May 7, 2025 **SSI Project Number: 0299-002**

Planning and Development Services
Mountainview County
1408 – Twp Rd 320
Didsbury, AB, Canada, T0M 0W0

Dear Sir/ Madam:

Re: Netook North Conceptual Stormwater Management Plan SE ¼ 3-33-1-W5

This conceptual Stormwater Management Plan is in support of the Netook North Plan.

Introduction

The proposed mixed-use development is located on the north side of Highway 27, west of Range Road 12, south of Olds Golf and Country Club. **Figure 1** is the Location Plan. The quarter section is currently agricultural land with a drainage ditch along the north and west property lines.

The Concept Plan proposes forty-five 2 acre lots, and a 40 acre commercial/ industrial area. **Figure 2** shows the existing Site Layout and **Figure 3** shows the proposed subdivision layout. The Phase 1 development is shown on **Figure 4**.

The topography shows there is a general slope from north to south with runoff discharging southwest below Hwy 27. From here runoff flows southeast to Lone Pine Creek, which is a tributary of Kneehill Creek and the Red Deer River.

Design Criteria

For the design storm service level, Mountainview County references Red Deer County Guidelines, which uses the 1:5 year and 1:100 year design storms (Chicago distribution). It is recommended that the 24-hour storm is used here.

In addition, to ensure there is no impact to adjacent properties, continuous rainfall data (from Red Deer Airport) will be used to ensure no increase in flow to the downstream watercourse.

Analysis

Figure 2 shows the boundary of the existing overland flow routes which was taken from Lidar.

In order to determine both the existing and proposed stormwater runoff from the site, it is necessary to review the native soil types. From the Geotechnical Assessment by Watt Consulting

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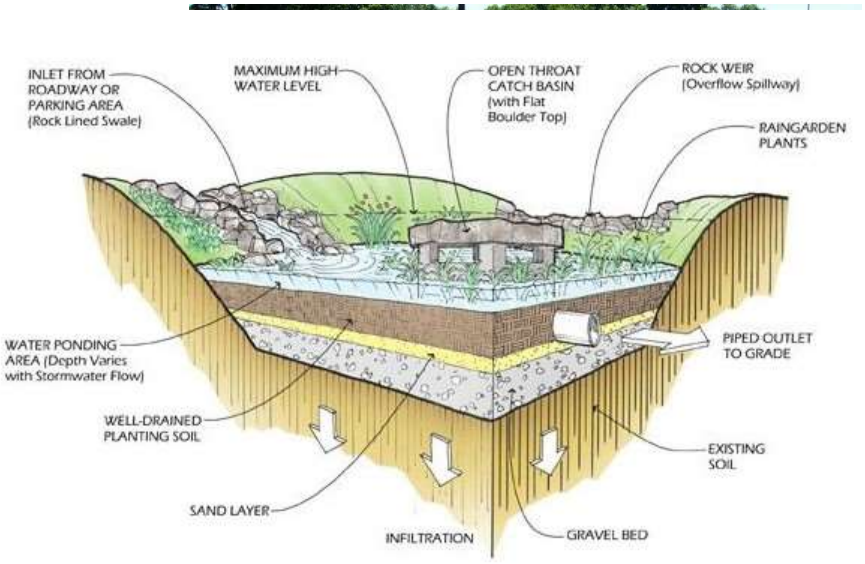
Tel (403) 828-9917: **Fax** (403) 374-2517

Group, April 2024 (Watt), the site is underlain by glacial till. This means that infiltration rates are relatively low. Clay pond liners have a design infiltration rate of 1 x 10^{-8} m/s, in accordance with provincial and some municipal guidelines. As the native materials contains sandy deposits, a conservative infiltration rate of 1 x 10^{-7} m/s is assumed here i.e. 10 times more porous than a clay liner. This is confirmed by the Watt report.

The soil type is Type C with a Curve Number of 72 in accordance with the USDA Soil Conservation Service 1968.

To keep runoff values to the same, or less than existing values, it is recommended that some form of stormwater management facility is constructed close to the south west corner of the property as shown on **Figure 3**. In addition, bioretention areas are recommended in a few different locations where stormwater would leave the property. The figure below shows how a typical bioretention area is constructed.



Bioretention areas are Low-Impact Development (LID) Measures which allow stormwater runoff to be infiltrated rather than to discharge offsite. They not only protect downstream watercourses from excessive runoff, but also filter the water to protect fish habitat. They are typically placed at the side of a road to collect runoff from an overland swale or catchbasin. They consist of a sand/ gravel or other well-draining subsoil, below a deep, well-draining growing medium. Above this there is a ponding area of variable depth and a high-level discharge pipe or spillway. Trees, shrubs or other vegetation can be planted in the bioretention area as required. For this project, bioretention zones placed adjacent to the site entrances can be planted with vegetation to match to existing flora of the area. The locations of the proposed bioswales are shown on **Figure 4**, with a detail of the entrance bioretention area given on **Figure 5**.

In addition to the bioretention area, an additional LID measure is proposed. This is called absorbent landscaping. One approach to absorbent landscaping is simply adding topsoil to the proposed lots and roadway ditches. Construction of the roads and houses typically results in excessive topsoil. This can be stockpiled and used by homeowners during development of their lots.

Computer Modelling

To model rural runoff, appropriate design parameters and hydrological equations are required. The Kinematic Wave Formula is to be used to determine the Time of Concentration for rural areas. The overland flows show little sign of channelizing (upstream of the site) and the catchment has approximately uniform grades. A value of 0.100 for Manning's is recommended. Runoff from the existing lots is channelized in the form of road ditches and culverts; therefore a Manning's value of 0.05 is used for this area.

The Kinematic Wave Formula:

$$t_c = \frac{0.94\, L^{0.6}\, n^{0.6}}{i^{0.4}\, S^{0.3}}$$

t_c = Time of Concentration (mins)

L = Overland Flow Length (ft)

n = Manning's number for overland flow

i = Rainfall intensity (in/hr)

S = Catchment Slope (ft/ft)

The IDF parameters a, b & c are obtained from the Red Deer County Design Guidelines.

Table 1 – IDF Parameters

Return Period	a	b	c	Total 24hr Rainfall Depth from AES data (mm)
1:5 Year	165.0	6.10	0.570	62.6
1:100 Year	187.0	-1.60	0.510	110.0

Therefore, as i and t_c are interdependent, the process is iterative.

Once t_c is obtained, the unit hydrograph time to peak, t_p (t_c x 0.66667) is used in SWMHYMO to generate the runoff hydrograph.

Figure 3 shows potential lot layouts. Based on the neighbouring lots, it is estimated that each lot will contain approximately 1,000 m^2 of roof/ asphalt, with 6,000 m^2 of cut grass. The internal roadway is a standard 9 m wide asphalt. Tables 2 and 3 below shows the catchment parameters used.

Table 2 Existing Catchment

Ref	Area (Ha)	1:5 Year t_c (Hrs)	1:100 Year t_c (Hrs)	1:5 Year Disch. (L/s)	1:100 Year Disch. (L/s)	Notes
EX-01	25.598	2.85	2.06	57	228	To north ditch then SW culvert
EX-02	10.676	0.58	0.42	32	183	To west ditch then SW culvert
EX-03	17.219	1.65	1.19	43	189	To south centre culvert
EX-04	1.175	0.58	0.42	4	20	To north ditch then east culvert
EX-05	5.844	0.31	0.22	19	137	To east culvert
EX-06	2.535	0.36	0.26	8	54	To east ditch then east culvert
Total	**63.047**			**163**	**811**	

Table 3 Proposed Catchment

Ref	Area (Ha)	CN Value	Ia (mm)	T_c (Hrs)
Residential. Lots	28.335	77.2	2.9	0.50
Residential. Road	3.815	86.3	2.3	0.50
Existing Ditch	1.134	85.0	10.4	0.50
Commercial Lots	7.207	94.1	1.8	0.333
MR & PUL	2.040	73.3	3.1	0.333
Commercial Road	0.878	73.3	2.6	0.167
Proposed Pond	2.002	90.2	1.0	0.333
Total	**65.053**	**74.8**	**4.7**	**-**

The CN value is the runoff curve from the USDA Soil Conservation Service 1968.

For other modelling parameters not available in the Red Deer County guidelines or other referenced documents, the City of Calgary Stormwater Manual is used.

Single event analysis – SWMHYMO

- 5 minute interval, 24 hour duration
- Peak at 30 percent of duration of storm event
- For developed grasses areas, a value of 72 was used for the curve number (CN). This corresponds with moisture condition II, urban – open space, good condition, soil group B.
- NASHYD is a command in SWMHYMO application to simulate runoff from urban areas with impervious ratios lower than 0.20, or indirectly connected surfaces (i.e. mixed surfacing

that flows overland). The user must provide the values for 'Ia' and 'N'. Rainfall losses can be simulated with either Horton's infiltration equations or modified SCS procedure or a proportional loss coefficient. In this report, modified SCS procedure was applied. Following is a description used for the runoff simulation:

- Computational Time Step (DT) = 1 or 5 minutes used in all cases, depending on the existing SWMHYMO model for external areas
- Percent Impervious XIMP - Ratio of areas directly connected to the minor system
- Percent Impervious TIMP - Ratio of total impervious areas, equal to XIMP
- Base Flows (DWF) - Zero in all cases
- CN value of grass with soil type C = 72
- Initial Abstraction (IA) - For pervious areas only
- IA = based on CN Value =0.2*(25400/CN-254) unless stated otherwise
- Depression Storage (DPSI) - Impervious areas only
- DPSI = 1.6 mm in all cases
- For pervious surfaces, MNP = 0.25.
- For impervious surfaces, MNI = 0.013 or 0.014
- SCP = 0 or 10.00 min
- SCI = 0 or 5.00 min

Following is a brief description of SWMHYMO computer model commands typically used for simulation of overland runoff interception regime to the minor system:

READ HYD	Command for reading a previously saved hydrograph from a text file
ADD HYD	Command for adding hydrographs
ROUTE RESERVOIR	Command for routing flow hydrographs through detention storage facilities (i.e. trap low, pond) with a storage-outflow relationship

DIVERT HYD	Operational command which can be used to split a hydrograph into two or more hydrographs
COMPUTE DUALHYD	Command for separating the major system (street flow) and minor system (pipe flow) hydrograph from a total hydrograph
SAVE HYD	Command for saving a hydrograph to file
COMPUTE VOLUME	An operational command that can be used to compute a total volume of a hydrograph

Continuous Modelling – Water Balance Spreadsheet for City of Calgary (WBSCC)

The WBSCC is a Microsoft Excel Spreadsheet used to provide volumetric runoff calculations over a 51-year period. Even though it was designed for the City of Calgary, it is applicable here as the best tool available to model annual volumes and water re-use. It can simulate different Low-Impact Development (LID) measures and can consider different infiltration rates for winter months. Also, any irrigation demand for the site can be simulated, if required. The WBSCC simulates over a 51-year period.

The WBSCC general catchment characteristics are given in **Table 3** below.

Table 3 General Water Balance Spreadsheet Characteristics

Ref	Unit	Asphalt/Roof	Gravel/ Infil	Grass	Bioswale
Depression Loss	mm	1.6		-	-
Sand	%	n/a	88	30	30
Silt	%	n/a	7	35	35
Clay	%	n/a	5	35	35
Media Depth	mm	n/a	50	150-300	400
Porosity	% vol	n/a	0.46	0.48	0.48
Field Capacity	% vol	n/a	0.10	0.36	0.36
Wilting Point	% vol	n/a	0.05	0.22	0.22
Sat. Hyd. Cond.	m/s	n/a	3,00E-05	1.19E-06	1.19E-06
Sub-soil Hyd. Cond.	m/s	n/a	1.0 E-07	1.0 E-07	1.0 E-07
Ponding Depth	mm	n/a	0	3.2	varies

Water Re-use

As well as modelling the proposed catchments, a portion of the golf course was modelled to simulate irrigation. Support in principle has been reached with the golf course to re-use stormwater

from this development. This was detailed in a letter June 27, 2024, to the golf course with a reply stating a 'support in principle' from the golf club. More detailed discussions will occur during the application process period.

The golf club has an existing diversion license for their ponds. As the proposed diversion is greater than 6,250 m^3 annually, this license would have to be modified through communication with Alberta Environment (AEP) at the next stage of design. The area of the golf course which is irrigated is 17.4 hectares, as stated in the 2002 Water Management Plan by Tagish Engineering Ltd. This area is used in the model.

Results

For the 1:100-year design storm, using SWMHYMO, the size of the pond area was adjusted until the peak flow rate matched the pre-development values. The WBSCC was then used to compare annual runoff volumes.

Table 4 below shows the size of stormwater facility required.

