PRELIMINARY SERVICING REPORT

415 OXFORD STREET WEST
LONDON, ONTARIO

LDS PROJECT NO. LD-00250

JUNE 25, 2024

Submitted to:

CORPORATION OF THE CITY OF LONDON
300 DUFFERIN AVENUE
LONDON, ONTARIO N6A 4L9

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CORPORATION OF THE CITY OF LONDON
RAND DEVELOPMENTS

Table of Contents

Appendices List

1. INTRODUCTION

1.1 Overview

Rand Developments has commissioned LDS Consultants Inc. (LDS) to prepare a preliminary servicing report that meets the City of London's site plan conditions for the future development of the Forest Glen Golf Centre lands. This report, a key part of the overall site design submission, should be considered alongside all other submitted documents. The proposed development, strategically positioned at a prime location, will feature two (2) buildings, accommodating 704 units, in the City of London. The site, spanning approximately 3.82 hectares, is strategically nestled amidst existing commercial and office lands to the west, future development lands to the north and east, and high-density residential and commercial properties along Oxford Street to the south. This strategic location not only enhances the value of the development but also contributes to the overall urban planning of the area. A site location plan is provided in **Figure 1** in **Appendix A**. The site will include a private street with right-in and right-out access to Oxford Street and future connections to a street as part of the Beaverbrook community lands directly north of the subject site.

1.2 Background Information

The proposed document was developed using the following information presented in the following reports:

- City of London Subwatershed Studies; Group 1 Subwatershed (Medway, Stanton and Mud Creeks), prepared by Marshall Macklin Monaghan, dated May 1995.
- Mud Creek Subwatershed Class Environmental Assessment, prepared by CH2M Hill Canada Limited, dated September 18, 2017.
- The Beaverbrook Community – 323 Oxford Street West, 92 Proudfoot Lane, 825 Proudfoot Lane, London, Ontario Functional Servicing and Stormwater Management Report, prepared by The Municipal Infrastructure Group LTD., dated June 2021.
- The Beaverbrook Community – 323 Oxford Street West, 92 Proudfoot Lane, 825 Proudfoot Lane, London, Ontario Functional Servicing and Stormwater Management Report Addendum, prepared by T.Y. Lin International Canada Inc., dated June 12th, 2023.
- Preliminary Geotechnical Investigation, prepared by LDS Consultants Inc., dated March 29th, 2021.
- Design Specifications & Requirements Manual, prepared by The Corporation of the City of London, dated January 2024.
- RE: Site Plan Consultation for 415 Oxford Street West, London, ON – File Number SPC24-043, prepared by The Corporation of the City of London, dated April 18, 2024.
- Stormwater Management Planning and Design Manual, prepared by MECP, dated March 2003.

1.3 Summarized Site Soils and Ground Water Conditions

A series of test pits were advanced at the site. General descriptions of the subsurface conditions are summarized as a 150 to 560 mm thick layer of topsoil observed at the ground surface in all test pits. Topsoil was described as having a silty loam texture with organic inclusions. Except for Test Pit 2, a layer of silty sand (and sand) was contacted below the topsoil in each test pit. The sandy soils were generally found to be loose within the weathered zone (typically within 1.2 m of the ground surface), becoming compact with increasing depth. The sandy soils were generally found to be very moist to wet. A 1.0 m thick layer of mottled grey-black marl was encountered below the topsoil in Test Pit 2, located in the southeast part of the site. The marl was observed to have a silty sand texture and was layered with organics. Based on tactile examination, the marl was very moist and soft, and the sidewall collapsed in the open test pit. Within the base of each test pit, a layer of sand and gravel was contacted, extending below the test pits' exploration depth.

Groundwater conditions were also investigated as part of the test pits investigation. Short-term water levels may not accurately represent the shallow groundwater conditions at the site; as such, this information should be treated as preliminary. The short-term groundwater observations noted in the open test pits range from 1.5 m - 3.0 m below the ground surface across the site. Such shallow groundwater features are typically influenced by site topography and surface water features. As such, the shallow groundwater is anticipated to flow south-southwesterly toward Mud Creek.

The Preliminary Geotechnical Investigation (LDS, 2021) provides a more detailed description of site soil and groundwater conditions.

2. SANITARY SERVICING

The sanitary sewage from the proposed development will be discharged into the existing 900 mm diameter sanitary sewer on Oxford Street West.

