

SERVICING AND STORMWATER MANAGEMENT REPORT



Project No.: OCP-17-0613

Project No.: 495 Jinkinson Road – J.R. Brisson Heavy Equipment Sales, Service and Rental

Prepared for:

J.R. Brisson Equipment Ltd.
121 St. Pierre Road, Vars, ON K0A 3H0

Prepared by:

McIntosh Perry Consulting Engineers
115 Walgreen Road, Carp ON K0A 1L0

June 27, 2018

McINTOSH PERRY

Executive Summary

Developing a site within the City of Ottawa requires meeting a predefined set of requirements outlined in the City of Ottawa Sewer Design Guidelines (SDG) - 2012 along with meeting the local conservation authority requirements (Mississippi Valley Conservation Authority - MVCA) and provincial requirements (Ministry of Environmental and Climate Change – MOECC). Site specific requirements are discussed and outlined in the pre-consultation meeting with the City of Ottawa before the detailed design process is initiated.

This report describes an innovative and cost-efficient design solution for the site servicing (water, sanitary, and storm) and stormwater management (SWM) requirements in order to develop this site. The Mississippi Valley Conservation Authority (MVCA) requires the removal of 70% of total suspended solids (TSS) before runoff discharge. An enhanced grassed swale is proposed with low slopes and a minimum travel distance of 61 m (approximately 200 ft) before outlet to meet the requirements outlined by the MVCA.

Evaluation of the proposed site plan in addition to a review of the site grading and soil characteristics was completed. Our review identified that a trapezoidal enhanced grassed swale with restricted flows provided the optimal design solution to meet the stormwater management requirements. During storm events the stormwater will be retained within the enhanced grassed swale until the storm event subsides and flows reduce. The runoff from the site will drain to the back of the property and outlet to the site behind the development area. These design elements will ensure that water quality and quantity concerns are addressed at all stages of development.

The evaluation of the proposed development, existing site characteristics and surrounding municipal infrastructure suggests that the SWM design elements consisting of an enhanced grassed swale will not only be a possible design solution to the site constraints but will also contribute to the health of the local watercourse. The proposed septic and well will utilize the existing groundwater and surrounding environment to service the development. Therefore, it is our professional opinion that this site located at 495 Jinkinson Road is able to be developed and fully serviced to accommodate the proposed J.R. Brisson heavy equipment sales, service and rental location.

TABLE OF CONTENTS

1.0	PROJECT DESCRIPTION	1
1.1	<i>Purpose</i>	1
1.2	<i>Site Description</i>	1
2.0	BACKGROUND STUDIES	2
3.0	PRE-CONSULTATION SUMMARY	2
4.0	EXISTING SERVICES	2
5.0	SERVICING PLAN	2
5.1	<i>Proposed Servicing Overview</i>	2
5.2	<i>Proposed Water Design</i>	2
5.3	<i>Proposed Sanitary Design</i>	3
5.4	<i>Proposed Storm Design (Conveyance and Management)</i>	3
5.5	<i>Site Utilities</i>	3
5.6	<i>Service Locations/Cover</i>	3
6.0	PROPOSED STORMWATER MANAGEMENT	4
6.1	<i>Design Criteria and Methodology</i>	4
6.2	<i>Runoff Calculations</i>	4
6.2.1	<i>Pre-Development Drainage</i>	5
6.2.2	<i>Post-Development Drainage</i>	5
6.3	<i>Quantity Control</i>	6
6.4	<i>Quality Control</i>	7
7.0	SEDIMENT EROSION CONTROL	8
8.0	SUMMARY	9
9.0	RECOMMENDATIONS	10
10.0	STATEMENT OF LIMITATIONS	11

LIST OF FIGURES

Figure 1: Key Map: 495 Jinkinson Road, Ottawa	1
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LIST OF TABLES

Table 1: Average Runoff Coefficients (C)	4
Table 2: Pre-Development Runoff Summary.....	5
Table 3: Post-Development Runoff Summary	5
Table 4: Allowable Release Rate.....	6
Table 5: Post-Development Restricted Runoff Calculations	6

APPENDICES

APPENDIX A: City of Ottawa Pre-Consultation Notes

APPENDIX B: Existing Watermain Flow and Fire Protection Calculations

APPENDIX C: Sanitary Sewer Calculation

APPENDIX D: Pre-Development Drainage Plan

APPENDIX E: Post-Development Drainage Plan

APPENDIX F: Stormwater Management Calculations

1.0 PROJECT DESCRIPTION

1.1 Purpose

McIntosh Perry (MP) has been retained by J.R. Brisson Equipment Ltd. to prepare this Servicing and Stormwater Management Report in support of the Site Plan Control process for the proposed J.R. Brisson heavy equipment sales, service and rental location at 495 Jinkinson Road within the City of Ottawa.

The main purpose of this report is to present a servicing design for the development in accordance with the recommendations and guidelines provided by the City of Ottawa (City), the Mississippi Valley Conservation Authority (MVCA), the Ministry of the Environment and Climate Change (MOECC) and the Ministry of Transportation (MTO). This report will address the water, sanitary and storm sewer servicing for the development, ensuring that existing and available services will adequately service the proposed development.

This report should be read in conjunction with the following drawings:

- CP-17-0613, C101 – Lot Grading, Drainage, Sediment and Erosion Control Plan, and
- CP-17-0613, C102 – Site Servicing Plan.

1.2 Site Description

The property is located at 495 Jinkinson Road. It is described as Part of Lot 17, Concession A (Rideau Front), City of Ottawa, Ontario. The land in question covers approximately 22.00 ha, though only 2.50 ha is to be developed, and is located west of the Hazeldean Road on-ramp to Highway 7. The property is subject to an easement per INST NS171766 and INST OC968652. The existing site is currently undeveloped consisting of tree cover and grass.

The proposed development consists of a 1,015 m², one-storey Case Dealership. In addition, the development includes a graveled storage yard, parking, drive aisle and landscaping along the frontage to Jinkinson Road. The existing private approach will be removed and replaced with another further to the east.

Figure 1: Key Map: 495 Jinkinson Road, Ottawa



2.0 BACKGROUND STUDIES

Background studies that have been completed for the site include review of a topographical survey of the site, a geotechnical report and a Phase I Environmental Site Assessment (ESA).

A topographic survey of the site was completed by MPSI and can be found under separate cover.

The following reports have previously been completed and are available under separate cover:

- Geotechnical Investigation completed by McIntosh Perry dated June, 2018.
- Phase I ESA completed by McIntosh Perry dated May 1, 2018.