Table 4 Proposed Storm Pond

Elevation	Step	Area	Stage Volume	Total Volume	Active Volume	Discharge	Notes
(m)	(m)	(m^2)	(m^3)	(m^3)	(m^3)	(m^3/s)	
14.00	0.00	0	0	0		0	
14.20	0.20	8,954	597	597		0	
14.70	0.50	10,162	4,776	5,373		0	
15.20	0.50	11,421	5,393	10,765		0	
15.70	0.50	12,729	6,035	16,800		0	
16.20	0.50	14,008	6,682	23,482	0	0	NWL
16.70	0.50	15,497	7,373	30,855	7,373	0.0437	
17.20	0.50	16,956	8,111	38,965	15,484	0.0660	
17.70	0.50	18,464	8,852	47,818	24,336	0.0825	
17.90	0.20	19,081	3,754	51,572	28,090	0.0883	HWL
18.20	0.30	20,023	5,865	57,437	33,955	0.0962	Freeboard

Table 5 Allowable Runoff Volumes – SWMHYMO (EXG-01 + EXG02)

Design Storm	Pre-development Runoff	Post-development Runoff
	Peak Flow (L/s)	Peak Flow (L/s)
1:5 Year	89	55
1:100 Year	411	87

The design criterion here is to keep 1:100 year post-development flow rates equal to, or less than, 1:5 year pre-development values.

Table 6 Runoff Volumes – WBSCC

Design Storm	Pre-development Runoff	Post-development Runoff
	Total Vol (m^3)	Total Vol (m^3)
51 Year Total	88,147	84,663
Annual	1,728	1,660

The criterion here is to keep annual average runoff volumes equal to, or less than, exiting values. The results show that there is a very slight reduction in discharge volume and flows.

Similar to the above design, there are smaller areas of the property which discharge offsite. There is a culvert below Range Road 12 which discharges east, and another culvert which discharges south as shown on **Figure 2**.

East Runoff

The catchment area flowing through the east culvert is currently 9.55 hectares (EXG-04, EXG-05 & EXG-06). It is proposed that runoff from the east catchment is captured and treated by bioretention areas at the 3 road entrances. These bioretention areas will likely be located within a PUL or part of the road right-of-way and are described above. They can be shaped into landscaped features, as necessary and will need to be able to contain 150 m^3 of runoff. To reduce the size of the bioretention areas at the commercial entrance, lot owners can be required to reduce runoff from their respective lot, or discharge by gravity or pump to the pond, as per below.

South Runoff

The catchment area flowing through the south central culvert is currently 17.22 hectares (EXG-03). It is proposed to limit the discharge on the commercial properties that will drain south so as to mitigate any impacts downstream. This will be done by the use of on-site bioretention areas. As can be seen on **Figure 2**, only some of the commercial lots discharge to the south central culvert. This is due to the grade limiting the possibility of a gravity discharge to the pond. During development of each lot, a lot-owner may decide to either import material to raise the lot sufficiently to drain to the pond by gravity or have a pump to discharge to discharge to the pond along the PUL on the north side of the lots. There is redundancy built-in to the pond to allow for this.

Phase Drainage

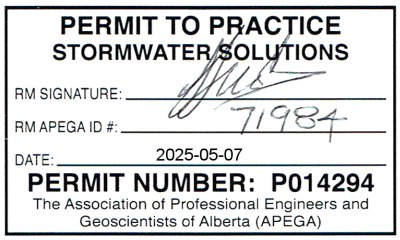
In addition to the above, an assessment of drainage was completed for Phase 1 alone as shown on **Figure 4**. As can be seen, only 16 residential lots, and the first two commercial lots, are proposed for Phase 1, the majority of which will drain to the east bioswales. For the few lots that drain west towards the future pond, temporary dugouts can be built to capture runoff. The size and exact location of the two dugouts will be determined as the next stage of design but it is estimated they will need to be able to contain 200 m^3 . The ultimate pond is not required until there is development beyond Phase 1, at which time EPEA registration will be required.

References

- Red Deer County Design Guidelines – Jan 2010
- Geotechnical Assessment for SE ¼ 3-33-1-W5M by Watt Consulting Group, April 2024
- USDA Soil Conservation Service 1968
- City of Calgary, "Stormwater Management & Design Manual", Wastewater & Drainage Department, September 2011
- J.F. Sabourin and Associates Inc., "SWMHYMO Stormwater Management Hydrologic Model – User's Manual", May 2000 (reprinted April 2005)
- WBSCC User's Manual

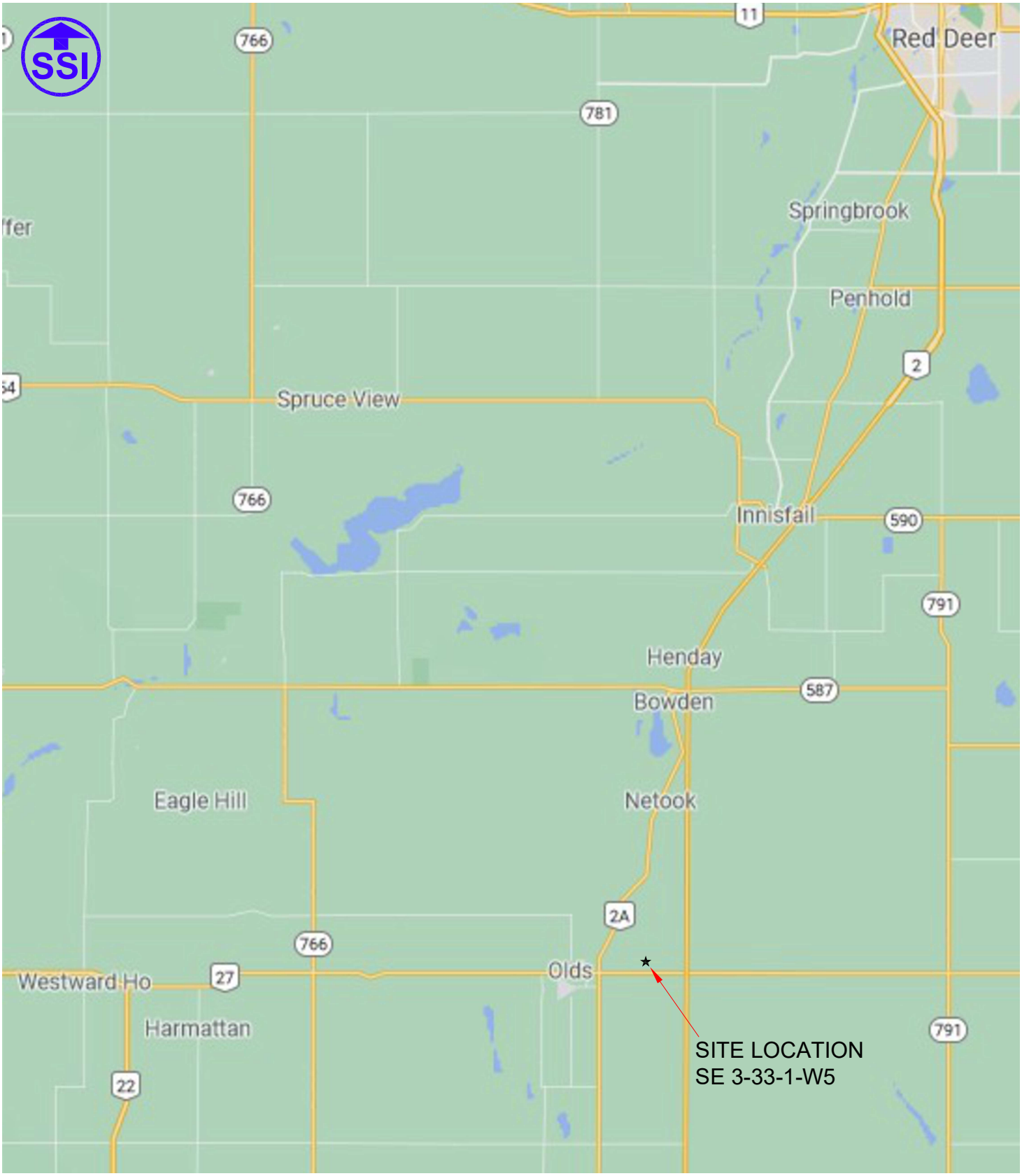
We trust that this report is acceptable but if you have any questions, or require further information, please do not hesitate to contact me.

Yours truly,



Paul Jacobs, P. Eng
Water Management Engineer

Enc:
Figure 1 – Location Plan
Figure 2 – Existing Site Plan
Figure 3 – Proposed Site Plan
Figure 4 – Phase 1 Site Plan
Figure 5 – Site Entrance Bioswales
SWMHYMO model files (input and output)
WBSCC model files – (input files)

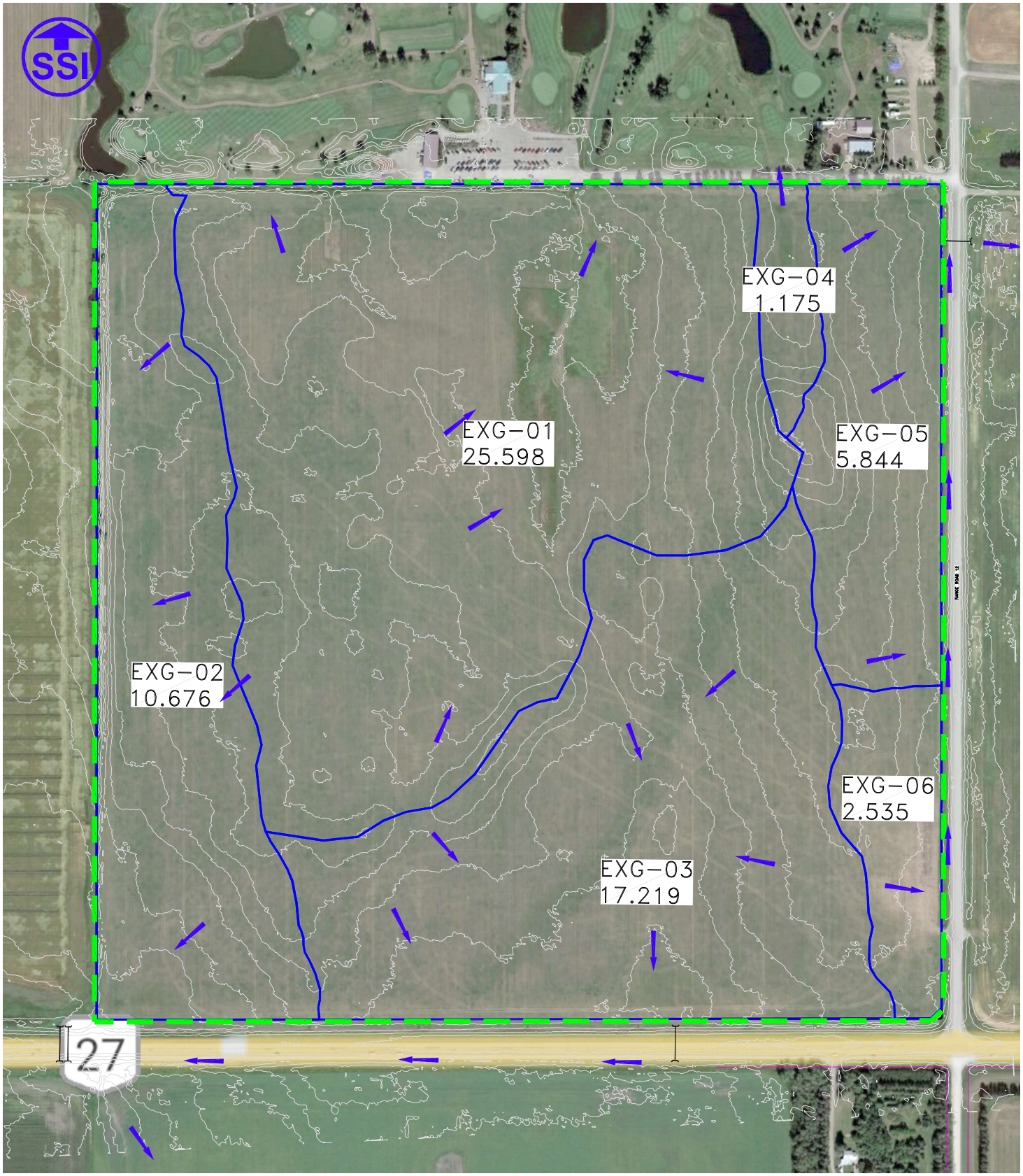


Rev.	Description	
B	ISSUED FOR APPROVAL	2024-08-08
A	ISSUED FOR REVIEW	2023-11-09

