

Waterfront Homes

Ramhans Investments Inc.

Submission to Norfolk County for Site Plan Application

Project #22-032

January 5, 2023

vallee

Consulting Engineers, Architects & Planners



vallee

Consulting Engineers,
Architects & Planners

January 5, 2024

Norfolk County
Clerks and By-Law
50 Colborne Street South
Simcoe, Ontario N3Y 4H3

Norfolk County
Community Development Division
185 Robinson Street
Simcoe, Ontario N3Y 5L6

Attention: **Genevieve Scharback, County Clerk**
Tricia Givens, Director of Planning
Mohammad Alam, Supervisor of Development Planning

Reference: **Lakeview Homes - Ramhans Investments Inc.**
Site Plan Application
38 New Lakeshore Drive, Port Dover
Our File 22-013

Please accept this package as our formal application for the following planning applications:

- Site Plan Application

In response to Norfolk County's minutes issued on August 18, 2022 relating to the pre-consultation meeting of August 15, 2022, we include the following documents as our complete application package:

1. This cover letter.
2. Summary notes for pre-submission meeting to be scheduled by Norfolk County staff.
3. Pre-consultation minutes, including:
   a) A copy of the Norfolk County minutes issued August 18, 2022 from the August 15, 2022 pre-consultation meeting, signed by Lesley Hutton-Rhora on behalf of G. Douglas Vallee Limited and the proponent.
   b) Subsequent email correspondence with Tricia Givens dates April 26, 2023 regarding the updated submission requirements.
4. Completed and executed Norfolk County Planning Department Development Application Form.
5. Conceptual site plan for the proposed development prepared by G. Douglas Vallee Limited (includes zoning data & parking assessment).
6. Elevation & Plans prepared by G. Douglas Vallee Limited, including:
   a) Typical 4-unit block
   b) Typical 3-unit block with provisional basement ARDU units
7. Photometrics Plan(s) prepared by Seguin Engineering Inc.
8. Functional Servicing Report prepared by G. Douglas Vallee Limited, including request for water and sanitary modelling.
9. SWM Report prepared by G. Douglas Vallee Limited.

10. Complete civil design set prepared by G. Douglas Vallee Limited, including:
    a) General Servicing Plan
    b) Grading Plan (including base topographical data)
    c) Storm Outlet Plan & Profile
    d) Erosion Control Plan
    e) Sanitary Drainage Areas
    f) Storm Drainage Areas
11. Geotechnical report prepared by G2S Consulting Inc.
12. D-Series Analysis, including:
    a) D-Series Compatibility assessment prepared by CCS Engineering Inc.
    b) Peer review prepared by GHD Group (as reviewed with County staff on April 14, 2023)
    c) Acoustic Assessment Report prepared by CCS Engineering Inc. (in response to peer review).
13. Traffic Impact Study prepared by RC Spencer Associates Inc.
14. Securities estimate.

The submission has been made electronically on January 5, 2024 via email to planning@norfolkcounty.ca. Feel free to reach out should you have any questions or comments. Thank you in advance for your support of this project.

Respectfully submitted,

Lesley Hutton-Rhora

Lesley Hutton-Rhora
G. DOUGLAS VALLEE LIMITED
Consulting Engineers, Architect and Planners

c. Som Gosain, Ramhans Investments Inc.
Rohit Gosain, Ramhans Investments Inc.
Rahul Gosain, Ramhans Investments Inc.
John Vallee, P.Eng, G. Douglas Vallee Limited
John Iezzi, P.Eng, G. Douglas Vallee Limited
Scott Puillandre, G. Douglas Vallee Limited
Eldon Darbyson, G. Douglas Vallee Limited
H:\Projects\2022\22-032 Ramhans Condos 38 New Lakeshore Road\Agency\SPA\Working Files\1. Cover Letter.docx

MEETING MINUTES

Project #: 22-032
Project: Ramhans Condos – Waterfront Homes

Date: DATE TBD
Category: Pre-Submission Meeting with County Staff for Site Plan Application
Organizer: Norfolk County Planning Department
Attendees: ATTENDEES TBD

Agenda:

1. Confirm submission requirements for Site Plan application.

Notes:

Required:	Provided:	Comments:
Confirmation of Submission Requirements	A pre-submission meeting will be scheduled by Norfolk County staff. These notes will be updated and circulated as a follow up to the pending meeting.	
Pre-Consultation Minutes	A copy of the minutes from County staff dated August 18, 2023 for the pre-consultation meeting held on August 15, 2022 is included with the submission. Also included is correspondence with Tricia Givens regarding updated submission requirements.	
Development Application Form	A development application form has been completed, signed & commissioned by the applicant and is included with the submission.	
Planning Justification Report	**NOT REQUIRED** As confirmed with Director of Planning Tricia Givens, a Planning Justification Report is not required for a Site Plan Application.	
Proposed Site Plan / Drawing	A proposed site plan drawing prepared by G. Douglas Vallee Limited is included with the submission.	
Topographical Survey	Topographical base data is included on the proposed grading plan enclosed within the detailed civil drawings.	
Elevation Plan	Elevation plans for the proposed building(s) prepared by G. Douglas Vallee Limited are included with the submission.	
Parking Assessment	A parking assessment prepared by G. Douglas Vallee Limited is included within the proposed site plan / drawing package.	

Landscaping Plan	**NOT REQUIRED** As per Bill 23 and as confirmed with Director of Planning Tricia Givens, a Landscape Plan is not required for a Site Plan Application.	
Photometrics Plan(s)	Photometrics plan(s) prepared by Seguin Electrical Engineering Inc. are included with the submission.	
Functional Servicing & Stormwater Management Report	A Functional Servicing and Stormwater Management Report (FSR) prepared by G. Douglas Vallee Limited will be included with the submission.	
Confirmation of a Legal & Adequate Inlet	Provided in FSR.	
Detailed Civil Design	The following detailed design plans prepared by G. Douglas Vallee Limited is included with the application: - General Servicing Plan - Grading Plan - Storm Outlet Plan & Profile - Erosion Control Plan - Sanitary Drainage Plan - Storm Drainage Plan	
Geotechnical Report	A geotechnical report prepared by G2S Consulting Inc. is included with the submission.	
D-Series Analysis	A D-Series Analysis prepared by CCS Engineering Inc., a copy of the peer review prepared by GHD Group, as well as an acoustic assessment report prepared by CCS Engineering Inc. in response to the comments provided as part of the peer review, are included with the submission.	
Traffic Impact Study	A traffic impact study prepared by RC Spencer Associates Inc. is included with the submission.	
Water & Wastewater Modelling	A request to initiate water & sanitary modelling is included in the FSR.	
Securities Estimate	An estimate of securities required has been prepared by G. Douglas Vallee Ltd. and is included with the submission.	

MEETING MINUTES

Project #: 22-032
Project: Ramhans Condos – Waterfront Homes

Date: January 18, 2024
Category: Pre-Submission Meeting with County Staff for Site Plan Application
Organizer: Norfolk County Planning Department
Attendees: Hannelore Yager, Stephen Gradish, Mohammad Alam, Scott Puillandre, John Iezzi, Lesley Hutton-Rhora

Agenda:
1. Confirm submission requirements for Site Plan application.

Notes:

Required:	Provided:	Comments:
Confirmation of Submission Requirements	A pre-submission meeting will be scheduled by Norfolk County staff. These notes will be updated and circulated as a follow up to the pending meeting.	
Pre-Consultation Minutes	A copy of the minutes from County staff dated August 18, 2023 for the pre-consultation meeting held on August 15, 2022 is included with the submission. Also included is correspondence with Tricia Givens regarding updated submission requirements.	
Development Application Form	A development application form has been completed, signed & commissioned by the applicant and is included with the submission.	
Planning Justification Report	**NOT REQUIRED** As confirmed with Director of Planning Tricia Givens, a Planning Justification Report is not required for a Site Plan Application.	
Proposed Site Plan / Drawing	A proposed site plan drawing prepared by G. Douglas Vallee Limited is included with the submission.	
Topographical Survey	Topographical base data is included on the proposed grading plan enclosed within the detailed civil drawings.	Information provided on grading plan is sufficient.
Elevation Plan	Elevation plans for the proposed building(s) prepared by G. Douglas Vallee Limited are included with the submission.	
Parking Assessment	A parking assessment prepared by G. Douglas Vallee Limited is included within the proposed site plan / drawing package.	Information provided on site plan sufficient to confirm.

Landscaping Plan	**NOT REQUIRED** As per Bill 23 and as confirmed with Director of Planning Tricia Givens, a Landscape Plan is not required for a Site Plan Application.	
Photometrics Plan(s)	Photometrics plan(s) prepared by Seguin Electrical Engineering Inc. are included with the submission.	
Functional Servicing & Stormwater Management Report	A Functional Servicing and Stormwater Management Report (FSR) prepared by G. Douglas Vallee Limited will be included with the submission.	
Confirmation of a Legal Outlet	Provided in FSR.	
Detailed Civil Design	The following detailed design plans prepared by G. Douglas Vallee Limited is included with the application: - General Servicing Plan - Grading Plan - Storm Outlet Plan & Profile - Erosion Control Plan - Sanitary Drainage Plan - Storm Drainage Plan	Siltation & erosion control provided on C101 (mislabeled as general servicing plan). Plan & Profile drawings have yet to be prepared (not anticipated to be required – can be provided if needed). Questions about depth of sanitary and configuration of crossings. Crossings table and castings shown on General Plan of Services. Stephen to confirm req't for P&P. Utility plan to be required as condition to approval – plan is underway, and will be submitted @ 2nd. Stephen to review SWM report prior to deeming complete.
Geotechnical Report	A geotechnical report prepared by G2S Consulting Inc. is included with the submission.	
D-Series Analysis	A D-Series Analysis prepared by CCS Engineering Inc., a copy of the peer review prepared by GHD Group, as well as an acoustic assessment report prepared by CCS Engineering Inc. in response to the comments provided as part of the peer review, are included with the submission.	To be reviewed by Mike King. Historical complaints sourced via FOI request to MECP (cursory review by Vallee did not indicate any records of concern that impact sound or odour complaints)… copy can be provided to Norfolk County if needed.
Traffic Impact Study	A traffic impact study prepared by RC Spencer Associates Inc. is included with the submission.	
Water & Wastewater Modelling	A request to initiate water & sanitary modelling is included in the FSR.	
Securities Estimate	An estimate of securities required has been prepared by G. Douglas Vallee Ltd. and is included with the submission.	

Pre-Submission Consultation Meeting Minutes

Date: August 15, 2022

Description of Proposal: Site Plan for 27 townhouse dwellings in the R4 (H) Zone.

Property Location: 38 New Lakeshore Road, Port Dover

Roll Number: 33403078000

As a result of the information shared at the pre-consultation meeting dated June 8, 2022, the following applications and qualified professional documents / reports are required as part of the development review process.

Please note that various fees are associated with each application and there are also costs for qualified professionals retained to complete various documents / reports. All requirements identified are minimum and determined as of the date of the pre-consultation meeting with the information available at that time. As the proposal proceeds and more information is made available, additional applications, studies, reports, etc. may be required.

This summary including checklists, comments and requests are applicable for a period of one (1) year from the date of meeting. If an application is not received within that time frame, a subsequent pre-consultation meeting may be required due to changes in policies and technical requirements.

Before you submit your application, please contact the assigned Planner and planning@norfolkcounty.ca to confirm submission requirements and the applicable fee

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Lesley Hutton-Rhora

Signed on behalf of proponent Ramhans Investments Inc. (January 1, 2024)

Attendance List

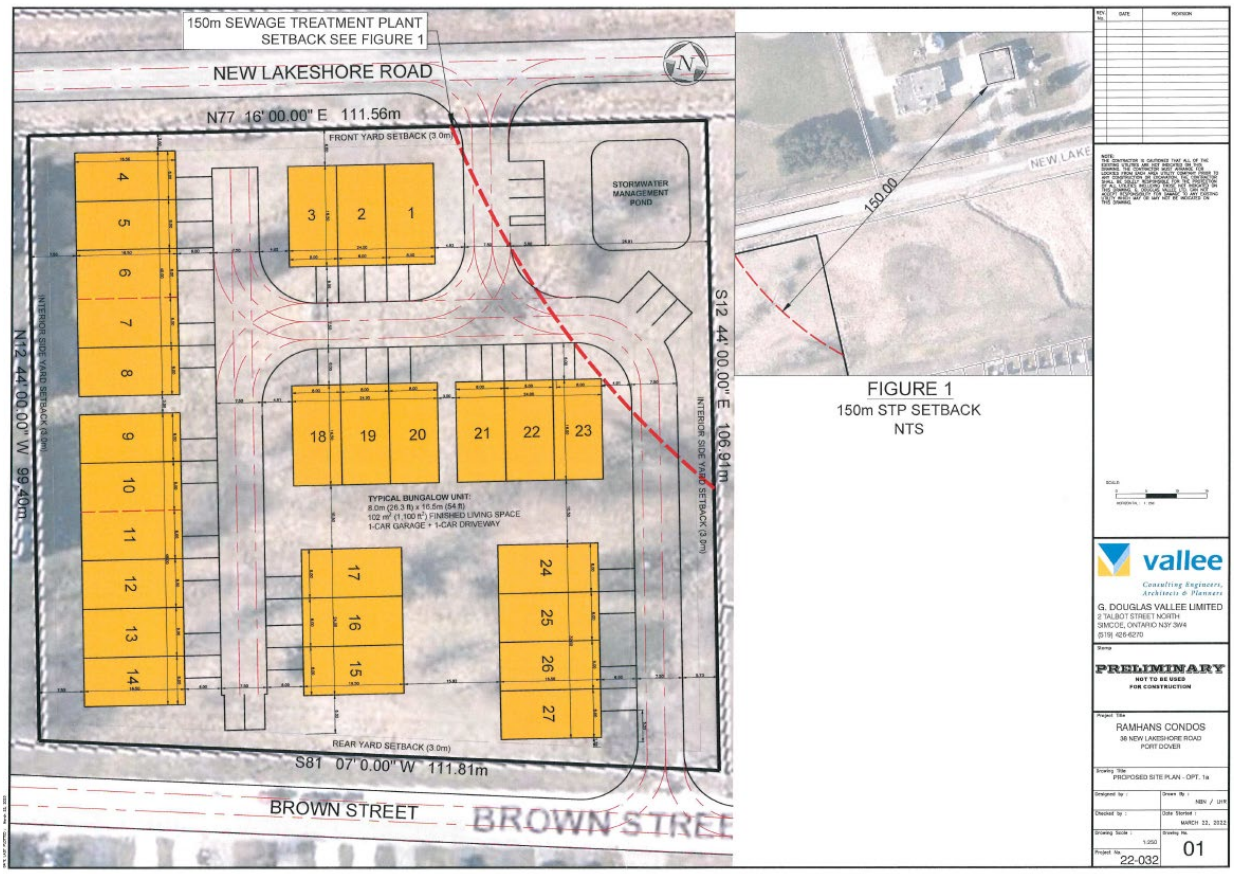
Proponent	G. Douglas Vallee Limited, Agent Scott Puillandre John Vallee Lesley Hutton-Rhora John Iezzi Ramhans Investments Inc., Applicant Rohit Gosain Rahul Gosain Som Gosain
Community Development – Planning and Agreement	Jennifer Catarino, Senior Planner Annette Helmig, Agreement and Development Coordinator
Community Development – Building and Zoning	Jonathan Weir, Building Inspector Roxanne Lambrecht, Zoning Administrator
Environment & Infrastructure Services – Development Engineering	Stephen Gradish, Development Technologist
Community Services – Fire	Katie Ballantyne, Community Safety Officer
Corporate Support Services – Realty Services	Kelly Darbishire, Specialist, Realty Services
Long Point Regional Conservation Authority	Isabel Johnson, Resource Planner

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Proposal Summary

It is proposed to construct a 27-unit condominium in the form of group townhouses, which will achieve 23.7 units per hectare. This development will be located immediately adjacent to the Lake Erie Waterfront Trail as shown on Schedule 1-3 of the Official Plan to help encourage active transportation and healthy living. Through the site plan process the necessary landscaping and buffering will be provided on the periphery of the property in order to offer buffering from the surrounding land uses.



List of Application Requirements

Planning Department

Planning application(s) required to proceed		**Required**
Official Plan Amendment Application Choose an item.		
Zoning By-law Amendment Application Choose an item.		
Site Plan Application (Major)		X
Draft Plan of Subdivision Application		
Draft Plan of Condominium Application		X* most likely an exemption
Part Lot Control Application		
Consent / Severance Application		
Minor Variance Application		
Removal of Holding Application		X
Temporary Use By-Law Application		
Other - Click here to enter text.		
Planning requirements for a complete application The items below are to be submitted as part of the identified Planning Application(s). ** electronic/PDF copies of all plans, studies and reports are required**	**Required at OPA/ Zoning Stage**	**Required at Site Plan Stage**
Proposed Site Plan / Drawing		X
Planning Impact Analysis Report / Justification Report		X
Environmental Impact Study Choose an item.		
Neighbourhood Plan (TOR must be approved by the County)		
Agricultural Impact Assessment Report		
Archaeological Assessment		
Heritage Impact Assessment		
Market Impact Analysis		
Dust, Noise and/or Vibration Study		
MOE D-Series Guidelines Analysis* and deposit regarding Peer Review		X
Landscaping Plan		X
Elevation Plan		X
Photometrics (Lighting) Plan		X
Shadow Analysis Report		X

Record of Site Condition		
Contaminated Site Study		
Minimum Distance Separation Schedule		
Parking Assessment		X
Hydrogeological Study		
Restricted Land Use Screening Form		
Topographical Survey Drawing		X
Additional Planning requirements		**Required**
Development Agreement		X
Parkland Dedication/Cash-in-lieu of Parkland		X

*the list of requirements is based on the information submitted and as presented for this specific pre-consultation meeting. Any changes to a proposal may necessitate changes to Planning Department submission requirements.

*Community Development fees, applications, and helpful resources can be found can be found by visiting https://www.norfolkcounty.ca/government/planning/

Planning Comments

The subject lands are designated Urban Residential by the Official Plan and subject to the Lakeshore Special Policy Area Secondary Plan as well as the Community Design Guidelines.

The property is zoned Urban Residential Type 4 Zone (R4) with a Holding subject to site plan control and special provision 14.581 applies, which states:

> *"In lieu of the uses permitted in the R4 Zone, a maximum of twenty nine (29) dwelling units shall be permitted.*
>
> *In lieu of the corresponding provisions in the R4 Zone, the following shall apply:*
> *a) Minimum front yard – 3 metres;*
> *b) Minimum rear yard – 3 metres."*

The holding applied through by-law 19-NA-00 may be removed once a site plan control application is processed and approved. Given the servicing constraints in Port Dover, the site plan agreement registration may be postponed until servicing allocation is granted to the development. The Norfolk County Servicing Capacity Management Strategy – Servicing Allocation Policy may be utilized.

The subject lands are within 150 metres of the Port Dover Wastewater Treatment Plant and the site plan application will be subject to the D6 Guidelines. County Staff, through Environmental and Infrastructure Services, will be applying Guideline D-6-3

(https://www.ontario.ca/page/d-6-3-separation-distances), which measures the required separation distance of 150 metres from the property line of the Wastewater Treatment Plant towards the subject lands. The Wastewater Treatment Plant is zoned General Industrial (MG) and upgrades are ongoing at the site which may alter the distance requirements if the D-2 guideline is applied.

Staff acknowledge that the D-2 Guideline (https://www.ontario.ca/page/d-2-compatibility-between-sewage-treatment-and-sensitive-land-use) is specifically related to the separation between Sewage Treatment and sensitive land uses. It provides some flexibility regarding the required distance separation and notes that the distances will be measured from the periphery of the noise/odour-producing source structure to the property/lot line of the sensitive land use.

Staff require that an MOE D-Series Guidelines Analysis be completed to support the site plan application. The report will be peer reviewed so that staff can determine what the appropriate distance requirement is for the proposed development given the location of the Wastewater Treatment Plan and potential sensitive land use. Mitigation measures from the study and peer review may alter the configuration and layout of the subject lands. The peer review will be completed at the expense of the applicant.

There have been a number of rezoning applications for the property which were discussed during the meeting:

- 6-NA-95
  In addition to the uses of the R6 zone, a model suite and sales office were permitted.

- 16-NA-96
  Zoning went from R6 to R6 with a holding – uses permitted a retirement home with a number of site specific provisions for lot area, yards, height, number of apartment dwelling units (42) and retirement home units (157), parking and applied site plan control.

- 20-NA-98
  The zoning changed from R6 to R4 with a holding.
  Amended the maximum number of dwelling houses permitted and limited it to 37 units with site specific yard provisions.

- 19-NA-00
  The previously approved site specific amendment was deleted and replaced to permit a maximum of 29 dwelling houses with site specific yard provisions.

In 2000, the wastewater treatment plant was designated Urban Industrial by the Official Plan and zoned Neighbourhood Institutional Zone (IN). The D-2 Guideline as applied and measured the buffer from the primary sedimentation tanks. As noted above, the wastewater treatment plant is currently designated Major Public Infrastructure and

within the General Industrial (MG) zone, therefore requiring the larger D-6 setback requirement.

When reviewing the site plan, staff will review the criteria of Official Plan Sections 9.6.5 and 5.4. Port Dover is currently subject to the Lakeshore Special Policy Area Secondary Plan and the Community Design Guidelines are applicable. The **planning justification report** submitted as part of the site plan application should address the design criteria of the Official Plan and outline the function of the site.

One of the questions from the applicant team was regarding the acceptance of backlotting for three lots along New Lakeshore Road. As per Official Plan policies, 5.4 d), reverse lotting onto County Roads will not be permitted. Additional design consideration will be required for these units.

General Design Comments:

- Additional design development required for units facing New Lakeshore Road.
    - As noted above, reverse lotting is not permitted. If the building configuration remains the same, the façade facing New Lakeshore Road must designed to appear as the front of the dwelling units.
    - Unit 4, 14, 15 and 27 are all required to be designed so that the façades facing the streets appear as the front of the dwelling units to ensure that there is an active streetscape along New Lakeshore Road.
- Visitor parking is required for condominiums and a **parking plan** is also required as well as a **vehicle maneuvering plan** to ensure that proposed locations can be accessed safely.
- A safe path of travel from the visitor parking spaces to units is required and planning recommends sidewalks. The sidewalk should connect the condominium development to the municipal sidewalk along Brown Street.
    - The location of the visitor parking at the corner does not appear to be safe, however, confirmation regarding the configuration is required to support the site plan application.

Planning Questions to be addressed in the Planning Justification Report:

- Is there a variety of unit sizes being proposed, ie a range in the number of bedrooms?
- Will there be amenity space provide? Will there be an opportunity for a community garden or gathering space? Edible landscape?

The proposed solution regarding garbage and recycling is to be included with the site plan application. If a central garage location is required, it must be illustrated on the site plan with the necessary buffering.

A **landscaping plan** and **lighting plan** are required and must address the streetscapes of New Lakeshore Road and Brown Street. All proposed trees and fences must also be shown.

If required, the location of the Canada Post superbox is required to be shown on the site plan.

Parkland dedication or cash-in-lieu will be confirmed through the site plan process in accordance with By-Law 2016-126, Amended my 2019-34 and 2019-106.

Standard site plan components are required to be included with the application, which include:

- Key map
- Site Plan
    - Development name
    - All measurements in metric
        - All dimensions of the subject lands
        - Dimensions and setbacks of all buildings and structures
        - Gross, ground and useable floor area
    - Scale, legend and north arrow
    - Legal description and municipal address
    - Drawing title, number, original date and revision dates
    - Owner's name, address and telephone number and signature
    - Engineer's name, address and telephone number
    - Professional engineer's stamp
    - Existing and proposed easements and right of ways
    - Zoning compliance table – required versus proposed
    - Parking space totals – required and proposed
    - All entrances to parking areas marked with directional arrows
    - Loading spaces, facilities and routes (for commercial developments)
    - Building entrances, building type, height, grades and extent of overhangs
    - All exterior stairways and ramps with dimensions and setbacks
    - Names, dimensions and location of adjacent streets including daylighting triangles
    - Driveways, curbs, drop curbs, pavement markings, widths, radii and traffic directional signs
    - Retaining walls including materials proposed
    - Fire access and routes, including fire route signs
    - Fire hydrants and utilities location
    - Location, dimensions and number of parking spaces (including visitor and accessible) and drive aisles
    - Location of mechanical room, and other building services (eg. A/C, HRV)
    - Refuse disposal and storage areas including any related screening (if indoors, need notation on site plan and route used for truck pick-up)
    - Winter snow storage location
    - All hard surface materials
    - Light standards and wall mounted lights (plus a note on the site plan that all outdoor lighting is to be dark sky compliant)
    - Business signs (make sure they are not in sight-lines)
    - Pedestrian access routes into site and around site

- Bicycle parking

Please be advised that it is owner's responsibility to be aware of and comply with all relevant federal or provincial legislation, municipal by-laws or other agency approvals.

[see Appendix A for additional comments]

Assigned Planner:

Jennifer Catarino
Senior Planner
Extension 8013
Jennifer.Catarino@norfolkcounty.ca

Agreements

A recommended condition of your planning application approval will be to enter into a development agreement with the County that will be registered on title to the subject lands, at the Owner's expense.

The additional requirements for a development agreement could include, but are not limited to the following:

- Engineering drawing review
- Engineer's schedule of costs for the works
- Clearance letter and supporting documentation to support condition clearance
- User fees and performance securities
- Current property identification number (PIN printout) (can be obtained by visiting https://help.onland.ca/en/home/)
- Owner's commercial general liability insurance to be obtained and kept in force during the terms of the agreement
- Postponement of interest. If there are mortgagees / charges on your property identifier, your legal representative will be required to obtain a postponement from your bank or financial institution to the terms outlined in your development agreement
- Transfers and / or transfer easements along with registered reference plan

I look forward to assisting you through the agreement stage of your development through to final release of your performance securities.

Annette Helmig
Agreement and Development Coordinator
Extension 8053
Annette.Helmig@norfolkcounty.ca

Development Engineering

Development Engineering requirements to proceed The below requirements are to be submitted as part of the Formal Development Planning application.	**Required at OPA/ Zoning Stage**	**Required at Site Plan Stage**	**Potentially Required (See Notes Section)**
General Requirements			
Concept Plan		X	
Lot Grading Plan		X[9]	
Siltation and Erosion Control Plan		X[9]	
General Plan of Services		X[9]	
Plan and Profile Drawings		X[10]	
Utility Plan		X[11]	
Geotechnical Report			X[24]
Functional Servicing Report		X[12]	
Ministry of Environment, Conservation and Parks Permit		X	
Water Servicing Requirements– Section 10.0 Norfolk County Design Criteria and ISMP Section 4.0			
Water Modelling (County Consultant)		X[12]	
Backflow Preventer (RPZ)		X[14]	
Water Allocation		X[6]	
Sanitary Servicing Requirements – Section 9.0 Norfolk County Design Criteria and ISMP Section 4.0			
Sanitary Modelling (County Consultant)		X[12]	
Property Line Inspection Maintenance Hole		X[16]	
Storm Water Servicing Requirements – Section 7.0 and Section 8 Norfolk County Design Criteria and ISMP Section 4.0			
Storm Water Management Design Report (including calculations)		X[17]	
Storm Water Drainage Plan		X[18]	
Storm Sewer Design Sheet			
Establish/Confirm Legal and Adequate Outlet		X[19]	
Anticipated Flow/Analysis to Receiving Collection System		X[20]	
Property Line Inspection Maintenance		X[21]	
Municipal Drainage			X[25]

Transportation Requirements – Section 6.0 Norfolk County Design Criteria, ISMP Section 5.0, Section 6.0 and Appendix J			
Traffic Impact Study		X[22]	
Street Signage/Traffic Control Plan		X[23]	
Improvements to Existing Roads & Sidewalk (urbanization, pavement structure, widening sidewalk replacement, upgrades, extension and accessibility)		X[24]	

General Notes:

1. Securities will be required in the form of a schedule. Any works completed within the Municipal Right-of-Way (R.O.W.) is to be shown as 100% security. Any works completed within private property is to be shown as 10% security. This can be submitted at time of Site Plan.
2. All reports and plans are to be signed and stamped by a Professional Engineer (P.Eng.).
3. All reports are to be completed in reference to Norfolk County's Design Criteria and Integrated Sustainable Master Plan (ISMP).
4. Recommendations from all reports (FSR, SWM, TIS, Modelling, etc.) must be incorporated into the design and be constructed at the developer's expense.
5. If Municipal Waste Collection Services are required, the development must adhere to Norfolk County's Technical Guidelines for Waste Collection Services for Condominium Corporations. These guidelines are available upon request Please note application for waste collection can be made after the development is completed. It must also be noted that in the guidelines it identifies that no reversing of garbage collection vehicles is permitted.
6. Water allocation will not be issued as part of the Zoning By-law amendment. Applicant is to confirm capacities at the time of Site Plan application, at the time registration of agreement\approval allocation will be provided for the development, if available.

Required at Zoning Notes:

As mentioned at the Pre-consultation meeting, in Development Engineering review of this submission, we considered the applicants assessment of the current zoning being adequate and have provided no comments specific to any potential Zone change. If a Zone change is ever required Development Engineering would have additional comments.

Required at Site Plan Stage Notes:

7. All Site Plan submissions are to comply with Section 16 of the Norfolk County Design Criteria in addition to the comments below.

8. The following reports/studies will be required at time of Site Plan Submission:

    - Concept Plan;
    - Functional Servicing Report (as per Norfolk County Design Criteria);
    - Water / Sanitary Modelling;
    - Storm Water Management Report;
    - Traffic Impact Study (as per ISMP Appendix J – TIS Guidelines);

9. Lot Grading Plan, Siltation and Erosion Control Plan, and the General Plan of Services drawing can be shown on one engineering plan as long as it's legible for review.
10. Plan and Profile drawings will be required as per Section 16.4.03.
11. A Utility Plan is required as per Section 4.4.07 of Norfolk County Design Criteria for all utilities to be installed in the Municipal ROW. An Electrical Services Plan as per Section 16.4.05 and 16.5.05 shall also be included with the Utility Plan.
12. Sanitary and Water modelling will be required. This is to be completed by Norfolk County's third-party consultant. The cost to complete the modelling and any recommendations from reports are to be implemented into the design at the applicant's expense. The following information will be required to receive a quote and complete the modelling;
    a. General Plan of Services
    b. Functional Servicing Report;
        i. Total Wastewater Design Flows;
        ii. Total Domestic Water and Fire Flows as per Norfolk County Design Criteria Section 10.1.1

    The Functional Servicing Report must include water /sanitary servicing and fire flow calculations.

    Once the quote has been received, approval from the applicant will be required before proceeding.

13. As per Norfolk County By-law 2013-65, only one domestic water service pipe shall be installed per condominium corporation.
14. A Testable DCVA Backflow device shall be placed in a watertight chamber at property line.
15. Norfolk County Environmental Services Department has noted; "Dead end water service in condo needs a hydrant for flushing maintenance of water main." While Fire hydrants are not shown on the concept plans it was assumed that given both Building and Fire comments regarding fire protection that hydrants will be added.
16. A Sanitary Inspection manhole will be required on Property line.
17. Stormwater Management Report is to be completed as per Norfolk County Design Criteria Section 7.0.

18. A Storm Drainage Area Plan will be required as per Norfolk County Design Criteria and must identify if any external overland flows are tributary to this site. The Plan must also show the location of all major overland flows exiting the site.
19. As mentioned in the submission for Pre-consultation the intent is to use the existing Highway 6 Drain watershed (As shown in the ISMP PD-23 Figure No. 3C). The Stormwater Management Report must identify the available capacity of the outlet pipes downstream of this development and confirm it is both Legal and adequate to convey the post development flows
20. The developer will be responsible to confirm anticipated flow to the existing storm system and ensure adequate capacity exists to accept the proposed development. It shall be the developer's responsibility to satisfy themselves that there is an adequate storm collection to the proposed development. All associated costs of construction for upgrades to existing and new infrastructure shall be the responsibility of the owner / applicants of the development.
21. A Storm Inspection manhole will be required on Property line.
22. As per Norfolk County's Integrated Sustainable Master Plan (ISMP) – Appendix J: Traffic Impact Study (TIS) Guidelines, a traffic impact study will be required. These guidelines are available upon request.
23. AS mentioned at the Pre-consultation meeting it is recognized that the 2 proposed entrances connecting Brown Street to New Lakeshore may present as an opportunity for local traffic to use as a "Shortcut" between the 2 streets. It is recommended that during the detailed design stage that the Owner and consultant look at traffic calming and signage to prevent this type of unwanted traffic.
24. Any new or redesigned entrance on to New Lakeshore Road must include an assessment of the existing culvert to determine if replacement of the existing culvert in necessary.

Potentially Required Notes:

25. A Geotechnical Report will be required if infiltration galleries are proposed within the design.
26. Throughout the process of determining a Legal an adequate outlet, alternate options may be potentially required. These options may require Easements and /or Municipal Drainage

Stephen Gradish
Development Technologist
Extension 1702
Stephen.Gradish@norfolkcounty.ca

Conservation Authority

Long Point Regional Conservation Authority

Conservation Authority Requirements to Proceed:	May be Required	Required
Conservation Authority Permit	X	
Stormwater Management Report		X
Other		

Provincial Policy Statement, 2020, Section 3.1 Natural Hazards

Conservation Authorities have been delegated responsibilities from the Minister of Natural Resources and Forestry to represent the provincial interests regarding natural hazards encompassed by Section 3.1 of the Provincial Policy Statement, 2020 (PPS). The overall intent of Section 3.0 - Protecting Public Health and Safety of the PPS is to reduce the potential public cost or risk to Ontario's residents from natural or human-made hazards.

Staff can advise the subject property is not subject to natural hazards and the proposed application is consistent with section 3.1 of the Provincial Policy Statement, 2020.

Ontario Regulation 178/06

The subject lands are partially regulated by Long Point Region Conservation Authority under Ontario Regulation 178/06. Permission from this office is required prior to any development within the regulated area.

Development is defined as:

- the construction, reconstruction, erection or placing of a building or structure of any kind,
- any change to a building or structure that would have the effect of altering the use or potential use of the building or structure, increasing the size of the building or structure or increasing the number of dwelling units in the building or structure,
- site grading, or
- the temporary or permanent placing, dumping or removal of any material, originating on the site or elsewhere (Conservation Authorities Act, R.S.O. 1990, c. 27, s. 28 (25))

LPRCA and Norfolk County's Memorandum of Understanding for Plan Review Services

Based on LPRCA and Norfolk County's Memorandum of Understanding for Plan Review Services, LPRCA staff can provide the following comments with regard to Stormwater Management:

Stormwater Management

LPRCA will review the final stormwater management design using the 2003 MECP Stormwater Management Planning and Design Manual, MTO Drainage Manual, LID Stormwater Management Manual, the sustainable technologies STEP website https://sustainabletechnologies.ca/, and the Municipal SWM guidelines.
Based on the site and receiving watercourse, an enhanced level of treatment as per the 2003 MECP Stormwater Management Planning and Design Manual is required for the proposed development.

LPRCA requires the following be included and addressed in the design of stormwater management:

- Minimize, or, where possible, prevent increases in contaminant loads.
- Minimize, erosion and changes in water balance, and prepare for the impacts of a changing climate through the effective management of stormwater, including the use of green infrastructure.
- Mitigate risks to human health, safety, property and the environment.
- Maximize the extent and function of vegetative and pervious surfaces.
- Implement stormwater management best practices, including stormwater attenuation and re-use, water conservation and efficiency, and low impact development, for end of pipe facilities 24-48hr drawdown times to be targeted in all case.
- Provide adequate and legal outlet for major, minor, and all flow conditions from the site be provided.

In addition to the above requirements, the following must be clearly shown on the submitted design drawings:

- Major flow systems are delineated on the drawing. Overland flow paths and depths from surcharged storm sewer systems and the stormwater treatment facility during a 100-year storm must not increase the flood risk to life, property and the environment.
- Minor overland flow systems and paths are to be delineated and shown on the drawings.
- Erosion and sedimentation control during construction.
- Adequate erosion control on inlets and outlets.

In conclusion, LPRCA staff have no objection to the concept of site development.

Current Planning Application Fees (2022)
Pre-consultation Fee - $339
Draft Plan of Subdivision including associated OPA and ZBA- $1,380.00 + $100/lot + HST (Max $15,000.00 +HST)
Combined Official Plan/Zoning By-Law Amendment- $813.60
Zoning By-Law Amendment- $514.15*

Consent (severance)- $514.15*
Variance- $514.15*
Site Plan Control- $514.15*
* Accompanied by 1 technical report- $813.60, Accompanied by 2 technical reports- $1,615.90

*LPRCA fees, applications, and helpful resources can be found can be found by visiting https://lprca.on.ca/planning-permits/planning-fees/

Isabel Johnson, *Resource Planner*
ijohnson@lprca.on.ca
519-842-4242 ext. 229.

County Departmental Comments & Requirement

Corporate Support Services – Realty Services

The County will require a postponement of any charge(s)/mortgage(s) on title to the County's Site Plan Agreement. We recommend that you connect with your lender(s) and/or solicitor as early in the process as possible to avoid any delays.

Kelly Darbishire
Specialist, Realty Services
Extension 8117
Kelly.Darbishire@norfolkcounty.ca

Corporate Support Services - Accessibility for Ontarians with Disabilities Act

Please show on future submission at minimum 1 accessible parking space at 3.4m wide equipped with 1.5m wide access aisle and appropriate accessible parking signage as a part of visitor parking

Sam McFarlane
Manager, Accessibility and Special Projects
Corporate Support Services
519-426-5870 x. 8099
Sam.McFarlane@norfolkcounty.ca

Building
Zoning Administrator:
32 New Lakeshore road 33403078000
-Zoned R4 with Group townhouses proposed, 27 units proposed, 29 units max, special provision 14.581
-Preliminary proposal meets zoning requirements, please ensure decks added to rear of properties along the interior lot lines meet the requirements of the deck provisions.

-The plan doesn't indicate lot lines between units at this time, if there will be in the future an interior setback of 1.2m will be required for decks. Please put any future decks on the site sketch, units 4-14, unit 15, 27, and 1-3 will have setbacks from lot lines
-Height to TBD, ensure the height is 11m or less
-Parking in garages to meet parking bylaw, and all parking spaces on the lot and in visitor parking 9 spots layout to be labelled on the site plan, one must be accessible
-Zoning table to show requirements to R4 zone condominium conform

Roxanne Lambrecht
Zoning Administrator
Extension 1839
Roxanne.Lambrecht@norfolkcounty.ca

Building Inspector:

The proposed construction is considered a Residential Group C as defined by the Ontario Building Code (OBC). You will need to retain the services of a qualified individual with BCIN House, HVAC House, an Architect and/or a Professional Engineer to complete the design documentation for this application.
If the building area exceeds 600sqm an Architect will be required for general review.
If a firewall is to be constructed to minimize the building area, a Professional Engineer design will be required for the firewall design.
Norfolk County is permitting new home construction to occur with the understanding that an alternative water supply that meets the requirements of the Ontario Building Code is being installed and that the property will connect to the municipal supply when it becomes available.
Building permit brochures have been included in the minutes for your review.

Items for Site Plan

Site plan drawings need to have enough detail, to determine compliance with the code references listed.

1. Indicate location of access route and access route design [OBC 3.2.5.4 to 3.2.5.6]
2. Revised fire water pond design and calculations. [OBC 3.2.5.7]
3. Indicate location of existing and new fire department connections. Dimensions between hydrants and building entrances is required.

[OBC 3.2.5.16]

3. Location and specifications of exterior lighting. Lighting to be included in SB-10 report – energy efficiency
4. Indicate barrier free path of travel from parking area to building entrance. Construction of curb cuts and location of tactile attention indicators is required. [OBC 3.8.1.3, & 3.8.3.2]
5. Location of revised septic system (if required)
6. Provide building elevations and cross section, showing building massing, location of proposed entrances and exits, barrier free controls, exterior lighting locations, and exterior signage. [Planning Act 41(4).2]

Jonathan Weir
Building Official III
Extension 1832
Jonathan.weir@norfolkcounty.ca

Fire Department

Norfolk County Fire Department has the following comments for this proposal:

- Ensure adequate water supply
- Ensure access for fire apparatus is provided and is built as a fire access route

Katie Ballantyne
Community Safety Officer
Extension 2423
Katie.ballantyne@norfolkcounty.ca

Appendix A: Summary of Applicable Planning Legislation, Policy and Zoning

Following is a summary of key items related to the proposal as presented; noting these documents are meant to be read in their entirety with relevant policies to be applied in each situation. This is not an exhaustive list and only in response to the information submitted for the pre-consultation. This feedback is subject to change pending full submission of a development application and any changes or additional information provided therein.

Provincial Policy Statement, 2020

https://www.ontario.ca/page/provincial-policy-statement-2020

Norfolk County Official Plan

https://www.norfolkcounty.ca/government/planning/official-plan/

Section 9.4.2 describes Holding Provisions.
Section 9.6.2 outlines requirements in relation to requests to amend the Zoning By-law.
Section 9.6.5 outlines requirements for Site Plan Control.
Section 2.2 Goals and Objectives
Section 5.0 Maintaining Healthy Communities
Section 5.3 Housing
Section 5.4 Community Design
Section 5.8 Access to Healthy Food
Section 7.7 Urban Residential Designation
Section 8.9 Water and Wastewater Services

Lakeshore Special Policy Area Secondary Plan
https://www.norfolkcounty.ca/download/government/community-planning/Part-II-Section-11-LSPA-Secondary-Plan.pdf

- 11.8 Community Design Strategy
    - Appendix "D" – Community Design Guidelines
      https://www.norfolkcounty.ca/download/government/community-planning/Appendix-D-Norfolk-CDG-FINAL-Sept-2009-Revised.pdf

It is the responsibility of the proponent to review and ensure relevant Official Plan policies are addressed in any future development application.

Norfolk County Zoning By-Law 1-Z-2014

https://www.norfolkcounty.ca/government/planning/new-zoning-by-law/

The provisions of the Norfolk County Zoning By-Law shall apply to all lands within the boundaries of Norfolk County. No land, building or structure shall be used, erected or altered in whole or in part except in conformity with the provisions of this By-Law. No

land, building or structure shall be used or occupied except for uses that are specifically identified in the By-Law as permitted uses by the relevant zoning category.

It is the responsibility of the proponent to review and ensure relevant Zoning By-law provisions are addressed in any future development application

Site Plan Control:

Minimum requirements are noted in the Planning Comments.

Environmental & Infrastructure Services Division
Community Development Division
185 Robinson Street, Suite 200
Simcoe, Ontario N3Y 5L6
Tel: 519-426-5870
Fax: 519-426-5901

Memo

To: **Business and Development Community**

Date: **February 11, 2022**

Re: **Update: Implementation of the Inter-Urban Water Supply Project**

Norfolk County has begun the implementation of the Inter-Urban Water Supply (IUWS) Project. The County has adopted a phased approach which will first address the water servicing priorities based on approved and pending development applications. The first phase will supplement the water supply for Port Dover, Simcoe, and Port Rowan.

The Port Dover WTP Phase 2 Upgrades project is scheduled to commence in the spring of 2022 and be completed in early 2023. The upgrades will create a plant capacity of 7,300 cubic meters per day and allow for development to resume in Port Dover. Staff will continue to monitor forecasted growth against water servicing capacity.

Engineering assignments to increase the water capacity for Simcoe are initiated and scheduled to be completed in 2022-2023. Construction on these projects is planned to commence in Q4 2023 and be substantially complete in Q2 2026. Increased capacity of 5,000 cubic meters per day is expected to be available in Q4 2024 (Bloomsburg – NE Wells). Staff will continue to monitor forecasted growth against water system capacity and provide updates as the new water infrastructure is gradually put into service.

The Port Rowan WTP Phase 2 Engineering has commenced anticipating that the construction work will commence in early 2023 and be completed by late 2024.

The project when completed, will restore sufficient production capacity of the plant allowing it to meet the needs of the community as well as allowing for future development in accordance with the anticipated near term growth of the community.

Once again, staff will be monitoring forecasted growth against infrastructure needs.

Matters pertaining to water servicing are being continually evaluated on a County-wide basis. Through the implementation of these and other projects, the entire water supply of the County is being evaluated in a comprehensive manner. The completion of the

IUWS will allow the transmission of water from one system to another and hence the need to evaluate available water supply within the County in a comprehensive manner.

All new development applications will be subject to the application of a “Holding” provision to allow for review and confirmation of water and wastewater servicing capacity allocation. Development agreements will include confirmation of access to sufficient servicing clauses or alternative solutions in accordance with Official Plan policy and as approved by the General Managers of Community Development and Environmental & Infrastructure Services.

Addressing the water supply deficiency remains a top priority for staff, and updates on these activities will be provided to Council as they become available.

For further information on the Inter-Urban Water Supply study, please visit - https://www.norfolkcounty.ca/living/roads-water-wastewater/inter-urban-water-supply/

APPLICABLE LAW CHECKLIST

The Building Code Act prohibits the issuance of a building permit if the proposed construction or demolition will contravene an applicable law as defined by the Building Code. The questions below will help you to determine if an applicable law applies to your project. No timeframe for building permit review can be established until all required applicable law approvals are completed and the approval documents are submitted to the Building Division.

If the answer is **YES** to any question, the relevant approval documents must be submitted with this permit application. Where any required approval has **NOT** been obtained, the agencies listed on the back of this form must be contacted to obtain approval, and the declaration on the bottom of this form must state accordingly.

Property Address: _____ **Permit Number** (office use)_____

Zoning By-Laws – *Norfolk County Planning Department*	YES	NO
Is/was relief required to permit a minor zoning variance in your proposal?		
Is/was rezoning required to permit the proposed building or land use?		
Is a land division or subdivision required and not yet fully completed?		
Are municipal services required but not yet completed or available?		

Planning Approval - *Norfolk County Planning Department*	YES	NO
Is this property regulated by Site Plan Control under Section 41 of the Planning Act?		

Heritage - N*orfolk County Heritage and Culture Department*	YES	NO
Are you demolishing a building that is listed on the County's heritage inventory?		
Is the building designated or in the process of being designated?		
Is the property located in a heritage district or study area?		

Construction and Fill Permits – *Long Point Regional or Grand River Conservation Authority*	YES	NO
Is the property located within a regulated area (i.e. abutting a ravine, watercourse, wetland, or shoreline)?		

Building and Land Use Permits - *Ontario Ministry of Transportation*	YES	NO
Is the property within 45m of a highway or 180 m from any highway intersection?		
Is the property within 395m of a controlled highway intersection? (applies to Sign Permits)		
Is this a major traffic generating project located within 800m of a highway?		

Clean Water Act – *Public Works*	YES	NO
Is the property located within a Source Water Protection regulated area?		
If yes: does a Water Source Protection Plan restrict the land use you are proposing? (s.59 screening form may be required)		

Community Development Division- Building Department
185 Robinson Street, Suite 200, Simcoe, ON N3Y 5L6 • 519-426-5870 Ext. 6016

Agriculture and Farms - *Ontario Ministry of Agriculture and Food*	YES	NO
Is this a farm building that will house animals or manure?		
Is this a milk processing plant?		

Crown Lands Work Permit – *Ministry of Natural Resources*	YES	NO
Are you proposing to construct or place a structure or combination of structures that are in physical contact with more than 15 square meters of shore lands?		
Are you proposing to build on Crown Land?		

Electrical Conductor Clearances - *Electrical Safety Authority*	YES	NO
Are any overhead power lines located above or within 5.5 metres of the proposed building?		

Environmental Approvals - *Ministry of Environment, Conservation, Parks*	YES	NO
Is a Record of Site Condition required to be filed because of a change to more sensitive land use? Is the property a former waste disposal site?		
Is this project a major industrial, commercial, or government project?		
Is this a renewable energy project?		
Does this property have a Certificate of Property Use under the Environmental Protection Act?		

Child Care Centres - *Ministry of Education*	YES	NO
Is a daycare proposed in any part of the building?		

Seniors Centres - Ministry of Children, Community and Social Services	YES	NO
Is this a seniors project where Ontario Government funding is being sought?		

Long Term Care Centres – *Ministry of Health & Long Term Care*	YES	NO
Construction, alteration or conversion of building used for a nursing home?		

Education Act - *Ministry of Education*	YES	NO
Is the project being carried out on the property of an educational facility?		
If so, is any or all building on the property being fully or partially demolished?		

DELCARATION – I have considered the list of applicable laws in the Ontario Building Code as described above, and do hereby declare that:

	None of these applicable law approvals apply to this project
	Applicable laws check 'yes' apply to this project, and approval documents are submitted with this application.
	Applicable laws checked 'yes' apply to this project; however, all approval documents have not yet been obtained

The information provided on this form is true to the best of my knowledge. I have authority to act on behalf of the owner, corporation, or partnership with respect to this application (if applicable).

Name: _____ Signature: _____ Date: _____

Approvals from other agencies are required in many instances before a building permit can be processed and issued. These approvals are **NOT** administered by the Building Department. The fastest way to obtain a building permit is to ensure that all other required approvals are completed prior to permit application. The Building Department is required by law to prioritize applications that are fully complete in terms of applicable law approvals and document submissions. Building permit documents must be consistent with applicable law approvals. If you answer yes to any of the following question please reach out to these agencies for approvals.

Zoning and Planning – Community Services Division – Norfolk County

Zoning 519-426-5870 ext. 6064 or zoning@norfolkcounty.ca
Planning 519-426-5870 ext. 1842 or planning@norfolkcounty.ca

Planning Act, s.34, 34(5), 45, and Part VI
Zoning By-laws restrict such things as land use, lot size, building size, and setbacks. If your project does not comply with any part of the Zoning By-law, a minor variance or rezoning must be obtained before any building permit can be issued. Zoning By-laws also restrict the issuance of permits until any associated land division, subdivision, or municipal servicing is complete.
Planning Act, s.41
Site Plan Approval applies to commercial, industrial, institutional, multi-residential and intensive livestock site plans. The site plan agreement must be registered before site plans will be approved.

Conservation Authority Permits

Grand River Conservation Authority (GRCA)1-866-900-4722 or grca@grandriver.ca
Long Point Regional Conservation Authority (LPRCA) 1-888-231-5408 or conservation@lprca.on.ca

Conservation Authorities Act s. 28 (1)(c), regulation 166/06
Development within certain conservation regulated areas requires a construction and fill permit from the conservation authority before any building permit can be issued. GRCA or LPRCA will confirm if your property falls within their jurisdiction.

Highway Corridor Building & Land Use Permits

Ministry of Transportation (MTO) 1-800-268-4686 or
www.mto.gov.on.ca/english/highway-bridges/highway-corridor-management/index.shtml

Public Transportation and Highway Improvement Act, s.34, 38
Ministry authorization is required for construction of all buildings within certain distances of a highway or intersection. The requirement for Ministry authorization extents to 800m from a highway where development will generate major traffic, such as a shopping centre.

Environmental Approvals

Ministry of the Environment, Conservation and Parks (MECP)1-800-461-6290 or www.ontario.ca

Environmental Protection Act s. 46, 47.3, 168 and the Environmental Assessment Act s 5.
Ministry of Environment approvals are required where a property of industrial or commercial use is changed to more sensitive residential or parkland use, for major government, industrial and commercial projects where defined by regulation, properties formerly used for landfill or waste disposal, or renewable energy projects.

Electrical Conductor Clearances

Electrical Safety Authority 1-877-372-7233 or www.esasafe.com

Subsection 3.1.19. of the Ontario Building Code prohibits buildings being located beneath or within a certain minimum distances of overhead electrical conductor wires, other than the power feed to the building.

Source Water Protection – Environmental and Infrastructure Services – Norfolk County

Environmental Services – Stephanie Davis- Manager, Water & Wastewater Compliance- 519-426-5870 ext. 8037 or Stephanie.Davis@norfolkcounty.ca
Cambium Inc. Racheal Doyle – sourcewaterprotection@cambium-inc.com

Clean Water Act s. 59
Special land use restrictions may apply if a water source protection plan is in effect in the area where the building is located. Uses affected by these restrictions require the approval of the designated Risk Management Official

Agriculture and Farms

Ministry of Agriculture Food and Rural Affairs 1-877-424-1300 or www.omafra.gov.on.ca

Nutrient Management Act 2002 s.11 reg 267/03, Milk Act s.14
Buildings or structures that house animals or store manure may trigger a requirement for a nutrient management strategy approved by the Ministry. The Ministry must determine that a milk processing plant is necessary and authorize it before a building permit can be issued.

Child Care Centres

Ministry of Education (905) 895-9192 or www.ontario.ca

Child Care and Early Years Act, s. 14 reg 137/15
Ministry plan approval is required if a new building is proposed to be used as a day nursery, an existing building is proposed to be used, altered or renovated for a day nursery, or if an existing day nursery is altered or renovated.

Seniors Centres

Ministry of Children, Community and Social Services 1-888-789-4199 or www.mcss.gov.on.ca

Elderly Persons Centres Act s. 6 of reg 314
Reports must be submitted to the Minister and approval obtained for all seniors centres to which government funding applies.

Long Term Care Homes

Ministry of Health & Long Term Care 1-800-387-5559 or www.health.gov.on.ca

Nursing Home Act s. 4, 5 reg 832
Homes for the Aged & Rest Homes Act s. 14
The Long Term Heath Care Act is designed to help ensure that residents of long-term care homes receive safe, consistent, high-quality, resident-centred care.

Education

Ministry of Education (905) 895-9192 or www.ontario.ca

Education Act s. 194
The board shall obtain approval from the Minister for the demolition of any buildings located on a school site regulated by the Education Act. App

Crown Lands Works Permits

Ministry of Natural Resources www.ontario.ca/page/crown-land-work-permits

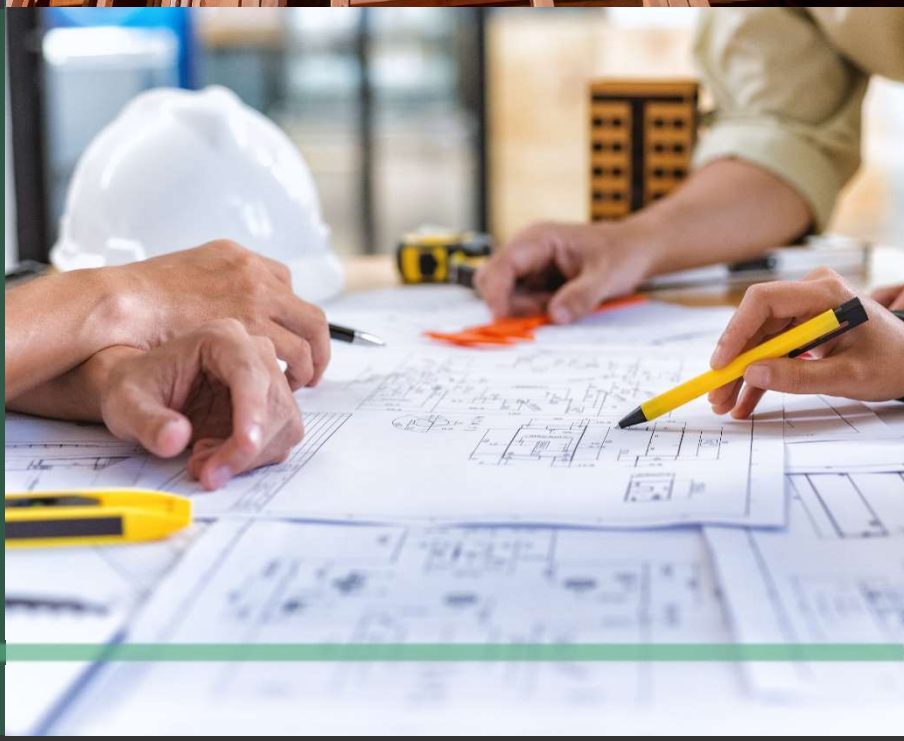
Ontario Regulation 239/13 s. 2, s. 5
Ministry approval is required to construct a building on crown lands or to construct or place a structure along shorelines.

NEW RESIDENTIAL HOUSE, SEMI-DETACHED TOWNHOUSES

Building Permit Package



A step by step guide for making a building permit application



Norfolk County Building Department
Community Development Division
185 Robinson Street, Suite 200 Simcoe, Ontario, N3Y 5L6
norfolkcounty.ca

New Residential Permit Package
Houses, Semi-detached, Townhomes

Building permits help protect you, your home, and the interests of your community by making sure the project is structurally sound and follows the Ontario Building Code, municipal zoning and other applicable laws.



There are multiple steps to the building permit process. The purpose of this permit package is to highlight these steps and provide guidance to the building permit process.

STEP 1: Applicable Law.

Approvals from other agencies are required in many instances before a building permit can be processed and issued. These approvals are **NOT** administered by the Building Department. The fastest way to obtain a building permit is to ensure that all other required approvals are completed prior to permit application.

An Applicable Law Checklist is required as part of a complete application. Agency contacts are attached with this form. Our community mapping has many of these layers mapped to help you determine if additional approvals are required for your application.

Zoning Requirements.

Finding the zoning associated with your property is easy with our GIS Community Web Map, position over your property and turn on the zoning layer by clicking layer list, planning, zoning.



Norfolk County Zoning Bylaw is available online.

To confirm your project conforms to the Zoning By-law you will need to provide a plot plan indicating:

- ☐ Property lines and lot dimensions,
- ☐ Location of building and all other structures on the lot,
- ☐ Location of all steps and landings,
- ☐ Distance from dwelling to property lines,
- ☐ Parking spots with dimensions,
- ☐ Location of septic system.

If your proposed building / structure does not comply with the zoning requirements, a planning application will be required. Zoning and Planning approval is required as part of a complete permit application.

Planning Department: planning@norfolkcounty.ca or 519-426-5870 ext. 1438.
Zoning: zoning@norfolkcounty.ca or 519-426-5870 ext. 6068

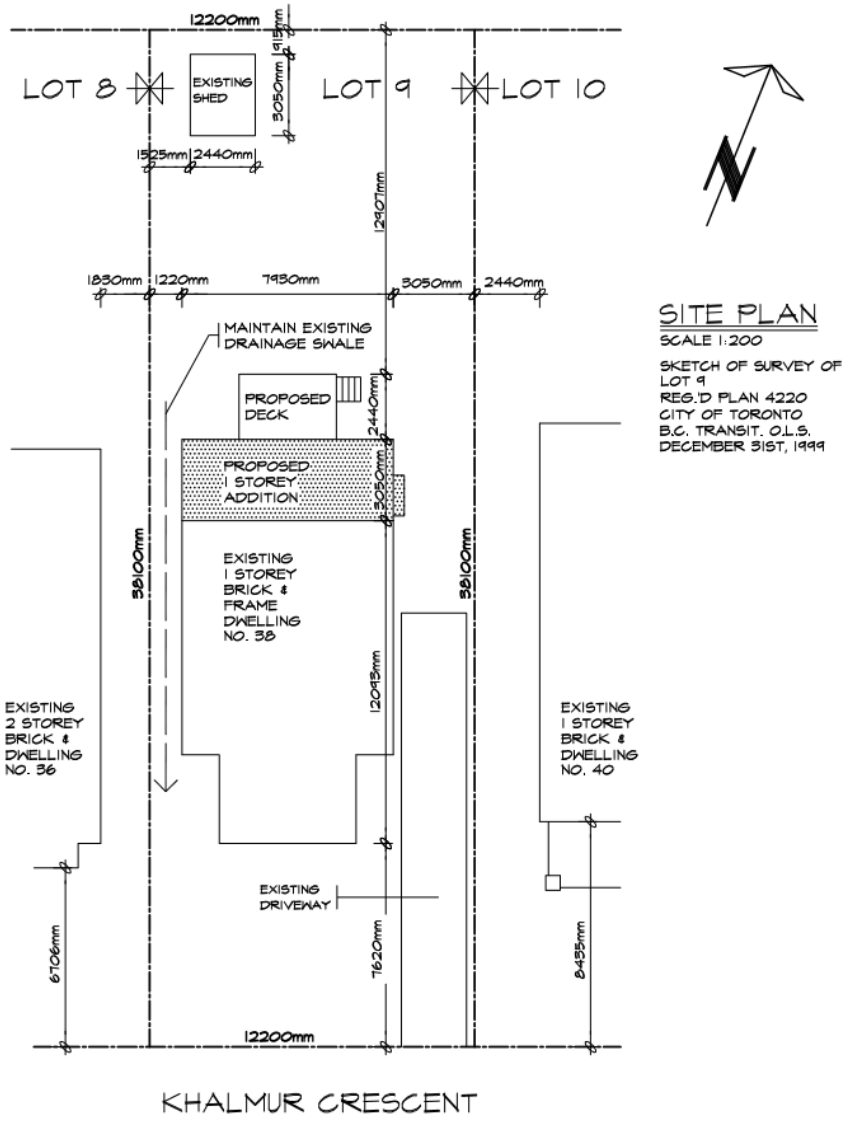
Lot Grading.

Proposed grading plans and lot grading form shall be submitted with all building permit applications, under Norfolk County Grading and Drainage By-law.

Proposed grading plan needs to identify:

- all surface features;
- existing and proposed structures;
- changes in grade and slopes in percent between such changes; and
- include sufficient information regarding adjacent properties to confirm conformance with this By-Law with respect to drainage onto those properties.

An exemption may be considered for a lot in a rural area (complete form, fee applies)



STEP 2: Preparing your application.

A building permit application consists of many documents. The forms attached are to be completed, signed, and dated.

Who can design a house?

As the property owner, you can complete the design yourself for a house, or have a qualified individual with a BCIN number in House, an Architect or a Professional Engineer complete the drawings.

Buildings containing multiple dwelling units may require qualified individuals to complete the design documents. Check with a Building Inspector prior to making application.

Drawings and Documents

Drawings are to be legible and to scale. Use a ruler or computer aided drafting (CAD) software to complete your drawings. Provide enough information and detail to ensure compliance with the Ontario Building Code.

The Ontario Building Code is available online under the 'regulations under this act' tab.

Building Department staff are not permitted by law to provide design advice. It is the responsibility of the property owner or authorized agent to complete a design that meets the requirements of the Ontario Building Code (OBC) and the Building Code Act (BCA).

If you are unable to complete the application and provide the required documents, should retain a qualified designer to assist you in completing the application.

Building Permits – Application Checklist.

Completed Forms.

- ☐ Building Permit Application Form.
- ☐ Schedule 1: Designer Information.
- ☐ Applicant Authorization Form, if application is not completed by the property owner.
- ☐ Applicable Law Checklist and supporting documents.
- ☐ Lot grading form or approved exemption.
- ☐ Water, storm sewer, sanitary sewer connection permit (where required).
- ☐ Evaluation of existing on-site septic system (where required).

Required Documents.

- ☐ Plot Plan:
  - Property lines and lot dimensions,
  - Location of building and all other structures on the lot,
  - Location of all steps and landings,
  - Distance from dwelling to property lines,
  - Parking spots with dimensions,
  - Location of septic system.
- ☐ Lot Grading Plan.

- ☐ Drawings of the Building:
  - Footing, foundations, anchorage details (where applicable),
  - Floor plans,
  - Room names, sizes and ceiling heights,
  - Door & window location and sizes,
  - Location of plumbing fixtures including laundry facilities,
  - Fire separations, fire wall design (if applicable),
  - Smoke alarms and/or fire alarm systems.
- ☐ Elevations.
- ☐ Cross sections of exterior wall from footing to roof.
- ☐ Roof truss layout or roof framing plan.
- ☐ Energy Efficiency Design Summary (EEDS), performance or prescriptive option.
- ☐ Engineered floor system layout (where required).
- ☐ Engineered beam details (i.e. LVL's, steel beams) (where required)
- ☐ Residential mechanical ventilation design summary.
- ☐ Ventilation duct design:
  - Heat Recovery Ventilator (HRV) duct sizing and layout,
  - Exhaust fan duct sizing and layout.
- ☐ Septic application (where required) This is a separate application, see septic.

Fees

- ☐ Building Permit fee.
- ☐ Plumbing fee.
- ☐ Occupancy fee.
- ☐ Lot grading exemption fee (if applicable).
- ☐ Water/Sewer/Storm connection permit fee(if applicable).
- ☐ Water meter fee (if applicable).
- ☐ Civic address fee (if applicable).
- ☐ Development charges.

Septic Permits - Application Checklist.

Completed Forms.

- ☐ Building Permit Application Form.
- ☐ Schedule 1: Designer Information.
- ☐ Schedule 2: Sewage System Installer Information.

Required Documents.

- ☐ Septic System Permit Application Information Package / Worksheets .
- ☐ Percolation time ('T' time) report from a licensed testing agency.

Fees.

- ☐ Septic Permit fee.

STEP 3: Applying.

Email: Electronically submit your permit documents permits@norfolkcounty.ca.

In Person: Visit our service counter located at 185 Robinson Street, Suite 200 Simcoe Ontario. Please call or email ahead and make an appointment.

Online Portal: Visit Norfolk Permits Portal and make your application online.



Building Department

Apply for a Building Permit
Status and Fees

Our Permit Coordinators will review your application and provide in writing any item which may be missing from the application and a cost break down for the permit fees and payment options.

Step 4: Plans Review.

A Building Inspector will contact you in writing if there are building code concerns or missing information from your application.

A building permit is issued once all documentation has been received, fees are paid in full, and your plans are check for compliance with zoning by-law and the building code.

Step 5: Inspections.

Once you have obtained a building permit, a building inspector needs to attend your site at several milestones in the construction process. For more information, please check the inspection section of Norfolk County's Building Department website. Once all inspections are complete and passed your permit is closed.

Need Help? If you have any question on the building permit process or plans required, please contact permits@norfolkcounty.ca or 519-426-5870 ext. 6016.

Updated November 2021

SITE PLAN INFORMATION

Name of Owner_____

Property Legal Description_____

Roll Number_____

PIN Number_____

Lands Contain any Contaminated or Impacted Soil	◯ YES	◯ NO	◯ UNKNOWN
Lands Contain any Natural Watercourse	◯ YES	◯ NO	◯ UNKNOWN
Lands Contain any Wetlands	◯ YES	◯ NO	◯ UNKNOWN
Lands Contain any Archaeological Sites	◯ YES	◯ NO	◯ UNKNOWN
Lands Contain an Existing Gas Wells and or Septic Field	◯ YES	◯ NO	◯ UNKNOWN
Species at Risk Branch MECP Screening	◯ YES	◯ NO	◯ UNKNOWN
Lands Contain any Endangered Species	◯ YES	◯ NO	◯ UNKNOWN

SPECIES AT RISK SCREENING

The *Ontario Endangered Species Act* inquiries and Species at Risk screening are now handled by the Ministry of the Environment, Conservation and Parks, specifically the "Species at Risk Branch" and the new e-mail address for handling these inquiries is now SAROntario@ontario.ca.

TRANSFERS, EASEMENTS AND POSTPONEMENT OF INTEREST

The owner acknowledges and agrees that it is their solicitor's responsibility on behalf of the owner for the registration of all transfer(s) of land to the County, and/or transfer(s) of easement in favour of the County and/or utilities. Also, the owner further acknowledges and agrees that it is their solicitor's responsibility on behalf of the owner for the registration of the postponements of any charges to the County's site plan agreement.

INSURANCE CERTIFICATES

Prior to the execution of the development agreement, the owner shall at their expense obtain and keep in force, during the term of this development agreement, commercial general liability insurance coverage satisfactory to the County. The owner further acknowledges and agrees that he/she has authorized the County to discuss with their insurance provider the specific insurance requirements of the County for site plan approval purposes. Also, the County will require any professionals hired to carry Professional Liability insurance to provide coverage for acts, errors and omissions arising from their professional services performed.

OWNER'S AUTHORIZATION

I/We _____ am/are the registered owner(s) of the lands that is the subject of this site plan agreement.

I/We authorize our Agent _____ to provide information on my/our behalf and to provide any of my/our personal information necessary for the processing of this site plan agreement. Moreover, this shall be your good and sufficient authorization for so doing.

I/We authorize the Agreement Administrator to provide and receive information on my/our behalf in connection to the insurance coverage, letter of credit and agreement registration of my/our development.

I/We acknowledge that if there are any new charges or mortgage holders on the property they will be added to the development agreement and will be required to postpone their interest on the property to the County's development conformity interest.

_____

Owner Signature Date

OWNER INFORMATION

NAME_____

CONTACT_____

ADDRESS WITH POSTAL CODE_____

PHONE NUMBER_____

EMAIL _____

ENGINEER INFORMATION

NAME_____

CONTACT_____

ADDRESS WITH POSTAL CODE_____

PHONE NUMBER_____

EMAIL _____

LAWYER INFORMATION

NAME_____

CONTACT_____

ADDRESS WITH POSTAL CODE_____

PHONE NUMBER_____

EMAIL_____

INSURANCE INFORMATION

NAME_____

CONTACT_____

ADDRESS WITH POSTAL CODE_____

PHONE NUMBER_____

EMAIL_____

MORTGAGEE INFORMATION (IF APPLICABLE)

NAME_____

CONTACT_____

ADDRESS WITH POSTAL CODE_____

PHONE NUMBER_____

EMAIL _____

Please return the first two pages completed and signed. This page can be kept for your reference.

NORFOLK COUNTY CONTACT

Annette Helmig
Agreement and Development Coordinator
Norfolk County, Community Development Division
185 Robinson Street, Suite 200, Simcoe ON N3Y 5L6
519.426.5870 extension 8053
annette.helmig@norfolkcounty.ca

DOCUMENTATION REQUIRED

- ☐ Owner's authorization
- ☐ Letter from owner requesting holding (H) symbol be removed from the subject lands
- ☐ Owner's commercial general liability certificate of insurance
- ☐ Professional liability insurance for surveyor and / or engineer
- ☐ Current parcel register (property identifier or PIN printout)
- ☐ Final reference plan for any easements and lands to be conveyed
- ☐ Postponement of interest from mortgagee / chargee (if applicable)
- ☐ Construction estimates and securities
- ☐ Letter of credit or certified cheque for performance securities
- ☐ Current property taxes to be paid (if applicable)
- ☐ Monies to be paid to Norfolk County (if time is of the essence please provide a certified cheque)
  $2,598 for preparation of the site plan agreement
  $844 to remove the holding from the zoning on the property (if applicable)
  $417 for financial administration of this agreement
  $506 per tree cash-in-lieu of trees (if applicable)
  2% or 5% land appraisal cash-in-lieu of parkland as per consolidated by-law 2016-126 (if applicable)

If you will be applying for a Condominium Exemption planning application, please note that we will require:

- ☐ Commissioned application form
- ☐ User fee
- ☐ Current PIN printout
- ☐ Draft condominium description and declaration
- ☐ Street name application and acceptance
- ☐ Professional liability insurance coverage for surveyor

Planning Department – Agreement Administration
Community Development Division
185 Robinson Street, Suite 200, Simcoe Ontario Canada N3Y 5L6
subdivisionagreements@norfolkcounty.ca

INSURANCE REQUIREMENTS

For the Owner Entering Into a Subdivision and/or Condominium Agreement

Prior to the execution of the Agreement, the Owner shall, at its expense, obtain and keep in force, until the end of the maintenance period and return of all securities, a certificate of insurance to Norfolk County evidencing the insurance coverages required. The insurance certificate shall be in the Owner's name as shown on the property identification number.

The issuance of such insurance policies as described in a certificate of insurance shall not be construed as relieving the Owner from responsibility for any claims in excess of such policy or policies, if any, for which the Owner may be held responsible. Such insurance policy or policies shall be in a form acceptable to Norfolk County's and, without limiting the generality of the foregoing, shall provide:

1. A **Commercial General Liability Policy** with a limit of not less than five million dollars **($5,000,000.00)** per occurrence;
2. **Products and Completed Operations** coverage;
3. **Non-owned Automobile** coverage with a limit of at least two million dollars **($2,000,000.00)**, per occurrence including without limitation contractual non-owned coverage;
4. A provision for **Cross Liability** in respect of the named insured;
5. The Corporation of Norfolk County shall be named as an **additional insured** 50 Colborne Street South, Simcoe ON N3Y 4H3 Attention: County Clerk;
6. **Thirty (30) days prior written notice** of any alteration, cancellation or change in policy terms, which reduces coverage, and any such notice of cancellation shall be given in writing to the County.

The County reserves the right to request such higher limits of insurance or other types of policies appropriate to the Agreement as Norfolk County may reasonably require from time to time.

Proof of Insurance

The Owner shall provide the certificate of insurance or certified copies of the above referred to policies, satisfactory to Norfolk County. Provided that if a certificate is provided, all requirements as above set forth must be shown on the said certificate and notwithstanding the provision of any certificate, Norfolk County may require that the Owner provide a certified copy of the policy, if required. Such certificates or policies shall be provided prior to the commencement of any work.

The Owner shall further provide evidence of the continuance of said insurance be filed at each policy renewal date for the duration of the Agreement until the end of maintenance period. In the event any renewal premium is not paid, Norfolk County, in order to prevent the lapse of such policy, may pay the renewal premium or premiums, and the Owner agrees to reimburse Norfolk County for the cost of such renewals within ten (10) days of the account therefore being rendered by Norfolk County. Further, prior to the commencement of the Agreement, the Owner shall cause its insurance broker to confirm in writing that it will accept any request from the County to renew such insurance and will extend the term of any such insurance policy held by the Owner in accordance with such request upon payment of the renewal premium(s) by the County.

Notice

Every party to the Agreement agrees to immediately notify all other parties of any occurrence, incident, or event, which may reasonably be expected to expose any of the parties to liability of any kind in relation to the development of the Lands.

Indemnification

The Owner shall indemnify Norfolk County and its employees, members of Council, agents and other representatives from any loss arising directly or indirectly from claims, damages, injury or otherwise in connection with the works done by or on behalf of the Owner of the Lands until installation of services and any works or restoration of public roadways or property is completed and accepted by the appropriate inspectors acting on behalf of Norfolk County.

Planning Department – Agreement Administration
Community Development Division
185 Robinson Street, Suite 200, Simcoe Ontario Canada N3Y 5L6
subdivisionagreements@norfolkcounty.ca

Before you send your certificate, please check that



NAME SAME AS PIN



COMMERCIAL GENERAL LIABILITY POLICY $5M



PRODUCTS AND COMPLETED OPERATIONS



NON-OWNED AUTOMOBILE $2M



CROSS LIABILITY



NORFOLK COUNTY AS ADDITIONAL INSURED



30 DAYS PRIOR WRITTEN NOTICE

You must renew this certificate each year until the completion of your works and the return of your performance securities at the end of your maintenance period.

TECHNICAL GUIDELINES

FOR

WASTE COLLECTION SERVICES

FOR

CONDOMINIUM CORPORATIONS

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INTRODUCTION

Norfolk County is providing Technical Guidelines for Waste Collection Services for Condominium Corporations to ensure that owners of condominium properties within the County are familiar with appropriate waste and recycling collection programs.

The County is pleased to provide waste and recycling collection services to our residents, businesses and other property owners including Condominium Corporations and unit owners and residents. However, in order to continue to provide safe and efficient service, the County requires that some minimum standards be met. This document provides the minimum requirements only and the County will work with existing condominium properties or proposed development projects to gain optimum efficiencies for both the property owners and the County.

The provisions of By-law No. 2013-164, as amended from time to time or as replaced (the "Waste Management By-law") shall be applicable with regard to waste collection services for condominium sites. All words and phrase, whether capitalized or not, if not defined within these guidelines or attachments, shall have the same meaning as in the Waste Management By-law if defined or referenced in that by-law.

Only condominium corporations with only residential units can apply and be considered for waste collection services and any condominium corporations with industrial or commercial units are not eligible for this service.

When planning condominium facilities, consideration should be given to a design that encourages recycling and other waste reduction programs. It is imperative this is easy to use and readily accessible to all residents. Building and site plans for all multi-residential developments should also provide adequate and efficient waste handling and storage facilities for all wastes and be located conveniently within the building structure or on the property site for easy and barrier free access by residents and collection vehicles.

As each property will have specific needs and will require detailed reviews, the County will discuss each application in person. Onsite meetings will discuss details pertaining to the application for collection services. Norfolk County intends to provide condominium corporations and unit owners and residents with efficient and effective waste and recycling collection systems which respects both the property needs and the responsibilities of the County where possible.

The formal resolution passed by Council on March 28, 2017 says:

> "THAT Report P.W. 17-09, Waste and Recycling Collection at Condominium Corporations, be received as information;
>
> AND THAT the following options for service provision respecting waste management at Condominium Corporations: 3A and 4; be approved for implementation, subject to applications made by the Condominium Corporations and approval by Norfolk County Staff.
>
> AND FURTHER THAT the Waste Management By-law No. 2013-164, be amended accordingly."

As directed by Norfolk County Council Option 3A means curbside collection at each unit driveway may be possible but only if the internal road network allows collection vehicles too properly and safely operate within the condominium site which means no backing up or turning around. The alternative, Option 4, is to establish a collection site on the municipal street in accordance with the particulars as approved by Council.

Any condominium corporation wishing to have service must apply in order that a full assessment can be undertaken to determine which service, if any is possible.

DEFINITIONS

"Blue Box Recyclables" means wastes designated by the County as part of the Blue Box program and which are not to be collected as garbage.

"Collectible" means any residential waste material which may be collected pursuant to the Waste Management By-law.

"Common Collection Points " means a designated area on a municipal Street for multiple condominium unit owners and residents, with driveways that do not front onto a municipal roadway or for residents living on inaccessible private roads, to set out waste and recycling on their designated collection day for collection by the County;

"Condominium Corporation" means the corporation that is the owner of lands and premises established for residential condominium forms of ownership and use, and includes any property manager or other designated third party acting on behalf of such Condominium Corporation.

"Contractor" means any person or business which has entered into a contract with the County for the collection of waste or Blue Box Recyclables on behalf of the County.

"Garbage" means waste other than Blue Box Recyclables, household hazardous wastes, white or metal goods, seasonal leaf and yard wastes and other non-collectible wastes as outlined in the Waste Management By-law.

"Internal Curbside Collection Area" means the location where a Unit Owner within the Condominium Corporation lands will bring their residential waste and Blue Box Recyclables to the edge of the private road.

"Unit Owner" includes an owner, occupant, lessee, tenant or any other person in charge or control of or residing in a unit within the Condominium Corporation.

"On-site Waste Collection" means the collection of residential waste containers on condominium property.

“Roadways” includes private roads, streets, avenue, lane, alley, square, driveway and or parking lot.

“Rural Area” includes all areas within the County not defined as being part of the Urban Area within the County’s Official Plan.

“Set Out” means to place, or permit to be placed, waste at the designated location on private property for the purpose of waste collection.

“Street” means any public highway, road, street, avenue, parkway, lane, alley or square.

“Turning Radius” means the minimum area required for a vehicle to turn around.

“Waste” means residential Blue Box Recyclables and residual Garbage materials.

GENERAL WASTE COLLECTION REQUIREMENTS

The following are general conditions for the collection of Garbage and Blue Box Recyclables for Condominium Corporations. Applicants should refer to the Waste Management By-law for additional or specific collection requirements.

Condominium Corporations are responsible for the design and construction of proper and safe residential waste handling systems for their residents on private property. This includes access routes, storage facilities, collection areas, and with direct access to a municipal Street that does not require the collection vehicle to reverse onto the municipal Street or any Street within the Condominium Corporation.

Condominium Corporations are responsible for ensuring that all private roads are maintained in good repair which includes but is not limited to: repairing potholes, ensuring roads are plowed and sanded/salted during winter months, and removing overhanging tree branches that may interfere with the collection vehicles. The County reserves the right to suspend collection services to any condominium property that does not ensure that all private roads are maintained in good repair, until such time as the roads are brought back to a state of repair satisfactory to the County.