3.0 PRE-CONSULTATION SUMMARY

City of Ottawa Staff have been pre-consulted regarding this proposed development in person on February 23rd, 2018. Specific design parameters to be incorporated within this design include the following:

- Pre-development and post-development flows shall be calculated using a time of concentration (Tc) of 20 minutes and 10 minutes, respectively.
- Control 5 through 100-year post-development flows to the 5 and 100-year pre-development flows with a combined C value to a maximum of 0.50.

Correspondence with the City can be found in Appendix 'A'.

4.0 EXISTING SERVICES

The property has not been developed and is within Area D (Rural) of the City of Ottawa Zoning Schedule. There are no underground services available within the Jinkinson Road right-of-way though overhead wires are present along the frontage of the site.

5.0 SERVICING PLAN

5.1 Proposed Servicing Overview

The property will be serviced with a new well and a septic system to provide the water and sanitary services. The stormwater will be conveyed by means of sheet flow and enhanced grassed swales to a storage area along the southeastern limit of the development area prior to its discharge to the rear portion of the property.

5.2 Proposed Water Design

A new well will be drilled within the landscaped area in the parking lot north of the building to provide the proposed development with domestic water supply. The new well will provide sufficient quantity and quality of water for proposed site needs and should not adversely affect groundwater. The building will be connected

by a 50 mm diameter copper lateral that will provide sufficient pressure and flow for the intended use of the development.

The water demands for the new buildings have been calculated as per the Ottawa Design Guidelines – Water Distribution and are as follows: the average and maximum daily demands are 1.00 L/s and 1.49 L/s respectively. The maximum hourly demand was calculated as 2.69 L/s (Refer to Appendix 'B' for flow details).

5.3 Proposed Sanitary Design

A new septic bed located within the west side yard will be installed and sized to accommodate the development. McIntosh Perry will coordinate with the Ottawa Septic System Office (OSSO) for the required permits and approvals.

Currently the sanitary design flow is calculated at 5,000 L/day, which takes into consideration the building plumbing as well as the floor drains from the maintenance, service and wash bay locations within the building. Not that at this time, the flow from the maintenance, service and was bay locations is expected to be directed to an oil and grit separator discharging directly into the pump chamber (effectively bypassing the septic tank).

5.4 Proposed Storm Design (Conveyance and Management)

The transition from an undeveloped site covered in vegetation to a fully developed site will increase the amount of stormwater runoff due to an increase in impervious area. To manage the increase in stormwater runoff, an enhanced grassed swale has been designed to convey, restrict and treat the stormwater for suspended solid removal. The stormwater will generally sheet flow from the front of the property to the back. The storage during the 5 through 100-year storm events shall be provided by the grassed swale through restricting the flow of water out of the swale. The combined restricted flow from the swale will not exceed the pre-development flows for the respective storm events. A trapezoidal earth weir as well as a 450 mm pipe equipped with a 350 mm orifice are provided for the outlet to control the flows until the 100-year storm event subsides while also allowing for an emergency overland flow location. The stormwater management design will be further detailed in Section 6.0.

5.5 Site Utilities

All relevant utility companies (telephone - Bell, gas – Enbridge and hydro – Hydro Ottawa and cable - Rogers) will be contacted prior to construction in order to confirm adequate utility servicing for the site. It is anticipated that the existing overhead wires within the Jinkinson Road right-of-way will be used for the servicing of the site.

5.6 Service Locations/Cover

The proposed sanitary and water service laterals will be placed under the parking lot and grassed areas. Hydro, telephone, gas will be primarily placed in a common utility trench connecting to existing infrastructure along Jinkinson Road. It is anticipated that the hydro and gas meters will be located at the centre of the building. The minimum cover for sanitary and water services will conform to requirements per the City of Ottawa Standard.

Separation distances between the storm, water and sanitary will be maintained as per the Ministry of the Environment requirements.

6.0 PROPOSED STORMWATER MANAGEMENT

6.1 Design Criteria and Methodology

Stormwater management for this site will be maintained through positive drainage away from the proposed building and be conveyed by way of overland sheet flow to the back of the site where an enhanced grassed swale is proposed to treat the quality of the water as well as restrict the runoff and provide storage for the 5 and 100-year storm events. The emergency overland flow will be directed towards the rear of the property. A trapezoidal earth weir located in the southeastern corner of the site will provide the emergency overland flow location as well as control the 100-year storm event flows. The quantitative and qualitative properties of the storm runoff for both the pre- and post-development flows are further detailed below.

Stormwater Best Management Practices (SWM BMP's) will be implemented at the "Lot level", "Conveyance" and "End of Pipe" locations. These concepts will be explained further in Section 6.3. To summarize, roof water will be directed to grass surfaces, where possible, that in turn will be collected into proposed stormwater management swale. The SWM facilities will consist of a swale treating both quality and quantity, with a normal level of quality control mandated by the Mississippi Valley Conservation Authority (MVCA).

6.2 Runoff Calculations

Runoff calculations presented in this report are derived using the Rational Method, given as:

$$Q = 2.78CIA \text{ (L/s)}$$

Where	C	= Runoff coefficient
	I	= Rainfall intensity in mm/hr (City of Ottawa IDF curves)
	A	= Drainage area in hectares

It is recognized that the rational method tends to overestimate runoff rates. As a by-product of using extremely conservative prediction method, any facilities that are sized using these results are expected to function as intended in real world conditions.

The following coefficients were used to develop an average C for each area:

Table 1: Average Runoff Coefficients (C)

Roofs/Concrete/Asphalt	0.90
Gravel	0.60
Undeveloped and Grass	0.20

As per the City of Ottawa Sewer Design Guidelines, the 5-year balanced 'C' value must be increased by 25% for a 100-year storm event to a maximum of 1.0.

As per the pre-consultation meeting with the City of Ottawa the time of concentration (T_c) used for pre-development and post-development flows shall be calculated using a time of concentration (T_c) of 20 and 10 minutes, respectively.

6.2.1 Pre-Development Drainage

The existing site has been demonstrated as drainage area A1. Drawing CP-17-0613 PRE (Appendix 'D') indicates the limits of the drainage area. Existing conditions have the overland stormwater runoff flowing from a high point located relatively central to the site and draining inconsistently in all directions with pockets of no drainage. Table 2 demonstrates the existing flow rates in pre-development conditions.

Table 2: Pre-Development Runoff Summary

Area ID	Drainage Area (ha)	Runoff Coefficient (5-year)	Runoff Coefficient (100-year)	T_c (min)	Unrestricted 5-year Peak Flow (L/s)	Unrestricted 100-year Peak Flow (L/s)
A1	2.46	0.20	0.25	20	96.09	205.09
Total	2.46				96.09	205.09

(See Appendix 'F' for Calculations)

6.2.2 Post-Development Drainage

The post-development drainage plan was designed to retain runoff generated by a 100-year storm event onsite. Stormwater exceeding this amount is directed to the southeast corner of the property. The proposed drainage and overland flow directions are indicated on drawing CP-17-0613 POST (Appendix 'E'). Table 3 displays the post-development runoff generated by the proposed site.