Stormwater Solutions

Scale 1:300,000

Client: Greg Brown
Project Name: Netook North
Drawing Title: Location Plan
Drawing Number: Figure 1
Project Number: 0299-002



Stormwater Solutions

Rev.	Description	
B	ISSUED FOR APPROVAL	2024-08-08
A	ISSUED FOR OPEN HOUSE	2024-05-13

Scale 1:5,000

DEVELOPMENT BOUNDARY

OVERLAND FLOW

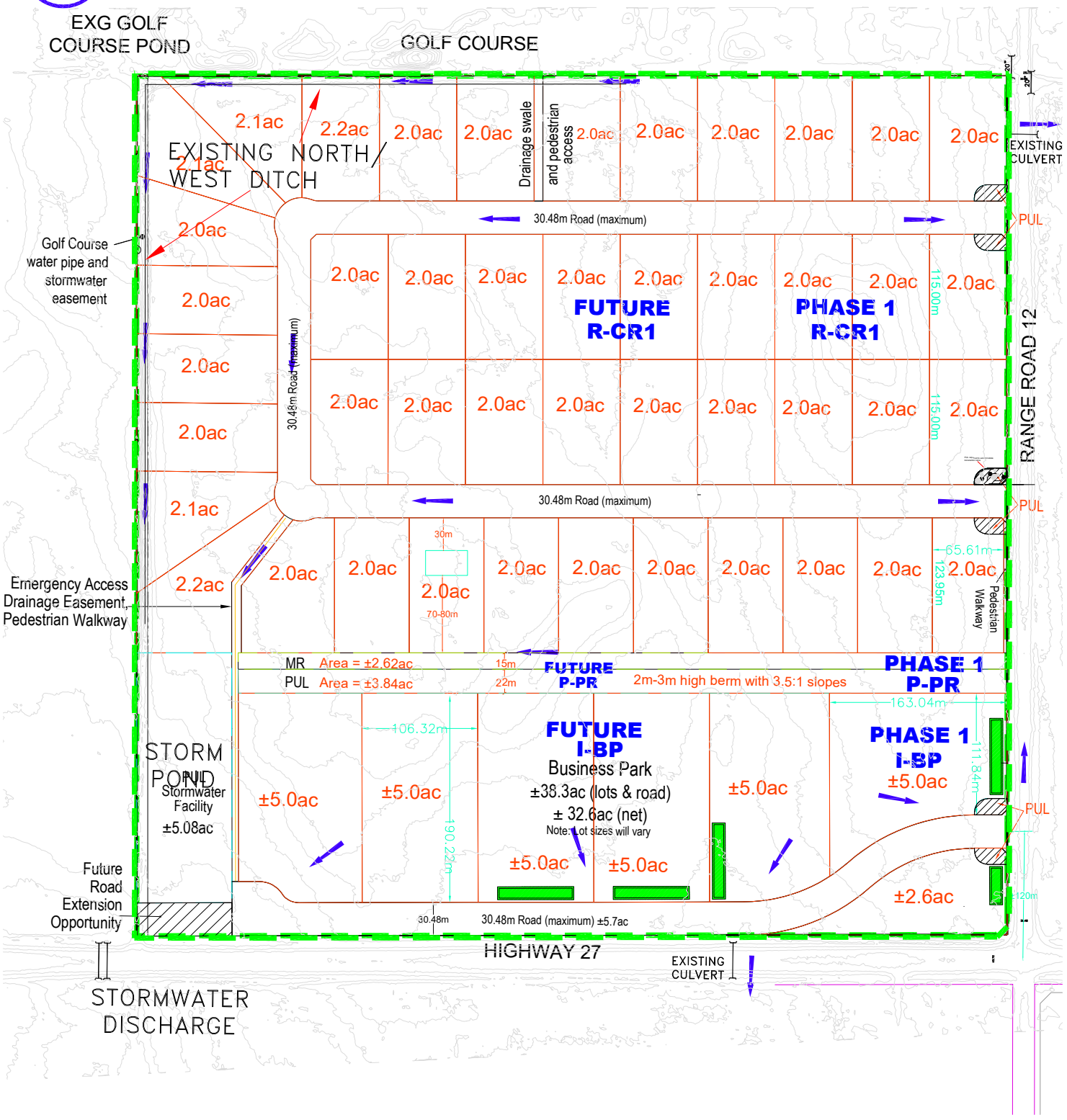
Client: 1273927 Alberta Ltd

Project Name: Netook North

Drawing Title: Existing Site Plan

Drawing Number: Figure 2

Project Number: 0299-002



Rev.	Description	
C	ISSUED FOR APPROVAL	2025-04-29
B	ISSUED FOR APPROVAL	2024-08-20
A	ISSUED FOR OPEN HOUSE	2024-05-13

Scale 1:5,000

DEVELOPMENT BOUNDARY

OVERLAND FLOW

BIORETENTION

ENTRANCE PUL

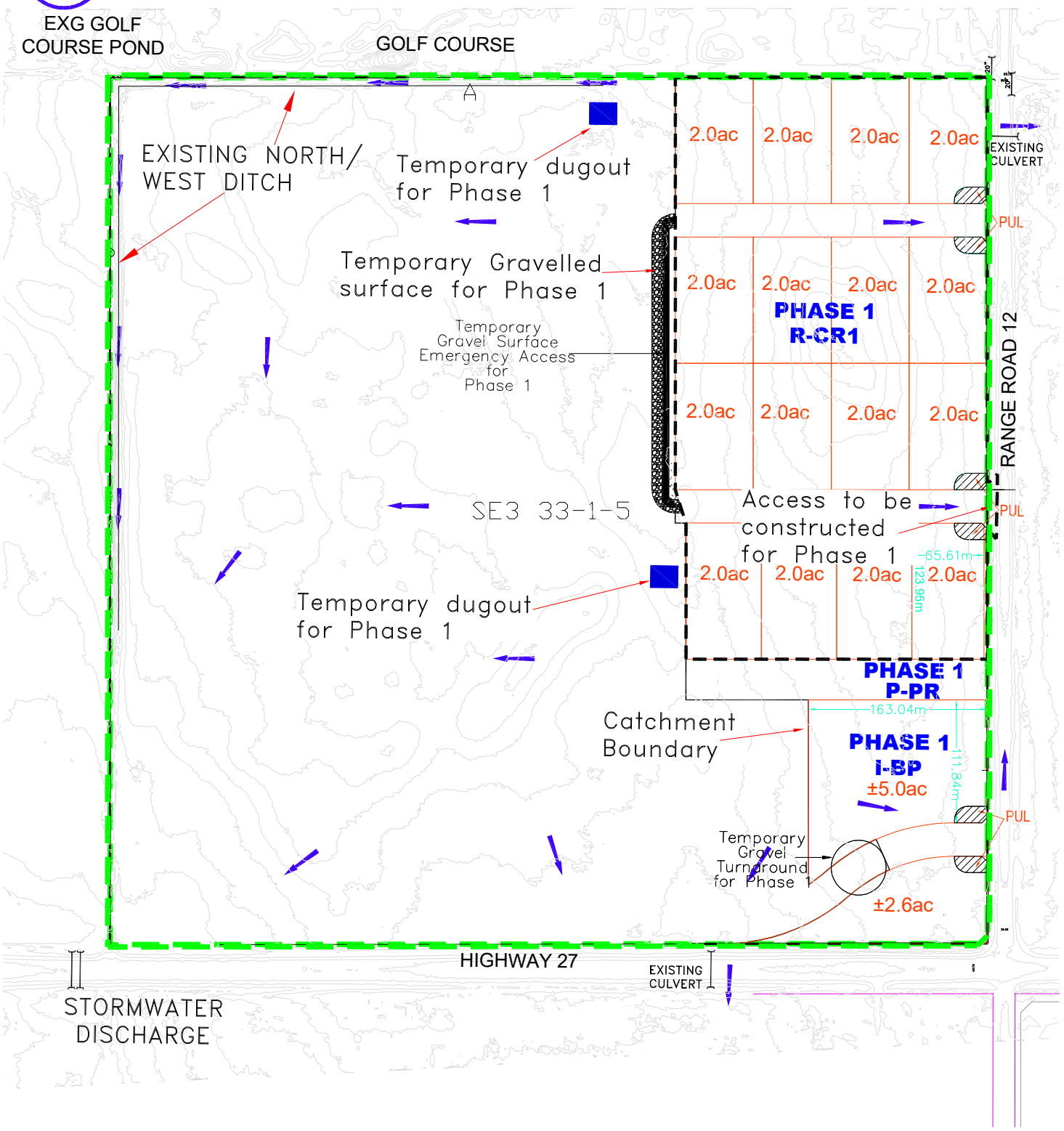
Client: 1273927 Alberta Ltd

Project Name: Netook North

Drawing Title: Proposed Site Plan

Drawing Number: Figure 3

Project Number: 0299-002



Stormwater Solutions

Rev.	Description	
C	ISSUED FOR APPROVAL	2025-04-29
B	ISSUED FOR APPROVAL	2024-08-20
A	ISSUED FOR OPEN HOUSE	2024-05-13

Scale 1:5,000

DEVELOPMENT BOUNDARY

OVERLAND FLOW

ENTRANCE PUL

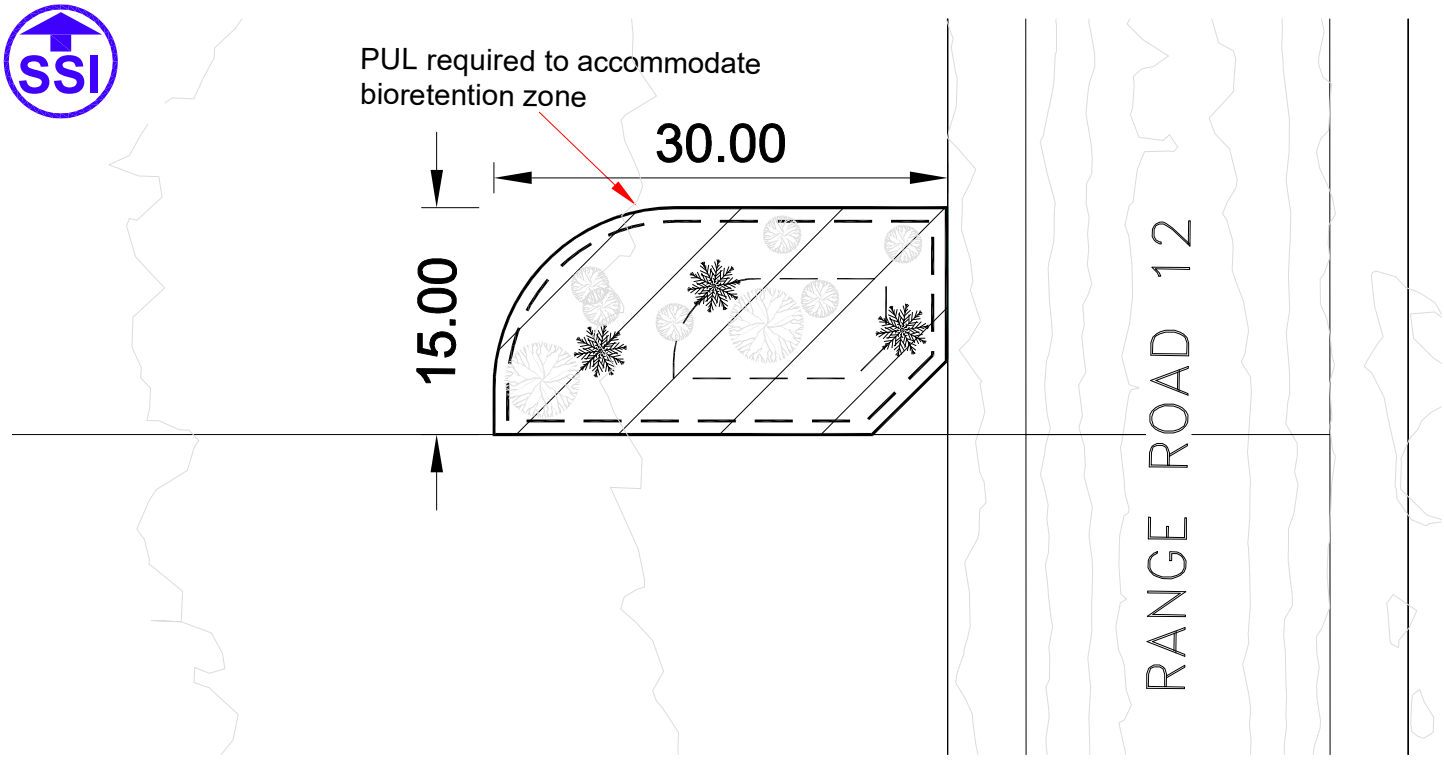
Client: 1273927 Alberta Ltd

Project Name: Netook North

Drawing Title: Proposed Phase 1 Plan

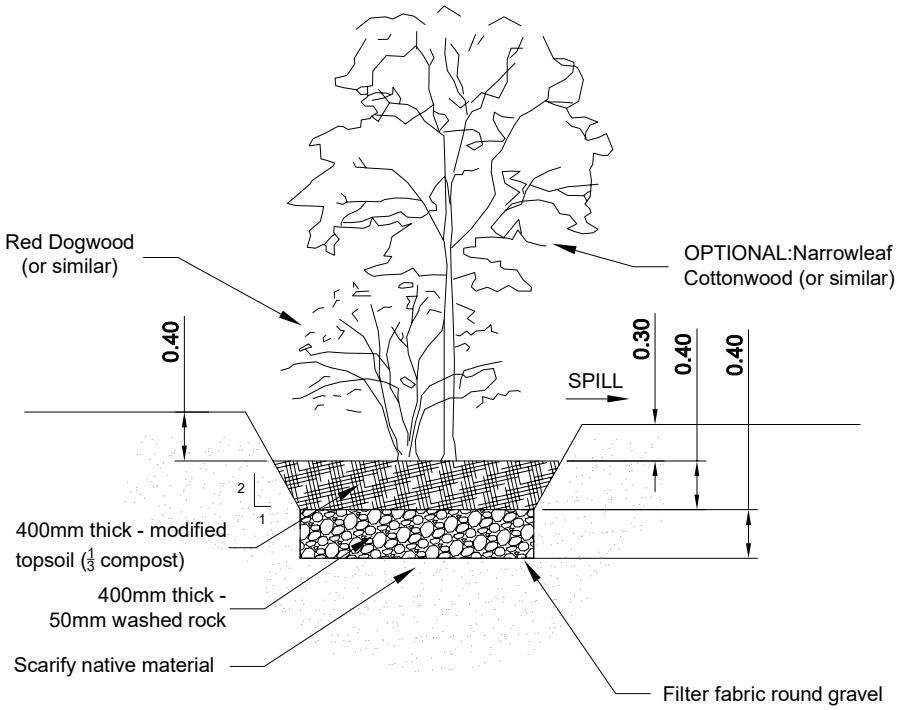
Drawing Number: Figure 4

Project Number: 0299-002



RESIDENTIAL ENTRANCE BIORETENTION ZONE

1:500



BIORETENTION AREA

Scale NTS

Stormwater Solutions			Scale as noted
A	ISSUED FOR APPROVAL	2025-04-29	
Rev.	Description		

Client: 1273927 Alberta Ltd
Project Name: Netook North
Drawing Title: Bioretention
Drawing Number: Figure 5
Project Number: 0299-002

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*Jul 2024
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CALIB NASHYD        ID  NHYD  DT(min)  AREA(ha)  DWF(cms) CN/C   IA    N   TP
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*MR & PUL
CALIB NASHYD        ID  NHYD  DT(min)  AREA(ha)  DWF(cms) CN/C   IA    N   TP
                    5   105    5.0      2.040     0       73.3   3.1   3  0.333
                        END = -1
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*Commercial Road
CALIB NASHYD        ID  NHYD  DT(min)  AREA(ha)  DWF(cms) CN/C   IA    N   TP
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*
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*Residential Lots
CALIB NASHYD        ID  NHYD  DT(min)  AREA(ha)  DWF(cms) CN/C   IA    N   TP
                    1   101    5.0      28.335    0       77.2   2.9   3  0.50
                        END = -1
*******************************************************************************
*Residential Road
CALIB NASHYD        ID  NHYD  DT(min)  AREA(ha)  DWF(cms) CN/C   IA    N   TP
                    2   102    5.0       3.8154   0       86.3   2.3   3  0.50
                        END = -1
*******************************************************************************
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                    3   103    5.0      1.134     0       85.0  10.4   3  0.50
                        END = -1
*******************************************************************************
*Commercial
CALIB NASHYD        ID  NHYD  DT(min)  AREA(ha)  DWF(cms) CN/C   IA    N   TP
                    4   104    5.0      7.207     0       94.1   1.8   3  0.333
                        END = -1
*******************************************************************************
*MR & PUL
CALIB NASHYD        ID  NHYD  DT(min)  AREA(ha)  DWF(cms) CN/C   IA    N   TP
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                        END = -1
*******************************************************************************
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CALIB NASHYD        ID  NHYD  DT(min)  AREA(ha)  DWF(cms) CN/C   IA    N   TP
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                        END = -1
*******************************************************************************
ADD HYD             8 201 1 2 3 4 5 6 7
*******************************************************************************
*Pond
ROUTE RESERVOIR      ID=1 NHYD=201 IDIN=8 DT=5.0 min
                     DISCH(cms)      STORAGE(ha m)
                        0               0
                      0.0437           0.7373
                      0.0660           1.5484
                      0.0825           2.4336
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                      0.0962           3.3955
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   S      W W W  MM MM  H   H   Y Y   MM MM  O   O      9   9  9   9
   SSSSS  W W W  M M M  HHHHH    Y    M M M  O   O  ##  9   9  9   9   Ver  4.05
       S   W W   M   M  H   H    Y    M   M  O   O       9999   9999   Sept 2011
   SSSSS   W W   M   M  H   H    Y    M   M   OOO           9      9   =========
                                                        9   9  9   9   # 3826891
        StormWater Management HYdrologic Model           999    999    =========

 ********************************************************************************
 ***************************** SWMHYMO Ver/4.05  ********************************
 *********  A single event and continuous hydrologic simulation model  *********
 *********     based on the principles of HYMO and its successors      *********
 *********                 OTTHYMO-83 and OTTHYMO-89.                  *********
 ********************************************************************************
 ********* Distributed by:  J.F. Sabourin and Associates Inc.          *********
 *********                  Ottawa,  Ontario: (613) 836-3884           *********
 *********                  Gatineau, Quebec: (819) 243-6858           *********
 *********                  E-Mail: swmhymo@jfsa.Com                   *********
 ********************************************************************************

 +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
 +++++++++ Licensed user: Stormwater Solutions Inc.                    +++++++++
 +++++++++                Calgary              SERIAL#:3826891        +++++++++
 +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++

 ********************************************************************************
 *********           ++++++ PROGRAM ARRAY DIMENSIONS ++++++             *********
 *********           Maximum value for ID numbers  :     10            *********
 *********           Max. number of rainfall points: 105408            *********
 *********           Max. number of flow points    : 105408            *********
 ********************************************************************************


 **********************   D E T A I L E D   O U T P U T   **********************
 ********************************************************************************
 *         DATE: 2024-08-07     TIME: 11:34:23     RUN COUNTER: 003146         *
 ********************************************************************************
 * Input   filename: C:\DATA\SWMHYMO\NETK-S21.dat                               *