2.1 Sanitary Servicing Demands

This development's anticipated sanitary discharge rate was estimated using the City of London Design Specifications & Requirements Manual criteria and population densities based on the number of proposed residential units derived from the site plan. Note that the sanitary capacity analysis was completed using older design sheets and drainage areas obtained from the city. The design sheet and drainage areas obtained from the adjacent subdivision servicing report addendum (T.Y. Lin, 2023) are up to a maintenance hole just downstream of this site. The following table details the expected sanitary discharge from the site.

Table 1 – Sanitary Sewer Discharge

Description	Area (ha) [1.]	Population Density (people/unit) [2.]	Population [3.]	Avg. Flow (L/s) [4.]	Peaking Factor [5.]	Peak Flow (L/s) [6.]
4 Apartment Buildings	2.69	1.6	1,126.4	3.00	4.14	12.43
Infiltration Allowance						0.27 [7.]
					Total Sanitary Demand	**12.70** [8.]

Notes:

1. Area reflects the sum of catchment areas SA1 and SA2.
2. A population density of 1.6 people/unit was referenced from "Section 3.8.1.a)", Chapter 3 Sanitary Sewer Collection System, Design Specifications & Requirements Manual (March 2023). The density was used with the proposed Site Plan (Population = 704 units * 1.6 people/unit).
3. The population was calculated for the density with bonusing provision (25%) at 1.6 people/unit.
4. Average flow = (Population) x (Unit Sewage Flow) = (1,126) x (230 L/d/cap) / (24x60x60) = 3.00 L/s
5. Harmon Peaking Factor (PF) = $(1+14 / (4+P^{0.5}))$ x 1.1 where P = population in thousands
   PF = $1 + (14 / (4+(1.126)^{0.5}))$ = 4.14
6. Peak Flow = (Avg. Flow) x (PF) = (3.00 L/s) x (4.14) = 12.43 L/s
7. Infiltration Allowance (IA) based on 0.100 L/s/ha, as outlined in the Design Specifications & Requirements Manual (January 2024).
   IA = (0.100 L/s/ha) x (2.69 ha) = 0.27 L/s
8. Total Sanitary Demand = Peak Flow + Infiltration Allowance = 11.30 + 0.27 = 12.70 L/s

Based on the expected sanitary sewer discharge, the site can be serviced with a 300 mm diameter sewer at a 0.50% slope. The full-flow capacity of a 300 mm diameter pipe at 0.50% is 68.38 L/s, so the expected sanitary demand is well below the limit. The outlet sewer for the site has been sized to accommodate the future flows from Catchment EXT 1 and the subject site (refer to Sheet No. **SAN1** in **Appendix B**).

2.2 Sanitary Sewer Realignment and Proposed Flows

As noted in the record of site plan consultation (City of London, 2024), the City of London assumes a population of 768 people based on the area of 2.56 ha shown on the design sheet from the functional servicing report addendum of the Beaverbrook Community (T.Y. Lin, 2023). The population proposed in this letter of 1,126.4 people (based on the density with bonusing) was developed based on the current site plan, having a site area of 3.82 ha. While the current version of the adjacent subdivisions' final proposal report does not align with the LDS design sheet and sanitary area plan included in the **Appendix B**, the LDS analysis will be used for planning purposes. T.Y. Lin has confirmed under separate cover that they will update their drawings and calculations to reflect the latest sewer alignment and sanitary calculations presented in this letter during the detailed design stage of the adjacent development. The 300 mm diameter sewer sloped at 0.50% satisfies the sanitary demand of the subject site and external catchment area.

2.3 Proposed Sanitary Servicing Plan and Phasing

The construction schedule for realigning the portion of Mud Creek on the subject site limits the phasing of the proposed infrastructure. Servicing is also restricted by the downstream capacity constraints imposed by the Oxford Street trunk sewer. A holding provision for adequate capacity and connection to a municipal outlet will need to be issued for this application.

Therefore, two things must occur for the sanitary servicing of this land. The holding provision must be removed, signalling that the capacity of the trunk sewer has been increased based on all the development applications in the transit village and corridor. The second would be ensuring that local servicing works are constructed in parallel with the construction of the realigned Mud Creek Channel.