Table 3: Post-Development Runoff Summary

Area ID	Drainage Area (ha)	Runoff Coefficient (5-year)	Runoff Coefficient (100-year)	T_c (min)	Unrestricted 5-year Peak Flow (L/s)	Unrestricted 100-year Peak Flow (L/s)
B1	0.09	0.20	0.25	10	5.32	11.39
B2	2.37	0.57	0.70	10	391.90	817.16
Total	2.46				397.22	828.56

(See Appendix 'F' for Calculations)

Runoff from area B2 will be restricted before outletting to the rear of the property. The total flow leaving the site will be controlled by a 350 mm orifice within a 450 mm storm pipe that will restrict the 5-year storm event flows to 88.58 L/s. A trapezoidal earth weir in combination with the pipe and orifice will restrict the 100-year storm event flows to 193.61 L/s. The restriction devices will account for the unrestricted flow leaving the site.

See Appendix 'F' for calculations. This restriction and quality runoff control will be further detailed in Sections 6.3 and 6.4.

6.3 Quantity Control

After discussing the stormwater management criteria for the site with City staff, the post-development runoff for this site has been restricted to match the 5 and 100-year pre-development flow rates with a calculated C value of 0.20 and 0.25, respectively (See Appendix 'A' for pre-consultation notes). These values create the following allowable release rates and storage volumes for the development site.

Table 4: Allowable Release Rate

Area ID	Drainage Area (ha)	Runoff Coefficient (5-year)	Runoff Coefficient (100-year)	5-year Flow Rate (L/s)	100-year Flow Rate (L/s)
A1	2.46	0.20	0.25	96.09	205.09

(See Appendix 'F' for Calculations)

Reducing site flows will be achieved using flow restriction and will create the need for onsite storage. Runoff from area B2 will be restricted as detailed in Table 5.

Table 5: Post-Development Restricted Runoff Calculations

Area ID	Post-Development Unrestricted (L/s)		Post-Development (Restricted) (L/s)		
	5-yr	100-yr	5-yr	100-yr	
B1	5.32	11.39	5.32	11.39	UNRESTRICTED
B2	391.90	817.16	88.58	193.61	RESTRICTED
Total	397.22	828.56	93.89	205.00	

(See Appendix 'F' for Calculations)

Runoff from Area B2 will be restricted at the outlet by a 350 mm diameter orifice plug within the 450 mm diameter outlet pipe as well as a trapezoidal earth weir with a bottom dimension of 4.6 m and 3:1 side slopes. This orifice plug will restrict area B2 to 88.58 L/s for the 5-year storm event creating a water surface elevation (WSEL) of 135.54. The 100-year storm event flows will be restricted by both the orifice plug and trapezoidal earth weir restricting the flows to 193.61 L/s creating a WSEL of 135.63. The storage for this area will be provided within the enhanced grassed swale as well as atop a portion of the gravel storage yard. Table 6 below details the amount of required and provided storage before outletting to the rear of the property.

Table 6: Site Storage Summary

Area	Depth of Ponding (m) for 5-yr storm	5-year required storage (m ³)	5-year available storage (m ³)	Depth of Ponding (m) for 100-yr storm	100-year required storage (m ³)	100-year available storage (m ³)
B2	0.27	211.5	216.4	0.36	426.7	440.0

(See Appendix 'F' for Calculations)

The outlet design detailed on drawing C101 creates surface water within the 0.15 m vertical difference between the outlet (135.42) and the bottom of swale (135.27). It is anticipated that this water will infiltrate through the overburden native soil and the highly fractured and weathered limestone bedrock underneath within a time of 24 hours.

6.4 Quality Control

The development of this lot will employ Best Management Practices (BMP's) wherever possible. The intent of implementing stormwater BMP's is to ensure that water quality and quantity concerns are addressed at all stages of development. Lot level BMP's typically include temporary retention of the parking lot runoff, minimizing ground slopes and maximizing landscaped areas. Some of these BMP's cannot be provided for this site due to site constraints and development requirements.

The enhanced grass swale has a cross-slope of 0.5% and a drainage conveyance slope of 0.25% to slow down the stormwater and allow for infiltration and removal of total suspended solids. It is suggested that the enhanced grassed swale be evaluated yearly to determine if the amount of suspended solid accumulation requires removal. The minimum travel path of water through the swale is approximately 61 m (200.13 ft) providing sufficient total suspended solid removal to satisfy the conservation authorities requirement of 70%. Table 7 provides the criteria and proposed conditions the enhanced grassed swale will be subjected to.

Table 7: Enhanced Grassed Swale Requirements

No.	Design Element	Criteria	Proposed Works
1	Drainage Areas	Less than 2 hectares	There is 2.46 ha of the site area draining to the swale with less than 2 ha of the drainage area contributing to sediment loading.
2	Soils Type	Soil percolation rate should be greater than 15mm/hr	Area is predominantly over highly fractured limestone bedrock. Based on historical performance, runoff has been known to infiltrate
3	Water Table Depth	The seasonally high-water depth should be greater than 1m below the bottom of the enhanced swales	Once full completion of the site is achieved it is anticipated that the ground water table will be pushed below 1m of the enhanced grassed swales bottom elevation.

4	Bedrock Depth	The depth to bedrock should be greater than 1m below the bottom of the enhanced swales	Depth to bedrock is anticipated to be as high as 0.36m below original ground, however it is highly fractured and still allows for infiltration through the fractures.
5	Cross-Section	Bottom width: >0.75m Side slopes: 2.5:1 (Typical) Maximum Depth of Flow: <0.5m (Typical) Channel Slope: <4%	Bottom width: 5-18m Side slopes: 20:1 to 3:1 Max Depth of Flow: 0.36m Channel Slope: 0.25%
6	Flow Velocity	Convey the peak flow from a 4 hour 25mm Chicago storm with a velocity <0.5m/s	The velocity within the ditch will be less than 0.5 m/s.
7	Swale Length	>5m	The swale is greater than 5m in length.
8	Permanent Check Dams	To promote infiltration of stormwater and the settling of pollutants, permanent check dams can be constructed at intervals along the swale systems	The outlet functions as a check dam by providing 0.15m vertical clearance between bottom of swale and the outlet invert.
9	Major System Events	Grassed swales must be evaluated under major system and minor system events to ensure that swales can convey these storms effectively	The major storm events are anticipated to crest the banks however given the adjacent land use (vegetated and no sediment or erosion concerns), runoff will still ultimately be directed to the intended outlet through a combination of overland sheet flow (where runoff has crested the banks) and concentrated flow (runoff within the banks).