 * Output  filename: C:\DATA\SWMHYMO\NETK-S21.out                               *
 * Summary filename: C:\DATA\SWMHYMO\NETK-S21.sum                               *
 * User comments:                                                               *
 * 1:_____________________________________________________________________________*
 * 2:_____________________________________________________________________________*
 * 3:_____________________________________________________________________________*
 ********************************************************************************

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001:0001--------------------------------------------------------------------------
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********************************************************************************
*
*FILENAME: NTK-S04.dat
*Netook Crossing
*Jul 2024
*PFJ
--------------------
| START            |  Project  dir.: C:\DATA\SWMHYMO\
--------------------  Rainfall dir.: C:\DATA\SWMHYMO\
    TZERO =   .00 hrs on        0
    METOUT=   2 (output = METRIC)
    NRUN  = 001
    NSTORM=   0
--------------------------------------------------------------------------------
----
001:0002--------------------------------------------------------------------------
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********************************************************************************
*5 YEAR CHICAGO DESIGN STORM
*
--------------------
| CHICAGO STORM    |    IDF curve parameters: A= 165.000
| Ptotal= 62.57 mm |                          B=   6.100
--------------------                          C=    .570
                         used in:   INTENSITY =  A / (t + B)^C

                         Duration of storm  = 24.00 hrs
                         Storm time step    =  5.00 min
                         Time to peak ratio =   .30
```

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
.08	1.139	6.08	3.406	12.08	2.283	18.08	1.443
.17	1.147	6.17	3.573	12.17	2.261	18.17	1.436
.25	1.155	6.25	3.765	12.25	2.240	18.25	1.430
.33	1.163	6.33	3.989	12.33	2.219	18.33	1.424
.42	1.172	6.42	4.253	12.42	2.199	18.42	1.418
.50	1.180	6.50	4.571	12.50	2.179	18.50	1.412
.58	1.188	6.58	4.964	12.58	2.159	18.58	1.406
.67	1.197	6.67	5.465	12.67	2.140	18.67	1.400
.75	1.206	6.75	6.134	12.75	2.122	18.75	1.394
.83	1.215	6.83	7.086	12.83	2.104	18.83	1.389
.92	1.225	6.92	8.581	12.92	2.086	18.92	1.383
1.00	1.234	7.00	11.397	13.00	2.069	19.00	1.377
1.08	1.244	7.08	19.703	13.08	2.052	19.08	1.372
1.17	1.254	7.17	41.846	13.17	2.035	19.17	1.366
1.25	1.264	7.25	24.301	13.25	2.019	19.25	1.361
1.33	1.274	7.33	16.914	13.33	2.003	19.33	1.356
1.42	1.285	7.42	13.380	13.42	1.988	19.42	1.350
1.50	1.296	7.50	11.272	13.50	1.973	19.50	1.345
1.58	1.307	7.58	9.854	13.58	1.958	19.58	1.340
1.67	1.318	7.67	8.826	13.67	1.944	19.67	1.335
1.75	1.330	7.75	8.041	13.75	1.929	19.75	1.330
1.83	1.342	7.83	7.418	13.83	1.915	19.83	1.325
1.92	1.354	7.92	6.910	13.92	1.902	19.92	1.320
2.00	1.366	8.00	6.486	14.00	1.888	20.00	1.315
2.08	1.379	8.08	6.125	14.08	1.875	20.08	1.310
2.17	1.392	8.17	5.814	14.17	1.862	20.17	1.305
2.25	1.406	8.25	5.543	14.25	1.850	20.25	1.300
2.33	1.420	8.33	5.303	14.33	1.837	20.33	1.296
2.42	1.434	8.42	5.090	14.42	1.825	20.42	1.291
2.50	1.449	8.50	4.899	14.50	1.813	20.50	1.286
2.58	1.464	8.58	4.726	14.58	1.801	20.58	1.282
2.67	1.480	8.67	4.568	14.67	1.790	20.67	1.277
2.75	1.496	8.75	4.425	14.75	1.778	20.75	1.273
2.83	1.512	8.83	4.293	14.83	1.767	20.83	1.268
2.92	1.529	8.92	4.171	14.92	1.756	20.92	1.264
3.00	1.547	9.00	4.058	15.00	1.746	21.00	1.259
3.08	1.565	9.08	3.953	15.08	1.735	21.08	1.255
3.17	1.584	9.17	3.856	15.17	1.725	21.17	1.251
3.25	1.603	9.25	3.764	15.25	1.714	21.25	1.247
3.33	1.623	9.33	3.679	15.33	1.704	21.33	1.242
3.42	1.644	9.42	3.598	15.42	1.694	21.42	1.238
3.50	1.666	9.50	3.522	15.50	1.685	21.50	1.234
3.58	1.688	9.58	3.451	15.58	1.675	21.58	1.230
3.67	1.711	9.67	3.383	15.67	1.666	21.67	1.226

3.75	1.735	9.75	3.319	15.75	1.656	21.75	1.222
3.83	1.760	9.83	3.258	15.83	1.647	21.83	1.218
3.92	1.786	9.92	3.200	15.92	1.638	21.92	1.214
4.00	1.813	10.00	3.145	16.00	1.629	22.00	1.210
4.08	1.841	10.08	3.092	16.08	1.620	22.08	1.206
4.17	1.871	10.17	3.042	16.17	1.612	22.17	1.202
4.25	1.902	10.25	2.993	16.25	1.603	22.25	1.198
4.33	1.934	10.33	2.947	16.33	1.595	22.33	1.195
4.42	1.968	10.42	2.903	16.42	1.586	22.42	1.191
4.50	2.004	10.50	2.861	16.50	1.578	22.50	1.187
4.58	2.041	10.58	2.820	16.58	1.570	22.58	1.184
4.67	2.080	10.67	2.781	16.67	1.562	22.67	1.180
4.75	2.122	10.75	2.743	16.75	1.555	22.75	1.176
4.83	2.166	10.83	2.706	16.83	1.547	22.83	1.173
4.92	2.212	10.92	2.671	16.92	1.539	22.92	1.169
5.00	2.261	11.00	2.638	17.00	1.532	23.00	1.166
5.08	2.314	11.08	2.605	17.08	1.524	23.08	1.162
5.17	2.370	11.17	2.573	17.17	1.517	23.17	1.159
5.25	2.430	11.25	2.543	17.25	1.510	23.25	1.155
5.33	2.494	11.33	2.513	17.33	1.503	23.33	1.152
5.42	2.563	11.42	2.484	17.42	1.496	23.42	1.148
5.50	2.638	11.50	2.457	17.50	1.489	23.50	1.145
5.58	2.719	11.58	2.430	17.58	1.482	23.58	1.142
5.67	2.807	11.67	2.403	17.67	1.475	23.67	1.138
5.75	2.903	11.75	2.378	17.75	1.468	23.75	1.135
5.83	3.010	11.83	2.353	17.83	1.462	23.83	1.132
5.92	3.127	11.92	2.329	17.92	1.455	23.92	1.129
6.00	3.258	12.00	2.306	18.00	1.449	24.00	1.125

001:0003---
****
*Residential Lots

| CALIB NASHYD | Area (ha)= 28.34 | Curve Number (CN)=77.20
| 01:000101 DT= 5.00 | Ia (mm)= 2.900 | # of Linear Res.(N)= 3.00
---| U.H. Tp(hrs)= .500

Unit Hyd Qpeak (cms)= 2.165

PEAK FLOW (cms)= .384 (i)
TIME TO PEAK (hrs)= 7.833
RUNOFF VOLUME (mm)= 26.437
TOTAL RAINFALL (mm)= 62.572
RUNOFF COEFFICIENT = .423

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

001:0004---
****
*Residential Road

| CALIB NASHYD | Area (ha)= 3.82 | Curve Number (CN)=86.30
| 02:000102 DT= 5.00 | Ia (mm)= 2.300 | # of Linear Res.(N)= 3.00
---| U.H. Tp(hrs)= .500

Unit Hyd Qpeak (cms)= .291

PEAK FLOW (cms)= .078 (i)
TIME TO PEAK (hrs)= 7.833
RUNOFF VOLUME (mm)= 36.112
TOTAL RAINFALL (mm)= 62.572
RUNOFF COEFFICIENT = .577

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

001:0005---
****
*Ditch

| CALIB NASHYD | Area (ha)= 1.13 | Curve Number (CN)=85.00
| 03:000103 DT= 5.00 | Ia (mm)= 10.400 | # of Linear Res.(N)= 3.00
---| U.H. Tp(hrs)= .500

Unit Hyd Qpeak (cms)= .087

PEAK FLOW (cms)= .015 (i)
TIME TO PEAK (hrs)= 7.917
RUNOFF VOLUME (mm)= 28.061
TOTAL RAINFALL (mm)= 62.572
RUNOFF COEFFICIENT = .448

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

001:0006---
****
*Commercial

| CALIB NASHYD | Area (ha)= 7.21 | Curve Number (CN)=94.10
| 04:000104 DT= 5.00 | Ia (mm)= 1.800 | # of Linear Res.(N)= 3.00
---| U.H. Tp(hrs)= .333

Unit Hyd Qpeak (cms)= .827

PEAK FLOW (cms)= .271 (i)
TIME TO PEAK (hrs)= 7.500
RUNOFF VOLUME (mm)= 48.153
TOTAL RAINFALL (mm)= 62.572
RUNOFF COEFFICIENT = .770

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

001:0007---
****
*MR & PUL

| CALIB NASHYD | Area (ha)= 2.04 | Curve Number (CN)=73.30
| 05:000105 DT= 5.00 | Ia (mm)= 3.100 | # of Linear Res.(N)= 3.00
---| U.H. Tp(hrs)= .333

Unit Hyd Qpeak (cms)= .234

PEAK FLOW (cms)= .028 (i)
TIME TO PEAK (hrs)= 7.583