3. WATER SERVICING

As shown on the Water Servicing Figure prepared by LDS, included in **Appendix C**, a 250 mm diameter watermain fronting the south side of the subject site is located within the Oxford Street R.O.W. and is also planned for the future as part of the Beaverbrook Community located north of the site. This development will connect to both existing and proposed mains listed above. It is not anticipated that the construction and maintenance of the watermain will impact the adjacent lands or the realigned Mud Creek Channel, as the watermain layout will follow the city standards. The proposed watermain crossing of the Mud Creek channel will require design considerations to protect the watermain from external elements. Pre-insulated pipes or directional drilling under Mud Creek and electric tracing will be considered during the detailed design stage.

4. STORMWATER MANAGEMENT AND SERVICING

The subject site's stormwater management (SWM) objective is to control the stormwater discharge as described in the sections below.

4.1 Stormwater Management Control Criteria

The subject site is in the City of London, within the Mud Creek subwatershed. Stormwater management design review and approvals for the site are completed by the City and Upper Thames River Conservation Authority (UTRCA). *The Group 1 Subwatershed Study (Marshall Macklin Monaghan Ltd.,* 1995), initiated by the city in partnership with the UTRCA, identified goals and objectives for managing resources for Medway Creek, Stanton Drain and Mud Creek. The study recommends “Normal” water quality protection and 75 m^3/ha storage volume for erosion control. No peak flow attenuation for flood control was recommended. The most recent subwatershed study, *Mud Creek Subwatershed Class Environmental Assessment (CH2M Hill Canada Limited, 2017),* established that Permanent Private Systems (PPS) be incorporated into medium and high-density residential developments.

The SWM design presented herein consolidates the work and recommendations from the applicable subwatershed studies.

4.1.1 Water Quality Control

The development's water quality treatment control requirement is 70% Total Suspended Solids (TSS) removal, as described in the Mud Creek EA. The City of London Design Specifications and Requirement Manual also specifies the 25 mm storm as the water quality event and accepts that infiltration or filtration measures for a volume representing the 25 mm event be acceptable to meet TSS reduction target requirements.

4.1.2 Water Quantity Control

Provide for the safe conveyance of flows to Mud Creek. Based on the findings of previous studies, post-development flow rates are to match pre-development flow rates up to the 100-year storm event. The pre-development peak flow rates from the development were modelled to establish the target peak flow rate discharge from the developable area of the subject site.

4.1.3 Erosion Control

During construction, erosion control measures will be implemented to minimize sediment transport from the site.

4.1.4 Water Balance

The City of London Design Specifications and Requirements Manual specifies that a water balance analysis be completed for the development and that maintenance of pre-development infiltration conditions is a general requirement.

4.2 Existing Condition

The site is a 3.82-hectare parcel currently used as an abandoned miniature golf, a nine-hole golf course, and buildings supporting the golf operations. An existing road, residential and commercial developments enclose the site. Proudfoot Lane to the west and Oxford Street West to the south. The site is relatively flat with subtle undulations and is utilized for recreational activity. Drainage for the property directs surface water toward the Mud Creek corridor.

4.2.1 Existing Drainage Area

Catchment 101 - This area represents the abandoned golf course facility and existing parking lot.

4.2.2 Existing Condition Hydrologic Modeling

As previously discussed, storm runoff from the property under pre-development conditions drains to Mud Creek. A hydrologic model has been created to assess the developable area under existing conditions. Refer to **Figure 2** – Existing Conditions Drainage Area Plan.

The existing conditions were assessed using the SWMHYMO hydrologic modelling program developed by J.F. Sabourin & Associates for the City of London's parameters for IDF curves and the three (3) hour Chicago event storm distribution for 2 the 100-year design storm event. This scenario was used to establish the target peak flow rates for the development. **Table 2** summarizes the surface runoff discharge for each storm event. The model output files are provided in **Appendix D**.

Table 2 – Existing Condition and Allowable Peak Discharges

Design Storm Event	Allowable Discharge to Mud Creek (m^3/s)
2-year	0.025
5-year	0.049
10-year	0.070
25-year	0.098
50-year	0.121
100-year	0.146

4.3 Proposed Condition

The total developable area tributary to Mud Creek is 2.65 hectares, as illustrated on the site plan. The site is proposed to be developed as a high-density residential area with at-grade and above-ground parking serviced by a private roadway. The roadway has access from the future street of the Beaverbrook community at the northern boundary of the subject site and access at Oxford Street West. The development will include parking, an internal road and landscape areas. The internal storm sewer will convey runoff generated on-site to Mud Creek. The proposed catchment is described below and illustrated in **Figure 3**.