7.0 SEDIMENT EROSION CONTROL

The site-grading contractor is responsible for ensuring sediment control structures are installed in accordance with the Site Grading and Drainage Plan as indicated. Silt fences shall be installed on site before construction or earth-moving operations begin, as shown on the Site Grading and Drainage Plan.

Geosock is to be installed under the grates of all existing structures along the frontage of the site and any new structures immediately upon installation. The Geosock is to be removed only after all areas have been paved and vegetation has been established. Care shall be taken at the removal stage to ensure that any silt that has accumulated is properly handled and disposed of. Removal of silt fences without prior removal of the sediments shall not be permitted.

At the discretion of the project manager, municipal staff or conservation authority, additional silt control devices shall be installed at designated locations.

8.0 SUMMARY


- A new 1,015 m² Case Dealership will be constructed centrally on the site located at 495 Jinkinson Road.
- A new septic system will be installed to service the site including a 100 mm private service lateral to be coordinated by other as part of the septic application.
- A new well will be drilled on the site including a 50 mm diameter copper service lateral to the building.
- Stormwater runoff will be directed by overland sheet flow to the rear of the property where the outlet will control the quantity and quality of the runoff.
- As discussed with the City of Ottawa staff, the stormwater management design will ensure that the post-development flow rates are restricted to the 5-year and 100-year pre-development flow rate respectively, with a calculated maximum C value of 0.5.
- Storage for the 5- through 100-year storm events will be provided within the parking lot areas and within the enhanced grassed swales.
- The stormwater management design accounts for 70% total suspended solid removal per the Mississippi Valley Conservation Authorities requirements.

9.0 RECOMMENDATIONS

Based on the information presented in this report, we recommend that City of Ottawa approve this Servicing and Stormwater Management Report in support of the proposed J.R. Brisson Equipment Ltd development on Jinkinson Road.

The sediment and erosion control plan outlined in Section 7.0 and detailed in the Grading and Drainage Plan notes are to be implemented by the contractor.

This report is respectfully being submitted for approval.



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10.0 STATEMENT OF LIMITATIONS

This report was produced for the exclusive use of J.R. Brisson Equipment Ltd. The purpose of the report is to assess the existing stormwater management system and provide recommendations and designs for the post-construction scenario that are in compliance with the guidelines and standards from the Ministry of the Environment and Climate Change, City of Ottawa and local approval agencies. McIntosh Perry reviewed the site information and background documents listed in Section 2.0 of this report. While the previous data was reviewed by McIntosh Perry and site visits were performed, no field verification/measures of any information were conducted.

Any use of this review by a third party, or any reliance on decisions made based on it, without a reliance report is the responsibility of such third parties. McIntosh Perry accepts no responsibility for damages, if any, suffered by any third party as a result of decisions or actions made based on this review.

The findings, conclusions and/or recommendations of this report are only valid as of the date of this report. No assurance is made regarding any changes in conditions subsequent to this date. If additional information is discovered or becomes available at a future date, McIntosh Perry should be requested to re-evaluate the conclusions presented in this report, and provide amendments, if required.

APPENDIX A:
CITY OF OTTAWA PRE-CONSULTATION NOTES

Site Plan Control Application Pre-Consultation- 495 Jinkinson

Meeting Date: February 23, 2018

Proposal:

The proponent wishes to develop approximately 6 acres of land located at 495 Jinkinson Road to accommodate the Heavy Equipment and Vehicle Sales, Rental and Servicing business. The proposal falls within the RG [355r] Boundary on the property. The remainder of land will mostly remain its original state.

Staff Comments

The application will be considered as: "*Application for New Development*", "*Manager Approval, Public Consultation*", "*Value of Infrastructure and Landscaping - < \$50,000*", "*Conservation Authority Fee - Remainder of City*" – see link http://app06.ottawa.ca/online_services/forms/ds/site_plan_control_en.pdf

Submission requirements:

Plan of Survey (2 copies)

Site Plan (10 copies)

- Site plans should indicate fire and emergency route and the location of Fire Protection Storage Tank.
- Site plan should also show Zoning boundary to ensure all proposed development components relating to the Heavy Equipment and Vehicle Sales, Rental and Servicing business are within the zoning limit.
- Site plan should also indicate the existing and proposed access. Please note curvet is required for the new access. It is understood the existing access will be removed.
- Access should be designed according to City's Private Approach By-law. If additional width is needed to accommodate vehicle movement, please provide additional rationale to justify the design choice.
- Site plan should show wetland and the 30 metres required setback from the wetland.
- Site plan should also identify locations of service bays and entrance of the building.
- Site plan should identify required screening around the storage area. Opaque screen that is at least 1.8 metres in height from finish grade is required as per Zoning Bylaw.
- Site plan should show accessibility design of the parking lot.
- Please separate grading from site plan. Keep the plan clear.

Landscape Plan (10 copies)

- Indicate proposed paving for parking lot and around the building
- Landscaping along Jinkinson to protect the Scenic Entry Route (Highway 7)

Building Elevations (5 copies)

- Show façade treatments
- Show any signage location and dimensions.

Planning Rationale (5 copies)

- Planning Rationale Include Design Brief and Integrated Environmental Review Statement.
- Schedule J of the Official Plan and the City's Cycling Network Plan identifies Highway 7 as Scenic Entry Route. Planning Rationale should provide discussion around use of landscape and architectural treatments along with other design elements along Jinkinosn to protect the Scenic Entry Route.

Grading and Drainage Plan (10 copies)

Erosion and Sediment Control Plan (10 Copies)

Stormwater Management Brief (5 copies)

- Post-development runoff should be controlled to the pre-development rate.
- MOECC approval may be necessary for proposed industrial development.
- Consultation with MTO is recommended for additional stormwater management requirement.

Geotechnical Study (5 copies)

Hydrogeological and Terrain Analysis (5 copies)

Environmental Impact Statement (EIS) (5 copies)

- A revised EIS should be provided and Include Tree Conservation Report (TCR) as part of the EIS.
- Additional consultation with locale MNRF office is necessary and the revised EIS should discuss significant habitat for threatened and endangered species. Additional Site visit may be triggered.

Please provide electronic copy (PDF) of all plans and studies required.

All plans and drawings must be produced on A1-sized paper and folded to 21.6 cm x 27.9 cm (8½"x 11").

A scale of 1:200 is recommended for the Site Plan and Landscape Plan.

Note that many of the plans and studies collected with this application must be signed, sealed and dated by a qualified engineer, architect, surveyor, planner or designated specialist.