All residential waste containers that are set out on the municipal Street or right of way, shall be set out at curbside or at the approved Common Collection Point on the municipal Street in accordance with the Waste Management By-law;

All emptied residential waste containers, and uncollected materials, that are set out on the municipal Street or right of way, shall be removed from the curbside or approved Common Collection Point in accordance with the Waste Management By-law;

The Condominium Corporation is exclusively and solely responsible for any damage on Streets, private access roads and/or storage areas from waste collection vehicles;

The Condominium Corporation is responsible for moving all waste containers out to the designated Common Collection Point on the municipal Street;

The Condominium Corporation is responsible for collection, processing, haulage and disposal of all waste from the property until such time as the site is approved for collection services;

The County reserves the right to revoke collection services to any Condominium Corporation that does not meet the guidelines outlined in this document or the Waste Management By-law;

The Condominium Corporation must complete the enclosed application form and indemnification form and submit such documents for consideration, assessment and approval if applicable by the County before any collection services can be provided.

For further details or information if required please contact Norfolk County's Environmental Services Division at 519-582-2100.

REQUIREMENTS FOR CONDOMINIUM CORPORATIONS

Access Routes

The internal roadways must be a minimum of 7.5 metres (25 ft.) in width, have a minimum of 13 metres in turning radii (need to confirm with collection contractors);

Along the collection access route and in the Internal Curbside Collection Area, an overhead clearance of 7 metres must be provided from all overhead obstructions such as wires, balconies and trees.

Private roads must be constructed of a suitable material and be structurally adequate to prevent damage by and support a fully loaded waste collection vehicle;

Collection vehicles must be able to safely drive out of private property and onto a municipal street, not reverse onto a municipal street or any private street;

For those Condominium Corporations that do not meet the technical guidelines, the Condominium Corporation can chose to select a Common Collection Point on a municipal Street;

Access routes must remain free of obstructions throughout the year, including, without limitation, parked vehicles and snow, which must be removed in order to not impede any collection services being provided.

Collection Area (in order of preference)

Preferred Choice: Door to door Collection Areas serviced from the municipal Street and that the Waste Management By-law is adhered to.

Second Choice: Door to door Collection Areas serviced from private property within a condominium site with direct and safe access for collection vehicles and that the Waste Management By-law is adhered to.

Third Choice: Common Collection Point serviced from the municipal Street and that the Waste Management By-law is adhered to.

The Common Collection Point must be kept clear of obstructions. Signage on the municipal Street will be the responsibility of the County.

REVISIONS TO THE WASTE COLLECTION GUIDELINES

The County may from time to time review, revise and update its “Technical Guidelines for Waste Collection Services on Condominium Property”.

Any revisions to this document will require the approval of the General Manager of Public Works or designate.

DISTRIBUTION OF WASTE COLLECTION GUIDELINES

The County will distribute amended “Technical Guidelines for Waste Collection Services for Condominium Corporations” upon request to interested parties and to those that have been approved for this service. For more information on waste collection, check the County’s website, www.norfolkcounty.ca.

It is the intent of the County to provide realistic and workable “Technical Guidelines for Waste Collection Services for Condominium Corporations” to strengthen waste management practices in our communities.

Waste Collection Guideline inquiries can be directed to Norfolk County’s Environmental Services Division by:

Phone: 519-582-2100

E-mail: askus@norfolkcounty.ca

SUBMISSION PROCESS

Listed below is the required documentation that the applicant must provide for review and consideration:

A. Formal request **letter** signed by Condominium Board Officer(s)

B. Completed **Application** for Waste Collection Services for Condominium Corporation (Attachment 1)

C. **Indemnification** Form (Acknowledgement) required for the collection option on private property only (Attachment 2).

D. **Certificate of Insurance** as described in the Indemnification Form for the collection option on private property only. The Certificate of Insurance must include:
   - Commercial General Liability $5,000,000 per occurrence,
   - An endorsement certifying that The Corporation of Norfolk County, Norfolk Disposal Services Limited and HGC Management Inc. are added as additional insured, and
   - Cross Liability endorsement.

   Please note that the Certificate of Insurance must be provided to the County annually upon renewal.

E. Completed Application **Checklist** (Attachment 3 or 4)

Once completed, please send by email or regular mail to:

Public Works Division
Environmental Services Department
183 Main Street of Delhi
Delhi ON N4B 2M3

The County will respond to the applicant acknowledging that the application has been received for further review.

Attachment 1 – Application for Waste Collection Services for Condominium Corporation

Date: _____ (DD/MM/YY)

The undersigned requests waste and recycling collection services for a Condominium Corporation as provided by the Corporation of Norfolk County.

Applicant Details:

Applicant (Condominium Name): _____

Board Representative: _____ Unit # _____

Address: _____

Community: _____ Postal Code: _____

Phone: _____ E-mail address: _____

Mailing Address: (If different from location address)
_____

Details of Location:

Expected Date of Completion: _____
(if under construction or indicate if fully built)

Condominium Plan Number: _____

Total No. of Units: _____ Units Occupied to Date: _____

Collection Requested at: (Check all that apply)

On private road with Individual Stops ( )

OR

Common Collection Point on Municipal Street ( )

Name(s) of Street Location of Proposed Collection Point:

_____ _____

_____ _____

_____ _____

Comments:

_____

_____

_____

On behalf of:
CONDOMINIUM CORPORATION NAME & NUMBER:

_____#_____

Signature: _____
Name:
Title:
I have the authority to bind the Corporation.

Witness:
Signature: _____
Name:
Title:

Attachment 2 – Indemnification Form (Acknowledgement)

FROM: _____ (Owner)
(Name of Condominium Corporation)

_____
(Address of private property)

AND: _____
(Name of duly authorized agent of Condominium Corporation)

_____
(Address of duly authorized agent)

TO: THE CORPORATION OF NORFOLK COUNTY and its officers, employees, agents and contractors ("County")

In consideration of Waste and recycling collection from the condominium property of the Owner, the Owner on behalf of itself, all Unit Owners and invitees, and the heirs, executors, administrators, successors and assigns of the Owner, the Unit Owners and invitees hereby:

Permits the County to enter, pass upon and re-enter (collectively "Enter") the property owned by the Condominium Corporation for Waste and recycling collection purposes;

Certifies that the condominium property (including the pavement, driving surface and boulevard) can sustain the entry of the County's collection vehicles; and

Agrees to hold the County, its employees, Councillors, assignees, agents and other representatives, and the County's Contractor(s) harmless from any and all claims, losses, liabilities, costs, damages, debts, expenses, fees (including all legal expenses and court costs) or wear and tear that may result, directly or indirectly, from any act, omission, default or negligence of the Owner or any Unit Owner or invitee, or entry onto the private property for Waste and recycling collection purposes, except losses, costs, damages or expenses caused by the County's or Contractor's negligence. This provision shall survive any termination of the collection services to be provided by the County.

The Owner, or the Owner's authorized agent, shall ensure that all internal roadways on private property are maintained in good repair for collection services throughout the year, as well as ensuring there are no parked cars or snow/ice on the internal roadways that could be deemed as obstructions.

Acknowledge that repeat obstruction of the internal roadways or any turn-around area may result in missed collections or cancellation of collection service.

Has the authority to bind the Condominium Corporation.

The Owner shall at its expense obtain and keep in force commercial general liability insurance which shall be written with an insurer licensed in the Province of Ontario and satisfactory to the County, having the following characteristics: (i) a limit of liability of not less than Five Million Dollars ($5,000,000.00) per occurrence; (ii) the County and its Contractor shall be named as additional insureds; and (iii) the policy shall contain a provision for cross liability in respect of the named insureds.

Dated this_____day of_____20__.

Condominium Name: _____ (Insert Name)

Norfolk Condominium Corporation No. _____ [Insert Number]

Per: _____
Name:
Title:

Per: _____
Name:
Title:
We have authority to bind the corporation.

Attachment 3

Application Checklist for Waste Collection Services for Condominium Corporation – Internal Curbside Individual Stops on Private Lands

Access Routes/Collection Area Private Property Requirements	Checklist
Is the access and internal roadway a minimum of 7.5 metres (25 ft.) in width and have a minimum of 13 metres in turning radii?	
Does the Condominium Corporation provide a continuous drive-through access and exit?	
Can the collection vehicles drive out onto the street and not reverse out in order to turn around?	
Do the Private Roads and Collection Area provide an overhead clearance of 7 metres from obstructions such as wires, balconies and trees?	
Are Private Roads constructed of a suitable material and structurally adequate to prevent damage by and support a fully loaded waste collection vehicle?	
Are the Private Roads free of pot holes and snowplowed/salted/sanded on an as needed basis?	

Attachment 4

Application Checklist for Waste Collection Services for Condominium Corporation – Collection at Municipal Street

Condominium Corporation Collection at Municipal Street Requirements	**Checklist**
Is there an adequate location and space at the municipal street to receive and store the waste and recyclable material without interfering with traffic or normal operation of the public road?	
Is there adequate space to place waste and recyclable materials at the municipal street without interfering with the property rights of neighbouring property owners?	
Is the Condominium Corporation less than 35 units?	
Does the Condominium Corporation have a plan in place in the event that collection is delayed or cancelled to return the materials to the Condominium Corporation to be collected at a later collection day? An example would be if collections are cancelled by the County due to snow storm.	

Lesley Hutton-Rhora

From: Tricia Givens <Tricia.Givens@norfolkcounty.ca>
Sent: Wednesday, April 26, 2023 9:16 AM
To: Lesley Hutton-Rhora; John Vallee; John Iezzi
Cc: Mohammad Alam
Subject: FW: Proposed Development at 38 New Lakeshore Road, Port Dover

Importance: High

Good morning,

Please see response in red below. I have copied in Mohammad to provide further assistance.

Planning Justification Report Not Required

- The minutes note that a PJR is required, however in this case there are no applications required that require planning justification given that the proposed development aligns with the existing Official Plan & Zoning designations.
- Kindly confirm that a **Planning Justification Report is therefore not required** for a complete SPA submission.

Note however: The County will require the itemization of individual elements in the security such as fencing, pathways, information signs etc. as needed, instead of categorizing them as landscape. For tree plantation the County continues to request for one tree per lot/unit as per the By-law Forestry has. This is still permitted and has been confirmed via legal counsel.

Landscape Drawing : Not Required as per changes to Planning Act through Bill 23
Elevation: Required to identify the proposed building height from the average grade to the pick of the roof as defined in the zoning by-law derived from the elevation
Photometric Plan: Required for staff's review to satisfy the Zoning By-Law requirement that the exterior lighting facilities will deflect glare away from adjacent residential uses, streets and the night sky and to avoid causing nuisance to adjacent property owners, or any confusion with traffic signals.

- In accordance with Bill 23, it is our understanding that the Planning Act now stipulates that exterior design elements are no longer subject to site plan control.
- Appropriate policies and by-laws will certainly be respected as part of the SPA and subsequent building permit submissions.
- Kindly confirm that **Landscaping, Building Elevations, and Photometrics Plans are therefore not required** for a complete SPA submission.

Shadow Analysis Report Not Required

- The proposed development includes low rise bungalow townhomes. We are unclear as to why a shadow analysis report has been requested, and what the intent of this analysis is meant to demonstrate.
- Kindly confirm that a Shadow Analysis Report is therefore not required for a complete SPA submission.

Regards,

Tricia

Tricia Givens, M.Sc.(PI), MCIP, RPP
Director, Planning
Community Development Division
185 Robinson St.
Suite 200, Simcoe, Ontario, N3Y 5L6
519-426-5870 x. 8229



Working together with our community

From: Lesley Hutton-Rhora <lesleyhuttonrhora@gdvallee.ca>
Sent: Tuesday, April 25, 2023 1:38 PM
To: Tricia Givens <Tricia.Givens@norfolkcounty.ca>
Cc: DCS Planning General Email <planning@norfolkcounty.ca>; John Vallee <Johnvallee@gdvallee.ca>; John Iezzi <johniezzi@gdvallee.ca>
Subject: Proposed Development at 38 New Lakeshore Road, Port Dover
Importance: High

CAUTION: This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Hi Tricia,

In an effort to work towards a complete SPA submission, are looking to confirm several items referenced in the pre-consultation minutes dated August 15, 2022 for 38 New Lakeshore Road, Port Dover (as attached).

Assigned Planner

- In Jennifer Catarino's absence, kindly advise who the assigned planner will be for this file

Planning Justification Report

- The minutes note that a PJR is required, however in this case there are no applications required that require planning justification given that the proposed development aligns with the existing Official Plan & Zoning designations.
- Kindly confirm that a **Planning Justification Report is therefore not required** for a complete SPA submission.

Landscaping, Elevation, Photometrics Plans

- In accordance with Bill 23, it is our understanding that the Planning Act now stipulates that exterior design elements are no longer subject to site plan control.
- Appropriate policies and by-laws will certainly be respected as part of the SPA and subsequent building permit submissions.
- Kindly confirm that **Landscaping, Building Elevations, and Photometrics Plans are therefore not required** for a complete SPA submission.

Shadow Analysis Report

- The proposed development includes low rise bungalow townhomes. We are unclear as to why a shadow analysis report has been requested, and what the intent of this analysis is meant to demonstrate.
- Kindly confirm that a Shadow Analysis Report is therefore not required for a complete SPA submission.

Thank you for your help,

Lesley Hutton-Rhora
G. DOUGLAS VALLEE LIMITED
Consulting Engineers, Architects and Planners
2 Talbot Street North Simcoe Ontario N3Y 3W4
Phone: 519.426.6270 Fax: 519.426.6277
www.gdvallee.ca



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Planning Department Development Application Form

Complete Application

A complete development application consists of the following:

1. A completed, signed, and notarized application form
2. Supporting information adequate to illustrate your proposal as indicated in **Section H** of this application form
3. Written authorization from the registered owner of the subject lands where the applicant is not the owner as per Section N
4. Cash, debit, credit or cheque payable to Norfolk County in the amount set out in the user fees By-Law that will be accepted and deposited once the application has been deemed complete.

Pre-Submission Consultation:

Norfolk County requires a Pre-Consultation Meeting for all applications; however, minor applications may be exempted depending on the nature of the proposal. The purpose of a Pre-Consultation Meeting is to provide the applicant with an opportunity to present the proposed application, discuss potential issues, and for the Norfolk County and Agency staff to identify the application requirements. Application requirements, as detailed in the Pre-Consultation Meeting Comments, are valid for one year after the meeting date.

Development Application Process

Once an application has been deemed complete by a Planner, Norfolk County staff will circulate the application to adjacent landowners, public agencies, and internal departments for comment. The time involved in application processing varies depending on its complexity, acceptability to the other agencies, and statutory Planning Act decision time-frames.

Payment is required once your application is deemed complete. Pre-payments will not be accepted.

Norfolk County collects personal information submitted through this form under the Municipal Freedom of Information and Protection Act's authority. Norfolk County will use this information for the purposes indicated or implied by this form. You can direct questions about collecting personal information to Norfolk GIS Services at NorfolkGIS@norfolkcounty.ca.

Additional studies required for the complete application shall be at the applicant's sole expense. Sometimes, peer reviews may be necessary to review particular studies at the applicant's expense. In these caseds, Norfolk County staff will select the company to complete the peer review.

Norfolk County will refund the original fee if applicants withdraw their applications before circulation. If Norfolk County must recirculate your drawings, there will be an additional fee. If Norfolk County must do more than three reviews of engineering drawings due to revisions by the owner or failure to revise engineering drawings as requested, Norfolk County will charge an additional fee. Full refunds are only available before Norfolk County has circulated the application.

Notification Sign Requirements

For public notification, Norfolk County will provide you with a sign to indicate the intent and purpose of your development application. It is your responsibility to:

1. Post one sign per frontage in a conspicuous location on the subject lands.
2. Ensure one sign is posted at the front of the subject lands at least three feet above ground level and not on a tree.
3. Notify the Planner when the sign is in place.
4. Maintain the sign until the development application is finalized and, after that, remove it.

Contact Us

For additional information or assistance completing this application, please contact a Planner at 519-426-5870 or 519-875-4485 extension 1842 or planning@norfolkcounty.ca. Please submit the completed application and fees to the attention of the Planning Department at 185 Robinson Street, Suite 200, Simcoe, ON N3Y 5L6.

For Office Use Only:

File Number		Public Notice Sign	
Related File Number		Application Fee	
Pre-consultation Meeting		Conservation Authority Fee	
Application Submitted		Well & Septic Info Provided	
Complete Application		Planner	

Check the type of planning application(s) you are submitting.

- ☐ Official Plan Amendment
- ☐ Zoning By-Law Amendment
- ☐ Temporary Use By-law
- ☐ Draft Plan of Subdivision/Vacant Land Condominium
- ☐ Condominium Exemption
- ☒ Site Plan Application
- ☐ Extension of a Temporary Use By-law
- ☐ Part Lot Control
- ☐ Cash-in-Lieu of Parking
- ☐ Renewable Energy Project or Radio Communication Tower

Please summarize the desired result of this application (for example, a special zoning provision on the subject lands to include additional use(s), changing the zone or official plan designation of the subject lands, creating a certain number of lots, or similar)

Site plan approval for the proposed development.

Property Assessment Roll Number: 33403078000

A. Applicant Information

Name of Owner Ramhans Investments Inc. c/o Somnath Gosain

Address 9 Hackwood Heights

Town and Postal Code Brampton, ON L6X 5P4

Phone Number 416-509-7373

Cell Number

Email somgosain@hotmail.com

Name of Applicant Same as above

Address

Town and Postal Code

Phone Number

Cell Number

Email

Name of Agent G. Douglas Vallee Limited c/o Lesley Hutton-Rhora

Address 2 Talbot St. North

Town and Postal Code Simcoe, ON N3Y 3W4

Phone Number 519-426-6270

Cell Number

Email lesleyhuttonrhora@gdvallee.ca

Unless otherwise directed, Norfolk County will forward all correspondence and notices regarding this application to both owner and agent noted above.

☐ Owner ■ Agent ☐ Applicant

Names and addresses of any holder of any mortgagees, charges or other encumbrances on the subject lands:

B. Location, Legal Description and Property Information

1. Legal Description (include Geographic Township, Concession Number, Lot Number, Block Number and Urban Area or Hamlet):
   Part of Lot 13 Concession 1 Woodhouse Designated as Parts 1 & 2, 37R-2753

   Municipal Civic Address: 38 New Lakeshore

   Present Official Plan Designation(s): Urban Residential

   Present Zoning: Urban Residential (R4-H)

2. Is there a special provision or site specific zone on the subject lands?

   ■ Yes ☐ No If yes, please specify corresponding number:
   Special Provision 14.581

3. Present use of the subject lands:
   Vacant

4. Please describe **all existing** buildings or structures on the subject lands and whether they will be retained, demolished or removed. If retaining the buildings or structures, please describe the type of buildings or structures, and illustrate the setback, in metric units, from the front, rear and side lot lines, ground floor area, gross floor area, lot coverage, number of storeys, width, length, and height on your attached sketch which must be included with your application:
   Vacant

5. If an addition to an existing building is being proposed, please explain what it will be used for (for example: bedroom, kitchen, or bathroom). If new fixtures are proposed, please describe.
   N/A

6. Please describe **all proposed** buildings or structures/additions on the subject lands. Describe the type of buildings or structures/additions, and illustrate the setback, in metric units, from front, rear and side lot lines, ground floor area, gross floor area, lot coverage, number of storeys, width, length, and height on your attached sketch which must be included with your application:
   28 one-storey group townhouse units

7. Are any existing buildings on the subject lands designated under the *Ontario Heritage Act* as being architecturally and/or historically significant? Yes ☐ No ■

   If yes, identify and provide details of the building:

8. If known, the length of time the existing uses have continued on the subject lands:
   Not known
9. Existing use of abutting properties:
   North - Open Space, East - Residential, South - Residential, West - Residential
10. Are there any easements or restrictive covenants affecting the subject lands?

    ☐ Yes ■ No If yes, describe the easement or restrictive covenant and its effect:

C. Purpose of Development Application

Note: Please complete all that apply.

1. Please explain what you propose to do on the subject lands/premises which makes this development application necessary:
   Property is under site plan control
2. Please explain why it is not possible to comply with the provision(s) of the Zoning By-law/and or Official Plan:
   N/A
3. Does the requested amendment alter all or any part of the boundary of an area of settlement in the municipality or implement a new area of settlement in the municipality? ☐ Yes ■ No If yes, describe its effect:
4. Does the requested amendment remove the subject land from an area of employment? ☐ Yes ■ No If yes, describe its effect:

5. Does the requested amendment alter, replace, or delete a policy of the Official Plan?
☐ Yes ☒ No If yes, identify the policy, and also include a proposed text of the policy amendment (if additional space is required, please attach a separate sheet):

_____

_____

_____

6. Description of land intended to be severed in metric units:
Frontage: _____
Depth: _____
Width: _____
Lot Area: _____
Present Use: _____
Proposed Use: _____
Proposed final lot size (if boundary adjustment): _____
If a boundary adjustment, identify the assessment roll number and property owner of the lands to which the parcel will be added: _____

_____

Description of land intended to be retained in metric units:
Frontage: _____
Depth: _____
Width: _____
Lot Area: _____
Present Use: _____
Proposed Use: _____
Buildings on retained land: _____

7. Description of proposed right-of-way/easement:
Frontage: _____
Depth: _____
Width: _____
Area: _____
Proposed use: _____

8. Name of person(s), if known, to whom lands or interest in lands to be transferred, leased or charged (if known):

_____

9. Site Information	Zoning	Proposed
Please indicate unit of measurement, for example: m, m^2 or %		
Lot frontage	30m	112m
Lot depth		
Lot width		
Lot area	195 sq m	11,508 sq m
Lot coverage		
Front yard	3m	3m (min.)
Rear yard	3m	3m (min.)
Left Interior side yard	3m	6m
Right Interior side yard	3m	18m
Exterior side yard (corner lot)		
Landscaped open space		
Entrance access width		
Exit access width		
Size of fencing or screening		
Type of fencing		
10. Building Size		
Number of storeys	-	1
Building height	11m (max.)	7.6m
Total ground floor area		
Total gross floor area		
Total useable floor area		
11. Off Street Parking and Loading Facilities		
Number of off street parking spaces	56	56
Number of visitor parking spaces	11	11
Number of accessible parking spaces	1	1
Number of off street loading facilities		

12. Residential (if applicable)

Number of buildings existing: 0

Number of buildings proposed: 7 blocks (28 units) plus 4 provisional accessory dwelling units

Is this a conversion or addition to an existing building? ☐ Yes ■ No

If yes, describe: _____

Type	Number of Units	Floor Area per Unit in m2
Single Detached		
Semi-Detached		
Duplex		
Triplex		
Four-plex		
Street Townhouse		
Stacked Townhouse		
Apartment - Bachelor		
Apartment - One bedroom		
Apartment - Two bedroom		
Apartment - Three bedroom		

Other facilities provided (for example: play facilities, underground parking, games room, or swimming pool):

13. Commercial/Industrial Uses (if applicable)

Number of buildings existing: _____

Number of buildings proposed: _____

Is this a conversion or addition to an existing building? ☐ Yes ■ No

If yes, describe:

_____

Indicate the gross floor area by the type of use (for example: office, retail, or storage):

_____

_____

_____

Seating Capacity (for assembly halls or similar): _____

Total number of fixed seats: _____

Describe the type of business(es) proposed: _____

Total number of staff proposed initially: _____

Total number of staff proposed in five years: _____

Maximum number of staff on the largest shift: _____

Is open storage required: ☐ Yes ■ No

Is a residential use proposed as part of, or accessory to commercial/industrial use?

☐ Yes ☐ No If yes please describe:

_____

_____

14. Institutional (if applicable)

Describe the type of use proposed: _____

Seating capacity (if applicable): _____

Number of beds (if applicable): _____

Total number of staff proposed initially: _____

Total number of staff proposed in five years: _____

Maximum number of staff on the largest shift: _____

Indicate the gross floor area by the type of use (for example: office, retail, or storage):

_____

_____

_____

15. Describe Recreational or Other Use(s) (if applicable)

_____

_____

_____

_____

_____

D. Previous Use of the Property

1. Has there been an industrial or commercial use on the subject lands or adjacent lands? ☐ Yes ■ No ☐ Unknown
   If yes, specify the uses (for example: gas station or petroleum storage):

   _____

   _____

2. Is there reason to believe the subject lands may have been contaminated by former uses on the site or adjacent sites? ☐ Yes ■ No ☐ Unknown
3. Provide the information you used to determine the answers to the above questions:

   _____

   _____

   _____

4. If you answered yes to any of the above questions in Section D, a previous use inventory showing all known former uses of the subject lands, or if appropriate, the adjacent lands, is needed. Is the previous use inventory attached? ☐ Yes ■ No

E. Provincial Policy

1. Is the requested amendment consistent with the provincial policy statements issued under subsection 3(1) of the *Planning Act, R.S.O. 1990, c. P. 13*? ■ Yes ☐ No

   If no, please explain:

   _____

   _____

   _____

2. It is owner's responsibility to be aware of and comply with all relevant federal or provincial legislation, municipal by-laws or other agency approvals, including the Endangered Species Act, 2007. Have the subject lands been screened to ensure that development or site alteration will not have any impact on the habitat for endangered or threatened species further to the provincial policy statement subsection 2.1.7? ■ Yes ☐ No

   If no, please explain:

   _____

   _____

   _____

3. Have the subject lands been screened to ensure that development or site alteration will not have any impact on source water protection? ☐ Yes ■ No

If no, please explain:

Not in WHPA

Note: If in an area of source water Wellhead Protection Area (WHPA) A, B or C please attach relevant information and approved mitigation measures from the Risk Manager Official.

4. Are any of the following uses or features on the subject lands or within 500 metres of the subject lands, unless otherwise specified? Please check boxes, if applicable.

Livestock facility or stockyard (submit MDS Calculation with application)

☐ On the subject lands or ☐ within 500 meters – distance _____

Wooded area

☐ On the subject lands or ☐ within 500 meters – distance _____

Municipal Landfill

☐ On the subject lands or ☐ within 500 meters – distance _____

Sewage treatment plant or waste stabilization plant

☐ On the subject lands or ■ within 500 meters – distance see D-series analysis

Provincially significant wetland (class 1, 2 or 3) or other environmental feature

☐ On the subject lands or ☐ within 500 meters – distance _____

Floodplain

☐ On the subject lands or ☐ within 500 meters – distance _____

Rehabilitated mine site

☐ On the subject lands or ☐ within 500 meters – distance _____

Non-operating mine site within one kilometre

☐ On the subject lands or ☐ within 500 meters – distance _____

Active mine site within one kilometre

☐ On the subject lands or ☐ within 500 meters – distance _____

Industrial or commercial use (specify the use(s))

☐ On the subject lands or ■ within 500 meters – distance _____

Active railway line

☐ On the subject lands or ☐ within 500 meters – distance _____

Seasonal wetness of lands

☐ On the subject lands or ☐ within 500 meters – distance _____

Erosion

☐ On the subject lands or ☐ within 500 meters – distance _____

Abandoned gas wells

☐ On the subject lands or ☐ within 500 meters – distance _____

F. Servicing and Access

1. Indicate what services are available or proposed:

Water Supply

- ☒ Municipal piped water
- ☐ Communal wells
- ☐ Individual wells
- ☐ Other (describe below)

_____

Sewage Treatment

- ☒ Municipal sewers
- ☐ Communal system
- ☐ Septic tank and tile bed in good working order
- ☐ Other (describe below)

_____

Storm Drainage

- ☒ Storm sewers
- ☐ Open ditches
- ☐ Other (describe below)

_____

2. Existing or proposed access to subject lands:

- ☒ Municipal road
- ☐ Provincial highway
- ☐ Unopened road
- ☐ Other (describe below)

Name of road/street: _____

G. Other Information

1. Does the application involve a local business? ☐ Yes ☒ No
   If yes, how many people are employed on the subject lands?

   _____

2. Is there any other information that you think may be useful in the review of this application? If so, explain below or attach on a separate page.

   _____

   _____

   _____

   _____

H. Supporting Material to be submitted by Applicant

In order for your application to be considered complete, **folded** hard copies (number of paper copies as directed by the planner) and an **electronic version (PDF) of the properly named site plan drawings, additional plans, studies and reports** will be required, including but not limited to the following details:

1. Concept/Layout Plan
2. All measurements in metric
3. Key map
4. Scale, legend and north arrow
5. Legal description and municipal address
6. Development name
7. Drawing title, number, original date and revision dates
8. Owner's name, address and telephone number
9. Engineer's name, address and telephone number
10. Professional engineer's stamp
11. Existing and proposed easements and right of ways
12. Zoning compliance table – required versus proposed
13. Parking space totals – required and proposed
14. All entrances to parking areas marked with directional arrows
15. Loading spaces, facilities and routes (for commercial developments)
16. All dimensions of the subject lands
17. Dimensions and setbacks of all buildings and structures
18. Location and setbacks of septic system and well from all existing and proposed lot lines, and all existing and proposed structures
19. Gross, ground and useable floor area
20. Lot coverage
21. Floor area ratio
22. Building entrances, building type, height, grades and extent of overhangs
23. Names, dimensions and location of adjacent streets including daylighting triangles
24. Driveways, curbs, drop curbs, pavement markings, widths, radii and traffic directional signs
25. All exterior stairways and ramps with dimensions and setbacks
26. Retaining walls including materials proposed
27. Fire access and routes
28. Location, dimensions and number of parking spaces (including visitor and accessible) and drive aisles
29. Location of mechanical room, and other building services (e.g. A/C, HRV)
30. Refuse disposal and storage areas including any related screening (if indoors, need notation on site plan)
31. Winter snow storage location

32. Landscape areas with dimensions
33. Natural features, watercourses and trees
34. Fire hydrants and utilities location
35. Fencing, screening and buffering – size, type and location
36. All hard surface materials
37. Light standards and wall mounted lights (plus a note on the site plan that all outdoor lighting is to be dark sky compliant)
38. Business signs (make sure they are not in sight lines)
39. Sidewalks and walkways with dimensions
40. Pedestrian access routes into site and around site
41. Bicycle parking
42. Architectural elevations of all building sides
43. All other requirements as per the pre-consultation meeting

In addition, the following additional plans, studies and reports, including but not limited to, **may** also be required as part of the complete application submission:

- ☐ Zoning Deficiency Form
- ☐ On-Site Sewage Disposal System Evaluation Form (to verify location and condition)
- ☐ Architectural Plan
- ☐ Buildings Elevation Plan
- ☐ Cut and Fill Plan
- ☐ Erosion and Sediment Control Plan
- ☐ Grading and Drainage Control Plan (around perimeter and within site) (existing and proposed)
- ☐ Landscape Plan
- ☐ Photometric (Lighting) Plan
- ☐ Plan and Profile Drawings
- ☐ Site Servicing Plan
- ☐ Storm water Management Plan
- ☐ Street Sign and Traffic Plan
- ☐ Street Tree Planting Plan
- ☐ Tree Preservation Plan
- ☐ Archaeological Assessment
- ☐ Environmental Impact Study

- ☐ Functional Servicing Report
- ☐ Geotechnical Study / Hydrogeological Review
- ☐ Minimum Distance Separation Schedule
- ☐ Noise or Vibration Study
- ☐ Record of Site Condition
- ☐ Storm water Management Report
- ☐ Traffic Impact Study – please contact the Planner to verify the scope required

Site Plan applications will require the following supporting materials:

1. Two (2) complete sets of the site plan drawings folded to 8½ x 11 and an electronic version in PDF format
2. Letter requesting that the Holding be removed (if applicable)
3. A cost estimate prepared by the applicant's engineer
4. An estimate for Parkland dedication by a certified land appraiser
5. Property Identification Number (PIN) printout

Standard condominium exemptions will require the following supporting materials:

- ☐ Plan of standard condominium (2 paper copies and 1 electronic copy)
- ☐ Draft condominium declaration
- ☐ Property Identification Number (PIN) printout

Your development approval might also be dependent on other relevant federal or provincial legislation, municipal by-laws or other agency approvals.

All final plans must include the owner's signature as well as the engineer's signature and seal.

I. Development Agreements

A development agreement may be required prior to site plan approval, subdivision and condominium applications. Should this be necessary for your development, you will be contacted by the agreement administrator with further details of the requirements including but not limited to insurance coverage, professional liability for your engineer, additional fees and securities.

J. Transfers, Easements and Postponement of Interest

The owner acknowledges and agrees that if required, it is their solicitor's responsibility on behalf of the owner, to disclose the registration of all transfer(s) of land and/or easement in favour of the County and/or utilities. Also, the owner further acknowledges and agrees that it is their solicitor's responsibility on behalf of the owner for the registration of postponements of any charges in favour of the County.

K. Permission to Enter Subject Lands

Permission is hereby granted to Norfolk County officers, employees or agents, to enter the premises subject to this application for the purposes of making inspections associated with this application, during normal and reasonable working hours.

L. Freedom of Information

For the purposes of the *Municipal Freedom of Information and Protection of Privacy Act*, I authorize and consent to the use by or the disclosure to any person or public body any information that is collected under the authority of the *Planning Act, R.S.O. 1990, c. P. 13* for the purposes of processing this application.

Owner/Applicant Signature — Date: 3rd Jan/2024

M. Owner's Authorization

If the applicant/agent is not the registered owner of the lands that is the subject of this application, the owner(s) must complete the authorization set out below.

I/We Somnath Gosain am/are the registered owner(s) of the lands that is the subject of this application.

I/We authorize G. Douglas Vallee Limited to make this application on my/our behalf and to provide any of my/our personal information necessary for the processing of this application. Moreover, this shall be your good and sufficient authorization for so doing.

Owner — Date: 3rd Jan/2024

Owner — Date

N. Declaration

I, Somnath Gosain of Brampton, Ontario

solemnly declare that:

all of the above statements and the statements contained in all of the exhibits transmitted herewith are true and I make this solemn declaration conscientiously believing it to be true and knowing that it is of the same force and effect as if made under oath and by virtue of *The Canada Evidence Act.*

Declared before me at:
Town of Simcoe

In County of Norfolk

This 3 day of January

A.D., 2024

A Commissioner, etc.

Owner/Applicant Signature

SCOTT CONNELL PUILLANDRE,
a Commissioner, etc., Province of Ontario,
for G. Douglas Vallee Limited.
Expires August 19, 2025.

CONSULTANT LIST

ARCHITECTURAL / STRUCTURAL / CIVIL

vallee
Consulting Engineers, Architects & Planners

CONTACTS:

ARCHITECTURE:
LESLEY HUTTON RHORA
BRODI MARTIN, B.ARCH.SC.

STRUCTURAL:
BEN BUCHWALD, M. ENG., P. ENG.,
ANDREA VALLEE, B.E.SC.

CIVIL ENGINEERING:
JOHN IEZZI, P.ENG.

ELECTRICAL

SEL
Electrical Engineering
12 ARGYLE ST. N.,
CALEDONIA, ON N3W 1B6
TEL. (289)284-0454

CONTACTS:

KEITH SEGUIN, P. ENG., LEED® AP
JAKUB RUDY, B.A

GROSS SITE
11508.15 m²

1 / A100 GROSS SITE
SCALE 1 : 1000



2 / A100 SITE ISOMETRIC
SCALE

SITE STATISTIC & ZONING REQ.'S

PROPERTY LEGAL DESCRIPTION:
WDH CON 1 PT LOT 13 RP 37R2753, ROLL 33403078000
IN THE TOWN OF PORT DOVER, IN THE DISTRICT OF NORFOLK COUNTY

ZONING:
IN ACCORDANCE W/ ZONING BY-LAW 1-Z-2014 NORFOLK COUNTY, CONSOLIDATED JANUARY 1, 2021

PROVISION	LAND USE: EXISTING
5.0 5.4 5.4.1	RESIDENTIAL ZONES URBAN RESIDENTIAL TYPE 4 ZONE (R4) PERMITTED USES In an R4 Zone, no land, building or structure shall be used except in accordance with the following uses: a) group townhouse b) stacked townhouse c) street townhouse d) semi-detached, duplex, tri-plex and four-plex dwellings provided they are located on the same lot with, and in accordance with the Zone provisions of, group townhouse e) home occupation f) accessory residential dwelling unit, subject to Subsection 3.2.3.[1-Z-2020]

PROVISION	SETBACKS (m - METERS):	REQ'D in Street Townhouse (per unit)	REQ'D in Group Townhouse Stacked Townhouse	PROVIDED (m)
5.4.2a)	MIN. LOT AREA: i) ATTACHED GARAGE ii) CORNER LOT iii) DETACHED GARAGE	156m² 264m² 162m²	195m² 195m² 215m²	11,508m²
5.4.2b)	MIN. LOT FRONTAGE i) INTERIOR LOT ii) CORNER LOT iii) CORNER LOT ACCESSED BY A REAR LANE	6.5 11 6.5	30 30	111
14.5b1	MIN. FRONT YARD :	3	3	MIN. 3
5.4.2d)	MIN. EXTERIOR SIDE YARD: i) W/ A 6m FRONT YARD ii) W/ A 1.5m FRONT YARD	6 1.5	6 1.5	N/A N/A
5.4.2e)	MIN. INTERIOR SIDE YARD	1.2	3	MIN. 6
14.5b1	MIN. REAR YARD :	3	3	MIN. 3
5.4.2g)	MIN. SEPARATION BETWEEN TOWNHOUSE DWELLINGS	2	2	MIN. 3
5.4.2h)	MAX. BLDG. HEIGHT	11 [6-Z-2017]	11 [6-Z-2017]	7.6
5.4.3	Setback from Mutual Side Lot Line Notwithstanding the required side yard, on a mutual side lot line separating two (2) attached townhouse units, no interior side yard is required where the walls are joined, where the walls are not joined, a 1.2 metre side yard shall be required.	1.2	1.2	MIN. 1.2
5.4.4	Maximum Units in a Townhouse Dwelling No more than eight (8) dwelling units shall be located in a townhouse dwelling.	8 UNITS	8 UNITS	MAX. 6

GRAY HIGH-LIGHTED APPLICABLE

COORD. W/ ZONING BY-LAW FOR ALL OTHER ZONING REQ.'S

3.0 GENERAL PROVISIONS

3.6.	**Decks and Porches** No deck or unenclosed porch shall: a) be nearer than 1.2 metres from an interior side lot line; b) have a floor higher than the height, above finished grade, of the floor of the first storey of the main dwelling on the lot, if so, it is referred to as a balcony [21-Z-2020]; c) be closer than 3 metres from the rear lot line; [6-Z-2020] d) project more than 1.5 metres into the required front yard or required exterior side yard; e) on a sloping rear yard, be closer than 3 metres from an interior lot line and 6 metres from the rear lot line, at the point where the deck floor reaches a height of 2 metres above the finished surface of the ground.
3.10.	**Exemptions from Yard Provisions** Except as otherwise provided herein, every part of any required yard shall be open and unobstructed by any building, structure, fuel-storage tanks, heating or air conditioner units, and generators except: a) sills, belt courses, cornices, chimneys, bay windows, pilasters, hydro meters or gas meters may project into any required yard or setback area a distance of not more than 0.65 metres; b) eaves or gutters may project into any required yard or setback area a distance of not more than 0.65 metres; c) canopies or awnings may project into any required rear yard, required front yard or required exterior side yard area a distance of not more than 1.5 metres; d) balconies may project into any required rear yard, required front yard or required exterior side yard area a distance of not more than 1.5 metres provided they are no closer than 3 metres from an interior lot line and 6 metres from a rear lot line; e) barrier-free access ramps may project into any required rear yard, required front yard or required exterior side yard area a distance of 3 metres; f) steps may project into any required rear yard, required front yard or required exterior side yard area a distance of not more than 1.5 metres; and steps may project into any required interior side yard area a distance of 1 metre. g) Public utilities may project into any required rear yard, required front yard, required interior side yard area or required exterior side yard area. [66-Z-2018] h) Air conditioner units, provided the encroachment is no closer than 0.6 metres to the side lot line. [21-Z-2020]
3.11.	**Frontage on a Street** 3.11.1 No building or structure shall be erected, altered or enlarged on any land which does not have the minimum required lot frontage on an open, constructed and year-round, improved street. 3.11.2 For the purposes of this Subsection, a private condominium road servicing a condominium development shall be deemed to be an open, constructed and year-round improved street.

PARKING REQ.'D: RESIDENTIAL

PROVISION	NUMBER OF PARKING SPACES	REQUIRED	PROVIDED
4.9a)	SINGLE DETACHED, SEMI-DETACHED, DUPLEX, TRI-PLEX, FOUR-PLEX, TOWNHOUSE DWELLINGS & VACATION HOME [6-Z-2017]: 2 SPACES / DWELLING UNIT 2 SPACES x 28 DWELLING UNITS = 56	56 SPACE(S)	56 SPACE(S)
4.9e)	ACCESSORY RESIDENTIAL DWELLING UNIT: 1 SPACES IN ADDITION TO THOSE REQ'D FOR THE PRIMARY RESIDENTIAL DWELLING UNIT USE	4 SPACE(S)	4 SPACE(S)
PARKING REQ.'D RESIDENTIAL - VISITOR:			
4.9f)	VISITOR PARKING: 1 SPACE / 3 DWELLING UNITS 1 SPACE x (32** / 3) = 11	11 SPACE(S)	11 SPACE(S)

** INCLUDING PROVISIONAL ADU's

PARKING REQ.'D TOTAL:

	TOTAL	71 SPACE(S)	71 SPACE(S)

PARKING REQ.'D - BARRIER FREE: (PART OF REQ.'D VISITOR PARKING)

4.3.3	BARRIER FREE PARKING REQ.'D: 1-25 (VISITOR) PARKING SPACES =		
	TYPE 'A' (3.4m WIDE) PLUS 1.5m AISLE	1 SPACE(S)	1 SPACE(S)
	TYPE 'B' (2.4m WIDE) PLUS 1.5m AISLE	0 SPACE(S)	0 SPACE(S)

4.0 OFF STREET PARKING

PARKING SPACE DIMENSIONS

4.1 4.1.3a)	PARKING SPACE DIMENSIONS WIDTH OF PARKING SPACE: FOR VEHICLES PARKED SIDE BY SIDE FOR VEHICLES PARKED WITH WALL OR FENCE ADJ.	3 MIN. 3.3 MIN.	3 3.3
4.1.3b)	DEPTH OF PARKING SPACE: FOR 90 DEGREE PARKING FOR PARALLEL PARKING	5.9 MIN. 7 MIN.	5.9 7
4.1.4 4.1.4b)	PARKING AISLE REQ.'S TWO-WAY TRAFFIC	7.3 MIN.	7.5

4.2 LOCATION OF PARKING ON A LOT

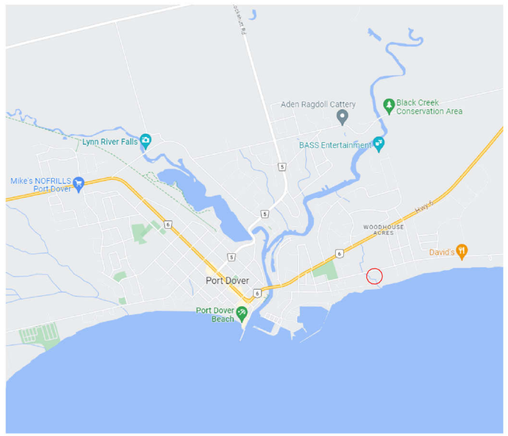
4.2.3	**4.2.3 Residential Parking Area** For Urban Residential Type 1 to 4 Zones (R1 to R4), the following shall apply: a) within a front yard or exterior side yard, motor vehicles shall only be parked on a driveway, in a parking space or private garage [1-Z-2018]; b) not more than one (1) required parking space may be located within the required front yard or required exterior side yard [1-Z-2015]; c) vehicles shall not be parked within any landscape area [1-Z-2018];

LANDSCAPED AREA

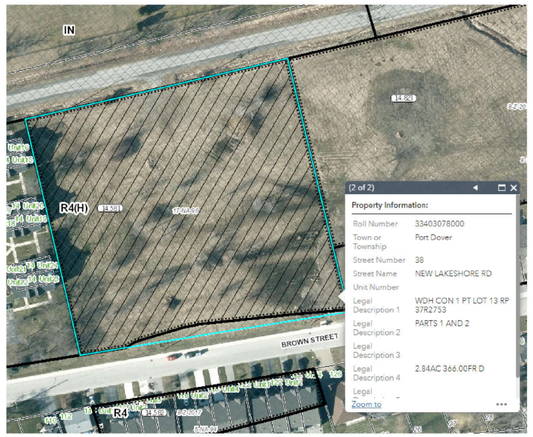
2.81	**"LANDSCAPE AREA"** shall mean an area of land comprised of trees, shrubs, flowers, grass or other horticultural elements. Landscaping may include pervious paths, patios, walkways, or elements designed to enhance the visual amenity of a property but does not include open storage display areas, parking or loading areas, or areas covered by driveways. [8-Z-2018]
4.25	**4.25 Parking and *Landscape Area* [1-Z-2018]** Within Urban Residential Type 1 to 4 Zones (R1 to R4), the following shall apply: a) A minimum of 50 percent of the front yard shall be maintained as landscape area. b) In the case of a corner lot, a minimum of 50 percent of each of the front yard and exterior side yard shall be maintained as landscape area.

BLDG. HEIGHT - NORFOLK COUNTY:
shall mean the vertical distance between the average finished grade of the ground at the front wall of a building and:
a) in the case of a flat roof or a mansard roof, the highest point of the roof surface;
b) in the case of any other roof, the highest point of the ridge. [6-Z-2017]

LIGHTING NOTE:
LIGHTING MUST BE DIRECTED ON SITE AND MUST NOT SPILL OVER TO / ONTO ADJACENT PROPERTIES OR STREETS. PROVIDE "HOUSE SHIELDS" WHERE NEEDED, TO COMPLETELY ELIMINATE SPILL / GLARE TO ADJACENT PROPERTIES. DARK SKY COMPLIANT
(COORD. W/ ELEC. PHOTOMETRIC SITE PLAN)



KEY MAP
SCALE 1 : 100



SITE MAP
SCALE 1 : 100

NO.	DATE	ISSUANCE

NO.	DATE	ISSUANCE

PROPERTY LEGAL DESCRIPTION:
38 NEW LAKESHORE ROAD, PORT DOVER

APPLICANT:
RAMHANS INVESTMENTS INC.
SOMNATH GOSAIN
9 HACKWOOD HEIGHTS,
BRAMPTON, ONTARIO
L6X 5P4
416-509-7373

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SIMCOE ONTARIO N3Y 3W4
(519) 426-6270

STAMP
LICENSED PROFESSIONAL ENGINEER
2023.12.22
J. T. IEZZI
100189485
PROVINCE OF ONTARIO

PROJECT TITLE:
RAMHANS CONDOS
38 NEW LAKESHORE ROAD,
PORT DOVER, ON
N0A 1N3

DRAWING TITLE:
COVER SHEET SPA

CHECKED BY:	DRAWN BY:
LHR / JI	BM
DRAWING SCALE: As indicated	DRAWING NO.: A100
PROJECT NO.: 22-032	

DATE PLOTTED: 12/22/2023 9:28:01 AM PROJECT NUMBER & NAME: 22-032 RAMHANS CONDOS FILE PATH: H:\Projects\2022\22-032 Ramhans Condos 38 New Lakeshore Road\Drawings\2023 Drawings\Architectural\22-032 Ramhans Condos.rvt

GENERAL NOTES:

- FIRE ACCESS ROUTE TO BE POSTED & DESIGNATED UNDER MUNICIPAL BY-LAW (FIRE ACCESS ROUTE TO BE MIN. 6 m WIDE W/ A MIN. 12 m CENTER LINE TURNING RADIUS & MAX. 6% SLOPE)
- COORD. W/ MECH. & ELEC. SITE PLANS FOR ALL EX. & NEW LOCATIONS OF SERVICES & ENTRY OF SERVICES INTO THE BLDG. ENVELOPE. (ALL MECH. & ELEC. INFORMATION INDICATED ON ARCH. SITE DWG. A101 IS FOR GENERAL REFERENCE & COORD. ONLY)
- COORD. W/ SITE GRADING PLAN FOR PROPOSED FINAL FINISH GRADE ELEV.'S & DRAINAGE SLOPES

BEFORE STARTING WORK

- THE ***AUTHORITY HAVING JURISDICTION*** IS NORFOLK COUNTY
- THE CONTRACTOR SHALL NOTIFY THE ***AUTHORITY HAVING JURISDICTION***, ARCHITECT & CONSULTANTS AT LEAST 48 HOURS PRIOR TO COMMENCING ANY CONST. OR DEMOLITION.
- THE POSITION OF THE POLE LINES, CONDUITS, WATER MAINS, SEWERS, & OTHER UTILITIES & STRUCTURES ARE NOT NECESSARILY SHOWN ON THE CONTRACT DWG.'S. WHERE SHOWN, THE ACCURACY OF THE POSITION OF SUCH UTILITIES & STRUCTURES IS NOT GUARANTEED & ARE TO BE VERIFIED ON SITE.
- ALL POSITIONS OF THE EX. UNDERGROUND UTILITIES WITHIN THE LIMITS OF CONST. SHALL BE LOCATED, MARKED & PROTECTED BY THE CONTRACTOR. ANY UTILITIES DAMAGED OR DISTURBED DURING CONST. SHALL BE REPAIRED OR REPLACED TO THE SATISFACTION OF THE ENGINEER, AT THE CONTRACTOR'S EXPENSE.
- PRIOR TO THE COMMENCEMENT OF CONST., ALL BENCHMARKS, ELEVATIONS, DIMENSIONS, & GRADES MUST BE CHECKED BY THE CONTRACTOR & ANY DISCREPANCIES REPORTED TO THE ENGINEER / ARCHITECT

SITE PLAN NOTES

- ALL WORK INVOLVED IN THE CONST., RELOCATION, REPAIR OF MUNICIPAL SERVICES FOR THE PROJECT SHALL BE TO THE SATISFACTION OF THE ***AUTHORITY HAVING JURISDICTION***
- FIRE ROUTE SIGNS SHALL BE ESTABLISHED TO THE SATISFACTION OF THE LOCAL FIRE DEPARTMENT & AT THE EXPENSE OF THE OWNER.
- THE APPROVAL OF THIS PLAN DOES NOT EXEMPT THE CONTRACTOR FROM THE REQ.'S TO OBTAIN THE VARIOUS PERMITS/APPROVALS AS MAY BE REQUIRED, SUCH AS, BUT NOT LIMITED TO:

- BUILDING PERMIT
- SANITARY / STORM & WATER PERMITS
- ROAD CUT PERMITS
- RELOCATION OF SERVICES
- APPROACH APPROVAL PERMITS
- ENCROACHMENT AGREEMENTS (IF REQ.'D)
- COMMITTEE OF ADJUSTMENT
- ROAD OCCUPANCY PERMIT
- SITE ALTERATION

- ABANDONED ACCESSES MUST BE REMOVED & THE CURB & BOULEVARD RESTORED W/ SOD AT THE OWNER'S EXPENSE TO THE SATISFACTION OF THE TRAFFIC ENGINEERING SECTION & PUBLIC WORKS DEPARTMENT.

GENERAL NOTES:

(A) GENERAL CONTRACTOR TO COORDINATE ALL WORK WITHIN THE BOULEVARD W/ THE ***AUTHORITY HAVING JURISDICTION*** & OBTAIN ALL NECESSARY PERMITS & APPROVALS FROM LOCAL AUTHORITIES. EXECUTE ALL WORK AS PER THE MUNICIPAL REQUIREMENTS.

(B) GENERAL CONTRACTOR TO EXECUTE WORK TO DRIVEWAY ENTRANCE UNDER SUPERVISION OF THE ***AUTHORITY HAVING JURISDICTION*** REFER TO ENTRANCE PERMIT REQUIREMENTS WHERE EXIST. DRIVEWAY ENTRANCE TO BE MODIFIED OR INSTALLATION OF NEW ENTRANCE AS PER MUNICIPAL REQUIREMENTS. PROVIDE NEW CONC. ENTRANCE CURBS TO MATCH EXISTING WHERE INDICATED.

(L) PLANTING BEDS, TREE PLANTINGS, LANDSCAPE FEATURES & SODDED AREAS

(CP) CANADA POST
(COORD. W/ ***A103***)

SIGN LEGEND

(F) NO PARKING - FIRE ROUTE

(L) NO PARKING, BY PERMIT ONLY, BARRIER-FREE PARKING, VAN ACCESSIBLE - TYPE 'A'

(V) VISITOR PARKING ONLY

NOTE:
CONFIRM LOCATIONS & CONTENT OF ALL SIGNAGE W/ THE OWNER & ***AUTHORITY HAVING JURISDICTION*** PRIOR TO FABRICATION & ERECTION. PROPOSED SITE SIGNAGE TO COMPLY W/ SIGNAGE BY-LAWS

NOTE:
ALL SIGNS TO BE CENTERED ON POSTS TYP.



1 / A101 SITE PLAN
SCALE 1 : 250

SITE PLAN LEGEND

- ENT. — MAIN / PRINCIPAL ENTRANCE / EXIT DOOR
- ENTRANCE / EXIT DOOR
- OH -50 — ENTRANCE / EXIT DOOR (OVERHEAD DOOR)
- DATUM / GRADE (RELATIVE TO A/T/F NEW BLDG.)
- PROPERTY BOUNDARY LINE(S)
- SETBACKS
- SNOW STORAGE
- FIRE ROUTE (6m WIDE / 12m CENTER RADIUS)
- CE — COVERED ENTRANCE
- P — PATIO (ON GRADE)
- PAINTED GRAPHICS ON ASPHALT / CONC. (COORD. W/ ***THE CITY / TOWN HAVING JURISDICTION*** GUIDELINES)
- • ACCESSIBLE SIGN ON ASPHALT / CONC. (WHITE & BLUE COLOUR)
- • VEHICULAR STALL MARKINGS (YELLOW COLOUR)
  VBF - BARRIER FREE / ACCESSIBLE
  V - VISITOR
  1 - ONE REQ.'D DWELLING PARKING
  2 - TWO REQ.'D DWELLING PARKING
- • DIAGONAL MARKINGS (WHITE / YELLOW COLOUR)
- SIGN (COORD. W/ SIGN LEGEND)
- PERENNIAL DROUGHT RESISTANT GRASSES
- NEW CONIFEROUS TREE
- NEW DECIDUOUS TREE
- VISIBILITY TRIANGLES / SIGHT / DAYLIGHT TO BE MAINTAINED (REMAIN CLEAR) @ BOTH SIDES OF ALL LANEWAY / DRIVEWAYS & INTERSECTIONS. THE MAX. HEIGHT OF ANY OBJECT OR MATURE VEGETATION WITHIN THE VISIBILITY TRIANGLE IS NOT TO EXCEED REQ.'D HEIGHT ABOVE THE CENTRELINE OF THE CORRESPONDING ADJACENT STREET
  NORFOLK COUNTY
  5m X 5m LANEWAY
  9m X 9m INTERSECTION / STREET LINES
  1m HEIGHT
  N/A CBD ZONE
  NO PARKING ALLOWED
- EX. FH — EX. FIRE HYDRANT
- LF — LIGHT STD. (SUBMIT SHOP DWG. FROM APPROVED SUPPLIER - TROWEL FINISH, 20MPA, REBAR, REIN. CONC., 25mm CHAMFERED CORNERS, RECESS JUNCTION BOX FOR FLUSH COVER FIT, STAMPED & SIGNED FROM LICENSED ENG.)(OPSD 2200.011)(COORD. W/ SITE LIGHTING DWG.'S
- WM — WALL MTD. LIGHT FIXTURE
- SM — RECESSED SOFFIT MTD. LIGHT FIXTURE

NOTE:
LANDSCAPING SHOWN FOR DEMONSTRATIVE PURPOSES ONLY. LANDSCAPING PLANS TO BE PROVIDED IN TENDER DOCUMENTS.

COMMUNITY TREES TO BE PROVIDED IN ACCORDANCE WITH NORFOLK COUNTY'S URBAN FORESTRY POLICIES OR AS OTHERWISE DETAILED IN THE DEVELOPMENT AGREEMENT (TREE QUANTITY, SPECIES, LOCATION & PLANTING DETAILS TO BE PROVIDED IN TENDER DOCUMENTS WHERE APPLICABLE).

HATCH IDENTIFICATION LEGEND

- ASPHALT
- CONC. SIDEWALK / PAD / CROSSWALK / SIDEWALK / LANEWAY / STAIRS / ETC.
- EX. CONC. SIDEWALK / PAD / CROSSWALK / SIDEWALK / LANEWAY / STAIRS / ETC.
- AREA OF NEW SOD (COORD. W/ CONST. FOR EXTENTS)
- EX. GRASS
- NEW BLDG. / ADDITION

NO.	DATE	ISSUANCE

NO.	DATE	ISSUANCE

PROPERTY LEGAL DESCRIPTION:
38 NEW LAKESHORE ROAD, PORT DOVER

APPLICANT:
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SOMNATH GOSAIN
9 HACKWOOD HEIGHTS,
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416-509-7373

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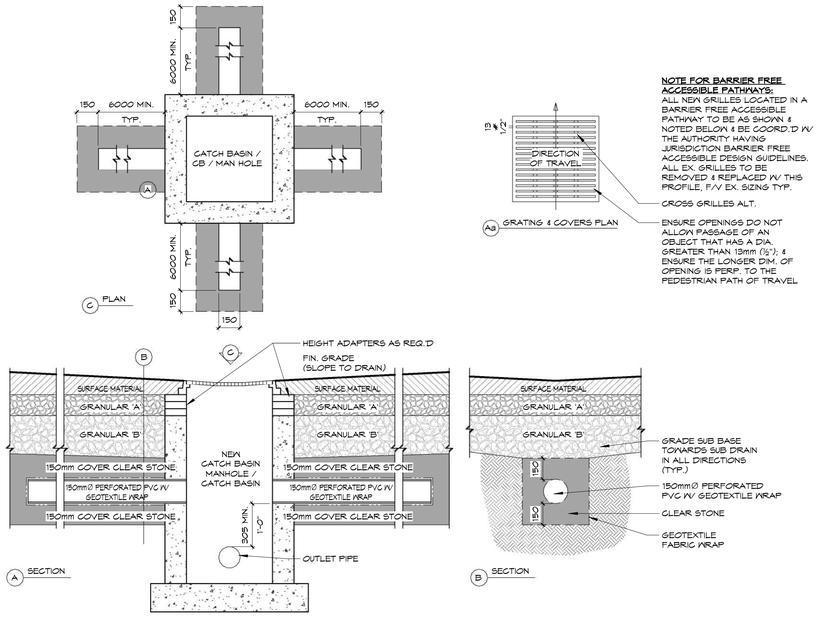
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38 NEW LAKESHORE ROAD,
PORT DOVER, ON
N0A 1N3

DRAWING TITLE:
SITE PLAN

CHECKED BY:	DRAWN BY:
LHR / JI	BM
DRAWING SCALE: As indicated	DRAWING NO.: A101
PROJECT NO.: 22-032	

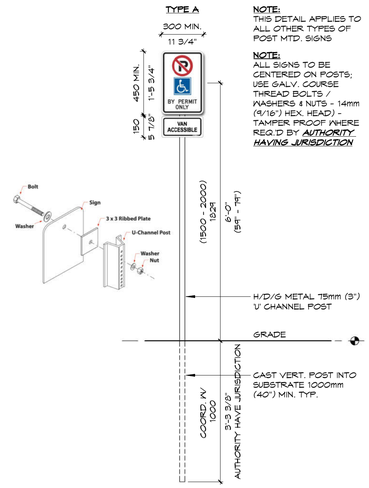
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1 / A102 CATCH BASIN
SCALE 1 : 20

NOTE FOR BARRIER FREE ACCESSIBLE PATHWAYS:
ALL NEW GRILLES LOCATED IN A BARRIER FREE ACCESSIBLE PATHWAY TO BE AS SHOWN & NOTED BELOW & BE COORD'D W/ THE AUTHORITY HAVING JURISDICTION BARRIER FREE ACCESSIBLE DESIGN GUIDELINES. ALL EX. GRILLES TO BE REMOVED & REPLACED W/ THIS PROFILE, F/V EX. SIZING TYP.

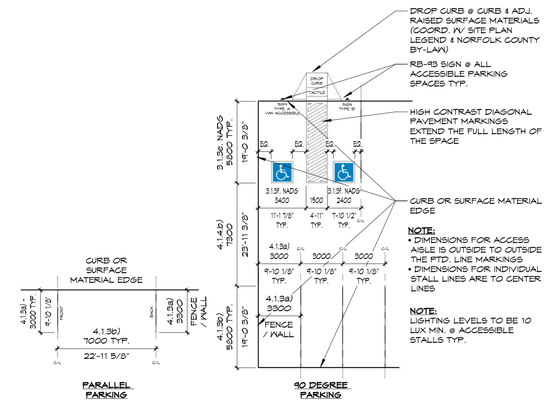
- CROSS GRILLES ALT.
- ENSURE OPENINGS DO NOT ALLOW PASSAGE OF AN OBJECT THAT HAS A DIA. GREATER THAN 13mm (½"); & ENSURE THE LONGER DIM. OF OPENING IS PERP. TO THE PEDESTRIAN PATH OF TRAVEL



NOTE:
THIS DETAIL APPLIES TO ALL OTHER TYPES OF POST MTD. SIGNS.

NOTE:
ALL SIGNS TO BE CENTERED ON POSTS; USE GALV. COURSE THREAD BOLTS / WASHERS & NUTS - 14mm (9/16") HEX. HEAD) - TAMPER PROOF WHERE REQ'D BY ***AUTHORITY HAVING JURISDICTION***

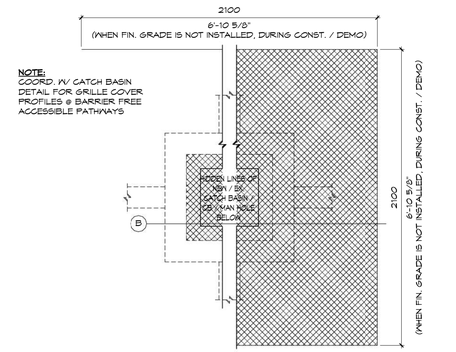
5 / A102 ACCESSIBLE PARKING VERT. SIGNAGE - NORFOLK
SCALE 1 : 20



NOTE:
- DIMENSIONS FOR ACCESS AISLE IS OUTSIDE TO OUTSIDE OF THE PTD. LINE MARKINGS
- DIMENSIONS FOR INDIVIDUAL STALL LINES ARE TO CENTER LINES

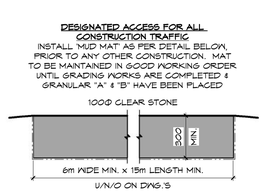
NOTE:
LIGHTING LEVELS TO BE 10 LUX MIN. @ ACCESSIBLE STALLS TYP.

6 / A102 PARKING STALL GUIDELINES - NORFOLK COUNTY
SCALE 1 : 200

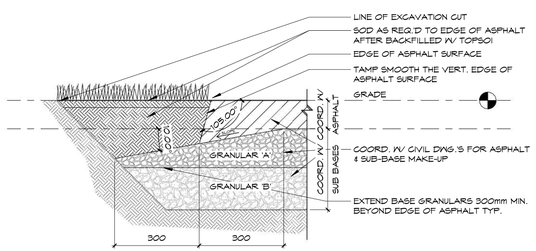


2 / A102 CB COVER DURING CONST.
SCALE 1 : 20

DESIGNATED ACCESS FOR ALL CONSTRUCTION TRAFFIC
INSTALL 'MUD MAT' AS PER DETAL BELOW, PRIOR TO ANY OTHER CONSTRUCTION. MAT TO BE MAINTAINED IN GOOD WORKING ORDER UNTIL GRADING WORKS ARE COMPLETED & GRANULAR "A" & "B" HAVE BEEN PLACED



3 / A102 MUD MAT
SCALE 1 : 20



4 / A102 ASPHALT TO GRASS
SCALE 1 : 10



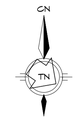
7 / A102 SIGNS
SCALE 1 : 50

NO.	DATE	ISSUANCE

NO.	DATE	ISSUANCE

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APPLICANT:
RAMHANS INVESTMENTS INC.
SOMNATH GOSAIN
9 HACKWOOD HEIGHTS,
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L6X 5P4
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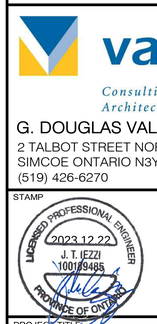
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PROJECT TITLE:
RAMHANS CONDOS
38 NEW LAKESHORE ROAD,
PORT DOVER, ON
N0A 1N3

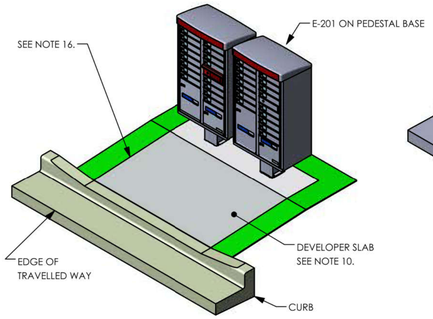
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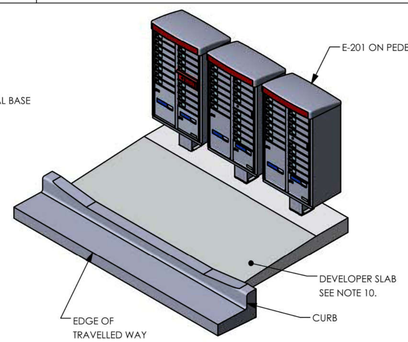
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PROJECT NO.: 22-032	

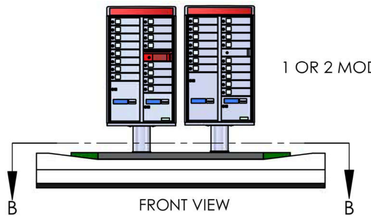
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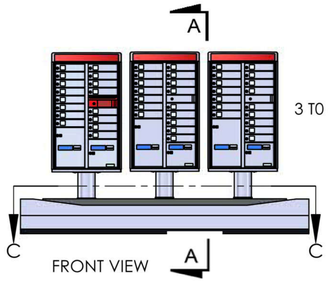






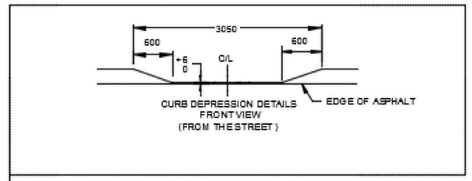
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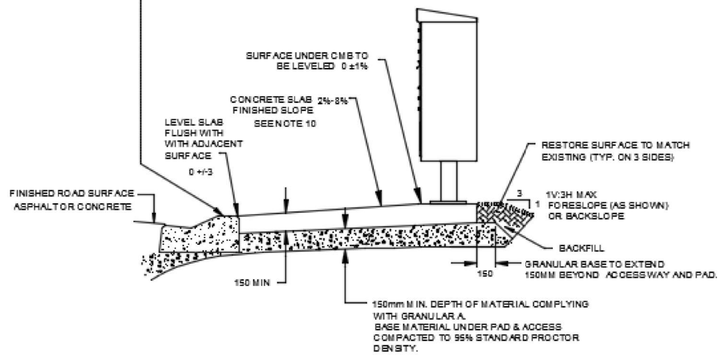
FRONT VIEW



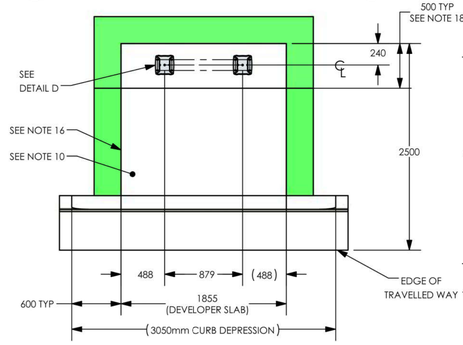
3 TO 6 MODULES

FRONT VIEW

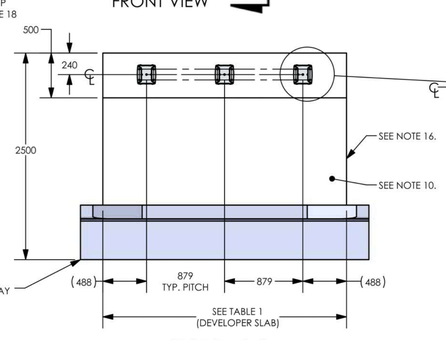




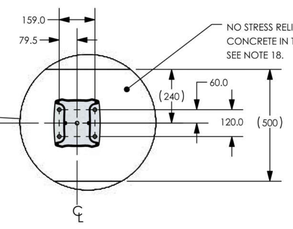
SECTION A-A



SECTION B-B



SECTION C-C



DETAIL D
5 HOLE BOLT PATTERN
TYPICAL

TABLE 1	
NUMBER OF MODULES	WIDTH OF SLAB
3	2734 MM
4	3613 MM
5	4492 MM
6	5371 MM

NOTES:

1. ALL MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE NATIONAL BUILDING CODE. ABIDE BY LOCAL MUNICIPAL BY-LAWS AND REGULATORY AGENCIES THAT MAY AFFECT THE WORK.
2. THE CONTRACTOR SHALL REVIEW THE SITE CONDITIONS AND ASSUME RESPONSIBILITY FOR EXISTING SERVICES (WATER; POWER; SEWAGE; GAS ETC.) THAT EXIST AT THE SITE.
3. CONCRETE SLAB TO HAVE A MINIMUM THICKNESS OF 150 mm.
4. CONCRETE SLAB SHALL BE PLACED ON 150 mm MINIMUM THICK BASE OF GRANULAR MATERIAL (OPSS GRANULAR 'A' OR EQUIVALENT) COMPACTED TO 95% STANDARD PROCTOR MAXIMUM DRY DENSITY.
5. GRANULAR BASE SHALL BE PLACED ON SOIL CAPABLE OF SAFELY SUSTAINING A BEARING PRESSURE OF NOT LESS THAN 30 kPa.
6. CONCRETE CONSTRUCTION SHALL CONFORM TO CSA A23.1.
7. CONCRETE TESTING SHALL BE CARRIED OUT IN ACCORDANCE WITH CSA A23.1 AND CSA A23.2.
8. CSA A23.1 CONCRETE EXPOSURE CLASSIFICATION TO BE C-1 WITH THE FOLLOWING PROPERTIES:
   - MINIMUM COMPRESSIVE STRENGTH AT 28 DAYS: 35 MPA
   - MINIMUM WATER TO CEMENTING MATERIALS RATIO: 0.40
   - MAXIMUM COARSE AGGREGATE SIZE: 20 mm
   - MAXIMUM SLUMP: 90 mm
   - AIR CONTENT: 5% TO 8%
9. SURFACE OF SLAB TO BE SLOPED 2% to 8% MAX TO THE NEAREST PLUVIAL DRAIN.
10. TOP OF SLAB TO HAVE A TEXTURED BROOM FINISH TO CSA A23.1. EDGES OF SLAB TO HAVE A SMOOTH TOOLED FINISH.
11. SLAB REINFORCEMENT TO BE 152mm X 152mm, MW 25.8 X MW 25.8 WELDED WIRE FABRIC CONFORMING TO ASTM 1064M. REINFORCEMENT TO BE PLACED AT MID-DEPTH OF SLAB OR APPROVED EQUIVALENT.
12. APPLY PIGMENTED CURING COMPOUND TO SURFACE OR REBAR OF SLAB IN ACCORDANCE WITH ASTM C309 TYPE 2 (WHITE COLOUR), CLASS B (RESIN).
13. ALL SITE LOCATIONS REQUIRE CPC AND MUNICIPAL APPROVAL.
14. IF SITE CONDITIONS LIMIT PLACEMENT, CONTACT CPC FOR ASSISTANCE.
15. DIFFERENT LAYOUT, CONFIGURATIONS, AND QUANTITY OF BOXES PERMITTED WITH CPC ENGINEERING INPUT TO ENSURE ACCESSIBILITY AND EASE OF USE REQUIREMENTS HAVE BEEN CONSIDERED.
16. RESTORE SURFACES ADJACENT TO ALL 3 SIDES OF SLAB PERIMETER WITHIN 6mm AS TO AVOID TRIPPING HAZARDS.
17. PROVIDE A MINIMUM SETBACK DISTANCE OF 3000mm FROM ANY EDGE OF MAILBOX TO NEAREST EDGE OF TRAVELLED ROADWAY. THIS DISTANCE MAY NEED TO BE INCREASED IN THE EVENT OF HIGH VOLUME OR ARTERIAL ROADS TO ENSURE THE BOXES ARE OUTIDE OF THE CLEAR ZONE.
18. THERE ARE TO BE NO STRESS RELIEF CUTS IN CONCRETE IN AREA WHERE BOXES ARE TO BE BOLTED DOWN.

