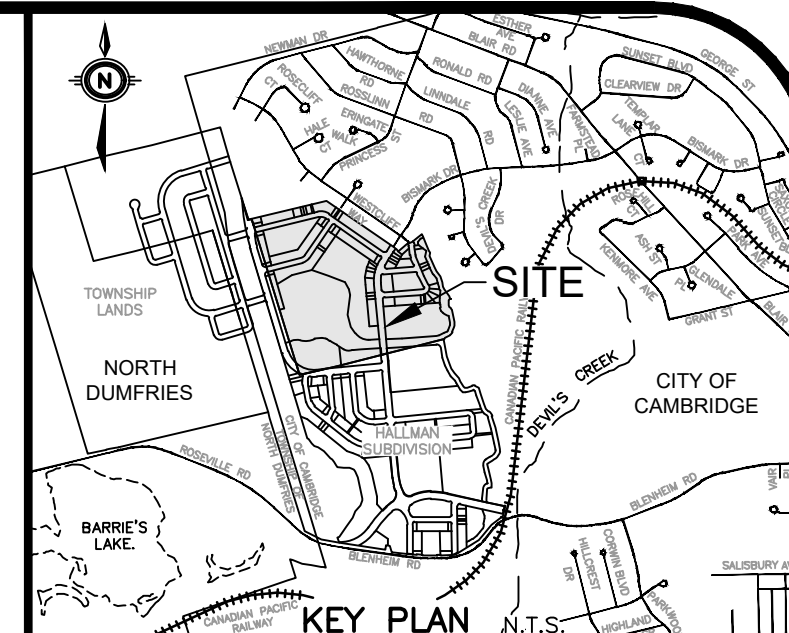
DETAIL 8B - ASPHALT
MAINTENANCE ACCESS SECTION
N.T.S.



DETAIL 8A - OVERLAND FLOW ROUTE
MAINTENANCE ACCESS SECTION
N.T.S.

- NOTES:
- ALL GRANULARS TO BE VERIFIED FOR CONFORMANCE TO OPSS 1010 PRIOR TO UTILIZATION OF SITE. TO BE COMPACTED TO 100% SPMD.
 - ANY FILL BENEATH ROAD TO CONSIST OF INORGANIC NATIVE MATERIAL IN MAXIMUM 300mm LIFTS COMPACTED TO MINIMUM 95% SPMD.

SWM FACILITY ACCESS ROAD
N.T.S.



GEODETTIC BM
STATION 00119663308
CONCRETE CINDER WITH TOPOGRAPHICAL TABLET ON NORTH SIDE OF GRANT STREET, 10.9m EAST OF INTERSECTION WITH KENMORE AVENUE, IN GRASSY AREA BETWEEN ROADWAY AND SIDEWALK, 1.6m NORTH OF ROADWAY, 1.0m WEST FROM CONCRETE LIGHT STANDARD AND 18.6m FROM CENTRELINE OF DRIVEWAY TO No. 56 GRANT STREET.

SITE BENCHMARK
ELEV. = 306.341m
CUT CROSS IN CONCRETE SIDEWALK ON EAST CORNER OF BISMARCK DRIVE AND WESTCLIFF WAY INTERSECTION. LOCATED APPROX. 14.7m SOUTH EAST ALONG WESTCLIFF WAY CENTRELINE FROM INTERSECTION AND 8.4m NORTH EAST ALONG BISMARCK DRIVE CENTRELINE FROM INTERSECTION.

NOTE TO CONTRACTOR :
DO NOT SCALE DRAWINGS.

CONTRACTORS MUST CHECK AND VERIFY ALL DIMENSIONS AND REPORT ANY DISCREPANCIES TO THE ENGINEER BEFORE PROCEEDING WITH THE WORK.

ALL DRAWINGS REMAIN THE PROPERTY OF THE ENGINEER AND SHALL NOT BE REPRODUCED OR REUSED WITHOUT THE ENGINEER'S WRITTEN PERMISSION.

THE OWNER/ARCHITECT/CONTRACTOR IS ADVISED THAT M.T.E. CONSULTANTS INC. CANNOT CERTIFY ANY COMPONENT OF THE SITE WORKS NOT INSPECTED DURING CONSTRUCTION. IT IS THE RESPONSIBILITY OF THE GENERAL CONTRACTOR TO NOTIFY M.T.E. CONSULTANTS INC. PRIOR TO COMMENCEMENT OF CONSTRUCTION TO ARRANGE FOR INSPECTION.

NOTE:
DRAWING TO BE READ IN
CONJUNCTION WITH SW2.1 & SW2.2

13.	RE-ISSUED FOR WESTWOOD VILLAGE PHASE 2	GMK	2026-04-02
12.	ISSUED FOR CONSTRUCTION	GMK	2021-07-22
11.	ISSUED FOR 3RD SUBMISSION - SERVICING APPROVAL	GMK	2021-06-30
10.	ISSUED FOR CONSTRUCTION - PRINCESS STREET OUTLET	GMK	2021-05-04
9.	ISSUED FOR 2ND SUBMISSION - SERVICING APPROVAL	GMK	2021-03-31
8.	ISSUED FOR TENDER - PRINCESS STREET OUTLET	GMK	2021-01-28
7.	RE-ISSUED FOR CONSTRUCTION-AREA GRADING	GMK	2020-07-30
6.	ISSUED FOR CONSTRUCTION	GMK	2020-06-11
5.	General Revisions	GMK	2020-04-16
4.	ISSUED FOR AREA GRADING TENDER	GMK	2020-04-02
3.	ISSUED FOR SERVICING APPROVAL	GMK	2020-03-12
2.	ISSUED FOR 2ND SUBMISSION - AREA GRADING APPROVAL	GMK	2020-02-10
1.	ISSUED FOR AREA GRADING APPROVAL	GMK	2019-07-24
No.	REVISION	BY	YYYY-MM-DD

CITY of CAMBRIDGE



Engineers, Scientists, Surveyors

519-743-6500

OWNER
CACHET DEVELOPMENTS (CAM WEST) INC.
361 Connie Crescent, Suite 200
PROJECT
CAMBRIDGE WEST CACHET SUBDIVISION
Cambridge
DRAWING

SWM FACILITY No.2 DETAILS AND NOTES PLAN

Project Manager	G.KORBER	Project No.	44720-114
Design By	JNJ	Checked By	GMK
Drawn By	ACH/AXH	Checked By	
Surveyed By	MTE	Drawing No.	
Date	May.20/22		
Scale	1:250	Sheet	of

SW2.3