Other Development Considerations

- Ministry of Environment, Environmental Compliance Approval may be required. Please contact the local MOE office for clarification. Please note that if an ECA is required that process time is 6 months +, and is required prior to issuance of a commence work permit.
- Accessibility Design Standards – particularly for parking, as the standards are stricter than the Traffic and Parking By-law in regards to accessible parking spaces. A copy of the accessibility design standards can be found on City's Website.
- Construction activities should follow Protocol for Wildlife Protection during Construction.
- Parkland Cash-in-lieu will be required at 2% of the proposed development area (approximately 6 acres). The value of land will be determined as of the day before planning approval is given for Site Plan Control.
- Outside storage is not permitted within any required front yard.

From: Tyler Ferguson
Sent: May 4, 2018 10:10 AM
To: Sean Leflar
Cc: Ryan Kennedy
Subject: FW: 495 Jinkinson Road - MVCA Requirements

FYI, this is great news for Jinkinson. We can now look at the two outlet option.

Tyler Ferguson, EIT

Engineering Intern

T. 613.836.2184 (ext 2242) | F. 613.836.3742

From: Nader Nakhaei [<mailto:NNakhaei@mvc.on.ca>]
Sent: May-04-18 10:00 AM
To: Tyler Ferguson <t.ferguson@mcintoshperry.com>
Cc: Curtis Melanson <c.melanson@mcintoshperry.com>; Niall Oddie <NOddie@mvc.on.ca>
Subject: RE: 495 Jinkinson Road - MVCA Requirements

Hi Tyler,

Yes, the quality control requirement would be "Normal" (70% TSS removal). Any type of SWM design that is based on MOE manual standards (including grass swale and check dams) along with possible and best management practices can be acceptable by us.

Please do not hesitate to contact me if you have any further question/concern.

Cheers,

Nader Nakhaei, Ph.D. | Postdoctoral Fellow / Water Resources Engineer (EIT) | Mississippi Valley Conservation Authority
www.mvc.on.ca | t. 613 253 0006 ext. 259 | f. 613 253 0122 | NNakhaei@mvc.on.ca



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Please consider the environment before printing this e-mail and/or its attachments

From: Tyler Ferguson [<mailto:t.ferguson@mcintoshperry.com>]
Sent: Thursday, May 3, 2018 2:18 PM
To: Nader Nakhaei <NNakhaei@mvc.on.ca>
Cc: Curtis Melanson <c.melanson@mcintoshperry.com>; Niall Oddie <NOddie@mvc.on.ca>
Subject: 495 Jinkinson Road - MVCA Requirements

Hi Nadar,

We are currently working on the stormwater management design for the site located at 495 Jinkinson Road. There was a pre-consultation meeting on February 23rd but I wanted to confirm the stormwater management criteria and briefly go over our approach for the SWM design.

The quality control requirement for the site was given as:

- 1 Normal level of quality treatment (70% TSS removal)

Can you confirm this requirement? Since the site requires a 70% TSS removal, we are proposing to use a treatment train approach to meet the quality control requirements. A proposed enhanced grass swale as per MOE standards would be the prominent feature providing quality control. Along with rock check dams where possible and best management practices (lot level, conveyance & end-of-pipe). Would this type of treatment train approach be acceptable to the MVCA in order to meet the 70% TSS removal?

I have also attached a plan for reference and if you have any questions or concerns don't hesitate to contact me.

Thanks,

Tyler Ferguson, EIT

Engineering Intern

115 Walgreen Road, R.R. 3, Carp, ON K0A 1L0

T. 613.836.2184 (ext 2242) | **F.** 613.836.3742

t.ferguson@mcintoshperry.com | www.mcintoshperry.com

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APPENDIX B:
EXISTING WATERMAIN FLOW AND FIRE PROTECTION CALCULATIONS

From: Evans, Allan <Allan.Evans@ottawa.ca>
Sent: June 11, 2018 11:10 AM
To: Tyler Ferguson
Cc: Curtis Melanson; Sean Leflar
Subject: RE: 495 Jinkinson Road: Requirement for Fire Tanks on-site

Apologies all, very busy.

Based upon the classification and building size (with 4 hour fire rated wall), provided the OBC does not require standpipes or sprinklers, no on-site water will be required.

Regards,

Allan Evans

Fire Protection Engineer
Ottawa Fire Service
1445 Carling Avenue
Ottawa, ON, K1Z 7L9

Follow me on Twitter: @FFSnack
((613) 913-2747

Did you know? That as of October 15th, 2015, all residential occupancies that contain at least one fuel-burning appliance (e.g., gas water heater or gas furnace), fireplace or an attached garage require the installation of a CO alarm outside all sleeping areas.

Learn More at: http://www.mcscs.jus.gov.on.ca/english/FireMarshal/CarbonMonoxideAlarms/QuestionsandAnswers/OFM_COAlarms_QandA.html



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From: Tyler Ferguson <t.ferguson@mcintoshperry.com>
Sent: Wednesday, June 06, 2018 8:22 AM
To: Evans, Allan <Allan.Evans@ottawa.ca>
Cc: Curtis Melanson <c.melanson@mcintoshperry.com>; Sean Leflar <s.leflar@mcintoshperry.com>
Subject: RE: 495 Jinkinson Road: Requirement for Fire Tanks on-site

Hi Allan,

Please let us know when we should expect to receive a response for the below.

Thanks,

Tyler Ferguson, EIT

Engineering Intern
115 Walgreen Road, R.R. 3, Carp, ON K0A 1L0
T. 613.836.2184 (ext 2242) | F. 613.836.3742
t.ferguson@mcintoshperry.com | www.mcintoshperry.com

From: Tyler Ferguson
Sent: May-25-18 8:25 AM
To: Evans, Allan <Allan.Evans@ottawa.ca>
Cc: Curtis Melanson <c.melanson@mcintoshperry.com>; Sean Leflar <s.leflar@mcintoshperry.com>
Subject: RE: 495 Jinkinson Road: Requirement for Fire Tanks on-site

Hi Allan,

Just following up on the email below, do you know if we will require onsite fire protection?

Thanks,

Tyler Ferguson, EIT

Engineering Intern
T. 613.836.2184 (ext 2242) | F. 613.836.3742

From: Tyler Ferguson
Sent: May-16-18 4:10 PM
To: Evans, Allan <Allan.Evans@ottawa.ca>
Cc: Curtis Melanson <c.melanson@mcintoshperry.com>; Sean Leflar <s.leflar@mcintoshperry.com>
Subject: RE: 495 Jinkinson Road: Requirement for Fire Tanks on-site

Hi Allan,

Have you had a chance to review the below?