TOLERANCES

UNLESS OTHERWISE SPECIFIED ALL DIMENSIONS ARE IN MILLIMITERS.
SAUF SI SPÉCIFICATIONS CONTRAIRE DIMENSIONS SONT EN MILLIMÈTRES

DEC. X ± 4, X.X ± .5, X.XX ± .30
ANGLES ± 1°

CONFORMS TO/ CONFORME À CSA B78.2

REV RÉV	DATE	BY/PAR	CHKD/VÉR
2	17-10-2022	KC	AH
	UPDATED SLAB TABLE AND MODULE SPACING		
	DESCRIPTION		

CANADA POSTES / POST CANADA

ENGINEERING SERVICES / SERVICES D'INGÉNERIE		DATE DD-MM-YYYY JJ-MM-AAAA
CREATED BY / CRÉE PAR	A. HORNER	07-10-2020
CHECKED BY / VERIFIÉ PAR	T. POLICARPIO	17-12-2020
ENGINEERING AUTH. RESP. DU GÉNIE	T. MACGILLIVRAY	17-12-2020

PROJECT / PROJET: DEVELOPER PROVIDED CONCRETE PAD
CPC ID: **E20X-ENG-06** REV / RÉV: **2**

TITLE / TITRE: DEVELOPER PROVIDED CONCRETE PAD SPECIFICATION ROAD FACING INSTALLATION

SCALE / ÉCHELLE: NTS | SHEET / FEUILLE: 1 | OF / DE: 1

A3

NO.	DATE	ISSUANCE

NO.	DATE	ISSUANCE

PROPERTY LEGAL DESCRIPTION:
38 NEW LAKESHORE ROAD, PORT DOVER

APPLICANT:
RAMHANS INVESTMENTS INC.
SOMNATH GOSAIN
9 HACKWOOD HEIGHTS,
BRAMPTON, ONTARIO
L6X 5P4
416-509-7373

DO NOT SCALE DRAWINGS, CALL FOR ANY CLARIFICATIONS THAT ARE REQUIRED, FIELD VERIFY AT ALL BUILT CONDITIONS
ALL DWG.'S ARE TO BE READ IN COLOUR
ORIGINAL PAGE SIZE ARCH 'D' - 24" x 36"

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G. DOUGLAS VALLEE LIMITED
2 TALBOT STREET NORTH
SIMCOE ONTARIO N3Y 3W4
(519) 426-6270

STAMP
LICENSED PROFESSIONAL ENGINEER
2023.12.22
J. T. IEZZI
100189485
PROVINCE OF ONTARIO

PROJECT TITLE:
RAMHANS CONDOS
38 NEW LAKESHORE ROAD,
PORT DOVER, ON
N0A 1N3

DRAWING TITLE:
CANADA POST

CHECKED BY:	DRAWN BY:
LHR/JI	BM
DRAWING SCALE:	DRAWING NO.:
PROJECT NO.: 22-032	A103

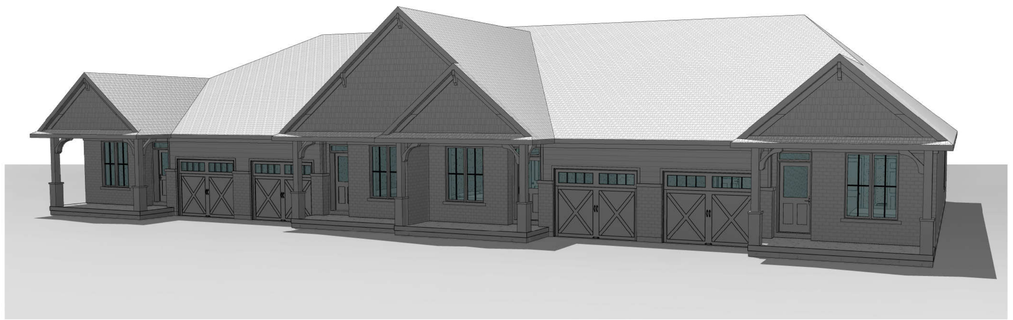
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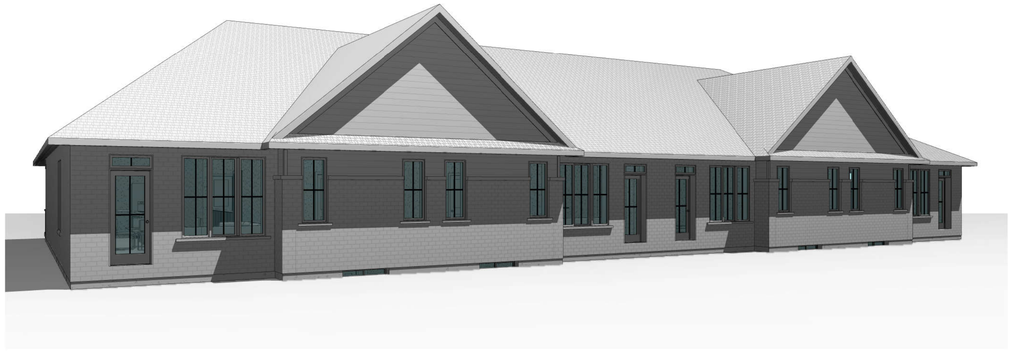
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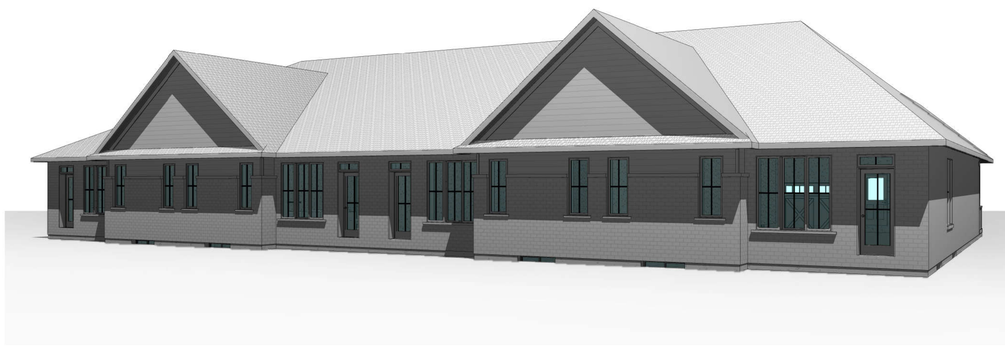
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3 P000 RIGHT FRONT ISOMETRIC
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2 P000 LEFT REAR ISOMETRIC
SCALE



4 P000 RIGHT REAR ISOMETRIC
SCALE

PROJECT TITLE:
RAMHANS CONDOS
38 NEW LAKESHORE ROAD,
PORT DOVER, ON
N0A 1N3

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(4 UNIT BLOCK)

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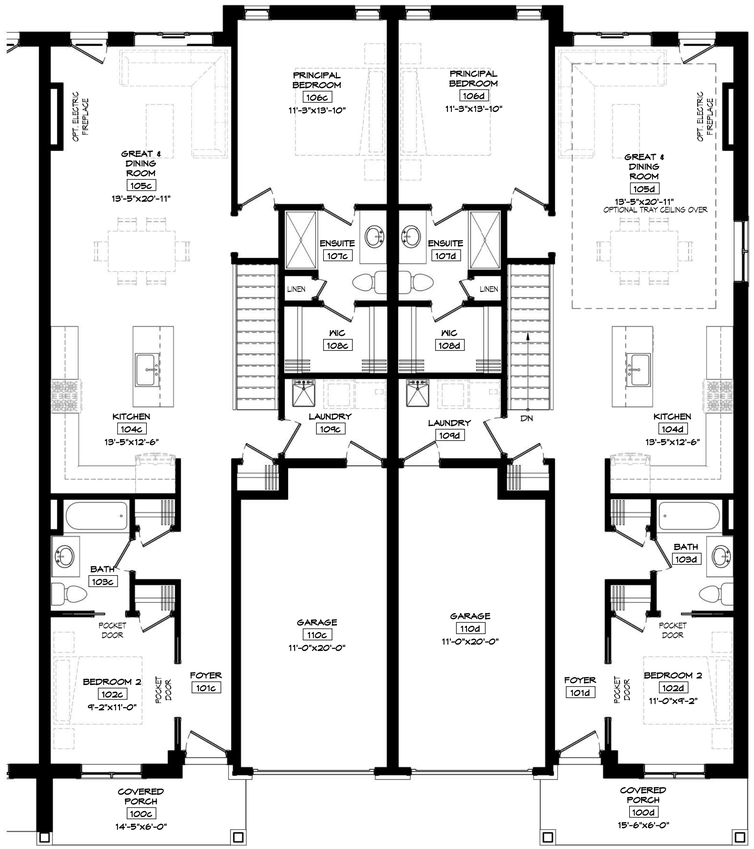
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2023.09.20

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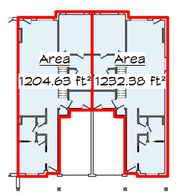
PROJECT NO.:
22-032

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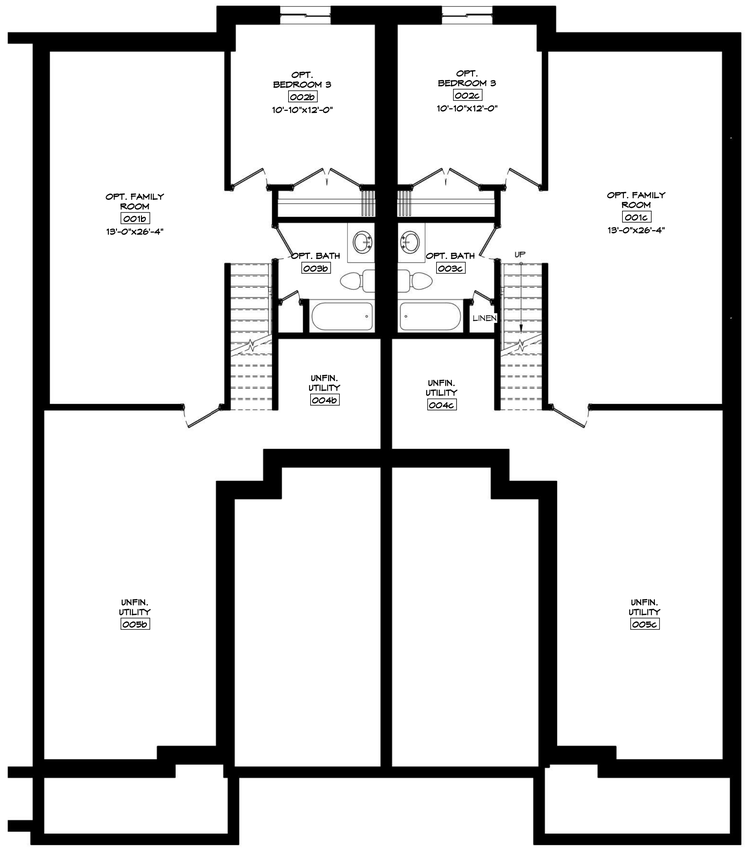
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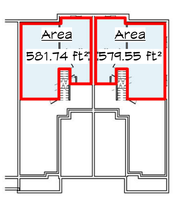
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SCALE 3/16" = 1'-0"



3 P201 LEVEL 1 AREAS
SCALE 1 : 300



2 P201 LEVEL 0 PLAN
SCALE 3/16" = 1'-0"



4 P201 LEVEL 0 AREAS
SCALE 1 : 300

PROJECT TITLE:
RAMHANS CONDOS
38 NEW LAKESHORE ROAD,
PORT DOVER, ON
N0A 1N3

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(4 UNIT BLOCK)

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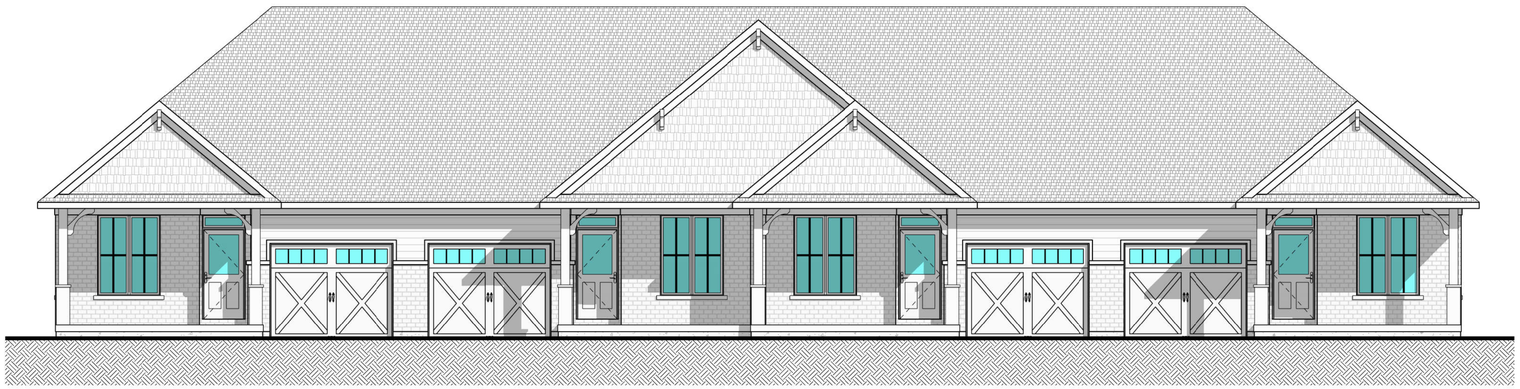
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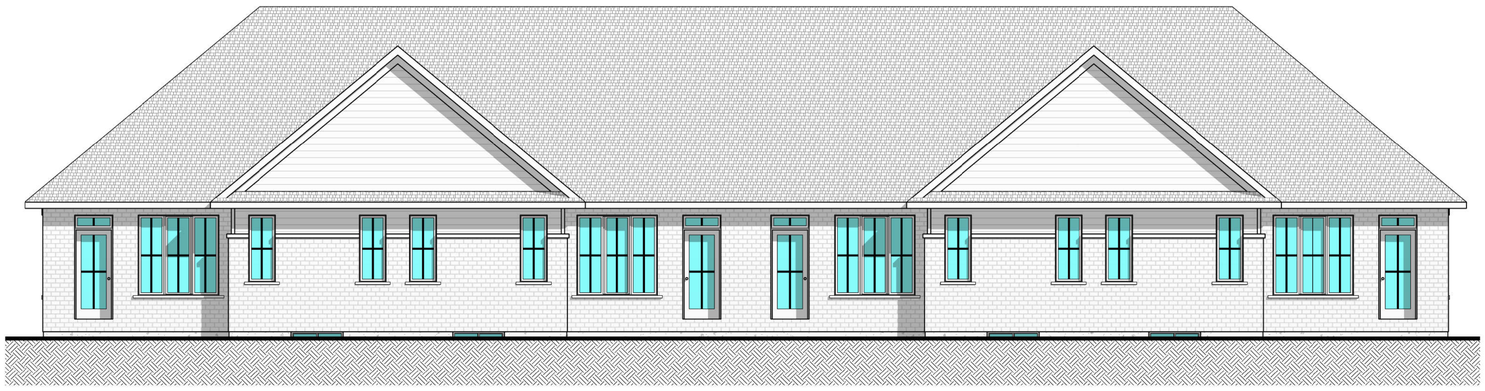
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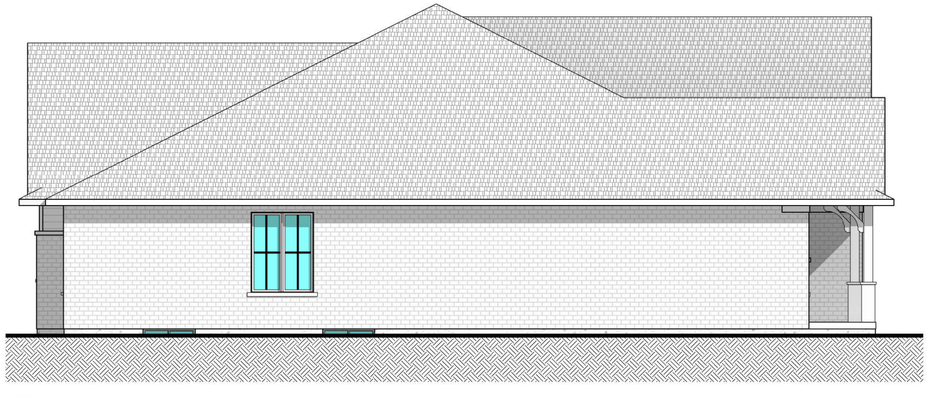
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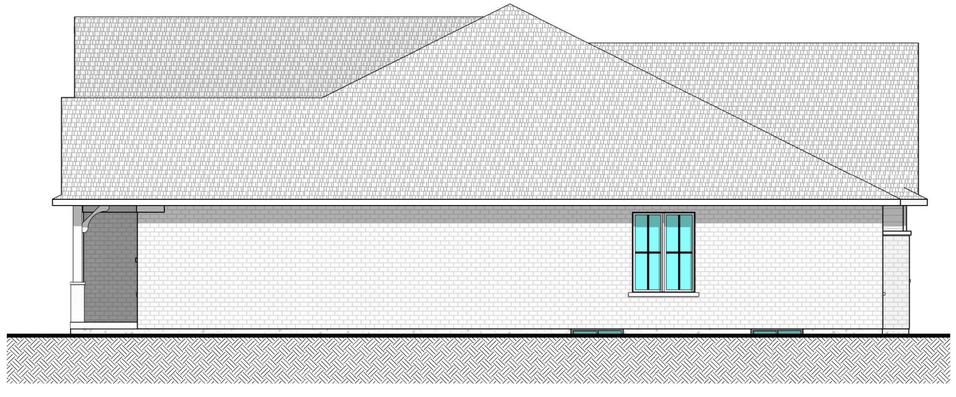
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2 P301 REAR ELEVATION
SCALE 3/16" = 1'-0"



3 P301 LEFT ELEVATION
SCALE 3/16" = 1'-0"



4 P301 RIGHT ELEVATION
SCALE 3/16" = 1'-0"

PROJECT TITLE:
RAMHANS CONDOS
38 NEW LAKESHORE ROAD,
PORT DOVER, ON
N0A 1N3

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(4 UNIT BLOCK)

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2023.09.20

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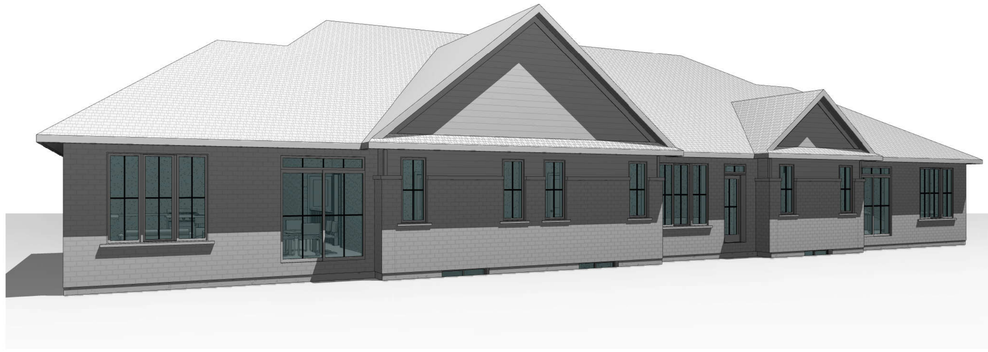
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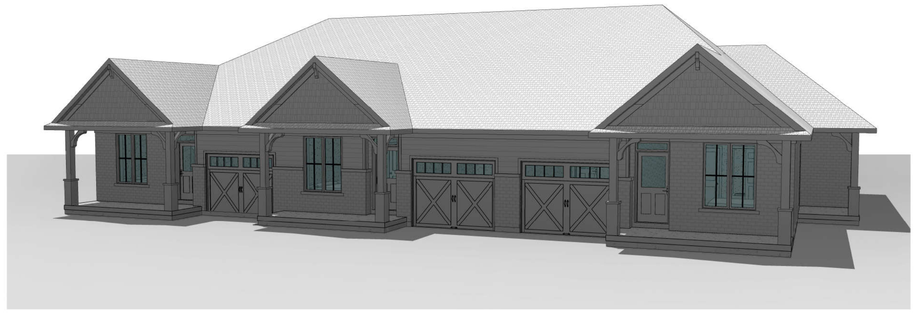
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1 P000 LEFT FRONT ISOMETRIC
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2 P000 LEFT REAR ISOMETRIC
SCALE



3 P000 RIGHT FRONT ISOMETRIC
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4 P000 RIGHT REAR ISOMETRIC
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38 NEW LAKESHORE ROAD,
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P000

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OPTIONAL CORNERUNIT LAYOUT (WITHOUT ADDITIONAL RESIDENTIAL UNIT)

OPTIONAL CORNER UNIT LAYOUT (WITH ADDITIONAL RESIDENTIAL UNIT)

1 / P201 LEVEL 1 PLAN
SCALE 1/4" = 1'-0"

PROJECT TITLE:
RAMHANS CONDOS
38 NEW LAKESHORE ROAD,
PORT DOVER, ON
N0A 1N3

DRAWING TITLE:
PRESENTATION PLANS
(3 UNIT CORNER BLOCK)

DRAWING SCALE:
1/4" = 1'-0"

DATE ISSUED:
2023.09.20

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PROJECT NO.:
22-032

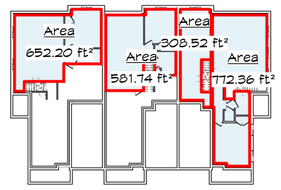
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OPTIONAL CORNERUNIT LAYOUT
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OPTIONAL CORNER UNIT LAYOUT
(WITH ADDITIONAL RESIDENTIAL UNIT)

1 P202 LEVEL 0 PLAN PRESENTATION
SCALE 1/4" = 1'-0"



2 P202 LEVEL 0 AREAS
SCALE 1 : 300

PROJECT TITLE:
RAMHANS CONDOS
38 NEW LAKESHORE ROAD,
PORT DOVER, ON
N0A 1N3

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(3 UNIT CORNER BLOCK)

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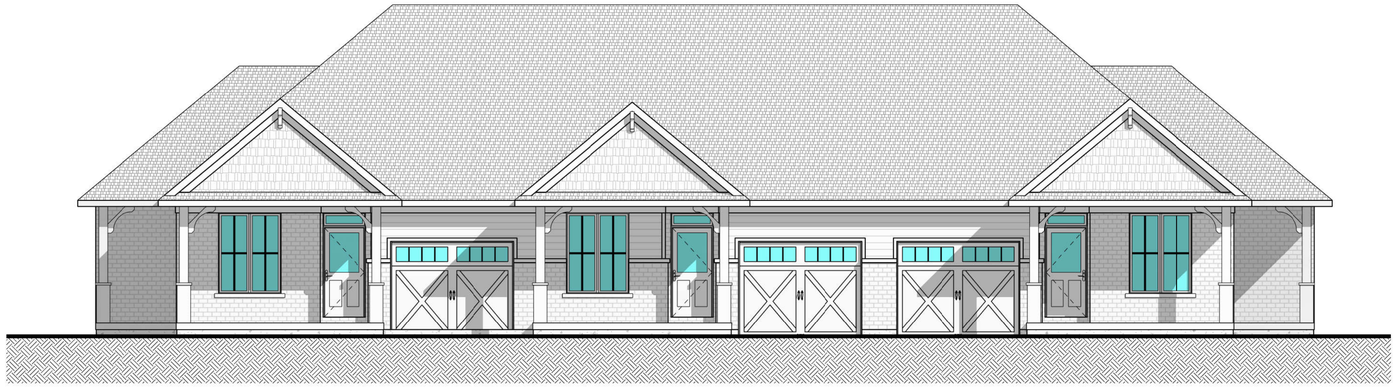
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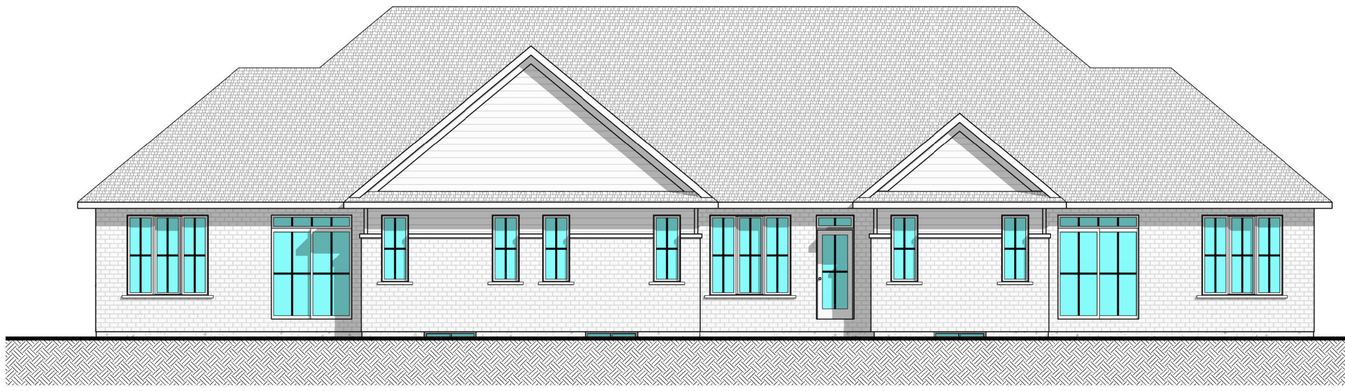
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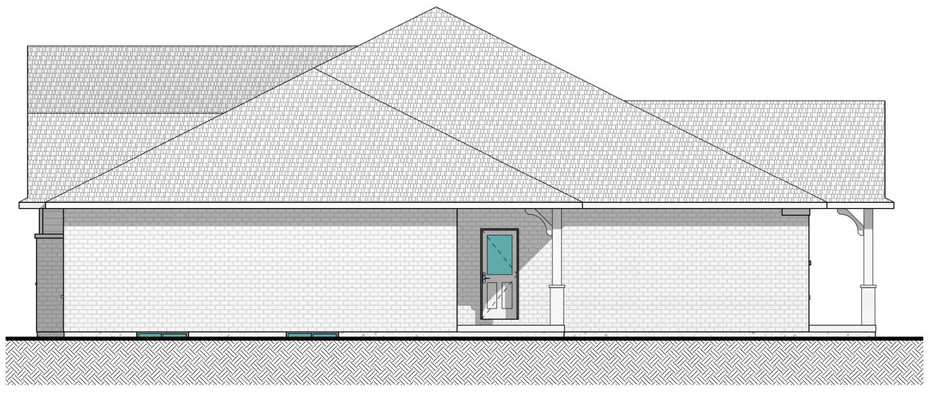
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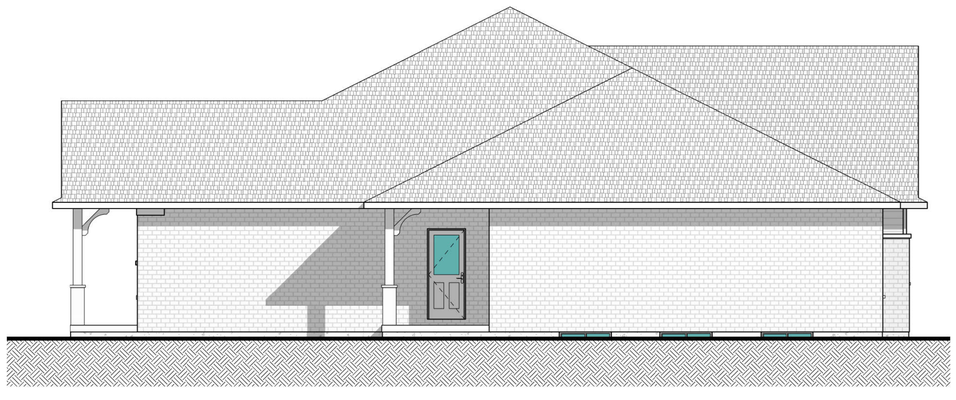
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SCALE 3/16" = 1'-0"



3 P301 LEFT ELEVATION
SCALE 3/16" = 1'-0"



4 P301 RIGHT ELEVATION
SCALE 3/16" = 1'-0"

PROJECT TITLE:
RAMHANS CONDOS
38 NEW LAKESHORE ROAD,
PORT DOVER, ON
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DRAWING TITLE:
PRESENTATION ELEVATIONS
(3 UNIT CORNER BLOCK)

DRAWING SCALE:
3/16" = 1'-0"

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P301

PROJECT NO.:
22-032



TYPICAL POLE MOUNTED LIGHT FIXTURE TYPE 'PT-Tx'

LEGEND

THIS LEGEND REPRESENTS THE SYMBOLS COMMONLY USED. NOT ALL SYMBOLS MAY APPEAR ON THE DRAWINGS. SHOULD A SYMBOL BE FOUND ON THE DRAWING AND NOT APPEARING ON THE LEGEND, THE CONTRACTOR SHALL SUBMIT A QUESTION TO HAVE THE SYMBOL CLARIFIED IN AN ADDENDUM PRIOR TO SUBMITTING A BID.

ABBREVIATIONS

AE	APPROVED EQUAL
AFF	ABOVE FINISHED FLOOR
CB	CIRCUIT BREAKER
ER	EXISTING TO BE RELOCATED
EX	EXISTING TO REMAIN
JB	JUNCTION BOX
REL	RELOCATED ITEM IN NEW LOCATION
REM	EXISTING TO BE REMOVED IN IT'S ENTIRETY
UNO	UNLESS NOTED OTHERWISE

LIGHTING FIXTURES

	SINGLE POLE MOUNTED LIGHT FIXTURE
	TWIN POLE MOUNTED LIGHT FIXTURES TYPES AS PER DRAWINGS
	TRIPLE POLE MOUNTED LIGHT FIXTURE TYPES AND ORIENTATION AS PER DRAWINGS
	QUAD POLE MOUNTED LIGHT FIXTURES REFER TO DRAWINGS FOR TYPES
	POST TOP MOUNTED AREA LIGHT FIXTURES. LETTER DENOTES TYPE.
	WALL OR COLUMN MOUNTED LIGHTING FIXTURES. LETTER DENOTES TYPE.
B-1-2	LIGHTING CIRCUITING NOTE. B-PANELBOARD I.D., 1-BRANCH CIRCUIT, 2-LOCAL (SWITCH) CIRCUIT.

SITE STATISTICS - DRIVELANE AND PARKING SURFACE

AVERAGE	MINIMUM	MAXIMUM	MAX/AVG	AVG/MIN	MAX/MIN
1.14fc	0.1c	7.0fc	6.14	11.40	70.00

THE PHOTOMETRIC DATA USED AS INPUT FOR THESE CALCULATIONS IS BASED ON ESTABLISHED IES PROCEDURES AND PUBLISHED FIXTURE RATINGS. FIELD PERFORMANCE WILL DEPEND ON ACTUAL LAMP, BALLAST, ELECTRICAL AND SITE CHARACTERISTICS.

FULL CUTOFF PERFORMANCE - FULL CUTOFF PERFORMANCE MEANS A LUMINAIRE DISTRIBUTION WHERE ZERO CANDELA INTENSITY OCCURS AT AN ANGLE AT OR ABOVE 90° ABOVE NADIR. ADDITIONALLY, THE CANDELA PER 1000 LAMP LUMENS DOES NOT NUMERICALLY EXCEED 10% (100 LUMENS) AT A VERTICAL ANGLE OF 80° ABOVE NADIR, THIS APPLIES TO ALL LATERAL ANGLES AROUND THE LUMINAIRE.

CUTOFF PERFORMANCE - CUTOFF PERFORMANCE MEANS A LUMINAIRE DISTRIBUTION WHERE THE CANDELA PER 1000 LAMP LUMENS DOES NOT NUMERICALLY EXCEED 2.5% (25 LUMENS) AT AN ANGLE ABOVE 90° ABOVE NADIR, AND 10% (100 LUMENS) AT A VERTICAL ANGLE 80° ABOVE NADIR. THIS APPLIES TO ALL LATERAL ANGLES AROUND THE LUMINAIRE.

DRAWING LIST

EP001	GENERAL NOTES, DRAWING LIST, LEGEND AND FIXTURE SCHEDULE
EP100	ELECTRICAL SITE PLAN LAYOUT - PHOTOMETRIC CALCULATIONS

SITE LIGHTING FIXTURE SCHEDULE

1.	THE LIGHTING FIXTURES, BALLASTS AND LAMPS FOR THIS PROJECT HAVE BEEN SPECIFIED TO ENSURE THAT SPECIFIC AESTHETIC AND PERFORMANCE REQUIREMENTS WILL BE SATISFIED.
2.	THE SPECIFIED LIGHTING FIXTURES ARE IDA APPROVED DARK-SKY FRIENDLY FIXTURES AND CONSISTENT WITH LEED GOALS & GREEN GLOBES CRITERIA FOR LIGHT POLLUTION REDUCTION. DIRECT GLARE WILL NOT BE OBSERVABLE (OUTSIDE THE ORIGINATING PROPERTY LIMITS) AT AN ANGLE GREATER THAN 85° FROM NADIR OF THE VERTICAL AXIS OF THE LIGHT SOURCE.
3.	ALL ALTERNATE FIXTURES TO THE PROPOSED FIXTURES SHALL HAVE IES FILES FOR FIXTURES FROM A REPUTABLE LAB WITH IES LAB CERTIFICATION. SHOULD A PROPOSED FIXTURE PERFORMANCE FAIL TO MEET THE MINIMUM REQUIREMENTS, THE CONTRACTOR SHALL BE RESPONSIBLE FOR INSTALLING ANY ADDITIONAL EQUIPMENT TO BRING THE LIGHTING LEVELS UP TO THE REQUIRED VALUES.
4.	INSTALLATION OF LIGHT FIXTURES SHALL BE ACCORDING TO MANUFACTURER'S RECOMMENDATION AND ACCORDING TO CODE REQUIREMENTS.
5.	POLES LISTED BELOW ARE BASED ON STRESSCRETE DECORATIVE DIRECT BURIED POLES (THE TRADITIONAL - NON-FLUTED) FOR EXAMPLE PURPOSES. POLES SHALL BE SUBMITTED FOR ENGINEERS REVIEW C/W ENGINEERS STAMP. ALL POLES SHALL BE MOUNTED ON CONCRETE BASES AS NOTED IN SCHEDULE BELOW.

TYPE	DESCRIPTION	LAMP/ WATTAGE	VOLTAGE
PT-T1	SINGLE, POLE MOUNTED, FULL CUT-OFF, LED AREA LIGHT, TYPE IV WIDE OPTICS. 0-10V ELECTRONIC DIMMING DRIVER STANDARD, WIRED FOR 120V, DRIVER MOUNTED TO DIE-CAST ALUMINUM BACK HOUSING SUITABLE FOR -40° C TO 40° C ENVIRONMENTS. CONSTRUCTED OF HINGED DIE-CAST ALUMINUM TOP WITH CUPOLE COVER. PRECISE OPTICS FOR EFFICIENT LIGHT OUTPUT. FIXTURE TO BE MOUNTED ON 10'-0", DIRECT BURIED DECORATIVE CONCRETE POLE FOR A TOTAL MOUNTING HEIGHT OF 10'-0" (3.048m) A.F.G. FOR EXAMPLE STRESSCRETE TRADITIONAL CAT. No.: KDNF15 OR SIMILAR. FIXTURE B.U.G. RATING TO BE B1-U3-G2 OR BETTER. FIXTURE TO BE SUPPLIED C/W FIXTURE MOUNTED PHOTOCELL. BASE OF DESIGN; COOPER LIGHTING STREETWORKS LEXINGTON CAT. No.: LXF-PA1-50-730-U-T4W-CL-xx-10MSP/NPC/PR7 OA-RA1016 OR APPROVED EQUAL	5,700 NOMINAL LUMEN OUTPUT 54W INPUT 3000K	TBC (120V)
PT-T2	SINGLE, POLE MOUNTED, FULL CUT-OFF, LED AREA LIGHT, TYPE II ROADWAY OPTICS. 0-10V ELECTRONIC DIMMING DRIVER STANDARD, WIRED FOR 120V, DRIVER MOUNTED TO DIE-CAST ALUMINUM BACK HOUSING SUITABLE FOR -40°C TO 40°C ENVIRONMENTS. CONSTRUCTED OF HINGED DIE-CAST ALUMINUM TOP WITH CUPOLE COVER. PRECISE OPTICS FOR EFFICIENT LIGHT OUTPUT. FIXTURE TO BE MOUNTED ON 10'-0", DIRECT BURIED DECORATIVE CONCRETE POLE FOR A TOTAL MOUNTING HEIGHT OF 10'-0" (3.048m) A.F.G. FOR EXAMPLE STRESSCRETE TRADITIONAL CAT. No.: KDNF15 OR SIMILAR. FIXTURE B.U.G. RATING TO BE B1-U3-G2 OR BETTER. FIXTURE TO BE SUPPLIED C/W FIXTURE MOUNTED PHOTOCELL. BASE OF DESIGN; COOPER LIGHTING STREETWORKS LEXINGTON CAT. No.: LXF-PA1-50-730-U-T2R-CL-xx-10MSP/NPC/PR7 OA-RA1016 OR APPROVED EQUAL	5,700 NOMINAL LUMEN OUTPUT 54W INPUT 3000K	TBC (120V)

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1	ISSUED FOR SITE PLAN APPROVAL	2023.12.15	K.S.

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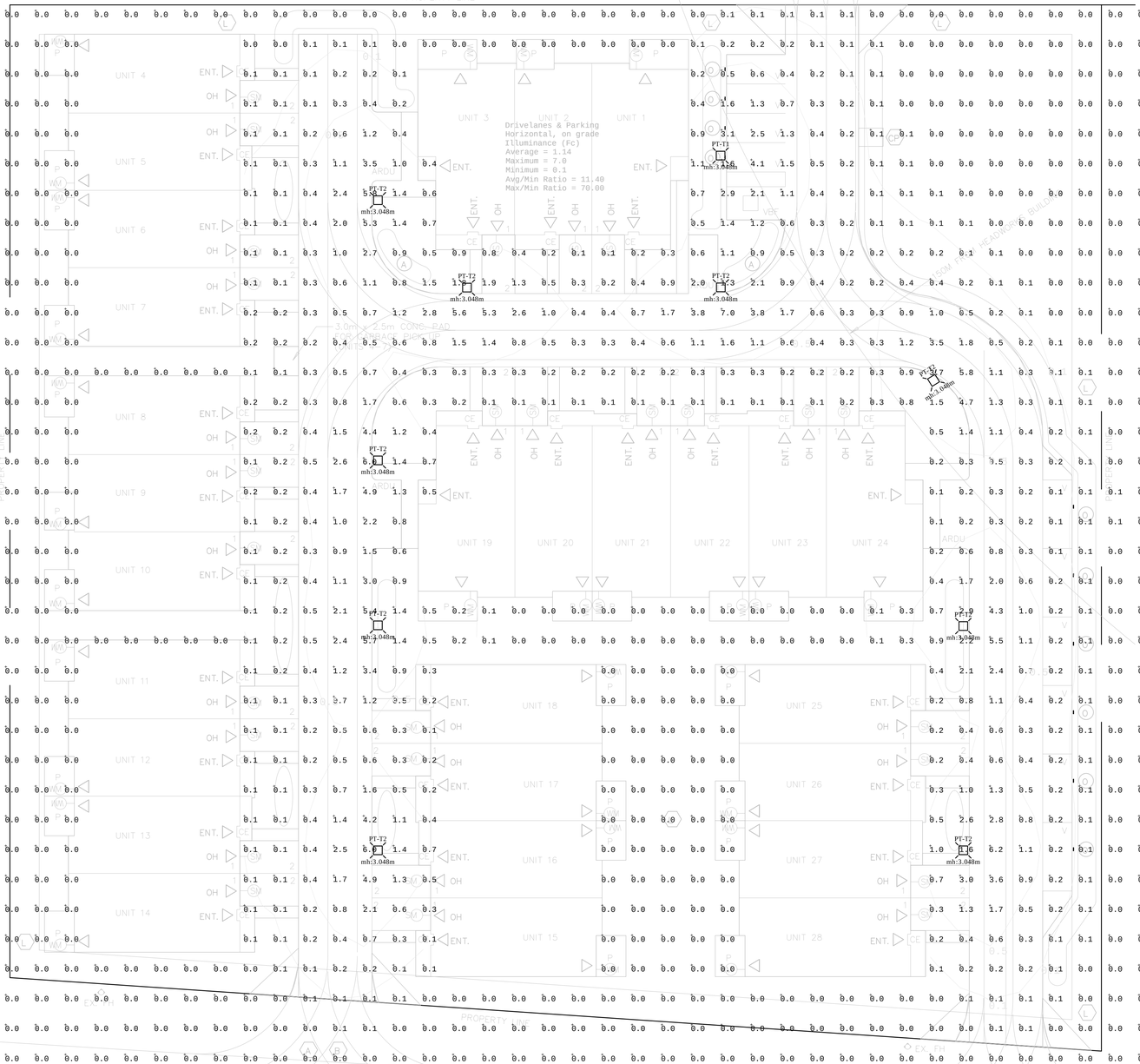
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ORIGINAL SHEET - ARCH D

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December 18, 2023 - 10:52am Plotted by: jmdy



1 ELECTRICAL SITE PLAN - PHOTOMETRIC DRAWING
SCALE 1:250

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PORT DOVER, ON

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ELECTRICAL SITE PLAN PHOTOMETRICAL CALCULATIONS

Dr. DR.	**D** Checked DR.	**A** Scaled AS.	**D** DE
Pr. N.		**S** AS NOTED	
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ORIGINAL SHEET - ARCH D

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December 16, 2023 - 10:52am Plotted by: jrudy

vallee

Consulting Engineers,
Architects & Planners

December 19, 2023

Ramhans Investments Inc.
c/o Somnath Gosain
9 Hackwood Heights
Brampton, Ontario
L6X 5P4

Attention: **Mr. Somnath Gosain**

Reference: **Functional Servicing Report**
Ramhans Condos
Port Dover, Norfolk County
Our Project #22-032

Introduction

This Functional Servicing Report has been prepared in support of the application required to construct a 28-unit condominium development in the form of group townhouses. The subject site is located at 38 New Lakeshore Road in Port Dover - Norfolk County. This report presents the functional serving for the proposed development, including sanitary servicing, storm servicing, domestic, and fire water servicing.

Background

The proposed 1.15 ha development site is located between New Lakeshore Road and Brown Street in the southern portion of the urban area of Port Dover. In accordance with Figure 1 below, the subject lands are also located in close proximity to an industrially zoned parcel which is occupied by the Port Dover Waste Water Treatment Plant (WWTP).

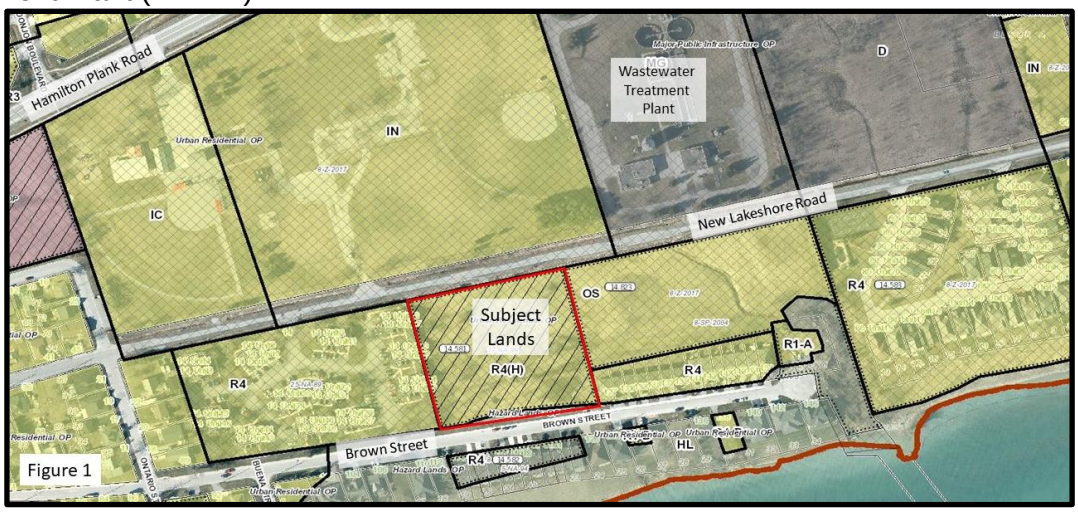


Figure 1 – Site Location

The Official Plan designates the property Urban Residential on Schedule B-16, while Schedule A-1 identifies the subject lands within the Lakeshore Special Policy Area. The parcel is zoned R4(H) with

Special Provision 14.581 in accordance with Schedule A-33 of the Norfolk County Zoning Bylaw. The proposed development on the site will consist of the following construction:

- Urban Residential Zone Type 4 (R4)
  - 7 – 1-storey stacked residential dwelling units
- Storm and sanitary infrastructure to support proposed construction
- Stormwater management facility
- Driveways, and other miscellaneous items to support proposed construction

Sanitary Servicing

Per the Norfolk County GIS, gravity sanitary sewers exist fronting the property on both New Lakeshore Road and Brown Street (size to be confirmed by the County). It appears there are two sanitary services on New Lakeshore. Both sewers converge to the north-east of the development, conveying flows to the Port Dover WWTP. Although it is anticipated that Norfolk County infrastructure can support the 28-Unit development, this will need to be confirmed by their third-party modeling consultant.

Sanitary design flows for the proposed development were calculated using the Norfolk County Design Criteria. Table 1 presents the flow information associated with the proposed development. In summary, the proposed development is anticipated to generate a total additional sanitary flow of approximately 1.99 L/s to the existing sanitary sewer on New Lakeshore Road or Brown Street. Detailed calculations are outlined in Appendix A and the sanitary areas are detailed in Appendix D.

Table 1
Sanitary Design Flow Information

	Zone R4
Total Number of Units	28
Population Density (persons/units)	2.75
Per Capita Flow (L/person/day)	450
Peak Extraneous Flow (L/sec/ha)	0.28
Development Area (ha)	1.15
Infiltration Flow (L/s)	0.32
Sewage Flow (L/s)	0.46
Peak Design Flow (L/s)	2.27

To confirm capacity for the estimated design flows, Vallee requests that sanitary modelling be completed by the Norfolk County consultant to determine if the existing County infrastructure provides adequate capacity to accommodate the estimated sanitary design flow from the proposed development. It is understood that the reconstruction of New Lakeshore Road may include the consolidation of the sanitary main. For design purposes a 300mm diameter sanitary sewer has been assumed at the doghouse service connection.

Sewer Sizing
The sanitary sewer design sheet, provided on the SAN drawing in the associated drawing set.

Stormwater Management

Stormwater management design is detailed in the Stormwater Management Report.
Stormwater is conveyed overland from rear yards by swales to a network of catch basin inlets throughout the site connected by storm sewers. The onsite SWM detention will release to an OGS and ultimately be conveyed to ST5. With the upcoming urbanization of New Lakeshore Road, a portion of the proposed outlet will need to be revised to accommodate additional flows which currently utilize the ditch to connect to DICB ST5.

Storm drainage areas and sewer sizing is provided in Appendix C.

Water Servicing

Per the Norfolk County ISMP, municipal water infrastructure is available surrounding the site with an existing 100mm watermain fronting the lands on New Lakeshore Road and an existing 150mm watermain on Brown Street. Although it is anticipated that Norfolk County infrastructure can support the 28-Unit development, this will need to be confirmed by their third-party modeling consultant.

Domestic Water Demand

The following summarizes the domestic water flow information for the proposed development:

- Total Number of Units: 28
- Accessory Dwelling Units: 4
- Total Units: 32

Based on these numbers and the design parameters in the Norfolk County Design Criteria, the Maximum Daily Demand (MDD) is 1.03 l/s and the Maximum Hourly Demand is 1.83 l/s. Detailed calculations are provided in Appendix B.

Fire Water Service

According to the County GIS online mapping, there are three existing fire hydrants located in proximity to the development site. One hydrant is located on the north side of New Lakeshore Rd. just west of the property. The other two hydrants are located on the north side of Brown St. near the southwest and southeast corners of the property. The coverage of these hydrants is detailed on the Servicing Plan C101 included with this submission which indicates that all units are covered by the existing hydrant network. No new hydrants are proposed for this work.

The estimated fire flow requirement for the development has been determined using the recommendations of the Fire Underwriters Survey – 2020 (FUS) at the direction of the County.

Based on the FUS estimation, the total recommended fire flow is 150 l/s. Calculations are provided in Appendix B.

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Vallee requests that an analysis of the hydraulic modelling be conducted by the County's consultant to determine the existing water servicing capacity and constraints on the existing water system to ensure adequate system flows and pressure for the aforementioned domestic and fire demands.

The ISMP Figure 5 and 6 show that the area has pressure in the range of 350-550 kPa (50-80 psi) and available Fire Flow during MDD of 57-83 l/s on Brown St. and less than 57 l/s on New Lakeshore.

Currently water servicing is proposed on Brown Street. We recommend during the modelling that alternative solutions be considered. Possible alternative solutions include:

1) A watermain easement through the site to allow a watermain loop.
2) Upgrade of watermain on New Lakeshore Rd. which we understand is already in design.

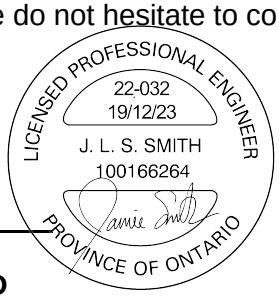
Conclusions and Recommendations

The functional servicing design for the proposed development can be summarized as follows:

- The existing sanitary sewer 450mm assumed on New Lakeshore Road will be the sanitary service connection.
- A peak sanitary design flow of approximately 2.27 l/s is anticipated from the proposed development.
- Modelling from the Norfolk County's consultant has been requested to determine if existing County infrastructure provides adequate capacity to accommodate the estimated sanitary design flow.
- Storm sewers will convey stormwater to a detention facility on site. A buried storm outlet connection from the site to existing DICB ST5 is proposed as an upgrade to the K. Smart Branch B ditch outlet. Pre to Post design details and water quality treatment details are provided in the included SWM report.
- Minimal runoff from primarily grassed areas will remain uncontrolled to Brown St. at peak flows less than predevelopment rates.
- There are no known existing water services for this site. The existing 150mm watermain on Brown St. is proposed for the 100mm water service connection. Further investigation will be required to determine if sufficient flows are available with the Norfolk County Water Modelling consultant.

We trust that this information is complete and sufficient for submission. Should you have any questions or require further information please do not hesitate to contact us.

Respectfully submitted,



Jamie Smith, P.Eng. M.Sc.
G. DOUGLAS VALLEE LIMITED
Consulting Engineers, Architects and Planners

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Appendix A
– 22-032 Sanitary Flow Calculation

Appendix B
– Domestic Water Demand Calculations
– FUS Calculations

Appendix C
– Refer to Drawing 22-032 SWM

Appendix D
– Refer to Drawing 22-032 SAN

APPENDIX A

22-032 Sanitary Flow Calculation

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Subject:	Ramhans Condos		
Date:	7/12/2023	By:	JLS
Project #:	22-032	Page	1
Description:	38 New Lakeshore Rd.		

Norfolk County Design Criteria Section 9.2 - Sanitary Sewage Flow

9.2.01 Tributary Population

Residential Development:	2.75	persons/unit
Units:	28	Units
Accessory Dwelling Units:	4	Units
Total Units:	32	Units
Number of Persons:	88	persons
Site Area	1.15	ha

9.2.02 Sewage Flow

Residential Development:	0.45	m^3/person/day
Average Sewage Flow:	0.458	L/s

9.2.03 Peak Sanitary Flow Factor

Commercial Peaking Factor Formula:

M = 1 + (14/(4+ [14 / { 4 + P^(0.5)}])

P =	0.088
M =	4.258

9.2.04 Infiltration Allowance

Infiltration Allowance:	0.28	L/s/ha
Infiltration Allowance:	0.322	L/s

9.2.05 Design Flow

Design Flow:

Design Flow = (Average Sewage Flow * Peak Sanitary Flow Factor) + Infil. Allowance

Design Flow =	2.27	L/s

APPENDIX B

Domestic Water Demand Calculations
FUS Calculations

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Subject:	Ramhans Condos		
Date:	Dec-23	By:	JLS
Project #:	22-032	Page:	1

Townhouse Units

Maximum Daily Demand

Units:	28	Units
Accessopry Dwelling Units:	4	Units
Total Units:	32	Units
Zoning of Land	Residential	
Equiv. Population Density	2.75	ppl/unit
Equiv. Population	88	
Av. Daily Demand Per Capita	0.45	m^3/capita/day
Maximum Daily Demand Peaking Factor	2.25	
Maximum Daily Demand	89.10	m^3/day
	1.03	l/s

Maximum Hourly Demand

Units:	28	Units
Accessopry Dwelling Units:	4	Units
Total Units:	32	Units
Zoning of Land	Residential	
Equiv. Population Density	2.75	ppl/unit
Equiv. Population	88	
Av. Daily Demand Per Capita	0.45	m^3/capita/day
Maximum Hourly Demand Peaking Factor	4	
Maximum Hourly Demand	6.60	m^3/hour
	1.83	l/s

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Subject:	Ramhans Condos		
Date:	Dec-23	By:	JLS
Project #:	22-032	Page:	1

UNITS 8-10 (WORST CASE UNIT)

1) Fire Flow Requirement

$F_1=220C(A^{1/2})$ (L/min)

C= 1.5 Construction coefficient for wood frame construction

Length= 17.5 m
Width= 8 m
A= 140.0 Floor Area m^2 = Main Floor Area Building
= 280.0 Fire Area m^2 = Main Floor Area Building + 2nd Floor

F_1= 5522 L/min
F_1= 6000 L/min (Round to the nearest 1,000 l/min)

2) Occupancy

Occupancy Type: Residential Occupancy
Reduction: 15%
Surcharge: 0%

$F_2=F_1+(F_1*Reduction/Surcharge)$ (L/min)
F_2= 5100 L/min

3) Sprinkler System

Sprikler System: Not Applicable (assumed no sprinkler system in service)
Reduction: 0%

$F_3=F_2*Reduction$ (L/min)
F_3= 0 L/min

4) Seperation

Location	Direction	Distance (m)	Surcharge
Front	East	16.7	15%
Side	North	3.0	25%
Side	South	3.0	25%
Rear	West	9.0	20%
		Total:	85%

Separation Surcharges

0 to 3m	25%
3.1m to 10m	20%
10.1m to 20m	15%
20.1 to 30m	10%
Greater than 30m	0%

F4=(TOTAL)*F2 (L/min)
F_4= 4335 L/min

Total Fire Flow

$F=F_2-F_3+F_4$ = 9435 L/min
= 9000 L/min (Round to the nearest 1,000 l/min)
= **150.0 L/s**

Notes: *1) All calculations and factors from Part 2 "Water Supply for Public Fire Protection" by the Fire Underwriters Survey, 2020*

APPENDIX C

Refer to Drawing 22-032 SWM

APPENDIX D

Refer to Drawing 22-032 SAN

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Consulting Engineers,
Architects & Planners

Norfolk County

December 18, 2023

185 Robinson Street - Suite 200
Simcoe, ON
N3Y 5L6

Attention: **Mohammad Alam, Supervisor of Planning**

Reference: **Storm Water Management Report**
Ramhan Development
38 New Lakeshore Road, Port Dover, Norfolk County, Ontario
Roll#: 33403078000
Our Project # 22-032

Introduction

G. Douglas Vallee Limited has been retained by Ramhans Investments Inc. to make application for Site Plan Approval for the development of a 28-unit group townhouse condominium in Port Dover at 38 New Lakeshore Road.

Background

The subject lands are located are between New Lakeshore Road and Brown Street in the southern portion of the urban area of Port Dover. The area is predominately envisioned in the Official Plan for residential development, with institutional land use located immediately across New Lakeshore Road. The subject lands are also located in close proximity to and industrially zoned parcel which is occupied by the Port Dover Waste Water Treatment Plant (WWTP). Drainage of the 1.15 ha site is split between storm sewer on Brown Street and the ditch on the south side of New Lakeshore Road. Both areas drain to the adjacent outlet for the Hwy 6 drain.



Figure 1. *38 New Lakeshore Undeveloped R4 (H) Zone*

Stormwater Management

The design criteria for the proposed development are as follows:

- Quantity Control: Reduce or control the total post-development peak flow rates from the site to levels that do not exceed the total pre-development flow rates, for all storm events up to and including the 100-year storm event.

- Quality Control: Stormwater to be treated to Basic Protection Level (60% TSS removal) as defined in the MOECC Ministry of Environment and Climate Change Design Manual - March 2003. Oil separation will also be provided prior to release to the municipal infrastructure.

The Norfolk County 3 Hour Chicago Distribution Design Storm Hyetograph data has been utilized for the storm analysis.

Table 1 - IDF Parameters for Norfolk

Return Period	2-Year	5-Year	10-Year	25-Year	50-Year	100-Year
A	529.711	583.017	670.324	721.533	766.038	801.041
B	4.501	3.007	3.007	2.253	1.898	1.501
C	0.745	0.703	0.698	0.679	0.668	0.657

Pre-Development Condition

The pre-development drainage area of 1.15 ha site is split into two drainage areas. The two areas are detailed in the pre-development drainage area drawing, FIG1, provided in Appendix B for reference.

Recently New Lakeshore Road storm sewers were rebuilt according to a design prepared by K. Smart Associates Limited. In this design the subject lands were shown to drain partially to New Lakeshore and partially to Brown Street. The sizing of the storm infrastructure along New Lakeshore Road is based on this catchment configuration.

Area 1 drains to the Brown Street storm system via catch basins located in the grassed area of the right of way. This ultimately outlets at the end of Brown to the recently rebuilt storm outlet to Lake Erie. This connection occurs at ST2 on the K. Smart Highway 6 Storm Drainage Areas Plan included in Appendix A.

Area 2 drains north to the ditch along the south side of New Lakeshore Road which also ultimately outlets to the recently rebuilt storm outlet to Lake Erie. This drainage inlets at ST5 on the K. Smart Highway 6 Storm Drainage Areas Plan included in Appendix A.

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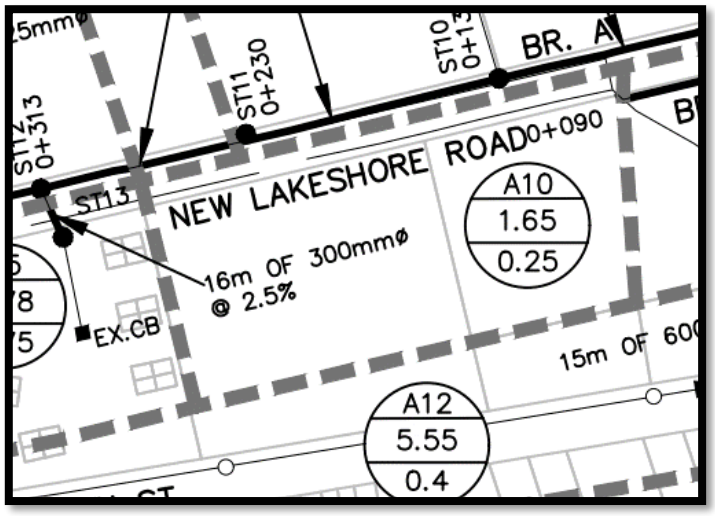


Figure 2. *New Lakeshore Rd. and Brown St. Runoff Coefficients for the Hwy 6 drain (K. Smart)*

Table 2: Pre-development Site Parameters		
	New Lakeshore Road	**Brown Street**
Area	0.905 ha	0.246 ha
Runoff Coefficient	0.25	0.40
Time of Concentration	26.8 min	14.2 min

Brown Street Outlet – Pre-Development

According to the recent K. Smart design of the Hwy 6 Drain, the portion of the Brown St. drainage has an associated 0.40 runoff coefficient. Refer to Appendix B – FIG1, or Appendix A – Storm Drainage Areas - K. Smart Associates Limited Highway 6 Petition – Storm Drainage Areas Plan dated Nov.9, 2018.

Based on these parameters in Table 2, the estimated peak flow release rates for the Brown St outlet are estimated using the flowing. The intensity was established from the Norfolk Design Criteria as follows:

$$i = a/(t+b)^c$$

where, a, b & c are derived from the IDF curves.

The peak flow is defined by the rational equation where peak flow (Q) is provided in litres per second:

$$Q = 2.778 \cdot Ca \cdot C \cdot i \cdot A$$

The results are presented in Table 3 for each of the typical return periods.

Table 3 – Pre-Development Release Rates (Limits) - Brown St.						
	2-Year	5-Year	10-Year	25-Year	50-Year	100-Year
I (mm/hr)	59.7	78.8	91.9	107.7	119.6	131.1
C	0.40	0.40	0.40	0.40	0.40	0.40
Ca	1.00	1.00	1.00	1.10	1.20	1.25
A (ha)	0.2456	0.2456	0.2456	0.2456	0.2456	0.2456
Tc (min)	14.2	14.2	14.2	14.2	14.2	14.2
Q (l/s)	**16.30**	**21.51**	**25.09**	**32.33**	**39.18**	**44.73**

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New Lakeshore Rd Outlet – Pre-Development
According to the recent K. Smart design of the Hwy 6 Drain, the portion of the New Lakeshore Rd. drainage has an associated 0.25 runoff coefficient. Refer to Figure 2 or Appendix A – Storm Drainage Areas - K. Smart Associates Limited Highway 6 Petition – Storm Drainage Areas Plan dated Nov.9, 2018.

This runoff coefficient of 0.25 contrasts with the official plan that anticipates residential development in this area. Typical townhouse developments are ascribed runoff coefficients of 0.75 and single family residential development at 0.60 as per the Norfolk County design criteria.

The development of this site is burdened by the assigned 0.25 runoff coefficient which creates a disproportionate site servicing expense in order to meet runoff quantity targets. We propose that the site be considered with a 0.60 runoff coefficient and will demonstrate that the storm outlet downstream has sufficient capacity to accommodate this without impacting surrounding development that currently utilizes this outlet.

Table 4: Pre-Development Site Parameters – New Lakeshore Rd.	
	Pre-development
Area	0.905 ha
Tc	26.8 min
Runoff Coefficient	0.60 *(proposed) 0.25 (current)*

Under the proposed runoff condition, the pre-development release rate is as shown in Table 5.

Table 5 – Pre-Development Release Rates (Limits) New Lakeshore Rd.						
	2-Year	5-Year	10-Year	25-Year	50-Year	100-Year
I (mm/hr)	40.7	53.6	62.6	73.2	81.3	89.0
*C**	0.60	0.60	0.60	0.60	0.60	0.60
Ca	1.00	1.00	1.00	1.10	1.20	1.25
A (ha)	0.905	0.905	0.905	0.905	0.905	0.905
Tc (min)	26.8	26.8	26.8	26.8	26.8	26.8
Q (l/s)	**61.37**	**80.79**	**94.47**	**121.41**	**147.13**	**167.82**

**proposed runoff coefficient consistent with single family homes.*

Post-Development Condition
Under the post-development condition, the site has been fully developed and the subject property is divided into two post-development drainage areas, as shown in FIG2 Post-development Drainage Areas drawing in Appendix B. For the south drainage area, the rational method is used to demonstrate a reduction in runoff. For the north drainage area, the Modified Rational Method was utilized to estimate the amount of on-site detention volume required to limit the 100-year event release rate below pre-development conditions.

Brown Street Drainage Area
Uncontrolled runoff will occur along the south limits of the property. This area is limited to 0.128 ha and has a post development runoff coefficient of 0.57, and a time of concentration of 10.2 minutes.
As a result, the release rates will be as noted in Table 6 below.

Table 6 – Post Development Release Rates (Limits) Brown St.						
	2-Year	5-Year	10-Year	25-Year	50-Year	100-Year
I (mm/hr)	61.5	81.2	94.7	110.9	123.3	135.1
C	0.40	0.40	0.40	0.40	0.40	0.40
Ca	1.00	1.00	1.00	1.10	1.20	1.25
A (ha)	0.1275	0.1275	0.1275	0.1275	0.1275	0.1275
Tc (min)	10.2	10.2	10.2	10.2	10.2	10.2
Proposed Peak Q (l/s)	**10.12**	**13.44**	**15.65**	**20.25**	**24.59**	**28.14**
Pre-Dev Limit Q (l/s)	**16.30**	**21.51**	**25.09**	**32.33**	**39.18**	**44.73**

Table 6 demonstrates that the proposed release rates to the Brown St. represent a reduction in flow from pre-development across all return periods. Refer to Appendix C for

This runoff will be collected by the Brown St. storm sewer which outlets to storm manhole ST2 in the Hwy 6 drain plan. Refer to Appendix A.

New Lakeshore Drainage Area

A detention facility comprised of ADS StormTech MC-7200 chambers, with 525.4 m^3 of storage is proposed. The proposed orifice plate has the following openings.

1) 165mm Ø @ 186.88m and
2) 180mm Ø @ 187.63m

This results in a rating curve as shown in Table 7.

Table 7 – SWM Detention Rating Curve		
Elevation (m)	Outflow (m3/s)	Storage (m3)
186.88	0.0000	0.0
187.08	0.0269	33.8
187.29	0.0380	98.0
187.49	0.0466	165.2
187.69	0.0716	230.5
187.90	0.0968	293.1
188.10	0.1145	352.1
188.18	0.1204	373.0
188.48	0.1410	447.3
188.79	0.1587	500.0
188.94	0.1668	525.4

Utilizing the modified rational method with the above rating curve the peak flows in the post development scenario were estimated for return periods between 2- through 100-years. This is summarized in Table 8.

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Table 8 – Post Development Release Rates (Limits) New Lakeshore Rd.						
	2-Year	5-Year	10-Year	25-Year	50-Year	100-Year
C	0.76	0.76	0.76	0.76	0.76	0.76
Ca	1.00	1.00	1.00	1.10	1.20	1.25
A (ha)	0.9050	0.9050	0.9050	0.9050	0.9050	0.9050
Proposed Peak Q (m^3/s)	**0.0446**	**0.0667**	**0.0794**	**0.0992**	**0.1241**	**0.1345**
Pre-Dev Limit Q (m^3/s)	**0.0614**	**0.0808**	**0.0945**	**0.1214**	**0.1471**	**0.1678**
Storage Required (m^3)	**155.40**	**229.24**	**253.44**	**306.43**	**376.49**	**432.19**
Storage Available (m^3)	**525.40**	**525.40**	**525.40**	**525.40**	**525.40**	**525.40**

Table 8 is prepared with the notion that the release rate based on a runoff of 0.60 instead of 0.25 was feasible, as detailed in Table 5. The modelling results are provided in Appendix B.

The following discussion will demonstrate that there is surplus capacity in the storm outlet to accommodate this increased release rate without negatively impacting future development on surrounding lands.

Existing / Proposed Legal Outlet

The storm sewer along New Lakeshore Rd. does not reserve any capacity for runoff from the subject site. Instead, it is allocated to the New Lakeshore Rd. ditch which drains 165m east to a new ditch inlet catch basin (ST5). The proposed storm outlet would connect the detention system in the north-east corner of the site to the ditch inlet catch basin (ST5) with a dedicated storm sewer outlet in the right of way. It is understood that this portion of New Lakeshore Rd. is currently in the design phase of an urbanization reconstruction upgrade. The proposed outlet provides a solution that is better suited for an urbanized New Lakeshore Rd. If the design were to utilize the existing ditch, urbanization of New Lakeshore Rd. would need to accommodate this outlet.

Demonstrated Capacity

The storm outlet downstream of New Lakeshore Rd. starting at the ditch inlet catch basin (ST5) has sufficient capacity to accept the runoff of the subject site. The K. Smart Storm Drainage Areas Plan indicates that New Lakeshore Rd drains into storm manhole ST6, which also accepts flow from storm manhole ST7, before crossing to the ditch inlet catch basin on the south side of New Lakeshore Rd. Table 7 reflects the K. Smart Storm Sewer Design Sheet dated 2 February 2021, included in Appendix A. From ST6 downstream there is significant surplus capacity in the sewer. Starting at the ditch inlet catch basin ST5, the unused capacity available in each pipe was analyzed to demonstrate the amount of capacity that will remain after adding the 100-year detained runoff from the subject site. In the proposed conditions the available capacity ranges from 51% to 85% (percent empty) compared to 56% to 90% (percent empty) pre-development.

Table 9 – Storm Sewer Capacity on New Lakeshore							
From	To	Runoff (cms)	Pipe Capacity (cms)	Current Available Capacity (cms)	Current Available Capacity (%)	Proposed Added Outflow (cms)	Proposed Excess Capacity (%)
ST5	ST4	0.866	2.862	1.996	**70%**	0.1345	**65%**
ST4	ST3	0.887	5.431	4.544	**84%**	0.1345	**81%**
ST3	ST2	0.297	2.880	2.583	**90%**	0.1345	**85%**
ST2	ST1	1.124	6.004	4.880	**81%**	0.1345	**79%**
ST1	OUTLET	1.122	2.560	1.438	**56%**	0.1345	**51%**

The pipe run from ST1 to the Outlet has the lowest surplus capacity of the outlet, with 1.44 m^3/s of unused capacity. This is the limiting factor in determining if the outlet has sufficient capacity for the proposed solution. Two pathways may rely on this surplus capacity in the future; **A)** ST10 to ST6 and **B)** ST7 to ST6.

A) If upstream flows were increased to the full capacity of the pipe from ST10 to ST6, an additional 0.049 m^3/s would enter the storm sewer at ST5 in the 5-year return period.

B) Subcatchment A1 has an area of 7.8 ha, a runoff coefficient of 0.5, and drains to ST6 via ST7. In the very unlikely event that all of the A1 sub catchment was paved, with a runoff coefficient of 0.95, the resultant increase in runoff would be 0.52 m^3/s in the 5-year return period.

In total, 0.57 m^3/s could potentially be added to the storm sewer from ST6 through ST1 and ultimately the outlet to Lake Erie with future development under current zoning. This is well within the available capacity of 1.44 m^3/s in the lowest capacity sewer of this oulet. Therefore, there is sufficient capacity downstream of ST6 to accommodate the proposed release rates of the subject site without negatively impacting future development.

Quality Control

To provide a >60% TSS load reduction for the 5-year runoff rate an EFO8 is proposed after the orifice manhole. The Imbrium Stromceptor sizing report is included in Appendix C. It confirms that 45 L/s can be treated with the EFO8 to an 63% TSS removal rate. The table below summarizes the calculation for the 2-year storm.

Table 10: Quality Control Parameters

Parameter	Value
Runoff Coefficient (C)	0.76
Antecedent Precipitation Factor (Ca)	1.0
Catchment Area (A)	0.9050 ha
Peak Release Rate (2-year Q)	45 L/s
TSS Removal Provided (EF8)	63%

Conclusions and Recommendations

Based on the review presented by this Stormwater Management Report, a stormwater management design for the proposed Caledonia Fire and EMS Station development can be summarized as follows:

NORTH

- The total active storage volume of the proposed underground storage is 525.40m^3; total required is 432.19m^3 in the 100-year return period.
- The storage is provided by MC-7200 chambers and an orifice plate that ensure release rates remain below the pre-development levels for each return period between 2-years and 100-years.
- Stormceptor EFO8 is proposed to provide water quality control at a basic level of protection, min. 60% long-term TSS removal.

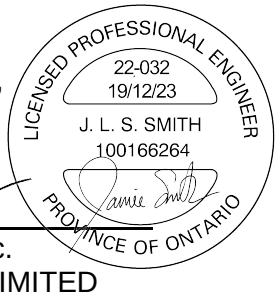
SOUTH

- Overland flow from the south perimeter of the site to the Brown St. storm sewers is held under the pre-development levels for each return period between 2-years and 100-years.

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It is recommended that this report be submitted in support of the detailed design and site plan approval application.

Respectfully submitted,



Jamie Smith P.Eng. M.Sc.
G. DOUGLAS VALLEE LIMITED
Consulting Engineers, Architects and Planners

Appendix A
K. Smart Highway 6 Drain Drainage Areas Drawing
K. Smart Highway 6 Drain Storm Sewer Design Sheet

Appendix B
– DWG - FIG1 Pre-Development Drainage Areas
– DWG - FIG2 Post-Development Drainage Areas

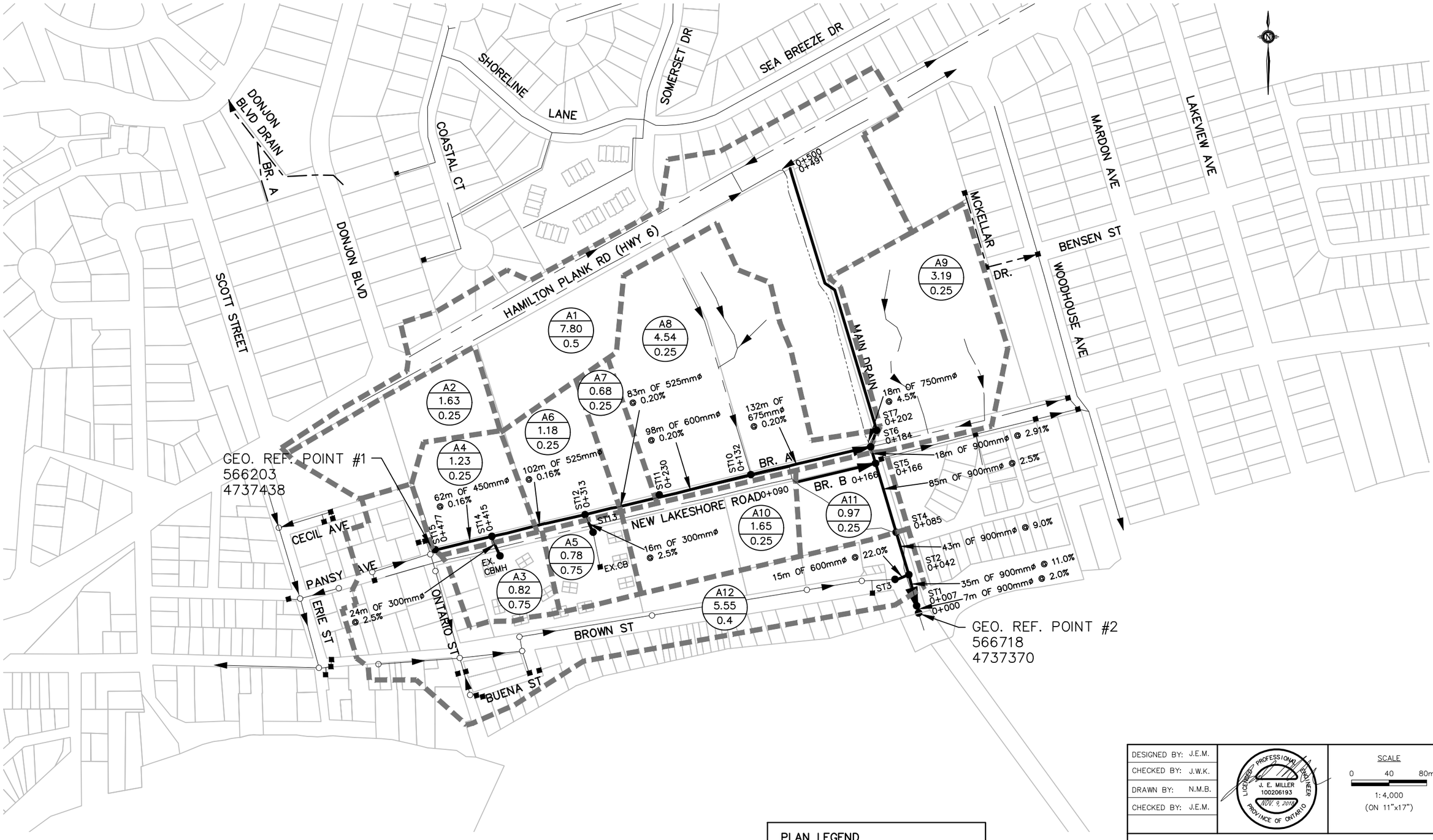
Appendix C
– Brown St. Rational Method Calculations
– New Lakeshore Rd. Modified Rational Method Calculations

Appendix D
– Stormceptor EFO8 Sizing Report

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APPENDIX A

K. Smart Highway 6 Drain Drainage Areas Drawing
K. Smart Highway 6 Drain Storm Sewer Design Sheet



PLAN LEGEND

- DRAINAGE AREA LIMITS
- A10 / 1.65 / 0.25 — AREA I.D / AREA (ha.) / RUN-OFF COEFFICIENT

DESIGNED BY:	J.E.M.
CHECKED BY:	J.W.K.
DRAWN BY:	N.M.B.
CHECKED BY:	J.E.M.

