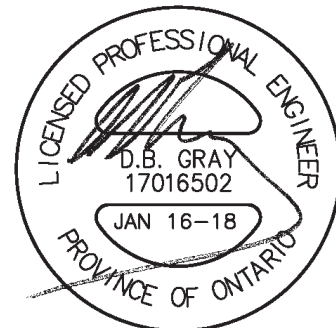


STORMWATER MANAGEMENT REPORT

2688 Carp Road
Ottawa, Ontario

Report No. 17016

September 18, 2017
Revised January 16, 2018



NOT VALID UNLESS
SIGNED & DATED

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STORMWATER MANAGEMENT REPORT

2688 Carp Road
Ottawa, Ontario

This Stormwater Management Report addresses the stormwater management requirements of 3.2 hectares of land at 2688 Carp Road in Ottawa. An existing one-storey 108 sq.m. garage building is proposed to be relocated on the subject lands. A proposed two storey office / one storey repair garage has a 599 sq.m. footprint. Approximately 70% of the property consists of a granular surface. A minimal amount of regrading of the existing granular surface is proposed. Huntley Creek flows through the property immediately to the south of the proposed development.

This report forms part of the stormwater management design for the proposed development. Also refer to drawing C-1 to C-3 prepared by D. B. Gray Engineering Inc.

WATER QUALITY:

To meet the Mississippi Valley Conservation Authority (MVCA) requirements the 15m setback from of the top of the Huntley Creek bank will be vegetated (it is currently mostly vegetated).

In addition the MVCA requires quality treatment corresponding to an enhanced level of protection within the Huntley Creek watershed per the Carp River Watershed/Subwatershed Study. As per the Ministry of the Environment (MOE) Stormwater Management Planning and Design Manual (March 2003), an enhanced level of protection requires the removal of 80% total suspended solids (TSS). MVCA also requires measures to maintain infiltration and reduce water temperatures be considered and implement where feasible as per the Carp River Watershed/Subwatershed Study.

Rainfall runoff from most of the site currently sheet drain to ditches to the north and east of the property and to Huntley Creek to the south. Infiltration trenches are proposed to be located at the perimeter of the developed portion of the property. The underside of the bottom of the trench. There are no infiltration trenches within 15m of the proposed septic system and there are no infiltration trenches to the north of the proposed building (an area that will mostly only receive runoff from the roof of the proposed building which is considered "clean"). The infiltration trenches have been sized to remove 80% TSS as per the MOE Design Manual. The infiltration trenches will promote groundwater recharge and thermal mitigation.

As per the geotechnical report no groundwater was observed in any of the six boreholes (1.8 to 6.1 m depth). The top of infiltration trenches are located about 4m above the water level in the creek. As per the detail the on drawing C-3 the bottom of the trench is

0.75m below grade, therefore the bottom of the trench is significantly greater than the 1m recommended in the MOE Design Manual.

An erosion and sediment control plan has been developed to be implemented during construction, (see notes 2.1 to 2.5 on drawing C-3). In summary: to filter out construction sediment a silt fence barrier will be installed adjacent to the north, east and south edge of the developed portion of the property.

WATER QUANTITY:

The stormwater quantity control measures detailed in this report are based on the criteria that the release rate for post-development storm events is equal to or less than the flow produced by the (existing) pre-development.

It is calculated that the pre-development conditions reflect a runoff coefficient of 0.61. The post development runoff coefficient is calculated to be 0.57. Therefore the release rate for post-development storm events will be less than the flow produced by the (existing) pre-development.

MINISTRY OF ENVIRONMENT AND CLIMATE CHANGE (MOECC) ENVIRONMENTAL COMPLIANCE APPROVAL (ECA):

Since part of the proposed building is a repair garage it is expected that the MOECC will consider the property “industrial lands and therefore it is expected that a MOECC ECA will be required. A pre-consultation record has been requested from the MOECC.

CONCLUSIONS:

1. Infiltration trenches have been sized to remove 80% TSS as required by MVCA to achieve a quality treatment corresponding to an enhanced level of protection.
2. The infiltration trenches will promote groundwater recharge and thermal mitigation as required by MVCA.
3. An erosion and sediment control plan has been developed to be implemented during construction.
4. The runoff from post-development storm events will be than the flow produced by the (existing) pre-development.
5. It is expected that the MOECC will consider the property “industrial lands” and therefore a MOECC ECA will be required.