```
     RUNOFF VOLUME     (mm)=   23.270
     TOTAL RAINFALL    (mm)=   62.572
     RUNOFF COEFFICIENT   =     .372

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

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001:0008--------------------------------------------------------------------------
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********************************************************************************
*Commercial Road
----------------------
| CALIB NASHYD       |   Area    (ha)=     .88   Curve Number   (CN)=81.10
| 06:000106 DT= 5.00 |   Ia      (mm)=   2.600   # of Linear Res.(N)= 3.00
----------------------   U.H. Tp(hrs)=    .167

     Unit Hyd Qpeak  (cms)=     .201

     PEAK FLOW       (cms)=     .023 (i)
     TIME TO PEAK    (hrs)=    7.333
     RUNOFF VOLUME    (mm)=   30.181
     TOTAL RAINFALL   (mm)=   62.572
     RUNOFF COEFFICIENT   =     .482

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

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001:0009--------------------------------------------------------------------------
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********************************************************************************
*Pond
----------------------
| CALIB NASHYD       |   Area    (ha)=    2.00   Curve Number   (CN)=89.60
| 07:000107 DT= 5.00 |   Ia      (mm)=   1.000   # of Linear Res.(N)= 3.00
----------------------   U.H. Tp(hrs)=    .333

     Unit Hyd Qpeak  (cms)=     .230

     PEAK FLOW       (cms)=     .061 (i)
     TIME TO PEAK    (hrs)=    7.583
     RUNOFF VOLUME    (mm)=   41.635
     TOTAL RAINFALL   (mm)=   62.572
     RUNOFF COEFFICIENT   =     .665

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

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001:0010--------------------------------------------------------------------------
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********************************************************************************
------------------------
| ADD HYD (       201) | ID: NHYD         AREA     QPEAK   TPEAK   R.V.    DWF
------------------------                   (ha)     (cms)   (hrs)   (mm)    (cms)
                     ID1 01:       101    28.34     .384    7.83  26.44    .000
                    +ID2 02:       102     3.82     .078    7.83  36.11    .000
                    +ID3 03:       103     1.13     .015    7.92  28.06    .000
                    +ID4 04:       104     7.21     .271    7.50  48.15    .000
                    +ID5 05:       105     2.04     .028    7.58  23.27    .000
                    +ID6 06:       106      .88     .023    7.33  30.18    .000
                    +ID7 07:       107     2.00     .061    7.58  41.64    .000
                     ================================================================

                         SUM 08:       201    45.41     .819    7.67  31.34    .000

   NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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----
001:0011--------------------------------------------------------------------------
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********************************************************************************
*Pond
----------------------
| ROUTE RESERVOIR    |    Requested routing time step =  5.0 min.
|  IN>08:(000201)    |
| OUT<01:(000201)    |    =========  OUTLFOW STORAGE TABLE  =========
----------------------    OUTFLOW    STORAGE    |  OUTFLOW    STORAGE
                            (cms)     (ha.m.)    |    (cms)    (ha.m.)
                             .000  .0000E+00    |     .083  .2434E+01
                             .044  .7373E+00    |     .088  .2809E+01
                             .066  .1548E+01    |     .096  .3395E+01

     ROUTING RESULTS            AREA     QPEAK     TPEAK       R.V.
     -------------------         (ha)     (cms)     (hrs)       (mm)
     INFLOW >08: (000201)       45.41      .819     7.667      31.337
     OUTFLOW<01: (000201)       45.41      .055    24.500      31.337
    OVERFLOW<03: (000301)         .00      .000      .000        .000

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


                PEAK   FLOW   REDUCTION [Qout/Qin](%)=    6.667
                TIME SHIFT OF PEAK FLOW         (min)=  1010.00
                MAXIMUM  STORAGE   USED       (ha.m.)=.1135E+01

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001:0012--------------------------------------------------------------------------
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********************************************************************************
********************************************************************************
*100 YEAR CHICAGO DESIGN STORM
*
--------------------
| CHICAGO STORM    |    IDF curve parameters: A= 187.000
| Ptotal=110.03 mm |                          B=  -1.600
--------------------                          C=    .510
                         used in:   INTENSITY =  A / (t + B)^C

                         Duration of storm  = 24.00 hrs
                         Storm time step    =  5.00 min
                         Time to peak ratio =   .30