LICENCED PROFESSIONAL ENGINEER — J. E. MILLER — 100206193 — NOV. 9, 2018 — PROVINCE OF ONTARIO

SCALE
0 40 80m
1:4,000
(ON 11"x17")

HIGHWAY 6 PETITION

NORFOLK COUNTY (WOODHOUSE TOWNSHIP)

STORM DRAINAGE AREAS PLAN

NOV. 9, 2018

K. SMART ASSOCIATES LIMITED
CONSULTING ENGINEERS AND PLANNERS
KITCHENER RAINY RIVER

REVISED:

JOB NUMBER: 12-157

DRAWING FIGURE 1

\\server\ksdata\Data\2012\12-157\Drafting\WS 12-157.dwg DRAINAGE AREAS 21-Nov-18 4:12:25 PM

Project Number	12-157					STORM SEWER DESIGN SHEET													
Designed By	JM	K. Smart Associates Limited																	
Checked By	SS	K. Smart Associates Limited				Port Dover - Highway 6 Petition													
Date	23-Aug-19																		
Revised:	02-Feb-21																		
		5 Year Storm Event																	
		A	B	C															
		538.017	3.007	0.703															
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	

Area ID	Design Storm	From	To	Δ Area (ha)	C	AC	Total AC	Tc (minutes)	Rain (mm/hr)	Q design (cms)	Design Pipe Size	Qcap (cms)	Velocity (m/sec)	Mannings N	Pipe Slope (%)	Pipe Length (meters)	Travel Time (minutes)	Total Time (minutes)	Pipe Capacity Available
A1	5	**ST7** 0+202	**ST6** 0+184	7.8	0.50	3.9	3.9	23.83	53.265	**0.578**	750	**2.3616**	5.346	0.013	4.5	18	0.056	23.882	76%
A2	5	**ST15** 0+477	**ST14** 0+415	1.63	0.25	0.4075	0.4075	29.06	46.991	**0.053**	450	**0.1140**	0.717	0.013	0.16	62	1.441	30.504	53%
A3	5	EX. CBMH	**ST14** 0+415	0.82	0.75	0.615	0.615	10.00	88.620	**0.152**	300	**0.1529**	2.163	0.013	2.5	24	0.185	10.185	1%
A4	5	**ST14** 0+415	**ST12** 0+312	1.23	0.25	0.3075	1.33	30.50	45.561	**0.168**	600	**0.2456**	0.869	0.013	0.16	102	1.957	32.461	31%
A5	5	**EX CB**	**ST13**	0.78	0.75	0.585	0.585	10.00	88.620	**0.144**	300	**0.1845**	2.610	0.013	3.64	7	0.045	10.045	22%
	5	**ST13**	**ST12** 0+313	0	0.75	0	0.585	10.04	88.406	**0.144**	300	**0.1529**	2.163	0.013	2.5	16	0.123	10.168	6%
A6	5	**ST12** 0+313	**ST11** 0+230	1.18	0.25	0.295	1.625	33.94	42.541	**0.192**	600	**0.2746**	0.971	0.013	0.2	83	1.424	35.362	30%
A7	5	**ST11** 0+230	**ST10** 0+132	0.68	0.25	0.17	1.795	35.36	41.424	**0.207**	600	**0.2746**	0.971	0.013	0.2	98	1.682	37.044	25%
A8	5	**ST10** 0+132	**ST6** 0+184	4.54	0.25	1.135	2.93	37.04	40.194	**0.327**	675	**0.3759**	1.051	0.013	0.2	132	2.094	39.138	13%
A9	5	**ST6** 0+184	**ST5** 0+166	3.19	0.25	0.7975	7.6275	39.14	38.779	**0.822**	900	**3.0882**	4.854	0.013	2.91	18	0.062	39.200	73%
A10	5	**ST5** 0+166	**ST4** 0+083	1.65	0.25	0.4125	8.04	39.20	38.739	**0.866**	900	**2.8624**	4.499	0.013	2.5	85	0.315	39.515	70%
A11	5	**ST4** 0+083	**ST2** 0+042	0.97	0.25	0.2425	8.2825	39.51	38.537	**0.887**	900	**5.4309**	8.537	0.013	9	43	0.084	39.599	84%
A12	5	**ST3**	**ST2** 0+042	5.55	0.40	2.22	2.22	27.95	48.173	**0.297**	600	**2.8800**	10.186	0.013	22	43	0.070	28.019	90%
	5	**ST2** 0+042	**ST1** 0+007	0	0.40	0	10.5025	39.60	38.484	**1.124**	900	**6.0041**	9.438	0.013	11	35	0.062	39.661	81%
	5	**ST1** 0+007	**Outlet** 0+000	0	0.40	0	10.5025	39.66	38.445	**1.122**	900	**2.5602**	4.024	0.013	2	7	0.029	39.689	56%

Time of Concentration Calculations

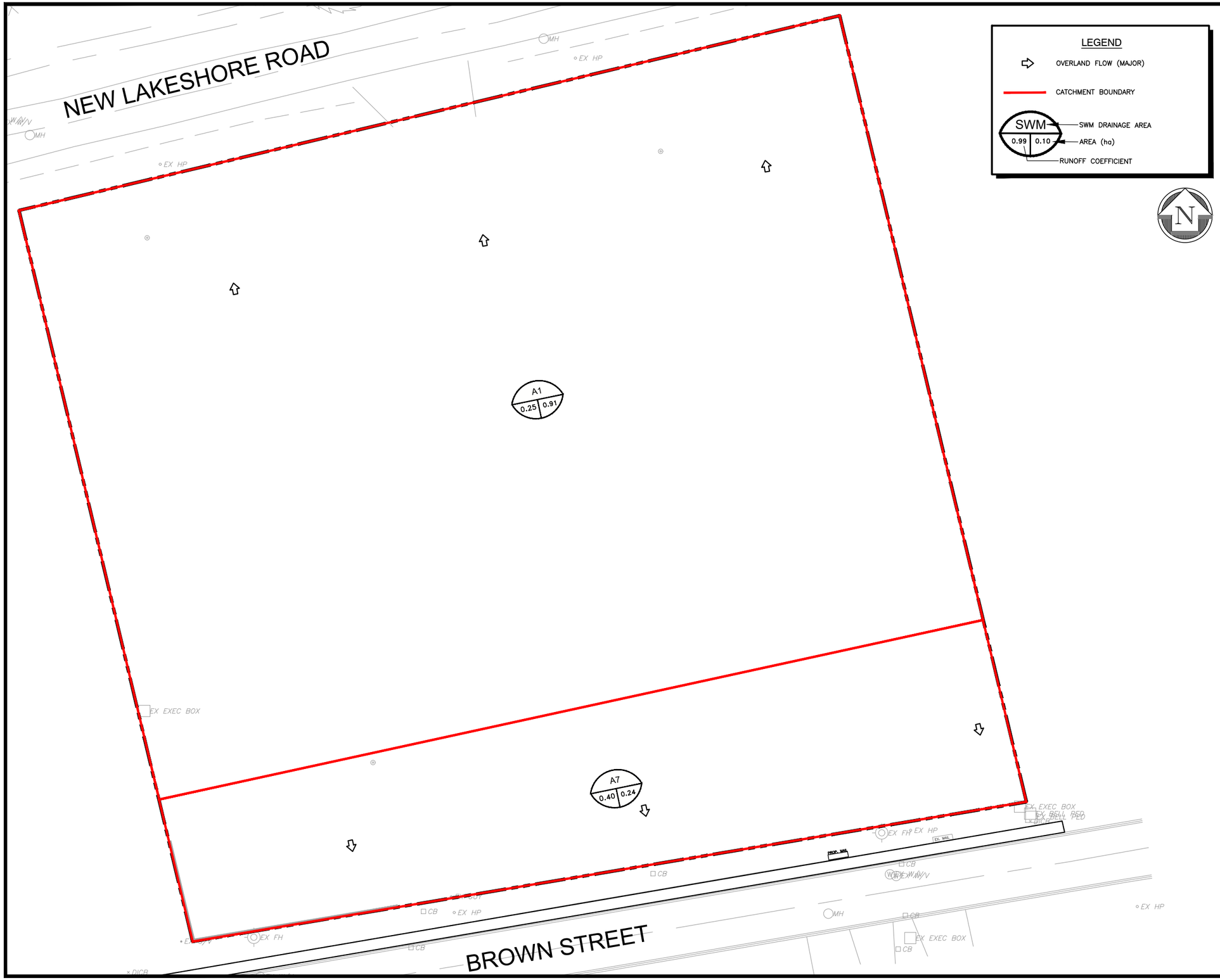
Airport Method: tc = (3.26*(1.1-C)*L^0.5)/Sw^0.33

To ST7 (0+202)			**To ST15 (0+477)**			**To ST12 (0+313)**			**To ST10 (0+132)**			**To ST6 (0+184)**			**To ST5 (0+166)**			**To ST3**		
C	0.5		C	0.25		C	0.250		C	0.250		C	0.250		C	0.25		C	0.40	
Sw	0.55	%	Sw	1	%	Sw	1.000	%	Sw	1.000	%	Sw	1.000	%	Sw	4	%	Sw	1.00	%
L	100	m	L	110	m	L	150.000	m	L	160.000	m	L	150.000	m	L	75	m	L	150.00	m
tc	23.83	min	tc	29.06	min	tc	33.938	min	tc	35.051	min	tc	33.938	min	tc	15.19	min	tc	27.95	min

Appendix B

DWG - FIG1 Pre-Development Drainage Areas

DWG - FIG2 Post-Development Drainage Areas



LEGEND

- OVERLAND FLOW (MAJOR)
- CATCHMENT BOUNDARY
- SWM — SWM DRAINAGE AREA
- 0.99 | 0.10 — AREA (ha)
- RUNOFF COEFFICIENT

N

DATE	REVISION
2023.12.06	ISSUED FOR SWM REPORT

Stamp

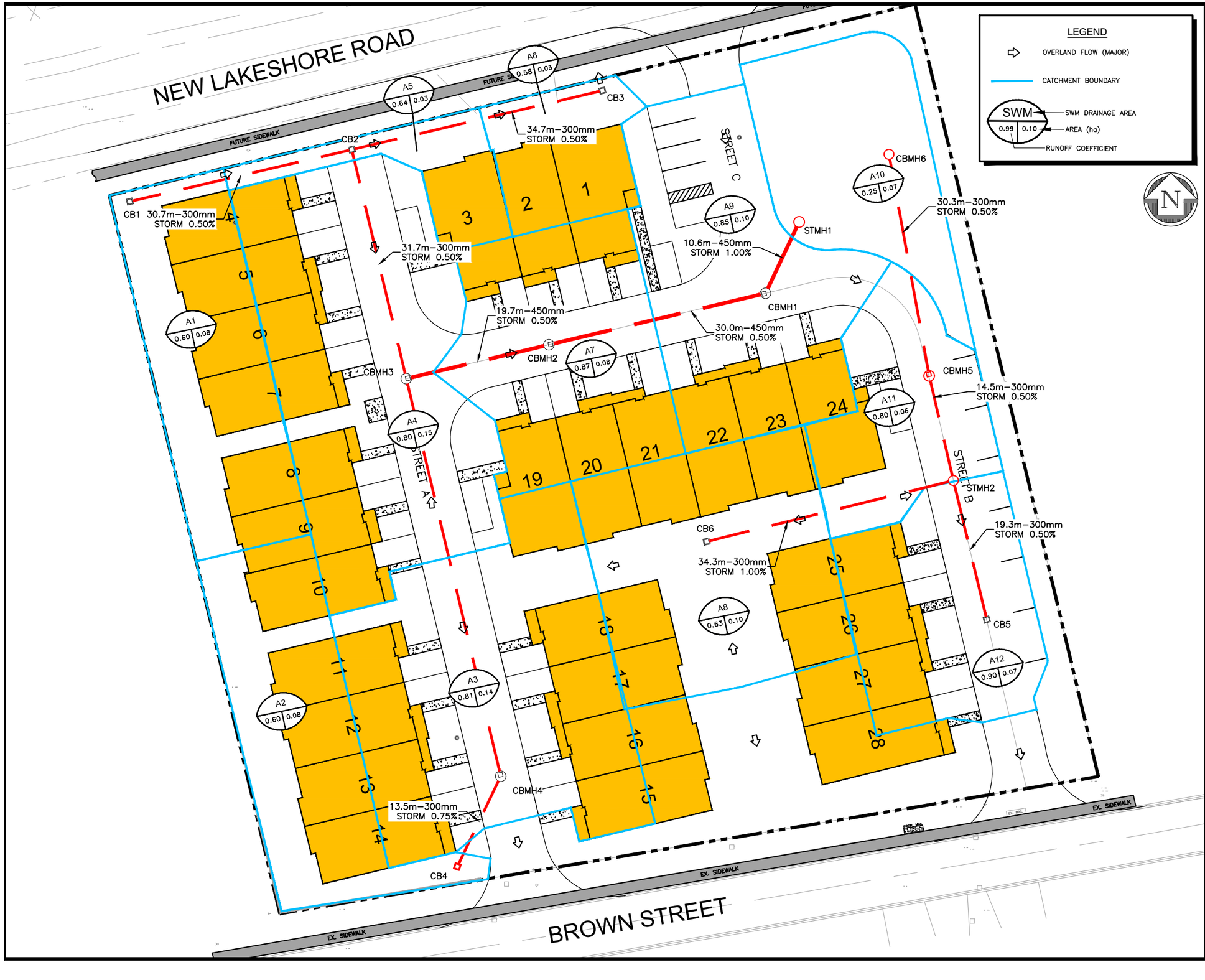
vallee
Consulting Engineers, Architects & Planners

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SIMCOE, ONTARIO N3Y 3W4
(519) 426-6270

Project Title
RAMHANS CONDOS
38 NEW LAKESHORE ROAD
PORT DOVER, NORFOLK COUNTY

Drawing Title
POST DEVELOPMENT DRAINAGE AREAS

Designed by :	Drawn By :	Checked By :
JLS	KRA	JLS
Scale : JLS	Date : JLS	Drawing No. FIG1
Project No. 22-032		



DATE	REVISION
2023.12.06	ISSUED FOR SWM REPORT

Stamp

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Project Title
RAMHANS CONDOS
38 NEW LAKESHORE ROAD
PORT DOVER, NORFOLK COUNTY

Drawing Title
POST DEVELOPMENT DRAINAGE AREAS

Designed by :	Drawn By :	Checked By :
JLS	KRA	JLS
Scale : JLS	Date : JLS	Drawing No. FIG1
Project No. 22-032		

APPENDIX C

Brown St. Rational Method Calculations

New Lakeshore Rd. Modified Rational Method Calculations

Brown Street Pre-Development Peak Runoff Release Rates

PRE	2-Year	5-Year	10-Year	25-Year	50-Year	100-Year
I (mm/hr)	59.7	78.8	91.9	107.7	119.6	131.1
C	0.40	0.40	0.40	0.40	0.40	0.40
Cf	1.00	1.00	1.00	1.10	1.20	1.25
A (ha)	0.2456	0.2456	0.2456	0.2456	0.2456	0.2456
Tc (min)	14.2	14.2	14.2	14.2	14.2	14.2
Q (l/s)	**16.30**	**21.51**	**25.09**	**32.33**	**39.18**	**44.73**
Q (m3/s)	**0.0163**	**0.0215**	**0.0251**	**0.0323**	**0.0392**	**0.0447**

Brown Street Post-Development Peak Runoff Release Rates

POST	2-Year	5-Year	10-Year	25-Year	50-Year	100-Year
I (mm/hr)	71.4	94.9	110.5	130.0	144.6	158.9
C	0.40	0.40	0.40	0.40	0.40	0.40
Cf	1.00	1.00	1.00	1.10	1.20	1.25
A (ha)	0.1275	0.1275	0.1275	0.1275	0.1275	0.1275
Tc (min)	10.2	10.2	10.2	10.2	10.2	10.2
Q (l/s)	**10.12**	**13.44**	**15.65**	**20.25**	**24.59**	**28.14**
Q (m3/s)	**0.0101**	**0.0134**	**0.0157**	**0.0203**	**0.0246**	**0.0281**

2 - Year Modified Rational Method

Catchment Area	0.9050	ha
Target Release Rate	61.37	l/s
Runoff Coefficient	0.76	
Adjustment Factor	1.00	
Timestep	5	min

Return Period	2-Year
A	529.7
B	4.501
C	0.745

Time (min)	Intensity (mm/hr)	Q (m3/s)	Release Rate 5 m3/s	Flow Detained 5 m3/s	Storage Req. 5 m3
5	99.0	0.1891	0.03007	0.1590	47.70
10	72.2	0.1380	0.03429	0.1037	78.81
15	57.9	0.1107	0.03804	0.0726	100.60
20	48.9	0.0934	0.04035	0.0530	116.50
25	42.6	0.0813	0.04145	0.0398	128.45
30	37.9	0.0723	0.04253	0.0298	137.40
35	34.2	0.0654	0.04358	0.0218	143.94
40	31.3	0.0598	0.04460	0.0152	148.52
45	28.9	0.0553	0.04460	0.0107	151.72
50	26.9	0.0515	0.04460	0.0069	153.78
55	25.2	0.0482	0.04460	0.0036	154.85
60	23.8	0.0454	0.04460	0.0008	155.09
65	22.5	0.0429	0.04460	-0.0017	154.59
70	21.3	0.0408	0.04460	-0.0038	153.44
75	20.3	0.0388	0.04460	-0.0058	151.71
80	19.4	0.0371	0.04460	-0.0075	149.46
85	18.6	0.0356	0.04358	-0.0080	147.06
90	17.9	0.0341	0.04358	-0.0094	144.23
95	17.2	0.0329	0.04358	-0.0107	141.01
100	16.6	0.0317	0.04253	-0.0108	137.76
105	16.0	0.0306	0.04253	-0.0119	134.18
110	15.5	0.0296	0.04145	-0.0119	130.63

5 - Year Modified Rational Method

Catchment Area	0.9050	ha
Target Release Rate	80.79	l/s
Runoff Coefficient	0.76	
Adjustment Factor	1.00	
Timestep	5	min

Return Period	5-Year
A	583.0
B	3.007
C	0.703

Time (min)	Intensity (mm/hr)	Q (m3/s)	Release Rate 5 m3/s	Flow Detained 5 m3/s	Storage Req. 5 m3
5	135.1	0.2580	0.03294	0.2250	67.51
10	96.0	0.1834	0.03921	0.1442	110.77
15	76.4	0.1459	0.04358	0.1024	141.48
20	64.3	0.1228	0.04561	0.0772	164.65
25	56.0	0.1070	0.04849	0.0585	182.19
30	49.9	0.0953	0.04941	0.0459	195.96
35	45.2	0.0863	0.05121	0.0351	206.49
40	41.4	0.0791	0.05987	0.0193	212.27
45	38.3	0.0732	0.05987	0.0134	216.29
50	35.8	0.0683	0.05987	0.0084	218.82
55	33.6	0.0641	0.06668	-0.0026	218.05
60	31.7	0.0605	0.06668	-0.0062	216.20
65	30.0	0.0573	0.06668	-0.0093	213.40
70	28.6	0.0545	0.06668	-0.0121	209.76
75	27.3	0.0521	0.06668	-0.0146	205.37
80	26.1	0.0498	0.06668	-0.0168	200.32
85	25.0	0.0478	0.06668	-0.0188	194.67
90	24.1	0.0460	0.06668	-0.0207	188.46
95	23.2	0.0443	0.06668	-0.0223	181.76
100	22.4	0.0428	0.06668	-0.0239	174.61
105	21.7	0.0414	0.06668	-0.0253	167.03
110	21.0	0.0401	0.05987	-0.0197	161.11

10 - Year Modified Rational Method

Catchment Area	0.9050	ha
Target Release Rate	94.47	l/s
Runoff Coefficient	0.76	
Adjustment Factor	1.00	
Timestep	5	min

Return Period	10-Year
A	670.3
B	3.007
C	0.698

Time (min)	Intensity (mm/hr)	Q (m3/s)	Release Rate 5 m3/s	Flow Detained 5 m3/s	Storage Req. 5 m3
5	156.9	0.2997	0.03429	0.2654	79.63
10	111.8	0.2136	0.04145	0.1722	131.27
15	89.1	0.1702	0.04659	0.1236	168.37
20	75.1	0.1435	0.04941	0.0941	196.58
25	65.5	0.1251	0.05987	0.0652	216.14
30	58.4	0.1115	0.06668	0.0448	229.59
35	52.9	0.1011	0.07159	0.0295	238.43
40	48.5	0.0927	0.07572	0.0170	243.53
45	45.0	0.0859	0.07938	0.0065	245.47
50	41.9	0.0801	0.07938	0.0007	245.69
55	39.4	0.0752	0.07938	-0.0042	244.45
60	37.2	0.0710	0.07938	-0.0084	241.94
65	35.3	0.0673	0.07938	-0.0121	238.32
70	33.5	0.0641	0.07938	-0.0153	233.73
75	32.0	0.0612	0.07938	-0.0182	228.26
80	30.7	0.0586	0.07938	-0.0208	222.02
85	29.4	0.0562	0.07938	-0.0231	215.08
90	28.3	0.0541	0.07938	-0.0253	207.50
95	27.3	0.0522	0.07938	-0.0272	199.34
100	26.4	0.0504	0.07938	-0.0290	190.64
105	25.5	0.0487	0.07938	-0.0306	181.45
110	24.7	0.0472	0.07938	-0.0322	171.80

25 - Year Modified Rational Method

Catchment Area	0.9050	ha
Target Release Rate	121.41	l/s
Runoff Coefficient	0.76	
Adjustment Factor	1.10	
Timestep	5	min

Return Period	25-Year
A	721.5
B	2.253
C	0.679

Time (min)	Intensity (mm/hr)	Q (m3/s)	Release Rate 5 m3/s	Flow Detained 5 m3/s	Storage Req. 5 m3
5	187.9	0.3948	0.03921	0.3556	106.68
10	131.6	0.2765	0.04755	0.2290	175.38
15	104.3	0.2192	0.06668	0.1525	221.14
20	87.8	0.1844	0.08273	0.1017	251.65
25	76.5	0.1607	0.08878	0.0719	273.22
30	68.2	0.1433	0.09422	0.0491	287.96
35	61.9	0.1300	0.09922	0.0308	297.19
40	56.8	0.1193	0.09922	0.0201	303.22
45	52.6	0.1106	0.10160	0.0090	305.92
50	49.2	0.1033	0.10160	0.0017	306.43
55	46.2	0.0971	0.10160	-0.0045	305.07
60	43.7	0.0917	0.10160	-0.0099	302.11
65	41.4	0.0870	0.09922	-0.0122	298.45
70	39.5	0.0829	0.09922	-0.0163	293.55
75	37.7	0.0792	0.09677	-0.0176	288.28
80	36.1	0.0759	0.09677	-0.0209	282.03
85	34.7	0.0729	0.09422	-0.0213	275.64
90	33.4	0.0702	0.09422	-0.0240	268.44
95	32.2	0.0677	0.09422	-0.0265	260.50
100	31.2	0.0655	0.09422	-0.0287	251.88
105	30.2	0.0634	0.09422	-0.0308	242.63
110	29.3	0.0615	0.09677	-0.0353	232.04

50 - Year Modified Rational Method

Catchment Area	0.9050	ha
Target Release Rate	147.13	l/s
Runoff Coefficient	0.76	
Adjustment Factor	1.20	
Timestep	5	min

Return Period	50-Year
A	766.0
B	1.898
C	0.668

Time (min)	Intensity (mm/hr)	Q (m3/s)	Release Rate 5 m3/s	Flow Detained 5 m3/s	Storage Req. 5 m3
5	210.9	0.4833	0.04253	0.4408	132.23
10	146.5	0.3358	0.05987	0.2759	215.00
15	115.9	0.2656	0.08585	0.1798	268.93
20	97.5	0.2234	0.09922	0.1242	306.19
25	85.0	0.1947	0.10831	0.0864	332.11
30	75.8	0.1738	0.11250	0.0613	350.49
35	68.8	0.1577	0.11651	0.0411	362.83
40	63.2	0.1448	0.11845	0.0264	370.75
45	58.6	0.1343	0.12035	0.0140	374.93
50	54.8	0.1255	0.12035	0.0052	376.49
55	51.5	0.1180	0.12035	-0.0023	375.80
60	48.7	0.1116	0.12035	-0.0088	373.17
65	46.2	0.1059	0.11845	-0.0125	369.42
70	44.1	0.1010	0.11845	-0.0175	364.17
75	42.1	0.0965	0.11651	-0.0200	358.18
80	40.4	0.0926	0.11651	-0.0240	350.99
85	38.8	0.0890	0.11453	-0.0256	343.32
90	37.4	0.0857	0.11250	-0.0268	335.28
95	36.1	0.0827	0.11043	-0.0277	326.97
100	34.9	0.0800	0.11043	-0.0304	317.84
105	33.8	0.0775	0.10831	-0.0308	308.59
110	32.8	0.0751	0.10831	-0.0332	298.63

100 - Year Modified Rational Method

Catchment Area	0.9050	ha
Target Release Rate	167.82	l/s
Runoff Coefficient	0.76	
Adjustment Factor	1.25	
Timestep	5	min

Return Period	100-Year
A	801.0
B	1.501
C	0.657

Time (min)	Intensity (mm/hr)	Q (m3/s)	Release Rate 5 m3/s	Flow Detained 5 m3/s	Storage Req. 5 m3
5	234.2	0.5591	0.04460	0.5145	154.34
10	161.0	0.3843	0.07938	0.3049	245.83
15	127.0	0.3032	0.09922	0.2040	307.01
20	106.7	0.2548	0.11250	0.1423	349.70
25	93.0	0.2221	0.12222	0.0999	379.66
30	83.0	0.1982	0.12764	0.0706	400.84
35	75.4	0.1800	0.13111	0.0488	415.49
40	69.3	0.1654	0.13448	0.0309	424.76
45	64.3	0.1535	0.13613	0.0174	429.97
50	60.1	0.1435	0.13613	0.0074	432.19
55	56.6	0.1351	0.13613	-0.0011	431.86
60	53.5	0.1277	0.13613	-0.0084	429.34
65	50.8	0.1213	0.13448	-0.0131	425.40
70	48.5	0.1157	0.13448	-0.0188	419.76
75	46.4	0.1107	0.13281	-0.0221	413.12
80	44.5	0.1062	0.13111	-0.0250	405.63
85	42.8	0.1021	0.12939	-0.0273	397.44
90	41.2	0.0984	0.12764	-0.0293	388.67
95	39.8	0.0950	0.12587	-0.0309	379.41
100	38.5	0.0919	0.12406	-0.0322	369.76
105	37.3	0.0890	0.12222	-0.0332	359.81
110	36.2	0.0864	0.12035	-0.0339	349.63

APPENDIX D
Stormceptor EFO Sizing Chart

Stormceptor®

Rinker MATERIALS™

Stormceptor® EF Sizing Report

Imbrium® Systems
ESTIMATED NET ANNUAL SEDIMENT (TSS) LOAD REDUCTION

12/05/2023

Province:	Ontario
City:	Port Dover
Nearest Rainfall Station:	HAMILTON RBG CS
Climate Station Id:	6153301
Years of Rainfall Data:	20

Site Name:	Ramhan NE outlet

Drainage Area (ha):	0.91
Runoff Coefficient 'c':	0.76

Particle Size Distribution:	CA ETV
Target TSS Removal (%):	60.0

Required Water Quality Runoff Volume Capture (%):	90.00
Estimated Water Quality Flow Rate (L/s):	21.65
Oil / Fuel Spill Risk Site?	Yes
Upstream Flow Control?	Yes
Upstream Orifice Control Flow Rate to Stormceptor (L/s):	45.00
Peak Conveyance (maximum) Flow Rate (L/s):	
Influent TSS Concentration (mg/L):	100
Estimated Average Annual Sediment Load (kg/yr):	313
Estimated Average Annual Sediment Volume (L/yr):	255

Project Name:	Ramhan
Project Number:	22-032
Designer Name:	Jamie Smith
Designer Company:	G.D. Vallee Ltd.
Designer Email:	jamiesmith@gdvallee.ca
Designer Phone:	519-426-6270
EOR Name:	
EOR Company:	
EOR Email:	
EOR Phone:	

Net Annual Sediment (TSS) Load Reduction Sizing Summary

Stormceptor Model	TSS Removal Provided (%)
EFO4	51
EFO6	59
EFO8	63
EFO10	66
EFO12	68

Recommended Stormceptor EFO Model: EFO8

Estimated Net Annual Sediment (TSS) Load Reduction (%): 63

Water Quality Runoff Volume Capture (%): > 90

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THIRD-PARTY TESTING AND VERIFICATION

►**Stormceptor® EF and Stormceptor® EFO** are the latest evolutions in the Stormceptor® oil-grit separator (OGS) technology series, and are designed to remove a wide variety of pollutants from stormwater and snowmelt runoff. These technologies have been third-party tested in accordance with the Canadian ETV **Procedure for Laboratory Testing of Oil-Grit Separators** and performance has been third-party verified in accordance with the **ISO 14034 Environmental Technology Verification (ETV)** protocol.

PERFORMANCE

►**Stormceptor® EF and EFO** remove stormwater pollutants through gravity separation and floatation, and feature a patent-pending design that generates positive removal of total suspended solids (TSS) throughout each storm event, including high-intensity storms. Captured pollutants include sediment, free oils, and sediment-bound pollutants such as nutrients, heavy metals, and petroleum hydrocarbons. Stormceptor is sized to remove a high level of TSS from the frequent rainfall events that contribute the vast majority of annual runoff volume and pollutant load. The technology incorporates an internal bypass to convey excessive stormwater flows from high-intensity storms through the device without resuspension and washout (scour) of previously captured pollutants. Proper routine maintenance ensures high pollutant removal performance and protection of downstream waterwavs.

PARTICLE SIZE DISTRIBUTION (PSD)

►The **Canadian ETV PSD** shown in the table below was used, or in part, for this sizing. This is the identical PSD that is referenced in the Canadian ETV ***Procedure for Laboratory Testing of Oil-Grit Separators*** for both sediment removal testing and scour testing. The Canadian ETV PSD contains a wide range of particle sizes in the sand and silt fractions, and is considered reasonably representative of the particle size fractions found in typical urban stormwater runoff.

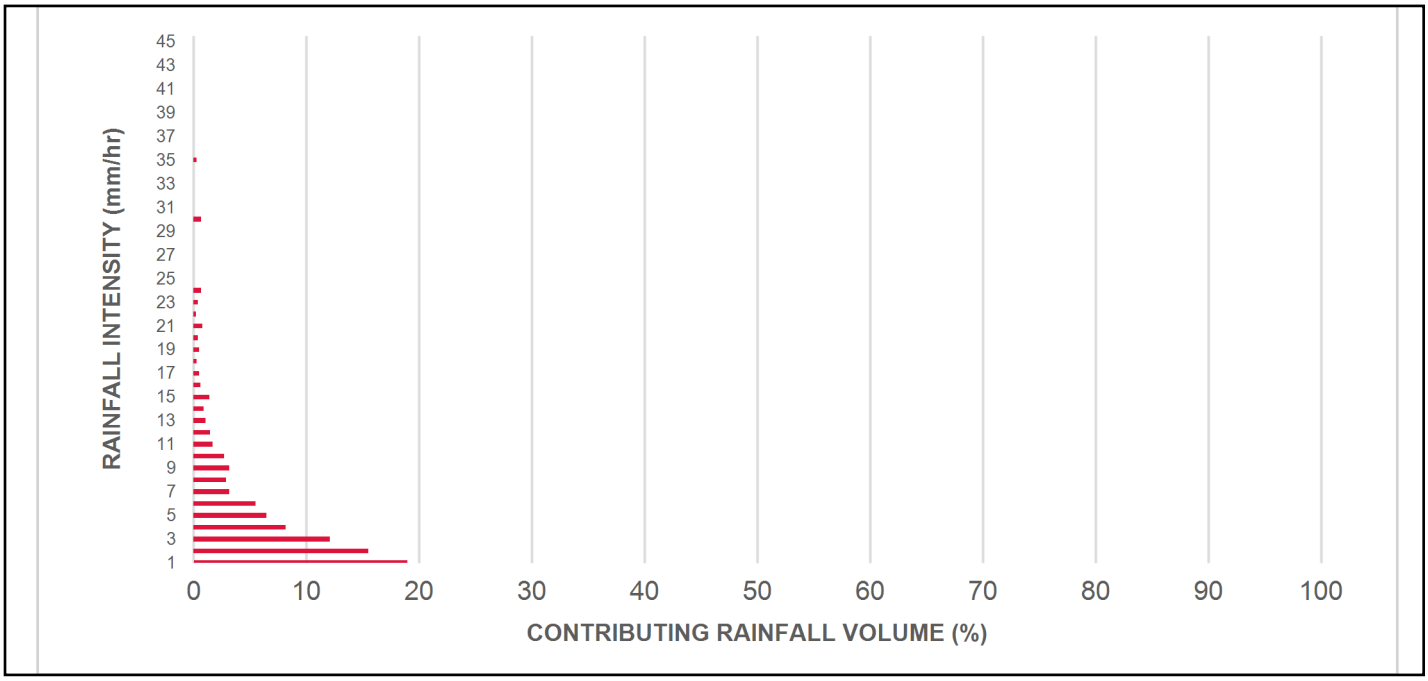
Particle Size (µm)	Percent Less Than	Particle Size Fraction (µm)	Percent
1000	100	500-1000	5
500	95	250-500	5
250	90	150-250	15
150	75	100-150	15
100	60	75-100	10
75	50	50-75	5
50	45	20-50	10
20	35	8-20	15
8	20	5-8	10
5	10	2-5	5
2	5	<2	5

Upstream Flow Controlled Results

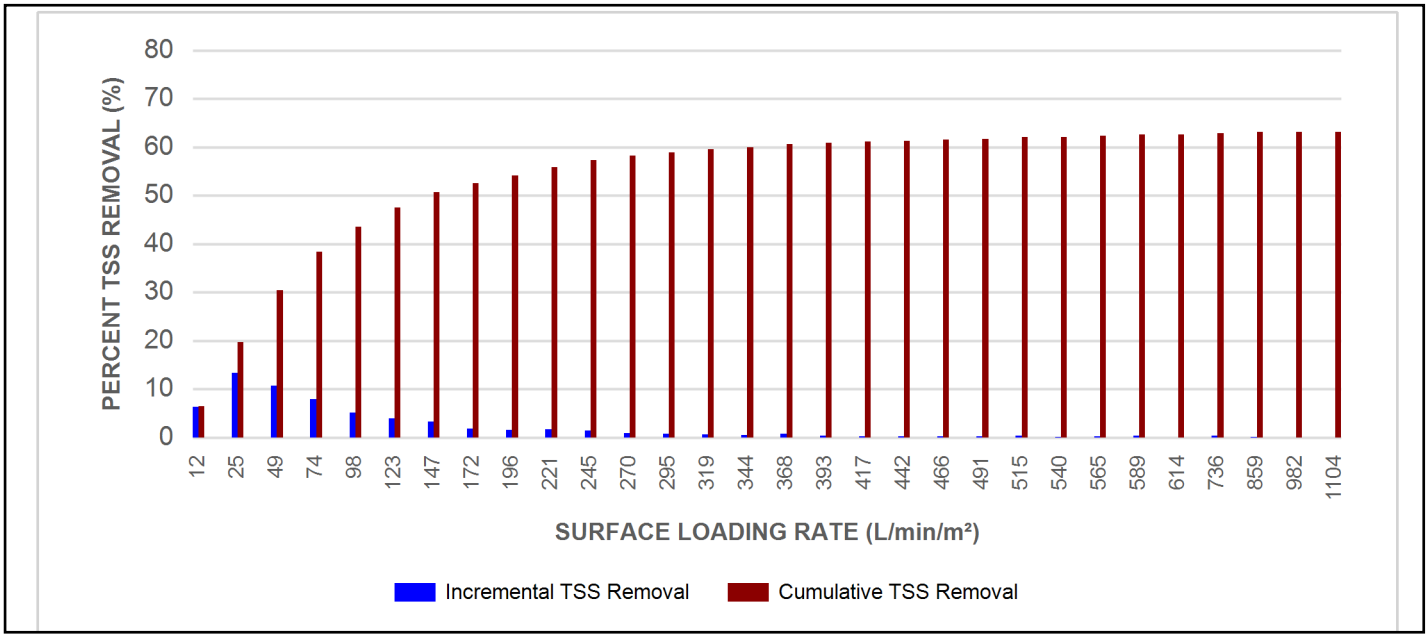
Rainfall Intensity (mm / hr)	Percent Rainfall Volume (%)	Cumulative Rainfall Volume (%)	Flow Rate (L/s)	Flow Rate (L/min)	Surface Loading Rate (L/min/m²)	Removal Efficiency (%)	Incremental Removal (%)	Cumulative Removal (%)
0.50	9.1	9.1	0.96	58.0	12.0	70	6.4	6.4
1.00	19.0	28.0	1.92	115.0	25.0	70	13.4	19.7
2.00	15.5	43.5	3.85	231.0	49.0	69	10.7	30.4
3.00	12.1	55.6	5.77	346.0	74.0	66	7.9	38.3
4.00	8.2	63.8	7.69	461.0	98.0	63	5.2	43.5
5.00	6.5	70.4	9.61	577.0	123.0	61	4.0	47.5
6.00	5.5	75.9	11.54	692.0	147.0	59	3.2	50.7
7.00	3.2	79.0	13.46	808.0	172.0	57	1.8	52.5
8.00	2.9	81.9	15.38	923.0	196.0	55	1.6	54.1
9.00	3.2	85.2	17.30	1038.0	221.0	53	1.7	55.8
10.00	2.7	87.9	19.23	1154.0	245.0	53	1.4	57.3
11.00	1.7	89.6	21.15	1269.0	270.0	52	0.9	58.2
12.00	1.5	91.1	23.07	1384.0	295.0	51	0.8	58.9
13.00	1.1	92.2	24.99	1500.0	319.0	50	0.6	59.5
14.00	0.9	93.1	26.92	1615.0	344.0	50	0.5	59.9
15.00	1.4	94.5	28.84	1730.0	368.0	49	0.7	60.6
16.00	0.6	95.1	30.76	1846.0	393.0	48	0.3	60.9
17.00	0.5	95.6	32.69	1961.0	417.0	48	0.2	61.1
18.00	0.3	95.9	34.61	2076.0	442.0	47	0.2	61.3
19.00	0.5	96.4	36.53	2192.0	466.0	46	0.2	61.5
20.00	0.4	96.8	38.45	2307.0	491.0	45	0.2	61.7
21.00	0.8	97.6	40.38	2423.0	515.0	45	0.4	62.1
22.00	0.2	97.8	42.30	2538.0	540.0	44	0.1	62.1
23.00	2.2	100.0	44.22	2653.0	565.0	43	0.9	63.1
24.00	0.0	100.0	45.00	2700.0	574.0	43	0.0	63.1
25.00	0.0	100.0	45.00	2700.0	574.0	43	0.0	63.1
30.00	0.0	100.0	45.00	2700.0	574.0	43	0.0	63.1
35.00	0.0	100.0	45.00	2700.0	574.0	43	0.0	63.1
40.00	0.0	100.0	45.00	2700.0	574.0	43	0.0	63.1
45.00	0.0	100.0	45.00	2700.0	574.0	43	0.0	63.1
Estimated Net Annual Sediment (TSS) Load Reduction =								**63 %**

Climate Station ID: 6153301 *Years of Rainfall Data*: 20

RAINFALL DATA FROM HAMILTON RBG CS RAINFALL STATION



INCREMENTAL AND CUMULATIVE TSS REMOVAL FOR THE RECOMMENDED STORMCEPTOR® MODEL



imbrium

Maximum Pipe Diameter / Peak Conveyance

Stormceptor EF / EFO	Model Diameter		Min Angle Inlet / Outlet Pipes	Max Inlet Pipe Diameter		Max Outlet Pipe Diameter		Peak Conveyance Flow Rate	
	(m)	(ft)		(mm)	(in)	(mm)	(in)	(L/s)	(cfs)
EF4 / EFO4	1.2	4	90	609	24	609	24	425	15
EF6 / EFO6	1.8	6	90	914	36	914	36	990	35
EF8 / EFO8	2.4	8	90	1219	48	1219	48	1700	60
EF10 / EFO10	3.0	10	90	1828	72	1828	72	2830	100
EF12 / EFO12	3.6	12	90	1828	72	1828	72	2830	100

SCOUR PREVENTION AND ONLINE CONFIGURATION

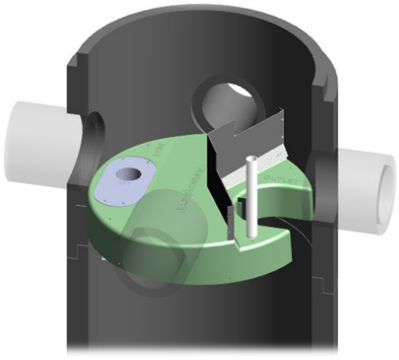
►**Stormceptor® EF and EFO** feature an internal bypass and superior scour prevention technology that have been demonstrated in third-party testing according to the scour testing provisions of the Canadian ETV **Procedure for Laboratory Testing of Oil-Grit Separators**, and the exceptional scour test performance has been third-party verified in accordance with the ISO 14034 ETV protocol. As a result, Stormceptor EF and EFO are approved for online installation, eliminating the need for costly additional bypass structures, piping, and installation expense.

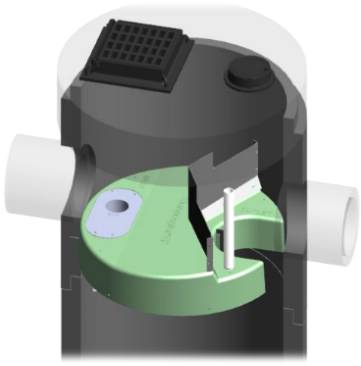
DESIGN FLEXIBILITY

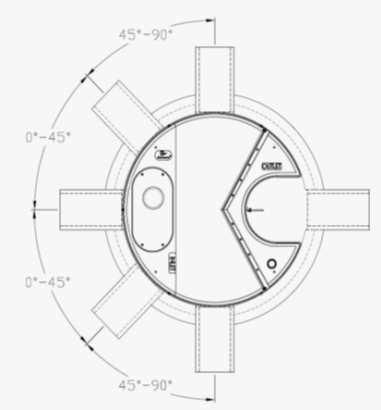
►**Stormceptor® EF** and **EFO** offers design flexibility in one simplified platform, accepting stormwater flow from a single inlet pipe or multiple inlet pipes, and/or surface runoff through an inlet grate. The device can also serve as a junction structure, accommodate a 90-degree inlet-to-outlet bend angle, and can be modified to ensure performance in submerged conditions.

OIL CAPTURE AND RETENTION

►While Stormceptor® EF will capture and retain oil from dry weather spills and low intensity runoff, **Stormceptor® EFO** has demonstrated superior oil capture and greater than 99% oil retention in third-party testing according to the light liquid re-entrainment testing provisions of the Canadian ETV **Procedure for Laboratory Testing of Oil-Grit Separators**. Stormceptor EFO is recommended for sites where oil capture and retention is a requirement.







INLET-TO-OUTLET DROP

Elevation differential between inlet and outlet pipe inverts is dictated by the angle at which the inlet pipe(s) enters the unit.
0° - 45° : The inlet pipe is 1-inch (25mm) higher than the outlet pipe.
45° - 90° : The inlet pipe is 2-inches (50mm) higher than the outlet pipe.

HEAD LOSS

The head loss through Stormceptor EF is similar to that of a 60-degree bend structure. The applicable K value for calculating minor losses through the unit is 1.1. For submerged conditions the applicable K value is 3.0.

Pollutant Capacity

Stormceptor EF / EFO	Model Diameter		Depth (Outlet Pipe Invert to Sump Floor)		Oil Volume		Recommended Sediment Maintenance Depth *		Maximum Sediment Volume *		Maximum Sediment Mass **	
	(m)	(ft)	(m)	(ft)	(L)	(Gal)	(mm)	(in)	(L)	(ft^3)	(kg)	(lb)
EF4 / EFO4	1.2	4	1.52	5.0	265	70	203	8	1190	42	1904	5250
EF6 / EFO6	1.8	6	1.93	6.3	610	160	305	12	3470	123	5552	15375
EF8 / EFO8	2.4	8	2.59	8.5	1070	280	610	24	8780	310	14048	38750
EF10 / EFO10	3.0	10	3.25	10.7	1670	440	610	24	17790	628	28464	78500
EF12 / EFO12	3.6	12	3.89	12.8	2475	655	610	24	31220	1103	49952	137875

*Increased sump depth may be added to increase sediment storage capacity
** Average density of wet packed sediment in sump = 1.6 kg/L (100 lb/ft^3)

Feature	Benefit	Feature Appeals To
Patent-pending enhanced flow treatment and scour prevention technology	Superior, verified third-party performance	Regulator, Specifying & Design Engineer
Third-party verified light liquid capture and retention for EFO version	Proven performance for fuel/oil hotspot locations	Regulator, Specifying & Design Engineer, Site Owner
Functions as bend, junction or inlet structure	Design flexibility	Specifying & Design Engineer
Minimal drop between inlet and outlet	Site installation ease	Contractor
Large diameter outlet riser for inspection and maintenance	Easy maintenance access from grade	Maintenance Contractor & Site Owner

STANDARD STORMCEPTOR EF/EFO DRAWINGS

For standard details, please visit http://www.imbriumsystems.com/stormwater-treatment-solutions/stormceptor-ef

STANDARD STORMCEPTOR EF/EFO SPECIFICATION

For specifications, please visit http://www.imbriumsystems.com/stormwater-treatment-solutions/stormceptor-ef

Table of TSS Removal vs Surface Loading Rate Based on Third-Party Test Results
Stormceptor® EFO

SLR (L/min/m²)	TSS % REMOVAL	SLR (L/min/m²)	TSS % REMOVAL	SLR (L/min/m²)	TSS % REMOVAL	SLR (L/min/m²)	TSS % REMOVAL
1	70	660	42	1320	35	1980	24
30	70	690	42	1350	35	2010	24
60	67	720	41	1380	34	2040	23
90	63	750	41	1410	34	2070	23
120	61	780	41	1440	33	2100	23
150	58	810	41	1470	32	2130	22
180	56	840	41	1500	32	2160	22
210	54	870	41	1530	31	2190	22
240	53	900	41	1560	31	2220	21
270	52	930	40	1590	30	2250	21
300	51	960	40	1620	29	2280	21
330	50	990	40	1650	29	2310	21
360	49	1020	40	1680	28	2340	20
390	48	1050	39	1710	28	2370	20
420	47	1080	39	1740	27	2400	20
450	47	1110	38	1770	27	2430	20
480	46	1140	38	1800	26	2460	19
510	45	1170	37	1830	26	2490	19
540	44	1200	37	1860	26	2520	19
570	43	1230	37	1890	25	2550	19
600	42	1260	36	1920	25	2580	18
630	42	1290	36	1950	24	2600	26

STANDARD PERFORMANCE SPECIFICATION FOR "OIL GRIT SEPARATOR" (OGS) STORMWATER QUALITY TREATMENT DEVICE

PART 1 – GENERAL

1.1 WORK INCLUDED

This section specifies requirements for selecting, sizing, and designing an underground Oil Grit Separator (OGS) device for stormwater quality treatment, with third-party testing results and a Statement of Verification in accordance with ISO 14034 Environmental Management – Environmental Technology Verification (ETV).

1.2 REFERENCE STANDARDS & PROCEDURES

ISO 14034:2016 Environmental management – Environmental technology verification (ETV)

Canadian Environmental Technology Verification (ETV) Program's **Procedure for Laboratory Testing of Oil-Grit** S**eparators**

1.3 SUBMITTALS

1.3.1 All submittals, including sizing reports & shop drawings, shall be submitted upon request with each order to the contractor then forwarded to the Engineer of Record for review and acceptance. Shop drawings shall detail all OGS components, elevations, and sequence of construction.

1.3.2 Alternative devices shall have features identical to or greater than the specified device, including: treatment chamber diameter, treatment chamber wet volume, sediment storage volume, and oil storage volume.

1.3.3 Unless directed otherwise by the Engineer of Record, OGS stormwater quality treatment product substitutions or alternatives submitted within ten days prior to project bid shall not be accepted. All alternatives or substitutions submitted shall be signed and sealed by a local registered Professional Engineer, based on the exact same criteria detailed in Section 3, in entirety, subject to review and approval by the Engineer of Record.

PART 2 – PRODUCTS

2.1 OGS POLLUTANT STORAGE

The OGS device shall include a sump for sediment storage, and a protected volume for the capture and storage of petroleum hydrocarbons and buoyant gross pollutants. The minimum sediment & petroleum hydrocarbon storage capacity shall be as follows:

2.1.1	4 ft (1219 mm) Diameter OGS Units:	1.19 m^3 sediment / 265 L oil
	6 ft (1829 mm) Diameter OGS Units:	3.48 m^3 sediment / 609 L oil
	8 ft (2438 mm) Diameter OGS Units:	8.78 m^3 sediment / 1,071 L oil
	10 ft (3048 mm) Diameter OGS Units:	17.78 m^3 sediment / 1,673 L oil
	12 ft (3657 mm) Diameter OGS Units:	31.23 m^3 sediment / 2,476 L oil

PART 3 – PERFORMANCE & DESIGN

3.1 GENERAL

The OGS stormwater quality treatment device shall be verified in accordance with ISO 14034:2016 Environmental management – Environmental technology verification (ETV). The OGS stormwater quality treatment device shall

remove oil, sediment and gross pollutants from stormwater runoff during frequent wet weather events, and retain these pollutants during less frequent high flow wet weather events below the insert within the OGS for later removal during maintenance. The Manufacturer shall have at least ten (10) years of local experience, history and success in engineering design, manufacturing and production and supply of OGS stormwater quality treatment device systems, acceptable to the Engineer of Record.

3.2 SIZING METHODOLOGY

The OGS device shall be engineered, designed and sized to provide stormwater quality treatment based on treating a minimum of 90 percent of the average annual runoff volume and a minimum removal of an annual average 60% of the sediment (TSS) load based on the Particle Size Distribution (PSD) specified in the sizing report for the specified device. Sizing of the OGS shall be determined by use of a minimum ten (10) years of local historical rainfall data provided by Environment Canada. Sizing shall also be determined by use of the sediment removal performance data derived from the ISO 14034 ETV third-party verified laboratory testing data from testing conducted in accordance with the Canadian ETV protocol Procedure for Laboratory Testing of Oil-Grit Separators, as follows:

3.2.1 Sediment removal efficiency for a given surface loading rate and its associated flow rate shall be based on sediment removal efficiency demonstrated at the seven (7) tested surface loading rates specified in the protocol, ranging 40 L/min/m^2 to 1400 L/min/m^2, and as stated in the ISO 14034 ETV Verification Statement for the OGS device.

3.2.2 Sediment removal efficiency for surface loading rates between 40 L/min/m^2 and 1400 L/min/m^2 shall be based on linear interpolation of data between consecutive tested surface loading rates.

3.2.3 Sediment removal efficiency for surface loading rates less than the lowest tested surface loading rate of 40 L/min/m^2 shall be assumed to be identical to the sediment removal efficiency at 40 L/min/m^2. No extrapolation shall be allowed that results in a sediment removal efficiency that is greater than that demonstrated at 40 L/min/m^2.

3.2.4 Sediment removal efficiency for surface loading rates greater than the highest tested surface loading rate of 1400 L/min/m^2 shall assume zero sediment removal for the portion of flow that exceeds 1400 L/min/m^2, and shall be calculated using a simple proportioning formula, with 1400 L/min/m^2 in the numerator and the higher surface loading rate in the denominator, and multiplying the resulting fraction times the sediment removal efficiency at 1400 L/min/m^2.

The OGS device shall also have sufficient annual sediment storage capacity as specified and calculated in Section 2.1.

3.3 CANADIAN ETV or ISO 14034 ETV VERIFICATION OF SCOUR TESTING

The OGS device shall have Canadian ETV or ISO 14034 ETV Verification of third-party scour testing conducted in accordance with the Canadian ETV Program's **Procedure for Laboratory Testing of Oil-Grit Separators.**

3.3.1 To be acceptable for on-line installation, the OGS device must demonstrate an average scour test effluent concentration less than 10 mg/L at each surface loading rate tested, up to and including 2600 L/min/m^2.

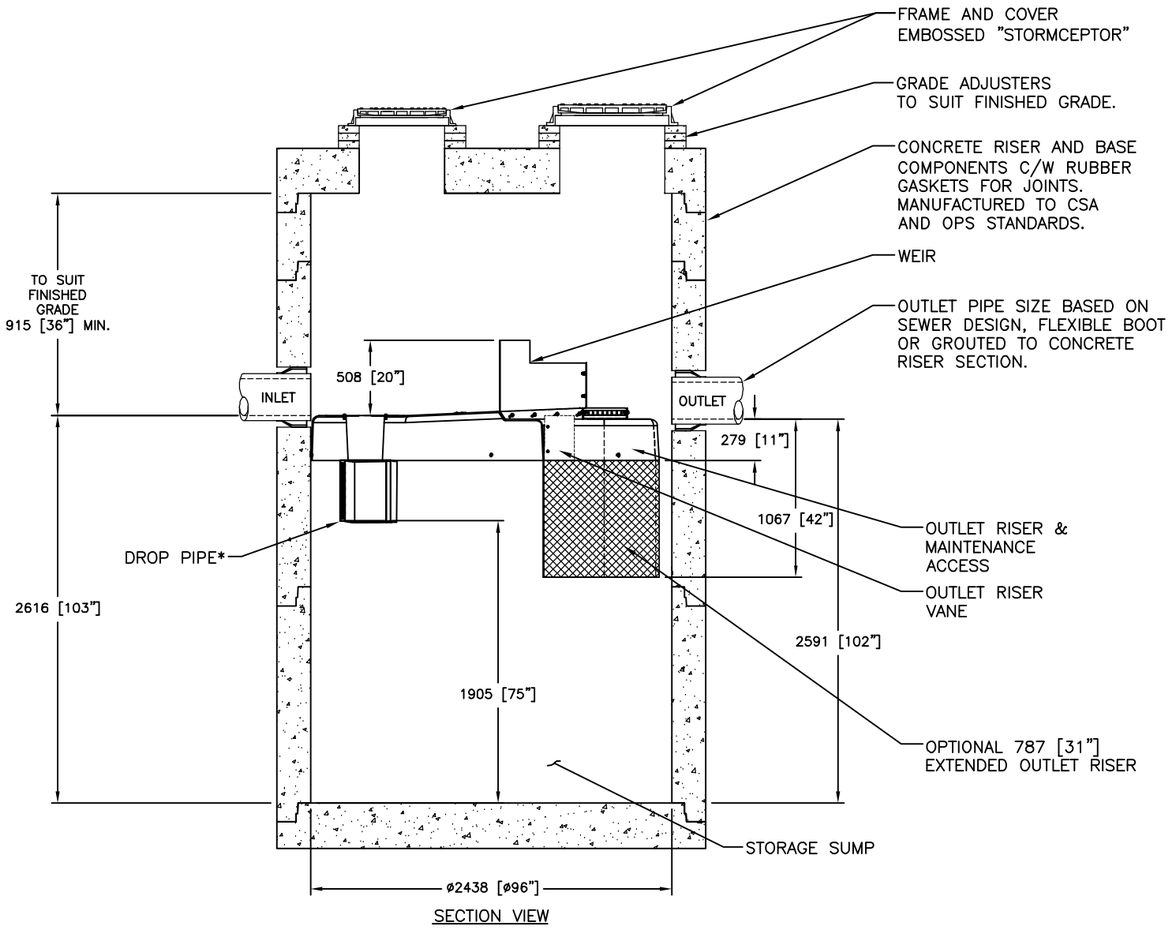
3.4 LIGHT LIQUID RE-ENTRAINMENT SIMULATION TESTING

The OGS device shall have Canadian ETV or ISO 14034 ETV Verification of completed third-party Light Liquid Re-entrainment Simulation Testing in accordance with the Canadian ETV **Program's Procedure for Laboratory Testing of Oil-Grit Separators,** with results reported within the Canadian ETV or ISO 14034 ETV verification. This re-entrainment testing is conducted with the device pre-loaded with low density polyethylene (LDPE) plastic beads as a surrogate for light liquids such as oil and fuel. Testing is conducted on the same OGS unit tested for sediment removal to

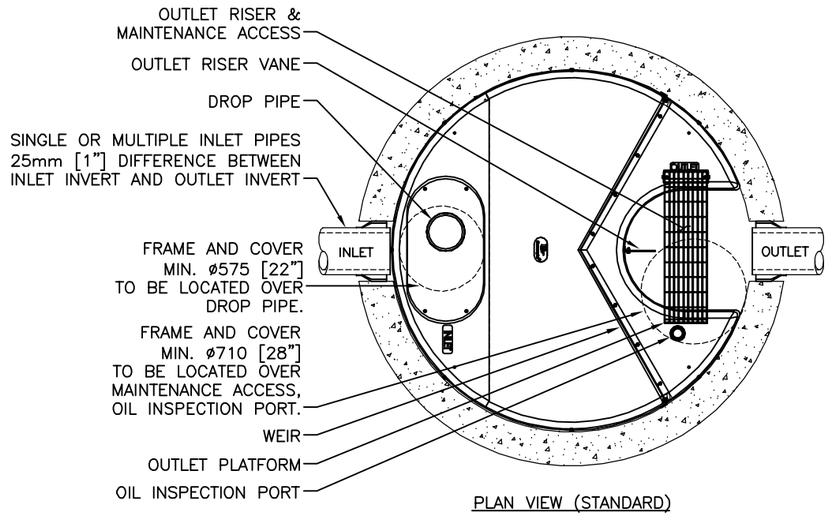
assess whether light liquids captured after a spill are effectively retained at high flow rates.

3.4.1 For an OGS device to be an acceptable stormwater treatment device on a site where vehicular traffic occurs and the potential for an oil or fuel spill exists, the OGS device must have reported verified performance results of greater than 99% cumulative retention of LDPE plastic beads for the five specified surface loading rates (ranging 200 L/min/m^2 to 2600 L/min/m^2) in accordance with the Light Liquid Re-entrainment Simulation Testing within the Canadian ETV Program's **Procedure for Laboratory Testing of Oil-Grit Separators.** However, an OGS device shall not be allowed if the Light Liquid Re-entrainment Simulation Testing was performed with screening components within the OGS device that are effective at retaining the LDPE plastic beads, but would not be expected to retain light liquids such as oil and fuel.

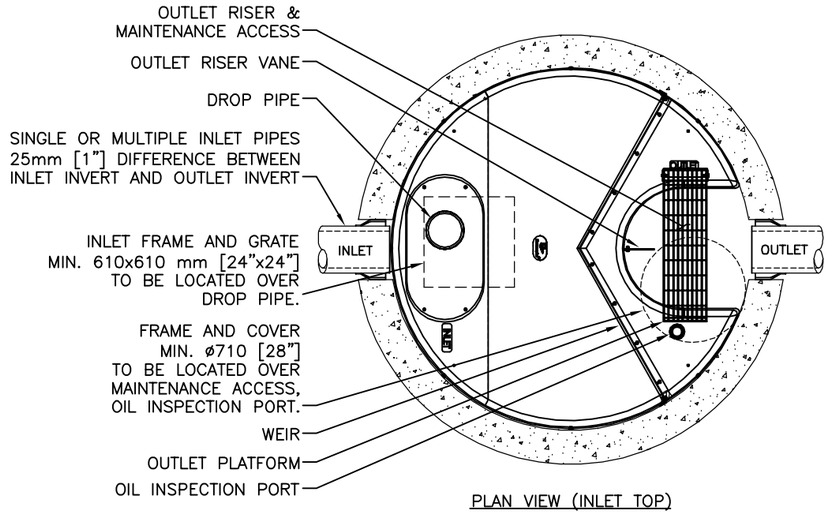
DRAWING NOT TO BE USED FOR CONSTRUCTION



SECTION VIEW



PLAN VIEW (STANDARD)



PLAN VIEW (INLET TOP)

GENERAL NOTES:

* MAXIMUM SURFACE LOADING RATE (SLR) INTO LOWER CHAMBER THROUGH DROP PIPE IS 1135 L/min/m^2 (27.9 gpm/ft^2) FOR STORMCEPTOR EF8 AND 535 L/min/m^2 (13.1 gpm/ft^2) FOR STORMCEPTOR EFO8 (OIL CAPTURE CONFIGURATION).

1. ALL DIMENSIONS INDICATED ARE IN MILLIMETERS (INCHES) UNLESS OTHERWISE SPECIFIED.
2. STORMCEPTOR STRUCTURE INLET AND OUTLET PIPE SIZE AND ORIENTATION SHOWN FOR INFORMATIONAL PURPOSES ONLY.
3. UNLESS OTHERWISE NOTED, BYPASS INFRASTRUCTURE, SUCH AS ALL UPSTREAM DIVERSION STRUCTURES, CONNECTING STRUCTURES, OR PIPE CONDUITS CONNECTING TO COMPLETE THE STORMCEPTOR SYSTEM SHALL BE PROVIDED AND ADDRESSED SEPARATELY.
4. DRAWING FOR INFORMATION PURPOSES ONLY. REFER TO ENGINEER'S SITE/UTILITY PLAN FOR STRUCTURE ORIENTATION.
5. NO PRODUCT SUBSTITUTIONS SHALL BE ACCEPTED UNLESS SUBMITTED 10 DAYS PRIOR TO PROJECT BID DATE, OR AS DIRECTED BY THE ENGINEER OF RECORD.

INSTALLATION NOTES

A. ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
B. CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE STRUCTURE (LIFTING CLUTCHES PROVIDED)
C. CONTRACTOR WILL INSTALL AND LEVEL THE STRUCTURE, SEALING THE JOINTS, LINE ENTRY AND EXIT POINTS (NON-SHRINK GROUT WITH APPROVED WATERSTOP OR FLEXIBLE BOOT)
D. CONTRACTOR TO TAKE APPROPRIATE MEASURES TO PROTECT THE DEVICE FROM CONSTRUCTION-RELATED EROSION RUNOFF.
E. DEVICE ACTIVATION, BY CONTRACTOR, SHALL OCCUR ONLY AFTER SITE HAS BEEN STABILIZED AND THE STORMCEPTOR UNIT IS CLEAN AND FREE OF DEBRIS.

FOR SITE SPECIFIC DRAWINGS PLEASE CONTACT YOUR LOCAL STORMCEPTOR REPRESENTATIVE. SITE SPECIFIC DRAWINGS ARE BASED ON THE BEST AVAILABLE INFORMATION AT THE TIME. SOME FIELD REVISIONS TO THE SYSTEM LOCATION OR CONNECTION PIPING MAY BE NECESSARY BASED ON AVAILABLE SPACE OR SITE CONFIGURATION REVISIONS. ELEVATIONS SHOULD BE MAINTAINED EXCEPT WHERE NOTED ON BYPASS STRUCTURE (IF REQUIRED).

STANDARD DETAIL
NOT FOR CONSTRUCTION

SITE SPECIFIC DATA REQUIREMENTS

STORMCEPTOR MODEL	EFO8				
STRUCTURE ID					*
HYDROCARBON STORAGE REQ'D (L)					*
WATER QUALITY FLOW RATE (L/s)					*
PEAK FLOW RATE (L/s)					*
RETURN PERIOD OF PEAK FLOW (yrs)					*
DRAINAGE AREA (HA)					*
DRAINAGE AREA IMPERVIOUSNESS (%)					*
PIPE DATA:	I.E.	MAT'L	DIA	SLOPE %	HGL
INLET #1	*	*	*	*	*
INLET #2	*	*	*	*	*
OUTLET	*	*	*	*	*

* PER ENGINEER OF RECORD

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MARK	DATE	REVISION DESCRIPTION	BY
1	6/8/18	OUTLET PLATFORM	JSK
0	5/26/17	INITIAL RELEASE	JSK

Stormceptor® EF

SCALE = NTS

imbrium®
407 FAIRVIEW DRIVE, WHITBY, ON L1N 9A9
TF 800-565-6801 CA 416-665-8600 INTL +1-416-665-8600

DATE:	10/13/2017
DESIGNED: JSK	DRAWN: JSK
CHECKED: BSF	APPROVED: *
PROJECT No.: EFO8	SEQUENCE No.: *
SHEET:	1 OF 1

I:\IMBRIUM\PRODUCTS\STORMCEPTOR EF\40 DRAWINGS & DETAILS\STANDARD DETAILS\EFO8 STANDARD DETAILS\EFO8-DETAIL.DWG 4/12/2019 11:07 AM

NOTES:

1. PROPOSED STORM SEWERS TO ADHERE TO THE FOLLOWING OPSD:

1200mm MAINTENANCE HOLE STRUCTURE	OPSD 701.010
1200mm MAINTENANCE HOLE GRATE	OPSD 401.010
1200mm CATCH BASIN MAINTENANCE HOLE GRATE	OPSD 400.010
SINGLE CATCH BASIN GRATE 600mm X 600mm	OPSD 400.010

2. PROPOSED STORM SEWERS TO BE INSULATED AS INDICATED IN THIS PLAN. REFER TO DETAILS ON DWG. C104.
3. WATERMAIN TO PVC DR18 CONFORMING TO AWWA C900 AND CSA B137.3 COMPLETE WITH TWU#10 GA TRACER WIRE WITH 60 MIL DIRECT BURY INSULATION, TERMINATE AT ALL HYDRANTS AND BLOWOFFS.
4. SANITARY SEWER TO BE SDR35 CONFORMING TO CSA B182.2. STORM SEWER TO BE SDR35 CONFORMING TO CSA B182.2 OR PROFILE PVC 320 kPa CONFORMING TO CSA B182.4.
5. SERVICE LATERALS
   - SANITARY SERVICES TO BE 125mm PVC SDR 28 AT MIN. 2.0%
   - WATER SERVICES TO BE 19mm SOFT COPPER TYPE 'K'
6. RESTORE EXISTING COUNTY INFRASTRUCTURE TO COUNTY STANDARDS:
   - REFER TO TRENCHING RESTORATION DETAIL ON DRAWING C104.
   - CONCRETE CURB TO MATCH EXISTING.
   - CONCRETE SIDEWALK TO MATCH EXISTING WIDTH.
   - CONSTRUCTION PER OPSS AND OPSD.
7. GENERAL CONTRACTOR TO COORDINATE ALL WORK WITHIN THE SITE WITH THE COUNTY AND OBTAIN ALL NECESSARY PERMITS AND APPROVALS FROM LOCAL AUTHORITIES. EXECUTE ALL WORK AS PER NORFOLK COUNTY REQUIREMENTS.
8. GENERAL CONTRACTOR TO EXECUTE WORK TO CONSTRUCTION SITE ACCESS UNDER SUPERVISION OF THE ENGINEER. REFER TO ENTRANCE PERMIT REQUIREMENTS WHERE APPLICABLE. DRIVEWAY ENTRANCE TO BE MODIFIED OR INSTALLATION OF NEW ENTRANCE AS PER NORFOLK COUNTY REQUIREMENTS. PROVIDE NEW CONC. ENTRANCE CURBS TO MATCH EXISTING AS REQUIRED.
9. PRIOR TO THE COMMENCEMENT OF CONSTRUCTION, ALL BENCHMARKS, ELEVATIONS, DIMENSIONS AND GRADES MUST BE CHECKED BY THE CONTRACTOR AND ANY DISCREPANCIES REPORTED TO THE ENGINEER.
10. AT LEAST TWO DIFFERENT BENCHMARKS MUST BE REFERRED TO AT ALL TIMES.
11. LIGHTING MUST BE DIRECTED ON SITE AND MUST NOT SPILL OVER TO ADJACENT PROPERTIES OR STREETS. PROVIDE "HOUSE SHIELD" WHERE NEEDED TO COMPLETELY ELIMINATE GLARE TO ADJACENT PROPERTIES. ALL EXTERIOR LIGHTING TO BE DARK SKY COMPLIANT. REFER TO ELECTRICAL DRAWINGS FOR DETAILS.
12. COORDINATE WITH SITE GRADING PLAN FOR PROPOSED FINAL FINISH GRADE ELEVATIONS AND DRAINAGE SLOPES.
13. TRAFFIC CONTROL SHALL BE IMPLEMENTED BY THE CONTRACTOR IN ACCORDANCE WITH OTM TEMPORARY CONDITIONS BOOK 7. APPROVAL FOR THE TRAFFIC CONTROL WILL BE SOUGHT FROM THE MUNICIPALITY BY THE CONTRACTOR.
14. FIRE ACCESS FROM ARGYLE STREET ONLY AS PER O.B.C. 3.2.5.1–7, 3.2.2.6, 3.2.2.42, 3.2.2.72.
15. ALL NEW PRIVATE FIRE HYDRANTS ARE TO BE PAINTED IN ACCORDANCE TO THE NORFOLK COUNTY FIRE DEPARTMENT STANDARDS.
16. ROOF WATER DRAINAGE TO OUTLET TO CONCRETE SPLASH PADS.
17. ALL WATERMAIN TO BE RESTRAINED AT ALL BENDS, TEES, REDUCERS, DEAD ENDS, AND VALVES. REFER TO DETAIL ON C104.
18. ALL INTERNAL AND OFFSITE WATER, SANITARY SEWER, AND STORM SEWER TO BE INSPECTED BY ENGINEERING CONSULTANTS INCLUDING DCVA & CHAMBER, MANHOLES, DURING CONSTRUCTION.
19. ALL UNITS TO BE INDIVIDUALLY METERED AND ISOLATED WITH BACKFLOW PREVENTER.

LEGEND

- PROPOSED STORM MANHOLE & SEWER
- PROPOSED SANITARY MANHOLE & SEWER
- PROPOSED SANITARY SERVICE
- PROPOSED WATERMAIN
- PROPOSED WATER SERVICE
- PROPERTY LINE
- 90m FIRE HYDRANT RADIUS
- WV — PROPOSED WATERVALVE
- FH — EXISTING FIRE HYDRANT
- BLOWOFF — CS — BLOWOFF – REFER TO C104 FOR DETAILS
- PROPOSED BUILDING
- BOREHOLE LOCATION

CROSSING TABLE			
CROSSING LOCATION	OBVERT	INVERT	SEPARATION
1	*187.29 (WAT)	187.78 (STM)	*0.5m
2	187.46 (SAN)	187.76 (STM)	0.30m
3	187.18 (SAN)	188.28 (WAT)	1.10m
4	187.32 (STM)	188.21 (WAT)	0.87m
5	187.01 (SAN)	188.21 (WAT)	1.30m
6	187.02 (SAN)	187.41 (STM)	0.38m
7	187.39 (SAN)	187.66 (STM)	0.26m
8	187.39 (SAN)	188.27 (WAT)	0.88m
9	*187.26 (WAT)	187.76 (STM)	*0.50m
10	*187.60 (WAT)	188.10 (STM)	*0.50m
11	*187.51 (WAT)	187.01 (STM)	*0.50m

NOTES:
1. MINIMUM 0.5m SEPARATION BETWEEN SERVICE LATERALS AND MAINS, WATER LINE TO BE ABOVE SEWER INFRASTRUCTURE FOR ALL UNITS
2. MEASUREMENTS OF EXISTING INFRASTRUCTURE WITHIN ROAD ALLOWANCE APPROXIMATE, TO BE CONFIRMED BY CONTRACTOR DURING CONSTRUCTION.

* WATERMAIN DEFLECTION REQUIRED. DEFLECTED ELEVATION / SEPARATION INDICATED IN TABLE.



REV. No.	DATE	REVISION
1	29/09/23	ISSUED FOR CLIENT REVIEW
2	15/12/23	ISSUED FOR SPA

CLIENT CONTACT INFORMATION
RAMHANS INVESTMENTS INC.
SOMNATH GOSAIN
416–509–7373

SUBMISSION DRAWING
NOT TO BE USED FOR CONSTRUCTION

SCALE:
0 4 8 12
HORIZONTAL : 1 : 250

vallee
Consulting Engineers, Architects & Planners
G. DOUGLAS VALLEE LIMITED
2 TALBOT STREET NORTH
SIMCOE, ONTARIO N3Y 3W4
(519) 426-6270

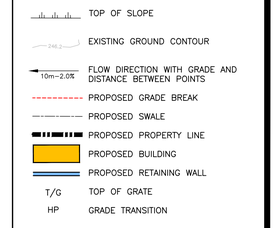
Stamp
LICENSED PROFESSIONAL ENGINEER
22-032
19/12/23
J. L. S. SMITH
100166264
PROVINCE OF ONTARIO

Project Title
RAMHANS CONDOS
38 NEW LAKESHORE ROAD
PORT DOVER, NORFOLK COUNTY

Drawing Title
GENERAL SERVICING PLAN

Designed by : KRA	Drawn By : KRA
Checked by : JTI	Date Started : 2023-08-16
Drawing Scale : AS NOTED	Drawing No. C101
Project No. 22-032	





TOP OF SOD AT THE HOUSE
THE TOP OF SOD ELEVATIONS AT THE HOUSE ARE MINIMUMS THAT MAY BE EXCEEDED. IN ACCORDANCE WITH THE ONTARIO BUILDING CODE, AT LEAST 0.15m OF FOUNDATION WALL MUST REMAIN EXPOSED.

EROSION & SEDIMENT CONTROL NOTE:
ALL ROAD CATCH BASINS TO HAVE FILTER CLOTH COVER IN PLACE UNTIL BASE ASPHALT IS IN PLACE. STORMWATER INLET STRUCTURES (DITCH INLET CATCH BASINS, CATCH BASINS, CATCH BASIN MANHOLES ETC.) TO HAVE SILT PROTECTION. ALL EROSION CONTROL TO BE TO THE SATISFACTION OF ENGINEER AND L.P.R.C.A.

MATCH ELEVATIONS:
MATCH ELEVATIONS AT THE PROPERTY LINE ARE BASED ON INTERPOLATED TOPOGRAPHIC DATA. CONTRACTOR TO CONFIRM MATCH ELEVATIONS AND REPORT AND DISCREPANCY TO THE ENGINEER PRIOR TO CONSTRUCTION.

RETAINING WALL:
TO BE DESIGNED BY OTHERS. WALL TO BE DESIGNED AND SEALED BY A STRUCTURAL ENGINEER LICENSED TO PRACTICE IN ONTARIO.

REV. No.	DATE	REVISION
1	09/29/23	ISSUED FOR CLIENT REVIEW
2	15/12/23	ISSUED FOR SPA

CLIENT CONTACT INFORMATION
RAMHANS INVESTMENTS INC.
SOMNATH GOSAIN
416–509–7373

SUBMISSION DRAWING
NOT TO BE USED FOR CONSTRUCTION

SCALE:
0 4 8 12
HORIZONTAL : 1 : 250

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Consulting Engineers, Architects & Planners
G. DOUGLAS VALLEE LIMITED
2 TALBOT STREET NORTH
SIMCOE, ONTARIO N3Y 3W4
(519) 426-6270

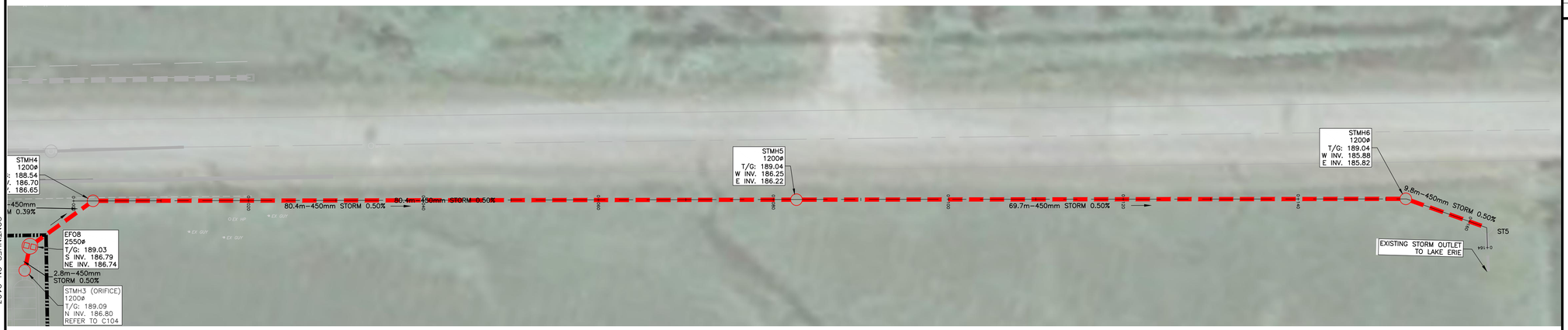
Stamp
LICENSED PROFESSIONAL ENGINEER
22-032
19/12/23
J. L. S. SMITH
100166264
PROVINCE OF ONTARIO

Project Title
RAMHANS CONDOS
38 NEW LAKESHORE ROAD
PORT DOVER, NORFOLK COUNTY

Drawing Title
GRADING PLAN

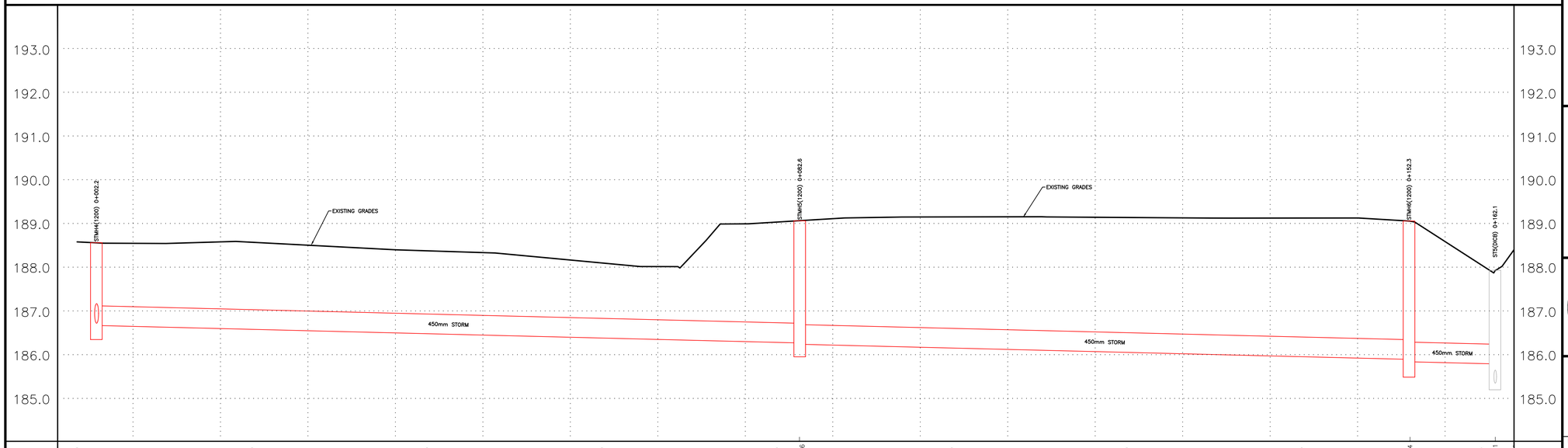
Designed by : KRA	Drawn By : KRA
Checked by : JTI	Date Started : 2023-08-16
Drawing Scale : AS NOTED	Drawing No. C102
Project No. 22-032	

DATE LAST PLOTTED : December 20, 2023

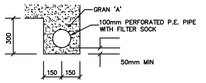


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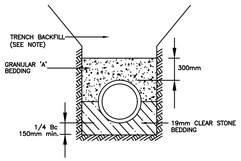
LAKESHORE ROAD



| | | |

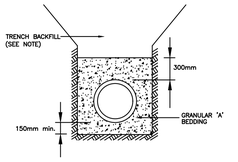


SUBDRAIN DETAIL



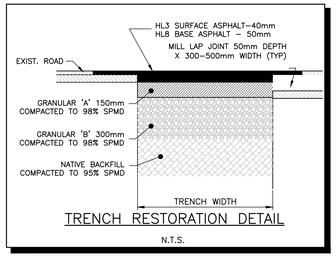
STONE BEDDING

NOTES:
1. 19mm CLEAR STONE STONE BEDDING SHALL BE USED IN PLACE OF THE STANDARD BEDDING WHERE HIGH HYDRAULIC GRADIENT CONDITIONS ARE ENCOUNTERED DURING CONSTRUCTION.



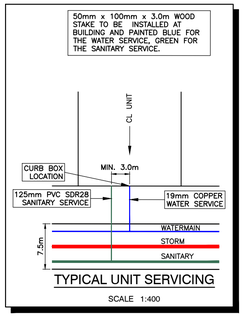
CLASS B BEDDING

NOTES:
1. PIPE BEDDING AS SPECIFIED ON PLAN AND PROFILE DRAWINGS COMPACTED TO 95% SPMDD IN LAYERS NOT EXCEEDING 150mm, TO 300mm ABOVE TOP OF PIPE.
2. TRENCH BACKFILL FROM TOP OF PIPE BEDDING TO UNDERSIDE OF GRANULAR "B" SUBBASE SHALL CONSIST OF APPROVED NATIVE MATERIALS COMPACTED TO 95% SPMDD IN LAYERS NOT EXCEEDING 300mm.
3. PRIOR TO PLACING THE GRANULAR SUBBASE MATERIAL ALL TOPSOIL, SOFT OR OTHERWISE COMPRESSIBLE MATERIAL MUST BE REMOVED FROM THE SUBGRADE AREA, AND THE SUBGRADE SHALL BE PROOF-ROLLED TO COMPACT ANY LOOSE SURFACE ZONES. ALL EXCAVATED AREAS MUST BE BACKFILLED WITH APPROVED ON-SITE NATIVE MATERIALS OR IMPORTED



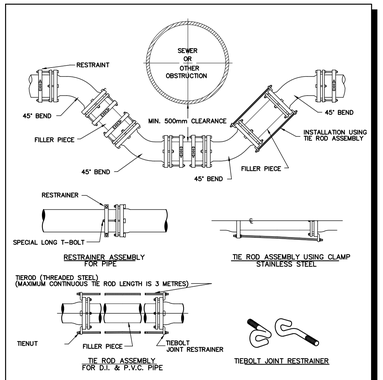
TRENCH RESTORATION DETAIL

N.T.S.



TYPICAL UNIT SERVICING

SCALE 1:400



WATERMAIN DEFLECTION DETAIL

GENERAL NOTES

1. PRIOR TO CLOSING ANY STREET, THE CONTRACTOR SHALL OBTAIN CLEARANCE BY FILLING OUT THE COUNTY'S NOTICE OF ROAD CLOSURE FORM AND NOTIFY SCHOOL BUS OPERATORS OF STREETS USED FOR DETOUR AND THE DURATION OF THE DETOUR. THE CONTRACTOR MUST SUPPLY AND MAINTAIN ADEQUATE LOCAL DETOUR SIGNS AND LIGHTS. THE CONTRACTOR MUST MAINTAIN MAXIMUM ACCESS TO ALL PROPERTIES AS DIRECTED BY THE ENGINEER.
2. THE CONTRACTOR SHALL CONSTRUCT TEMPORARY MEASURES TO CONTROL SILT ENTERING THE STORM DRAINAGE SYSTEM TO THE SPECIFICATIONS OUTLINED IN THE GUIDELINES ON EROSION AND SEDIMENT CONTROL FOR URBAN CONSTRUCTION SITES PREPARED BY THE MINISTRY OF NATURAL RESOURCES. THESE MEASURES ARE TO BE INSTALLED PRIOR TO COMMENCING ANY CONSTRUCTION FOR THIS STREET AND ARE TO REMAIN IN PLACE UNTIL CONSTRUCTION HAS BEEN COMPLETED TO THE SPECIFICATIONS OF THE ENGINEER.
3. THE CONTRACTOR IS TO MEET ALL THE REQUIREMENTS OF THE OWNERS OF THE UTILITIES ON THIS PLAN, AND MUST MAKE SATISFACTORY ARRANGEMENTS WITH THE UTILITY COMPANIES FOR CROSSING THEIR INSTALLATIONS AND FOR PROVIDING ADEQUATE PROTECTION DURING CONSTRUCTION.
4. PRIOR TO COMMENCING ANY CONSTRUCTION, ALL EXISTING UNDERGROUND UTILITIES SHALL BE LOCATED AND MARKED. ANY UTILITIES DAMAGED OR DISTURBED DURING CONSTRUCTION SHALL BE REPAIRED OR REPLACED TO THE SATISFACTION OF THE OWNER AT THE CONTRACTORS EXPENSE.
5. ALL ORGANIC, SUITABLE OR UNSUITABLE MATERIALS BENEATH THE ROAD ALLOWANCES MUST BE REMOVED AND THESE AREAS BACKFILLED WITH AN APPROVED FILL MATERIAL, ALL TO THE SATISFACTION OF THE ENGINEER.
6. PRIOR TO COMMENCING ANY CONSTRUCTION, ALL EXISTING SEWER OUTLET INFORMATION, BENCHMARKS, DIMENSIONS, ELEVATIONS AND GRADES MUST BE CHECKED AND VERIFIED AND ANY DISCREPANCIES REPORTED TO THE ENGINEER IMMEDIATELY.
7. ALL PVC WATERMAIN SHALL HAVE TWU 10 COPPER TRACING WIRE LAID ALONG ENTIRE LENGTH. WATERMAIN SHALL HAVE 1.7m TO 1.9m COVER WITH CLASS 'B' BEDDING.
8. ALL NEW WATERSERVICES SHALL BE TYPE 19mm (3/4") SOFT 'K' COPPER.
9. WATERMAIN FITTINGS SHALL BE MECHANICAL JOINT OR PUSH-ON JOINT INSTALLED WITH APPROVED MECHANICAL THRUST RESTRAINTS.
10. ALL MECHANICAL THRUST RESTRAINTS SHALL CONFORM TO CONTRACT DOCUMENT SPECIFICATIONS.
11. ALL JOINTS SHALL BE RESTRAINED WITH A MEG-A-LUG JOINT RESTRAINT.
12. ALL TEES SHALL HAVE A MINIMUM OF 1.0m SOLID PIPE OUT EACH SIDE OF THE MAIN RUN OF THE TEE.
13. ALL DISTANCES TO BE CONFIRMED TO THE MANUFACTURERS STANDARDS FOR ALTERNATE RESTRAINTS TO MEG-A-LUG.
14. INTERNAL ROAD CONSTRUCTION TO BE 40mm HL3, 65mm HL8, 150mm GRANULAR A, AND 350mm GRANULAR B
15. DRIVEWAY CONSTRUCTION TO BE 65mm HL3, 150mm GRANULAR A, AND 200mm GRANULAR B

GENERAL SEDIMENT CONTROL MEASURES

1. PROTECT ALL EXPOSED SURFACES AND CONTROL ALL RUNOFF DURING CONSTRUCTION
2. ALL EROSION CONTROL MEASURES TO BE IN PLACE BEFORE STARTING CONSTRUCTION AND REMAIN IN PLACE UNTIL RESTORATION IS COMPLETE
3. MAINTAIN EROSION CONTROL MEASURES DURING CONSTRUCTION
4. ALL COLLECTED SEDIMENT TO BE DISPOSED OF AT AN APPROVED LOCATION
5. MINIMIZE AREA DISTURBED DURING CONSTRUCTION
6. ALL DEWATERING TO BE DISPOSED OF IN AN APPROVED SEDIMENTATION BASIN
7. PROTECT ALL CATCHBASINS, MANHOLES AND PIPE ENDS FROM SEDIMENT INTRUSTION WITH GEOTEXTILE (TERRAFIX 270R OR APPROVED EQUIVALENT
8. KEEP ALL SUMPS CLEAN DURING CONSTRUCTION
9. PREVENT WIND-BLOWN DUST
10. STRAW BALES TO BE USED IN LOCALIZED AREAS AS SHOWN AND AS DIRECTED BY THE ENGINEER DURING CONSTRUCTION

ROAD & BOULEVARD RESTORATION

ALL DISTURBED AREAS SHALL BE RESTORED AS FOLLOWS:

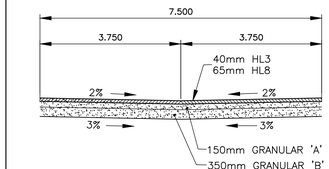
i. ALL ROAD CUTS SHALL BE RESTORED WITH
- -50mm HL3 SURFACE ASPHALT (97% MARSHALL)
- -65mm HL8 BASE ASPHALT (97% MARSHALL)
- -150mm GRANULAR "A" BASE (100% SPMDD)
- -350mm GRANULAR "B" TYPE 2 SUBBASE (100% SPMDD)
- GRANULAR "B" TO BE EXTENDED 0.3m BEHIND EDGE OF THE PAVEMENT

ii. BOULEVARDS SHALL BE RESTORED WITH SOD OVER 100mm TOPSOIL (min) UNLESS OTHERWISE NOTED

WATERMAIN RESTRAINTS TABLE					
DIAMETER (mm)	MINIMUM LENGTH TO BE RESTRAINED ON EACH SIDE OF FITTINGS (m)				
	11-1/4°	22-1/2°	45°	90° AND TEES	DEAD END AND VALVES
100 (HORZ)	5.5			8.8	13
100 (VERT)				8.8	13

NOTE:
ALL BELL AND SPIGOT JOINTS WITHIN DISTANCES SHOWN SHALL BE RESTRAINED WITH MEGA-LUG RESTRAINTS.

RESTRAINT LENGTHS SHOWN ARE MINIMUMS. ACTUAL RESTRAINED LENGTHS ARE TO BE VERIFIED BY AN ENGINEER BASED ON ANTICIPATED SOIL CONDITIONS AND BEDDING FRICTION FACTOR PROVIDED IN THE GEOTECHNICAL REPORT.