4.3.1 Proposed Area Grading

A grading plan for the site plan illustrating the finished road and site grades will be included in the engineering drawing set and submitted separately. The grading design of the site is controlled by many factors, including servicing constraints (both sanitary and storm), groundwater elevations, matching existing grades along the adjacent properties and environmental features. The site will be graded generally towards the proposed Mud Creek channel.

4.3.2 Post-Development Drainage Area

Catchment 201 - This catchment area consists of the developable portion of the subject property, shown as a high-density residential.

4.4 Stormwater Management Design

4.4.1 Hydrologic Analysis

The SWMHYMO hydrologic modelling program (JF Sabourin and Associates) was used to create an analysis for the water quantity control design on site. The 3-hour Chicago distribution was used for the design storms with the City of London IDF parameters. The proposed conditions scenario is based on the Site Plan (**Appendix A**). The required storage volumes for peak flow attenuation were calculated using the model. The proposed conditions area plan (**Figure 3**) and modelling output are included in **Appendix D**.

4.4.2 Stormwater Quantity Control Function

Under the proposed development condition, increased impervious surface area generates additional runoff volumes. The stormwater quantity control approach will attenuate post-development peak flow rates of the developed area to the previously stated target release rates in **Table 2**. The internal storm sewer network will collect runoff, combined with an underground ADS StormTech system and a controlled outlet device, to minimize the impact of erosion and flooding on Mud Creek. A drawing set for the StormTech system is provided in **Appendix D**. The headwall locations from the Mud Creek realignment works outlined in the Beaverbrook Functional Servicing Report (T.Y. Lin, 2023) are also included in **Figure 3**.

The details of the PPS will be explored during later design stages; however, the hydrologic modelling for the site includes on-site storage requirements for quantity control to the pre-development peak flow rates (**Table 3**). The preliminary storage requirements are subject to refinement at later design stages based on site plan configuration and detailed analysis.

Table 3 – Post-Development Condition Required Storage Volumes

Design Storm Event	Storage Volume Required (m^3)
2-year	418
5-year	546
10-year	634
25-year	737
50-year	814
100-year	882

4.4.3 Stormwater Quality Control

The MECP Enhanced Level of Protection will be provided using a treatment train approach, exceeding the subwatershed study's Normal Level of Protection requirement. Quality control will be achieved using Oil-Grit Separator (OGS) technology. The OGS device will be placed at the site's storm sewer outlet to the underground ADS StormTech system. It has been sized to achieve above 80% total suspended solids (TSS) removal. This reaches the Enhanced Level of Protection recommended by the MECP. The OGS device proposed is the ADS Model FD-5HC or approved equivalent. The device will treat runoff from the entire internal road network and parking areas. Grit loading information and sizing calculations are included in **Appendix D**, which is attached. It is expected that the OGS unit will have to be serviced once every 20-24 months.

Water quality treatment will also be provided through the infiltration and filtration of the 25 mm water quality storm event. The underground facility will be designed to capture and infiltrate runoff from the 25 mm storm event. The ADS drawing set includes notes on maintenance protocols for the infiltration chambers isolator rows. The isolator row provides secondary water quality control. The isolator row is at the inlet, isolates the bulk of sediment and associated pollutants, and is designed for easy access by jet-flushing cleaning equipment. If this row becomes compromised and can not function as intended, the chambers are designed with multiple rows as a bypass so the system can still work as intended.

4.4.4 Water Balance

Water balance mitigation measures will be incorporated into the new development to maintain the existing local water budget to the extent technically, physically, and economically practical. The underground facility will be designed to capture and infiltrate runoff from the 25 mm storm event to meet water balance requirements. Ecological buffers have been incorporated by leaving an open space corridor adjacent to the Mud Creek channel to promote infiltration adjacent to the development. Also, runoff from the impervious areas will be directed to landscape features wherever feasible during the grading design to promote infiltration.

5. EROSION & SEDIMENT CONTROL PLAN

This section describes the Erosion and Sediment Control Plan implemented before, during and immediately after construction to reduce the possibility of sediment being conveyed from the proposed construction site.