      TIME    RAIN |   TIME    RAIN |   TIME    RAIN |   TIME    RAIN
       hrs   mm/hr |    hrs   mm/hr |    hrs   mm/hr |    hrs   mm/hr
       .08   2.265 |   6.08   5.923 |  12.08   4.186 |  18.08   2.793
       .17   2.279 |   6.17   6.172 |  12.17   4.151 |  18.17   2.782
       .25   2.293 |   6.25   6.455 |  12.25   4.116 |  18.25   2.771
       .33   2.307 |   6.33   6.779 |  12.33   4.082 |  18.33   2.761
       .42   2.322 |   6.42   7.158 |  12.42   4.049 |  18.42   2.750
       .50   2.337 |   6.50   7.607 |  12.50   4.017 |  18.50   2.740
       .58   2.352 |   6.58   8.151 |  12.58   3.986 |  18.58   2.730
       .67   2.367 |   6.67   8.830 |  12.67   3.955 |  18.67   2.720
       .75   2.383 |   6.75   9.709 |  12.75   3.925 |  18.75   2.710
```

.83	2.399	6.83	10.912	12.83	3.896	18.83	2.700
.92	2.415	6.92	12.702	12.92	3.867	18.92	2.690
1.00	2.432	7.00	15.787	13.00	3.839	19.00	2.681
1.08	2.449	7.08	22.611	13.08	3.811	19.08	2.671
1.17	2.466	7.17	100.181	13.17	3.784	19.17	2.662
1.25	2.484	7.25	25.500	13.25	3.758	19.25	2.652
1.33	2.502	7.33	21.032	13.33	3.732	19.33	2.643
1.42	2.520	7.42	17.809	13.42	3.707	19.42	2.634
1.50	2.539	7.50	15.677	13.50	3.682	19.50	2.625
1.58	2.558	7.58	14.150	13.58	3.658	19.58	2.616
1.67	2.578	7.67	12.991	13.67	3.634	19.67	2.607
1.75	2.598	7.75	12.073	13.75	3.610	19.75	2.598
1.83	2.619	7.83	11.323	13.83	3.587	19.83	2.589
1.92	2.640	7.92	10.696	13.92	3.565	19.92	2.581
2.00	2.662	8.00	10.161	14.00	3.543	20.00	2.572
2.08	2.684	8.08	9.699	14.08	3.521	20.08	2.564
2.17	2.707	8.17	9.293	14.17	3.500	20.17	2.555
2.25	2.730	8.25	8.934	14.25	3.479	20.25	2.547
2.33	2.754	8.33	8.613	14.33	3.458	20.33	2.539
2.42	2.778	8.42	8.324	14.42	3.438	20.42	2.531
2.50	2.804	8.50	8.062	14.50	3.418	20.50	2.523
2.58	2.830	8.58	7.823	14.58	3.399	20.58	2.515
2.67	2.856	8.67	7.604	14.67	3.379	20.67	2.507
2.75	2.884	8.75	7.402	14.75	3.360	20.75	2.499
2.83	2.912	8.83	7.215	14.83	3.342	20.83	2.491
2.92	2.941	8.92	7.041	14.92	3.324	20.92	2.483
3.00	2.971	9.00	6.880	15.00	3.306	21.00	2.476
3.08	3.002	9.08	6.728	15.08	3.288	21.08	2.468
3.17	3.033	9.17	6.587	15.17	3.270	21.17	2.461
3.25	3.066	9.25	6.453	15.25	3.253	21.25	2.453
3.33	3.100	9.33	6.328	15.33	3.236	21.33	2.446
3.42	3.135	9.42	6.209	15.42	3.220	21.42	2.439
3.50	3.171	9.50	6.097	15.50	3.203	21.50	2.432
3.58	3.209	9.58	5.990	15.58	3.187	21.58	2.424
3.67	3.248	9.67	5.889	15.67	3.171	21.67	2.417
3.75	3.288	9.75	5.793	15.75	3.156	21.75	2.410
3.83	3.330	9.83	5.701	15.83	3.140	21.83	2.403
3.92	3.373	9.92	5.613	15.92	3.125	21.92	2.396
4.00	3.418	10.00	5.530	16.00	3.110	22.00	2.390
4.08	3.465	10.08	5.449	16.08	3.095	22.08	2.383
4.17	3.514	10.17	5.373	16.17	3.081	22.17	2.376
4.25	3.565	10.25	5.299	16.25	3.066	22.25	2.369
4.33	3.618	10.33	5.228	16.33	3.052	22.33	2.363
4.42	3.674	10.42	5.160	16.42	3.038	22.42	2.356
4.50	3.732	10.50	5.095	16.50	3.024	22.50	2.350
4.58	3.793	10.58	5.032	16.58	3.011	22.58	2.343
4.67	3.858	10.67	4.971	16.67	2.997	22.67	2.337
4.75	3.925	10.75	4.912	16.75	2.984	22.75	2.330
4.83	3.996	10.83	4.855	16.83	2.971	22.83	2.324
4.92	4.071	10.92	4.801	16.92	2.958	22.92	2.318
5.00	4.151	11.00	4.748	17.00	2.945	23.00	2.311
5.08	4.235	11.08	4.696	17.08	2.932	23.08	2.305
5.17	4.324	11.17	4.647	17.17	2.920	23.17	2.299
5.25	4.420	11.25	4.598	17.25	2.908	23.25	2.293
5.33	4.522	11.33	4.552	17.33	2.896	23.33	2.287
5.42	4.631	11.42	4.506	17.42	2.884	23.42	2.281
5.50	4.748	11.50	4.462	17.50	2.872	23.50	2.275
5.58	4.874	11.58	4.420	17.58	2.860	23.58	2.269
5.67	5.011	11.67	4.378	17.67	2.848	23.67	2.264
5.75	5.161	11.75	4.337	17.75	2.837	23.75	2.258
5.83	5.324	11.83	4.298	17.83	2.826	23.83	2.252
5.92	5.503	11.92	4.260	17.92	2.815	23.92	2.246
6.00	5.702	12.00	4.222	18.00	2.804	24.00	2.241

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001:0013--------------------------------------------------------------------------
----
********************************************************************************
*Residential Lots
----------------------
| CALIB NASHYD       |   Area    (ha)=   28.34   Curve Number   (CN)=77.20
| 01:000101 DT= 5.00 |   Ia      (mm)=   2.900   # of Linear Res.(N)= 3.00
----------------------   U.H. Tp(hrs)=    .500

     Unit Hyd Qpeak  (cms)=    2.165

     PEAK FLOW       (cms)=     .895 (i)
     TIME TO PEAK    (hrs)=    7.750
     RUNOFF VOLUME    (mm)=   63.013
     TOTAL RAINFALL   (mm)=  110.035
     RUNOFF COEFFICIENT   =     .573

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

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001:0014--------------------------------------------------------------------------
----
********************************************************************************
*Residential Road
----------------------
| CALIB NASHYD       |   Area    (ha)=    3.82   Curve Number   (CN)=86.30
| 02:000102 DT= 5.00 |   Ia      (mm)=   2.300   # of Linear Res.(N)= 3.00
----------------------   U.H. Tp(hrs)=    .500

     Unit Hyd Qpeak  (cms)=     .291

     PEAK FLOW       (cms)=     .164 (i)
     TIME TO PEAK    (hrs)=    7.750
     RUNOFF VOLUME    (mm)=   78.394
     TOTAL RAINFALL   (mm)=  110.035
     RUNOFF COEFFICIENT   =     .712

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

--------------------------------------------------------------------------------
----
001:0015--------------------------------------------------------------------------
----
********************************************************************************
*Ditch
----------------------
| CALIB NASHYD       |   Area    (ha)=    1.13   Curve Number   (CN)=85.00
| 03:000103 DT= 5.00 |   Ia      (mm)=  10.400   # of Linear Res.(N)= 3.00
----------------------   U.H. Tp(hrs)=    .500

     Unit Hyd Qpeak  (cms)=     .087

     PEAK FLOW       (cms)=     .041 (i)
     TIME TO PEAK    (hrs)=    7.750
     RUNOFF VOLUME    (mm)=   68.719
     TOTAL RAINFALL   (mm)=  110.035
     RUNOFF COEFFICIENT   =     .625

     (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
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001:0016--------------------------------------------------------------------------
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********************************************************************************
*Commercial
----------------------
| CALIB NASHYD       |   Area    (ha)=    7.21   Curve Number   (CN)=94.10
| 04:000104 DT= 5.00 |   Ia      (mm)=   1.800   # of Linear Res.(N)= 3.00
----------------------   U.H. Tp(hrs)=    .333

     Unit Hyd Qpeak  (cms)=     .827

     PEAK FLOW       (cms)=     .498 (i)
     TIME TO PEAK    (hrs)=    7.500
     RUNOFF VOLUME    (mm)=   94.352
     TOTAL RAINFALL   (mm)=  110.035
     RUNOFF COEFFICIENT   =     .857

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

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001:0017--------------------------------------------------------------------------
----
********************************************************************************
*MR & PUL
----------------------
| CALIB NASHYD       |   Area    (ha)=    2.04   Curve Number   (CN)=73.30
| 05:000105 DT= 5.00 |   Ia      (mm)=   3.100   # of Linear Res.(N)= 3.00
----------------------   U.H. Tp(hrs)=    .333

     Unit Hyd Qpeak  (cms)=     .234

     PEAK FLOW       (cms)=     .070 (i)
     TIME TO PEAK    (hrs)=    7.500
     RUNOFF VOLUME    (mm)=   57.331
     TOTAL RAINFALL   (mm)=  110.035
     RUNOFF COEFFICIENT   =     .521

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

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001:0018--------------------------------------------------------------------------
----
********************************************************************************
*Commercial Road
----------------------
| CALIB NASHYD       |   Area    (ha)=     .88   Curve Number   (CN)=81.10
| 06:000106 DT= 5.00 |   Ia      (mm)=   2.600   # of Linear Res.(N)= 3.00
----------------------   U.H. Tp(hrs)=    .167

     Unit Hyd Qpeak  (cms)=     .201

     PEAK FLOW       (cms)=     .057 (i)
     TIME TO PEAK    (hrs)=    7.250
     RUNOFF VOLUME    (mm)=   69.269
     TOTAL RAINFALL   (mm)=  110.035
     RUNOFF COEFFICIENT   =     .630

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

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001:0019--------------------------------------------------------------------------
----
********************************************************************************
*Pond
----------------------
| CALIB NASHYD       |   Area    (ha)=    2.00   Curve Number   (CN)=89.60
| 07:000107 DT= 5.00 |   Ia      (mm)=   1.000   # of Linear Res.(N)= 3.00
----------------------   U.H. Tp(hrs)=    .333

     Unit Hyd Qpeak  (cms)=     .230

     PEAK FLOW       (cms)=     .121 (i)
     TIME TO PEAK    (hrs)=    7.500
     RUNOFF VOLUME    (mm)=   85.828
     TOTAL RAINFALL   (mm)=  110.035
     RUNOFF COEFFICIENT   =     .780

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

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001:0020--------------------------------------------------------------------------
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********************************************************************************
------------------------
| ADD HYD (       201) | ID: NHYD         AREA     QPEAK   TPEAK   R.V.    DWF
------------------------                   (ha)     (cms)   (hrs)   (mm)    (cms)
                     ID1 01:       101    28.34     .895    7.75  63.01    .000
                    +ID2 02:       102     3.82     .164    7.75  78.39    .000
                    +ID3 03:       103     1.13     .041    7.75  68.72    .000
                    +ID4 04:       104     7.21     .498    7.50  94.35    .000
                    +ID5 05:       105     2.04     .070    7.50  57.33    .000
                    +ID6 06:       106      .88     .057    7.25  69.27    .000
                    +ID7 07:       107     2.00     .121    7.50  85.83    .000
                     ================================================================
                     SUM 08:       201    45.41    1.754    7.58  70.29    .000

   NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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----
001:0021--------------------------------------------------------------------------
----
********************************************************************************
*Pond
----------------------
| ROUTE RESERVOIR    |    Requested routing time step =  5.0 min.
|  IN>08:(000201)    |
| OUT<01:(000201)    |    =========  OUTLFOW STORAGE TABLE  =========
---------------------    OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
                           (cms)     (ha.m.)   |    (cms)    (ha.m.)
                            .000  .0000E+00    |     .083  .2434E+01
                            .044  .7373E+00    |     .088  .2809E+01
                            .066  .1548E+01    |     .096  .3395E+01

     ROUTING RESULTS            AREA     QPEAK     TPEAK       R.V.
     -------------------         (ha)     (cms)     (hrs)       (mm)