Thanks,

Tyler Ferguson, EIT

Engineering Intern

T. 613.836.2184 (ext 2242) | F. 613.836.3742

From: Tyler Ferguson

Sent: May-11-18 1:29 PM

To: Evans, Allan <Allan.Evans@ottawa.ca>

Cc: Curtis Melanson <c.melanson@mcintoshperry.com>; Sean Leflar <s.leflar@mcintoshperry.com>

Subject: RE: 495 Jinkinson Road: Requirement for Fire Tanks on-site

Hi Allan,

As requested, see below for description of the building provided by the architect:

"The front "building" is a combination of office, retail and low hazard industrial (warehouse space), with a building area of 427 sq.m. The back "building" is medium hazard industrial (repair garage), with a building area of 573 sq.m. The front and back are going to be separated with a 4-hour firewall. For what it's worth, the whole thing will be built using non-combustible construction."

Let us know if we will require any onsite fire protection.

If you need any more information don't hesitate to contact me.

Thanks,

Tyler Ferguson, EIT

Engineering Intern

T. 613.836.2184 (ext 2242) | F. 613.836.3742

From: Tyler Ferguson

Sent: May-04-18 2:05 PM

To: Evans, Allan <Allan.Evans@ottawa.ca>

Cc: Curtis Melanson <c.melanson@mcintoshperry.com>; Sean Leflar <s.leflar@mcintoshperry.com>

Subject: RE: 495 Jinkinson Road: Requirement for Fire Tanks on-site

Hi Allan,

We will confirm the occupancy for the building and get back to you.

Thanks,

Tyler Ferguson, EIT

Engineering Intern

T. 613.836.2184 (ext 2242) | F. 613.836.3742

From: Evans, Allan [<mailto:Allan.Evans@ottawa.ca>]

Sent: May-04-18 12:57 PM

To: Tyler Ferguson <t.ferguson@mcintoshperry.com>; Sean Leflar <s.leflar@mcintoshperry.com>

Cc: Curtis Melanson <c.melanson@mcintoshperry.com>

Subject: RE: 495 Jinkinson Road: Requirement for Fire Tanks on-site

What would it fall under for classification under the OBC? What hazard level specifically.

Usually if you subdivide a building into smaller portions than 600 m2 with a 2 hour fire wall, it does not fall under Part 3 of the OBC and on-site water would likely not be required. If it was classified medium or high hazard industrial, I would likely still review as well as determine where our nearest water source was as we sometimes will request when above 200 m2, but it is a lot less likely.

Regards,

Allan Evans

Fire Protection Engineer

Ottawa Fire Service

1445 Carling Avenue

Ottawa, ON, K1Z 7L9

Follow me on Twitter: @FFSnack

(613) 913-2747

Did you know? That as of October 15th, 2015, all residential occupancies that contain at least one fuel-burning appliance (e.g., gas water heater or gas furnace), fireplace or an attached garage require the installation of a CO alarm outside all sleeping areas.

Learn More at: http://www.mcscs.jus.gov.on.ca/english/FireMarshal/CarbonMonoxideAlarms/QuestionsandAnswers/OFM_COAlarms_QandA.html



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From: Tyler Ferguson <t.ferguson@mcintoshperry.com>
Sent: Friday, May 04, 2018 10:41 AM
To: Evans, Allan <Allan.Evans@ottawa.ca>; Sean Leflar <s.leflar@mcintoshperry.com>
Cc: Curtis Melanson <c.melanson@mcintoshperry.com>
Subject: RE: 495 Jinkinson Road: Requirement for Fire Tanks on-site

Hi Allan,

Can you please confirm the below?

Thanks,

Tyler Ferguson, EIT

Engineering Intern
115 Walgreen Road, R.R. 3, Carp, ON K0A 1L0
T. 613.836.2184 (ext 2242) | F. 613.836.3742
t.ferguson@mcintoshperry.com | www.mcintoshperry.com

From: Tyler Ferguson
Sent: May-02-18 2:47 PM
To: Evans, Allan <Allan.Evans@ottawa.ca>; Sean Leflar <s.leflar@mcintoshperry.com>
Cc: Curtis Melanson <c.melanson@mcintoshperry.com>
Subject: RE: 495 Jinkinson Road: Requirement for Fire Tanks on-site

Hi Allan,

Thanks for the response. If the building has an internal fire wall between a 600 m2 portion of the building and remaining building footprint would that satisfy the criteria of not requiring on site fire protection?

Thanks,

Tyler Ferguson, EIT

Engineering Intern
T. 613.836.2184 (ext 2242) | F. 613.836.3742

From: Evans, Allan [<mailto:Allan.Evans@ottawa.ca>]
Sent: May-02-18 1:57 PM
To: Sean Leflar <s.leflar@mcintoshperry.com>
Cc: Tyler Ferguson <t.ferguson@mcintoshperry.com>; Curtis Melanson <c.melanson@mcintoshperry.com>
Subject: RE: 495 Jinkinson Road: Requirement for Fire Tanks on-site

Apologies – emails got pushed down too far in my mailbox.

Yes, the site will require on-site water storage as the building is > 600 m2. As for size, please provide the FUS and OBC calculations for flow and water storage breakdown. Once we get that value, we can sit down and discuss a more realistic amount that we would require (we won't need the full 2 hour supply for instance).

Regards,

Allan Evans

Fire Protection Engineer
Ottawa Fire Service
1445 Carling Avenue
Ottawa, ON, K1Z 7L9

Follow me on Twitter: @FFSnack
(613) 913-2747

Did you know? That as of October 15th, 2015, all residential occupancies that contain at least one fuel-burning appliance (e.g., gas water heater or gas furnace), fireplace or an attached garage require the installation of a CO alarm outside all sleeping areas.

Learn More at: http://www.mcscs.jus.gov.on.ca/english/FireMarshal/CarbonMonoxideAlarms/QuestionsandAnswers/OFM_COAlarms_QandA.html



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From: Sean Leflar <s.leflar@mcintoshperry.com>

Sent: Friday, April 20, 2018 1:37 PM
To: Evans, Allan <Allan.Evans@ottawa.ca>
Cc: Tyler Ferguson <t.ferguson@mcintoshperry.com>; Curtis Melanson <c.melanson@mcintoshperry.com>
Subject: RE: 495 Jinkinson Road: Requirement for Fire Tanks on-site

Good Afternoon,

I just realized I forgot to attach a conceptual site plan showing the location and size of the building. Please see attached.