5.1 Types of Selected Erosion/Sediment Control Methods

The details and locations of the proposed temporary and longer-term erosion and sediment control measures will be identified before final approval. The construction drawings, once complete, will form a part of the sediment and erosion control plan. Proposed erosion and sediment control measures include the following:

- The Contractor will install a silt fence barrier along the boundary of the subject site.
- Per OPSS 572, the contractor is expected to stabilize all disturbed areas where work will not occur for 30 days or more.
- When necessary, street sweeping will remove soil deposited on adjacent right-of-way by construction traffic.

The proposed temporary erosion and sediment control measures have been selected based on the site's susceptibility to erosion, the sensitivity of the downstream environment, site slopes, and the total drainage area. The proposed measures should provide adequate erosion and sediment control for the project without additional effort. However, the site will be monitored during construction; other actions will be added if required.

5.2 Installation of Erosion Control Measures

The locations of the proposed erosion and sediment control measures will be determined, and the order in which they will be implemented is summarized below in **Table 4**.

Table 4 - Erosion and Sediment Control Sequencing

Stage	Erosion and Sediment Control Measures
Pre-Construction	Create a contact list for emergency contingency plan operations.
	Install a silt fence around the proposed work limits, as appropriate.
	Install a robust perimeter siltation barrier, as necessary.
	Preparation of a Construction Dewatering Discharge Plan, including discharge location, temporary storage locations and identifying measures to reduce suspended solids or other treatment, if required.
Construction	Monitor water quality (turbidity) for construction dewatering discharge water discharged at the surface.
	Regularly inspect erosion and sediment control measures to confirm they are practical and operating as intended.
	Monitor weather reports for significant precipitation events for contingency planning.
	Install filter cloth in on-site catch basins.
	Street sweeping as necessary to remove accumulated sediment from the right-of-way.
	Build up boulevards to minimize sediment discharges into new CB and MH structures.
	Complete final paving, landscaping and vegetation plantings.
Post-Construction	Remove the robust siltation barrier, which is subject to inspection and approval by the Contract Administrator.
	Remove the silt fence from the proposed work limits, subject to inspection and approval by the Contract Administrator.
	Remove filter cloth from on-site catch basins.
	Remove the construction fence from the proposed work limits.

The proposed erosion and sediment control measures have been designed according to the site slopes, drainage area, and the risks and consequences of failure. Based on these factors, additional steps will likely be situational.

However, the site will be monitored during construction, and the Contractor may install additional measures (i.e., additional rows of silt fence) at the discretion of the Contract Administrator. Although this is not an exhaustive list, inspections are expected to include: checks on siltation barrier installations to confirm that it is properly installed and secured, including a review for evidence of damage or tears and overtopping or undermining; checking the condition of surface water ponding areas and storm drain inlets, and documenting areas where seeding/sodding/mulching is implemented to re-establish vegetative cover.

The triggers for installing enhanced erosion and sediment control measures would include breaching the proposed measures and re-evaluation based on site conditions during construction. As described below, site conditions and the proposed measures will be monitored regularly.

5.3 Inspection Requirements

Frequent inspections will be required to monitor the effectiveness of the erosion and sediment control measures during site grading and site servicing work. Therefore, the following minimum inspection intervals are recommended:

- The Contractor and Contract Administrator shall monitor weather reports daily and record temperatures and rainfall. When rainfall is anticipated, the Contractor and the Contract Administrator shall inspect the erosion control works immediately before and immediately after a rainfall event and snowmelt event (timing for inspections before events are based on predicted weather forecasts).
- Daily during extended or significant precipitation (i.e., rainfall amounts that exceed 25 millimetres) or during significant snowmelt periods.
- Daily during any construction activity that could yield significant runoff volumes or otherwise impact the runoff quality leaving the site.
- Daily while deficiencies are present which fail to contain, filter or otherwise treat runoff or contribute to sediment loading in surface water.
- Weekly during dry periods while construction activity is occurring at the site. The Contractor and the Contract Administrator shall inspect the erosion control measures the day before the last business day of the week (typically Thursday) to allow any work to be completed on damaged erosion control works before the weekend.
- Monthly during inactive periods (>30 days).

The Contract Administrator will document all inspection activities in weekly erosion and sediment control inspection reports.

The Contractor shall construct and maintain all erosion and sediment control measures. This duty shall include but not be limited to preserving fencing and removing accumulated sediment. Temporary erosion and sediment control measures will not be removed until the areas they serve are restored and stable. The builder will be responsible for removing the erosion and sediment control measures after the sod has been rooted on the site.