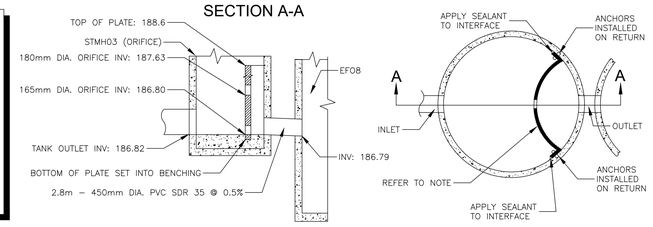


TYPICAL INTERNAL ROAD SECTION

SCALE 1:75

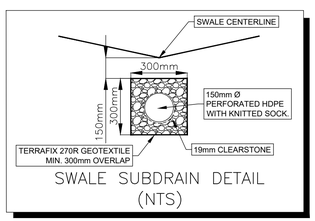
NOTE:
ORIFICE CONTROL TO BE UNIFORM SECTION WITH NO OPEN SEAMS.
MATERIAL TO BE MIN. ¼" THICK GALVANIZED STEEL PLATE
FASTENED WITH ¼" GALVANIZED EXPANSION ANCHOR BOLTS, 16" O.C. AND SEALED AT PLATE-WALL INTERFACE WITH POLYURETHANE SEALANT AND TOOLED NEATLY.

CONTROL FEATURE MUST BE INSTALLED AND INSPECTED BY THE ENGINEER PRIOR TO PAVING TO ENSURE STORMWATER RUNOFF FLOW CONTROLS ARE IN PLACE TO PROTECT DOWNSTREAM SYSTEM.

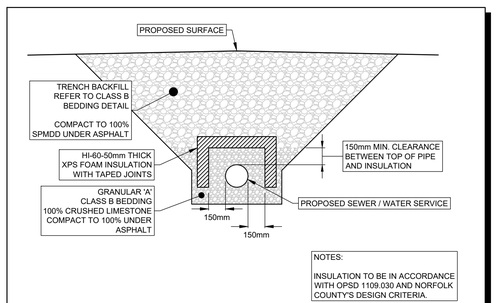


ORIFICE PLATE DETAIL

N.T.S.

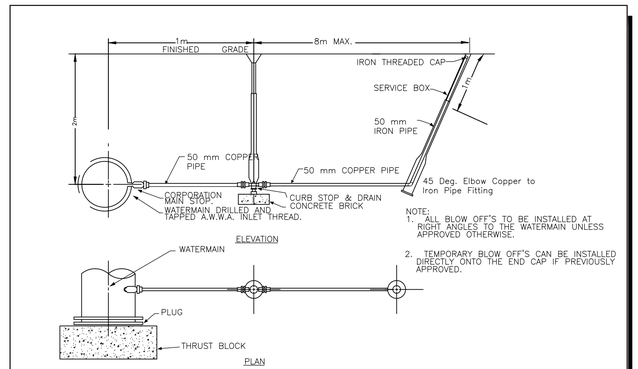


SWALE SUBDRAIN DETAIL (NTS)



TYPICAL INSULATION DETAIL

N.T.S.



STANDARD BLOW-OFF N.T.S.

REV. No.	DATE	REVISION
1	09/29/23	ISSUED FOR CLIENT REVIEW
2	15/12/23	ISSUED FOR SPA

CLIENT CONTACT INFORMATION
RAMHANS INVESTMENTS INC.
SOMNATH GOSAIN
416-509-7373

SUBMISSION DRAWING
NOT TO BE USED FOR CONSTRUCTION

SCALE:
5 10
HORIZONTAL : 1 : 250

vallee
Consulting Engineers, Architects & Planners
G. DOUGLAS VALLEE LIMITED
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SIMCOE, ONTARIO N3Y 3W4
(519) 426-6270

Stamp
LICENSED PROFESSIONAL ENGINEER
22-032
19/12/23
J. L. S. SMITH
100166264
PROVINCE OF ONTARIO

Project Title
RAMHANS CONDOS
38 NEW LAKESHORE ROAD
PORT DOVER, NORFOLK COUNTY

Drawing Title
CONSTRUCTION NOTES AND DETAILS

Designed by :	Drawn By :
KRA	KRA
Checked by :	Date Started :
JTI	2023-08-16
Drawing Scale :	Drawing No.
AS NOTED	C104
Project No.	
22-032	

DATE LAST PLOTTED : December 20, 2023

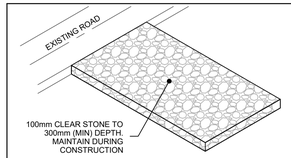
EROSION CONTROL NOTES

1. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR DESIGN AND PROVISION OF ALL SEDIMENT CONTROL MEASURES AS MAY BE REQUIRED TO PROTECT THE WORK SITE OR THE ADJACENT LANDS, REGARDLESS OF THE SOURCE OR ORIGIN OF EROSION OR SEDIMENTS. IF THE ENGINEER IS NOT SATISFIED WITH THE EXTENT OF THE MEASURES TAKEN, THE ENGINEER MAY DIRECT THAT ADDITIONAL CONTROLS BE PUT IN PLACE.

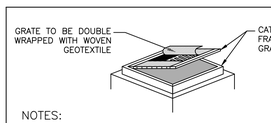
   THE ENGINEER'S REQUIREMENTS FOR SEDIMENT AND EROSION CONTROL SHALL BE CONSIDERED ABSOLUTE MINIMUMS. THE ULTIMATE RESPONSIBILITY TO ENSURE THAT THE MEASURES ARE ADEQUATE SHALL LIE SOLELY ON THE CONTRACTOR. ANY DAMAGE RESULTING FROM FAILURE OF THESE MEASURES SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE.
2. PROTECT ALL EXPOSED SURFACES AND CONTROL ALL RUNOFF DURING CONSTRUCTION.
3. ALL EROSION CONTROL MEASURES TO BE IN PLACE UNTIL ALL RESTORATION IS COMPLETE.
4. MAINTAIN EROSION CONTROL MEASURES DURING CONSTRUCTION.
5. MAINTAIN ALL STORMWATER CONVEYANCE SYSTEMS IN WORKING ORDER THROUGH MAINTENANCE OF EROSION CONTROL MEASURES.
6. ALL COLLECTED SEDIMENT TO BE DISPOSED OF AT AN APPROVED LOCATION.
7. MINIMIZE AREA DISTURBED DURING CONSTRUCTION.
8. ALL DEWATERING TO BE DISPOSED OF IN AN APPROVED SEDIMENTATION BASIN.
9. PROTECT ALL CATCH BASINS, MANHOLES, CULVERTS, AND PIPE ENDS FROM SEDIMENT INTRUSION WITH GEOTEXTILE (TERRAFIX 270R OR APPROVED EQUIVALENT AT A MINIMUM).
10. KEEP ALL SUMPS CLEAN DURING CONSTRUCTION.
11. PREVENT WIND-BLOWN DUST.

SITE PLAN LEGEND

- PROPOSED BAY DOOR ENTRANCE / EXIT (F)
- PROPOSED OVERHEAD DOOR (O)
- PROPOSED CONCRETE
- PROPOSED GRASS AREA
- MUD MAT
- SILT FENCE AS PER OPSD 219.110
- PROPOSED BUILDING
- PROPERTY LINE
- POST-DEVELOPMENT OVERLAND FLOW ROUTE



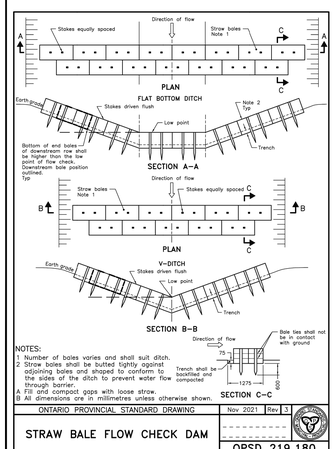
MUD MAT - CONSTRUCTION ACCESS
N.T.S.



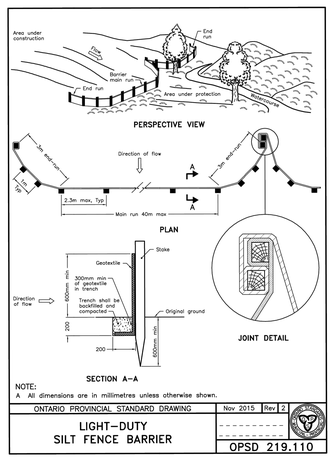
NOTES:

- FILTER CLOTH WILL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING STONE. MAINTAIN IN CLEAN AND FREE FLOWING STATE.
- WOVEN GEOTEXTILE TO HAVE A MINIMUM EQUIVALENT OPENING SIZE OF 0.15mm AND A MAXIMUM EQUIVALENT OPENING SIZE OF 0.25mm.
- WOVEN GEOTEXTILE TO BE REPLACED PERIODICALLY WHEN ACCUMULATED SEDIMENTS INTERFERES WITH DRAINAGE.
- CLEAR STONE TO BE PLACE ON TOP OF WRAPPED CATCHBASIN TO PROTECT GEOTEXTILE FROM LARGE OBJECTS.

CATCHBASIN SEDIMENT PROTECTION DETAIL
N.T.S.



ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2021	Rev 3
STRAW BALE FLOW CHECK DAM		OPSD 219.180



ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2015	Rev 2
LIGHT-DUTY SILT FENCE BARRIER		OPSD 219.110



REV. No.	DATE	REVISION
1	29/09/23	ISSUED FOR CLIENT REVIEW
2	15/12/23	ISSUED FOR SPA

CLIENT CONTACT INFORMATION
RAMHANS INVESTMENTS INC.
SOMNATH GOSAIN
416-509-7373

SUBMISSION DRAWING
NOT TO BE USED FOR CONSTRUCTION

SCALE:
0 4 8 12
HORIZONTAL : 1 : 250

vallee
Consulting Engineers, Architects & Planners
G. DOUGLAS VALLEE LIMITED
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SIMCOE, ONTARIO N3Y 3W4
(519) 426-6270

Stamp
LICENSED PROFESSIONAL ENGINEER
22-032
19/12/23
J. L. S. SMITH
100166264
PROVINCE OF ONTARIO

Project Title
RAMHANS CONDOS
38 NEW LAKESHORE ROAD
PORT DOVER, NORFOLK COUNTY

Drawing Title
GENERAL SERVICING PLAN

Designed by :	Drawn By :
KRA	KRA
Checked by :	Date Started :
JTI	2023-08-16
Drawing Scale :	Drawing No.
AS NOTED	C101
Project No.	
22-032	



LEGEND

- CATCHMENT BOUNDARY
- SA1 — SANITARY DRAINAGE AREA
- 1 | 0.10 — AREA (ha)
- SERVICE CONNECTIONS

REV. No.	DATE	REVISION
1	09/29/23	ISSUED FOR CLIENT REVIEW
2	07/12/23	ISSUED FOR FSR
3	15/12/23	ISSUED FOR SPA

SANITARY SEWER DESIGN SHEET

Date: 9/28/2023
Project: 22-032 Ramhans Condo
Town/County: Port Dover - Norfolk County

Pipe Material: PVC
N 0.013

Designed by: KRA
Checked by: JLS
Sheet: 1 of 1

Location			Residential Area		Commercial Area		Total	Residential Services		Cumul	KAV	M=Peak	Flow			Sewer Design							
Area	From	To	Section	Cumul.	Section	Cumul.	Area	Section	Cumul	Population	Factor	Factor	Q(i)	Q(s)	Q(d)	Material	Size	Length	N	Slope	Cap	Q(d)/Cap	Full V
	MH	MH	Ha	Ha	Ha	Ha	Ha	Services	Services				L/s	L/s	L/s		mm	m		%	L/s	%	m/s
SA1	SAMH4	SAMH3	0.13	0.13		0.00	0.13	4	4	11	1.000	4.411	0.04	0.25	0.29	PVC	200	32.2	0.013	0.70%	27.4	1.1%	0.87
SA2	SAMH5	SAMH3	0.35	0.35		0.00	0.35	11	11	30	1.000	4.354	0.10	0.69	0.78	PVC	250	58.3	0.013	0.50%	42.0	1.9%	0.86
SA3	SAMH3	SAMH2	0.26	0.75		0.00	0.75	8	19	52	1.000	4.311	0.21	1.17	1.38	PVC	250	10	0.013	0.40%	37.6	3.7%	0.77
SA5	SAMH7	SAMH6	0.20	0.20		0.00	0.20	4	4	11	1.000	4.411	0.06	0.25	0.31	PVC	200	58.4	0.013	0.70%	27.4	1.1%	0.87
SA4	SAMH6	SAMH2	0.04	0.24		0.00	0.24	1	5	14	1.000	4.400	0.07	0.32	0.38	PVC	200	18.9	0.013	0.70%	27.4	1.4%	0.87
	SAMH2	SAMH1		0.99		0.00	0.99	12	24	66	1.000	4.289	0.28	1.47	1.75	PVC	250	42.2	0.013	0.40%	37.6	4.7%	0.77

Design Information:
Q(s) = Sewage Flow = P q M / 86.4
Q(i) = Infiltration Flow = I A
Q(d) = Peak Design Flow = Q(s) + Q(i)

P = Population in thousands
A = Tributary Area
Residential M = Peaking Factor = 1 + 14 / (4 + P^.5)
Commerical M = Peaking Factor = 0.8 (1 + 14 / (4 + P^.5)
Combined M = KAV (1 + 14 / (4 + P^.5)
KAV = (AR + (0.8*AC))/(AR+AC)

Residential q = Per Capita Flow=	450	L/cap/d
Commercial q = Per Capita Flow=	40000	L/ha/d
I = Peak Extraneous Flow =	0.28	L/s/ha
Residential Population Density =	2.75	persons /unit
Commercial Population Density =	90	persons /ha

DATE LAST PLOTTED : December 20, 2023

CLIENT CONTACT INFORMATION
RAMHANS INVESTMENTS INC.
SOMNATH GOSAIN
416-509-7373

SUBMISSION DRAWING
NOT TO BE USED FOR CONSTRUCTION

SCALE:
5 10 15
HORIZONTAL : 1:250

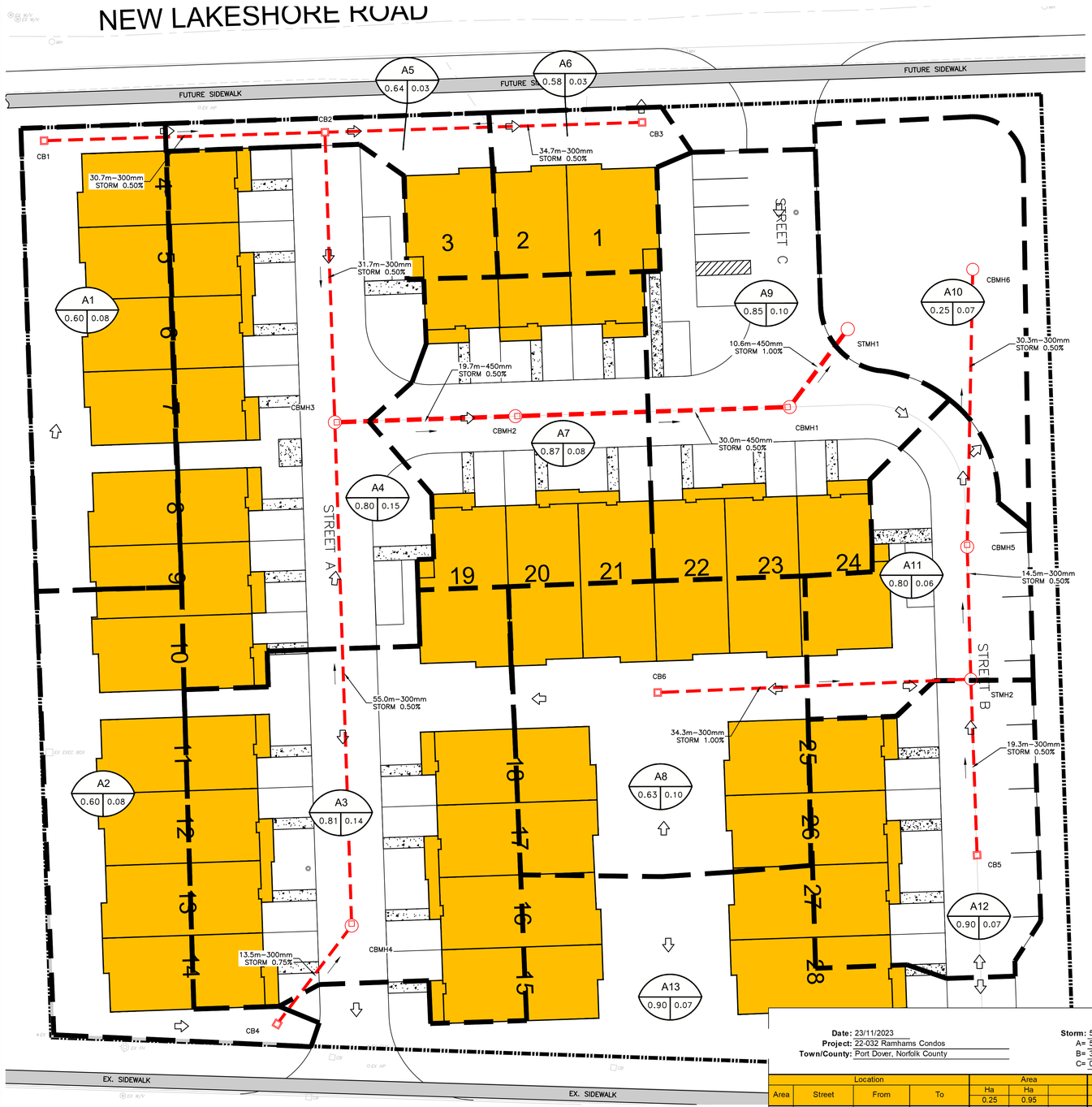
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Consulting Engineers, Architects & Planners
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(519) 426-6270

Stamp
LICENSED PROFESSIONAL ENGINEER
22-032
1912223
J. L. S. SMITH
100166264
PROVINCE OF ONTARIO

Project Title
RAMHANS CONDOS
38 NEW LAKESHORE ROAD
PORT DOVER, NORFOLK COUNTY

Drawing Title
SANITARY DRAINAGE AREAS

Designed by : KRA
Drawn By : KRA
Checked by : JLS
Date Started : 12/7/2023
Drawing Scale : 1:250
Drawing No. SAN
Project No. 22-032



LEGEND

- EMERGENCY OVERLAND FLOW
- CATCHMENT BOUNDARY
- SWM — SWM DRAINAGE AREA
  - 0.99 — RUNOFF COEFFICIENT
  - 0.10 — AREA (ha)

REV. No.	DATE	REVISION
1	09/29/23	ISSUED FOR CLIENT REVIEW
2	07/12/23	ISSUED FOR FSR
3	15/12/23	ISSUED FOR SPA

STORM SEWER DESIGN SHEET

Date: 23/11/2023
Project: 22-032 Ramhams Condos
Town/County: Port Dover, Norfolk County

Storm: 5-Year
A= 583.017
B= 3.007
C= 0.703

Pipe Material: PVC<=450, Concrete >450
n 0.013

Designed by: KRA
Checked by: JLS

Sheet: 1 of 1

Location				Area			Individual	Cumulative	Time of	Rainfall	Flow	Sewer Design					
Area	Street	From	To	Ha	Ha		C*A	C*A	Concentration	mm/hr	2.78*I*A*C	Size	Slope	Capacity (Full)	Vel (Full)	Length	Time
				0.25	0.95				min		L/s	mm	%	L/s	m/s	m	min
A1		CB1	CB2	0.04	0.04		0.05	0.05	15.00	76.40	10.4	300	0.50%	68.38	0.97	30.7	0.53
A6		CB3	CB2	0.02	0.02		0.02	0.02	15.00	76.40	4.6	300	0.50%	68.38	0.97	34.7	0.60
A5		CB2	CBMH3	0.01	0.01		0.02	0.09	15.60	74.67	18.1	300	0.50%	68.38	0.97	31.7	0.55
A2		CB4	CBMH4	0.0411	0.04		0.05	0.05	15.00	76.40	10.4	300	1.00%	96.70	1.37	13.5	0.16
A3		CBMH4	CBMH3	0.03	0.10		0.10	0.15	15.16	75.92	32.2	300	0.49%	67.69	0.96	55.0	0.96
A4		CBMH3	CBMH2	0.03	0.11		0.12	0.36	16.14	73.17	72.3	450	0.50%	201.60	1.27	19.7	0.26
A7		CBMH2	CBMH1	0.01	0.08		0.08	0.43	16.40	72.48	86.9	450	0.50%	201.60	1.27	30.0	0.39
A9		CBMH1	STMH1	0.02	0.09		0.09	0.52	16.80	71.46	103.2	450	0.50%	201.60	1.27	10.6	0.14
A12		CB5	STMH2	0.01	0.07		0.07	0.07	15.00	76.40	14.0	300	0.40%	61.16	0.87	19.3	0.37
A8		CB6	STMH2	0.05	0.06		0.07	0.07	15.00	76.40	13.9	300	0.40%	61.16	0.87	34.3	0.66
		STMH2	CBMH5				0.00	0.13	15.66	74.49	27.2	300	0.40%	61.16	0.87	14.5	0.28
A11		CBMH5	CBMH6	0.01	0.04		0.05	0.18	15.94	73.72	36.1	300	0.40%	61.16	0.87	30.3	0.58
SITE OUTFLOW PEAK FLOW from SWM MODEL (100-year return)											134.5	450	0.50%	201.60	1.27	169.0	2.22

Location				Area			Sewer Design						
Area	Street	From	To	Ha	Ha		Size	Slope	Capacity (Full)	Vel (Full)	Length	Time	Cap
				0.25	0.95		mm	%	L/s	m/s	m	min	%

G2S Consulting Inc.
4361 Harvester Rd., Unit 12, Burlington, ON L7L 5M4
P 905.331.3735 F 905.642.5999
G2Sconsulting.com

Geotechnical Investigation for Proposed Ramhans Condos



38 New Lakeshore Road, Port Dover, Ontario

G2S23228A

Ramhans Investments Inc. c/o Somnath Gosain
9 Hackwood Heights
Brampton Ontario
L6X 5P4

October 2023

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Appendix A: Drawings
Appendix B: Borehole Logs & Grain Size Analysis Graphs and Plasticity Chart
Appendix C: Certificates of Analysis

1. Introduction

G2S Consulting Inc. (G2S) was retained by Ramhans Investments Inc. (the Client) to complete a Geotechnical Investigation for a proposed residential development located at 38 New Lakeshore Road in Port Dover, Ontario (referred to as the 'Site'). As well, limited soil sampling and chemical testing was undertaken to check the environmental quality of the Site soil.

The Site is located at the south side of Lakeshore Road, approximately 200 m east of Ontario Street in Port Dover, Ontario. The general location of the Site is shown on the Site Location Plan, Drawing No. 1 in Appendix A. This geotechnical investigation was carried out as outlined in G2S' Proposal No. G2S22182 dated June 06, 2023.

2. Site and Project Overview

2.1 Site Description

The near rectangle shaped Site comprises an approximate area of 1.15 ha (2.84 ac.) and is located on the south side of New Lakeshore Road between Woodhouse Avenue and Ontario Street in Port Dover. The Site is bound by residential properties to the west and east, Brown Street to the south followed by residential properties and New Lakeshore Road to the north followed by vacant agricultural land. At the time of the investigation the Site was vacant and undeveloped.

2.2 Proposed Development

Based on the Proposed Site Plan - Opt. 1a Drawing 01, which was provided to us by the Client, it is understood that the proposed development will consist of the construction twenty-seven (27) residential bungalow units with basement and asphalt surface access roads. The purpose of this geotechnical investigation was to determine the subsurface conditions at nine (9) borehole locations and to interpret these findings with respect to the provisional design items for this project from a geotechnical point-of-view.

This report is based on the above summarized project description, and on the assumption that the design and construction will be performed in accordance with applicable codes and standards. Any significant deviations from the proposed project design may void the recommendations given in this report. If significant changes are made to the proposed design, then this office must be consulted to review the new design with respect to the results of this investigation. The information contained in this report does not reflect upon the environmental aspects of the Site, unless otherwise noted, and therefore have not been addressed in this document.

3. Investigation Methodology

A total of nine (9) sampled boreholes were advanced at the locations illustrated in the attached Drawing No.1, Borehole and Monitoring Well Location Plan in Appendix A. The borings were put down uncased using continuous flight solid stem auger equipment. The drilling and sampling operations were carried out under the direction and supervision of a G2S staff member. The boreholes were advanced to depths of between approximately 6.7 to 9.7 metres below the existing grade (mbeg).

On completion of drilling, the boreholes (apart from the ones where monitoring wells were installed) were backfilled in general accordance with Ontario Regulation 903.

Representative samples of the subsoils were recovered from the borings at selected depth intervals using split barrel sampling equipment driven in accordance with the requirements of Standard Penetration Resistance Testing (SPT). After undergoing a general field examination, the soil samples were preserved in plastic bags and transported to the soil laboratory for visual, tactile, and olfactory classifications. Routine moisture content tests were performed on all the recovered soil samples. Additionally, grain size analyses and Atterberg Limits tests were performed on selected soil samples as necessary.

Details of the conditions encountered in the boreholes, together with the results of the field and laboratory tests, are presented in Borehole (BH) Logs BH101 to BH109, inclusive, included in Appendix B. It is noted that the boundaries of soil types indicated on the borehole logs are inferred from non-continuous soil sampling and observations made during drilling. These boundaries are intended to reflect transition zones for the purpose of geotechnical design and therefore should not be construed as the exact plans of geological change.

Elevations at the ground surface of the borehole locations were interpolated from the drawing titled “Original Ground Topography” by Vallee Consulting Engineers, Architects and Planners, dated on July 05, 2023, provided to G2S by the Client. This drawing was utilized to produce the Borehole and Monitoring Well Location Plan, included in Appendix A.

4. Subsurface Conditions

The subsurface soil conditions have been evaluated in the nine (9) boreholes (BH101 to BH109) investigated by G2S at the Site for the purpose of this report. It should be considered that the subsurface conditions may not be consistent between and beyond the locations investigated at the Site. The soil descriptions outlined in the following stratigraphic summary are based on our interpretation of non-continuous samples of soil obtained from the boreholes.

The subsurface conditions encountered at the borehole locations are summarized as follows:

4.1 Topsoil

Topsoil veneer was contacted at the surface in all of the investigated boreholes excluding borehole BH104. The thickness of the topsoil veneer was ranging approximately from 25 to 300 mm.

The depth of topsoil must be expected to vary across the Site from the depths encountered at the borehole locations. In this report, the term “topsoil” has been used from a geotechnical point of view and does not necessarily reflect the suitability of the material to support plant growth. If it is to be used for landscaping or agricultural purposes, its suitability should be confirmed by tests on representative samples for organic and nutrient content and therefore its ability to support plant growth.

4.2 Fill

Fill material was encountered below the topsoil in BH101, BH102, BH103, BH105 to BH107, and BH109 and at the surface in the borehole BH104. This layer extended to depths ranging between 0.6 and 0.8 mbeg. The fill material consisted mainly of dark brown to brown clayey silt/silty clay or silty sand and contains trace gravel and organics. With moisture content ranging between 13% and 27%, indicating moist condition.

4.3 Silty Clay

A native silty clay deposit was encountered beneath the fill in Boreholes BH101 to BH107, and BH109 and below the topsoil in the borehole BH108. The native, brown to grey silty clay was found to contain occasional silt seams, trace sand and trace gravel and generally getting more plastic with depth. All boreholes were terminated in this deposit. With SPT N-values ranging between 5 and 20 blows per 300 mm of penetration and undrained shear strength, measured using pocket penetrometer and field vane shear test, ranging between 50 and 225 kPa, the silty clay deposit was classified as firm to very stiff in consistency. The moisture content for this deposit was ranging from 17% to 38%, indicating moist to very moist conditions.

Grain size analysis was carried out on selected soil samples of the silty clay deposit. The results showed between 0 to 4% gravel, 1 to 5% sand, 34 to 66% silt, and 27 to 65% clay. Based on the laboratory results for four (4) silty clay samples, the liquid limit for this deposit ranged between 27 and 49%, and the plastic limit was ranging between 16 and 23%, indicating clay of low to moderate plasticity. The results of the grain size analysis and the Atterberg limits are indicated on the borehole logs and the grain size distribution graphs, as well as the plasticity index chart are included in Appendix B.

4.4 Groundwater Observations

Groundwater level observations were recorded during the drilling operation and all boreholes were open and dry upon the completion of drilling. Further, groundwater monitoring wells were installed in Borehole Nos. BH101, BH104, and BH108. The results of our groundwater monitoring to date are presented in Table 1 below:

Table 1: Groundwater Observation

BH/MW ID	Ground Surface Elevation (m)	July 13, 2023	
		Depth (m)	Elevation (m)
BH/MW101	189.5	1.4	188.1
BH/MW104	189.1	2.3	186.8
BH/MW108	189.4	2.4	187.0

Given the low permeability of the silty clay soils, insufficient time has passed for the groundwater to infiltrate into the monitoring wells for the present levels to be considered as stabilised. Therefore, we would recommend that additional monitoring of these wells be conducted prior to construction. Some infiltration of groundwater through the fill layer, more permeable seams in the silty clay soils and from surface runoff should be anticipated during the excavation operations. Surface water should be directed away from the excavations. It is noted that the static groundwater level fluctuates based on seasonal conditions experience and may at times be slightly shallower than noted above during the 'wet' periods of the year (i.e., spring melt). Refer to Appendix B for the list of abbreviations and borehole logs.

5. Environmental Testing

5.1 Applicable Site Condition Standards for Reuse (Within the Project Area on Site)

The assessment criteria applicable to a given site in Ontario are provided in the Ministry of Environment, Conservation, and Parks (MECP) document entitled "Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act", dated April 15, 2011. Standards are provided in Tables 1 to 9 in the document. These standards are based on site sensitivity, groundwater use, property use, soil type and restoration depth.

For this investigation, G2S has selected the Table 2 Full Depth Background Site Condition Standards (SCS) for residential/parkland/institutional (RPI) Property Use with medium/fine textured soils. The selection of this category is based on the following factors:

- There is no intention to carry out stratified restoration at the Sites.
- Based on field observations and grain size analysis, the predominant soil type on the Site is medium/fine textured.
- The most recent property use of the Sites is vacant or agricultural.
- The Site is not considered an Environmentally Sensitive Site based on:
    - The Site is not located within 30 m of an area of natural significance or a body of water.
    - The pH values are within the recommended range of 5 to 9 for surface soil (<1.5 m) and within 5 to 11 for subsurface soil (>1.5 m).
- Based on the findings from this Environmental Investigation, the following can be confirmed with respect to Sections 41 and 43.1 of O. Reg. 153/04, as amended:
    - The Site is not a shallow soil property, as defined in Section 43.1 of O. Reg. 153/04, as amended, since bedrock was not encountered at depths of less than 2 m.
    - The Site is not Environmentally Sensitive as defined in Section 41 of O. Reg. 153/04, as amended.

5.2 Excess Soil Quality Standards (ESQS) for Reuse Off-Site (Outside the Project Area)

The MECP has developed Generic Excess Soil Quality Standards (ESQS) for use with the Rules for Soil Management and Excess Soil Quality Standards (December 2020) under O. Reg. 406/19, as amended. The ESQS consist of nine tables (Table 1 through Table 9.1) that provide criteria for maximum concentrations of various contaminants. In general, the applicable Table and ESQS depend on the Reuse Site (Receiving Site) location, land use, soil texture, bedrock depth, soil pH and source of potable water at the Reuse Site (Receiving Site).

For reuse with minimal environmental restrictions, the O. Reg. 406/19, as amended, Full Depth Background Table 1 ESQS for residential/parkland/institutional/industrial/commercial/community (RPI/ICC) property uses were considered applicable.

For the option of reusing the excess soil at a Reuse Site (Receiving Site) with a potable groundwater condition, the O. Reg. 406/19 Table 2.1 Full Depth Generic ESQS were considered applicable for RPI and ICC property uses.

It is noted that a comparison to other tables within O. Reg. 406/19 was outside of G2S's scope for this assignment. If the potential Reuse Site (Receiving Site) for excess soil falls within another category, additional evaluation by G2S will be required to confirm conformance.

5.3 Soil Sampling

The soil samples obtained during the geotechnical drilling were field logged and placed in laboratory provided glass jars with Teflon™ lined lids and/or methanol vials (pre-filled and weighed with 10 mL purge & trap grade methanol). Sample cores for analysis of volatiles were collected using a 5-gram Ez-Core Soil Sampler. Disposable nitrile gloves (one per sample) were used during sample collection. The jars and vials were then sealed and stored in an insulated cooler with ice for transportation to the laboratory for additional examination. The remaining soil samples were placed in a sealed plastic bag for vapour screening for the presence of organic vapours. Particular attention was applied to visual and olfactory evidence of potential contamination such as odour and staining during field work.

Organic vapours in the soil samples were measured using an RKI Eagle 2 gas detector, equipped with a catalytic combustible gas sensor, calibrated to hexane (HEX), and a Photo Ionization Detector (PID) sensor, calibrated to isobutylene (IBL).

Selected soil samples were submitted for chemical analysis under chain of custody protocols to Paracel Laboratories Ltd. (Paracel), a Canadian Association for Laboratory Accreditation Inc. (CALA) accredited laboratory.

The rationale for soil sample selection was based on the visual and/or olfactory evidence of potential contamination and distribution for general coverage. The soil samples were submitted for chemical testing of metals, electrical conductivity (EC), sodium adsorption ratio (SAR), pH, petroleum hydrocarbon (PHC) Fractions F1 to F4 including benzene, toluene, ethylbenzene, and xylenes (BTEX).

The table below indicates the soil samples selected for laboratory analysis:

Table 2: Samples Submitted for Laboratory Analysis

Sample ID	Approx. Depth (m bgs)	Material Description	Chemical Analysis		
			Metals	EC/SAR/pH	PHCs F1 to F4 including BTEX
BH103 S2	0.8 – 1.3	Silty clay	✓	✓	✓
BH107 S2	0.9 – 1.4	Silty clay	✓	✓	✓
BH109 S1B	0.1 – 0.8	Fill	✓	✓	✓

6. Geotechnical Considerations

6.1 Site Preparation

At the time of the investigation the grading plan for the Site was not yet available to G2S, however, the following recommendations are based on the development plans as outlined in Section 2.2. Prior to any earthwork, it will be necessary to remove any unacceptable fill or organic soils from the areas to be developed. It is expected that only limited placement of engineered fill will likely be necessary in order to develop the Site. Any engineered fill must be placed and uniformly compacted in maximum lift thicknesses of 300 mm for earth fill and 200 mm for commercially sourced granular material. Each lift of the engineered fill must be uniformly compacted to at least 100 percent of Standard Proctor Maximum Dry Density (SPMDD). The placement water content of the engineered fill material should be maintained within ± 3 percent of the laboratory optimum water content in order to achieve an acceptable degree of compaction.

The limits of any engineered fill placed during this operation can best be determined by the geotechnical engineer at the time of construction. If engineered fill will be used to support foundations or pavements, it must extend laterally at sufficient distance to develop adequate lateral resistance.

All aspects of engineered fill construction including final excavation, material selection, placement and compaction must be tested by the geotechnical engineer at the time of placement and compaction. In-situ density (compaction) testing is required during construction for any and all engineered fill placement.

6.2 Foundation Recommendations

6.2.1 Methodology

The shallow foundations are to be designed applying the Limit State Design (LSD) methodology described in Chapter 8 of the Canadian Foundation Engineering Manual (CFEM) (2006). Both Ultimate Limit State (ULS) and Serviceability Limit State (SLS) were considered.

For design purposes to address the ULS, the ultimate (unfactored) bearing capacity of the foundation soil (R_n) was calculated. The allowable (factored) bearing capacity ($\Phi\ R_n$) was computed by multiplying R_n with a reduction factor, in accordance with National Building Code of Canada (NBCC) (2015) and CFEM (2006).

The foundation designer needs to ensure that the factored bearing capacity is greater than the factored applied pressure at foundation level ($\alpha_i\ S_{ni}$). Hence, the following formula applies:

$$\Phi\ R_n \geq \sum \alpha_i\ S_{ni}$$

If the foundation is subjected to vertical forces that act eccentric to the centroid of the foundation, the size of the foundation used in the bearing capacity equation is reduced to the following:

$$B' \times L' = (B-2e_B) \times (L-2e_L)$$

where:

B, L: actual foundation dimensions
B', L': reduced dimensions to be used in the bearing capacity equation

e_B, e_L: eccentricities due to applied forces (loading) from the centroid in dimensions B and L, respectively.

Foundations subject to moments M_B and M_L in the B and L directions and vertical load V acting through the centroid are equivalent to a loading system with V acting at eccentricities $e_B=M_B/V$ and $e_L=M_L/V$.

CFEM (2006) emphasizes that this equation is an approximate but reasonable approach provided that the eccentricity acts within the middle third of the foundation, i.e., eccentricity, e<B/6. In addition, in case of inclined loading, appropriate factors need to be considered in accordance with CFEM (2006).

The serviceability limit state (SLS) bearing pressure is considered by calculating the settlements (immediate, consolidation and total) due to foundation load. It is expected that the structural team will compare the settlements due to foundation and fill loads against allowable foundation settlement values.

It is noted that the overall settlement and/or heave experienced by the foundations may depend on other factors such as the quality of subgrade preparation and weather conditions at the time of construction, ground freeze and thaw, dynamic loading, among other factors.

6.2.2 Shallow Foundation

Based on the findings in the boreholes, the proposed structure can be supported on conventional spread and strip footings founded on the undisturbed silty clay. Foundations constructed at the approximate elevations and depths provided in **Error! Reference source not found.** below can b e designed with a geotechnical resistance ranging from 100 to 150 kPa at Serviceability Limit States (SLS) and 200 to 300 kPa at Ultimate Limit States (ULS), based on total and differential settlements being well within 25 and 20 millimetres, respectively.

Table 3: Bearing Resistance for Conventional Spread Footing

Borehole ID	Material	Bearing Resistance (kPa)	Recommended Founding Depth (mbeg)	Approx. Founding Elevation (m)
BH101	Silty Clay	150 SLS/300 ULS	1.5	188.0
		100 SLS/200 ULS	3.0	186.5
BH102	Silty Clay	150 SLS/300 ULS	1.5	188.2
		100 SLS/200 ULS	3.0	186.7
BH105	Silty Clay	150 SLS/300 ULS	1.5	188.1
		100 SLS/200 ULS	3.0	186.6
BH106	Silty Clay	150 SLS/300 ULS	1.5	188.3
		100 SLS/200 ULS	3.0	186.8
BH107	Silty Clay	150 SLS/300 ULS	1.5	187.8
		100 SLS/200 ULS	3.0	186.3
BH108	Silty Clay	150 SLS/300 ULS	1.5	187.9
		100 SLS/200 ULS	3.0	186.4
BH109	Silty Clay	150 SLS/300 ULS	1.5	187.6
		100 SLS/200 ULS	3.0	186.1

The encountered silty clay material typically became weaker with depth and the available bearing resistance may be reduced significantly below the depths mentioned above. Therefore, G2S should be contacted to review the proposed design details and provide further comments, as required. Prior to placement of foundation concrete all existing fill, organics and any other deleterious material must be removed down to the undisturbed native soils. The exposed footing base is to be inspected by G2S.

Alternatively, the proposed structure can be supported on engineered fill over the silty clay at the depths provided in Table 3, the engineered fill is to be constructed as detailed in Section 5.1 of this report utilizing a design bearing resistance of 100 kPa at (SLS) and 150 kPa at (ULS).

This office should be contacted to review the field data further and provide relevant recommendations.

6.2.3 Foundation General

The footing beds in the native silty clay will be prone to disturbance from construction, foot traffic and precipitation. It would be prudent to consider the placement of a 50 mm concrete ‘mud’ slab over the footing bases once evaluated. This will protect the footing beds from disturbance and provide a clean working surface for the placement of formwork and reinforcing steel.

In areas where it will be necessary to provide adjacent footings at different founding elevations, the lower footing should be constructed before the higher footing, if possible. To limit stress transfer from higher footings to lower footings, the higher footing should be set below a line drawn up from the edge of the lower footing at 10 horizontal to 7 vertical.

All footings exposed to the environment must be provided with a minimum of 1.2 metres of earth cover or equivalent insulation to protect against frost damage. This frost protection would also be required if construction were undertaken during the winter months. All footings and foundations should be designed and constructed in accordance with the current Ontario Building Code. It is

recommended to place a 50 millimetres thick high-density sheet of Styrofoam insulation against the exterior of the foundation walls, followed by the placement of a 10-mil sheet of 'double' polyethylene ('fold' placed at 'top') to prevent frost heaving/adfreezing action.

With foundations designed as outlined above and as required by the current Ontario Building Code, and with careful attention paid to construction detail, total and differential settlements should be well within normally tolerated limits of 25 and 20 millimetres, respectively. However, as is typical in most residential construction, 'cosmetic' cracking of plasterboard, foundation walls, etc. may occur within the first year of construction as a result of shrinkage, minor settlement, etc. Subsequent to repair, additional cracking should be minimal.

It is imperative that a soils engineer be retained from this office to provide geotechnical engineering services during the excavation and foundation construction phases of the project. This is to observe compliance with the design concepts and recommendations of this report and to allow changes to be made if subsurface conditions differ from the conditions identified at the borehole locations.

6.3 Seismic Design Parameters

The structure shall be designed according to Section 4.1.8 of the Ontario Building Code, Ontario Regulation 332/12. Based on the subsurface soil conditions encountered in this investigation, the applicable Site Classification for the seismic design is Site Class D – Stiff soils, based on the average soil characteristics for the Site. Conducting site-specific shear wave velocity testing may be considered to confirm or upgrade the site class. The seismic data as per the 2020 National Building Code interpolated seismic hazard values, in accordance with Article 4.1.8.23. of the NBC 2020, are as follows:

S_a[0.2]	S_a[0.5]	S_a[1.0]	S_a[2.0]	S_a[5.0]	S_a[10.0]	PGA	PGV
0.286	0.262	0.152	0.0717	0.0186	0.00581	0.174	0.165

It should be noted that the values above were based on the 2%-in-50-year seismic hazard values provided in accordance with Article 4.1.8.4. of the National Building Code 2020 (NBC). The structural engineer responsible for the project should review the earthquake loads and effects.

6.4 Floor Slab Considerations

The basement floor slab may be constructed using conventional slab-on-grade techniques on a prepared subgrade. The exposed subgrade surface should then be well compacted (proofrolled) in the presence of a representative of G2S. Any soft 'spots' delineated during this work must be sub-excavated and replaced with quality backfill material compacted to at least 98 percent of its Standard Proctor Maximum Dry Density (SPMDD). Imported granular fill is preferred due to its relative insensitivity to weather conditions, its relative ease in achieving the required degree of compaction, and its quick response to applied stresses.

As with all concrete floor slabs, there is a tendency for the floor slabs to crack. The slab thickness, concrete mix design, amount of steel and/or fibre reinforcement and/or wire mesh placed into the concrete slab, if any, will therefore be a function of the owner's tolerance for cracks in, and movements of, the slabs-on-grade, etc. The 'saw-cuts' in the concrete floors, for crack control, should extend a minimum of 1/3 the thickness of the slab.

A moisture barrier will be required under the floor slabs such as the placement of at least 200 mm of well-compacted 19-millimetre clear crushed stone. At a minimum, the moisture barrier material should contain no more than 10 percent passing the No. 4 sieve.

Curing of the slab-on-grade must be carefully specified to ensure that slab curl is minimized. This is especially critical during the hot summer months of the year when the surface of the slab tends to dry out quickly while high moisture conditions in the moisture barrier or water trapped on top of any 'poly' sheet at the saw cut joints and cracks, and at the edges of the slabs, maintains the underside of the slab in a moist condition.

Based on the conditions encountered in the boreholes, backfill recommendations, and the floor slab considerations as included in our report, a modulus of sub-grade reaction, ks, of 25 MPa/m (based on a loaded area of 300 mm x 300 mm) can be used for the design of the slab-on-grade floor slab.

It is also important that excess free water not be added to the concrete during its placement as this could increase the potential for shrinkage cracking and curling of the slab.

6.5 Lateral Earth Pressure and Perimeter Drainage

The following soil properties, provided in Table 4, may be considered for the design of structures subject to an unbalanced earth loading. These properties have been estimated based on our review and laboratory testing of the soil samples, which were recovered during the geotechnical investigation, as well as the type of backfill material, which is expected to be used in construction.

Table 4: Soil Properties for Design of Earth Retaining Structures

Material	φ	γ	K_a	K_o	K_P
Fill: Earth fill	28	19.0	0.36	0.53	2.77
Fill: OPSS 1010 Granular B – compact	32	21.0	0.31	0.47	3.25
Silty Clay –Stiff	28	19.0	0.36	0.53	2.77
Silty Clay – Very Stiff to Hard	30	19.5	0.33	0.50	3.00

Φ = Angle of Internal Friction (degrees), γ= Bulk Unit Weight of Soil (kN/m^3), K_a = Active Earth Pressure Coefficient, K_o = At-rest Earth Pressure Coefficient, K_P = Passive Earth Pressure Coefficient.

Lateral earth pressures on the basement foundation walls can be calculated as per the following:

$$p = K (\gamma h + q)$$

Where, p = Lateral earth pressure, in kPa acting at depth h
K = Coefficient of earth pressure
γ = Unit weight of backfill (kN/m3)
h = Depth to point of interest (m)
q = Surcharge load acting adjacent to the wall at the ground surface (kPa)

The above-mentioned formula is based on the assumption that a perimeter drainage system prevents hydrostatic pressure build-up behind the wall and free-draining granular material will be used for backfilling behind the wall.

The following equation can be used to calculate the earth pressure acting on the retaining walls including the effects of groundwater pressure:

$$p = K(\gamma h_1 + \gamma' h_2 + q) + \gamma_w h_2$$

Where, h_1 = depth in meters above the water table;

γ' = effective unit weight of soil;
γ_w = unit weight of water (10 kN/m^3);
h_2 = depth in metres below the water table;
q = equivalent value of surcharge on the ground surface in kPa;

The hydraulic uplift pressure, P, below the waterproofed structure can be calculated using the following formula:

$$P = \gamma_w h_w$$

Where, γ_w = unit weight of water (10 kN/m^3)
h_w = depth in metres below the water table

A permanent perimeter drainage system should be provided around the structure to prevent the build-up of water against the basement walls. As a minimum, it is recommended that the perimeter weeping tile consist of a 150 mm diameter perforated pipe with a geofabric 'sock', surrounded with 200 mm of 19 mm clear stone, with the stone in turn encased by a heavy geotextile filter fabric. The suppliers of the geotextile filter fabric should be consulted as to the type best suited for this project.

The perimeter drainage system should outlet to a gravity storm sewer connection, fitted with a suitable back-flow prevention valve. In the event that a sump pump system is required, it should be constructed with an 'oversized' reservoir to limit pumping intervals and include an alarm in the event that the system fails to operate as per design, with a municipal water operated backup pump to operate during power outages and when maintenance of the main pump is required.

If the structure is not designed as a watertight structure, it is recommended to install an underfloor drain. The underfloor drain should be connected to a positive outlet.

This office, i.e., G2S, should examine the installation of the perimeter and subfloor drains. Even a small break in the filtering materials could result in loss of 'fines' into the drains with attendant performance difficulties, including settlements of the ground surface. The exterior grade around the structure should be sloped away from the structure to prevent water ponding against the foundation walls.

Additional well graded granular material should be placed and compacted in exterior sidewalk and accessibility ramp areas to reduce the effects of frost heaving. Alternatively, insulation could be placed in these areas, or a structural 'frost' slab should be constructed at the doorways.

6.6 Excavations and Groundwater Control

All excavations must comply with the current Occupational Health and Safety Act (OHSA) and Regulations for Construction Projects.

It is anticipated that the excavations for the proposed foundations, sewers and other underground services will extend to depths of up to 3.5 to 4.0 mbeg through the existing fill and the native silty clay.

The excavation must be completed in accordance with the current OHSA regulations. For guidance, soft soils and soils below the groundwater level are classified as Type 4. The fill material and native silty clay may be classified as Type 3 soil. The very stiff silty clay can be classified as Type 2 soil, if the excavation contains more than one type of soil, the soil shall be classified as the type with the highest number. Excavation slopes steeper than those required in the OHSA must be supported or a trench box must be provided, and a senior Geotechnical Engineer from this office should supervise the work.

Where workers must enter excavations extending deeper than 1.2 m below grade, the excavation sidewalls must be suitably sloped and/or braced in accordance with the Occupational Health and Safety Act and Regulation for Construction Projects. Provisions must be made in any excavation or drilling contract for the removal of possible boulders.

Based on the monitoring wells which were installed during the current investigation, infiltration of groundwater as well as surface runoff should be anticipated, and localized dewatering will likely be required to facilitate the excavation. Filtered sumps, trenches, and oversized excavations, can be used to mitigate this issue. However, if these techniques fail to control the groundwater seepage, an adequate dewatering technique, which should be carried out by a specialized contractor, should be considered. G2S will be pleased to review and comment on the contractor's proposed dewatering system. Techniques such as a series of ditching and sump pumps may be used, however the method of dewatering is the responsibility of the contractor.

Ontario Regulation 387/04 requires authorization from the Ministry of the Environment, Conservation, and Parks (MECP) for all water takings over 50,000 L/day. Ontario Regulation 63/16 specifies that for temporary construction dewatering at rates between 50,000 and 400,000 L/day an Environmental Activity and Sector Registry (EASR) may be obtained in lieu of a Permit to Take Water (PTTW). Dewatering at rates of more than 400,000 L/day requires a PTTW to authorize groundwater withdrawal.

6.7 Temporary Shoring

The shoring method will depend on the settlement tolerance for the adjacent structure and buried utilities. We would recommend an active earth pressure coefficient K_a = 0.45 and using a unit weight of retained soil of 22 kN/m^3. The shoring wall must be designed and constructed as a rigid shoring system, such as a continuous interlocking caisson wall to limit adjacent soil movements/ deflections. The lateral earth pressure distribution diagram for cohesive soils should be as per CFEM Section 26.10.3 (b) and (c). The shoring system may be constructed with walers supported by rakers or soil anchors. Tieback agreements will be required for the installation of soil anchors from the neighboring properties. The shoring system must be designed by a professional engineer experienced in shoring design and the shoring system constructed by an experienced contractor. Any surcharge loads must be incorporated into the shoring design. The structural member stiffness and stability is the responsibility of the shoring design engineer and the shoring contractor. We would recommend that a detailed condition survey for the nearby structures and

roadways be conducted prior to the commencement of the excavation operation. In addition, the shoring system must be monitored for any vertical or horizontal movements during the course of construction. The excavation must provide 'space' for the construction of the footings and foundation walls, with an allowance for access by workers. In the event that a shoring system is required for this project we would recommend that this office be retained to review the selected design and provide monitoring during installation.

6.8 Pipe Bedding

For underground services installation, no bearing capacity issues are anticipated for pipes founded in dewatered native soils. A minimum 150 mm bedding thickness of OPSS Granular 'A' crusher-run limestone is recommended under the pipes. The bedding material should be compacted to 98 percent SPMDD. For pipes founded in wet native soils, the pipe bedding should consist of 19 mm clear stone completely wrapped in geotextile filter fabric to prevent the migration of fines into the void spaces of the bedding material. High performance aggregate can also be used in excessively wet areas.

Granular material should be extended upward as trench backfill for at least 300 mm above the obvert of the pipe. The remaining trench to final subgrade level should be backfilled in 300 mm thick lifts with approved excavated material compacted to at least 98 percent SPMDD.

Frequent inspection by G2S geotechnical personnel should be carried out to examine and approve backfill materials, to carefully inspect placement, and to verify that the specified degree of compaction has been obtained.

6.9 Thrust Blocks

Thrust blocks in the native silty clay may be sized as recommended by the applicable Ontario Provincial Standard Specification (OPSS). A design allowable bearing pressure of 200 kPa may conservatively be used in the design of thrust blocks. Any backfill required behind the blocks should be granular and should be compacted to 100 percent of their standard Proctor Density.

6.10 Backfill Considerations

The majority of the excavated material will consist of the native silty clay. We expected that most of the excavated material would be removed from the Site to accommodate the basement levels. The remaining material apart from the organics and otherwise deleterious material should be suitable for use as service trench backfill and as engineered fill provided that the moisture content can be controlled to within 3 percent of the standard Proctor optimum value. Some moisture content conditioning of the excavated material may be required, depending upon the weather conditions experienced at the time of construction to achieve acceptable compaction densities and minimize long-term settlements. Dusting could be a problem in the 'dry' summer months.

We note that where backfill material is placed near or slightly above its optimum content, the potential for long-term settlements due to the ingress of groundwater and collapse of the fill structure is reduced. Correspondingly, the shear strength of 'wet' backfill material is also lowered, thereby reducing its ability to support construction traffic, and therefore impacting roadway construction. If the soil is well 'dry' of its optimum value, it will appear to be very strong when compacted, but will tend to settle with time as the moisture content in the fill increases to equilibrium condition. The soil may require high compaction energy to achieve acceptable densities if the moisture content is not close to their standard Proctor optimum value. It is therefore

very important that the placement moisture content of the backfill soils be within 2 percent of its standard Proctor optimum moisture content during placement and compaction.

Any imported fill required in service trenches or to raise the subgrade elevation should have its moisture content within 3 percent of its optimum moisture content and meet the necessary environmental guidelines.

The backfilling and compaction operations should be monitored by a representative of G2S to monitor uniform compaction of the backfill material to project specification requirements. Close supervision is prudent in areas that are not readily accessible to compaction equipment, for instance near the end of compaction 'runs', and around the foundation walls. Any engineered fill should be compacted to 100 percent SPMDD. A method should be developed to assess compaction efficiency employing the on-Site compaction equipment and backfill materials during construction.

6.11 Pavement Considerations

6.11.1 Subgrade Preparation

The pavement areas should be stripped of all topsoil, organic and other unsuitable materials. The exposed subgrade should be proofrolled with 3 to 4 passes of a loaded tandem truck with the presence of a representative of G2S immediately prior to the placement of the sub-base material. Any areas of distress revealed by this, or any other means, must be sub-excavated and replaced with suitable backfill material. Alternatively, the soft areas may be repaired by placing coarse aggregate, such as 50 mm clear crushed stone. The need for sub-excavations of a softened subgrade will be reduced if construction is undertaken during periods of dry weather and careful attention is paid to the compaction operations. At areas of weak subgrade, suitable geogrid product such as Tensar TriAx (TX) geogrid or equivalent can be used to stabilize the subgrade. The fill placed over shallow utilities that cut into or across the paved areas must also be compacted to 100 percent of its SPMDD.

Good drainage provisions will optimize the long-term performance of the pavement structure. The subgrade must be properly crowned and shaped to promote drainage to the subdrain system. Subdrains should be installed to intercept excess subsurface water and to prevent softening of the subgrade material. Surface water should not be allowed to pond adjacent to the outer limits of the paved area.

The most severe loading conditions on the subgrade typically occur during the course of construction, therefore, precautionary measures may have to be taken to ensure that the subgrade is not unduly disturbed by construction traffic. These measures would include minimizing the amount of heavy traffic travelling over the subgrade, such as during the placement of granular base layers.

If construction is conducted under adverse weather conditions, additional subgrade preparation may be required. During wet weather conditions, such as typically experienced during the fall and spring months, additional subgrade preparation, such as the provision of an additional depth of Granular B sub-base coarse material would be required. It is also important that the sub-base and base coarse granular layers of the pavement structure be placed as soon after exposure and preparation of the subgrade level as practical.

6.11.2 Flexible Pavement Structure

The suggested pavement structures, for the pavement areas, outlined in Table 5 below are based on subgrade parameters estimated on the basis of visual and tactile examinations of the on-Site soils and past experience. The outlined pavement structures may be expected to have an approximate ten-year life, assuming that regular maintenance is performed. Should a more detailed pavement structure design be required, Site specific traffic information would be needed, together with detailed laboratory testing of the subgrade soils.

Table 5: Suggested Pavement Structure

Layer Description	Compaction Requirements	Light Duty Sections	Heavy Duty (Truck route)
Asphaltic Concrete Wearing course OPSS HL 3 or HL 3A	Min 92.0 % *MRD	65 millimetres	40 millimetres
Binder Course OPSS HL 8	Min 92.0 % *MRD	--	65 millimetres
Base Course OPSS Granular A	100% **SPMDD	150 millimetres	150 millimetres
Sub-base Course OPSS Granular B Type II	100% **SPMDD	200 millimetres	350 millimetres

Notes: * MRD denotes maximum relative density, MTO LS-264

** SPMDD denotes Standard Proctor Maximum Dry Density, ASTM-D698.

Depending on the arrangement of light duty and heavy-duty pavement sections, the transition between sections may present some difficulty for contractors. In this regard, consideration might be given to a slightly increased light duty pavement structure consisting of 50 mm of HL8 binder course and 40 mm of HL3 surface course asphaltic concrete. This structure will provide for a continuous depth of surface course asphalt allowing for ease of construction.

As well, such a structure would have an improved performance over an increased design life. Such an arrangement of asphalt layers would also allow for future rehabilitation with a ‘mill and pave’ type operation.

7. SWM Facility Recommendations

It is understood that the proposed stormwater management facility will be an offline wet pond with forebay for settlement of suspended solids. The proposed SWM is located at the northeast corner of the Site. It is assumed that the facility will be designed per provincial recommendations as outlined in the 2003 MOE Stormwater Management Design Guidelines, including maximum depths, side slopes, etc.

7.1 Soil Conditions

Boreholes BH103 and BH104 are located within the proposed SWM block and revealed the presence of fill material extending to a depth of 0.8 mbeg, underlain by silty clay. The groundwater level at the Site at the time of the investigation was in the order of 1.4 to 2.4 mbeg (~Elev. 188.1 to 186.8 m). It should be noted that the base elevation for the proposed pond was not available at the time of the investigation.

7.2 Soil Coefficient of Permeability

Grain size analysis and Atterberg Limits determination testing was carried out on four(4) soil samples of the native silty clay material located in BH103, BH104, and BH108 at depths ranging from 3.0 and 7.6 m. These results were used to provide estimates of the percolation rate and coefficient of permeability for the on-Site soils as well as its suitability for use as a compacted clay liner, as explained in Section 6.4.1 below. The following is a summary of the parameters:

Table 6: Soil Parameters and Estimated Percolation Rate

Sample	Grading	Atterberg Limits		% passing 0.002 mm	% passing 0.075 mm	% Particles between 2.0 and 0.06 mm	K (cm/sec)	T (mins/cm)
		LL	PL					
BH103 – S5	Gr: 0% Sa: 5% Si: 35% Cl: 60%	43%	22%	60%	99	2%	~ 10^{-6}	Over 50
BH103 – S9	Gr: 4% Sa: 3% Si: 66% Cl: 27%	24%	16%	27%	99	3%	< 10^{-5}	Over 50
BH104 – S7	Gr: 0% Sa: 1% Si: 54% Cl: 45%	27%	16%	45%	100	1%	~ 10^{-6}	Over 50
BH108 – S5	Gr: 0% Sa: 1% Si: 34% Cl: 65%	49%	23%	65%	100	1%	< 10^{-5}	Over 50

Note: Gr – Gravel; SA – Sand; Si – Silt and Cl - Clay

The silty clay was found to be firm to very stiff in consistency and in moist to very moist conditions. Utilizing the Ontario Building Code, Supplementary Standard SB-6, Percolation Time and Soil descriptions for the soil samples at the locations and depths shown in Table 6, the estimated coefficient of permeability was ranging between approximately 10^{-5} to 10^{-6} and the associated percolation time is estimated as over 50 mins/cm. Grain size analyses can be found in Appendix B. The soil properties indicated are representative only of the sample tested. Note that the permeability and percolation rates have been estimated based on an approximate relationship of soil types as determined by the grain size distribution test conducted and will vary with soil properties and compactness condition.

7.3 Side Slopes

The pond side walls are recommended to be constructed with a side slope of 3 horizontal to 1 vertical or flatter. However, for the section of the sidewalls which are located within the groundwater seasonal fluctuation area, it is recommended that the side slopes be flattened to 4 horizontal to 1 vertical to resist erosion by wavelet action. It is also recommended that the side slopes be vegetated and additional measures to stabilize the surface and reduce the risk of surficial erosion (i.e., rip rap stone, erosion mats) be installed, as needed.

7.4 Impermeable Liner

Based on the subsoil conditions at the Site and in order to facilitate construction of a wet pond capable of maintaining standing water, avoiding groundwater infiltration and the potential contamination, which may result from the collected surface water being in direct contact with the groundwater, the pond will require the installation of an impermeable liner. There are different options available for impermeable liners including a solid clay liner, a geosynthetic clay liner, or a plastic liner such as PVC or HDPE liner. Considerations relevant to different liner options should be evaluated depending on the project design requirements. Regardless of its type, the liner should be impermeable and shall extend at minimum to the top of the design maximum water level. As the liner extends up the sides of the facility the thickness of the liner or liner overburden may be decreased proportional to the decreasing depth.

The following sections will discuss the various available options to construct or install the pond liner. Marker/ballast layer with a minimum thickness of 200 mm consisting of 150 mm diameter stones should be installed on top of the liner material to serve as a marker for the maintenance crew to avoid damaging the liner material during maintenance operations.

7.4.1 Compacted Clay Liner

A compacted clay liner with a minimum thickness of 600 mm should be installed. However, once the long-term groundwater level is established and the acting uplift pressure on the liner material is calculated, the thickness of the liner material can be re-evaluated. The liner should be compacted to a minimum of 95% of the material Standard Proctor Maximum Dry Density (SPMDD). The material to be used in the liner construction should be analyzed as per LS 702/703, (ASTM D4318 and ASTM D7928) and the grain size distribution and the Atterberg Limits for this material should meet the following criteria:

1. Percent of fine particles passing Sieve Size 0.075 mm ≥ 50 percent
2. Percent of particles passing Sieve Size 0.002 mm (clay content) ≥ 20 percent
3. Percent of particles between passing 2.0 mm and retained on 0.06 mm ≤ 45 percent
4. Plasticity Index ≥ 20 percent
5. Liquid Limit LL ≥ 50 percent

Based on the grain size analysis and the Atterberg Limits determination results for the on-Site material, as noted in Table 5 above, the on-Site material is not considered suitable for use in the construction of the clay liner. Clay liner can be accepted based on the results of hydraulic conductivity laboratory testing to be completed for at least three soil samples taken from the already placed material, which should be compacted to a minimum of 95% of the material SPMDD. The hydraulic conductivity for the liner material based on the as built conditions should

be in the order of $1x10^{-8}$ or less. Alternatively, a mixture of 1 part bentonite to 3.5 parts by volume of Granular 'A' conforming with the OPSS.MUNI 1010 requirements, could be used to produce the clay liner material, provided that an approved mechanical mixer is used in the production of the liner material.

The subgrade at the pond area should be proofrolled and approved by a representative of G2S geotechnical staff prior to the placement of the liner material. The material should be placed in loose lifts not exceeding 150 mm in thickness or 25 mm less than the tamping foot length of the compaction equipment and be compacted to a minimum of 95% of its SPMDD. The moisture content for the liner material should be within 90 and 120% of its Optimum Moisture Content as determined by the laboratory Standard Proctor testing (ASTM D698). The surface of the material during placement and compaction operation must be free of any tree branches, organics, foreign debris, oversized gravel in excess of 75 mm in diameter, or any otherwise deleterious material. The operations should be carried out during favorable weather conditions to avoid frost penetration at the surface between the lifts during cold weather, or surface cracking and material shrinkage of the materials due to moisture loss during hot weather.

7.4.2 Synthetic Liner

Geosynthetic clay liner such as AGRU GeoClay liner or equivalent can be used. AGRU GeoClay is a reinforced needle-punched geosynthetic clay liner that consists of a uniform layer of natural granular sodium bentonite encapsulated between a woven and a nonwoven geotextile, or between scrim reinforced woven and nonwoven geotextiles. The subgrade should be prepared by removing all organics and unacceptable materials, proofrolled and approved by a representative of G2S geotechnical staff prior to the placement of the liner material. The groundwater level must be lowered to at least 0.5 m below the pond base level during installation. The synthetic liner should be installed as per the manufacturer recommendations.

7.4.3 Hydraulic Uplift

Groundwater was noted in BH/MW104 at elevation of 186.8 m (2.3 m begs) as shown in Table 1 in Section 4.4, however it is noted that the static groundwater level fluctuates based on seasonal conditions experienced during the wet and dry periods of the year. It is recommended that further evaluation of groundwater levels be completed to assess an average annual groundwater level/long-term groundwater level. Should the proposed bottom of the SWM pond or liner extend below the groundwater table it should be designed to resist hydraulic uplift in the most conservative condition; that being when the pond is empty. This scenario is possible during construction, depending on implementation of dewatering practices, as well as in the case of dewatering of the facility for maintenance purposes. In order to resist uplift pressure under the proposed liner, the weight of the liner plus any cover material such as the marker stone/ballast must be greater than the uplift force acting on the bottom of the liner. A drainage blanket consisting of 150 mm diameter perforated pipes, wrapped in geotextile fabric (i.e., Terrafix 270R or equivalent), and topped with a leveling blanket consisting of 150 mm of leveling sand should be installed below the liner.

The hydraulic uplift pressure, P, below the pond liner can be calculated using the following formula:

$P = \gamma_w h_w$

Where:

P = The hydraulic pressure acting on the base of the structure (kPa)
γ_w = Unit weight of water (10 kN/m^3)
h_w = Depth in metres of the liner below the water table

And the corresponding required liner thickness can be calculated as follows:

$H_L = P / \gamma_L$

Where:

γ_L = Unit weight of liner in kN/m3
H_L = Thickness in metres of the liner and any overburden material

8. Environmental Considerations

8.1 Vapour Screening

Organic vapour concentrations were measured in the headspace of the recovered soil samples using an RKI Eagle Portable Gas Detector and Photoionization Detector (PID), which detects a combination of combustible gases in parts per million (ppm). The are no regulatory criteria for soil vapours; however, soil vapours are often used as a screening tool to identify volatile organic compound (VOC) and/or petroleum hydrocarbon (PHC) impacted soils. The correlation between combustible vapour concentrations and PHCs in soil is highly dependent on the soil type, moisture content and characteristics of the contaminant of concern.

The results of screening are used as a tool in establishing relative organic vapours among samples and sampling locations. Measured soil vapour concentrations on the headspace of recovered soil samples were identified as 0 ppm for the catalytic gas sensor and between 0 and 5 ppm for the photoionization detector at the time of sampling. Complete soil field screening measurements are presented on the borehole logs in Appendix B.

8.2 Analytical Findings - Soil

The laboratory Certificate of Analysis for the soil sample submitted for analysis are included in Appendix C.

On-Site Reuse

When compared to the Table 2 RPI SCS, the measured concentrations of the tested parameters in the submitted samples met the criteria.

Off-Site Reuse

When compared to the Table 1 RPI/ICC ESQS, the measured concentrations of the tested parameters in the submitted samples met the criteria, except for the following:

- Sodium adsorption ration (SAR) in Sample BH107 S2 (2.46 exceeds ESQS of 2.4)

When compared to the Table 2.1 RPI ESQS, the measured concentrations of the tested parameters in the submitted samples met the criteria.

8.3 Assessment of Analytical Findings and Conclusions

The purpose of the limited soil sampling and chemical testing was to check the environmental quality of the Site soil for the purposes of assessing on-Site or off-Site reuse options.

Reuse within the Project Area (On-Site)

The soil tested met the O. Reg. 153/04 Table 2 RPI SCS for the parameters tested.

Reuse of excavated soil within the Project Area is acceptable, subject to acceptance by the geotechnical consultant at the time of construction based on geotechnical considerations.

Reuse Outside of the Project Area (Off-Site)

The soil tested met the O. Reg. 406/19 Table 1 RPI/ICC ESQS for the parameters tested, except for SAR in one sample. Therefore, off-Site reuse will be subject to certain handling restrictions.

When compared to the O. Reg. 406/19 Table 2.1 RPI ESQS, the chemical quality of the tested soil met the criteria, therefore off-Site reuse is acceptable. Depending on the volume of excess soil generated, further investigation may be required in accordance with O. Reg 406/19, as amended.

Guidelines for Off-Site Reuse

If the excess soil is to be removed from the Project Area (Site) for reuse, the following conditions must be met:

i. The excess soil is not taken to a property that is environmentally sensitive as defined in O. Reg. 153/04 or within 30 m of a waterbody.

ii. The work must be completed in accordance with local by-laws and Regulations governing soil movement and/or placement at the Reuse Site (Receiving Site).

iii. All analytical results and environmental assessment reports must be fully disclosed to the Reuse Site (Receiving Site) owners/authorities/Qualified Person (QP), and they have agreed in writing to receive the material. The chemical testing requirements for various Reuse Site (Receiving Site) is site-specific and additional testing may be required, beyond that provided in this report.

iv. Transportation and placement of the excess soil is monitored by the environmental consultant to check the material is appropriately placed at the pre-approved site.

v. The excavation work, for any amount of excess soil, must be completed in accordance with O. Reg. 406/19, as amended to ensure that all excess excavated material is tested and managed appropriately, and that imported fill material is of suitable quality and meets the ESQS applicable to the Project Area. Reuse of excess excavated soil within the Project Area or at a reuse site is also subject to acceptance for reuse by the geotechnical consultant at the time of construction based on geotechnical considerations.

It is noted that despite any chemical testing program, ultimate acceptance of excess soil lies with the Reuse Site (Receiving Site) and their written approval to receive the material, based on review of the reports provided.

9. General Comments

The comments provided in this document are intended only for the guidance of the design team. The subsoil descriptions and borehole information are only intended to describe conditions at the borehole locations. Contractors placing bids to undertake this project should carry out due diligence to verify the results of this investigation and to determine how the subsurface conditions will affect their operations.

The action of stripping topsoil and unsuitable near-surficial soils as well as the selection and placement of engineered fill should be tested by the geotechnical engineer at the time of construction. In-situ density testing should be carried out on any engineered fill placed at the Site.

All foundations should be reviewed on Site by the geotechnical engineer as they are constructed, as required by Section 4.2.2.2 of the Ontario Building Code (2012). If G2S is not retained to review the foundation bearing conditions or the construction of the foundations in the field, then G2S assumes no responsibility for the performance of the foundations as constructed.

The long-term performance of slabs on grade is dependent on the subgrade support conditions. Subgrades to support slabs on grade should be inspected by the geotechnical engineer prior to final construction. It is important that any engineered fill constructed beneath slabs on grade is carried out as outlined in this report.

10. Limitations

The geotechnical engineering advice and recommendations provided in this report are considered preliminary and were based on the factual information obtained during this investigation.

It may be possible that the subsurface conditions vary between and beyond the investigated borehole locations. For the purpose of this report, it is assumed that the conditions outside of and between the exact borehole locations are similar to the conditions observed in the boreholes. The change in subsurface stratigraphy reported on the borehole logs has also been interpreted based on non-continuous sampling, therefore, changes in stratigraphy as shown on the borehole logs and as discussed in this report should not be regarded as exact lines of geological change. The subsurface conditions at the Site may change with the passage of time and/or by human intervention.

The findings along with the geotechnical engineering advice and recommendations provided in this report are limited to the conditions at the Site at the time of this investigation as described herein. Conclusions presented in this report should not be construed as legal advice. If the Site conditions or applicable standards change or if any additional information becomes available at a future date, changes to the findings, conclusions and recommendations in this report may be necessary.

Through any subsurface investigation by boreholes, it may not be possible to identify all aspects of the subsurface conditions at the Site that could affect construction costs, techniques, equipment, and scheduling. Contractors bidding on or undertaking work on the project must be directed to draw their own conclusions as to how the subsurface conditions may affect them, based on their interpretation of the subsurface conditions and/or their own investigations.

This report has been prepared for the sole benefit of the Client and is intended to provide geotechnical engineering advice and recommendations based on the subsurface conditions investigated at the subject Site. This report is the copyright of G2S Consulting Inc. (G2S) and may not be used by any other person or entity without the expressed written consent of the Client and G2S. Any use which a third party makes of this report, or any reliance on decisions made based on it, is the responsibility of such third parties. G2S accepts no responsibility for damages, if any suffered by any third party as a result of decisions made or actions based on this report. It is recognized that Norfolk County in their capacity as the planning and building authority under Provincial statues, may make use of and rely upon this report cognizant of the limitations thereof, both as are expressed and implied.

A secondary review of this report was completed for general QA/QC and adherence to company standards and does not include a technical review of engineering conclusions and recommendations. This report does not address any environmental conditions such as soil and groundwater chemical quality and the suitability of excess soils for off-Site re-use.

11. Closing Remarks

We trust this report is satisfactory for your present purposes. Should you have any questions, please do not hesitate to contact this office.

Yours truly,

G2S Consulting Inc.

Almustafa Al-doori, EIT
Engineer-in-Training
Geotechnical Engineering Services

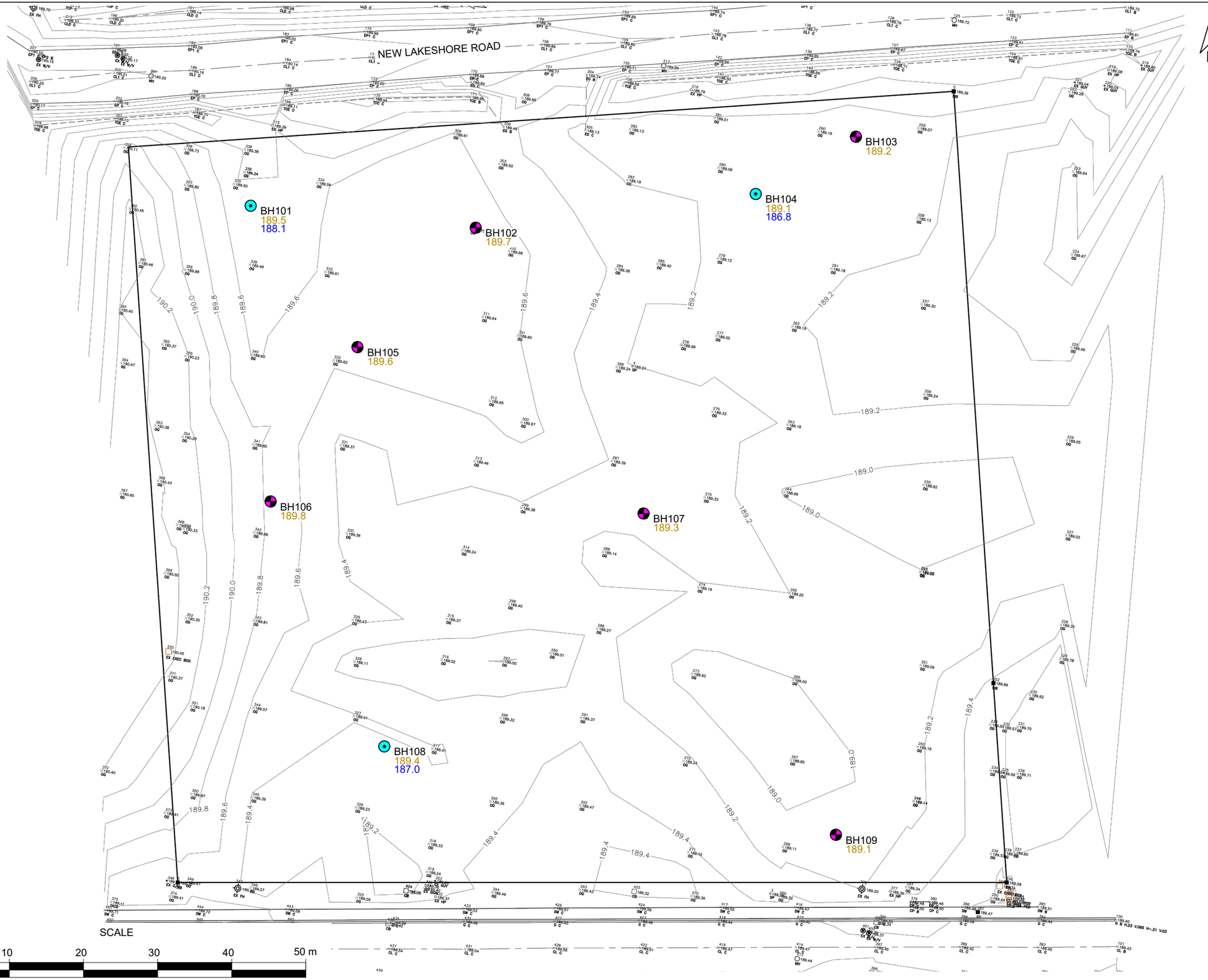


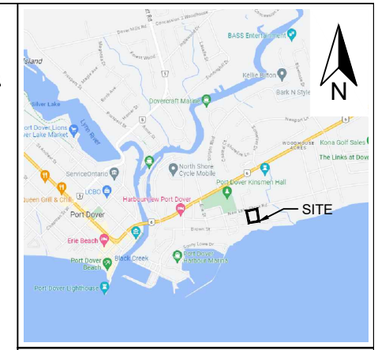
Ashraf Abass, P.Eng.
Head of Geotechnical Services
Senior Geotechnical Engineer

Melissa King, P. Geo., QP_{ESA}
Head of Environmental Services

Appendix A:

Drawings





LEGEND

- BOREHOLE LOCATION
- MONITORING WELL LOCATION
- 189.12 GROUND SURFACE ELEVATION (m)
- 186.85 GROUNDWATER ELEVATION (JULY 13, 2023)

REFERENCE:

RESULTS REPRODUCED FROM DRAWING PROVIDED BY CLIENT

TITLE:

BOREHOLE AND MONITORING WELL LOCATION PLAN

CLIENT:

RAMHANS INVESTMENTS INC

LOCATION:

38 NEW LAKESHORE ROAD

PORT DOVER, ONTARIO

PROJECT NO.:	G2S23228
DRAWING:	1
SCALE:	AS SHOWN
DATE:	OCTOBER 2023
DRAWN BY:	DB
FILE NAME:	G2S23228.dwg

Appendix B:

Borehole Logs
Grain Size Analysis Graphs
Plasticity Chart

LIST OF ABBREVIATIONS

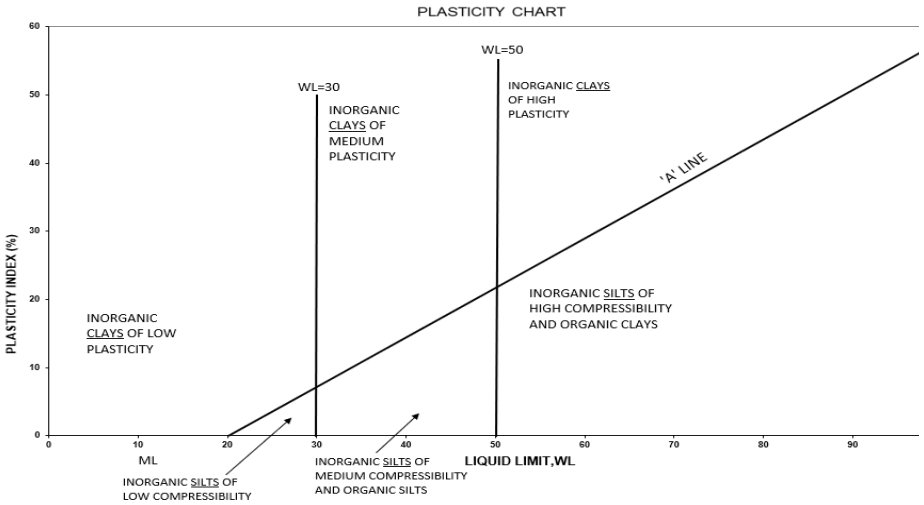
Description of Soil

The consistency of cohesive soils and the relative density or compactness of cohesionless soils are described in the following terms:

COHESIVE SOIL			COHESIONLESS SOIL	
CONSISTENCY	N (blows/0.3 m)	C (kPa)	DENSENESS	N (blows/0.3 m)
Very Soft	0 – 2	0 – 12	Very Loose	0 – 4
Soft	2 – 4	12 – 25	Loose	4 – 10
Firm	4 – 8	25 – 50	Compact	10 – 30
Stiff	8 – 15	50 – 100	Dense	30 – 50
Very Stiff	15 – 30	100 – 200	Very Dense	>50
Hard	>30	>200		
Moisture conditions				
Moist: dark or greyish color, may feel cool upon				
Wet: same as moist with free water seepage when handled				

Abbreviations

SS	Split Spoon Sample
AS	Auger Sample
GS	Grab Sample
DP	Direct Push
S	Sample
RC	Rock Core
FV/VA	Shear Vane (Field)
SPT	Standard Penetration Test
N	Blow counts per 300mm of penetration. (ASTMD1586)
MC	Moisture Content
PL	Plastic Limits
LL	Liquid Limits
PI	Plasticity Index



Penetration Resistance

Standard Penetration Resistance N: The number of blows required to advance a standard split spoon sampler 0.3 m into the subsoil. Driven by means of a 63.5 kg hammer falling freely a distance of 0.76 m. The values reported are as noted in the field without corrections.