Sorry for the inconvenience,

Sean Leflar

Civil Engineering Technologist
115 Walgreen Road, R.R. 3, Carp, ON K0A 1L0
T. 613.836.2184 (ext 2252) | F. 613.836.3742
s.leflar@mcintoshperry.com | www.mcintoshperry.com

From: Sean Leflar
Sent: April 20, 2018 11:47 AM
To: Evans, Allan <Allan.Evans@ottawa.ca>
Cc: Tyler Ferguson <t.ferguson@mcintoshperry.com>; Curtis Melanson <c.melanson@mcintoshperry.com>
Subject: 495 Jinkinson Road: Requirement for Fire Tanks on-site

Good Morning,

We are gearing up to start the civil work for a site located at 495 Jinkinson Road within the City of Ottawa which is currently undeveloped. The site is planned to be developed with a heavy equipment and vehicle sales, rental and servicing establishment including a gravel storage yard and an asphalt parking lot. There is only one building proposed that will hold the offices, sales, rental and service centres. Fire Station 81 – Stittsville is approximately 4.7km north east of the site as the crow flies. Would this site require fire tanks on-site, if so, could you please inform me what the requirements would be?

If you have any questions or concerns, please feel free to get in contact.

Thank you for your time,

Sean Leflar

Civil Engineering Technologist
115 Walgreen Road, R.R. 3, Carp, ON K0A 1L0
T. 613.836.2184 (ext 2252) | F. 613.836.3742
s.leflar@mcintoshperry.com | www.mcintoshperry.com

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,

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CP-17-0613 - 495 JINKINSON ROAD - Water Demands

Project:	495 JINKINSON ROAD
Project No.:	CP-17-0613
Designed By:	S.V.L.
Checked By:	R.P.K.
Date:	05/09/2018
Site Area:	2.46 gross ha

AVERAGE DAILY DEMAND

DEMAND TYPE	AMOUNT	UNITS
Residential	350	L/c/d
Industrial - Light	35,000	L/gross ha/d
Industrial - Heavy	55,000	L/gross ha/d
Shopping Centres	2,500	L/(1000m ² /d)
Hospital	900	L/(bed/day)
Schools	70	L/(Student/d)
Trailer Parks no Hook-Ups	340	L/(space/d)
Trailer Park with Hook-Ups	800	L/(space/d)
Campgrounds	225	L/(campsite/d)
Mobile Home Parks	1,000	L/(Space/d)
Motels	150	L/(bed-space/d)
Hotels	225	L/(bed-space/d)
Tourist Commercial	28,000	L/gross ha/d
Other Commercial	28,000	L/gross ha/d
AVERAGE DAILY DEMAND	1.00	L/s

MAXIMUM DAILY DEMAND

DEMAND TYPE	AMOUNT	UNITS
Residential	2.5 x avg. day	L/c/d
Industrial	1.5 x avg. day	L/gross ha/d
Commercial	1.5 x avg. day	L/gross ha/d
Institutional	1.5 x avg. day	L/gross ha/d
MAXIMUM DAILY DEMAND	1.49	L/s

MAXIMUM HOUR DEMAND

DEMAND TYPE	AMOUNT	UNITS
Residential	2.2 x max. day	L/c/d
Industrial	1.8 x max. day	L/gross ha/d
Commercial	1.8 x max. day	L/gross ha/d
Institutional	1.8 x max. day	L/gross ha/d
MAXIMUM HOUR DEMAND	2.69	L/s

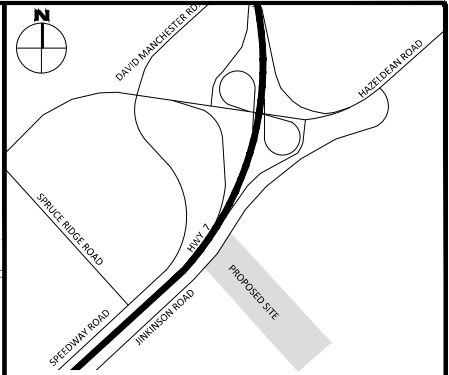
WATER DEMAND DESIGN FLOWS PER UNIT COUNT
CITY OF OTTAWA - WATER DISTRIBUTION GUIDELINES, JULY 2010

APPENDIX C: SANITARY SEWER CALCULATIONS

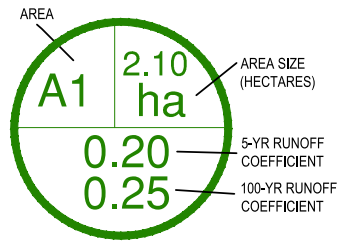
Calculations to be provided once available.

APPENDIX D:
PRE-DEVELOPMENT DRAINAGE PLAN

FILENAME: J:\02 Project - Presentation\2017\0613\CP-17-0613 - J.R. Brisson - Site Plan Control - 495 Jinkinson Road\GIS\15- Drawings\CP-17-0613 - Presentation.dwg
LAST SAVED: Wednesday, June 20, 2018 1:41:58 PM
LAST MODIFIED: Wednesday, June 20, 2018 1:41:58 PM
LAST PLOTTED: Thursday, June 21, 2018 10:11:58 AM
PLOTTER: HP DesignJet T1100e



LOCATION PLAN
LEGEND



01	ISSUED FOR REVIEW	JUN 27, 2018
No.	Revision/Issue	Date

Check and verify all dimensions before proceeding with the work. Do not scale drawings.

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Tel: 613-836-2184 Fax: 613-836-3742
www.mcintoshperry.com

	Stamp:
--	--------

Client:
J.R. BRISSON EQUIPMENT LTD.
121 ST. PIERRE, VARS, ON K0A 3H0

Project:
495 JINKINSON ROAD
CASE EQUIPMENT DEALERSHIP

OTTAWA ONTARIO

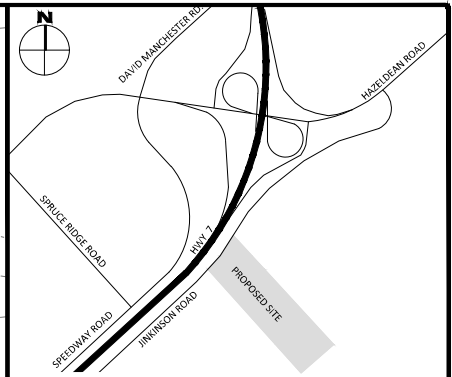
Drawing Title:
PRE-DEVELOPMENT DRAINAGE PLAN

Scale:	N.T.S.	Project Number:	CP-17-0613
Drawn by:	S.V.L.		
Checked By:	R.P.K.	Drawing Number:	
Designed By:	S.V.L.	SHEET 1 of 2	PRE

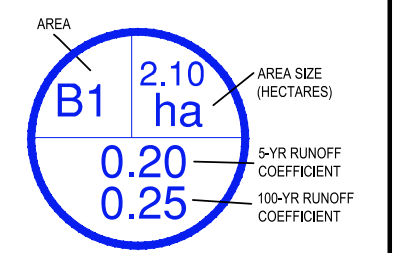
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APPENDIX E:
POST-DEVELOPMENT DRAINAGE PLAN

FILENAME: I:\AD Project - Driveway\2017 July\CP1600-17-0613 - J.R. Brisson - Site Plan Control - 495 Jinkinson Road\CP1600-17-0613 - Presentation.dwg
LAST SAVED: Thursday, June 21, 2018 1:51:45 PM
LAST MODIFIED: Thursday, June 21, 2018 1:51:45 PM
LAST PLOTTED: Thursday, June 21, 2018 1:51:45 PM



LOCATION PLAN
LEGEND



01	ISSUED FOR REVIEW	JUN. 27, 2018
No.	Revision/Issue	Date

Check and verify all dimensions before proceeding with the work. Do not scale drawings.