5.4 Contingency Plan

The contingency plan aims to help minimize the risk or consequence of a failure with the erosion and sediment control works. Failure could result from insufficient measures, maintenance, or severe weather conditions. The contingency plan includes two areas of consideration:

- Procedures that will be followed where a failure has occurred.
- Contingency measures will be implemented where there is potential for loss.

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

- The Contractor will maintain a contact list for emergencies.
- Workers shall be on call for emergencies, from the design to installing sediment and erosion control measures. The contractor is responsible for any associated health and safety issues.

- Sediment and erosion control measures such as erosion control blankets, straw bales and stakes, sandbags, and silt fences shall be available for emergency installation.
- Gas-powered pumps, appropriately sized hoses, filtration hose socks, and filter cloth will be available for emergency dewatering.
- Heavy equipment shall be on standby for emergency works.
- A supplemental contact list for any required equipment or materials shall be prepared and available for emergencies.

5.5 Monitoring and Reporting

Regular inspection and ongoing maintenance of the sediment and erosion control measures are required to ensure the proper and effective operation of the on-site bars.

The following summarizes the minimum frequency of inspection.

- Daily during extended rain or snowmelt periods or when active pumping/discharge of stormwater is undertaken.
- Weekly, during good weather conditions, no manual pumping is required.
- Before and after every rainfall event.
- After significant snowmelt events.
- Monthly during inactive periods (>30 days).

Inspections are expected to include the following scope.

- Inspection of silt fence installations to confirm that the fencing is installed correctly and secured, including review for evidence of damage or tears and overtopping or undermining of silt fence or straw bales along the perimeter of the site.
- Check the condition of berms/embankments around ponding areas.
- A review site for evidence of surface erosion and downstream impacts.
- Check the condition of storm drain inlets.
- Check the geo-tube's condition, position and connection to the discharge hose.
- Review roadways or points where construction vehicles enter/exit the site for evidence of damage or removal of berms placed to divert/convey flows.
- Document areas where seeding/sodding/mulching is implemented to re-establish vegetative cover.

5.6 Severe Weather Anticipated

In cases where the weather forecast indicates that significant rainfall is expected within 24 hours, the Contractor shall immediately complete the following.

- Inspect existing erosion and sediment control measures to confirm they are secure and in good working order.
- Review site conditions to identify and protect areas of exposed soil susceptible to surface erosion.
- Monitor all measures during the rainfall event and take corrective action where a potential for failure is identified.

The Contract Administrator shall document the status of the above-listed steps.

5.7 Responding to Failures

The Contractor will cease all construction-related work and focus on erosion and sediment control to stabilize the site where a failure has occurred or is imminent. The Contractor shall complete the job to the satisfaction of the Contract Administrator and any regulatory agencies having jurisdiction.

Any unexpected discharge of silt, sediment, or other harmful substance shall be reported to the City of London within 24 hours. The Contractor is responsible for advising the Contract Administrator and promptly notifying the incident to the Spills Action Centre. Depending on the type of incident, water sampling and quality testing may be warranted to document the extent of the impact. Scoping for the required testing will depend on the incident report.

The Owner's Engineer will develop a restoration plan if significant long-term damage to aquatic habitat or property is suspected. Consultation with an ecologist or biologist may be required to confirm that the remedial measures are appropriate. Development of the initial restoration plan will begin within 24 hours of discovering sediment discharge. It will be implemented immediately following consultation and approval from the MECP, UTRCA, and the City of London. The plan will address the following.

- Removal and disposal of sediment deposited outside of the work limits.
- Restoration of any areas disturbed through deposition or removal.

5.8 Reporting Schedule

The Contract Administrator shall prepare regular erosion and sediment control monitoring reports/summaries for site grading and servicing, as noted in the approved Monitoring Plan. Reports can be provided to the City of London regularly. Also, before removing the erosion and sediment controls, representatives from the City and the Contract Administrator should conduct a joint inspection of the development area.

The monitoring reports should document the status of the Erosion and Sediment Control Plan, any repairs, rainfall or pumping that has occurred since the last word, and any risks of failure that may be present.

Additionally, any failure of erosion and sediment control measures shall be reported as described in the contingency plan.