Soil Classification Dynamic Penetration Resistance: The number of blows required to advance a 51 mm, 60-degree cone, fitted to the end of drill rods, 0.3 m into the subsoil. The driving energy being 475 J per blow. Soils descriptions are made in accordance with the Canadian Foundations Engineering Manual (CFEM), following the International Society for Soil Mechanics and Foundation Engineering. (ISSMFE)

Notes

Soil samples will be discarded after three months unless directed otherwise by the Client.

Unless the grain size analysis is performed in our lab, soil samples are classified based on visual, tactile, and olfactory examinations, which may not be sufficient for accurate classification or precise grain sizing.

ISSMFE SOIL CLASSIFICATION



BH/MW NUMBER 101

G2S Consulting Inc.

CLIENT Ramhans Investments Inc.
PROJECT NAME Proposed Residential Development - Ramhans Condos
PROJECT NUMBER G2S23228
PROJECT LOCATION 38 New Lakeshore Road, Port Dover, ON
DATE STARTED 23-6-28 **COMPLETED** 23-6-28
GROUND ELEVATION 189.5 m
DRILLING CONTRACTOR Elite Drilling Services
LOGGED BY DB **CHECKED BY** AA
DRILLING METHOD Continuous Flight Solid Stem Augers
NOTES

DEPTH (m)	MATERIAL DESCRIPTION	ELEVATION (m)	NUMBER	TYPE	N VALUE	SPT N VALUES / Undrained Shear Strength (kPa)	MOISTURE / PLASTICITY	SOIL GAS READINGS HEX/IBL (ppm)	WELL CONSTRUCTION	GRAIN SIZE DISTRIBUTION % GR SA SI & CL
0.25	TOPSOIL: ~250 mm	189.25								
0.60	FILL: Clayey silt, dark brown with black staining, trace sand, moist	188.90	S1	SS	5			0/0	Stickup protective casing set in concrete	
1	SILTY CLAY: Brown and grey, trace sand, trace gravel, moist, stiff		S2	SS	9			0/0	188.1	
2			S3	SS	14	225		0/0	Bentonite seal	
3			S4	SS	11			0/0		
3.0	becoming, grey, more plastic with depth, stiff	186.50							Filter sand	
4			S5	SS	7			0/0		
			S6	SS	8			0/0		
5			S7	SS	8			0/0	Slotted screen	
6										
6.7		182.80	S8	SS	5	3.4 / 94		0/0	Filter sand	

Borehole terminated at 6.7 m.

Water Level Readings:

Date	Depth (m)	Elev. (m)
2023-07-13	1.40	188.10

2021 G2S GEOTECH BOREHOLE LOG G2S23228 BOREHOLE LOGS.GPJ G2S 2021 BH DATA TEMPLATE.GDT 23-10-17

BOREHOLE NUMBER 102

G2S Consulting Inc.

CLIENT Ramhans Investments Inc. **PROJECT NAME** Proposed Residential Development - Ramhans Condos

PROJECT NUMBER G2S23228 **PROJECT LOCATION** 38 New Lakeshore Road, Port Dover, ON

DATE STARTED 23-6-29 **COMPLETED** 23-6-29 **GROUND ELEVATION** 189.7 m

DRILLING CONTRACTOR Elite Drilling Services **LOGGED BY** DB **CHECKED BY** AA

DRILLING METHOD Continuous Flight Solid Stem Augers **NOTES**

DEPTH (m)	MATERIAL DESCRIPTION	ELEVATION (m)	NUMBER	TYPE	N VALUE	SPT N VALUES / Undrained Shear Strength (kPa)	MOISTURE / PLASTICITY	SOIL GAS READINGS HEX/IBL (ppm)	WELL CONSTRUCTION	GRAIN SIZE DISTRIBUTION % GR SA SI & CL
0.08	TOPSOIL: ~75 mm	189.63	S1A / S1B	SS	10			0/0		
0.80	FILL: Clayey silt, dark brown/brown, some sand, moist	188.90						0/0		
1	SILTY CLAY: Brown, trace sand, organics, reworked appearance at top portion, moist, stiff to very stiff		S2	SS	11			0/0		
2			S3	SS	16	225		0/0		
3			S4	SS	14	225		0/0		
3.0	becoming grey, more plastic	186.70	S5	SS	11			0/0		
4			S6	SS	10			0/0		
5			S7	SS	9			0/0		
6										
6.7		183.00	S8	SS	8			0/0		

SPT N values: ▲ 10 20 30 40 △ — Undrained Shear Strength (kPa): Pocket Penetrometer × 40 80 120 160 Vane ✚ — MOISTURE / PLASTICITY: PL MC LL 10 20 30

Borehole terminated at 6.7 m.

Upon completion of drilling
No cave
No free water

2021 G2S GEOTECH BOREHOLE LOG G2S23228 BOREHOLE LOGS.GPJ G2S 2021 BH DATA TEMPLATE.GDT 23-10-17

BOREHOLE NUMBER 103

Consulting Inc.

CLIENT Ramhans Investments Inc.
PROJECT NAME Proposed Residential Development - Ramhans Condos
PROJECT NUMBER G2S23228
PROJECT LOCATION 38 New Lakeshore Road, Port Dover, ON
DATE STARTED 23-6-28 **COMPLETED** 23-6-28
GROUND ELEVATION 189.2 m
DRILLING CONTRACTOR Elite Drilling Services
LOGGED BY DB **CHECKED BY** AA
DRILLING METHOD Continuous Flight Solid Stem Augers
NOTES

DEPTH (m)	MATERIAL DESCRIPTION	ELEVATION (m)	NUMBER	TYPE	N VALUE	SOIL GAS READINGS HEX/IBL (ppm)	GRAIN SIZE DISTRIBUTION % GR SA SI & CL
	0.03 TOPSOIL: ~25 mm	189.18	S1	SS	7	0/5	
1	0.80 FILL: Clayey silt, dark brown/brown, some sand, trace organics, possible reworked native soil, moist	188.40	S2	SS	11	0/0	
2	SILTY CLAY: Brown to grey, trace sand, reworked appearance at the top portion, moist, stiff to very stiff		S3	SS	12	0/0	
3	3.0	186.20	S4	SS	13	0/0	
4	becoming grey, more plastic with depth		S5	SS	8	0/0	0 5 35 60
			S6	SS	8	0/0	
5			S7	SS	9	0/0	
6			S8	SS	8	0/0	
7	7.6	181.60					
8	Occasional silt zones		S9	SS	18	0/0	4 3 66 27
9			S10	SS	8	0/0	
	9.7	179.50					

SPT N VALUES (N values ▲ 10 20 30 40 CPT values △)
Undrained Shear Strength (kPa) — Pocket Penetrometer × 40 80 120 160 — Vane ✚
MOISTURE / PLASTICITY — PL MC LL 10 20 30
WELL CONSTRUCTION

Borehole terminated at 9.7 m.

Upon completion of drilling
No cave
No free water

2021 G2S GEOTECH BOREHOLE LOG G2S23228 BOREHOLE LOGS.GPJ G2S 2021 BH DATA TEMPLATE.GDT 23-10-17

BH/MW NUMBER 104

G2S Consulting Inc.

CLIENT Ramhans Investments Inc. **PROJECT NAME** Proposed Residential Development - Ramhans Condos

PROJECT NUMBER G2S23228 **PROJECT LOCATION** 38 New Lakeshore Road, Port Dover, ON

DATE STARTED 23-6-28 **COMPLETED** 23-6-28 **GROUND ELEVATION** 189.1 m

DRILLING CONTRACTOR Elite Drilling Services **LOGGED BY** DB **CHECKED BY** AA

DRILLING METHOD Continuous Flight Solid Stem Augers **NOTES**

DEPTH (m)	MATERIAL DESCRIPTION	ELEVATION (m)	NUMBER	TYPE	N VALUE	SPT N VALUES / Undrained Shear Strength (kPa)	MOISTURE / PLASTICITY (PL MC LL)	SOIL GAS READINGS HEX/IBL (ppm)	WELL CONSTRUCTION	GRAIN SIZE DISTRIBUTION % GR SA SI & CL
0	FILL: Clayey silt, dark brown/brown, organics, moist		S1	SS	7			0/0	Stickup protective casing set in concrete	
0.80		188.30								
1	SILTY CLAY: Brownish grey to grey, trace sand, reworked appearance at the top portion, moist, stiff to very stiff		S2	SS	12			0/0		
2			S3	SS	12	225		0/0		
3			S4	SS	9			0/0	Bentonite seal	
4			S5	SS	10			0/0		
4.6		184.50								
5	becoming grey, very moist		S6	SS	9			0/0		
6.1		183.00							Filter sand	
6	Occasional silt zones		S7	SS	10			0/0		0 1 54 45
7										
8			S8	SS	12			0/0	Slotted screen	
9										
9.7		179.40	S9	SS	20			0/0	Filter sand	

186.8

Borehole terminated at 9.7 m.

Water Level Readings:

Date	Depth (m)	Elev. (m)
2023-07-13	2.30	186.80

2021 G2S GEOTECH BOREHOLE LOG G2S23228 BOREHOLE LOGS.GPJ G2S 2021 BH DATA TEMPLATE.GDT 23-10-17

BOREHOLE NUMBER 105

G2S Consulting Inc.

CLIENT Ramhans Investments Inc. **PROJECT NAME** Proposed Residential Development - Ramhans Condos

PROJECT NUMBER G2S23228 **PROJECT LOCATION** 38 New Lakeshore Road, Port Dover, ON

DATE STARTED 23-6-29 **COMPLETED** 23-6-29 **GROUND ELEVATION** 189.6 m

DRILLING CONTRACTOR Elite Drilling Services **LOGGED BY** DB **CHECKED BY** AA

DRILLING METHOD Continuous Flight Solid Stem Augers **NOTES**

DEPTH (m)	MATERIAL DESCRIPTION	ELEVATION (m)	GRAPHIC LOG	NUMBER	TYPE	N VALUE	SPT N VALUES / Undrained Shear Strength (kPa)	MOISTURE / PLASTICITY	SOIL GAS READINGS HEX/IBL (ppm)	WELL CONSTRUCTION	GRAIN SIZE DISTRIBUTION % GR SA SI & CL
	0.20 TOPSOIL: ~200 mm	189.40		S1A					0/0		
				S1B	SS	7			0/0		
1	0.80 FILL: Clayey silt, dark brown/brown, trace sand, organics, possible reworked native soil, moist	188.80									
				S2	SS	10			0/0		
2	SILTY CLAY: Brown to grey, trace sand, moist to wet, stiff to very stiff			S3	SS	17	225		0/0		
3				S4	SS	15	212.5		0/0		
	3.0 becoming grey, more plastic with depth	186.60									
4				S5	SS	11			0/0		
				S6	SS	8			0/0		
	4.6 becoming wet	185.00									
5				S7	SS	8			0/0		
6											
	6.7	182.90		S8	SS	7			0/0		

Borehole terminated at 6.7 m.

Upon completion of drilling
No cave
No free water

2021 G2S GEOTECH BOREHOLE LOG G2S23228 BOREHOLE LOGS.GPJ G2S 2021 BH DATA TEMPLATE.GDT 23-10-17

BOREHOLE NUMBER 106

G2S Consulting Inc.

CLIENT Ramhans Investments Inc. **PROJECT NAME** Proposed Residential Development - Ramhans Condos

PROJECT NUMBER G2S23228 **PROJECT LOCATION** 38 New Lakeshore Road, Port Dover, ON

DATE STARTED 23-6-29 **COMPLETED** 23-6-29 **GROUND ELEVATION** 189.8 m

DRILLING CONTRACTOR Elite Drilling Services **LOGGED BY** DB **CHECKED BY** AA

DRILLING METHOD Continuous Flight Solid Stem Augers **NOTES**

DEPTH (m)	MATERIAL DESCRIPTION	ELEVATION (m)	GRAPHIC LOG	NUMBER	TYPE	N VALUE	SPT N VALUES / Undrained Shear Strength (kPa)	MOISTURE / PLASTICITY	SOIL GAS READINGS HEX/IBL (ppm)	WELL CONSTRUCTION	GRAIN SIZE DISTRIBUTION % GR SA SI & CL
0.25	TOPSOIL: ~250 mm	189.55		S1A	SS	5			0/0		
				S1B							
0.80	FILL: Clayey silt to silty sand, brown with black staining, some organics, moist	189.00		S2	SS	6			0/0		
1											
2	SILTY CLAY: Brown to grey, trace sand, moist, reworked appearance at the top portion, firm to stiff			S3	SS	12			0/0		
3				S4	SS	15	225		0/0		
3.0	becoming grey, more plastic with depth	186.80		S5	SS	11			0/0		
4											
				S6	SS	8			0/0		
5				S7	SS	8			0/0		
6											
6.7		183.10		S8	SS	7			0/0		

Borehole terminated at 6.7 m.

Upon completion of drilling
No cave
No free water

2021 G2S GEOTECH BOREHOLE LOG G2S23228 BOREHOLE LOGS.GPJ G2S 2021 BH DATA TEMPLATE.GDT 23-10-17

BOREHOLE NUMBER 107

G2S Consulting Inc.

CLIENT Ramhans Investments Inc. **PROJECT NAME** Proposed Residential Development - Ramhans Condos

PROJECT NUMBER G2S23228 **PROJECT LOCATION** 38 New Lakeshore Road, Port Dover, ON

DATE STARTED 23-6-29 **COMPLETED** 23-6-29 **GROUND ELEVATION** 189.3 m

DRILLING CONTRACTOR Elite Drilling Services **LOGGED BY** DB **CHECKED BY** AA

DRILLING METHOD Continuous Flight Solid Stem Augers **NOTES**

DEPTH (m)	MATERIAL DESCRIPTION	ELEVATION (m)	GRAPHIC LOG	NUMBER	TYPE	N VALUE	SPT N VALUES / Undrained Shear Strength (kPa)	MOISTURE / PLASTICITY	SOIL GAS READINGS HEX/IBL (ppm)	WELL CONSTRUCTION	GRAIN SIZE DISTRIBUTION % GR SA SI & CL
0.20	TOPSOIL: ~200 mm	189.10		S1	SS	8			0/0		
0.61	FILL: Clayey silt, dark brown to grey with black staining, trace sand, organics	188.69									
1	SILTY CLAY: Brownish grey to grey, trace sand, reworked appearance at top portion, moist to wet, stiff to very stiff			S2	SS	11			0/0		
2				S3	SS	18	225		0/0		
3				S4	SS	17	225		0/0		
				S5	SS	11			0/0		
3.8	becoming grey, more plastic with depth	185.50									
4				S6	SS	9			0/0		
5				S7	SS	7	111		0/0		
6.1	becoming clayey silt, wet	183.20		S8	SS	6	3 / 100		0/0		
6.7	Borehole terminated at 6.7 m.	182.60									

Upon completion of drilling
No cave
No free water

2021 G2S GEOTECH BOREHOLE LOG G2S23228 BOREHOLE LOGS.GPJ G2S 2021 BH DATA TEMPLATE.GDT 23-10-17

BH/MW NUMBER 108

G2S Consulting Inc.

CLIENT Ramhans Investments Inc. **PROJECT NAME** Proposed Residential Development - Ramhans Condos

PROJECT NUMBER G2S23228 **PROJECT LOCATION** 38 New Lakeshore Road, Port Dover, ON

DATE STARTED 23-6-28 **COMPLETED** 23-6-28 **GROUND ELEVATION** 189.4 m

DRILLING CONTRACTOR Elite Drilling Services **LOGGED BY** DB **CHECKED BY** AA

DRILLING METHOD Continuous Flight Solid Stem Augers **NOTES**

DEPTH (m)	MATERIAL DESCRIPTION	ELEVATION (m)	GRAPHIC LOG	NUMBER	TYPE	N VALUE	SPT N VALUES / Undrained Shear Strength (kPa)	MOISTURE / PLASTICITY	SOIL GAS READINGS HEX/IBL (ppm)	WELL CONSTRUCTION	GRAIN SIZE DISTRIBUTION % GR SA SI & CL
0.30	TOPSOIL: ~300 mm	189.10		S1	SS	8			0/0	Stickup protective casing set in concrete	
1	SILTY CLAY: Brownish grey to grey, trace sand, organics, reworked appearance at top portion, moist, firm to very stiff			S2	SS	13			0/0	Bentonite seal	
2				S3	SS	16	225		0/0	187.0	
3				S4	SS	16			0/0	Filter sand	
3.8		185.60		S5	SS	9		49	0/0		0 1 34 65
4	more plastic depth			S6	SS	8			0/0	Slotted screen	
5				S7	SS	7			0/0		
6.1		183.30									
	occasional silt zone			S8	SS	10			0/0	Filter sand	
6.7		182.70									

Borehole terminated at 6.7 m.

Water Level Readings:

Date	Depth (m)	Elev. (m)
2023-07-13	2.40	187.00

2021 G2S GEOTECH BOREHOLE LOG G2S23228 BOREHOLE LOGS.GPJ G2S 2021 BH DATA TEMPLATE.GDT 23-10-17

BOREHOLE NUMBER 109

G2S Consulting Inc.

CLIENT Ramhans Investments Inc. **PROJECT NAME** Proposed Residential Development - Ramhans Condos

PROJECT NUMBER G2S23228 **PROJECT LOCATION** 38 New Lakeshore Road, Port Dover, ON

DATE STARTED 23-6-29 **COMPLETED** 23-6-29 **GROUND ELEVATION** 189.1 m

DRILLING CONTRACTOR Elite Drilling Services **LOGGED BY** DB **CHECKED BY** AA

DRILLING METHOD Continuous Flight Solid Stem Augers **NOTES**

DEPTH (m)	MATERIAL DESCRIPTION	ELEVATION (m)	GRAPHIC LOG	NUMBER	TYPE	N VALUE	SPT N VALUES / Undrained Shear Strength (kPa)	MOISTURE / PLASTICITY	SOIL GAS READINGS HEX/IBL (ppm)	WELL CONSTRUCTION	GRAIN SIZE DISTRIBUTION % GR SA SI & CL
0.08	TOPSOIL: ~75 mm	189.03		S1	SS	6			0/0		
0.80	FILL: Clayey silt, brownish grey, trace sand, trace gravel, moist	188.30									
1	SILTY CLAY: Brownish grey to grey, trace sand, trace gravel, moist, firm to stiff			S2	SS	11			0/0		
2				S3	SS	15			0/0		
3				S4	SS	13			0/0		
3.0	more plastic with depth	186.10		S5	SS	7			0/0		
4				S6	SS	7			0/0		
5				S7	SS	8			0/0		
6											
6.7		182.40		S8	SS	8			0/0		

Borehole terminated at 6.7 m.

Upon completion of drilling
No cave
No free water

2021 G2S GEOTECH BOREHOLE LOG G2S23228 BOREHOLE LOGS.GPJ G2S 2021 BH DATA TEMPLATE.GDT 23-10-17

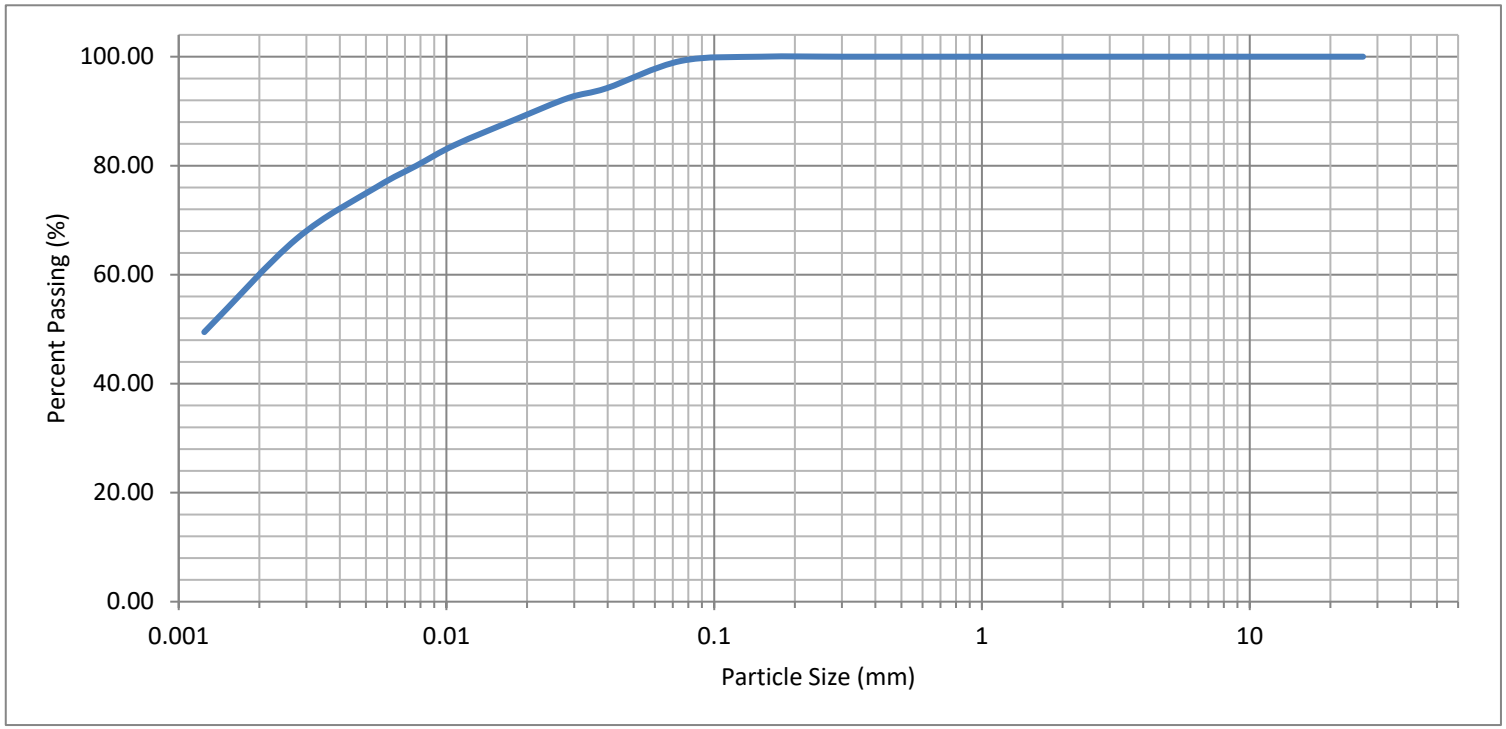
G2S Consulting Inc.
4361 Harvester Rd., Unit 12, Burlington, ON L7L 5M4
P 905.331.3735 F 905.642.5999
G2Senvironmental.com

Project No.:	G2S23228	**Lab No.:**	23064A
Project Name:	Proposed Residential Development - Ramhans Condos	**Borehole/Sample No.:**	BH103-S5

ISSMGE SOIL CLASSIFICATION

CLAY	SILT			SAND			GRAVEL		
	FINE	MEDIUM	COARSE	FINE	MEDIUM	COARSE	FINE	MEDIUM	COARSE

SIEVE SIZE: 1 2 6 20 60 #200 #100 #50 #16 #8 #4 3/8" 3/4" 2-1/2"



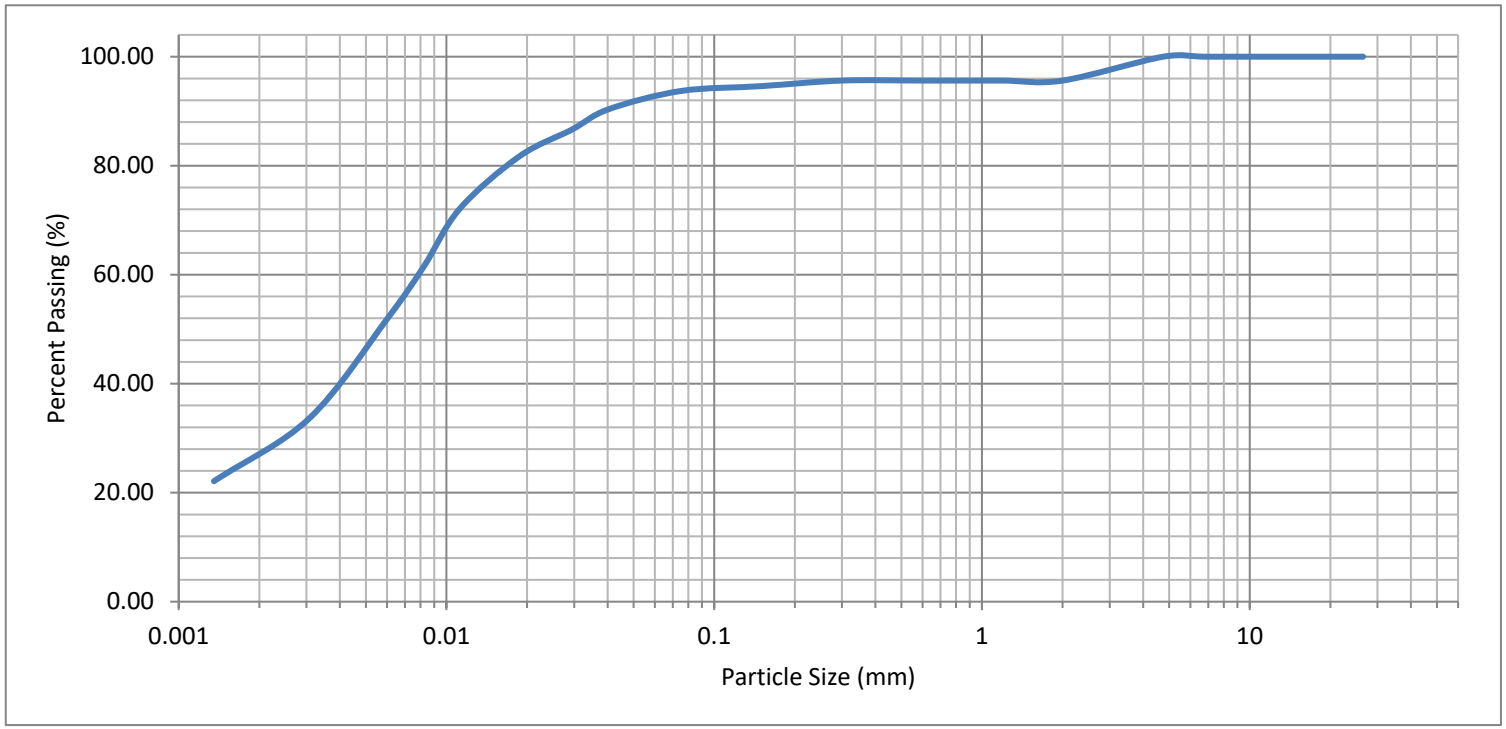
G2S Consulting Inc.
4361 Harvester Rd., Unit 12, Burlington, ON L7L 5M4
P 905.331.3735 F 905.642.5999
G2Senvironmental.com

Project No.:	G2S23228	**Lab No.:**	23064B
Project Name:	Proposed Residential Development - Ramhans Condos	**Borehole/Sample No.:**	BH103-S9

ISSMGE SOIL CLASSIFICATION

	CLAY	SILT			SAND			GRAVEL		
		FINE	MEDIUM	COARSE	FINE	MEDIUM	COARSE	FINE	MEDIUM	COARSE

SIEVE SIZE: 1 2 6 20 60 #200 #100 #50 #16 #8 #4 3/8" 3/4" 2-1/2"



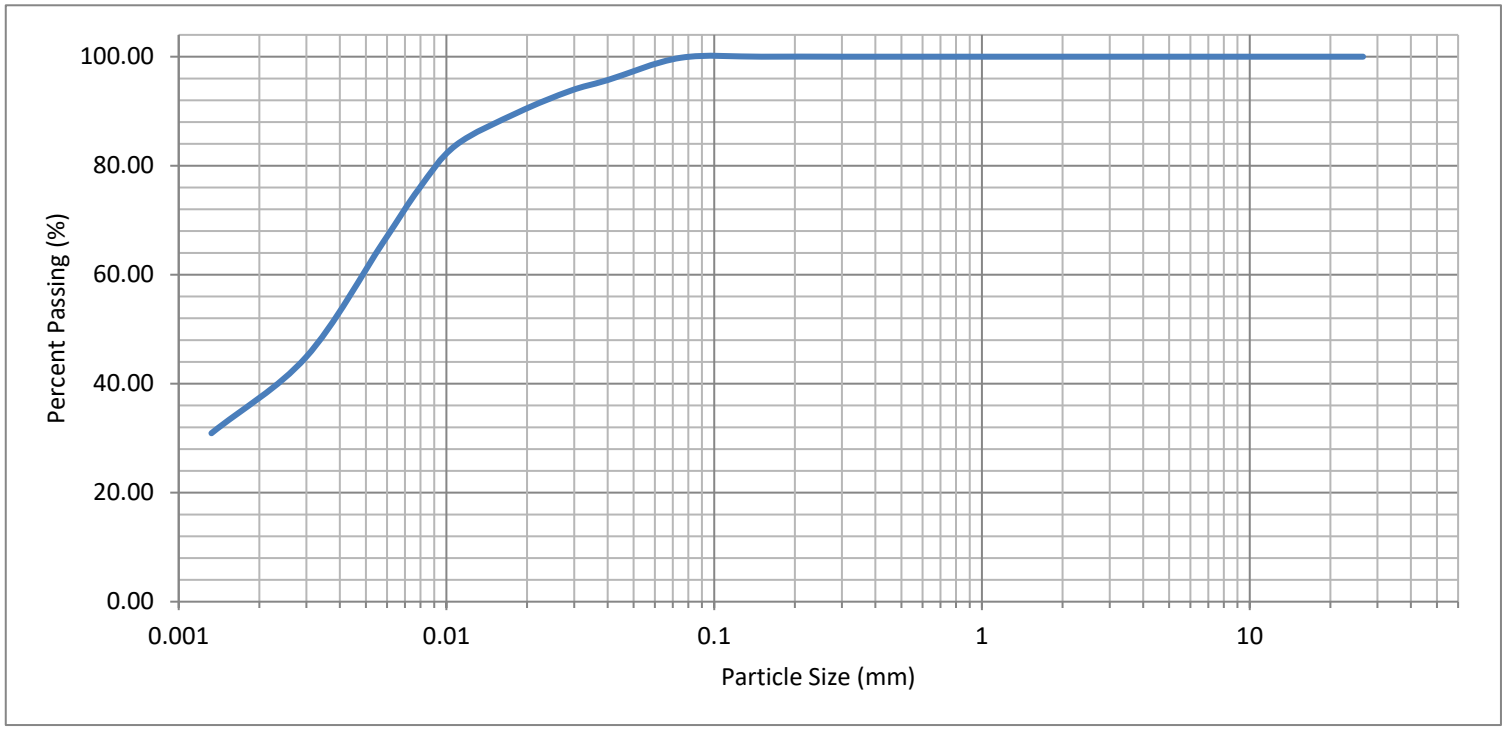
G2S Consulting Inc.
4361 Harvester Rd., Unit 12, Burlington, ON L7L 5M4
P 905.331.3735 F 905.642.5999
G2Senvironmental.com

Project No.:	G2S23228	**Lab No.:**	23064C
Project Name:	Proposed Residential Development - Ramhans Condos	**Borehole/Sample No.:**	BH104-S7

ISSMGE SOIL CLASSIFICATION

CLAY	SILT			SAND			GRAVEL		
	FINE	MEDIUM	COARSE	FINE	MEDIUM	COARSE	FINE	MEDIUM	COARSE

SIEVE SIZE: 1 2 6 20 60 #200 #100 #50 #16 #8 #4 3/8" 3/4" 2-1/2"



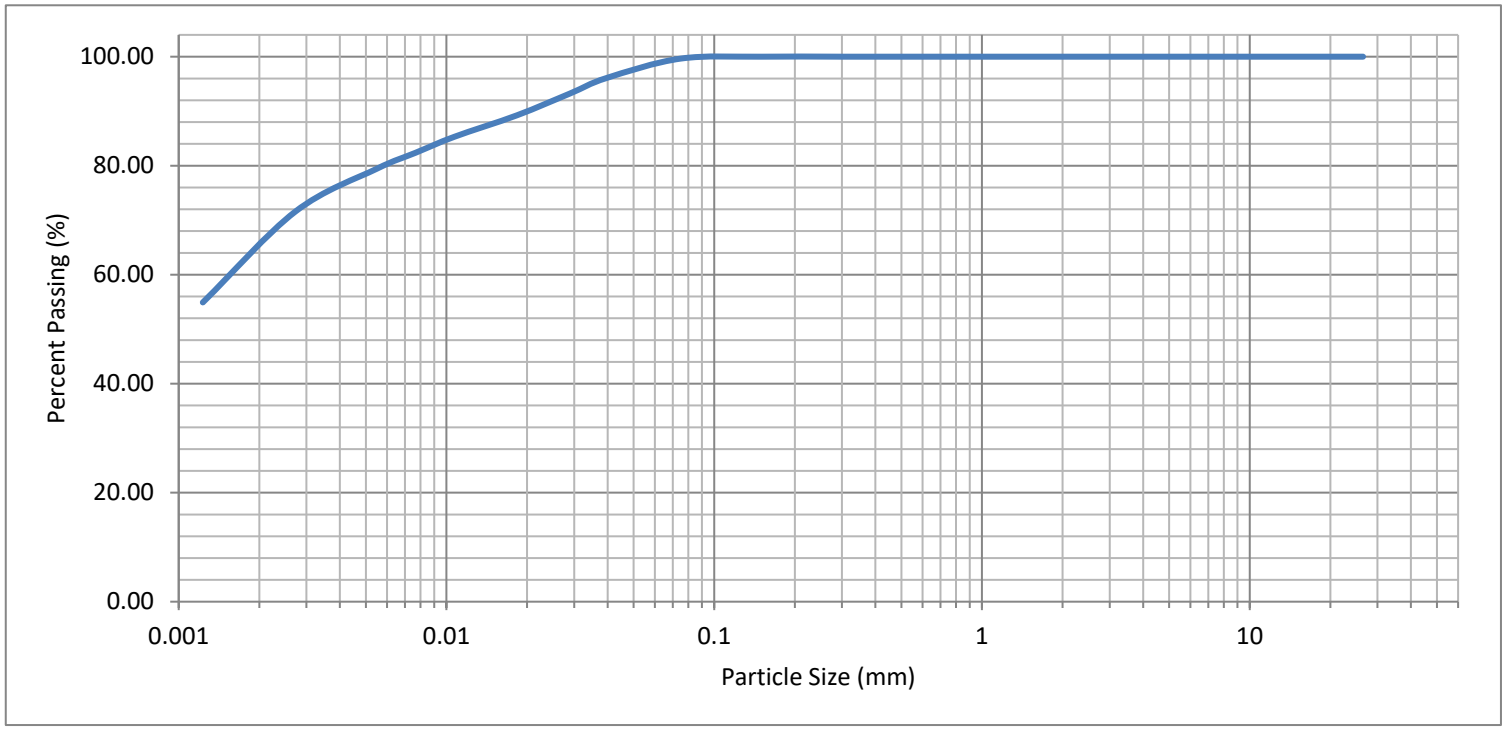
G2S Consulting Inc.
4361 Harvester Rd., Unit 12, Burlington, ON L7L 5M4
P 905.331.3735 F 905.642.5999
G2Senvironmental.com

Project No.:	G2S23228	**Lab No.:**	23064D
Project Name:	Proposed Residential Development - Ramhans Condos	**Borehole/Sample No.:**	BH108-S5

ISSMGE SOIL CLASSIFICATION

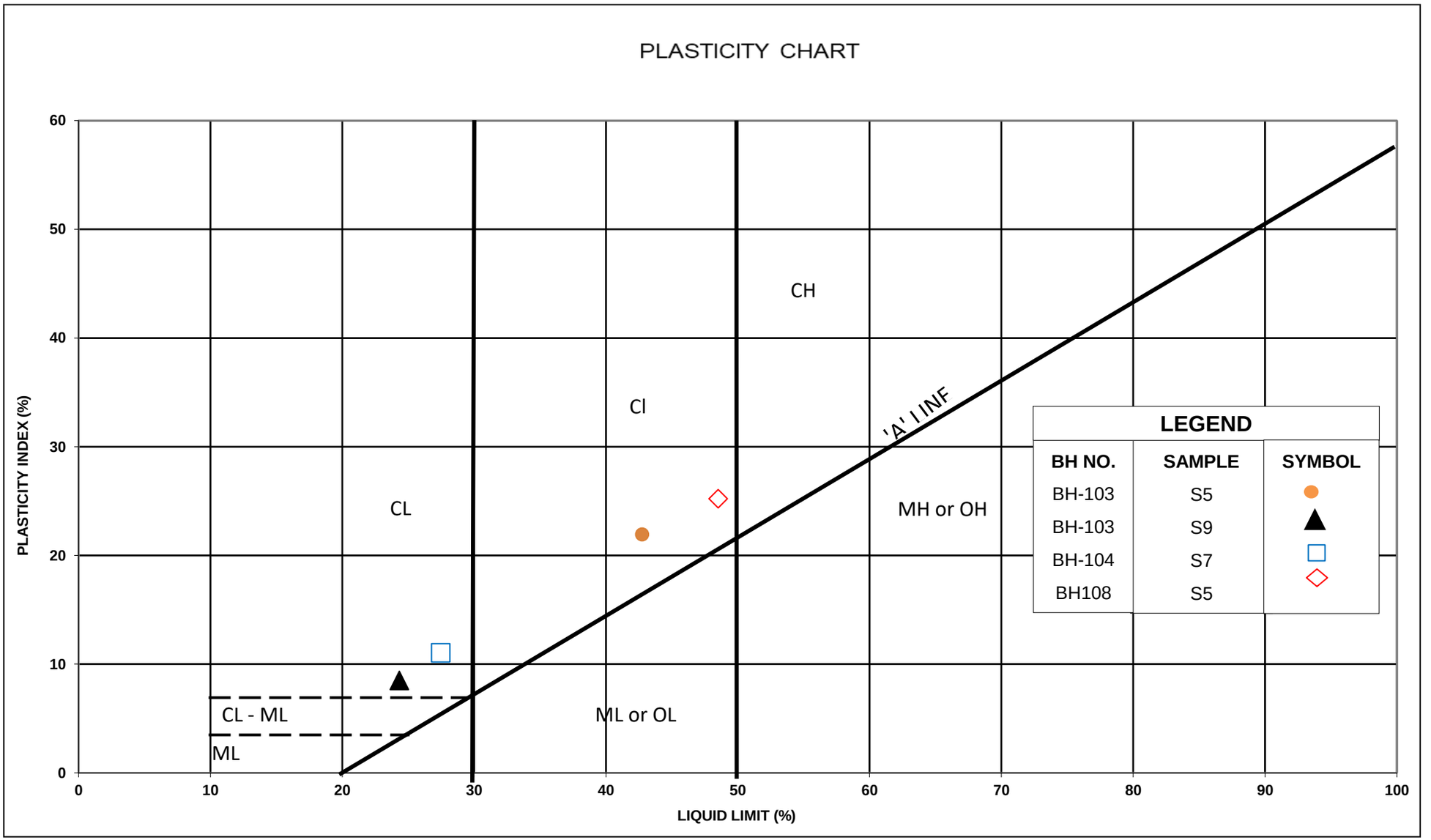
CLAY	SILT			SAND			GRAVEL		
	FINE	MEDIUM	COARSE	FINE	MEDIUM	COARSE	FINE	MEDIUM	COARSE

SIEVE SIZE: 1 2 6 20 60 #200 #100 #50 #16 #8 #4 3/8" 3/4" 2-1/2"



Project No.:	G2S23228	**Lab No.:**	23064 A, B, C, D
Project Name:	Proposed Residential Development - Ramhans Condos		

G2S Consulting Inc.
4361 Harvester Rd., Unit 12, Burlington, ON L7L 5M4
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G2Sconsulting.com



Appendix C:

Certificates of Analysis

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Certificate of Analysis

G2S Environmental Consulting Inc. (Burlington)
4361 Harvester Road, Unit 12
Burlington, ON L7L 5M4
Attn: Melissa King

Client PO:
Project: G2S23228
Custody: 70790

Report Date: 13-Jul-2023
Order Date: 5-Jul-2023

Order #: 2327212

This Certificate of Analysis contains analytical data applicable to the following samples as submitted:

Paracel ID	Client ID
2327212-01	BH103 S2
2327212-02	BH107 S2
2327212-03	BH109 S1B

Approved By:



Milan Ralitsch, PhD
Senior Technical Manager

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
Boron, available	MOE (HWE), EPA 200.8 - ICP-MS	8-Jul-23	8-Jul-23
BTEX by P&T GC-MS	EPA 8260 - P&T GC-MS	7-Jul-23	10-Jul-23
Chromium, hexavalent - soil	MOE E3056 - Extraction, colourimetric	8-Jul-23	11-Jul-23
Conductivity	MOE E3138 - probe @25 °C, water ext	7-Jul-23	7-Jul-23
Mercury by CVAA	EPA 7471B - CVAA, digestion	7-Jul-23	10-Jul-23
pH, soil	EPA 150.1 - pH probe @ 25 °C, CaCl buffered ext.	6-Jul-23	7-Jul-23
PHC F1	CWS Tier 1 - P&T GC-FID	7-Jul-23	10-Jul-23
PHCs F2 to F4	CWS Tier 1 - GC-FID, extraction	6-Jul-23	7-Jul-23
REG 153: Metals by ICP/MS, soil	EPA 6020 - Digestion - ICP-MS	7-Jul-23	7-Jul-23
SAR	Calculated	8-Jul-23	10-Jul-23
Solids, %	CWS Tier 1 - Gravimetric	10-Jul-23	11-Jul-23

Summary of Criteria Exceedances

(If this page is blank then there are no exceedances)

Only those criteria that a sample exceeds will be highlighted in red

Regulatory Comparison:

Paracel Laboratories has provided regulatory guidelines on this report for informational purposes only and makes no representations or warranties that the data is accurate or reflects the current regulatory values. The user is advised to consult with the appropriate official regulations to evaluate compliance. Sample results that are highlighted have exceeded the selected regulatory limit. Calculated uncertainty estimations have not been applied for determining regulatory exceedances.

Sample	Analyte	MDL / Units	Result	Reg 406/19 -T1 Res/Park/Ind/Com	Reg 406/19 -T1 Agr
BH107 S2	SAR	0.01 N/A	2.46	2.4 N/A	1 N/A

Certificate of Analysis

Report Date: 13-Jul-2023

Client: **G2S Environmental Consulting Inc. (Burlington)**

Order Date: 5-Jul-2023

Client PO:

Project Description: G2S23228

	Client ID:	BH103 S2	BH107 S2	BH109 S1B	-	Criteria:	
	Sample Date:	28-Jun-23 09:00	29-Jun-23 12:00	29-Jun-23 12:00	-	Reg 406/19 -T1 Res/Park/Ind/Com	Reg 406/19 -T1 Agr
	Sample ID:	2327212-01	2327212-02	2327212-03	-		
	Matrix:	Soil	Soil	Soil	-		
	MDL/Units						
Physical Characteristics							
% Solids	0.1 % by Wt.	82.1	79.2	84.1	-	-	-
General Inorganics							
SAR	0.01 N/A	0.63	2.46	0.23	-	2.4 N/A	1 N/A
Conductivity	0.005 mS/cm	0.312	0.268	0.194	-	0.57 mS/cm	0.47 mS/cm
pH	0.05 pH Units	7.69	7.71	7.75	-	5.00 - 9.00 pH Units	5.00 - 9.00 pH Units
Metals							
Antimony	1 ug/g	<1.0	<1.0	<1.0	-	1.3 ug/g	1 ug/g
Arsenic	1 ug/g	2.5	4.1	5.0	-	18 ug/g	11 ug/g
Barium	1 ug/g	113	102	162	-	220 ug/g	210 ug/g
Beryllium	0.5 ug/g	0.7	0.7	0.9	-	2.5 ug/g	2.5 ug/g
Boron	5 ug/g	9.5	10.4	9.1	-	36 ug/g	36 ug/g
Boron, available	0.5 ug/g	<0.5	<0.5	<0.5	-	-	-
Cadmium	0.5 ug/g	<0.5	<0.5	<0.5	-	1.2 ug/g	1 ug/g
Chromium	5 ug/g	22.7	23.0	29.5	-	70 ug/g	67 ug/g
Chromium (VI)	0.2 ug/g	<0.2	<0.2	0.4	-	0.66 ug/g	0.66 ug/g
Cobalt	1 ug/g	8.3	10.5	14.5	-	21 ug/g	19 ug/g
Copper	5 ug/g	13.3	14.8	19.1	-	92 ug/g	62 ug/g
Lead	1 ug/g	6.5	7.4	9.9	-	120 ug/g	45 ug/g
Mercury	0.1 ug/g	<0.1	<0.1	<0.1	-	0.27 ug/g	0.16 ug/g
Molybdenum	1 ug/g	<1.0	<1.0	<1.0	-	2 ug/g	2 ug/g
Nickel	5 ug/g	19.1	22.0	29.3	-	82 ug/g	37 ug/g
Selenium	1 ug/g	<1.0	<1.0	<1.0	-	1.5 ug/g	1.2 ug/g
Silver	0.3 ug/g	<0.3	<0.3	<0.3	-	0.5 ug/g	0.5 ug/g
Thallium	1 ug/g	<1.0	<1.0	<1.0	-	1 ug/g	1 ug/g
Uranium	1 ug/g	<1.0	<1.0	<1.0	-	2.5 ug/g	1.9 ug/g

Certificate of Analysis

Report Date: 13-Jul-2023

Client: **G2S Environmental Consulting Inc. (Burlington)**

Order Date: 5-Jul-2023

Client PO:

Project Description: G2S23228

	Client ID:	BH103 S2	BH107 S2	BH109 S1B	-	Criteria:	
	Sample Date:	28-Jun-23 09:00	29-Jun-23 12:00	29-Jun-23 12:00	-	Reg 406/19 -T1 Res/Park/Ind/Com	Reg 406/19 -T1 Agr
	Sample ID:	2327212-01	2327212-02	2327212-03	-		
	Matrix:	Soil	Soil	Soil	-		
	MDL/Units						
Metals							
Vanadium	10 ug/g	29.1	33.3	45.1	-	86 ug/g	86 ug/g
Zinc	20 ug/g	43.8	43.6	51.4	-	290 ug/g	290 ug/g
Volatiles							
Benzene	0.02 ug/g	<0.02	<0.02	<0.02	-	0.02 ug/g	0.02 ug/g
Ethylbenzene	0.05 ug/g	<0.05	<0.05	<0.05	-	0.05 ug/g	0.05 ug/g
Toluene	0.05 ug/g	<0.05	<0.05	<0.05	-	0.2 ug/g	0.2 ug/g
m,p-Xylenes	0.05 ug/g	<0.05	<0.05	<0.05	-	-	-
o-Xylene	0.05 ug/g	<0.05	<0.05	<0.05	-	-	-
Xylenes, total	0.05 ug/g	<0.05	<0.05	<0.05	-	0.05 ug/g	0.05 ug/g
Toluene-d8	Surrogate	102%	102%	103%	-	-	-
Hydrocarbons							
F1 PHCs (C6-C10)	7 ug/g	<7	<7	<7	-	25 ug/g	17 ug/g
F2 PHCs (C10-C16)	4 ug/g	<4	<4	<4	-	10 ug/g	10 ug/g
F3 PHCs (C16-C34)	8 ug/g	<8	<8	<8	-	240 ug/g	240 ug/g
F4 PHCs (C34-C50)	6 ug/g	<6	<6	<6	-	120 ug/g	120 ug/g

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	%REC	%REC Limit	RPD	RPD Limit	Notes
General Inorganics								
SAR	ND	0.01	N/A					
Conductivity	ND	0.005	mS/cm					
Hydrocarbons								
F1 PHCs (C6-C10)	ND	7	ug/g					
F2 PHCs (C10-C16)	ND	4	ug/g					
F3 PHCs (C16-C34)	ND	8	ug/g					
F4 PHCs (C34-C50)	ND	6	ug/g					
Metals								
Antimony	ND	1.0	ug/g					
Arsenic	ND	1.0	ug/g					
Barium	ND	1.0	ug/g					
Beryllium	ND	0.5	ug/g					
Boron, available	ND	0.5	ug/g					
Boron	ND	5.0	ug/g					
Cadmium	ND	0.5	ug/g					
Chromium (VI)	ND	0.2	ug/g					
Chromium	ND	5.0	ug/g					
Cobalt	ND	1.0	ug/g					
Copper	ND	5.0	ug/g					
Lead	ND	1.0	ug/g					
Mercury	ND	0.1	ug/g					
Molybdenum	ND	1.0	ug/g					
Nickel	ND	5.0	ug/g					
Selenium	ND	1.0	ug/g					
Silver	ND	0.3	ug/g					
Thallium	ND	1.0	ug/g					
Uranium	ND	1.0	ug/g					
Vanadium	ND	10.0	ug/g					
Zinc	ND	20.0	ug/g					
Volatiles								
Benzene	ND	0.02	ug/g					
Ethylbenzene	ND	0.05	ug/g					

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	%REC	%REC Limit	RPD	RPD Limit	Notes
Toluene	ND	0.05	ug/g					
m,p-Xylenes	ND	0.05	ug/g					
o-Xylene	ND	0.05	ug/g					
Xylenes, total	ND	0.05	ug/g					
Surrogate: Toluene-d8	*8.04*		*%*	*100*	*50-140*			

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
General Inorganics									
SAR	4.40	0.01	N/A	3.47			23.6	30	
Conductivity	0.398	0.005	mS/cm	0.401			0.8	5	
pH	7.73	0.05	pH Units	7.75			0.3	10	
Hydrocarbons									
F1 PHCs (C6-C10)	ND	7	ug/g	ND			NC	40	
F2 PHCs (C10-C16)	ND	4	ug/g	ND			NC	30	
F3 PHCs (C16-C34)	ND	8	ug/g	ND			NC	30	
F4 PHCs (C34-C50)	ND	6	ug/g	ND			NC	30	
Metals									
Antimony	ND	1.0	ug/g	ND			NC	30	
Arsenic	4.4	1.0	ug/g	4.3			2.0	30	
Barium	115	1.0	ug/g	122			5.7	30	
Beryllium	0.8	0.5	ug/g	0.6			16.1	30	
Boron, available	ND	0.5	ug/g	ND			NC	35	
Boron	13.8	5.0	ug/g	11.8			15.1	30	
Cadmium	ND	0.5	ug/g	ND			NC	30	
Chromium (VI)	ND	0.2	ug/g	ND			NC	35	
Chromium	26.4	5.0	ug/g	32.3			20.1	30	
Cobalt	9.2	1.0	ug/g	10.4			11.8	30	
Copper	21.9	5.0	ug/g	25.0			13.1	30	
Lead	23.2	1.0	ug/g	26.5			13.5	30	
Mercury	ND	0.1	ug/g	ND			NC	30	
Molybdenum	ND	1.0	ug/g	ND			NC	30	
Nickel	21.6	5.0	ug/g	24.0			10.9	30	
Selenium	ND	1.0	ug/g	ND			NC	30	
Silver	ND	0.3	ug/g	ND			NC	30	
Thallium	2.3	1.0	ug/g	ND			NC	30	
Uranium	ND	1.0	ug/g	ND			NC	30	
Vanadium	32.8	10.0	ug/g	35.8			8.7	30	
Zinc	158	20.0	ug/g	217			NC	30	

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Physical Characteristics									
% Solids	84.5	0.1	% by Wt.	84.2			0.3	25	
Volatiles									
Benzene	ND	0.02	ug/g	ND			NC	50	
Ethylbenzene	ND	0.05	ug/g	ND			NC	50	
Toluene	ND	0.05	ug/g	ND			NC	50	
m,p-Xylenes	ND	0.05	ug/g	ND			NC	50	
o-Xylene	ND	0.05	ug/g	ND			NC	50	
Surrogate: Toluene-d8	*7.53*		*%*		*102*	*50-140*			

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	60	7	ug/g	ND	84.2	80-120			
F2 PHCs (C10-C16)	83	4	ug/g	ND	89.8	60-140			
F3 PHCs (C16-C34)	196	8	ug/g	ND	94.2	60-140			
F4 PHCs (C34-C50)	171	6	ug/g	ND	114	60-140			
Metals									
Antimony	135	1.0	ug/g	ND	108	70-130			
Arsenic	146	1.0	ug/g	4.3	114	70-130			
Barium	254	1.0	ug/g	122	106	70-130			
Beryllium	139	0.5	ug/g	0.6	111	70-130			
Boron, available	4.16	0.5	ug/g	ND	83.2	70-122			
Boron	148	5.0	ug/g	11.8	109	70-130			
Cadmium	140	0.5	ug/g	ND	112	70-130			
Chromium (VI)	4.7	0.2	ug/g	ND	80.0	70-130			
Chromium	171	5.0	ug/g	32.3	111	70-130			
Cobalt	146	1.0	ug/g	10.4	109	70-130			
Copper	163	5.0	ug/g	25.0	110	70-130			
Lead	183	1.0	ug/g	26.5	125	70-130			
Mercury	1.41	0.1	ug/g	ND	93.8	70-130			
Molybdenum	146	1.0	ug/g	ND	117	70-130			
Nickel	162	5.0	ug/g	24.0	110	70-130			
Selenium	130	1.0	ug/g	ND	104	70-130			
Silver	130	0.3	ug/g	ND	104	70-130			
Thallium	157	1.0	ug/g	ND	126	70-130			
Uranium	146	1.0	ug/g	ND	117	70-130			
Vanadium	175	10.0	ug/g	35.8	112	70-130			
Zinc	339	20.0	ug/g	217	97.7	70-130			
Volatiles									
Benzene	4.02	0.02	ug/g	ND	100	60-130			
Ethylbenzene	3.84	0.05	ug/g	ND	95.4	60-130			
Toluene	3.70	0.05	ug/g	ND	92.5	60-130			

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
m,p-Xylenes	7.73	0.05	ug/g	ND	96.3	60-130			
o-Xylene	3.96	0.05	ug/g	ND	98.6	60-130			
Surrogate: Toluene-d8	*7.86*		*%*		*97.9*	*50-140*			

Qualifier Notes:

QC Qualifiers:

Sample Data Revisions:

None

Work Order Revisions / Comments:

None

Other Report Notes:

n/a: not applicable

ND: Not Detected

MDL: Method Detection Limit

Source Result: Data used as source for matrix and duplicate samples

%REC: Percent recovery.

RPD: Relative percent difference.

NC: Not Calculated

Soil results are reported on a dry weight basis unlesss otherwise noted.

Where %Solids is reported, moisture loss includes the loss of volatile hydrocarbons.

CCME PHC additional information:

- The method for the analysis of PHCs complies with the Reference Method for the CWS PHC and is validated for use in the laboratory. All prescribed quality criteria identified in the method has been met.

- F1 range corrected for BTEX.

- F2 to F3 ranges corrected for appropriate PAHs where available.

- The gravimetric heavy hydrocarbons (F4G) are not to be added to C6 to C50 hydrocarbons.

- In the case where F4 and F4G are both reported, the greater of the two results is to be used for comparison to CWS PHC criteria.

- When reported, data for F4G has been processed using a silica gel cleanup.

Any use of these results implies your agreement that our total liabilty in connection with this work, however arising, shall be limited to the amount paid by you for this work, and that our employees or agents shall not under any circumstances be liable to you in connection with this work.

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Paracel ID: 2327212

Chain Of Custody
(Lab Use Only)
№ 70790

Client Name: ~~PATTISON INVESTMENTS INC~~ 675
Contact Name: Melissa King
Address: 4361 HARVESTER RD, UNIT 12
BURL., ONT, L7L 5M4
Telephone: 905-331-3735

Project Ref: G2523228
Quote #:
PO #:
E-mail: melissak@g2sconsulting.com
dylanb@g2sconsulting.com

Page 1 of 1

Turnaround Time
☐ 1 day ☐ 3 day
☐ 2 day ☒ Regular
Date Required:

☐ REG 153/04 ☒ REG 406/19

☒ Table 1 ☐ Res/Park ☐ Med/Fine
☐ Table 2 ☐ Ind/Comm ☒ Coarse
☐ Table 3 ☐ Agri/Other
☐ Table
For RSC: ☐ Yes ☒ No

Other Regulation: ☐ REG 558 ☐ PWQO ☐ CCME ☐ MISA ☐ SU - Sani ☐ SU - Storm
Mun:
☐ Other:

Matrix Type: S (Soil/Sed.) GW (Ground Water) SW (Surface Water) SS (Storm/Sanitary Sewer) P (Paint) A (Air) O (Other)

	Sample ID/Location Name	Matrix	Air Volume	# of Containers	Sample Taken: Date	Sample Taken: Time	Required Analysis: PHC/BTEX	METALS	EC/SAR/pH
1	BH 103 SS2	S	/	3	23/06/28	AM	X	X	X
2	BH 107 SS2	S	/	3	23/06/29	PM	X	X	X
3	BH 109 SS8	S	/	3	23/06/29	PM	X	X	X
4									
5									
6									
7									
8									
9									
10									

Comments:

Method of Delivery: Walk In

Relinquished By (Sign): D. BRICE	Received By Driver/Depot:	Received at Lab: C-PLY	Verified By: C-PLY
Relinquished By (Print): D. Brice	Date/Time:	Date/Time: 07/05/23 16:15	Date/Time: 07/05/23 16:58
Date/Time: 23/07/05	Temperature: °C	Temperature: 16.0 °C	pH Verified: ☐ By:

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Certificate of Analysis

G2S Environmental Consulting Inc. (Burlington)
4361 Harvester Road, Unit 12
Burlington, ON L7L 5M4
Attn: Melissa King

Client PO:
Project: G2S23228
Custody: 70790

Report Date: 12-Oct-2023
Order Date: 5-Jul-2023

Revised Report

Order #: 2327212

This Certificate of Analysis contains analytical data applicable to the following samples as submitted:

Paracel ID	Client ID
2327212-01	BH103 S2
2327212-02	BH107 S2
2327212-03	BH109 S1B

Approved By:



Milan Ralitsch, PhD
Senior Technical Manager

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
Boron, available	MOE (HWE), EPA 200.8 - ICP-MS	8-Jul-23	8-Jul-23
BTEX by P&T GC-MS	EPA 8260 - P&T GC-MS	7-Jul-23	10-Jul-23
Chromium, hexavalent - soil	MOE E3056 - Extraction, colourimetric	8-Jul-23	11-Jul-23
Conductivity	MOE E3138 - probe @25 °C, water ext	7-Jul-23	7-Jul-23
Mercury by CVAA	EPA 7471B - CVAA, digestion	7-Jul-23	10-Jul-23
pH, soil	EPA 150.1 - pH probe @ 25 °C, CaCl buffered ext.	6-Jul-23	7-Jul-23
PHC F1	CWS Tier 1 - P&T GC-FID	7-Jul-23	10-Jul-23
PHCs F2 to F4	CWS Tier 1 - GC-FID, extraction	6-Jul-23	7-Jul-23
REG 153: Metals by ICP/MS, soil	EPA 6020 - Digestion - ICP-MS	7-Jul-23	7-Jul-23
SAR	Calculated	8-Jul-23	10-Jul-23
Solids, %	CWS Tier 1 - Gravimetric	10-Jul-23	11-Jul-23

Summary of Criteria Exceedances

(If this page is blank then there are no exceedances)

Only those criteria that a sample exceeds will be highlighted in red

Regulatory Comparison:

Paracel Laboratories has provided regulatory guidelines on this report for informational purposes only and makes no representations or warranties that the data is accurate or reflects the current regulatory values. The user is advised to consult with the appropriate official regulations to evaluate compliance. Sample results that are highlighted have exceeded the selected regulatory limit. Calculated uncertainty estimations have not been applied for determining regulatory exceedances.

Sample	Analyte	MDL / Units	Result	Reg 153/04 -T2 Res/Park, coarse	Reg 153/04 -T2 Res/Park, fine

Certificate of Analysis

Report Date: 12-Oct-2023

Client: **G2S Environmental Consulting Inc. (Burlington)**

Order Date: 5-Jul-2023

Client PO:

Project Description: G2S23228

	Client ID:	BH103 S2	BH107 S2	BH109 S1B	-	Criteria:	
	Sample Date:	28-Jun-23 09:00	29-Jun-23 12:00	29-Jun-23 12:00	-	Reg 153/04 -T2 Res/Park, coarse	Reg 153/04 -T2 Res/Park, fine
	Sample ID:	2327212-01	2327212-02	2327212-03	-		
	Matrix:	Soil	Soil	Soil	-		
	MDL/Units						
Physical Characteristics							
% Solids	0.1 % by Wt.	82.1	79.2	84.1	-	-	-
General Inorganics							
SAR	0.01 N/A	0.63	2.46	0.23	-	5 N/A	5 N/A
Conductivity	0.005 mS/cm	0.312	0.268	0.194	-	0.7 mS/cm	0.7 mS/cm
pH	0.05 pH Units	7.69	7.71	7.75	-	5.00 - 9.00 pH Units	5.00 - 9.00 pH Units
Metals							
Antimony	1.0 ug/g	<1.0	<1.0	<1.0	-	7.5 ug/g	7.5 ug/g
Arsenic	1.0 ug/g	2.5	4.1	5.0	-	18 ug/g	18 ug/g
Barium	1.0 ug/g	113	102	162	-	390 ug/g	390 ug/g
Beryllium	0.5 ug/g	0.7	0.7	0.9	-	4 ug/g	5 ug/g
Boron	5.0 ug/g	9.5	10.4	9.1	-	120 ug/g	120 ug/g
Boron, available	0.5 ug/g	<0.5	<0.5	<0.5	-	1.5 ug/g	1.5 ug/g
Cadmium	0.5 ug/g	<0.5	<0.5	<0.5	-	1.2 ug/g	1.2 ug/g
Chromium	5.0 ug/g	22.7	23.0	29.5	-	160 ug/g	160 ug/g
Chromium (VI)	0.2 ug/g	<0.2	<0.2	0.4	-	8 ug/g	10 ug/g
Cobalt	1.0 ug/g	8.3	10.5	14.5	-	22 ug/g	22 ug/g
Copper	5.0 ug/g	13.3	14.8	19.1	-	140 ug/g	180 ug/g
Lead	1.0 ug/g	6.5	7.4	9.9	-	120 ug/g	120 ug/g
Mercury	0.1 ug/g	<0.1	<0.1	<0.1	-	0.27 ug/g	1.8 ug/g
Molybdenum	1.0 ug/g	<1.0	<1.0	<1.0	-	6.9 ug/g	6.9 ug/g
Nickel	5.0 ug/g	19.1	22.0	29.3	-	100 ug/g	130 ug/g
Selenium	1.0 ug/g	<1.0	<1.0	<1.0	-	2.4 ug/g	2.4 ug/g
Silver	0.3 ug/g	<0.3	<0.3	<0.3	-	20 ug/g	25 ug/g
Thallium	1.0 ug/g	<1.0	<1.0	<1.0	-	1 ug/g	1 ug/g
Uranium	1.0 ug/g	<1.0	<1.0	<1.0	-	23 ug/g	23 ug/g

	Client ID:	BH103 S2	BH107 S2	BH109 S1B	-	Criteria:	
	Sample Date:	28-Jun-23 09:00	29-Jun-23 12:00	29-Jun-23 12:00	-	Reg 153/04 -T2 Res/Park, coarse	Reg 153/04 -T2 Res/Park, fine
	Sample ID:	2327212-01	2327212-02	2327212-03	-		
	Matrix:	Soil	Soil	Soil	-		
	MDL/Units						
Metals							
Vanadium	10.0 ug/g	29.1	33.3	45.1	-	86 ug/g	86 ug/g
Zinc	20.0 ug/g	43.8	43.6	51.4	-	340 ug/g	340 ug/g
Volatiles							
Benzene	0.02 ug/g	<0.02	<0.02	<0.02	-	0.21 ug/g	0.17 ug/g
Ethylbenzene	0.05 ug/g	<0.05	<0.05	<0.05	-	1.1 ug/g	1.6 ug/g
Toluene	0.05 ug/g	<0.05	<0.05	<0.05	-	2.3 ug/g	6 ug/g
m,p-Xylenes	0.05 ug/g	<0.05	<0.05	<0.05	-	-	-
o-Xylene	0.05 ug/g	<0.05	<0.05	<0.05	-	-	-
Xylenes, total	0.05 ug/g	<0.05	<0.05	<0.05	-	3.1 ug/g	25 ug/g
Toluene-d8	Surrogate	102%	102%	103%	-	-	-
Hydrocarbons							
F1 PHCs (C6-C10)	7 ug/g	<7	<7	<7	-	55 ug/g	65 ug/g
F2 PHCs (C10-C16)	4 ug/g	<4	<4	<4	-	98 ug/g	150 ug/g
F3 PHCs (C16-C34)	8 ug/g	<8	<8	<8	-	300 ug/g	1300 ug/g
F4 PHCs (C34-C50)	6 ug/g	<6	<6	<6	-	2800 ug/g	5600 ug/g

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	%REC	%REC Limit	RPD	RPD Limit	Notes
General Inorganics								
SAR	ND	0.01	N/A					
Conductivity	ND	0.005	mS/cm					
Hydrocarbons								
F1 PHCs (C6-C10)	ND	7	ug/g					
F2 PHCs (C10-C16)	ND	4	ug/g					
F3 PHCs (C16-C34)	ND	8	ug/g					
F4 PHCs (C34-C50)	ND	6	ug/g					
Metals								
Antimony	ND	1.0	ug/g					
Arsenic	ND	1.0	ug/g					
Barium	ND	1.0	ug/g					
Beryllium	ND	0.5	ug/g					
Boron, available	ND	0.5	ug/g					
Boron	ND	5.0	ug/g					
Cadmium	ND	0.5	ug/g					
Chromium (VI)	ND	0.2	ug/g					
Chromium	ND	5.0	ug/g					
Cobalt	ND	1.0	ug/g					
Copper	ND	5.0	ug/g					
Lead	ND	1.0	ug/g					
Mercury	ND	0.1	ug/g					
Molybdenum	ND	1.0	ug/g					
Nickel	ND	5.0	ug/g					
Selenium	ND	1.0	ug/g					
Silver	ND	0.3	ug/g					
Thallium	ND	1.0	ug/g					
Uranium	ND	1.0	ug/g					
Vanadium	ND	10.0	ug/g					
Zinc	ND	20.0	ug/g					
Volatiles								
Benzene	ND	0.02	ug/g					
Ethylbenzene	ND	0.05	ug/g					

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	%REC	%REC Limit	RPD	RPD Limit	Notes
Toluene	ND	0.05	ug/g					
m,p-Xylenes	ND	0.05	ug/g					
o-Xylene	ND	0.05	ug/g					
Xylenes, total	ND	0.05	ug/g					
Surrogate: Toluene-d8	*8.04*		*%*	*100*	*50-140*			

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
General Inorganics									
SAR	4.40	0.01	N/A	3.47			23.6	30	
Conductivity	0.398	0.005	mS/cm	0.401			0.8	5	
pH	7.73	0.05	pH Units	7.75			0.3	10	
Hydrocarbons									
F1 PHCs (C6-C10)	ND	7	ug/g	ND			NC	40	
F2 PHCs (C10-C16)	ND	4	ug/g	ND			NC	30	
F3 PHCs (C16-C34)	ND	8	ug/g	ND			NC	30	
F4 PHCs (C34-C50)	ND	6	ug/g	ND			NC	30	
Metals									
Antimony	ND	1.0	ug/g	ND			NC	30	
Arsenic	4.4	1.0	ug/g	4.3			2.0	30	
Barium	115	1.0	ug/g	122			5.7	30	
Beryllium	0.8	0.5	ug/g	0.6			16.1	30	
Boron, available	ND	0.5	ug/g	ND			NC	35	
Boron	13.8	5.0	ug/g	11.8			15.1	30	
Cadmium	ND	0.5	ug/g	ND			NC	30	
Chromium (VI)	ND	0.2	ug/g	ND			NC	35	
Chromium	26.4	5.0	ug/g	32.3			20.1	30	
Cobalt	9.2	1.0	ug/g	10.4			11.8	30	
Copper	21.9	5.0	ug/g	25.0			13.1	30	
Lead	23.2	1.0	ug/g	26.5			13.5	30	
Mercury	ND	0.1	ug/g	ND			NC	30	
Molybdenum	ND	1.0	ug/g	ND			NC	30	
Nickel	21.6	5.0	ug/g	24.0			10.9	30	
Selenium	ND	1.0	ug/g	ND			NC	30	
Silver	ND	0.3	ug/g	ND			NC	30	
Thallium	2.3	1.0	ug/g	ND			NC	30	
Uranium	ND	1.0	ug/g	ND			NC	30	
Vanadium	32.8	10.0	ug/g	35.8			8.7	30	
Zinc	158	20.0	ug/g	217			NC	30	

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Physical Characteristics									
% Solids	84.5	0.1	% by Wt.	84.2			0.3	25	
Volatiles									
Benzene	ND	0.02	ug/g	ND			NC	50	
Ethylbenzene	ND	0.05	ug/g	ND			NC	50	
Toluene	ND	0.05	ug/g	ND			NC	50	
m,p-Xylenes	ND	0.05	ug/g	ND			NC	50	
o-Xylene	ND	0.05	ug/g	ND			NC	50	
Surrogate: Toluene-d8	*7.53*		*%*		*102*	*50-140*			

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	60	7	ug/g	ND	84.2	80-120			
F2 PHCs (C10-C16)	83	4	ug/g	ND	89.8	60-140			
F3 PHCs (C16-C34)	196	8	ug/g	ND	94.2	60-140			
F4 PHCs (C34-C50)	171	6	ug/g	ND	114	60-140			
Metals									
Antimony	135	1.0	ug/g	ND	108	70-130			
Arsenic	146	1.0	ug/g	4.3	114	70-130			
Barium	254	1.0	ug/g	122	106	70-130			
Beryllium	139	0.5	ug/g	0.6	111	70-130			
Boron, available	4.16	0.5	ug/g	ND	83.2	70-122			
Boron	148	5.0	ug/g	11.8	109	70-130			
Cadmium	140	0.5	ug/g	ND	112	70-130			
Chromium (VI)	4.7	0.2	ug/g	ND	80.0	70-130			
Chromium	171	5.0	ug/g	32.3	111	70-130			
Cobalt	146	1.0	ug/g	10.4	109	70-130			
Copper	163	5.0	ug/g	25.0	110	70-130			
Lead	183	1.0	ug/g	26.5	125	70-130			
Mercury	1.41	0.1	ug/g	ND	93.8	70-130			
Molybdenum	146	1.0	ug/g	ND	117	70-130			
Nickel	162	5.0	ug/g	24.0	110	70-130			
Selenium	130	1.0	ug/g	ND	104	70-130			
Silver	130	0.3	ug/g	ND	104	70-130			
Thallium	157	1.0	ug/g	ND	126	70-130			
Uranium	146	1.0	ug/g	ND	117	70-130			
Vanadium	175	10.0	ug/g	35.8	112	70-130			
Zinc	339	20.0	ug/g	217	97.7	70-130			
Volatiles									
Benzene	4.02	0.02	ug/g	ND	100	60-130			
Ethylbenzene	3.84	0.05	ug/g	ND	95.4	60-130			
Toluene	3.70	0.05	ug/g	ND	92.5	60-130			

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
m,p-Xylenes	7.73	0.05	ug/g	ND	96.3	60-130			
o-Xylene	3.96	0.05	ug/g	ND	98.6	60-130			
Surrogate: Toluene-d8	*7.86*		*%*		*97.9*	*50-140*			

Qualifier Notes:

QC Qualifiers:

Sample Data Revisions:

None

Work Order Revisions / Comments:

Revision-1: Guideline comparisons updated as per client request.

Other Report Notes:

n/a: not applicable

ND: Not Detected

MDL: Method Detection Limit

Source Result: Data used as source for matrix and duplicate samples

%REC: Percent recovery.

RPD: Relative percent difference.

NC: Not Calculated

Soil results are reported on a dry weight basis unlesss otherwise noted.

Where %Solids is reported, moisture loss includes the loss of volatile hydrocarbons.

CCME PHC additional information:

- The method for the analysis of PHCs complies with the Reference Method for the CWS PHC and is validated for use in the laboratory. All prescribed quality criteria identified in the method has been met.

- F1 range corrected for BTEX.

- F2 to F3 ranges corrected for appropriate PAHs where available.

- The gravimetric heavy hydrocarbons (F4G) are not to be added to C6 to C50 hydrocarbons.

- In the case where F4 and F4G are both reported, the greater of the two results is to be used for comparison to CWS PHC criteria.

- When reported, data for F4G has been processed using a silica gel cleanup.

Any use of these results implies your agreement that our total liabilty in connection with this work, however arising, shall be limited to the amount paid by you for this work, and that our employees or agents shall not under any circumstances be liable to you in connection with this work.

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Paracel ID: 2327212

Chain Of Custody
(Lab Use Only)
№ 70790

Client Name: ~~PATTISON INVESTMENTS INC~~ 675
Contact Name: Melissa King
Address: 4361 HARVESTER RD, UNIT 12
BURL., ONT, L7L 5M4
Telephone: 905-331-3735

Project Ref: G2523228
Quote #:
PO #:
E-mail: melissak@g2sconsulting.com
dylanb@g2sconsulting.com

Page 1 of 1

Turnaround Time
☐ 1 day ☐ 3 day
☐ 2 day ☒ Regular
Date Required:

☐ REG 153/04 ☒ REG 406/19

☒ Table 1 ☐ Res/Park ☐ Med/Fine
☐ Table 2 ☐ Ind/Comm ☒ Coarse
☐ Table 3 ☐ Agri/Other
☐ Table
For RSC: ☐ Yes ☒ No

Other Regulation: ☐ REG 558 ☐ PWQO ☐ CCME ☐ MISA ☐ SU - Sani ☐ SU - Storm
Mun:
☐ Other:

Matrix Type: S (Soil/Sed.) GW (Ground Water) SW (Surface Water) SS (Storm/Sanitary Sewer) P (Paint) A (Air) O (Other)

	Sample ID/Location Name	Matrix	Air Volume	# of Containers	Sample Taken: Date	Sample Taken: Time	Required Analysis: PHC/BTEX	METALS	EC/SAR/pH
1	BH 103 SS2	S	/	3	23/06/28	AM	X	X	X
2	BH 107 SS2	S	/	3	23/06/29	PM	X	X	X
3	BH 109 SS8	S	/	3	23/06/29	PM	X	X	X
4									
5									
6									
7									
8									
9									
10									

Comments:

Method of Delivery: Walk In

Relinquished By (Sign): D. BRICE	Received By Driver/Depot:	Received at Lab: C-PLY	Verified By: C-PLY
Relinquished By (Print): D. Brice	Date/Time:	Date/Time: 07/05/23 16:15	Date/Time: 07/05/23 16:58
Date/Time: 23/07/05	Temperature: °C	Temperature: 16.0 °C	pH Verified: ☐ By:

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Certificate of Analysis

G2S Environmental Consulting Inc. (Burlington)
4361 Harvester Road, Unit 12
Burlington, ON L7L 5M4
Attn: Melissa King

Client PO:
Project: G2S23228
Custody: 70790

Report Date: 16-Oct-2023
Order Date: 5-Jul-2023

Revised Report

Order #: 2327212

This Certificate of Analysis contains analytical data applicable to the following samples as submitted:

Paracel ID	Client ID
2327212-01	BH103 S2
2327212-02	BH107 S2
2327212-03	BH109 S1B

Approved By:



Milan Ralitsch, PhD
Senior Technical Manager

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
Boron, available	MOE (HWE), EPA 200.8 - ICP-MS	8-Jul-23	8-Jul-23
BTEX by P&T GC-MS	EPA 8260 - P&T GC-MS	7-Jul-23	10-Jul-23
Chromium, hexavalent - soil	MOE E3056 - Extraction, colourimetric	8-Jul-23	11-Jul-23
Conductivity	MOE E3138 - probe @25 °C, water ext	7-Jul-23	7-Jul-23
Mercury by CVAA	EPA 7471B - CVAA, digestion	7-Jul-23	10-Jul-23
pH, soil	EPA 150.1 - pH probe @ 25 °C, CaCl buffered ext.	6-Jul-23	7-Jul-23
PHC F1	CWS Tier 1 - P&T GC-FID	7-Jul-23	10-Jul-23
PHCs F2 to F4	CWS Tier 1 - GC-FID, extraction	6-Jul-23	7-Jul-23
REG 153: Metals by ICP/MS, soil	EPA 6020 - Digestion - ICP-MS	7-Jul-23	7-Jul-23
SAR	Calculated	8-Jul-23	10-Jul-23
Solids, %	CWS Tier 1 - Gravimetric	10-Jul-23	11-Jul-23

Summary of Criteria Exceedances

(If this page is blank then there are no exceedances)

Only those criteria that a sample exceeds will be highlighted in red

Regulatory Comparison:

Paracel Laboratories has provided regulatory guidelines on this report for informational purposes only and makes no representations or warranties that the data is accurate or reflects the current regulatory values. The user is advised to consult with the appropriate official regulations to evaluate compliance. Sample results that are highlighted have exceeded the selected regulatory limit. Calculated uncertainty estimations have not been applied for determining regulatory exceedances.