     INFLOW >08: (000201)       45.41     1.754     7.583     70.293
     OUTFLOW<01: (000201)       45.41      .087    24.667     70.292
    OVERFLOW<03: (000301)         .00      .000      .000       .000

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


                    PEAK   FLOW   REDUCTION [Qout/Qin](%)=    4.951
                    TIME SHIFT OF PEAK FLOW         (min)=  1025.00
                    MAXIMUM  STORAGE   USED       (ha.m.)=.2715E+01

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001:0022-----------------------------------------------------------------------
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********************************************************************************
      FINISH
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********************************************************************************
****
     WARNINGS / ERRORS / NOTES
     -------------------------
   Simulation ended on 2024-08-07     at 11:34:24
================================================================================
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WBSCC

Water Balance Spreadsheet for the City of Calgary
Version 1.2

PROJECT SUMMARY SHEET

Project Name:	Netook North Residential/ Commerical
Project Description:	TEMP DUGOUTS
Location:	
Date:	AUGUST 2024
Designed by:	PAUL JACOBS
Company Name:	STORMWATER SOLUTIONS
Reviewed by:	

WBSCC - PROJECT DATA SHEET - Environmental Information

Minimum Temperature to Trigger Runoff (°C)	0
Sublimation Losses (%)	0
Precipitation Multiplication Factor (% Decrease)	0

Month	Is Winter or Summer?	Crop Water Requirement (mm/month)			
		KENTUCKY BLUE GRAS	SAGE BRUSH	Unnamed 1	Unnamed 2
January	Winter	0	0	0	0
February	Winter	0	0	0	0
March	Winter	0	0	0	0
April	Summer	0	0	0	0
May	Summer	0	50	0	0
June	Summer	0	50	0	0
July	Summer	0	60	0	0
August	Summer	0	50	0	0
September	Summer	0	50	0	0
October	Summer	0	20	0	0
November	Winter	0	0	0	0
December	Winter	0	0	0	0

Catchment Area Data

Sub-Catchment	Description of Sub-catchment Use	Area (ha)
Sub-Catchment 1	Existing Phase 1 development not draining east	6
Sub-Catchment 2	Proposed Dugouts	6
Sub-Catchment 3		
Sub-Catchment 4		
Sub-Catchment 5		
Total		12

Pond Area Data

Pond	Description of Pond	Pond Area (m^2)
Pond 1		0
Pond 2		0

WBSCC - PROJECT DATA SHEET - Sub-Catchment 1: Parameters, Runoff Allocation

Usage: Existing Phase 1 development not draining east

Sub-catchment Parameters		Cover Type					
		Impervious Surface	Pervious Surface	Absorbent Landscaping	Green Roof Media	Bioretention/ Bioswale Medium	Unassigned Area
Area (Total: 6)	(ha)	0	6	0	0	0	0
Depression Loss	(mm)	1.6					
Soil Type: Sand			30	30	0	30	
Silt			35	35	0	35	
Clay			35	35	0	35	
Custom							
Unassigned			0	0	100	0	
Soil or Media Depth	(mm)		150	300	200	400	
Porosity			0.48	0.48	0.512	0.48	
Field Capacity			0.36	0.36	0.132	0.36	
Wilting Point			0.22	0.22	0.057	0.22	
Saturated Hydraulic Conductivity	(m/s)		1.19E-06	1.19E-06	2.50E-05	1.19E-06	
Sub-soil Hydraulic Conductivity	(m/s)		1.00E-07	1.00E-07		1.00E-07	
Ponding Depth	(mm)		19.8	19.8	0	500	
Inv. Slope of Log. Tension Moisture Curve			7.75	7.75	4.55	7.75	
Subdrain Invert (above bottom of media)	(mm)					0	
Subdrain Capacity	(m^3/s)					0	

% of Runoff Allocated To:	Runoff Allocated from Cover Type/ Facility:						
	Impervious Surface	Pervious Surface	Absorbent Landscaping	Green Roof Media	Bioretention/ Bioswale Media	Storage/ Reuse Tank	Discharge
Pervious Surface	0			0			
Absorbent Landscaping	0	0		0			
Green Roof Media	0						
Storage/ Reuse Tank	0	0	0	0			
Bioretention/Bioswale Media	0	0	0	0			
Discharge	100	100	100	100	100	100	
Pond 1/Pond 2							POND #1

WBSCC - PROJECT DATA SHEET - Sub-Catchment 2: Parameters, Runoff Allocation

Usage: Proposed Dugouts

Sub-catchment Parameters		Cover Type					
		Impervious Surface	Pervious Surface	Absorbent Landscaping	Green Roof Media	Bioretention/ Bioswale Medium	Unassigned Area
Area (Total: 6)	(ha)	1.41	4.49	0	0	0.1	0
Depression Loss	(mm)	1.6					
Soil Type: Sand			30	30	0	30	
Silt			35	35	0	35	
Clay			35	35	0	35	
Custom							
Unassigned			0	0	100	0	
Soil or Media Depth	(mm)		300	150	200	300	
Porosity			0.48	0.48	0.512	0.48	
Field Capacity			0.36	0.36	0.132	0.36	
Wilting Point			0.22	0.22	0.057	0.22	
Saturated Hydraulic Conductivity	(m/s)		1.19E-06	1.19E-06	2.50E-05	1.19E-06	
Sub-soil Hydraulic Conductivity	(m/s)		1.00E-07	1.00E-07		1.00E-07	
Ponding Depth	(mm)		3.2	19.8	0	400	
Inv. Slope of Log. Tension Moisture Curve			7.75	7.75	4.55	7.75	
Subdrain Invert (above bottom of media)	(mm)					0	
Subdrain Capacity	(m^3/s)					0	

% of Runoff Allocated To:	Runoff Allocated from Cover Type/ Facility:						
	Impervious Surface	Pervious Surface	Absorbent Landscaping	Green Roof Media	Bioretention/ Bioswale Media	Storage/ Reuse Tank	Discharge
Pervious Surface	100			0			
Absorbent Landscaping	0	0		0			
Green Roof Media	0						
Storage/ Reuse Tank	0	0	0	0			
Bioretention/Bioswale Media	0	100	0	0			
Discharge	0	0	100	100	100	100	
Pond 1/Pond 2							POND #2

WBSCC

Water Balance Spreadsheet for the City of Calgary
Version 1.2

PROJECT SUMMARY SHEET

Project Name:	Netook North Residential/ Commerical
Project Description:	PROPOSED CONDITION
Location:	
Date:	APRIL 2024
Designed by:	PAUL JACOBS
Company Name:	STORMWATER SOLUTIONS
Reviewed by:	

WBSCC - PROJECT DATA SHEET - Environmental Information

Minimum Temperature to Trigger Runoff (°C)	0
Sublimation Losses (%)	0
Precipitation Multiplication Factor (% Decrease)	0

Month	Is Winter or Summer?	Crop Water Requirement (mm/month)			
		KENTUCKY BLUE GRAS	SAGE BRUSH	Unnamed 1	Unnamed 2
January	Winter	0	0	0	0
February	Winter	0	0	0	0
March	Winter	0	0	0	0
April	Summer	0	0	0	0
May	Summer	0	50	0	0
June	Summer	0	50	0	0
July	Summer	0	60	0	0
August	Summer	0	50	0	0
September	Summer	0	50	0	0
October	Summer	0	20	0	0
November	Winter	0	0	0	0
December	Winter	0	0	0	0

Catchment Area Data

Sub-Catchment	Description of Sub-catchment Use	Area (ha)
Sub-Catchment 1	To Main Pond with irrigation	43.4093
Sub-Catchment 2	Golf Course	17.4
Sub-Catchment 3	Existing	36.274
Sub-Catchment 4		
Sub-Catchment 5		
Total		97.0833

Pond Area Data

Pond	Description of Pond	Pond Area (m^2)
Pond 1		20023
Pond 2		0

WBSCC - PROJECT DATA SHEET - Sub-Catchment 1: Parameters, Runoff Allocation

Usage: To Main Pond with irrigation

Sub-catchment Parameters		Cover Type					
		Impervious Surface	Pervious Surface	Absorbent Landscaping	Green Roof Media	Bioretention/ Bioswale Medium	Unassigned Area
Area (Total: 43.4093)	(ha)	14.868	27.9745	0.5668	0	0	0
Depression Loss	(mm)	1.6					
Soil Type: Sand			30	30	0	30	
Silt			35	35	0	35	
Clay			35	35	0	35	
Custom							
Unassigned			0	0	100	0	
Soil or Media Depth	(mm)		150	300	200	300	
Porosity			0.48	0.48	0.512	0.48	
Field Capacity			0.36	0.36	0.132	0.36	
Wilting Point			0.22	0.22	0.057	0.22	
Saturated Hydraulic Conductivity	(m/s)		1.19E-06	1.19E-06	2.50E-05	1.19E-06	
Sub-soil Hydraulic Conductivity	(m/s)		1.00E-07	1.00E-07		1.00E-07	
Ponding Depth	(mm)		3.2	19.8	0	0	
Inv. Slope of Log. Tension Moisture Curve			7.75	7.75	4.55	7.75	
Subdrain Invert (above bottom of media)	(mm)					0	
Subdrain Capacity	(m^3/s)					0	

% of Runoff Allocated To:	Runoff Allocated from Cover Type/ Facility:						
	Impervious Surface	Pervious Surface	Absorbent Landscaping	Green Roof Media	Bioretention/ Bioswale Media	Storage/ Reuse Tank	Discharge
Pervious Surface	100			0			
Absorbent Landscaping	0	50		0			
Green Roof Media	0						
Storage/ Reuse Tank	0	0	0	0			
Bioretention/Bioswale Media	0	0	0	0			
Discharge	0	50	100	100	100	100	
Pond 1/Pond 2							POND #1

WBSCC - PROJECT DATA SHEET - Sub-Catchment 2: Parameters, Runoff Allocation

Usage: Golf Course

Sub-catchment Parameters		Cover Type					
		Impervious Surface	Pervious Surface	Absorbent Landscaping	Green Roof Media	Bioretention/ Bioswale Medium	Unassigned Area
Area (Total: 17.4)	(ha)	0	17.4	0	0	0	0
Depression Loss	(mm)	1.6					
Soil Type: Sand			30	30	0	30	
Silt			35	35	0	35	
Clay			35	35	0	35	
Custom							
Unassigned			0	0	100	0	
Soil or Media Depth	(mm)		300	150	200	200	
Porosity			0.48	0.48	0.512	0.48	
Field Capacity			0.36	0.36	0.132	0.36	
Wilting Point			0.22	0.22	0.057	0.22	
Saturated Hydraulic Conductivity	(m/s)		1.19E-06	1.19E-06	2.50E-05	1.19E-06	
Sub-soil Hydraulic Conductivity	(m/s)		1.00E-07	1.00E-07		1.00E-07	
Ponding Depth	(mm)		3.2	19.8	0	400	
Inv. Slope of Log. Tension Moisture Curve			7.75	7.75	4.55	7.75	
Subdrain Invert (above bottom of media)	(mm)					0	
Subdrain Capacity	(m^3/s)					0	

% of Runoff Allocated To:	Runoff Allocated from Cover Type/ Facility:						
	Impervious Surface	Pervious Surface	Absorbent Landscaping	Green Roof Media	Bioretention/ Bioswale Media	Storage/ Reuse Tank	Discharge
Pervious Surface	0			0			
Absorbent Landscaping	0	0		0			
Green Roof Media	0						
Storage/ Reuse Tank	0	0	0	0			
Bioretention/Bioswale Media	0	0	0	0			
Discharge	100	100	100	100	100	100	
Pond 1/Pond 2							POND #1

WBSCC - PROJECT DATA SHEET - Sub-Catchment 3: Parameters, Runoff Allocation

Usage: Existing

Sub-catchment Parameters		Cover Type					
		Impervious Surface	Pervious Surface	Absorbent Landscaping	Green Roof Media	Bioretention/ Bioswale Medium	Unassigned Area
Area (Total: 36.274)	(ha)	0	0	36.274	0	0	0
Depression Loss	(mm)	1.6					
Soil Type: Sand			88	30	0	88	
Silt			7	35	0	7	
Clay			5	35	0	5	
Custom							
Unassigned			0	0	100	0	
Soil or Media Depth	(mm)		50	150	200	100	
Porosity			0.46	0.48	0.512	0.46	
Field Capacity			0.1	0.36	0.132	0.1	
Wilting Point			0.05	0.22	0.057	0.05	
Saturated Hydraulic Conductivity	(m/s)		3.00E-05	1.19E-06	2.50E-05	3.00E-05	
Sub-soil Hydraulic Conductivity	(m/s)		2.00E-09	1.00E-07		2.00E-09	
Ponding Depth	(mm)		0	19.8	0	0	
Inv. Slope of Log. Tension Moisture Curve			5.51	7.75	4.55	5.51	
Subdrain Invert (above bottom of media)	(mm)					300	
Subdrain Capacity	(m^3/s)					0.01	

% of Runoff Allocated To:	Runoff Allocated from Cover Type/ Facility:						
	Impervious Surface	Pervious Surface	Absorbent Landscaping	Green Roof Media	Bioretention/ Bioswale Media	Storage/ Reuse Tank	Discharge
Pervious Surface	0			0			
Absorbent Landscaping	0	0		0			
Green Roof Media	0						
Storage/ Reuse Tank	0	0	0	0			
Bioretention/Bioswale Media	0	0	0	0			
Discharge	100	100	100	100	100	100	
Pond 1/Pond 2							POND #2

WBSCC - PROJECT DATA SHEET - Pond 1: Parameters, Elevation-Area-Discharge-Volume Relationship

Pond 1 Parametrs		Values
Base Elevation	(m)	14.00
Starting Water Elevation	(m)	16.20
Starting Discharge Elevation (UNWL)	(m)	16.20
High Water Level (HWL)	(m)	18.20
Lower Normal Water Level (LNWL)	(m)	15.00
Seepage Rate	(mm/hr)	0.00
Discharge and Overflow Routed to:		OUTFALL

Pond 1 Pertinent Volumes (m^3)	Values
Volume at Base Elevation	0
Volume at Stating Water Elevation	23482
Volume at LNWL	8608
Volume at UNWL	23482
Volume at HWL	57452

Pond 1 Bed Soil Parameters		
Soil Type: Sand		30
Silt		35
Clay		35
Custom		
Unassigned		0
Soil or Media Depth	(mm)	50
Porosity		0.48
Field Capacity		0.36
Wilting Point		0.22
Saturated Hydraulic Conductivity	(m/s)	1.19E-06
Sub-soil Hydraulic Conductivity	(m/s)	1.00E-08