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Client:
J.R. BRISSON EQUIPMENT LTD.
121 ST. PIERRE, VARS, ON K0A 3H0

Project:
495 JINKINSON ROAD
CASE EQUIPMENT DEALERSHIP

OTTAWA ONTARIO

Drawing Title:
POST-DEVELOPMENT DRAINAGE PLAN

Scale:	N.T.S.	Project Number:	CP-17-0613
Drawn by:	S.V.L.		
Checked by:	R.P.K.	Drawing Number:	
Designed by:	S.V.L.	SHEET 2 of 2	POST

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NOT FOR CONSTRUCTION

APPENDIX F:
STORMWATER MANAGEMENT CALCULATIONS

McINTOSH PERRY

CP-17-0613 - 495 JINKINSON ROAD - RUNOFF CALCULATIONS

1 of 3

Pre-Development Runoff Coefficient

Drainage Area	Area (ha)	Impervious Area (m ²)	C	Gravel Area (m ²)	C	Pervious Area (m ²)	C	Average C (5-Year)	Average C (100-Year)
A1	2.46	0.00	0.90	0.00	0.60	24601.40	0.20	0.20	0.25

Pre-Development Runoff Calculations

Drainage Area	Area (ha)	C (5-Year)	C (100-Year)	Tc (min)	I (mm/hr)		Q (L/s)	
					5-Year	100-Year	5-Year	100-Year
A1	2.46	0.20	0.25	20	70.3	120.0	96.09	205.09
Total	2.46						96.09	205.09

Post-Development Runoff Coefficient

Drainage Area	Area (ha)	Impervious Area (m ²)	C	Gravel Area (m ²)	C	Pervious Area (m ²)	C	Average C (5-Year)	Average C (100-Year)
B1	0.09	0.00	0.90	0.00	0.60	918.04	0.20	0.20	0.25
B2	2.37	3601.73	0.90	15679.83	0.60	4401.56	0.20	0.57	0.70

Post-Development Runoff Calculations

Drainage Area	Area (ha)	C (5-Year)	C (100-Year)	Tc (min)	I (mm/hr)		Q (L/s)	
					5-Year	100-Year	5-Year	100-Year
B1	0.09	0.20	0.25	10	104.2	178.6	5.32	11.39
B2	2.37	0.57	0.70	10	104.2	178.6	391.90	817.16
Total	2.46						397.22	828.56

Post-Development Restricted Runoff Calculations

Drainage Area	Unrestricted Flow (L/s)		Restricted Flow (L/s)		Storage Required (m ³)		Storage Provided (m ³)		
	5-Year	100-Year	5-Year	100-Year	5-Year	100-Year	5-Year	100-Year	
B1	5.32	11.39	5.32	11.39	-	-	-	-	UNRESTRICTED
B2	391.90	817.16	88.58	193.61	211.49	426.68	216.40	440.04	RESTRICTED
Total	397.22	828.56	93.89	205.00	211.49	426.68	216.40	440.04	

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CP-17-0613 - 495 JINKINSON ROAD - STORAGE REQUIREMENTS

2 of 3

Storage Requirements for Area B2

5-Year Storm Event

Tc (min)	I (mm/hr)	B2 Runoff (L/s)	Allowable Outflow (L/s)	Runoff to be Stored (L/s)	Storage Required (m ³)
20	70.3	264.23	88.58	175.66	210.79
21	68.1	256.26	88.58	167.68	211.28
22	66.1	248.79	88.58	160.22	211.49
23	64.3	241.80	88.58	153.23	211.45
24	62.5	235.23	88.58	146.66	211.18
25	60.9	229.05	88.58	140.47	210.71
26	59.3	223.21	88.58	134.64	210.03

Maximum Storage Required 5-Year (m ³) =	211.49
---	--------

100-Year Storm Event

Tc (min)	I (mm/hr)	B2 Runoff (L/s)	Allowable Outflow (L/s)	Runoff to be Stored (L/s)	Storage Required (m ³)
18	128.1	586.24	193.61	392.64	424.05
19	123.9	567.02	193.61	373.41	425.69
20	120.0	549.17	193.61	355.57	426.68
21	116.3	532.24	193.61	338.63	426.68
22	112.9	516.68	193.61	323.07	426.46
23	109.7	502.03	193.61	308.43	425.63
24	106.7	488.31	193.61	294.70	424.37

Maximum Storage Required 100-Year (m ³) =	426.68
---	--------

5-Year Storm Event Storage Summary

Water Elev. (m) =		135.54	
INV. (out)	Area (m ²)	Depth (m)	Volume (m ³)
135.42	1883.3	0.12	216.4

Storage Available (m ³) =	216.4
Storage Required (m ³) =	211.5

100-Year Storm Event Storage Summary

Water Elev. (m) =		135.63	
INV. (out)	Area (m ²)	Depth (m)	Volume (m ³)
135.42	3307.3	0.21	440.0

Storage Available (m ³) =	440.0
Storage Required (m ³) =	426.7

Discharge through Outlet Structure

For Orifice Flow, C =	0.600
For Weir Flow, C =	0.035

	Orifice	Rip-Rap Lined
Invert Elevation	135.42	135.54
Orifice Width/Weir Length	350 mm	4.60 m
Orifice Area (m ²)	0.096	

Elevation (m)	Orifice		Rip-Rap Lined Earth Weir		Total
	H [m]	Q [l/s]	H [m]	Q [l/s]	Q [l/s]
135.42	x	x	x	x	0
135.54	0.12	89	x	x	89
135.63	0.21	117	0.09	76	194
135.74	0.32	145	0.20	297	441
135.84	0.42	166	0.30	598	764
135.94	0.52	184	0.40	992	1176

5-yr
100-yr

Notes:

1. Orifice Equation: $Q = cA(2gh)^{1/2}$ (m³/s *1000 = l/s)
2. Weir flow calculated in Bentley's FlowMaster - Trapezoidal Channel at 0.1%, 3:1 side slopes, roughness coeff. of 0.035.
3. These Computations Do Not Account for Submergence Effects

Reference: Urban Hydrology, Hydraulics and Stormwater Quality: engineering application and computer modeling / A. Akan, Robert J. Houghtalen, 2003.