Sample	Analyte	MDL / Units	Result	Reg 406/19 -T2.1 Res/Park/Inst	-

Certificate of Analysis

Report Date: 16-Oct-2023

Client: **G2S Environmental Consulting Inc. (Burlington)**

Order Date: 5-Jul-2023

Client PO:

Project Description: G2S23228

	Client ID:	BH103 S2	BH107 S2	BH109 S1B	-	**Criteria:**	
	Sample Date:	28-Jun-23 09:00	29-Jun-23 12:00	29-Jun-23 12:00	-	**Reg 406/19 -T2.1 Res/Park/Inst**	-
	Sample ID:	2327212-01	2327212-02	2327212-03	-		
	Matrix:	Soil	Soil	Soil	-		
	MDL/Units						
Physical Characteristics							
% Solids	0.1 % by Wt.	82.1	79.2	84.1	-	-	-
General Inorganics							
SAR	0.01 N/A	0.63	2.46	0.23	-	5 N/A	-
Conductivity	0.005 mS/cm	0.312	0.268	0.194	-	0.7 mS/cm	-
pH	0.05 pH Units	7.69	7.71	7.75	-	5.00 - 9.00 pH Units	-
Metals							
Antimony	1.0 ug/g	<1.0	<1.0	<1.0	-	7.5 ug/g	-
Arsenic	1.0 ug/g	2.5	4.1	5.0	-	18 ug/g	-
Barium	1.0 ug/g	113	102	162	-	390 ug/g	-
Beryllium	0.5 ug/g	0.7	0.7	0.9	-	4 ug/g	-
Boron	5.0 ug/g	9.5	10.4	9.1	-	120 ug/g	-
Boron, available	0.5 ug/g	<0.5	<0.5	<0.5	-	1.5 ug/g	-
Cadmium	0.5 ug/g	<0.5	<0.5	<0.5	-	1.2 ug/g	-
Chromium	5.0 ug/g	22.7	23.0	29.5	-	160 ug/g	-
Chromium (VI)	0.2 ug/g	<0.2	<0.2	0.4	-	8 ug/g	-
Cobalt	1.0 ug/g	8.3	10.5	14.5	-	22 ug/g	-
Copper	5.0 ug/g	13.3	14.8	19.1	-	140 ug/g	-
Lead	1.0 ug/g	6.5	7.4	9.9	-	120 ug/g	-
Mercury	0.1 ug/g	<0.1	<0.1	<0.1	-	0.27 ug/g	-
Molybdenum	1.0 ug/g	<1.0	<1.0	<1.0	-	6.9 ug/g	-
Nickel	5.0 ug/g	19.1	22.0	29.3	-	100 ug/g	-
Selenium	1.0 ug/g	<1.0	<1.0	<1.0	-	2.4 ug/g	-
Silver	0.3 ug/g	<0.3	<0.3	<0.3	-	20 ug/g	-
Thallium	1.0 ug/g	<1.0	<1.0	<1.0	-	1 ug/g	-
Uranium	1.0 ug/g	<1.0	<1.0	<1.0	-	23 ug/g	-

	Client ID:	BH103 S2	BH107 S2	BH109 S1B	-	Criteria:	
	Sample Date:	28-Jun-23 09:00	29-Jun-23 12:00	29-Jun-23 12:00	-	Reg 406/19 -T2.1 Res/Park/Inst	-
	Sample ID:	2327212-01	2327212-02	2327212-03	-		
	Matrix:	Soil	Soil	Soil	-		
	MDL/Units						
Metals							
Vanadium	10.0 ug/g	29.1	33.3	45.1	-	86 ug/g	-
Zinc	20.0 ug/g	43.8	43.6	51.4	-	340 ug/g	-
Volatiles							
Benzene	0.02 ug/g	<0.02	<0.02	<0.02	-	0.02 ug/g	-
Ethylbenzene	0.05 ug/g	<0.05	<0.05	<0.05	-	0.05 ug/g	-
Toluene	0.05 ug/g	<0.05	<0.05	<0.05	-	0.2 ug/g	-
m,p-Xylenes	0.05 ug/g	<0.05	<0.05	<0.05	-	-	-
o-Xylene	0.05 ug/g	<0.05	<0.05	<0.05	-	-	-
Xylenes, total	0.05 ug/g	<0.05	<0.05	<0.05	-	0.091 ug/g	-
Toluene-d8	Surrogate	102%	102%	103%	-	-	-
Hydrocarbons							
F1 PHCs (C6-C10)	7 ug/g	<7	<7	<7	-	25 ug/g	-
F2 PHCs (C10-C16)	4 ug/g	<4	<4	<4	-	10 ug/g	-
F3 PHCs (C16-C34)	8 ug/g	<8	<8	<8	-	240 ug/g	-
F4 PHCs (C34-C50)	6 ug/g	<6	<6	<6	-	2800 ug/g	-

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	%REC	%REC Limit	RPD	RPD Limit	Notes
General Inorganics								
SAR	ND	0.01	N/A					
Conductivity	ND	0.005	mS/cm					
Hydrocarbons								
F1 PHCs (C6-C10)	ND	7	ug/g					
F2 PHCs (C10-C16)	ND	4	ug/g					
F3 PHCs (C16-C34)	ND	8	ug/g					
F4 PHCs (C34-C50)	ND	6	ug/g					
Metals								
Antimony	ND	1.0	ug/g					
Arsenic	ND	1.0	ug/g					
Barium	ND	1.0	ug/g					
Beryllium	ND	0.5	ug/g					
Boron, available	ND	0.5	ug/g					
Boron	ND	5.0	ug/g					
Cadmium	ND	0.5	ug/g					
Chromium (VI)	ND	0.2	ug/g					
Chromium	ND	5.0	ug/g					
Cobalt	ND	1.0	ug/g					
Copper	ND	5.0	ug/g					
Lead	ND	1.0	ug/g					
Mercury	ND	0.1	ug/g					
Molybdenum	ND	1.0	ug/g					
Nickel	ND	5.0	ug/g					
Selenium	ND	1.0	ug/g					
Silver	ND	0.3	ug/g					
Thallium	ND	1.0	ug/g					
Uranium	ND	1.0	ug/g					
Vanadium	ND	10.0	ug/g					
Zinc	ND	20.0	ug/g					
Volatiles								
Benzene	ND	0.02	ug/g					
Ethylbenzene	ND	0.05	ug/g					

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	%REC	%REC Limit	RPD	RPD Limit	Notes
Toluene	ND	0.05	ug/g					
m,p-Xylenes	ND	0.05	ug/g					
o-Xylene	ND	0.05	ug/g					
Xylenes, total	ND	0.05	ug/g					
Surrogate: Toluene-d8	*8.04*		*%*	*100*	*50-140*			

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
General Inorganics									
SAR	4.40	0.01	N/A	3.47			23.6	30	
Conductivity	0.398	0.005	mS/cm	0.401			0.8	5	
pH	7.73	0.05	pH Units	7.75			0.3	10	
Hydrocarbons									
F1 PHCs (C6-C10)	ND	7	ug/g	ND			NC	40	
F2 PHCs (C10-C16)	ND	4	ug/g	ND			NC	30	
F3 PHCs (C16-C34)	ND	8	ug/g	ND			NC	30	
F4 PHCs (C34-C50)	ND	6	ug/g	ND			NC	30	
Metals									
Antimony	ND	1.0	ug/g	ND			NC	30	
Arsenic	4.4	1.0	ug/g	4.3			2.0	30	
Barium	115	1.0	ug/g	122			5.7	30	
Beryllium	0.8	0.5	ug/g	0.6			16.1	30	
Boron, available	ND	0.5	ug/g	ND			NC	35	
Boron	13.8	5.0	ug/g	11.8			15.1	30	
Cadmium	ND	0.5	ug/g	ND			NC	30	
Chromium (VI)	ND	0.2	ug/g	ND			NC	35	
Chromium	26.4	5.0	ug/g	32.3			20.1	30	
Cobalt	9.2	1.0	ug/g	10.4			11.8	30	
Copper	21.9	5.0	ug/g	25.0			13.1	30	
Lead	23.2	1.0	ug/g	26.5			13.5	30	
Mercury	ND	0.1	ug/g	ND			NC	30	
Molybdenum	ND	1.0	ug/g	ND			NC	30	
Nickel	21.6	5.0	ug/g	24.0			10.9	30	
Selenium	ND	1.0	ug/g	ND			NC	30	
Silver	ND	0.3	ug/g	ND			NC	30	
Thallium	2.3	1.0	ug/g	ND			NC	30	
Uranium	ND	1.0	ug/g	ND			NC	30	
Vanadium	32.8	10.0	ug/g	35.8			8.7	30	
Zinc	158	20.0	ug/g	217			NC	30	

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Physical Characteristics									
% Solids	84.5	0.1	% by Wt.	84.2			0.3	25	
Volatiles									
Benzene	ND	0.02	ug/g	ND			NC	50	
Ethylbenzene	ND	0.05	ug/g	ND			NC	50	
Toluene	ND	0.05	ug/g	ND			NC	50	
m,p-Xylenes	ND	0.05	ug/g	ND			NC	50	
o-Xylene	ND	0.05	ug/g	ND			NC	50	
Surrogate: Toluene-d8	*7.53*		*%*		*102*	*50-140*			

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	60	7	ug/g	ND	84.2	80-120			
F2 PHCs (C10-C16)	83	4	ug/g	ND	89.8	60-140			
F3 PHCs (C16-C34)	196	8	ug/g	ND	94.2	60-140			
F4 PHCs (C34-C50)	171	6	ug/g	ND	114	60-140			
Metals									
Antimony	135	1.0	ug/g	ND	108	70-130			
Arsenic	146	1.0	ug/g	4.3	114	70-130			
Barium	254	1.0	ug/g	122	106	70-130			
Beryllium	139	0.5	ug/g	0.6	111	70-130			
Boron, available	4.16	0.5	ug/g	ND	83.2	70-122			
Boron	148	5.0	ug/g	11.8	109	70-130			
Cadmium	140	0.5	ug/g	ND	112	70-130			
Chromium (VI)	4.7	0.2	ug/g	ND	80.0	70-130			
Chromium	171	5.0	ug/g	32.3	111	70-130			
Cobalt	146	1.0	ug/g	10.4	109	70-130			
Copper	163	5.0	ug/g	25.0	110	70-130			
Lead	183	1.0	ug/g	26.5	125	70-130			
Mercury	1.41	0.1	ug/g	ND	93.8	70-130			
Molybdenum	146	1.0	ug/g	ND	117	70-130			
Nickel	162	5.0	ug/g	24.0	110	70-130			
Selenium	130	1.0	ug/g	ND	104	70-130			
Silver	130	0.3	ug/g	ND	104	70-130			
Thallium	157	1.0	ug/g	ND	126	70-130			
Uranium	146	1.0	ug/g	ND	117	70-130			
Vanadium	175	10.0	ug/g	35.8	112	70-130			
Zinc	339	20.0	ug/g	217	97.7	70-130			
Volatiles									
Benzene	4.02	0.02	ug/g	ND	100	60-130			
Ethylbenzene	3.84	0.05	ug/g	ND	95.4	60-130			
Toluene	3.70	0.05	ug/g	ND	92.5	60-130			

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
m,p-Xylenes	7.73	0.05	ug/g	ND	96.3	60-130			
o-Xylene	3.96	0.05	ug/g	ND	98.6	60-130			
Surrogate: Toluene-d8	*7.86*		*%*		*97.9*	*50-140*			

Qualifier Notes:

QC Qualifiers:

Sample Data Revisions:

None

Work Order Revisions / Comments:

Revision-1: Guideline comparisons updated as per client request.

Revision-2: Guideline comparisons updated as per client request.

Other Report Notes:

n/a: not applicable

ND: Not Detected

MDL: Method Detection Limit

Source Result: Data used as source for matrix and duplicate samples

%REC: Percent recovery.

RPD: Relative percent difference.

NC: Not Calculated

Soil results are reported on a dry weight basis unlesss otherwise noted.

Where %Solids is reported, moisture loss includes the loss of volatile hydrocarbons.

CCME PHC additional information:

- The method for the analysis of PHCs complies with the Reference Method for the CWS PHC and is validated for use in the laboratory. All prescribed quality criteria identified in the method has been met.

- F1 range corrected for BTEX.

- F2 to F3 ranges corrected for appropriate PAHs where available.

- The gravimetric heavy hydrocarbons (F4G) are not to be added to C6 to C50 hydrocarbons.

- In the case where F4 and F4G are both reported, the greater of the two results is to be used for comparison to CWS PHC criteria.

- When reported, data for F4G has been processed using a silica gel cleanup.

Any use of these results implies your agreement that our total liabilty in connection with this work, however arising, shall be limited to the amount paid by you for this work, and that our employees or agents shall not under any circumstances be liable to you in connection with this work.

PARACEL LABORATORIES LTD. | TRUSTED. RESPONSIVE. RELIABLE.

Paracel ID: 2327212

Chain Of Custody
(Lab Use Only)
№ 70790

Client Name: ~~PATTISON INVESTMENTS INC~~ 675
Contact Name: Melissa King
Address: 4361 HARVESTER RD, UNIT 12
BURL., ONT, L7L 5M4
Telephone: 905-331-3735

Project Ref: G2523228
Quote #:
PO #:
E-mail: melissak@g2sconsulting.com
dylanb@g2sconsulting.com

Page 1 of 1

Turnaround Time
☐ 1 day ☐ 3 day
☐ 2 day ☒ Regular
Date Required:

☐ REG 153/04 ☒ REG 406/19

☒ Table 1 ☐ Res/Park ☐ Med/Fine
☐ Table 2 ☐ Ind/Comm ☒ Coarse
☐ Table 3 ☐ Agri/Other
☐ Table
For RSC: ☐ Yes ☒ No

Other Regulation: ☐ REG 558 ☐ PWQO ☐ CCME ☐ MISA ☐ SU - Sani ☐ SU - Storm
Mun:
☐ Other:

Matrix Type: S (Soil/Sed.) GW (Ground Water) SW (Surface Water) SS (Storm/Sanitary Sewer) P (Paint) A (Air) O (Other)

	Sample ID/Location Name	Matrix	Air Volume	# of Containers	Sample Taken: Date	Sample Taken: Time	Required Analysis: PHC/BTEX	METALS	EC/SAR/pH
1	BH 103 SS2	S	/	3	23/06/28	AM	X	X	X
2	BH 107 SS2	S	/	3	23/06/29	PM	X	X	X
3	BH 109 SS8	S	/	3	23/06/29	PM	X	X	X
4									
5									
6									
7									
8									
9									
10									

Comments:

Method of Delivery: Walk In

Relinquished By (Sign): D. BRICE	Received By Driver/Depot:	Received at Lab: C-PLY	Verified By: C-PLY
Relinquished By (Print): D. Brice	Date/Time:	Date/Time: 07/05/23 16:15	Date/Time: 07/05/23 16:58
Date/Time: 23/07/05	Temperature: °C	Temperature: 16.0 °C	pH Verified: ☐ By:

455 Phillip Street, Unit 100A
Waterloo, Ontario N2L 3X2
Canada
www.ghd.com

Our ref: 12606686-LTR-1

10 March 2023

Mr. Mike King, CET
Director, Engineering
Robinson Administration Building
Engineering
Environmental and Infrastructure Services Division
185 Robinson Street Suite 200
Simcoe, Ontario
N3Y 5L6

Peer Review of Land Use Compatibility Assessment (D-2)
Proposed Residential Development
38 Lake Shore Road, Port Dover, Ontario

Dear Mr. King

1. Introduction

GHD Limited (GHD) was retained by Norfolk County (County) to complete a Peer Review of the Land Use Compatibility Assessment (the Study) in accordance with Guideline D-2: Compatibility between Sewage Treatment and Sensitive Land Use, prepared in support of the proposed residential development located at 38 New Lake Shore Road in Port Dover, Ontario (Site).

The following documents were reviewed:

– D-2 Compatibility Assessment, dated October 5, 2022 RV1, prepared by CCS Engineering (CCS)

The objective of the Study prepared by CCS was to evaluate the potential noise, dust or odour impacts with respect to the Ministry of Environment, Conservation, and Parks (MECP) land use planning guidelines. Specifically, the Study assessed potential impacts on the development relating to the sewage treatment plant operations, located at 137 Hamilton Plank Road, Port Dover, approximately 65m north east of the proposed development. The CCS Study concluded that the subject property is not expected to be adversely impacted by noise, dust or odour from the Port Dover WWTP operations.

The purpose of this Peer Review is to evaluate if the conclusion reached by CCS is appropriate with respect to land use compatibility, identify any data gaps and make further recommendations, if applicable.

GHD has reviewed the Study and evaluated the information and results presented against a standard evaluation system designed to help the County understand the analysis against the required regulatory requirements and best practices. The following standard peer review questions are provided below with GHD's comments regarding the need for further action or agreement of the findings:

2. Air Peer Review Questions

Peer Review Question 1

Has the Assessment identified and assessed all potential dust and odour sources?

GHD Response

The Study prepared by CCS focused on the potential dust and odour from the Port Dover Wastewater Treatment Plant (WWTP) and as such, was identified as the only source with potential to impact the proposed residential development. It was determined to not be a source of fugitive dust. The MECP D-2 Guideline was used to conduct a qualitative assessment of the potential odour impacts on the proposed Development. Odour was not quantified as part of this study.

On-site ambient measurement of odour using a field olfactometer is not a requirement of an odour assessment, but can be useful in identifying unknown odorous sources, confirming the significance of an odour source, and determining whether more accurate quantification is required.

CCS conducted an odour survey at the WWTP during a site visit on August 3, 2022. The results of the odour survey indicated a slight odour from the aeration tanks and clarifier tanks, and did not find any odours from the headhouse or preliminary treatment building. CCS also acknowledged the proposed increase in treatment capacity based on the proposed works and concluded these changes are not likely to cause a significant change to the current odour profile.

It was noted in the Assessment that prevailing winds in the area are generally from the west and on the day of the survey the winds were from the south. GHD reviewed historical weather data for nearby stations, and found this generally agrees with the Delhi Climatological Station (WMO ID 71753). Given the frequency of calm winds from the north east, GHD believes there is potential for the proposed development to be adversely impacted. GHD developed a wind direction analysis, included in Attachment 1, showing average wind speeds and directions based on 5-years of historical data between 2018 and 2022.

It is also noted that the odour survey was only conducted during a single day and will therefore have limited reliability. GHD also found that the odour survey was conducted during moderate wind speeds ranging between 11 – 20 km/hr (3 m/s – 5 m/s). Generally, the worst-case odour impacts will occur during low wind scenarios – at higher winds, the air emissions are well dispersed and less likely to cause any odour impacts. Historical weather data indicates that calm winds at the Delhi weather station occur 11.3% as shown on the windrose provided in Attachment 1.

Peer Review Question 2

Has the Odour Impact Study provided an appropriate methodology for assessing odour?

GHD Response

The MECP has published a draft “Guideline to Address Odour Mixtures in Ontario” (Odour Guideline) and a draft “Methodology for Completing an Odour Assessment for Odour Mixtures” (Technical Bulletin) in March 2021, which also provides guidance on assessing odour in Land Use Compatibility Studies. In the draft Technical Bulletin, odour characterization using the FIDOL model is recommended. FIDOL refers to five parameters: Frequency, Intensity, Duration, Offensiveness, and Location.

CCS conducted an odour survey at the WWTP during a site visit on August 3, 2022 to assess potential odours and found only slight odours from the aeration tanks and clarifier tanks, which were characterized as not strong or offensive. However, from the draft MECP Technical Bulletin, Section 3.1.4 identifies wastewater treatment as a specific process where the odours are offensive to most people, which may result in odour complaints at a very low odour concentrations.

It is also not known if the odour survey was conducted during normal or peak flows at the WWTP, which may impact the intensity and offensiveness results of the survey. GHD understands it may not be feasible to

conduct an odour survey during peak flows and low wind conditions, therefore, it can be effective to consult with the local MECP district office and staff at the WWTP on historical odour complaints. As there are already several residential areas surround the WWTP, this would provide reliable data that could be used to further support the assertion the WWTP is not likely to cause an adverse impact at the proposed development.

Peer Review Question 3

Has the Odour Impact Study identified all sensitive receptors and provided an assessment of the identified odour against the appropriate limits?

GHD Response

There is no ambient standard or criterion for odour mixtures in Ontario (Technical Bulletin Section 3.4), nor does the WWTP have a condition to limit odour effects to a specified odour concentration at odour receptors. One common approach to consider the value of 1 odour unit (OU) when assessing the potential for odour effects over a 10-minute period using odour modelling results. However, as the odour has not been quantified from the WWTP, the Assessment is based on a qualitative analysis.

The Assessment concluded that based on the separation distances in provided in Guideline D-2 for WWTPs with a treatment capacity of up to 25,000 m3/d, and given there are existing residences within the recommended separation distance, the proposed development is not likely to be adversely impacted by odours from the WWTP.

As noted by CCS in Section 6 of the Assessment, GHD agrees that warning clauses be included in agreements of purchase and sale and in documents registered on Title, advising prospective buyers of the presence of a sewage treatment plant in the area, and possible presence of related odours.

GHD generally agrees with this approach. However, it is GHD's opinion that it does not fully address the potential incompatibility issue without conducting a historical odour complaint search with the MECP District Office.

Peer Review Question 4

Has the Odour Impact Study provided an assessment of the proposed mitigation measures at the proposed Site?

GHD Response

The draft Odour Guideline encourages early engagement with all stakeholders for proposals that would place major facilities and sensitive land uses in proximity to each other. It would be beneficial to engage the Port Dover WWTP to allow potential accessibility to facility-specific information or discussion on recommendations for mitigation measures.

If the odour compatibility study shows there is a potential for odour impacts, it is the responsibility of the proponent to determine the extent of the odour impacts to minimize and mitigate odour impacts, if necessary.

Although it is not anticipated that odour mitigation measures will be required, based on the draft Odour Guidance Document, municipal WWTPs with a design capacity ≤ 25,000 m3/day are identified as Tier 1 activities with a 500m setback distance. When development occurs within this distance, it is required that an up-to-date Best Management Practices Plan (BMPP) to prevent or minimize odorous effects is prepared. BMPPs typically include:

– Assessing facility processes and operations and identifying all sources of odours
– For each source, identifying BMPs and integrating them into site operations
– Implementing administrative controls, odour complaint response, etc.
– Developing monitoring and inspection protocols, recordkeeping, etc.

3. Noise Peer Review Questions

GHD has reviewed the noise portion of the Study and evaluated the information and results presented against a standard evaluation system designed to help the Municipality understand the analysis against the required regulatory requirements and best practices. The following standard peer review questions are provided below with GHD's comments regarding the need for further action or agreement of the findings:

Peer Review Question 1

Has the Study identified and assessed all potential noise sources?

GHD Response

No significant sources of noise associated with the WWTP have been identified and assessed in the Study although property line and at Development noise measurements were taken. The Study provided sound level measurements of Facility operations at various points along the WWTP property line however these measurements provided in Attachment C were very short in duration (less than 60 seconds) and likely not representative of a 1-hour Leq average which is the standard for comparison to provincial NPC-300 day and noise limits. If operations and noise levels at the WWTP are static and consistent, then a minimum 20-minute measurement period would be representative of the hour however this was not done.

The Study acknowledges future WWTP upgrades will reduce the noise but provides no quantitative assessment to support this statement other than general assumptions.

The Study documents that the WWTP receives truck traffic from the north end of the site up to 10 trucks a day or 1 per hour. The Study should be updated to document if this is during daytime hours only or revise the assessment to document if during night-time 11pm to 7am for comparison to MECP day/night noise limits.

Additional sources of noise documented but not evaluated are solids management trucks which are required to remove solids from the underground storage tanks. These are significant sources of noise when in use and should be evaluated cumulatively with onsite mechanical noise sources and mobile trucks.

No acoustical modelling was completed, or sound power levels determined for on site equipment. Only a brief snapshot of operations was taken at the Facility property line (<1 min) during assumed normal operations which was supplemented with simplified distance attenuation calculations for on-site truck traffic. This truck traffic was not cumulatively evaluated with the noise measured at the property line or other equipment not active during the time of the measurements.

The Study should be amended to include a statement documenting that WWTP Facility staff confirmed the noise measurements that were taken on the day of sampling are representative of a typical period of operations or predictable worst-case. Otherwise, the noise measurements taken are only representative of that particular moment in time which may not be reflective of typical on-site activities such as liquid tanker trucks off-loading material via truck mounted blower systems, emergency generator testing and process equipment/stacks venting to atmosphere.

As sound power levels of individual equipment were not measured or provided GHD cannot comment on if source sound levels used in the assessment are consistent with known values for like WWTP equipment based on GHD's experience.

Peer Review Question 2

Has the Noise Impact Study provided an appropriate noise model methodology, assessment of the noise criteria and associated sound level limits used to evaluate potential noise impacts?

GHD Response

The stationary sound level criteria listed in the Study are consistent with the criteria contained in NPC-300, which is the appropriate guideline for assessment of noise impacts to the Development.

The Study provides sound level limits based on Acoustical “Class 2 (Urban)” area which is appropriate for the Site and surrounding area and includes the corresponding sound level limits from NPC-300 for non-impulsive (steady) sound. GHD concurs that the use of Class 2 for this site is appropriate based on the nature of the area.

The study has not provided any modelling methodology to carry out sound pressure level predictions in accordance with ISO standard 9613-2 or provided any logarithmic summary tables documenting the sound from each operation or equipment cumulatively added together for comparison to NPC-300’s day and night criteria which is common practice.

GHD recommends that a detailed impact assessment be completed with regards stationary noise sources (rooftop equipment, process stacks, emergency generators, solids unloading PTO blower truck, on site truck volumes etc.).

Peer Review Question 3

Has the Noise Impact Study identified all sensitive receptors and provided an assessment of the identified sound levels against the appropriate sound level limits?

GHD Response

The Study evaluates noise impacts at the worst-case sensitive receptors at the Site with regards to stationary noise exposure from the existing WWTP facility via direct noise measurements.

GHD concurs with the conclusion that the estimated noise impacts from the WWTP at the proposed development areas are below the applicable Class 2 MECP noise limits during the daytime and night-time hours without the need for any noise mitigation based on our experience with similar Facilities. However, the Study has not provided sufficient evidence or analysis to definitively conclude there are no land use compatibility issues associated with this proposed Development.

The provided field noise measurements taken at the NE corner of the proposed development as well as the SW corner of the WWTP may have been shielded by the on site WWTP building and not representative of the 2nd floor windows exposure of the proposed development which would have line of sight and exposure to the aeration motors and Facility process equipment. GHD recommends that the noise portion of the Study provide comment on if these measurements are appropriate and representative of the Developments worst-case exposure.

Peer Review Question 5

Provide an opinion regarding the sufficiency and accuracy of the submitted analysis based on the applicable Provincial and City guidelines and standards.

Identifying, commenting on and providing recommendations for potential mitigation measures to deal with impacts.

GHD Response

The noise information included thus far is lacking in methodology and detail and has not provided a definitive quantitative assessment to NPC-300. The recommended additional information would provide greater confidence in the findings and help the planning authority ensure land use compatibility prior to approval and during detailed design.

4. Conclusion

Based on our review, GHD is in general agreement with the statements in the submitted Study in support of the proposed development. However, GHD notes that analysis contains insufficient detail and recommends that the following items be addressed and noted to document the Study's findings:

1. The proponent should conduct a historical odour complaint search with the local MECP District Office and Port Dover WWTP. If any complaints are identified, they should be evaluated to determine if additional assessment is required.
2. GHD recommends an up-to-date Best Management Practices Plan for odour is prepared for the WWTP to prevent or minimize odorous effects.
3. GHD agrees that warning clauses be included in agreements of purchase and sale and in documents registered on Title, advising prospective buyers of the presence of a sewage treatment plant in the area, and possible presence of related odours.
4. GHD concurs with the conclusion that the estimated noise impacts from the WWTP at the proposed development areas are likely below the applicable Class 2 MECP noise limits during the daytime and night-time hours without the need for any noise mitigation based on our experience with similar Facilities.

   However, the Study has not provided sufficient evidence or analysis to definitively conclude there are no land use compatibility issues associated with this proposed Development.
5. The noise portion of the Study should be amended to include a written statement documenting that WWTP Facility staff confirmed the noise measurements that were taken on the day of sampling are representative of a typical period of operations or predictable worst-case. Otherwise, the noise measurements taken are only representative of that brief moment in time (<1min) which may not be reflective of typical on-site activities such as liquid tanker trucks off-loading material via truck mounted blower systems, emergency generator testing, HVAC units in operation and process equipment/stacks venting to atmosphere.
6. The provided field noise measurements taken at the NE corner of the proposed development as well as the SW corner of the WWTP may have been shielded by the onsite WWTP building and not representative of the 2nd floor windows exposure of the proposed development which would have line of sight and exposure to the aeration motors and Facility process equipment.

   GHD recommends that the noise portion of the Study provide comment on if these measurements are appropriate and representative of the Developments worst-case exposure.
7. GHD recommends that the noise portion of the Study be updated to include a detailed noise impact assessment with regards stationary noise sources (rooftop equipment, process stacks, emergency generators, solids unloading PTO blower truck, on site truck volumes etc.). Partial noise levels from actual or estimate individual equipment/operations should be evaluated logarithmically and/or added to the field noise measurements if they are valid and representative to obtain a site wide noise impact Leq for comparison to the noise limits.

   Please provide a summary noise table of partial levels for each piece of WWTP equipment/operation to supplement or added to the field measurements documenting compliance with NPC-300 criteria.

Should you have any questions on the above, please do not hesitate to contact us.

Regards

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Encl.

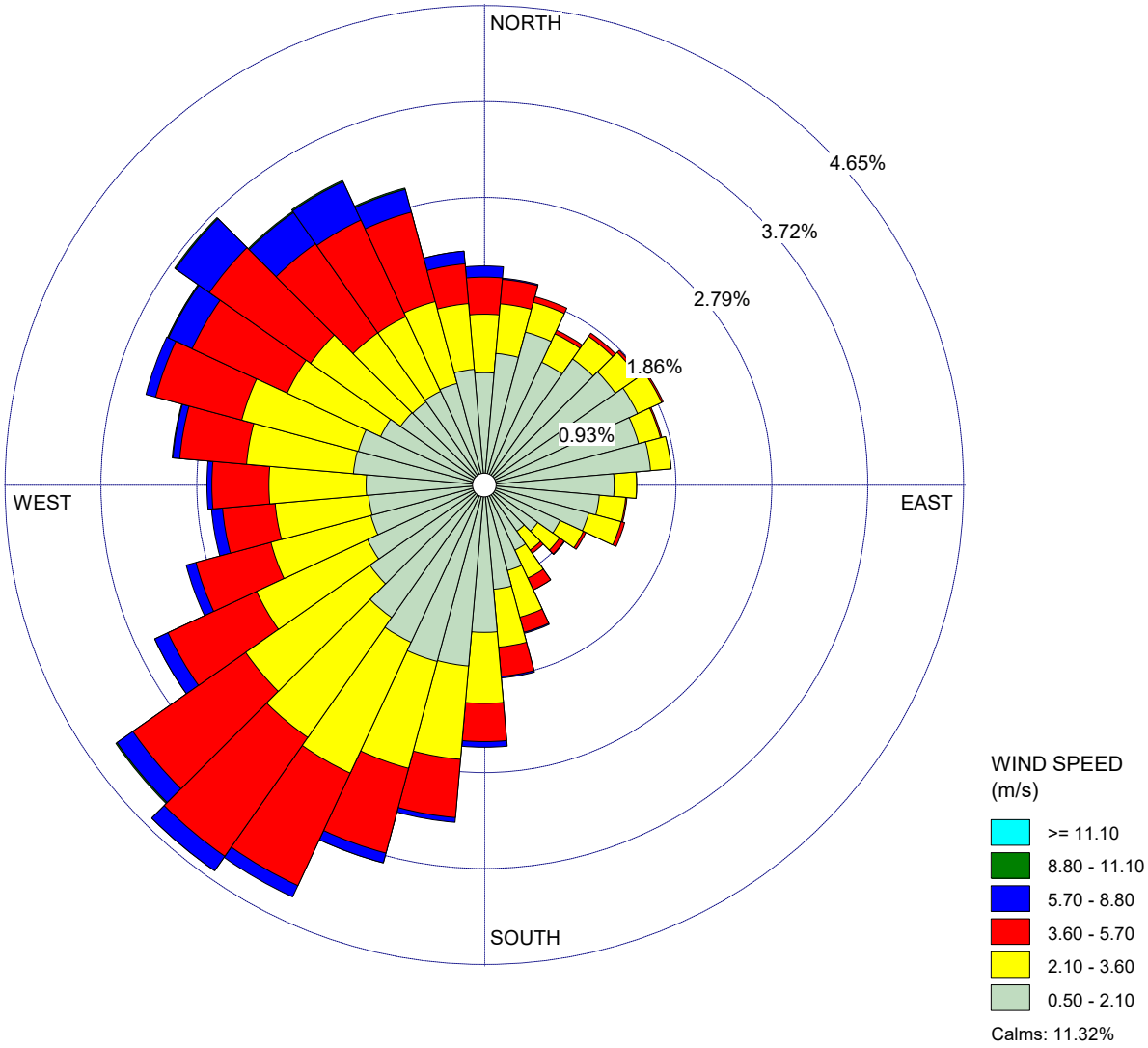
Attachment 1

WIND ROSE PLOT:

DELHI CS 2018-2022
Station 27528

DISPLAY:

Wind Speed
Direction (blowing from)



COMMENTS:	DATA PERIOD:	COMPANY NAME:	
	Start Date: 1/1/2018 - 00:00 **End Date: 12/31/2022 - 23:00**	**GHD Ltd.**	
	CALM WINDS:	TOTAL COUNT:	
	11.32%	**43688 hrs.**	
	AVG. WIND SPEED:	DATE:	PROJECT NO.:
	2.17 m/s	**3/3/2023**	

Government of Canada / Gouvernement du Canada

Hourly Data Report for August 03, 2022

If selected Local Standard Time (LST), add 1 hour to adjust for Daylight Saving Time where and when it is observed.

DELHI CS
ONTARIO
Current Station Operator: ECCC - MSC

Latitude:	42°52'00.000" N
Longitude:	80°33'00.000" W
Elevation:	231.70 m
Climate ID:	6131983
WMO ID:	71573
TC ID:	XDI

TIME LST	Temp °C	Dew Point °C	Rel Hum %	Precip. Amount mm	Wind Dir 10's deg	Wind Spd km/h	Visibility km	Stn Press kPa	Hmdx	Wind Chill	Weather
00:00	14.5	13.4	93	0.0		0		98.81			NA
01:00	14.1	13.2	94	0.0	0	1		98.74			NA
02:00	13.9	13.3	96	0.0	16	2		98.68			NA
03:00	12.9	12.3	96	0.0	28	2		98.73			NA
04:00	13.1	12.5	96	0.0	0	1		98.69			NA
05:00	12.3	11.7	96	0.0	29	3		98.67			NA
06:00	13.8	13.3	97	0.0	11	2		98.67			NA
07:00	18.1	16.4	90	0.0	18	6		98.69			NA
08:00	21.4	18.6	84	0.0	20	11		98.70	28		NA
09:00	22.7	17.4	72	0.0	21	13		98.67	28		NA
10:00	24.2	18.6	71	0.0	19	12		98.63	31		NA
11:00	25.6	19.5	69	0.0	19	15		98.58	33		NA
12:00	26.4	20.4	70	0.0	21	20		98.54	34		NA
13:00	26.3	18.4	62	0.0	23	17		98.50	33		NA
14:00	27.2	17.5	55	0.0	22	14		98.42	33		NA
15:00	29.4	17.6	49	0.0	21	19		98.38	35		NA
16:00	29.8	18.7	51	0.0	23	16		98.32	36		NA
17:00	28.8	18.3	53	0.0	23	14		98.41	35		NA
18:00	27.5	19.2	61	0.0	22	6		98.43	34		NA
19:00	22.5	18.8	80	0.0	33	18		98.73	29		NA
20:00	21.1	19.6	91	0.0	2	5		98.61	28		NA
21:00	20.7	20.0	96	3.5	16	2		98.64	28		NA

TIME LST	Temp °C	Dew Point °C	Rel Hum %	Precip. Amount mm	Wind Dir 10's deg	Wind Spd km/h	Visibility km	Stn Press kPa	Hmdx	Wind Chill	Weather
22:00	20.7	20.1	96	2.3	18	6		98.59	**28**		NA
23:00	20.5	19.8	96	0.0	19	7		98.64	**28**		NA

Legend

- E = Estimated
- M = Missing
- NA = Not Available*
- [empty] = Indicates an unobserved value

Date modified:

2023-01-31

ACOUSTIC ASSESSMENT REPORT

Is Support of
D-2 COMPATIBILITY ASSESSMENT

38 New Lake Shore Road, Port Dover ON

July 31, 2023

Prepared for:

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Project 1085

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EXECUTIVE SUMMARY

This updated acoustic assessment report has been prepared to support the Ramhams Investments Inc D-2 Land Use Compatibility Assessment for the proposed development at 38 New Lake Shore Road, Port Dover ON (subject property).

The subject property is located to the east of residential town houses located on New Lake Shore Road and north west of residential town houses located on Brown St.

The purpose of this assessment is to determine if the Port Dover Wastewater Treatment Plant (WWTP) potential current noise emissions might adversely impact the subject property sensitive land uses .

Wastewater treatment plant site significant noise sources included two lab HVAC units, one Lab vent, the Primary building HVAC and two vents, Sewage treatment truck pump, Sewage truck idling and driving movements around the ring road, the clarifier AMU, four aerated lagoon blowers, and an emergency generator combustion exhaust and fan. The sound pressure levels at all receptors reported as part of the acoustic assessment represent worst-case impacts assuming all significant sound sources are operating simultaneously and continuously, within their respective operating period.

These potential sounds are conservative as the WWTP expansion will remove all mechanical aerated lagoon blowers. We have also conservatively assumed road access from New Lakeshore however actual road access is from the north along Highway 6. The worst case noise scenario could only occur approximately three times per year based on digested sludge transfer operations occurring infrequently throughout the year.

Points of Reception (POR) are identified as first floor façade/outdoor living areas and second floor facades at the subject property.

The calculated sound levels at the receptors indicate receptors are not being impacted by the conservative proposed Port Dover Wastewater Treatment Plant noise sources and operations at the outdoor receptors and first floor facades. Sound levels are slightly above daytime limits during the day at potential second floor facades.

In our professional opinion, the sound pressure level at each receptor reported as part of the acoustic assessment represents the worst-case impact assuming all significant sound sources are operating at their maximum rated capacities, simultaneously during the daytime, evening

and nighttime, and will not impose sound levels that will adversely impact the proposed development at 38 New Lake Shore Road, Port Dover ON.

1.0 INTRODUCTION

This updated acoustic assessment report has been prepared to support the Ramhams Investments Inc D-2 Land Use Compatibility Assessment for the proposed development at 38 New Lake Shore Road, Port Dover ON (subject property).

The subject property is located to the east of residential town houses located on New Lake Shore Road and north west of residential town houses located on Brown St. Directly to the east of the subject property is open space undeveloped field. North of the subject property, north of New Lake Shore Road is Norfolk County Kinsmen Park (ball diamonds, dog park, etc.).

The purpose of this assessment is to determine if the Port Dover Wastewater Treatment Plant (WWTP) potential noise emissions might adversely impact the subject property sensitive land uses .

The following drawings and plans are in Appendix A of this document:

- Site Location (Figure 1)
- Land Use Zoning Designation Plan (Figure 2)
- Noise Source Locations (Figure E)
- POR Location (Figure 4)

2.0 FACILITY DESCRIPTION

The subject property is a proposed development at 38 New Lake Shore Road, Port Dover ON (subject property). It is located to the east of residential town houses located on New Lake Shore Road and north west of residential town houses located on Brown St. Directly to the east of the subject property is open space undeveloped field. North of the subject property, north of New Lake Shore Road is Norfolk County Kinsmen Park (ball diamonds, dog park).

The WWTP facility has the capability to operate twenty-four hours per day, seven days per week. The significant noise sources and their respective operating periods and sound sequences are outlined in Table 1 below.

Table 1: WWTP Sound Source Overview

Source ID	Description	Expected Operating Period	Sound Sequence
OLHVAC1	Office Lab HVAC	24 hrs	Continuous during day/eve, at 50% operation during the night.
OLHVAC2	Office Lab HVAC	24 hrs	Continuous during day/eve, at 50% operation during the night.
OLV	Office Lab Vent	24 hrs	Continuous
PBHVAC	Primary Bldg HVAC	24 hrs	Continuous during day/eve, at 50% operation during the night.
PBV1	Primary Bldg Vent 1	24 hrs	Continuous
PBV2	Primary Bldg Vent 2	24 hrs	10 min 3 x per hour
STP	Sewage Truck Pump	7 am - 7 pm M-F	3 trucks per hour
STR	Sewage Truck Idle	7 am - 7 pm M-F	60 min per hour
STRM	Sewage Truck Movements	7 am - 7 pm M-F	1 truck per hour
DSTP	Digested Sludge Transfer Pump	7 am - 7 pm M-F	Continuous (likely occurs 3 times per year)
DTRM	Digester Truck Movements	7 am - 7 pm M-F	Continuous (likely occurs 3 times per year)
CAMU	Clarifier AMU	24 hrs	Continuous
ALB1-4	Aerated lagoon blower	24 hrs	Continuous
EGEN_CE	Emergency Generator - Combustion Exhaust	7 am - 7 pm M-F	Up to 1 hr per day for maintenance testing.
EGEN_EF	Emergency Generator - Exhaust Fan	7 am - 7 pm M-F	Up to 1 hr per day for maintenance testing.

A site drawing identifying the location of significant noise sources can be found in Figure E, Appendix A.

3.0 NOISE SOURCE SUMMARY

Significant sources at the WWTP facility include two lab HVAC units, one Lab vent, the Primary building HVAC and two vents, Sewage treatment truck pump, Sewage truck idling and driving movements around the ring road, the clarifier AMU, four aerated lagoon blowers, and an emergency generator combustion exhaust and fan.

Sound levels, specific operating times and justification for assumptions are provided int Table 2 for each source type.

Table 2: Noise Source Summary Table

Source ID	Source Description	Sound Power Level (dBA)	Source Location[1]	Sound Characteristics[2]	Noise Control Measures[3]
OLHVAC1	Office Lab HVAC	87	O	S	U
OLHVAC2	Office Lab HVAC	87	O	S	U
OLV	Office Lab Vent	79	O	S	U
PBHVAC	Primary Bldg HVAC	87	O	S	U
PBV1	Primary Bldg Vent 1	79	O	S	U
PBV2	Primary Bldg Vent 2	79	O	S	U
STP	Sewage Truck Pump	107	O	S	U
STR	Sewage Truck Idle	96	O	S	U
STRM	Sewage Truck Movements	105	O	S	U
DSTP	Digested Sludge Transfer Pump	109	O	O	U
DTRM	Digester Truck Movements	105	O	O	U
CAMU	Clarifier AMU	95	O	O	U
ALB1-4	Aerated lagoon blower	101	O	S	U
EGEN_CE	Emergency Generator - Combustion Exhaust	98	O	S, O	U
EGEN_EF	Emergency Generator - Exhaust Fan	98	I	S,O	U

[1] O: located/installed outside the building, including on the roof
I: located/installed inside the building

[2] S: Steady
Q: Quasi Steady Impulsive
I: Impulsive
B: Buzzing
T: Tonal
C: Cyclic

[3] S: silencer, acoustic louvre, muffler
A: acoustic lining, plenum
B: barrier, berm, screening
L: lagging
E: acoustic enclosure
O: other
U: uncontrolled

4.0 POINT OF RECEPTION SUMMARY

Three Points of Reception (POR) are identified in the vicinity of the facility. The nearest sensitive receptors are residences ranging from one to two storeys W of the facility.

Unit	POR	Description	Location
1	POR1_F2a	Unit 1 - 2nd Storey Façade to North	new development unit to southwest
	POR1_F2b	Unit 1 - 2nd Storey Façade to East	new development unit to southwest
	POR1_OLA	Unit 1 - Outdoor Living Area	new development unit to southwest
20	POR20_F2	Unit 20 - 2nd Storey Façade	new development unit to southwest
23	POR23_F2a	Unit 23 - 2nd Storey Façade to North	new development unit to southwest
	POR23_F2b	Unit 23 - 2nd Storey Façade to East	new development unit to southwest
	POR23_OLA	Unit 23 - Outdoor Living Area	new development unit to southwest
24	POR24_F2a	Unit 24 - 2nd Storey Façade to North	new development unit to southwest
	POR24_F2b	Unit 24 - 2nd Storey Façade to East	new development unit to southwest
25	POR25_F2	Unit 25 - 2nd Storey Façade	new development unit to southwest

All POR are located within a Class 2 area.

A Class 2 Area designation was selected since the WWTP facility and all points of reception border the WWTP, residential and recreational areas and some green space areas on the edge of Highway 6.

The sound levels as indicated in Table 3a and 3b are predicted sound levels at the receptor location calculated using CadnaA Version 4.3.143 and based on the point source sound levels given in Table 2.

Evening impacts are similar to the nighttime impacts in table 3b.

Spectrum breakdowns for each source, as used in CadnaA are included in Appendix B.

Table 3a: Point of Reception Noise Impact Table - Daytime

Source ID	Source Description	POR1_F2a		POR1_F2b		POR1_OLA		POR20_F2		POR23_F2a		POR23_F2b		POR23_OLA		POR24_F2a		POR24_F2b		POR25_F2	
		Distance to POR (m)	Sound Level at POR (dBA)	Distance to POR (m)	Sound Level at POR (dBA)	Distance to POR (m)	Sound Level at POR (dBA)	Distance to POR (m)	Sound Level at POR (dBA)	Distance to POR (m)	Sound Level at POR (dBA)	Distance to POR (m)	Sound Level at POR (dBA)	Distance to POR (m)	Sound Level at POR (dBA)	Distance to POR (m)	Sound Level at POR (dBA)	Distance to POR (m)	Sound Level at POR (dBA)	Distance to POR (m)	Sound Level at POR (dBA)
ALB1	Aerated Lagoon Blower	206	36	207	37	202	33	233	35	217	37	218	34	233	28	240	30	241	30	251	29
ALB2	Aerated Lagoon Blower	214	36	214	37	210	32	240	36	223	35	224	32	238	23	246	25	246	24	256	24
ALB3	Aerated Lagoon Blower	200	36	201	37	196	32	226	36	209	35	210	32	225	27	233	30	233	29	243	24
ALB4	Aerated Lagoon Blower	208	36	208	36	204	32	233	36	215	33	216	24	231	21	238	24	238	23	248	23
CAMU	Clarifier AMU	235	33	236	33	231	34	263	32	248	33	249	33	265	31	272	32	273	32	283	32
PBV1	Primary Building Vent 1	168	24	167	24	165	24	184	23	161	24	161	25	172	22	180	23	180	23	188	22
PBV2	Primary Building Vent 2	156	26	156	26	153	26	173	25	151	26	151	26	162	24	170	25	170	25	178	25
PBHVAC	Primary Building HVAC	170	18	169	21	167	17	188	20	166	22	167	22	179	20	186	21	186	21	195	21
OLHVAC1	Office Lab HVAC	124	35	123	34	120	34	144	33	125	34	125	34	139	32	147	32	147	32	157	32
OLHVAC2	Office Lab HVAC	115	30	115	30	112	30	137	27	118	28	119	28	134	25	141	26	142	26	152	25
OLV	Office Lab Vent	114	28	113	29	110	27	135	26	116	27	117	27	132	25	139	25	140	25	150	24
DSTP	Digested Solids Transfer Pump	140	45	140	46	135	44	168	46	155	51	157	50	173	48	180	49	181	53	192	53
DTR	Digester Truck Idle	141	36	142	36	137	32	170	34	158	34	159	33	176	29	183	32	185	32	196	31
STP	Sewage Truck Pump	158	42	157	42	155	41	172	42	149	43	149	43	159	39	167	41	166	40	174	40

STR	Sewage Truck Idle	156	38	155	38	153	38	170	36	147	37	146	39	157	34	164	37	164	37	172	39
EGEN_CE	Generator Combustion Exhaust Stack	128	46	128	46	125	46	148	44	128	46	129	46	142	43	150	44	150	44	160	43
EGEN_EF	Generator Exhaust Fan	130	32	129	32	127	32	149	31	129	33	129	33	143	32	150	33	150	33	160	33
DTRM	Digester Truck Movements	Varies	35	Varies	35	Varies	35	Varies	33	Varies	35	Varies	34	Varies	33	Varies	32	Varies	33	Varies	32
STRM	Sewage Truck Movements	Varies	34	Varies	34	Varies	34	Varies	33	Varies	35	Varies	35	Varies	33	Varies	33	Varies	33	Varies	33

Table 3b: Point of Reception Noise Impact Table - Night

Source ID	Source Description	POR1_F2a		POR1_F2b		POR1_OLA		POR20_F2		POR23_F2a		POR23_F2b		POR23_OLA		POR24_F2a		POR24_F2b		POR25_F2	
		Distance to POR (m)	Sound Level at POR (dBA)	Distance to POR (m)	Sound Level at POR (dBA)	Distance to POR (m)	Sound Level at POR (dBA)	Distance to POR (m)	Sound Level at POR (dBA)	Distance to POR (m)	Sound Level at POR (dBA)	Distance to POR (m)	Sound Level at POR (dBA)	Distance to POR (m)	Sound Level at POR (dBA)	Distance to POR (m)	Sound Level at POR (dBA)	Distance to POR (m)	Sound Level at POR (dBA)	Distance to POR (m)	Sound Level at POR (dBA)
ALB1	Aerated Lagoon Blower	206	36	207	37	202	33	233	35	217	37	218	34	233	28	240	30	241	30	251	29
ALB2	Aerated Lagoon Blower	214	36	214	37	210	32	240	36	223	35	224	32	238	23	246	25	246	24	256	24
ALB3	Aerated Lagoon Blower	200	36	201	37	196	32	226	36	209	35	210	32	225	27	233	30	233	29	243	24
ALB4	Aerated Lagoon Blower	208	36	208	36	204	32	233	36	215	33	216	24	231	21	238	24	238	23	248	23
CAMU	Clarifier AMU	235	33	236	33	231	34	263	32	248	33	249	33	265	31	272	32	273	32	283	32
PBV1	Primary Building Vent 1	168	24	167	24	165	24	184	23	161	24	161	25	172	22	180	23	180	23	188	22
PBV2	Primary Building Vent 2	156	26	156	26	153	26	173	25	151	26	151	26	162	24	170	25	170	25	178	25
PBHVAC	Primary Building HVAC	170	15	169	18	167	14	188	17	166	19	167	19	179	17	186	18	186	18	195	18
OLHVAC1	Office Lab HVAC	124	31	123	31	120	31	144	30	125	31	125	31	139	29	147	29	147	29	157	29
OLHVAC2	Office Lab HVAC	115	27	115	27	112	27	137	24	118	25	119	25	134	22	141	23	142	23	152	22
OLV	Office Lab Vent	114	0	113	0	110	0	135	0	116	0	117	0	132	0	139	0	140	0	150	0
DSTP	Digested Solids Transfer Pump	140	0	140	0	135	0	168	0	155	0	157	0	173	0	180	0	181	0	192	0
DTR	Digester Truck Idle	141	0	142	0	137	0	170	0	158	0	159	0	176	0	183	0	185	0	196	0
STP	Sewage Truck Pump	158	0	157	0	155	0	172	0	149	0	149	0	159	0	167	0	166	0	174	0

STR	Sewage Truck Idle	156	0	155	0	153	0	170	0	147	0	146	0	157	0	164	0	164	0	172	0
EGEN_CE	Generator Combustion Exhaust Stack	128	0	128	0	125	0	148	0	128	0	129	0	142	0	150	0	150	0	160	0
EGEN_EF	Generator Exhaust Fan	130	0	129	0	127	0	149	0	129	0	129	0	143	0	150	0	150	0	160	0
DTRM	Digester Truck Movements	Varies	0	Varies	0	Varies	0	Varies	0	Varies	0	Varies	0	Varies	0	Varies	0	Varies	0	Varies	0
STRM	Sewage Truck Movements	Varies	0	Varies	0	Varies	0	Varies	0	Varies	0	Varies	0	Varies	0	Varies	0	Varies	0	Varies	0

Sound levels identified in Table 3a-b are the predicted sound levels at all receptors, calculated using CadnaA Version 4.3.143 and based on the source sound levels given in Table 2. Equipment sound levels and spectrum breakdowns, as available, are included in Table B.2, Appendix B.

Noise levels at all PORs, as shown in Table 3, were calculated accounting for spherical spreading in a free field from point sources. Modelling considered two orders of reflection, with shielding/reflections afforded by buildings both on and off the subject site. Ground attenuation in the model was set to have a default ground absorption of 1 for soft ground, 0.3 for gravel and 0 for paved/concrete areas around the site. The temperature and relative humidity were assumed to be 10° C and 70%, respectively.

The sound pressure level calculations are based on the International Standards ISO 9613-2:1996 “Acoustics – Attenuation of Sound During Propagation Outdoors – Part 2: General method of calculation” and were determined using CadnaA.

CadnaA input details and output diagrams are included in Appendix C.

5.0 ACOUSTIC ASSESSMENT SUMMARY TABLE

As per NPC-300, the overall resulting performance limit at a point of reception is the greater of either the sound level limit based on the minimum background sound level that occurs or is likely to occur during operation of the source under assessment, or the exclusionary limit.

The acoustical environment surrounding the subject property and the WWTP facility, and each POR, is representative of a Class 2 semi urban area. The performance limits applicable to this assessment are shown in Table 4 and were based on Class 2 Area limits as defined NPC-300.

Table 4: Performance Limits Steady Sources

Time of Day	Class 2 Area	
	Steady Source Limit L_{eq} (dBA)	
	Plane of Window	Outdoor Receptor
07:00-19:00	50	50
19:00-23:00	50	45
23:00-07:00	45	N/A - no criteria for this time period

The overall sound level resulting from the predictable worst-case impacts operating scenario where all significant sound sources are operating at the same time based on their operating sequence for the various points of reception is stated in Table 5.

The sound levels associated with the emergency testing scenario is provided in Table 6.

The sound level calculated at each POR is compared to the daytime, evening, and night-time performance criteria for the worst-case impact scenario assuming all significant sound sources are operating simultaneously, during their respective operating sequence.

Table 5: Noise Assessment Summary Table

Point of Reception ID	Point of Reception Description	Time of Day	Sound Pressure Level at POR dBA (Leq)	Verified by Acoustic Audit (Yes/No)	Performance Limit dBA (Leq)	Class Number	Compliance with Performance Limit (Yes/No)
POR1_F2a	Unit 1 - 2nd Storey Façade to North	Day	49	No	50	2	Yes
		Eve	44	No	50	2	Yes
		Night	43	No	45	2	Yes
POR1_F2b	Unit 1 - 2nd Storey Façade to East	Day	50	No	50	2	Yes
		Eve	44	No	50	2	Yes
		Night	44	No	45	2	Yes
POR1_OLA	Unit 1 - Outdoor Living Area	Day	48	No	50	2	Yes
		Eve	41	No	45	2	Yes
		Night	41	No	n/a	2	Yes
POR20_F2	Unit 20 - 2nd Storey Façade	Day	49	No	50	2	Yes
		Eve	43	No	50	2	Yes
		Night	43	No	45	2	Yes
POR23_F2a	Unit 23 - 2nd Storey Façade to North	Day	52	No	50	2	**No**
		Eve	43	No	50	2	Yes
		Night	43	No	45	2	Yes
POR23_F2b	Unit 23 - 2nd Storey Façade to East	Day	52	No	50	2	**No**
		Eve	41	No	50	2	Yes
		Night	40	No	45	2	Yes
POR23_OLA	Unit 23 - Outdoor Living Area	Day	50	No	50	2	Yes
		Eve	37	No	45	2	Yes
		Night	36	No	n/a	2	Yes
POR24_F2a	Unit 24 - 2nd Storey	Day	51	No	50	2	**No**

	Façade to North	Eve	39	No	50	2	Yes
		Night	38	No	45	2	Yes
POR24_F2b	Unit 24 - 2nd Storey Façade to East	Day	54	No	50	2	**No**
		Eve	38	No	50	2	Yes
		Night	37	No	45	2	Yes
POR25_F2	Unit 25 - 2nd Storey Façade	Day	53	No	50	2	**No**
		Eve	37	No	50	2	Yes
		Night	37	No	45	2	Yes

Table 6: Noise Assessment Summary Table – Emergency Generator Testing Scenario

Point of Reception ID	Point of Reception Description	Time of Day	Sound Pressure Level at POR dBA (Leq)	Verified by Acoustic Audit (Yes/No)	Performance Limit dBA (Leq)	Class Number	Compliance with Performance Limit (Yes/No)
POR1_F2a	Unit 1 - 2nd Storey Façade to North	Day	46	No	55	2	Yes
		Eve	--	No	55	2	Yes
		Night	--	No	50	2	Yes
POR1_F2b	Unit 1 - 2nd Storey Façade to East	Day	46	No	55	2	Yes
		Eve	--	No	55	2	Yes
		Night	--	No	50	2	Yes
POR1_OLA	Unit 1 - Outdoor Living Area	Day	46	No	55	2	Yes
		Eve	--	No	50	2	Yes
		Night	--	No	n/a	2	Yes
POR20_F2	Unit 20 - 2nd Storey Façade	Day	45	No	55	2	Yes
		Eve	--	No	55	2	Yes
		Night	--	No	50	2	Yes
POR23_F2a	Unit 23 - 2nd Storey Façade to North	Day	46	No	55	2	Yes
		Eve	--	No	55	2	Yes
		Night	--	No	50	2	Yes
POR23_F2b	Unit 23 - 2nd Storey Façade to East	Day	46	No	55	2	Yes
		Eve	--	No	55	2	Yes
		Night	--	No	50	2	Yes
POR23_OLA	Unit 23 - Outdoor Living Area	Day	44	No	55	2	Yes
		Eve	--	No	50	2	Yes
		Night	--	No	n/a	2	Yes
POR24_F2a	Unit 24 - 2nd Storey	Day	44	No	55	2	Yes

	Façade to North	Eve	--	No	55	2	Yes
		Night	--	No	50	2	Yes
POR24_F2b	Unit 24 - 2nd Storey Façade to East	Day	44	No	55	2	Yes
		Eve	--	No	55	2	Yes
		Night	--	No	50	2	Yes
POR25_F2	Unit 25 - 2nd Storey Façade	Day	44	No	55	2	Yes
		Eve	--	No	55	2	Yes
		Night	--	No	50	2	Yes

6.0 CONCLUSIONS

The sound level calculated at each proposed development subject property receptor is compared to the applicable performance limits defined for the WWTP sound environment surrounding the receptor.

The sound level at each receptor indicates that the receptors are not impacted by the WWTP operations at first floor facade and outdoor living areas points of reception on the proposed development during day, evening and night and meet limits identified in NPC 300.

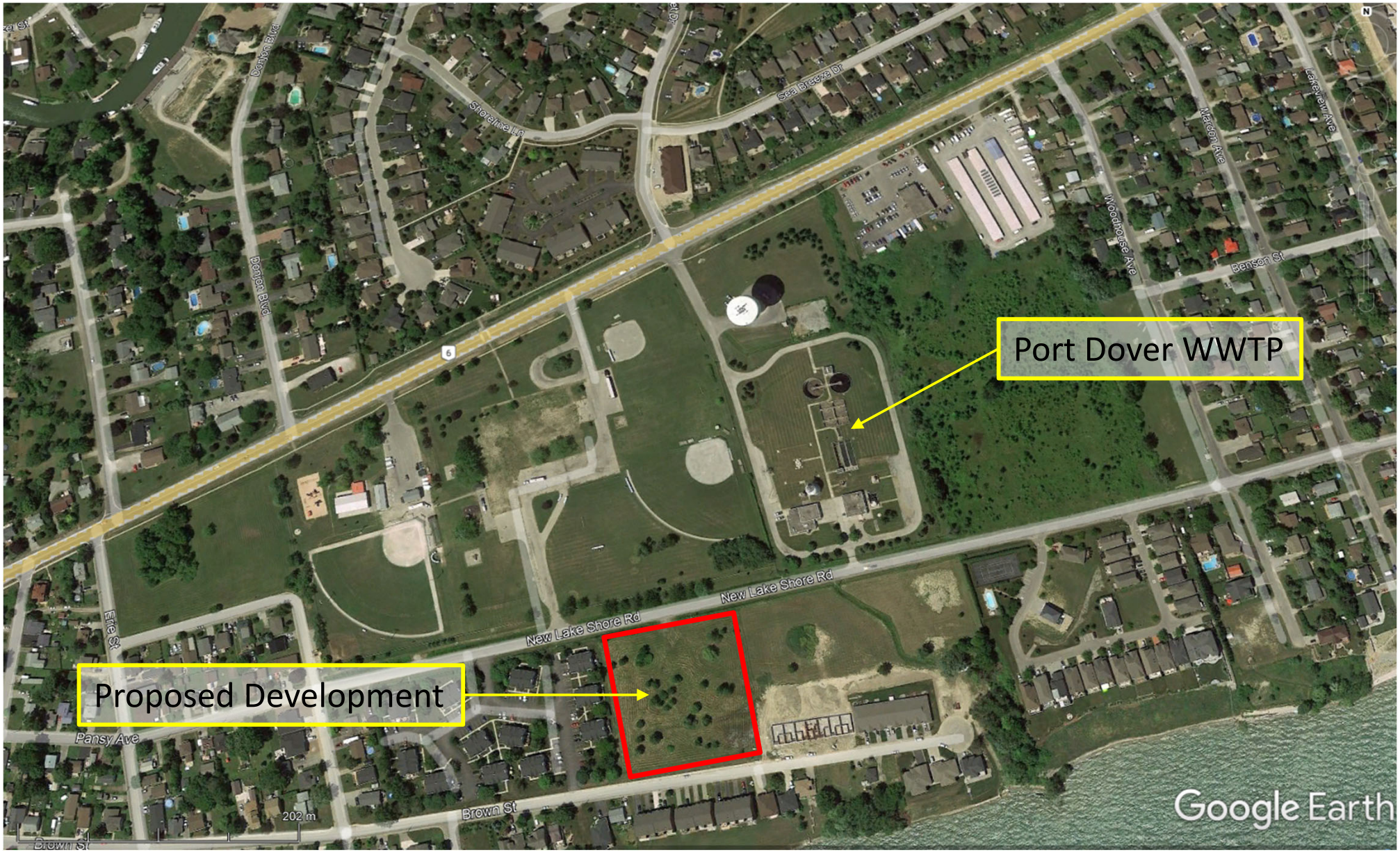
Some second storey potential receptors are predicted to exceed limits by approximately 1-3 dBA. These potential impacts could occur infrequently throughout the year based on digested sludge pumping operations currently only occurring approximately three times per year. Closed windows and provision for climate control in the units will adequately minimize these minor potential impacts.

The WWTP sound sources are conservatively overestimated as the WWTP upgrade will remove all outdoor mechanical aeration sources associate with the lagoons and sound impacts are expected to be lower with the removal of these potential sound sources.

In our professional opinion, the sound pressure level at each receptor reported as part of the acoustic assessment represents the worst-case impact assuming all significant sound sources are operating at their maximum rated capacities, simultaneously during the daytime, evening and nighttime, and will not impose sound levels that will adversely impact the proposed development at 38 New Lake Shore Road, Port Dover ON.

APPENDIX A

FIGURES



Source: Google Earth

Approximate Scale Metres

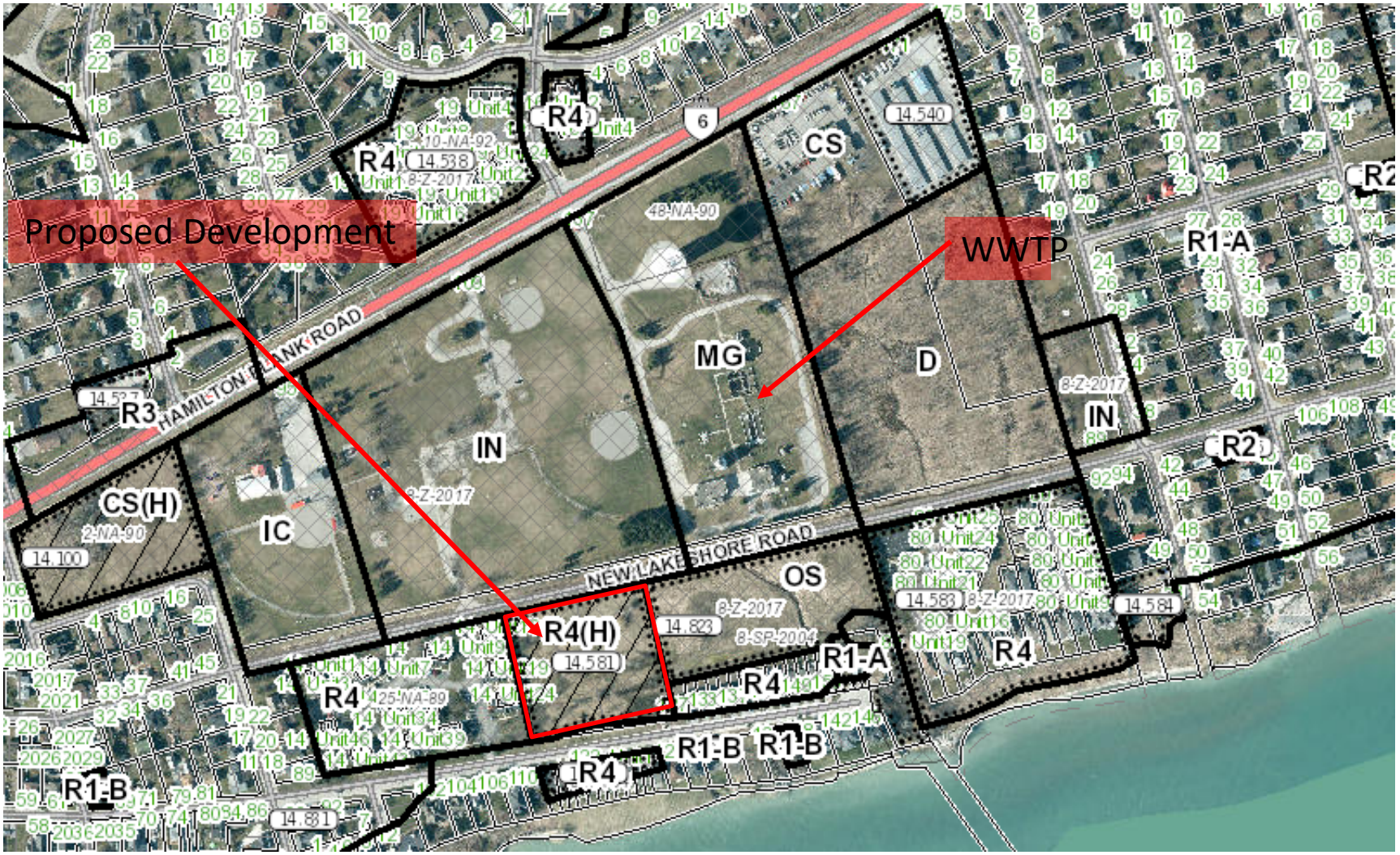
0 200

CCS Engineering Inc.

SITE LOCATION
28 New Lake Shore Road
PORT DOVER, ONTARIO

By: JA	Date: 9 Aug 2022	Project No. 1085

Figure 1



R- Residential, IC – Community Institutional, IN - Neighbourhood Institutional, OS – Open Space, D- Development Zone, MG – General Industrial, CS – service Commercial

Norfolk County Kinsmen Park = IC – Community Institutional and IN - Neighbourhood Institutional. Port Dover WTP = MG – General Industrial

Source: Norfolk County Community Web Map

Approximate Scale 100 m

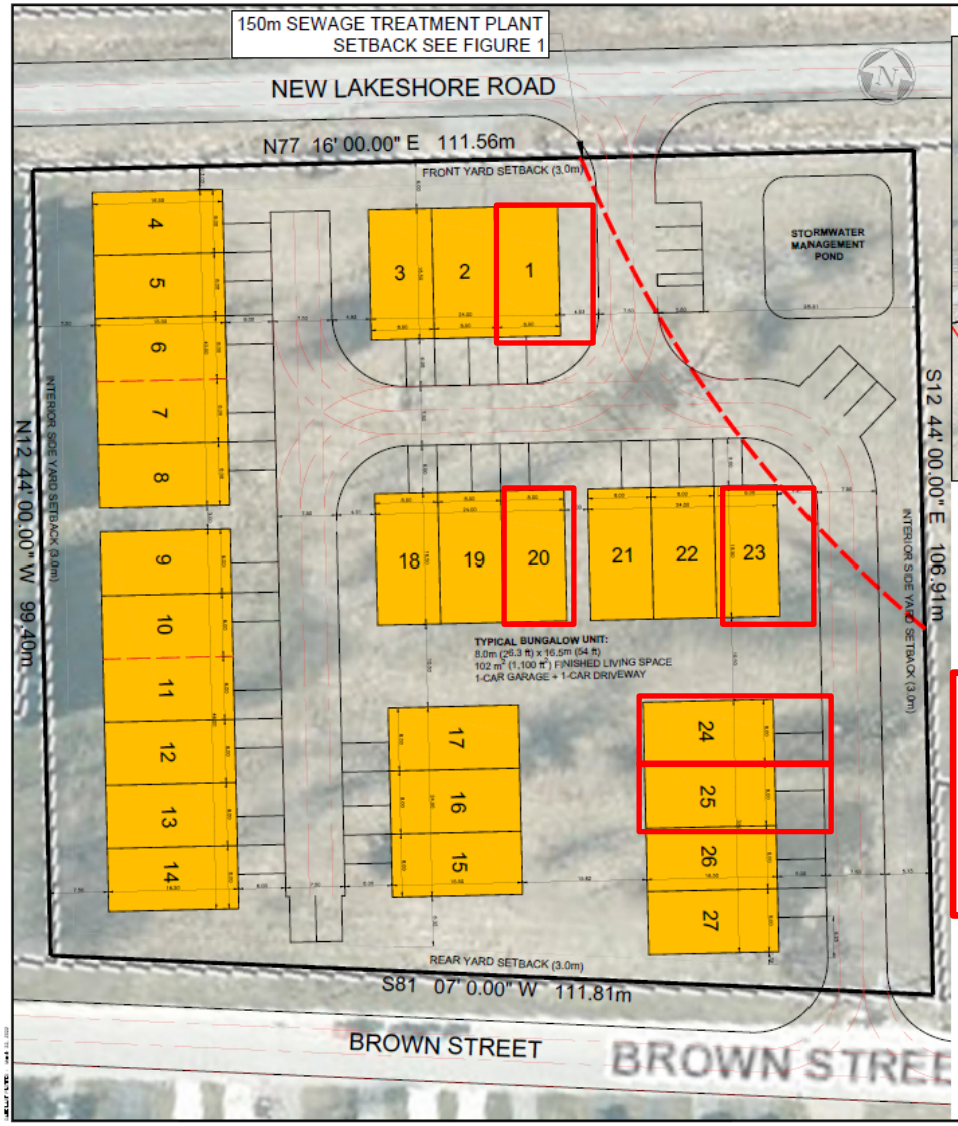
CCS Engineering Inc.

ZONING
28 New Lake Shore Road
PORT DOVER, ONTARIO

By: JA	Date: 9 Aug2022	Project No. 1085

Figure 2


566450
566500
566550
566600
566650
566700
4737750
4737700
4737650
4737600
4737550
CAMU
ALB1
ALB2
ALB3
ALB4
DTRM
DTR
DSTP
PBV2
PBHVAC
PBV1
OLHVAC1
EGEN_CE
EGEN_EF
OLHVAC2
OLV
STP
STR
STRM
Point Source
Line Source
Building
Cylinder
Barrier
Ground Absorption
Receiver
Calculation Area
N
Figure E:
Noise Source Locations
RAMHANS CONDOS
July 2023



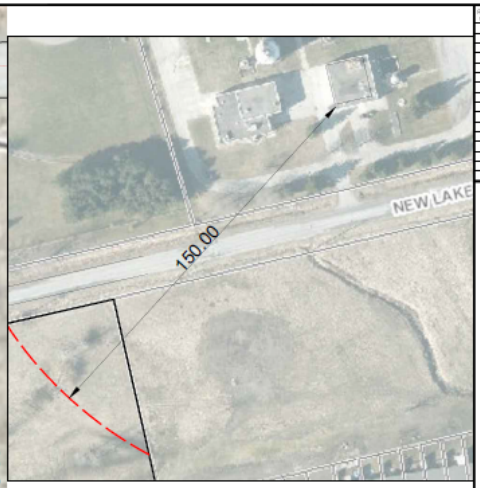


FIGURE 1
150m STP SETBACK
NTS

Unit¤	POR¤	Description¤
1¤	POR1_F2a¤	Unit·1·-·2nd·Storey·Façade·to·North¤
	POR1_F2b¤	Unit·1·-·2nd·Storey·Façade·to·East¤
	POR1_OLA¤	Unit·1·-·Outdoor·Living·Area¤
20¤	POR20_F2¤	Unit·20·-·2nd·Storey·Façade¤
23¤	POR23_F2a¤	Unit·23·-·2nd·Storey·Façade·to·North¤
	POR23_F2b¤	Unit·23·-·2nd·Storey·Façade·to·East¤
	POR23_OLA¤	Unit·23·-·Outdoor·Living·Area¤
24¤	POR24_F2a¤	Unit·24·-·2nd·Storey·Façade·to·North¤
	POR24_F2b¤	Unit·24·-·2nd·Storey·Façade·to·East¤
25¤	POR25_F2¤	Unit·25·-·2nd·Storey·Façade¤

vallee
Consulting Engineers, Architects & Planners
G. DOUGLAS VALLEE LIMITED
2 TALBOT STREET NORTH
SIMCOE, ONTARIO N3Y 3W4
(519) 426-6270

PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION

RAMHANS CONDOS
28 NEW LAKESHORE ROAD
PORT DOVER

PROPOSED SITE PLAN - OPT. 1a

MARCH 29, 2023

1:250

01

22-032

Source: Vallee

Approximate Scale NTS

CCS Engineering Inc.

POR LOCATIONS
28 New Lake Shore Road
PORT DOVER, ONTARIO

By: JA	Date: 31 July 2023	Project No. 1085

Figure 4

APPENDIX B

CALCULATIONS

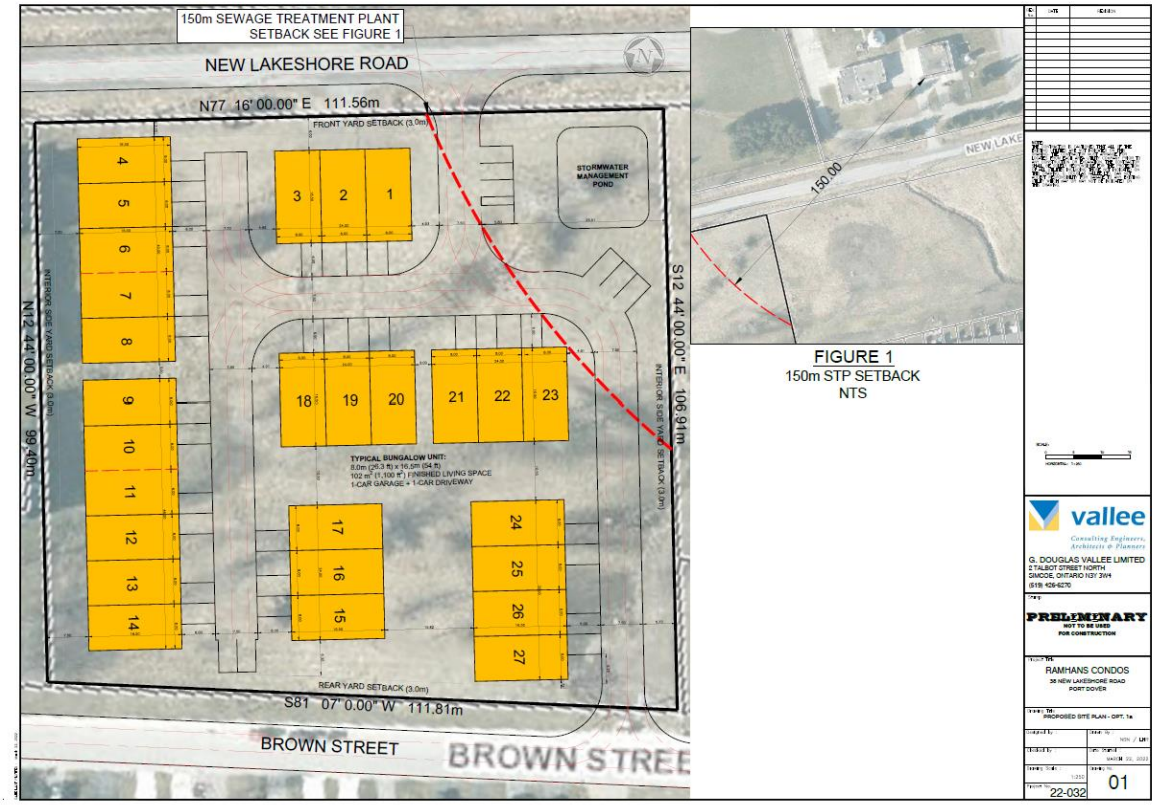
D-2 COMPATIBILITY ASSESSMENT

38 New Lake Shore Road, Port Dover ON

Rev. No.	Date	Revisions Made
1	April 29 2023	Peer review wants AAR with CadnaA
		Conservative as new WWTP upgrades remove aerators with bubble diffuse
		Could add a back up gen behind a building
	Jul-23	Switched small AC units to insignificant
		Only second storey receptors and OLAs evaluated as 2nd storey facades were more impacted than all 1st storey locations.
		Assumed office/lab building has diesel gen or fire water pump based on exterior diesel tank (see note/pic) in images tab.

Layouts


Port Dover WWTP
Proposed Development
Google Earth


150m SEWAGE TREATMENT PLANT
SETBACK SEE FIGURE 1
NEW LAKESHORE ROAD
N77° 16' 00.00" E 111.56m
FRONT YARD SETBACK (3.0m)
STORMWATER MANAGEMENT POND
N12° 44' 00.00" W 99.40m
S12° 44' 00.00" E 106.91m
INTERIOR SIDE YARD SETBACK (3.0m)
TYPICAL BUNGALOW UNIT:
REAR YARD SETBACK (3.0m)
S81° 07' 00.00" W 111.81m
BROWN STREET
150.00
FIGURE 1
150m STP SETBACK
NTS
vallee
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NOT TO BE USED FOR CONSTRUCTION
RAMHANS CONDOS
PROPOSED SITE PLAN - OPT. 1a
22-032
01

office and lab. Two AMU on roof



Primary sludge building where truck will pump sewage into primary receiving. Two pen blowers, one AC, truck blower.



Two clarifiers with mechanical room. One AMU and one AC on roof. Pen blower on grass insignificant.



Aerated lagoons. Four blower/pump motors.



Based on google streetview, fuel tank at office/lab suggests diesel gen may already exist and is internal. Vent in wall may be for heat/air exchange and stack above possibly for combustion exhaust. Gen could be for a fire water pump (fire protection) too. Assumed diesel gen 154 kW (207 hp) Clarke fire water pump for now. See spec under significant source table.



Measurements

lxt 185	94	calibration
lxt 186	114	calibration
lxt 187	46.6	at solids loading rack - no truck - just aerated lagoon blowers
lxt 188	46.4	SW corner - birds, road traffic, nothing from office lab
lxt 189	51.9	SE corner - birds, road traffic, water flow from outfall
lxt 190	57.3	on road looking at aerators



Office and Lab

OLHVAC hvac
OLV1 vent

Primary Bldg

PHVAC 1 hvac
PV1 vent
PV2

PTP1 primary sewage pumping from truck
10 min/hr, 3 per hour

Digester

DT1 Digester truck pump

Aerate Lagoons

ALB1-4 aerator motor

Clarifyer

CAMU1 amu
CAC AC
CV Vent - insignificant - on ground behind structures.

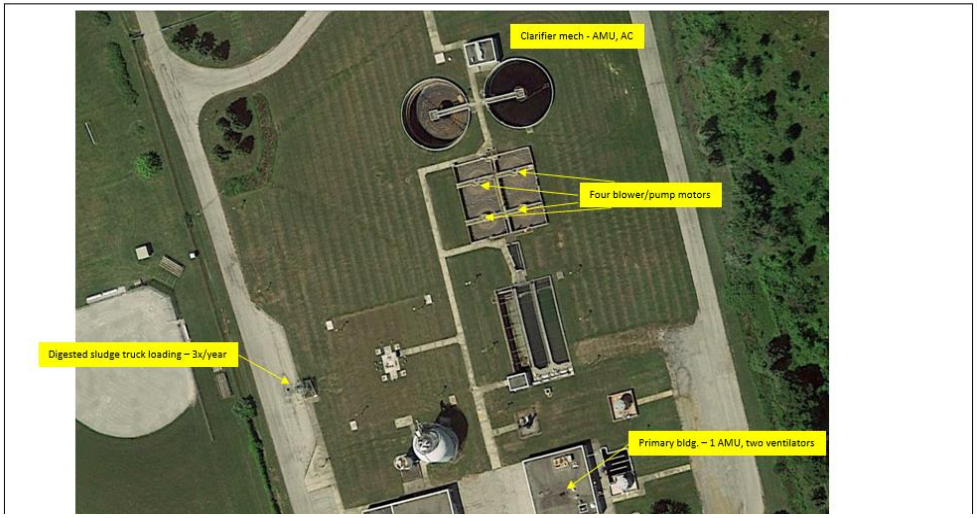


Table B.1: Insignificant Sources

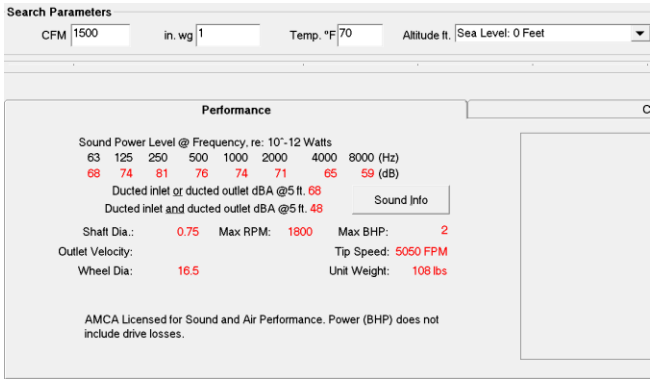
Source ID	Source Description	Rationale
--	Bay door, doors and windows	Not expected to significantly contribute to noise level impacts at receptors. Buildings area enclosed and operate with doors (man, bay) closed.
CV	Clarifier vent	Located on ground behind clarifyer structure and mech building
PBAC	Primary Building AC	Small, residential type AC unit.
CAC	Clarifyer Building AC	Small, split system AC unit.