2688 Carp Road Ottawa, Ontario

INFILTRATION CALCULATIONS

DRAINAGE AREA I

			C
Roof Area:	367	sq.m.	0.90
Granular:	6362	sq.m.	0.70
Landscape Area:	126	sq.m.	0.20

Total Catchment Area 6855 sq.m. 0.70

Require Storage Volume *: 70% Impervious Level 24.0 cu.m. (interpolated from Table 3.2 *)
(for 80% TSS removal)

* As per MOE Stormwater Management Planning and Design Manual, March 2003

Infiltration Trench				
Depth	Ave. Width	Length	Total Volume	Void Volume
m	m	m	cu.m.	40% cu.m.
0.60	2.40	42.0	60.5	24.2

Percolation Rate: 30 mm/hr (fine sand)

Time to Draw Down: 20.0 Hours

DRAINAGE AREA II

			C
Roof Area:	0	sq.m.	0.90
Granular:	2867	sq.m.	0.70
Landscape Area:	336	sq.m.	0.20

Total Catchment Area 3203 sq.m. 0.65

Require Storage Volume *: 65% Impervious Level 10.7 cu.m. (interpolated from Table 3.2 *)
(for 80% TSS removal)

* As per MOE Stormwater Management Planning and Design Manual, March 2003

Infiltration Trench				
Depth	Ave. Width	Length	Total Volume	Void Volume
m	m	m	cu.m.	40% cu.m.
0.60	0.65	70.0	27.3	10.9

Percolation Rate: 30 mm/hr (fine sand)

Time to Draw Down: 20.0 Hours

DRAINAGE AREA III

		C
Roof Area:	0 sq.m.	0.90
Granular:	1841 sq.m.	0.70
Landscape Area:	<u>189 sq.m.</u>	<u>0.20</u>

Total Catchment Area 2030 sq.m. 0.65

Require Storage Volume *: 65% Impervious Level 6.8 cu.m. (interpolated from Table 3.2 *)
(for 80% TSS removal)

* As per MOE Stormwater Management Planning and Design Manual, March 2003

Infiltration Trench

Depth	Ave. Width	Length	Total Volume	Void Volume
m	m	m	cu.m.	40% cu.m.
0.60	0.80	36.0	17.3	6.9

Percolation Rate: 30 mm/hr (fine sand)

Time to Draw Down: 20.0 Hours

DRAINAGE AREA IV

		C
Roof Area:	0 sq.m.	0.90
Granular:	1334 sq.m.	0.70
Landscape Area:	<u>409 sq.m.</u>	<u>0.20</u>

Total Catchment Area 1743 sq.m. 0.58

Require Storage Volume *: 58% Impervious Level 5.4 cu.m. (interpolated from Table 3.2 *)
(for 80% TSS removal)

* As per MOE Stormwater Management Planning and Design Manual, March 2003

Infiltration Trench

Depth	Ave. Width	Length	Total Volume	Void Volume
m	m	m	cu.m.	40% cu.m.
0.60	0.50	95.0	28.5	11.4

Percolation Rate: 30 mm/hr (fine sand)

Time to Draw Down: 20.0 Hours

DRAINAGE AREA V

			C
Roof Area:	0	sq.m.	0.90
Granular:	2750	sq.m.	0.70
Landscape Area:	<u>260</u>	sq.m.	<u>0.20</u>

Total Catchment Area 3010 sq.m. 0.66

Require Storage Volume *: 66% Impervious Level 10.1 cu.m. (interpolated from Table 3.2 *)
(for 80% TSS removal)

* As per MOE Stormwater Management Planning and Design Manual, March 2003

Infiltration Trench

				Void
Depth	Ave. Width	Length	Total Volume	40%
m	m	m	cu.m.	cu.m.
0.60	0.50	100.0	30.0	12.0

Percolation Rate: 30 mm/hr (fine sand)

Time to Draw Down: 20.0 Hours

DRAINAGE AREA VI

			C
Roof Area:	0	sq.m.	0.90
Granular:	1403	sq.m.	0.70
Landscape Area:	<u>182</u>	sq.m.	<u>0.20</u>

Total Catchment Area 1585 sq.m. 0.64

Require Storage Volume *: 64% Impervious Level 5.2 cu.m. (interpolated from Table 3.2 *)
(for 80% TSS removal)

* As per MOE Stormwater Management Planning and Design Manual, March 2003

Infiltration Trench

				Void
Depth	Ave. Width	Length	Total Volume	40%
m	m	m	cu.m.	cu.m.
0.60	0.60	36.0	13.0	5.2

Percolation Rate: 30 mm/hr (fine sand)

Time to Draw Down: 20.0 Hours

18-Sep-17

REVISED

16-Jan-18

2688 Carp Road Ottawa, Ontario

Pre-Development (Existing) Conditions

			C-values
Creek:	2124	sq.m.	1.00
Roof Area:	198	sq.m.	0.90
Asphalt/Concrete Area:	0	sq.m.	0.90
Gravel:	22675	sq.m.	0.70
Landscape Area:	<u>6988</u>	<u>sq.m.</u>	<u>0.20</u>
Total Catchment Area	31985	sq.m.	0.61

Post Development Conditions

			C-values
Creek:	2124	sq.m.	1.00
Roof Area:	706	sq.m.	0.90
Asphalt/Concrete Area:	218	sq.m.	0.90
Gravel:	19149	sq.m.	0.70
Landscape Area:	<u>9788</u>	<u>sq.m.</u>	<u>0.20</u>
Total Catchment Area	31985	sq.m.	0.57