5.9 Construction Dewatering Requirements

Based on the test pit information and findings from the Preliminary Geotechnical Investigation prepared by LDS, shallow groundwater conditions are localized and intermittent throughout the site. As such, where minor groundwater infiltration occurs within open excavations during construction, conventional sump pumping techniques are expected to be suitable for groundwater control. For deeper excavations extending into the stabilized groundwater table, construction dewatering will be carried out per the terms and conditions of a Permit to Take Water (PTTW). In addition, any recommendations and approved methodologies identified in the Construction Dewatering and Discharge Plan that support the PTTW application will also be adhered to.

The discharge from dewatering activities must be treated for sediment loading to reduce turbidity levels in the dewatering effluent. The contractor will be responsible for regular maintenance (including sediment removal). The Contractor and the Contract Administrator will monitor the water quality, leaving the sediment traps as per the approved Monitoring Plan.

Additional dewatering sediment traps will be constructed within the proposed work limits if the dewatering volume is significantly greater during construction. The exact location of the dewatering sediment traps will depend on the scope of work completed and the location of the excavation to be dewatered. Thus, the sites of any additional dewatering areas will be identified by the Owner’s Engineer in consultation with the Contractor and the Contract Administrator.

6. OPERATION AND MAINTENANCE

During the construction of the infiltration chamber, it is recommended that monitoring and inspection of the erosion and sediment controls be conducted to ensure the satisfactory performance of these measures. A construction inspection table is included in **Appendix D**. The table describes critical points during the construction sequence when inspections should be performed before proceeding further. The inspection and monitoring results should be reported to the City of London. Suppose it is found that the erosion and sediment control measures are not working adequately. Based on field decisions, they shall be augmented to the satisfaction of the City of London.

Furthermore, it is recommended that the owner initiate a post-construction monitoring program to ensure the long-term effectiveness of the infiltration chambers. The post-construction monitoring program should include the following:

- Regular inspection (twice annually, at a minimum) of the underground chamber and other erosion control works.
- Periodic inspections are done every five years (maintenance verifications) and every 15 (performance verifications) post-construction over the operating life cycle of the BMP to ensure compliance with the maintenance agreement conditions, evaluate functional performance and determine when rehabilitation or replacement is necessary.
- Inspection of the infiltration chambers and their outlet after significant rainfall events (generally more than 15 mm of rainfall).
- Remove debris that may accumulate and hinder the functioning of the infiltration chambers.
- Implement remedial measures, including erosion stabilization, repair of damaged vegetation and sediment removal, as required.

The frequency of the post-construction monitoring will be at the discretion of the City of London. A field data inspection sheet is included in **Appendix D**.

The infiltration chambers will continue to function during winter if the overflow outlet is below the local maximum frost penetration depth (i.e., frost depth).

7. CONCLUSIONS

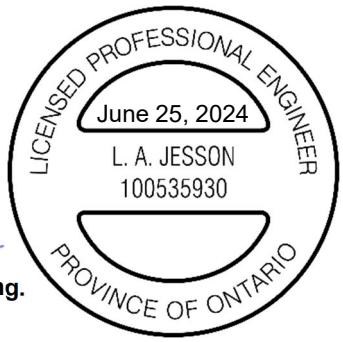
The Preliminary Servicing Report for 415 Oxford Street West in London, Ontario, was prepared to support the site plan proposed by Zelinka Priamo Ltd. The proposed development includes a high-density residential development, private roadway, parking, and the realigned Mud Creek Valley. The analyses and results described in this report demonstrate that stormwater management, sanitary servicing, and water supply infrastructure can adequately service the proposed development.

Based on the preceding analyses, a summary of the proposed conditions and recommendations are as follows:

1. The drainage outlet for the development is Mud Creek on the property's southern portion. The proposed Mud Creek Valley realigns the existing Mud Creek that traverses the site. The corridor is parallel to Oxford Street West and has a width of 61.3 m to incorporate requirements for regulatory flood conveyance and natural heritage features.
2. The SWM strategy outlined herein supports the development and focuses on targets for peak flow discharge and quantity storage, water quality and the annual water balance. The SWM design includes PPS controls on site. The proposed servicing plan includes headwall locations and a preliminary underground storage layout plan to help safely convey runoff from the proposed development into the Mud Creek Valley.
3. Municipal servicing plans were developed based on the site plan and existing infrastructure.
4. An implementation strategy for the proposed works will be similar to the one proposed for the Beaverbrook Community but will require future consultation with the City of London.

We trust this letter report to be complete and contents satisfactory. Should you have any questions concerning the findings presented herein, please do not hesitate to contact the undersigned,

LDS CONSULTANTS INC.



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