Ponding Depth	(mm)	0
Inv. Slope of Log. Tension Moisture Curve		7.75

Elevation (m)	Area (m^2)	Discharge (m^3/s)
14.00	0	0
14.20	8,954	0
14.70	10,162	0
15.20	11,421	0
15.70	12,729	0
16.20	14,008	0
16.70	15,497	0.0437
17.20	16,956	0.066
17.70	18,494	0.0825
18.20	20,023	0.0883
18.20	20,023	0.0962
18.20	20,023	0.0962
18.20	20,023	0.0962
18.20	20,023	0.0962
18.20	20,023	0.0962
18.20	20,023	0.0962
18.20	20,023	0.0962
18.20	20,023	0.0962
18.20	20,023	0.0962
18.20	20,023	0.0962
18.20	20,023	0.0962

WBSCC

Water Balance Spreadsheet for the City of Calgary
Version 1.2

PROJECT SUMMARY SHEET

Project Name:	Netook North Residential/ Commerical
Project Description:	EAST BIOSWALES
Location:	
Date:	AUGUST 2024
Designed by:	PAUL JACOBS
Company Name:	STORMWATER SOLUTIONS
Reviewed by:	

WBSCC - PROJECT DATA SHEET - Environmental Information

Minimum Temperature to Trigger Runoff (°C)	0
Sublimation Losses (%)	0
Precipitation Multiplication Factor (% Decrease)	0

Month	Is Winter or Summer?	Crop Water Requirement (mm/month)			
		KENTUCKY BLUE GRAS	SAGE BRUSH	Unnamed 1	Unnamed 2
January	Winter	0	0	0	0
February	Winter	0	0	0	0
March	Winter	0	0	0	0
April	Summer	0	0	0	0
May	Summer	0	50	0	0
June	Summer	0	50	0	0
July	Summer	0	60	0	0
August	Summer	0	50	0	0
September	Summer	0	50	0	0
October	Summer	0	20	0	0
November	Winter	0	0	0	0
December	Winter	0	0	0	0

Catchment Area Data

Sub-Catchment	Description of Sub-catchment Use	Area (ha)
Sub-Catchment 1	Exsiting Front of Commercial	17.219
Sub-Catchment 2	Front of Commercial - bioswlaes	3
Sub-Catchment 3	Commercial Road	1.2642
Sub-Catchment 4		
Sub-Catchment 5		
Total		21.4832

Pond Area Data

Pond	Description of Pond	Pond Area (m^2)
Pond 1		0
Pond 2		0

WBSCC - PROJECT DATA SHEET - Sub-Catchment 1: Parameters, Runoff Allocation

Usage: Exsiting Front of Commercial

Sub-catchment Parameters		Cover Type					
		Impervious Surface	Pervious Surface	Absorbent Landscaping	Green Roof Media	Bioretention/ Bioswale Medium	Unassigned Area
Area (Total: 17.219)	(ha)	0	17.219	0	0	0	0
Depression Loss	(mm)	1.6					
Soil Type: Sand			30	30	0	30	
Silt			35	35	0	35	
Clay			35	35	0	35	
Custom							
Unassigned			0	0	100	0	
Soil or Media Depth	(mm)		150	300	200	400	
Porosity			0.48	0.48	0.512	0.48	
Field Capacity			0.36	0.36	0.132	0.36	
Wilting Point			0.22	0.22	0.057	0.22	
Saturated Hydraulic Conductivity	(m/s)		1.19E-06	1.19E-06	2.50E-05	1.19E-06	
Sub-soil Hydraulic Conductivity	(m/s)		1.00E-07	1.00E-07		1.00E-07	
Ponding Depth	(mm)		19.8	19.8	0	500	
Inv. Slope of Log. Tension Moisture Curve			7.75	7.75	4.55	7.75	
Subdrain Invert (above bottom of media)	(mm)					0	
Subdrain Capacity	(m^3/s)					0	

% of Runoff Allocated To:	Runoff Allocated from Cover Type/ Facility:						
	Impervious Surface	Pervious Surface	Absorbent Landscaping	Green Roof Media	Bioretention/ Bioswale Media	Storage/ Reuse Tank	Discharge
Pervious Surface	0			0			
Absorbent Landscaping	0	0		0			
Green Roof Media	0						
Storage/ Reuse Tank	0	0	0	0			
Bioretention/Bioswale Media	0	0	0	0			
Discharge	100	100	100	100	100	100	
Pond 1/Pond 2							POND #1

WBSCC - PROJECT DATA SHEET - Sub-Catchment 2: Parameters, Runoff Allocation

Usage: Front of Commercial - bioswlaes

Sub-catchment Parameters		Cover Type					
		Impervious Surface	Pervious Surface	Absorbent Landscaping	Green Roof Media	Bioretention/ Bioswale Medium	Unassigned Area
Area (Total: 3)	(ha)	2.1	0.648	0	0	0.252	0
Depression Loss	(mm)	1.6					
Soil Type: Sand			30	30	0	30	
Silt			35	35	0	35	
Clay			35	35	0	35	
Custom							
Unassigned			0	0	100	0	
Soil or Media Depth	(mm)		300	150	200	300	
Porosity			0.48	0.48	0.512	0.48	
Field Capacity			0.36	0.36	0.132	0.36	
Wilting Point			0.22	0.22	0.057	0.22	
Saturated Hydraulic Conductivity	(m/s)		1.19E-06	1.19E-06	2.50E-05	1.19E-06	
Sub-soil Hydraulic Conductivity	(m/s)		1.00E-07	1.00E-07		1.00E-07	
Ponding Depth	(mm)		19.8	19.8	0	257	
Inv. Slope of Log. Tension Moisture Curve			7.75	7.75	4.55	7.75	
Subdrain Invert (above bottom of media)	(mm)					0	
Subdrain Capacity	(m^3/s)					0	

% of Runoff Allocated To:	Runoff Allocated from Cover Type/ Facility:						
	Impervious Surface	Pervious Surface	Absorbent Landscaping	Green Roof Media	Bioretention/ Bioswale Media	Storage/ Reuse Tank	Discharge
Pervious Surface	100			0			
Absorbent Landscaping	0	0		0			
Green Roof Media	0						
Storage/ Reuse Tank	0	0	0	0			
Bioretention/Bioswale Media	0	100	0	0			
Discharge	0	0	100	100	100	100	
Pond 1/Pond 2							POND #2

WBSCC - PROJECT DATA SHEET - Sub-Catchment 3: Parameters, Runoff Allocation

Usage: Commercial Road

Sub-catchment Parameters		Cover Type					
		Impervious Surface	Pervious Surface	Absorbent Landscaping	Green Roof Media	Bioretention/ Bioswale Medium	Unassigned Area
Area (Total: 1.2642)	(ha)	0.379	0	0.8852	0	0	0
Depression Loss	(mm)	1.6					
Soil Type: Sand			88	30	0	30	
Silt			7	35	0	35	
Clay			5	35	0	35	
Custom							
Unassigned			0	0	100	0	
Soil or Media Depth	(mm)		50	300	200	300	
Porosity			0.46	0.48	0.512	0.48	
Field Capacity			0.1	0.36	0.132	0.36	
Wilting Point			0.05	0.22	0.057	0.22	
Saturated Hydraulic Conductivity	(m/s)		3.00E-05	1.19E-06	2.50E-05	1.19E-06	
Sub-soil Hydraulic Conductivity	(m/s)		2.00E-09	1.00E-07		1.00E-07	
Ponding Depth	(mm)		0	3.2	0	225	
Inv. Slope of Log. Tension Moisture Curve			5.51	7.75	4.55	7.75	
Subdrain Invert (above bottom of media)	(mm)						
Subdrain Capacity	(m^3/s)						

% of Runoff Allocated To:	Runoff Allocated from Cover Type/ Facility:						
	Impervious Surface	Pervious Surface	Absorbent Landscaping	Green Roof Media	Bioretention/ Bioswale Media	Storage/ Reuse Tank	Discharge
Pervious Surface	0			0			
Absorbent Landscaping	100	0		0			
Green Roof Media	0						
Storage/ Reuse Tank	0	0	0	0			
Bioretention/Bioswale Media	0	0	0	0			
Discharge	0	100	100	100	100	100	
Pond 1/Pond 2							POND #2

WBSCC

Water Balance Spreadsheet for the City of Calgary
Version 1.2

PROJECT SUMMARY SHEET

Project Name:	Netook North Residential/ Commerical
Project Description:	EAST BIOSWALES
Location:	
Date:	AUGUST 2024
Designed by:	PAUL JACOBS
Company Name:	STORMWATER SOLUTIONS
Reviewed by:	

WBSCC - PROJECT DATA SHEET - Environmental Information

Minimum Temperature to Trigger Runoff (°C)	0
Sublimation Losses (%)	0
Precipitation Multiplication Factor (% Decrease)	0

Month	Is Winter or Summer?	Crop Water Requirement (mm/month)			
		KENTUCKY BLUE GRAS	SAGE BRUSH	Unnamed 1	Unnamed 2
January	Winter	0	0	0	0
February	Winter	0	0	0	0
March	Winter	0	0	0	0
April	Summer	0	0	0	0
May	Summer	0	50	0	0
June	Summer	0	50	0	0
July	Summer	0	60	0	0
August	Summer	0	50	0	0
September	Summer	0	50	0	0
October	Summer	0	20	0	0
November	Winter	0	0	0	0
December	Winter	0	0	0	0

Catchment Area Data

Sub-Catchment	Description of Sub-catchment Use	Area (ha)
Sub-Catchment 1	Existing discharge east	9.5539
Sub-Catchment 2	Proposed Discharge	8.913
Sub-Catchment 3	SE Commercial draining east	3.52
Sub-Catchment 4		
Sub-Catchment 5		
Total		21.9869

Pond Area Data

Pond	Description of Pond	Pond Area (m^2)
Pond 1		0
Pond 2		0

WBSCC - PROJECT DATA SHEET - Sub-Catchment 1: Parameters, Runoff Allocation

Usage: Existing discharge east

Sub-catchment Parameters		Cover Type					
		Impervious Surface	Pervious Surface	Absorbent Landscaping	Green Roof Media	Bioretention/ Bioswale Medium	Unassigned Area
Area (Total: 9.5539)	(ha)	0	9.5539	0	0	0	0
Depression Loss	(mm)	1.6					
Soil Type: Sand			30	30	0	30	
Silt			35	35	0	35	
Clay			35	35	0	35	
Custom							
Unassigned			0	0	100	0	
Soil or Media Depth	(mm)		150	300	200	400	
Porosity			0.48	0.48	0.512	0.48	
Field Capacity			0.36	0.36	0.132	0.36	
Wilting Point			0.22	0.22	0.057	0.22	
Saturated Hydraulic Conductivity	(m/s)		1.19E-06	1.19E-06	2.50E-05	1.19E-06	
Sub-soil Hydraulic Conductivity	(m/s)		1.00E-07	1.00E-07		1.00E-07	
Ponding Depth	(mm)		19.8	19.8	0	500	
Inv. Slope of Log. Tension Moisture Curve			7.75	7.75	4.55	7.75	
Subdrain Invert (above bottom of media)	(mm)					0	
Subdrain Capacity	(m^3/s)					0	

% of Runoff Allocated To:	Runoff Allocated from Cover Type/ Facility:						
	Impervious Surface	Pervious Surface	Absorbent Landscaping	Green Roof Media	Bioretention/ Bioswale Media	Storage/ Reuse Tank	Discharge
Pervious Surface	0			0			
Absorbent Landscaping	0	0		0			
Green Roof Media	0						
Storage/ Reuse Tank	0	0	0	0			
Bioretention/Bioswale Media	0	0	0	0			
Discharge	100	100	100	100	100	100	
Pond 1/Pond 2							POND #1

WBSCC - PROJECT DATA SHEET - Sub-Catchment 2: Parameters, Runoff Allocation

Usage: Proposed Discharge

Sub-catchment Parameters		Cover Type					
		Impervious Surface	Pervious Surface	Absorbent Landscaping	Green Roof Media	Bioretention/ Bioswale Medium	Unassigned Area
Area (Total: 8.913)	(ha)	2.16	6.561	0	0	0.192	0
Depression Loss	(mm)	1.6					
Soil Type: Sand			30	30	0	30	
Silt			35	35	0	35	
Clay			35	35	0	35	
Custom							
Unassigned			0	0	100	0	
Soil or Media Depth	(mm)		300	150	200	300	
Porosity			0.48	0.48	0.512	0.48	
Field Capacity			0.36	0.36	0.132	0.36	
Wilting Point			0.22	0.22	0.057	0.22	
Saturated Hydraulic Conductivity	(m/s)		1.19E-06	1.19E-06	2.50E-05	1.19E-06	
Sub-soil Hydraulic Conductivity	(m/s)		1.00E-07	1.00E-07		1.00E-07	
Ponding Depth	(mm)		3.2	19.8	0	300	
Inv. Slope of Log. Tension Moisture Curve			7.75	7.75	4.55	7.75	
Subdrain Invert (above bottom of media)	(mm)					0	
Subdrain Capacity	(m^3/s)					0	

% of Runoff Allocated To:	Runoff Allocated from Cover Type/ Facility:						
	Impervious Surface	Pervious Surface	Absorbent Landscaping	Green Roof Media	Bioretention/ Bioswale Media	Storage/ Reuse Tank	Discharge
Pervious Surface	100			0			
Absorbent Landscaping	0	0		0			
Green Roof Media	0						
Storage/ Reuse Tank	0	0	0	0			
Bioretention/Bioswale Media	0	100	0	0			
Discharge	0	0	100	100	100	100	
Pond 1/Pond 2							POND #2

WBSCC - PROJECT DATA SHEET - Sub-Catchment 3: Parameters, Runoff Allocation

Usage: SE Commercial draining east

Sub-catchment Parameters		Cover Type					
		Impervious Surface	Pervious Surface	Absorbent Landscaping	Green Roof Media	Bioretention/ Bioswale Medium	Unassigned Area
Area (Total: 3.52)	(ha)	2.5526	0.5714	0.3	0	0.096	0
Depression Loss	(mm)	1.6					
Soil Type: Sand			30	30	0	30	
Silt			35	35	0	35	
Clay			35	35	0	35	
Custom							
Unassigned			0	0	100	0	
Soil or Media Depth	(mm)		300	300	200	300	
Porosity			0.48	0.48	0.512	0.48	
Field Capacity			0.36	0.36	0.132	0.36	
Wilting Point			0.22	0.22	0.057	0.22	
Saturated Hydraulic Conductivity	(m/s)		1.19E-06	1.19E-06	2.50E-05	1.19E-06	
Sub-soil Hydraulic Conductivity	(m/s)		1.00E-07	1.00E-07		1.00E-07	
Ponding Depth	(mm)		3.2	300	0	300	
Inv. Slope of Log. Tension Moisture Curve			7.75	7.75	4.55	7.75	
Subdrain Invert (above bottom of media)	(mm)						
Subdrain Capacity	(m^3/s)						

% of Runoff Allocated To:	Runoff Allocated from Cover Type/ Facility:						
	Impervious Surface	Pervious Surface	Absorbent Landscaping	Green Roof Media	Bioretention/ Bioswale Media	Storage/ Reuse Tank	Discharge
Pervious Surface	100			0			
Absorbent Landscaping	0	100		0			
Green Roof Media	0						
Storage/ Reuse Tank	0	0	0	0			
Bioretention/Bioswale Media	0	0	100	0			
Discharge	0	0	0	100	100	100	
Pond 1/Pond 2							POND #2