Table B.2: Source Sound Characteristics

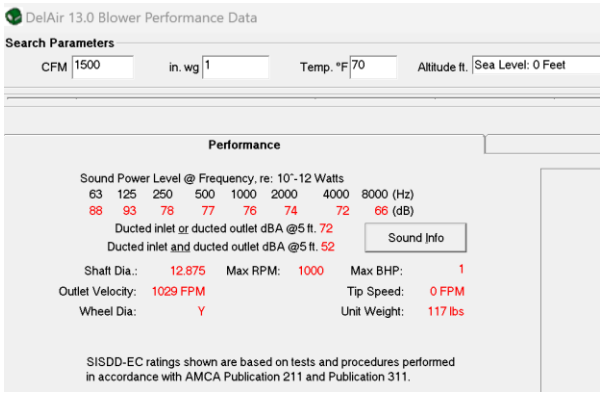
										Octave Band Frequency (Hz)								
Source ID	**Source Description**	**Tonal?**	**Operating Characteristics**	**Source/File**	**Sound Power (dBA)[1]**	**Sphere Partition (%)**	**Source Type/Height**	**Ref. Distance (m)**	**Sound Pressure (dBA)**	**31.5**	**63**	**125**	**250**	**500**	**1000**	**2000**	**4000**	**8000**
OLHVAC1	Office Lab HVAC	N	Continuous	carrier spec, spectrum in Lw, dB	87.1	100%	1 m a.r.				87.0	85.2	84.6	84.9	82.2	78.4	75.3	72.9
OLHVAC2	Office Lab HVAC	N	Continuous	carrier spec, spectrum in Lw, dB	87.1	100%	1 m a.r.				87.0	85.2	84.6	84.9	82.2	78.4	75.3	72.9
OLV	Office Lab Vent	N	Continuous	canarm spec, assumes ducted inlet, nonducted outlet. Spectrum in Lw, dB.	79.2	50%	1 storey roof	1.5	68		68	74	81	76	74	71	65	59
PBHVAC	Primary Bldg HVAC	N	Continuous	carrier spec	87.1	100%	1 m a.r.	--	--		87.0	85.2	84.6	84.9	82.2	78.4	75.3	72.9
PBV1	Primary Bldg Vent 1	N	Continuous	canarm spec, assumes ducted inlet, nonducted outlet. Spectrum in Lw, dB.	79.2	50%	0.5 m a.r.	1.5	68		68	74	81	76	74	71	65	59
PBV2	Primary Bldg Vent 2	N	Continuous	canarm spec, assumes ducted inlet, nonducted outlet. Spectrum in Lw, dB.	79.2	50%	2.5 m a.g.	1.5	68		68	74	81	76	74	71	65	59
STP	Sewage Truck Pump	N	10 min/truck, 3 per hour, daytime only	Estimate per Flo-Fab Spec. Pump size expected to be in 31-50 hp range, 3600 rpm.	107.0	--	1.5 m a.g.	--	--									
STR	Sewage Truck Idle	N	10 min/truck, 3 per hour, daytime only	MECP Truck Idle, Secondary Screening	96.0	--	1.5 m a.g.	--	--									
STRM	Sewage Truck Movements	N	3 per hour during day	CCS Eng. Msmt 016, Feb 2017	104.9	50%	Moving Point Line Source 2.4 m a.g.	5.8	75.7	53.6	59.5	60.8	69.6	72.3	76.8	76.0	73.9	67.3
DSTP	Digested Sludge Transfer Pump	N	60 min/hr, 3x/yr	Estimate per Flo-Fab Spec. Pump size expected to be in 50-100 hp range, 3600 rpm.	109.0	--	1.0 m a.g.	--	--									
DTRM	Digester Truck Movements	N	3 per hour during day	CCS Eng. Msmt 016, Feb 2017	104.9	50%	Moving Point Line Source 2.4 m a.g.	5.8	75.7	53.6	59.5	60.8	69.6	72.3	76.8	76.0	73.9	67.3
CAMU	Clarifier AMU	N	Continuous	canarm spec, spectrum in Lw, dB.	94.5	---	1.0 m a.r.	--	--		88	93	78	77	76	74	72	66

										Octave Band Frequency (Hz)								
Source ID	**Source Description**	**Tonal?**	**Operating Characteristics**	**Source/File**	**Sound Power (dBA)[1]**	**Sphere Partition (%)**	**Source Type/Height**	**Ref. Distance (m)**	**Sound Pressure (dBA)**	**31.5**	**63**	**125**	**250**	**500**	**1000**	**2000**	**4000**	**8000**
ALB1-4	Aerated lagoon blower	No	Continuous	Measurement. File 190. All 4 aerators combined. Split in model at Lw 95.2 dBA for each.	101.2	100%	1.5 m a.g.	44.0	57.3	19.6	29.7	31.6	33.7	45.3	53.1	51.8	50.3	45.9
EGEN_CE	Emergency Generator - Combustion Exhaust	No	Continuous over one daytime hour during testing.	Noise database for 195 kw diesel gen engine exhaust and exhaust fan (conserv). Spectrum in Lp (dBA).	98.2	100%	1.5 m a.r.	10.2	67.1	24.7	46.4	49.1	51.9	60.1	64.0	60.4	52.2	40.0
EGEN_EF	Emergency Generator - Exhaust Fan	No	Continuous over one daytime hour during testing.	Noise database for 195 kw diesel gen engine exhaust and exhaust fan (conserv). Spectrum in Lp (dBA).	98.2	100%	2 m a.g.	10.2	67.1	24.7	46.4	49.1	51.9	60.1	64.0	60.4	52.2	40.0

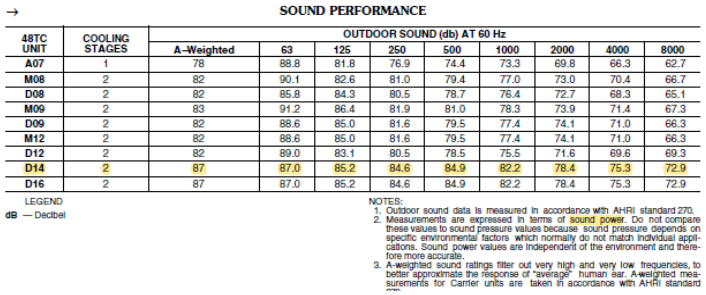
Vents:



Clarifyer AMU



HVAC and AC



SOUND PERFORMANCE

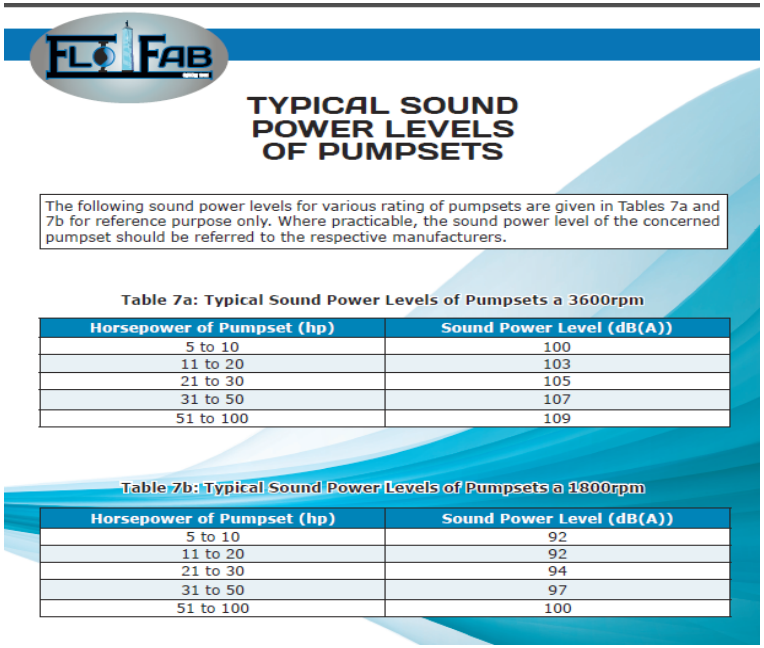
48TC UNIT	COOLING STAGES	OUTDOOR SOUND (db) AT 60 Hz								
		A-Weighted	63	125	250	500	1000	2000	4000	8000
A07	1	78	88.8	81.8	76.9	74.4	73.3	69.8	66.3	62.7
M08	2	82	90.1	82.6	81.0	79.4	77.0	73.0	70.4	66.7
D08	2	82	85.8	84.3	80.5	78.7	76.4	72.7	68.3	65.1
M09	2	83	91.2	86.4	81.9	81.0	78.3	73.9	71.4	67.3
D09	2	82	88.6	85.0	81.6	79.5	77.4	74.1	71.0	66.3
M12	2	82	88.6	85.0	81.6	79.5	77.4	74.1	71.0	66.3
D12	2	82	89.0	83.1	80.5	78.5	75.5	71.6	69.6	69.3
D14	2	87	87.0	85.2	84.6	84.9	82.2	78.4	75.3	72.9
D16	2	87	87.0	85.2	84.6	84.9	82.2	78.4	75.3	72.9

LEGEND
dB — Decibel

NOTES:
1. Outdoor sound data is measured in accordance with AHRI standard 270.
2. Measurements are expressed in terms of sound power. Do not compare these values to sound pressure values because sound pressure depends on specific environmental factors which normally do not match individual applications. Sound power values are independent of the environment and therefore more accurate.
3. A-weighted sound ratings filter out very high and very low frequencies, to better approximate the response of "average" human ear. A-weighted measurements for Carrier units are taken in accordance with AHRI standard

Source ID	Source Description	Tonal?	Operating Characteristics	Source/File	Sound Power (dBA)[1]	Sphere Partition (%)	Source Type/Height	Ref. Distance (m)	Sound Pressure (dBA)	Octave Band Frequency (Hz)								
										31.5	63	125	250	500	1000	2000	4000	8000

For septic/sewage tanker and solids transfer pumps:



TYPICAL SOUND POWER LEVELS OF PUMPSETS

The following sound power levels for various rating of pumpsets are given in Tables 7a and 7b for reference purpose only. Where practicable, the sound power level of the concerned pumpset should be referred to the respective manufacturers.

Table 7a: Typical Sound Power Levels of Pumpsets a 3600rpm

Horsepower of Pumpset (hp)	Sound Power Level (dB(A))
5 to 10	100
11 to 20	103
21 to 30	105
31 to 50	107
51 to 100	109

Table 7b: Typical Sound Power Levels of Pumpsets a 1800rpm

Horsepower of Pumpset (hp)	Sound Power Level (dB(A))
5 to 10	92
11 to 20	92
21 to 30	94
31 to 50	97
51 to 100	100

Unit	POR	Description	Location	
1	POR1_F2a	Unit 1 - 2nd Storey Façade to North	new development unit to southwest	Evaluated at 4.5 m a.g.
	POR1_F2b	Unit 1 - 2nd Storey Façade to East	new development unit to southwest	Evaluated at 4.5 m a.g.
	POR1_OLA	Unit 1 - Outdoor Living Area	new development unit to southwest	Evaluated at 1.5 m a.g.
20	POR20_F2	Unit 20 - 2nd Storey Façade	new development unit to southwest	Evaluated at 4.5 m a.g.
23	POR23_F2a	Unit 23 - 2nd Storey Façade to North	new development unit to southwest	Evaluated at 4.5 m a.g.
	POR23_F2b	Unit 23 - 2nd Storey Façade to East	new development unit to southwest	Evaluated at 4.5 m a.g.
	POR23_OLA	Unit 23 - Outdoor Living Area	new development unit to southwest	Evaluated at 1.5 m a.g.
24	POR24_F2a	Unit 24 - 2nd Storey Façade to North	new development unit to southwest	Evaluated at 4.5 m a.g.
	POR24_F2b	Unit 24 - 2nd Storey Façade to East	new development unit to southwest	Evaluated at 4.5 m a.g.
25	POR25_F2	Unit 25 - 2nd Storey Façade	new development unit to southwest	Evaluated at 4.5 m a.g.

* all 1st storey facades are less impacted than the 2nd storey receptor locations chosen for assessment.

** outdoor living areas are only evaluated if the backyard or sideyard of a proposed residence is located in direct view of the noise sources and are in areas expected to have noise impacts greater than 45 dBA.

*** "a" and "b" notations were added when two facades of the same unit are evaluated that are located in differing cardinal directions. "a" typically refers to the north façade while "b" refers to the east façade.



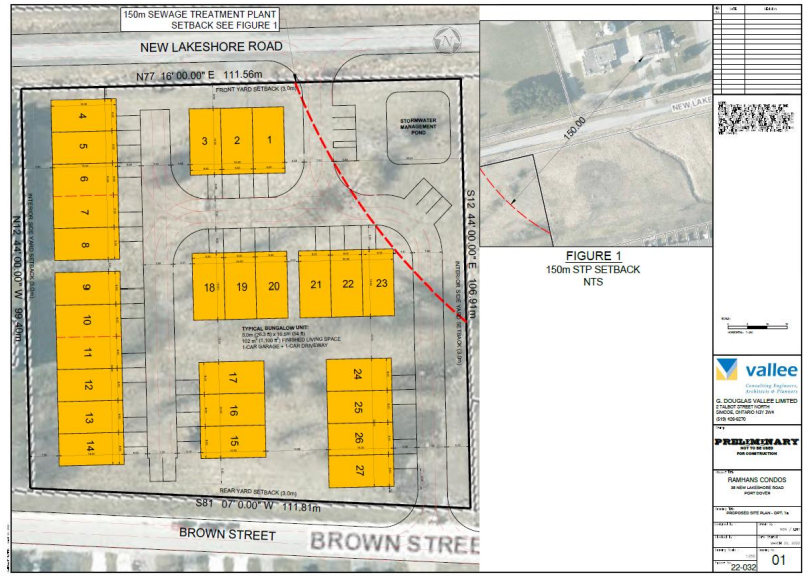


Table 1: Sound Source Overview

Source ID	Description	Expected Operating Period	Sound Sequence
OLHVAC1	Office Lab HVAC	24 hrs	Continuous during day/eve, at 50% operation during the night.
OLHVAC2	Office Lab HVAC	24 hrs	Continuous during day/eve, at 50% operation during the night.
OLV	Office Lab Vent	24 hrs	Continuous
PBHVAC	Primary Bldg HVAC	24 hrs	Continuous during day/eve, at 50% operation during the night.
PBV1	Primary Bldg Vent 1	24 hrs	Continuous
PBV2	Primary Bldg Vent 2	24 hrs	10 min 3 x per hour
STP	Sewage Truck Pump	7 am - 7 pm M-F	3 trucks per hour
STR	Sewage Truck Idle	7 am - 7 pm M-F	60 min per hour
STRM	Sewage Truck Movements	7 am - 7 pm M-F	1 truck per hour
DSTP	Digested Sludge Transfer Pump	7 am - 7 pm M-F	Continuous
DTRM	Digester Truck Movements	7 am - 7 pm M-F	Continuous
CAMU	Clarifier AMU	24 hrs	Continuous
ALB1-4	Aerated lagoon blower	24 hrs	Continuous
EGEN_CE	Emergency Generator - Combustion Exhaust	7 am - 7 pm M-F	Up to 1 hr per day for maintenance testing.
EGEN_EF	Emergency Generator - Exhaust Fan	7 am - 7 pm M-F	Up to 1 hr per day for maintenance testing.

Table 2: Noise Source Summary Table

Source ID	Source Description	Sound Power Level (dBA)	Source Location[1]	Sound Characteristics[2]	Noise Control Measures[3]
OLHVAC1	Office Lab HVAC	87	O	S	U
OLHVAC2	Office Lab HVAC	87	O	S	U
OLV	Office Lab Vent	79	O	S	U
PBHVAC	Primary Bldg HVAC	87	O	S	U
PBV1	Primary Bldg Vent 1	79	O	S	U
PBV2	Primary Bldg Vent 2	79	O	S	U
STP	Sewage Truck Pump	107	O	S	U
STR	Sewage Truck Idle	96	O	S	U
STRM	Sewage Truck Movements	105	O	S	U
DSTP	Digested Sludge Transfer Pump	109	O	O	U
DTRM	Digester Truck Movements	105	O	O	U
CAMU	Clarifier AMU	95	O	O	U
ALB1-4	Aerated lagoon blower	101	O	S	U
EGEN_CE	Emergency Generator - Combustion Exhaust	98	O	S, O	U
EGEN_EF	Emergency Generator - Exhaust Fan	98	I	S,O	U

[1] O: located/installed outside the building, including on the roof
I: located/installed inside the building

[2] S: Steady
Q: Quasi Steady Impulsive
I: Impulsive
B: Buzzing
T: Tonal
C: Cyclic
O: Occasional

[3] S: silencer, acoustic louvre, muffler
A: acoustic lining, plenum
B: barrier, berm, screening
L: lagging
E: acoustic enclosure
O: other
U: uncontrolled

Table 3a: Point of Reception Noise Impact Table (Daytime Impacts)

Source ID	Source Description	POR1_F2a		POR1_F2b		POR1_OLA		POR20_F2		POR23_F2a		POR23_F2b		POR23_OLA		POR24_F2a		POR24_F2b		POR25_F2	
		Distance to POR (m)	Sound Level at POR (dBA)	Distance to POR (m)	Sound Level at POR (dBA)	Distance to POR (m)	Sound Level at POR (dBA)	Distance to POR (m)	Sound Level at POR (dBA)	Distance to POR (m)	Sound Level at POR (dBA)	Distance to POR (m)	Sound Level at POR (dBA)	Distance to POR (m)	Sound Level at POR (dBA)	Distance to POR (m)	Sound Level at POR (dBA)	Distance to POR (m)	Sound Level at POR (dBA)	Distance to POR (m)	Sound Level at POR (dBA)
ALB1	Aerated Lagoon Blower	206	36	207	37	202	33	233	35	217	37	218	34	233	28	240	30	241	30	251	29
ALB2	Aerated Lagoon Blower	214	36	214	37	210	32	240	36	223	35	224	32	238	23	246	25	246	24	256	24
ALB3	Aerated Lagoon Blower	200	36	201	37	196	32	226	36	209	35	210	32	225	27	233	30	233	29	243	24
ALB4	Aerated Lagoon Blower	208	36	208	36	204	32	233	36	215	33	216	24	231	21	238	24	238	23	248	23
CAMU	Clarifyer AMU	235	33	236	33	231	34	263	32	248	33	249	33	265	31	272	32	273	32	283	32
PBV1	Primary Building Vent 1	168	24	167	24	165	24	184	23	161	24	161	25	172	22	180	23	180	23	188	22
PBV2	Primary Building Vent 2	156	26	156	26	153	26	173	25	151	26	151	26	162	24	170	25	170	25	178	25
PBHVAC	Primary Building HVAC	170	18	169	21	167	17	188	20	166	22	167	22	179	20	186	21	186	21	195	21
OLHVAC1	Office Lab HVAC	124	35	123	34	120	34	144	33	125	34	125	34	139	32	147	32	147	32	157	32
OLHVAC2	Office Lab HVAC	115	30	115	30	112	30	137	27	118	28	119	28	134	25	141	26	142	26	152	25
OLV	Office Lab Vent	114	28	113	29	110	27	135	26	116	27	117	27	132	25	139	25	140	25	150	24
DSTP	Digested Solids Transfer Pump	140	45	140	46	135	44	168	46	155	51	157	50	173	48	180	49	181	53	192	53
DTR	Digester Truck Idle	141	36	142	36	137	32	170	34	158	34	159	33	176	29	183	32	185	32	196	31
STP	Sewage Truck Pump	158	42	157	42	155	41	172	42	149	43	149	43	159	39	167	41	166	40	174	40
STR	Sewage Truck Idle	156	38	155	38	153	38	170	36	147	37	146	39	157	34	164	37	164	37	172	39
EGEN_CE	Generator Combustion Exhaust Stack	128	46	128	46	125	46	148	44	128	46	129	46	142	43	150	44	150	44	160	43
EGEN_EF	Generator Exhaust Fan	130	32	129	32	127	32	149	31	129	33	129	33	143	32	150	33	150	33	160	33
DTRM	Digester Truck Movements	Varies	35	Varies	35	Varies	35	Varies	33	Varies	35	Varies	34	Varies	33	Varies	32	Varies	33	Varies	32
STRM	Sewage Truck Movements	Varies	34	Varies	34	Varies	34	Varies	33	Varies	35	Varies	35	Varies	33	Varies	33	Varies	33	Varies	33

Table 3b: Point of Reception Noise Impact Table (Night-time Impacts)

Source ID	Source Description	POR1_F2a		POR1_F2b		POR1_OLA		POR20_F2		POR23_F2a		POR23_F2b		POR23_OLA		POR24_F2a		POR24_F2b		POR25_F2	
		Distance to POR (m)	Sound Level at POR (dBA)	Distance to POR (m)	Sound Level at POR (dBA)	Distance to POR (m)	Sound Level at POR (dBA)	Distance to POR (m)	Sound Level at POR (dBA)	Distance to POR (m)	Sound Level at POR (dBA)	Distance to POR (m)	Sound Level at POR (dBA)	Distance to POR (m)	Sound Level at POR (dBA)	Distance to POR (m)	Sound Level at POR (dBA)	Distance to POR (m)	Sound Level at POR (dBA)	Distance to POR (m)	Sound Level at POR (dBA)
ALB1	Aerated Lagoon Blower	206	36	207	37	202	33	233	35	217	37	218	34	233	28	240	30	241	30	251	29
ALB2	Aerated Lagoon Blower	214	36	214	37	210	32	240	36	223	35	224	32	238	23	246	25	246	24	256	24
ALB3	Aerated Lagoon Blower	200	36	201	37	196	32	226	36	209	35	210	32	225	27	233	30	233	29	243	24
ALB4	Aerated Lagoon Blower	208	36	208	36	204	32	233	36	215	33	216	24	231	21	238	24	238	23	248	23
CAMU	Clarifyer AMU	235	33	236	33	231	34	263	32	248	33	249	33	265	31	272	32	273	32	283	32
PBV1	Primary Building Vent 1	168	24	167	24	165	24	184	23	161	24	161	25	172	22	180	23	180	23	188	22
PBV2	Primary Building Vent 2	156	26	156	26	153	26	173	25	151	26	151	26	162	24	170	25	170	25	178	25
PBHVAC	Primary Building HVAC	170	15	169	18	167	14	188	17	166	19	167	19	179	17	186	18	186	18	195	18
OLHVAC1	Office Lab HVAC	124	31	123	31	120	31	144	30	125	31	125	31	139	29	147	29	147	29	157	29
OLHVAC2	Office Lab HVAC	115	27	115	27	112	27	137	24	118	25	119	25	134	22	141	23	142	23	152	22
OLV	Office Lab Vent	114	0	113	0	110	0	135	0	116	0	117	0	132	0	139	0	140	0	150	0
DSTP	Digested Solids Transfer Pump	140	0	140	0	135	0	168	0	155	0	157	0	173	0	180	0	181	0	192	0
DTR	Digester Truck Idle	141	0	142	0	137	0	170	0	158	0	159	0	176	0	183	0	185	0	196	0
STP	Sewage Truck Pump	158	0	157	0	155	0	172	0	149	0	149	0	159	0	167	0	166	0	174	0
STR	Sewage Truck Idle	156	0	155	0	153	0	170	0	147	0	146	0	157	0	164	0	164	0	172	0
EGEN_CE	Generator Combustion Exhaust Stack	128	0	128	0	125	0	148	0	128	0	129	0	142	0	150	0	150	0	160	0
EGEN_EF	Generator Exhaust Fan	130	0	129	0	127	0	149	0	129	0	129	0	143	0	150	0	150	0	160	0
DTRM	Digester Truck Movements	Varies	0	Varies	0	Varies	0	Varies	0	Varies	0	Varies	0	Varies	0	Varies	0	Varies	0	Varies	0
STRM	Sewage Truck Movements	Varies	0	Varies	0	Varies	0	Varies	0	Varies	0	Varies	0	Varies	0	Varies	0	Varies	0	Varies	0

Table 4: Performance Limits

Time Of Day	Class 2 Area	
	Steady Source Limit L_{eq} - (dBA)	
	Plane of Window	Outdoor Receptor
07:00-19:00	50	50
19:00-23:00	50	45
23:00-07:00	45	N/A - no criteria for this time period

Table 5: Acoustic Assessment Summary Table

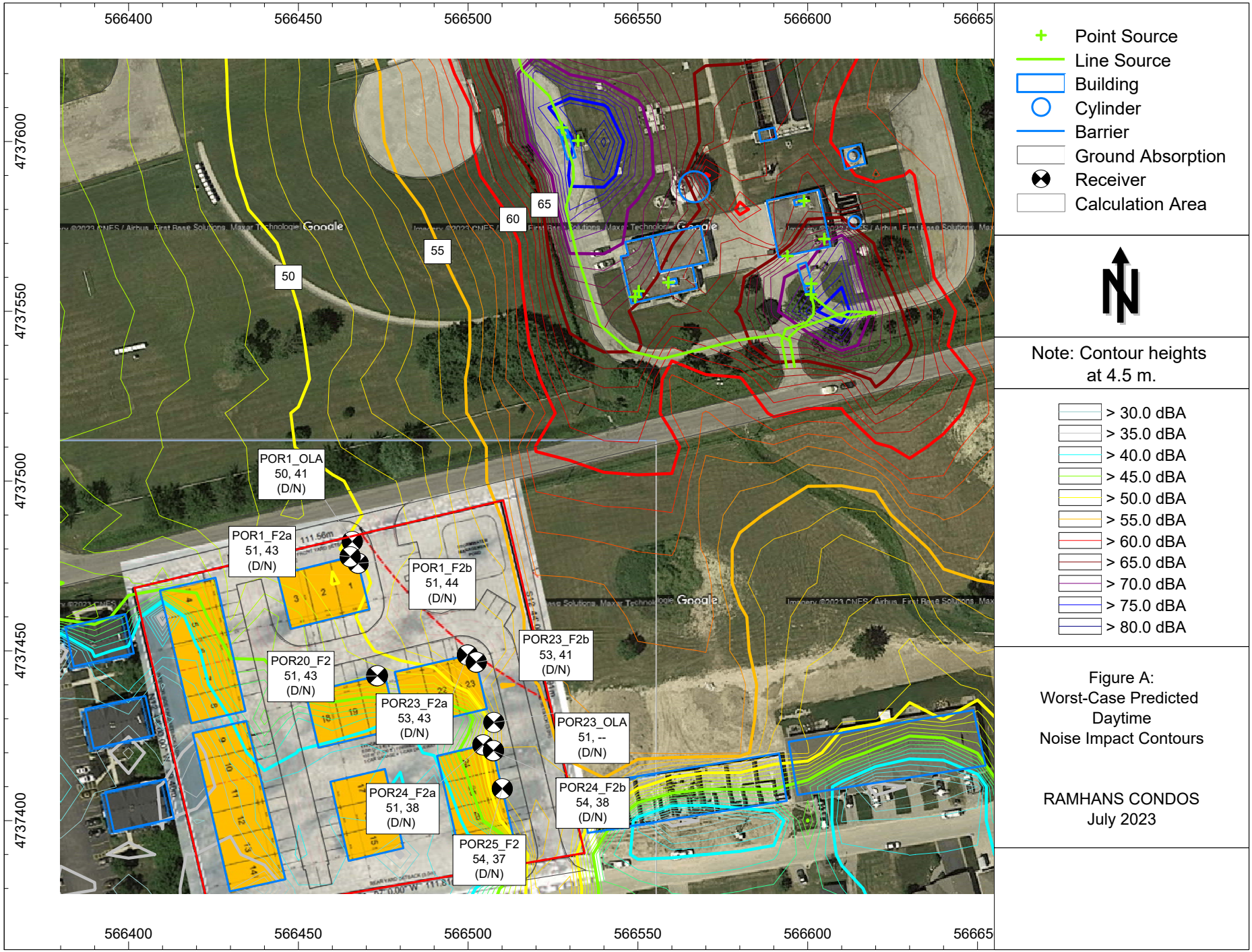
Point of Reception ID	Point of Reception Description	Time of Day	Sound Pressure Level at POR dBA (Leq)	Verified by Acoustic Audit (Yes/No)	Performance Limit dBA (Leq)	Class Number	Compliance with Performance Limit (Yes/No)
POR1_F2a	Unit 1 - 2nd Storey Façade to North	Day	49	No	50	2	Yes
		Eve	44	No	50	2	Yes
		Night	43	No	45	2	Yes
POR1_F2b	Unit 1 - 2nd Storey Façade to East	Day	50	No	50	2	Yes
		Eve	44	No	50	2	Yes
		Night	44	No	45	2	Yes
POR1_OLA	Unit 1 - Outdoor Living Area	Day	48	No	50	2	Yes
		Eve	41	No	45	2	Yes
		Night	41	No	n/a	2	Yes
POR20_F2	Unit 20 - 2nd Storey Façade	Day	49	No	50	2	Yes
		Eve	43	No	50	2	Yes
		Night	43	No	45	2	Yes
POR23_F2a	Unit 23 - 2nd Storey Façade to North	Day	52	No	50	2	**No**
		Eve	43	No	50	2	Yes
		Night	43	No	45	2	Yes
POR23_F2b	Unit 23 - 2nd Storey Façade to East	Day	52	No	50	2	**No**
		Eve	41	No	50	2	Yes
		Night	40	No	45	2	Yes
POR23_OLA	Unit 23 - Outdoor Living Area	Day	50	No	50	2	Yes
		Eve	37	No	45	2	Yes
		Night	36	No	n/a	2	Yes
POR24_F2a	Unit 24 - 2nd Storey Façade to North	Day	51	No	50	2	**No**
		Eve	39	No	50	2	Yes
		Night	38	No	45	2	Yes
POR24_F2b	Unit 24 - 2nd Storey Façade to East	Day	54	No	50	2	**No**
		Eve	38	No	50	2	Yes
		Night	37	No	45	2	Yes
POR25_F2	Unit 25 - 2nd Storey Façade	Day	53	No	50	2	**No**
		Eve	37	No	50	2	Yes
		Night	37	No	45	2	Yes

Table 6: Acoustic Assessment Summary Table - Emergency Generator Testing Scenario

Point of Reception ID	Point of Reception Description	Time of Day	Sound Pressure Level at POR dBA (Leq)	Verified by Acoustic Audit (Yes/No)	Performance Limit dBA (Leq)	Class Number	Compliance with Performance Limit (Yes/No)
POR1_F2a	Unit 1 - 2nd Storey Façade to North	Day	46	No	55	2	Yes
		Eve	--	No	55	2	Yes
		Night	--	No	50	2	Yes
POR1_F2b	Unit 1 - 2nd Storey Façade to East	Day	46	No	55	2	Yes
		Eve	--	No	55	2	Yes
		Night	--	No	50	2	Yes
POR1_OLA	Unit 1 - Outdoor Living Area	Day	46	No	55	2	Yes
		Eve	--	No	50	2	Yes
		Night	--	No	n/a	2	Yes
POR20_F2	Unit 20 - 2nd Storey Façade	Day	45	No	55	2	Yes
		Eve	--	No	55	2	Yes
		Night	--	No	50	2	Yes
POR23_F2a	Unit 23 - 2nd Storey Façade to North	Day	46	No	55	2	Yes
		Eve	--	No	55	2	Yes
		Night	--	No	50	2	Yes
POR23_F2b	Unit 23 - 2nd Storey Façade to East	Day	46	No	55	2	Yes
		Eve	--	No	55	2	Yes
		Night	--	No	50	2	Yes
POR23_OLA	Unit 23 - Outdoor Living Area	Day	44	No	55	2	Yes
		Eve	--	No	50	2	Yes
		Night	--	No	n/a	2	Yes
POR24_F2a	Unit 24 - 2nd Storey Façade to North	Day	44	No	55	2	Yes
		Eve	--	No	55	2	Yes
		Night	--	No	50	2	Yes
POR24_F2b	Unit 24 - 2nd Storey Façade to East	Day	44	No	55	2	Yes
		Eve	--	No	55	2	Yes
		Night	--	No	50	2	Yes
POR25_F2	Unit 25 - 2nd Storey Façade	Day	44	No	55	2	Yes
		Eve	--	No	55	2	Yes
		Night	--	No	50	2	Yes

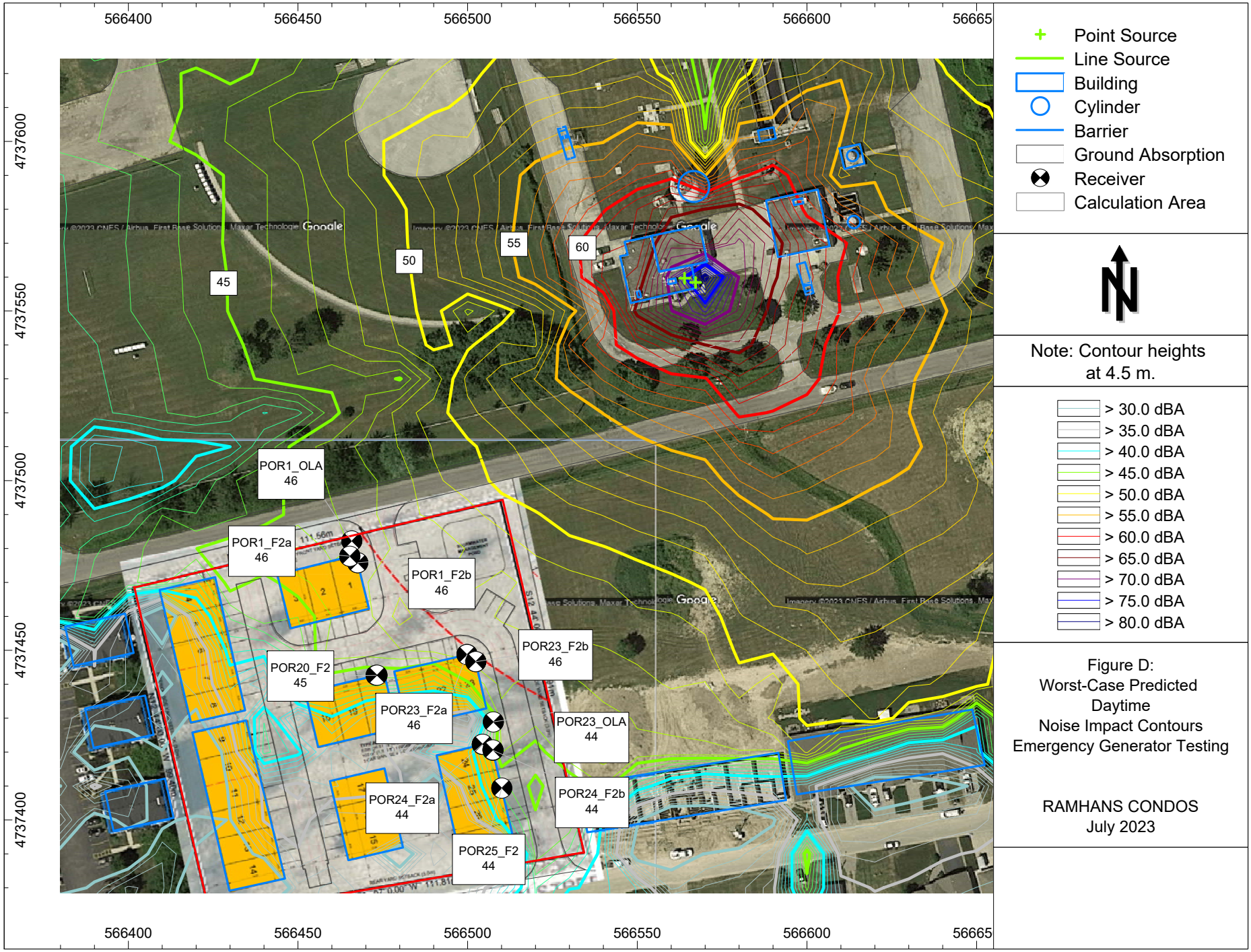
APPENDIX C

CADNAA MODELLING FILES


566400
566450
566500
566550
566600
56665
4737600
4737550
4737500
4737450
4737400
50
55
60
65
POR1_OLA
50, 41
(D/N)
POR1_F2a
51, 43
(D/N)
POR1_F2b
51, 44
(D/N)
POR20_F2
51, 43
(D/N)
POR23_F2a
53, 43
(D/N)
POR23_F2b
53, 41
(D/N)
POR23_OLA
51, --
(D/N)
POR24_F2a
51, 38
(D/N)
POR24_F2b
54, 38
(D/N)
POR25_F2
54, 37
(D/N)
Point Source
Line Source
Building
Cylinder
Barrier
Ground Absorption
Receiver
Calculation Area
Note: Contour heights at 4.5 m.
> 30.0 dBA
> 35.0 dBA
> 40.0 dBA
> 45.0 dBA
> 50.0 dBA
> 55.0 dBA
> 60.0 dBA
> 65.0 dBA
> 70.0 dBA
> 75.0 dBA
> 80.0 dBA
Figure A:
Worst-Case Predicted
Daytime
Noise Impact Contours
RAMHANS CONDOS
July 2023


566400
566450
566500
566550
566600
56665
4737600
4737550
4737500
4737450
4737400
55
50
45
POR1_OLA
50, 41
(D/N)
POR1_F2a
51, 43
(D/N)
POR1_F2b
51, 44
(D/N)
POR20_F2
51, 43
(D/N)
POR23_F2a
53, 43
(D/N)
POR23_F2b
53, 41
(D/N)
POR23_OLA
51, --
(D/N)
POR24_F2a
51, 38
(D/N)
POR24_F2b
54, 38
(D/N)
POR25_F2
54, 37
(D/N)
Point Source
Line Source
Building
Cylinder
Barrier
Ground Absorption
Receiver
Calculation Area
Note: Contour heights at 4.5 m.
> 30.0 dBA
> 35.0 dBA
> 40.0 dBA
> 45.0 dBA
> 50.0 dBA
> 55.0 dBA
> 60.0 dBA
> 65.0 dBA
> 70.0 dBA
> 75.0 dBA
> 80.0 dBA
Figure B:
Worst-Case Predicted
Evening
Noise Impact Contours
RAMHANS CONDOS
July 2023


566400
566450
566500
566550
566600
56665
4737600
4737550
4737500
4737450
4737400
55
50
45
POR1_OLA
50, 41
(D/N)
POR1_F2a
51, 43
(D/N)
POR1_F2b
51, 44
(D/N)
POR20_F2
51, 43
(D/N)
POR23_F2a
53, 43
(D/N)
POR23_F2b
53, 41
(D/N)
POR23_OLA
51, --
(D/N)
POR24_F2a
51, 38
(D/N)
POR24_F2b
54, 38
(D/N)
POR25_F2
54, 37
(D/N)
Point Source
Line Source
Building
Cylinder
Barrier
Ground Absorption
Receiver
Calculation Area
Note: Contour heights at 4.5 m.
> 30.0 dBA
> 35.0 dBA
> 40.0 dBA
> 45.0 dBA
> 50.0 dBA
> 55.0 dBA
> 60.0 dBA
> 65.0 dBA
> 70.0 dBA
> 75.0 dBA
> 80.0 dBA
Figure C:
Worst-Case Predicted
Night-time
Noise Impact Contours
RAMHANS CONDOS
July 2023


566400
566450
566500
566550
566600
56665
4737600
4737550
4737500
4737450
4737400
45
50
55
60
POR1_OLA
46
POR1_F2a
46
POR1_F2b
46
POR20_F2
45
POR23_F2a
46
POR23_F2b
46
POR23_OLA
44
POR24_F2a
44
POR24_F2b
44
POR25_F2
44
Point Source
Line Source
Building
Cylinder
Barrier
Ground Absorption
Receiver
Calculation Area
Note: Contour heights at 4.5 m.
> 30.0 dBA
> 35.0 dBA
> 40.0 dBA
> 45.0 dBA
> 50.0 dBA
> 55.0 dBA
> 60.0 dBA
> 65.0 dBA
> 70.0 dBA
> 75.0 dBA
> 80.0 dBA
Figure D:
Worst-Case Predicted
Daytime
Noise Impact Contours
Emergency Generator Testing
RAMHANS CONDOS
July 2023


566450
566500
566550
566600
566650
566700
4737750
4737700
4737650
4737600
4737550
CAMU
ALB1
ALB2
ALB3
ALB4
DTRM
DTR
DSTP
PBV2
PBHVAC
PBV1
OLHVAC1
EGEN_CE
EGEN_EF
OLHVAC2
OLV
STP
STR
STRM
Point Source
Line Source
Building
Cylinder
Barrier
Ground Absorption
Receiver
Calculation Area
N
Figure E:
Noise Source Locations
RAMHANS CONDOS
July 2023

Report (Ramhans Condo - EG.cna)

RAMHANS CONDOS
Port Dover, Ontario
Modelling Results - Emergency Generator Testing Scenario
Revision Date: July 4, 2023

Calculation Configuration

Configuration	
Parameter	Value
General	
Country	(user defined)
Max. Error (dB)	0.00
Max. Search Radius (m)	2000.00
Min. Dist Src to Rcvr	0.00
Partition	
Raster Factor	0.50
Max. Length of Section (m)	1000.00
Min. Length of Section (m)	1.00
Min. Length of Section (%)	0.00
Proj. Line Sources	On
Proj. Area Sources	On
Ref. Time	
Reference Time Day (min)	60.00
Reference Time Night (min)	60.00
Daytime Penalty (dB)	0.00
Recr. Time Penalty (dB)	0.00
Night-time Penalty (dB)	0.00
DTM	
Standard Height (m)	0.00
Model of Terrain	Triangulation
Reflection	
max. Order of Reflection	2
Search Radius Src	100.00
Search Radius Rcvr	100.00
Max. Distance Source - Rcvr	1000.00 1000.00
Min. Distance Rvcr - Reflector	1.00 1.00
Min. Distance Source - Reflector	0.10
Industrial (ISO 9613)	
Lateral Diffraction	some Obj
Obst. within Area Src do not shield	On
Screening	Excl. Ground Att. over Barrier
	Dz with limit (20/25)
Barrier Coefficients C1,2,3	3.0 20.0 0.0

Configuration	
Parameter	Value
Temperature (°C)	10
rel. Humidity (%)	70
Ground Absorption G	1.00
Wind Speed for Dir. (m/s)	3.0
Roads (TNM)	
Railways (Schall 03)	
Strictly acc. to Schall 03 / Schall-Transrapid	
Aircraft (???)	
Strictly acc. to AzB	

Results

Receptor Noise Impact Levels Table

Name	M.	ID	Level Lr			Limit. Value			Land Use			Height		Coordinates		
			Day	Eve	Night	Day	Eve	Night	Type	Auto	Noise Type			X	Y	Z
			(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)				(m)		(m)	(m)	(m)
POR1_F2a		POR1_F2a	45.9	-88.0	-88.0	0.0	0.0	0.0		x	Total	4.50	r	566465.29	4737477.73	4.50
POR1_F2b		POR1_F2b	46.0	-88.0	-88.0	0.0	0.0	0.0		x	Total	4.50	r	566467.58	4737475.78	4.50
POR1_OLA		POR1_OLA	46.3	-88.0	-88.0	0.0	0.0	0.0		x	Total	1.50	r	566465.88	4737482.22	1.50
POR20_F2		POR20_F2	44.5	-88.0	-88.0	0.0	0.0	0.0		x	Total	4.50	r	566473.05	4737442.62	4.50
POR23_F2a		POR23_F2a	45.9	-88.0	-88.0	0.0	0.0	0.0		x	Total	4.50	r	566499.82	4737448.81	4.50
POR23_F2b		POR23_F2b	45.8	-88.0	-88.0	0.0	0.0	0.0		x	Total	4.50	r	566502.41	4737446.63	4.50
POR23_OLA		POR23_OLA	43.7	-88.0	-88.0	0.0	0.0	0.0		x	Total	1.50	r	566507.57	4737428.90	1.50
POR24_F2a		POR24_F2a	44.1	-88.0	-88.0	0.0	0.0	0.0		x	Total	4.50	r	566504.33	4737422.26	4.50
POR24_F2b		POR24_F2b	44.2	-88.0	-88.0	0.0	0.0	0.0		x	Total	4.50	r	566507.46	4737420.51	4.50
POR25_F2		POR25_F2	43.6	-88.0	-88.0	0.0	0.0	0.0		x	Total	4.50	r	566510.05	4737409.38	4.50
POR1_F1		POR1_F1	45.7	-88.0	-88.0	0.0	0.0	0.0		x	Total	1.50	r	566467.60	4737475.81	1.50
POR1_F1		POR1_F1	45.6	-88.0	-88.0	0.0	0.0	0.0		x	Total	1.50	r	566465.30	4737477.72	1.50
POR20_F1		POR20_F1	43.5	-88.0	-88.0	0.0	0.0	0.0		x	Total	1.50	r	566473.28	4737442.68	1.50
POR23_F1		POR23_F1	44.9	-88.0	-88.0	0.0	0.0	0.0		x	Total	1.50	r	566499.79	4737448.74	1.50
POR23_F1		POR23_F1	45.0	-88.0	-88.0	0.0	0.0	0.0		x	Total	1.50	r	566502.37	4737446.68	1.50
POR24_F1		POR24_F1	43.4	-88.0	-88.0	0.0	0.0	0.0		x	Total	1.50	r	566504.42	4737422.31	1.50
POR24_F1		POR24_F1	43.6	-88.0	-88.0	0.0	0.0	0.0		x	Total	1.50	r	566507.46	4737420.62	1.50

Partial Levels Table

Source			Partial Level																														
Name	M.	ID	POR1_F2a			POR1_F2b			POR1_OLA			POR20_F2			POR23_F2a			POR23_F2b			POR23_OLA			POR24_F2a			POR24_F2b			POI		
			Day	Eve	Night	Day	Eve	Night	Day	Eve	Night	Day	Eve	Night	Day	Eve	Night	Day	Eve	Night	Day	Eve	Night	Day	Eve	Night	Day	Eve	Night	Day				
Aerated Lagoon Blower	-	ALB1																															
Aerated Lagoon Blower	-	ALB2																															
Aerated Lagoon Blower	-	ALB3																															
Aerated Lagoon Blower	-	ALB4																															
Clarifyer AMU	-	CAMU																															
Primary Building Vent 1	-	PBV1																															
Primary Building Vent 2	-	PBV2																															
Primary Building HVAC	-	PBHVAC																															

Source			Partial Level																												
Name	M.	ID	POR1_F2a			POR1_F2b			POR1_OLA			POR20_F2			POR23_F2a			POR23_F2b			POR23_OLA			POR24_F2a			POR24_F2b			POI	
			Day	Eve	Night	Day	Eve	Night	Day	Eve	Night	Day	Eve	Night	Day	Eve	Night	Day	Eve	Night	Day	Eve	Night	Day	Eve	Night	Day	Eve	Night	Day	
Office Lab HVAC	-	OLHVAC1																													
Office Lab HVAC	-	OLHVAC2																													
Office Lab Vent	-	OLV																													
Digested Sludge Transfer Pump	-	DSTP																													
Digester Truck Idle	-	DTR																													
Sewage Truck Pump	-	STP																													
Sewage Truck Idle	-	STR																													
Generator Combustion Exhaust Stack	+	EGEN_CE	45.8			45.8			46.2			44.3			45.7			45.6			43.4			43.8			43.9			43.2	
Generator Exhaust Fan	+	EGEN_EF	31.8			31.8			31.6			31.4			33.2			33.4			32.1			32.6			32.9			32.7	
Digester Truck Movements	-	DTRM																													
Sewage Truck Movements	-	STRM																													

Sources

Noise Source Library

Name	ID	Type	Oktave Spectrum (dB)												Source
			Weight.	31.5	63	125	250	500	1000	2000	4000	8000	A	lin	
Office Lab Vent	OLV	Lw			68.0	74.0	81.0	76.0	74.0	71.0	65.0	59.0	79.2	83.8	
HVAC	HVAC	Lw			87.0	85.2	84.6	84.9	82.2	78.4	75.3	72.9	87.1	92.4	
Primary Building Vents	PBV	Lw			68.0	74.0	81.0	76.0	74.0	71.0	65.0	59.0	79.2	83.8	
Sewage Pump Trucks	PUMP	Lw	A					107.0					107.0	110.2	Spec for 31-50 hp pump
Digested Sludge Transfer Pump	DSTP	Lw	A					109.0					109.0	112.2	Spec for 50-100 hp pump
Clarifyer AC	CAC	Lw			87.0	85.2	84.6	84.9	82.2	78.4	75.3	72.9	87.1	92.4	
Clarifyer AMU	CAMU	Lw	A		88.0	93.0	78.0	77.0	76.0	74.0	72.0	66.0	94.5	115.4	
Aerated Lagoon Blowers	ALB	Lw (c)	A	63.5	73.6	75.5	77.6	89.2	97.0	95.7	94.2	89.8	101.2	106.4	
Truck Movements	TR	Lw (c)	A	76.9	82.8	84.1	92.9	95.6	100.1	99.3	97.2	90.6	104.9	117.4	Noise Database
Truck Idle	TRIDLE	Lw	A					96.0					96.0	99.2	MECP Secondary Noise Screening Protocol
Generator Compustion Exhaust	EGEN_CE	Lw (c)	A	55.9	77.6	80.3	83.1	91.3	95.2	91.6	83.4	71.2	98.2	106.1	Noise database for 195 kW diesel eng
Generator Exaust Fan	EGEN_EF	Lw (c)	A	55.9	77.6	80.3	83.1	91.3	95.2	91.6	83.4	71.2	98.2	106.1	Noise database for 195 kW diesel eng

Point Sources

Name	M.	ID	Result. PWL			Lw / Li			Correction			Sound Reduction		Attenuation	Operating Time			K0	Freq.	Direct.	Height		Coordinates		
			Day	Evening	Night	Type	Value	norm.	Day	Evening	Night	R	Area		Day	Special	Night						X	Y	Z
			(dBA)	(dBA)	(dBA)			dB(A)	dB(A)	dB(A)	dB(A)		(m^2)		(min)	(min)	(min)	(dB)	(Hz)		(m)		(m)	(m)	(m)
Aerated Lagoon Blower	-	ALB1	95.2	95.2	95.2	Lw	ALB		-6.0	-6.0	-6.0				60.00	60.00	60.00	0.0		(none)	1.50	r	566576.30	4737651.60	1.50
Aerated Lagoon Blower	-	ALB2	95.2	95.2	95.2	Lw	ALB		-6.0	-6.0	-6.0				60.00	60.00	60.00	0.0		(none)	1.50	r	566586.19	4737653.91	1.50
Aerated Lagoon Blower	-	ALB3	95.2	95.2	95.2	Lw	ALB		-6.0	-6.0	-6.0				60.00	60.00	60.00	0.0		(none)	1.50	r	566578.73	4737642.68	1.50
Aerated Lagoon Blower	-	ALB4	95.2	95.2	95.2	Lw	ALB		-6.0	-6.0	-6.0				60.00	60.00	60.00	0.0		(none)	1.50	r	566588.39	4737644.78	1.50
Clarifyer AMU	-	CAMU	94.5	94.5	94.5	Lw	CAMU		0.0	0.0	0.0				60.00	60.00	60.00	0.0		(none)	1.00	g	566577.60	4737684.34	4.20
Primary Building Vent 1	-	PBV1	79.2	79.2	79.2	Lw	PBV		0.0	0.0	0.0				60.00	60.00	60.00	0.0		(none)	1.00	g	566604.88	4737571.32	5.30
Primary Building Vent 2	-	PBV2	79.2	79.2	79.2	Lw	PBV		0.0	0.0	0.0				60.00	60.00	60.00	0.0		(none)	2.50	r	566594.03	4737566.29	2.50
Primary Building HVAC	-	PBHVAC	87.1	87.1	87.1	Lw	HVAC		0.0	0.0	0.0				60.00	60.00	30.00	0.0		(none)	2.50	r	566598.93	4737582.56	2.50
Office Lab HVAC	-	OLHVAC1	87.1	87.1	87.1	Lw	HVAC		0.0	0.0	0.0				60.00	60.00	30.00	0.0		(none)	1.00	g	566558.97	4737558.48	5.30
Office Lab HVAC	-	OLHVAC2	87.1	87.1	87.1	Lw	HVAC		0.0	0.0	0.0				60.00	60.00	30.00	0.0		(none)	1.00	g	566550.25	4737555.94	5.30
Office Lab Vent	-	OLV	79.2	79.2	79.2	Lw	OLV		0.0	0.0	0.0				60.00	0.00	0.00	0.0		(none)	1.50	g	566549.20	4737554.24	5.80
Digested Sludge Transfer Pump	-	DSTP	109.0	109.0	109.0	Lw	DSTP		0.0	0.0	0.0				60.00	0.00	0.00	0.0		(none)	0.75	r	566532.36	4737600.25	0.75
Digester Truck Idle	-	DTR	96.0	96.0	96.0	Lw	TRIDLE		0.0	0.0	0.0				60.00	0.00	0.00	0.0		(none)	1.50	r	566527.60	4737604.11	1.50
Sewage Truck Pump	-	STP	107.0	107.0	107.0	Lw	PUMP		0.0	0.0	0.0				30.00	0.00	0.00	0.0		(none)	1.00	r	566601.07	4737558.12	1.00
Sewage Truck Idle	-	STR	96.0	96.0	96.0	Lw	TRIDLE		0.0	0.0	0.0				30.00	0.00	0.00	0.0		(none)	1.50	r	566600.94	4737554.96	1.50
Generator Combustion Exhaust Stack	+	EGEN_CE	98.2	98.2	98.2	Lw	EGEN_CE		0.0	0.0	0.0				60.00	0.00	0.00	0.0		(none)	1.50	g	566563.94	4737559.68	5.80

Name	M.	ID	Result. PWL			Lw / Li			Correction			Sound Reduction		Attenuation	Operating Time			K0	Freq.	Direct.	Height		Coordinates		
			Day	Evening	Night	Type	Value	norm.	Day	Evening	Night	R	Area		Day	Special	Night						X	Y	Z
			(dBA)	(dBA)	(dBA)			dB(A)	dB(A)	dB(A)	dB(A)		(m²)		(min)	(min)	(min)	(dB)	(Hz)		(m)		(m)	(m)	(m)
Generator Exhaust Fan	+	EGEN_EF	98.2	98.2	98.2	Lw	EGEN_EF		0.0	0.0	0.0				60.00	0.00	0.00	0.0		(none)	2.00	r	566567.19	4737558.43	2.00

Line Sources

Name	M.	ID	Result. PWL			Result. PWL'			Lw / Li			Correction			Sound Reduction		Attenuation	Operating Time			K0	Freq.	Direct.	Moving Pt. Src			
			Day	Evening	Night	Day	Evening	Night	Type	Value	norm.	Day	Evening	Night	R	Area		Day	Special	Night				Number			Speed
			(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)			dB(A)	dB(A)	dB(A)	dB(A)		(m²)		(min)	(min)	(min)	(dB)	(Hz)		Day	Evening	Night	(km/h)
Digester Truck Movements	-	DTRM	89.9	-10.1	-10.1	64.9	-35.1	-35.1	PWL-Pt	TR		0.0	0.0	0.0				60.00	0.00	0.00	0.0		(none)	1.0	0.0	0.0	10.0
Sewage Truck Movements	-	STRM	88.9	-15.8	-15.8	69.7	-35.1	-35.1	PWL-Pt	TR		0.0	0.0	0.0				60.00	0.00	0.00	0.0		(none)	3.0	0.0	0.0	10.0

Report (Ramhans Condo.cna)

RAMHANS CONDOS
Port Dover, Ontario
Modelling Results - Steady Source Modelling
Revision Date: July 4, 2023

Calculation Configuration

Configuration	
Parameter	Value
General	
Country	(user defined)
Max. Error (dB)	0.00
Max. Search Radius (m)	2000.00
Min. Dist Src to Rcvr	0.00
Partition	
Raster Factor	0.50
Max. Length of Section (m)	1000.00
Min. Length of Section (m)	1.00
Min. Length of Section (%)	0.00
Proj. Line Sources	On
Proj. Area Sources	On
Ref. Time	
Reference Time Day (min)	60.00
Reference Time Night (min)	60.00
Daytime Penalty (dB)	0.00
Recr. Time Penalty (dB)	0.00
Night-time Penalty (dB)	0.00
DTM	
Standard Height (m)	0.00
Model of Terrain	Triangulation
Reflection	
max. Order of Reflection	2
Search Radius Src	100.00
Search Radius Rcvr	100.00
Max. Distance Source - Rcvr	1000.00 1000.00
Min. Distance Rvcr - Reflector	1.00 1.00
Min. Distance Source - Reflector	0.10
Industrial (ISO 9613)	
Lateral Diffraction	some Obj
Obst. within Area Src do not shield	On
Screening	Excl. Ground Att. over Barrier
	Dz with limit (20/25)
Barrier Coefficients C1,2,3	3.0 20.0 0.0

Configuration	
Parameter	Value
Temperature (°C)	10
rel. Humidity (%)	70
Ground Absorption G	1.00
Wind Speed for Dir. (m/s)	3.0
Roads (TNM)	
Railways (Schall 03)	
Strictly acc. to Schall 03 / Schall-Transrapid	
Aircraft (???)	
Strictly acc. to AzB	

Results

Receptor Noise Impact Levels Table

Name	M.	ID	Level Lr			Limit. Value			Land Use			Height		Coordinates		
			Day	Eve	Night	Day	Eve	Night	Type	Auto	Noise Type			X	Y	Z
			(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)				(m)		(m)	(m)	(m)
POR1_F2a		POR1_F2a	51.0	43.5	43.1	0.0	0.0	0.0		x	Total	4.50	r	566465.29	4737477.73	4.50
POR1_F2b		POR1_F2b	51.3	44.0	43.7	0.0	0.0	0.0		x	Total	4.50	r	566467.58	4737475.78	4.50
POR1_OLA		POR1_OLA	50.3	41.2	40.6	0.0	0.0	0.0		x	Total	1.50	r	566465.88	4737482.22	1.50
POR20_F2		POR20_F2	50.5	43.1	42.8	0.0	0.0	0.0		x	Total	4.50	r	566473.05	4737442.62	4.50
POR23_F2a		POR23_F2a	53.1	42.9	42.5	0.0	0.0	0.0		x	Total	4.50	r	566499.82	4737448.81	4.50
POR23_F2b		POR23_F2b	52.9	40.6	39.9	0.0	0.0	0.0		x	Total	4.50	r	566502.41	4737446.63	4.50
POR23_OLA		POR23_OLA	50.6	37.1	36.2	0.0	0.0	0.0		x	Total	1.50	r	566507.57	4737428.90	1.50
POR24_F2a		POR24_F2a	51.5	38.5	37.7	0.0	0.0	0.0		x	Total	4.50	r	566504.33	4737422.26	4.50
POR24_F2b		POR24_F2b	54.2	38.2	37.4	0.0	0.0	0.0		x	Total	4.50	r	566507.46	4737420.51	4.50
POR25_F2		POR25_F2	53.8	37.4	36.5	0.0	0.0	0.0		x	Total	4.50	r	566510.05	4737409.38	4.50
POR1_F1		POR1_F1	49.8	41.4	40.9	0.0	0.0	0.0		x	Total	1.50	r	566467.60	4737475.81	1.50
POR1_F1		POR1_F1	49.4	40.9	40.3	0.0	0.0	0.0		x	Total	1.50	r	566465.30	4737477.72	1.50
POR20_F1		POR20_F1	48.9	40.0	39.6	0.0	0.0	0.0		x	Total	1.50	r	566473.28	4737442.68	1.50
POR23_F1		POR23_F1	51.0	40.3	39.7	0.0	0.0	0.0		x	Total	1.50	r	566499.79	4737448.74	1.50
POR23_F1		POR23_F1	51.0	38.8	38.0	0.0	0.0	0.0		x	Total	1.50	r	566502.37	4737446.68	1.50
POR24_F1		POR24_F1	49.9	37.0	36.2	0.0	0.0	0.0		x	Total	1.50	r	566504.42	4737422.31	1.50
POR24_F1		POR24_F1	52.2	36.5	35.6	0.0	0.0	0.0		x	Total	1.50	r	566507.46	4737420.62	1.50

Partial Levels Table

Source			Partial Level																												
Name	M.	ID	POR1_F2a			POR1_F2b			POR1_OLA			POR20_F2			POR23_F2a			POR23_F2b			POR23_OLA			POR24_F2a			POR24_F2b			POI
			Day	Eve	Night	Day	Eve	Night	Day	Eve	Night	Day	Eve	Night	Day	Eve	Night	Day	Eve	Night	Day	Eve	Night	Day	Eve	Night	Day	Eve	Night	Day
Aerated Lagoon Blower	+	ALB1	35.8	35.8	35.8	37.3	37.3	37.3	32.8	32.8	32.8	35.2	35.2	35.2	37.0	37.0	37.0	33.5	33.5	33.5	28.3	28.3	28.3	30.3	30.3	30.3	30.3	30.3	30.3	29.2
Aerated Lagoon Blower	+	ALB2	36.1	36.1	36.1	36.7	36.7	36.7	31.7	31.7	31.7	36.2	36.2	36.2	35.1	35.1	35.1	31.6	31.6	31.6	22.9	22.9	22.9	25.4	25.4	25.4	24.3	24.3	24.3	24.2
Aerated Lagoon Blower	+	ALB3	36.1	36.1	36.1	36.7	36.7	36.7	31.8	31.8	31.8	36.1	36.1	36.1	35.3	35.3	35.3	31.8	31.8	31.8	27.1	27.1	27.1	29.9	29.9	29.9	28.8	28.8	28.8	23.5
Aerated Lagoon Blower	+	ALB4	35.7	35.7	35.7	35.9	35.9	35.9	31.5	31.5	31.5	35.9	35.9	35.9	32.8	32.8	32.8	24.3	24.3	24.3	21.0	21.0	21.0	23.9	23.9	23.9	22.9	22.9	22.9	23.4
Clarifyer AMU	+	CAMU	33.4	33.4	33.4	33.4	33.4	33.4	34.2	34.2	34.2	32.4	32.4	32.4	32.9	32.9	32.9	32.8	32.8	32.8	31.2	31.2	31.2	32.0	32.0	32.0	32.0	32.0	32.0	31.7
Primary Building Vent 1	+	PBV1	23.7	23.7	23.7	23.7	23.7	23.7	24.0	24.0	24.0	22.7	22.7	22.7	24.1	24.1	24.1	24.8	24.8	24.8	21.7	21.7	21.7	22.6	22.6	22.6	22.6	22.6	22.6	22.1
Primary Building Vent 2	+	PBV2	25.6	25.6	25.6	25.8	25.8	25.8	26.1	26.1	26.1	24.9	24.9	24.9	26.4	26.4	26.4	26.2	26.2	26.2	24.3	24.3	24.3	25.0	25.0	25.0	24.9	24.9	24.9	24.6
Primary Building HVAC	+	PBHVAC	17.6	17.6	14.6	20.6	20.6	17.6	17.2	17.2	14.2	20.1	20.1	17.1	21.6	21.6	18.6	21.7	21.7	18.6	20.3	20.3	17.3	21.3	21.3	18.2	21.4	21.4	18.4	21.4

Source																															Partial Level			
Name	M.	ID	POR1_F2a			POR1_F2b			POR1_OLA			POR20_F2			POR23_F2a			POR23_F2b			POR23_OLA			POR24_F2a			POR24_F2b			POI			
			Day	Eve	Night	Day	Eve	Night	Day	Eve	Night	Day	Eve	Night	Day	Eve	Night	Day	Eve	Night	Day	Eve	Night	Day	Eve	Night	Day	Eve	Night	Day			
Office Lab HVAC	+	OLHVAC1	34.5	34.5	31.4	34.3	34.3	31.3	34.4	34.4	31.4	32.9	32.9	29.9	34.2	34.2	31.2	34.1	34.1	31.1	31.7	31.7	28.7	32.4	32.4	29.4	32.4	32.4	29.4	31.7			
Office Lab HVAC	+	OLHVAC2	30.1	30.1	27.1	30.1	30.1	27.1	29.7	29.7	26.7	27.4	27.4	24.4	27.9	27.9	24.9	28.0	28.0	25.0	24.9	24.9	21.9	26.1	26.1	23.0	26.0	26.0	22.9	25.2			
Office Lab Vent	+	OLV	27.5			28.5			27.3			25.8			27.1			27.0			24.5			25.2			25.2			24.4			
Digested Sludge Transfer Pump	+	DSTP	45.1			46.1			43.7			45.7			50.5			50.4			48.4			49.3			53.2			52.7			
Digester Truck Idle	+	DTR	35.7			35.9			32.1			33.7			33.9			33.0			28.7			32.1			31.9			31.4			
Sewage Truck Pump	+	STP	41.9			41.7			41.2			41.9			42.9			42.9			39.2			40.6			40.4			40.0			
Sewage Truck Idle	+	STR	37.8			37.8			37.8			35.9			36.7			39.2			33.5			36.6			36.6			38.9			
Generator Combustion Exhaust Stack	-	EGEN_CE	45.8			45.8			46.2			44.3			45.7			45.6			43.4			43.8			43.9			43.2			
Generator Exhaust Fan	-	EGEN_EF	31.8			31.8			31.6			31.4			33.2			33.4			32.1			32.6			32.9			32.7			
Digester Truck Movements	+	DTRM	34.6			35.4			35.4			33.4			34.7			34.3			33.1			31.7			32.6			32.0			
Sewage Truck Movements	+	STRM	33.8			33.9			34.3			33.3			34.7			35.4			33.0			33.1			33.1			32.6			

Sources

Noise Source Library

Name	ID	Type	Oktave Spectrum (dB)												Source
			Weight.	31.5	63	125	250	500	1000	2000	4000	8000	A	lin	
Office Lab Vent	OLV	Lw			68.0	74.0	81.0	76.0	74.0	71.0	65.0	59.0	79.2	83.8	
HVAC	HVAC	Lw			87.0	85.2	84.6	84.9	82.2	78.4	75.3	72.9	87.1	92.4	
Primary Building Vents	PBV	Lw			68.0	74.0	81.0	76.0	74.0	71.0	65.0	59.0	79.2	83.8	
Sewage Pump Trucks	PUMP	Lw	A					107.0					107.0	110.2	Spec for 31-50 hp pump
Digested Sludge Transfer Pump	DSTP	Lw	A					109.0					109.0	112.2	Spec for 50-100 hp pump
Clarifyer AC	CAC	Lw			87.0	85.2	84.6	84.9	82.2	78.4	75.3	72.9	87.1	92.4	
Clarifyer AMU	CAMU	Lw	A		88.0	93.0	78.0	77.0	76.0	74.0	72.0	66.0	94.5	115.4	
Aerated Lagoon Blowers	ALB	Lw (c)	A	63.5	73.6	75.5	77.6	89.2	97.0	95.7	94.2	89.8	101.2	106.4	
Truck Movements	TR	Lw (c)	A	76.9	82.8	84.1	92.9	95.6	100.1	99.3	97.2	90.6	104.9	117.4	Noise Database
Truck Idle	TRIDLE	Lw	A					96.0					96.0	99.2	MECP Secondary Noise Screening Protocol
Generator Compustion Exhaust	EGEN_CE	Lw (c)	A	55.9	77.6	80.3	83.1	91.3	95.2	91.6	83.4	71.2	98.2	106.1	Noise database for 195 kW diesel eng
Generator Exaust Fan	EGEN_EF	Lw (c)	A	55.9	77.6	80.3	83.1	91.3	95.2	91.6	83.4	71.2	98.2	106.1	Noise database for 195 kW diesel eng

Point Sources

Name	M.	ID	Result. PWL			Lw / Li			Correction			Sound Reduction		Attenuation	Operating Time			K0	Freq.	Direct.	Height		Coordinates		
			Day	Evening	Night	Type	Value	norm.	Day	Evening	Night	R	Area		Day	Special	Night						X	Y	Z
			(dBA)	(dBA)	(dBA)			dB(A)	dB(A)	dB(A)	dB(A)		(m²)		(min)	(min)	(min)	(dB)	(Hz)		(m)		(m)	(m)	(m)
Aerated Lagoon Blower	+	ALB1	95.2	95.2	95.2	Lw	ALB		-6.0	-6.0	-6.0				60.00	60.00	60.00	0.0		(none)	1.50	r	566576.30	4737651.60	1.50
Aerated Lagoon Blower	+	ALB2	95.2	95.2	95.2	Lw	ALB		-6.0	-6.0	-6.0				60.00	60.00	60.00	0.0		(none)	1.50	r	566586.19	4737653.91	1.50
Aerated Lagoon Blower	+	ALB3	95.2	95.2	95.2	Lw	ALB		-6.0	-6.0	-6.0				60.00	60.00	60.00	0.0		(none)	1.50	r	566578.73	4737642.68	1.50
Aerated Lagoon Blower	+	ALB4	95.2	95.2	95.2	Lw	ALB		-6.0	-6.0	-6.0				60.00	60.00	60.00	0.0		(none)	1.50	r	566588.39	4737644.78	1.50
Clarifyer AMU	+	CAMU	94.5	94.5	94.5	Lw	CAMU		0.0	0.0	0.0				60.00	60.00	60.00	0.0		(none)	1.00	g	566577.60	4737684.34	4.20
Primary Building Vent 1	+	PBV1	79.2	79.2	79.2	Lw	PBV		0.0	0.0	0.0				60.00	60.00	60.00	0.0		(none)	1.00	g	566604.88	4737571.32	5.30
Primary Building Vent 2	+	PBV2	79.2	79.2	79.2	Lw	PBV		0.0	0.0	0.0				60.00	60.00	60.00	0.0		(none)	2.50	r	566594.03	4737566.29	2.50
Primary Building HVAC	+	PBHVAC	87.1	87.1	87.1	Lw	HVAC		0.0	0.0	0.0				60.00	60.00	30.00	0.0		(none)	2.50	r	566598.93	4737582.56	2.50
Office Lab HVAC	+	OLHVAC1	87.1	87.1	87.1	Lw	HVAC		0.0	0.0	0.0				60.00	60.00	30.00	0.0		(none)	1.00	g	566558.97	4737558.48	5.30
Office Lab HVAC	+	OLHVAC2	87.1	87.1	87.1	Lw	HVAC		0.0	0.0	0.0				60.00	60.00	30.00	0.0		(none)	1.00	g	566550.25	4737555.94	5.30
Office Lab Vent	+	OLV	79.2	79.2	79.2	Lw	OLV		0.0	0.0	0.0				60.00	0.00	0.00	0.0		(none)	1.50	g	566549.20	4737554.24	5.80
Digested Sludge Transfer Pump	+	DSTP	109.0	109.0	109.0	Lw	DSTP		0.0	0.0	0.0				60.00	0.00	0.00	0.0		(none)	0.75	r	566532.36	4737600.25	0.75
Digester Truck Idle	+	DTR	96.0	96.0	96.0	Lw	TRIDLE		0.0	0.0	0.0				60.00	0.00	0.00	0.0		(none)	1.50	r	566527.60	4737604.11	1.50
Sewage Truck Pump	+	STP	107.0	107.0	107.0	Lw	PUMP		0.0	0.0	0.0				30.00	0.00	0.00	0.0		(none)	1.00	r	566601.07	4737558.12	1.00
Sewage Truck Idle	+	STR	96.0	96.0	96.0	Lw	TRIDLE		0.0	0.0	0.0				30.00	0.00	0.00	0.0		(none)	1.50	r	566600.94	4737554.96	1.50
Generator Combustion Exhaust Stack	-	EGEN_CE	98.2	98.2	98.2	Lw	EGEN_CE		0.0	0.0	0.0				60.00	0.00	0.00	0.0		(none)	1.50	g	566563.94	4737559.68	5.80

Name	M.	ID	Result. PWL			Lw / Li			Correction			Sound Reduction		Attenuation	Operating Time			K0	Freq.	Direct.	Height		Coordinates		
			Day	Evening	Night	Type	Value	norm.	Day	Evening	Night	R	Area		Day	Special	Night						X	Y	Z
			(dBA)	(dBA)	(dBA)			dB(A)	dB(A)	dB(A)	dB(A)		(m²)		(min)	(min)	(min)	(dB)	(Hz)		(m)		(m)	(m)	(m)
Generator Exhaust Fan	-	EGEN_EF	98.2	98.2	98.2	Lw	EGEN_EF		0.0	0.0	0.0				60.00	0.00	0.00	0.0		(none)	2.00	r	566567.19	4737558.43	2.00

Line Sources

Name	M.	ID	Result. PWL			Result. PWL'			Lw / Li			Correction			Sound Reduction		Attenuation	Operating Time			K0	Freq.	Direct.	Moving Pt. Src			
			Day	Evening	Night	Day	Evening	Night	Type	Value	norm.	Day	Evening	Night	R	Area		Day	Special	Night				Number			Speed
			(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)			dB(A)	dB(A)	dB(A)	dB(A)		(m²)		(min)	(min)	(min)	(dB)	(Hz)		Day	Evening	Night	(km/h)
Digester Truck Movements	+	DTRM	89.9	-10.1	-10.1	64.9	-35.1	-35.1	PWL-Pt	TR		0.0	0.0	0.0				60.00	0.00	0.00	0.0		(none)	1.0	0.0	0.0	10.0
Sewage Truck Movements	+	STRM	88.9	-15.8	-15.8	69.7	-35.1	-35.1	PWL-Pt	TR		0.0	0.0	0.0				60.00	0.00	0.00	0.0		(none)	3.0	0.0	0.0	10.0

Receiver
Name: POR24_F2a
ID: POR24_F2a
X: 566504.33
Y: 4737422.26
Z: 4.50

Point Source, ISO 9613, Name: "Aerated Lagoon Blower", ID: "ALB1"																			
Nr.	X	Y	Z	Refl.	Freq.	LxT	LxN	K0	Dc	Adiv	Aatm	Agr	Afol	Ahous	Abar	Cmet	RL	LrT	LrN
	(m)	(m)	(m)		(Hz)	dB(A)	dB(A)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	dB(A)	dB(A)
1	566576.30	4737651.60	1.50	0	32	57.5	57.5	0.0	0.0	58.6	0.0	-3.8	0.0	0.0	2.0	0.0	-0.0	0.6	0.6
2	566576.30	4737651.60	1.50	0	63	67.6	67.6	0.0	0.0	58.6	0.0	-3.8	0.0	0.0	2.2	0.0	-0.0	10.5	10.5
3	566576.30	4737651.60	1.50	0	125	69.5	69.5	0.0	0.0	58.6	0.1	2.6	0.0	0.0	0.8	0.0	-0.0	7.4	7.4
4	566576.30	4737651.60	1.50	0	250	71.6	71.6	0.0	0.0	58.6	0.3	5.6	0.0	0.0	0.0	0.0	-0.0	7.1	7.1
5	566576.30	4737651.60	1.50	0	500	83.2	83.2	0.0	0.0	58.6	0.5	2.9	0.0	0.0	1.3	0.0	-0.0	19.8	19.8
6	566576.30	4737651.60	1.50	0	1000	91.0	91.0	0.0	0.0	58.6	0.9	-0.4	0.0	0.0	4.4	0.0	-0.0	27.5	27.5
7	566576.30	4737651.60	1.50	0	2000	89.7	89.7	0.0	0.0	58.6	2.3	-0.9	0.0	0.0	4.7	0.0	-0.0	24.9	24.9
8	566576.30	4737651.60	1.50	0	4000	88.2	88.2	0.0	0.0	58.6	7.9	-0.9	0.0	0.0	4.9	0.0	-0.0	17.7	17.7
9	566576.30	4737651.60	1.50	0	8000	83.8	83.8	0.0	0.0	58.6	28.1	-0.9	0.0	0.0	5.1	0.0	-0.0	-7.2	-7.2
10	566576.30	4737651.60	1.50	1	500	83.2	83.2	0.0	0.0	63.1	0.8	3.3	0.0	0.0	6.3	0.0	14.4	-4.7	-4.7
11	566576.30	4737651.60	1.50	1	1000	91.0	91.0	0.0	0.0	63.1	1.5	-0.3	0.0	0.0	12.9	0.0	14.4	-0.6	-0.6
12	566576.30	4737651.60	1.50	1	2000	89.7	89.7	0.0	0.0	63.1	3.9	-0.9	0.0	0.0	16.9	0.0	14.4	-7.8	-7.8
13	566576.30	4737651.60	1.50	1	4000	88.2	88.2	0.0	0.0	63.1	13.1	-0.9	0.0	0.0	20.6	0.0	14.4	-22.3	-22.3
14	566576.30	4737651.60	1.50	1	8000	83.8	83.8	0.0	0.0	63.1	46.8	-0.9	0.0	0.0	23.9	0.0	14.4	-63.6	-63.6
15	566576.30	4737651.60	1.50	1	1000	91.0	91.0	0.0	0.0	61.3	1.2	-0.5	0.0	0.0	13.8	0.0	2.0	13.2	13.2
16	566576.30	4737651.60	1.50	1	2000	89.7	89.7	0.0	0.0	61.3	3.2	-1.1	0.0	0.0	16.6	0.0	2.0	7.7	7.7
17	566576.30	4737651.60	1.50	1	4000	88.2	88.2	0.0	0.0	61.3	10.7	-1.1	0.0	0.0	19.4	0.0	2.0	-4.2	-4.2
18	566576.30	4737651.60	1.50	1	8000	83.8	83.8	0.0	0.0	61.3	38.2	-1.1	0.0	0.0	22.4	0.0	2.0	-39.0	-39.0

Point Source, ISO 9613, Name: "Aerated Lagoon Blower", ID: "ALB2"																			
Nr.	X	Y	Z	Refl.	Freq.	LxT	LxN	K0	Dc	Adiv	Aatm	Agr	Afol	Ahous	Abar	Cmet	RL	LrT	LrN
	(m)	(m)	(m)		(Hz)	dB(A)	dB(A)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	dB(A)	dB(A)
1	566586.19	4737653.91	1.50	0	32	57.5	57.5	0.0	0.0	58.8	0.0	-3.8	0.0	0.0	1.6	0.0	-0.0	0.8	0.8
2	566586.19	4737653.91	1.50	0	63	67.6	67.6	0.0	0.0	58.8	0.0	-3.8	0.0	0.0	2.5	0.0	-0.0	10.0	10.0
3	566586.19	4737653.91	1.50	0	125	69.5	69.5	0.0	0.0	58.8	0.1	1.8	0.0	0.0	2.3	0.0	-0.0	6.4	6.4
4	566586.19	4737653.91	1.50	0	250	71.6	71.6	0.0	0.0	58.8	0.3	3.7	0.0	0.0	1.9	0.0	-0.0	6.9	6.9
5	566586.19	4737653.91	1.50	0	500	83.2	83.2	0.0	0.0	58.8	0.5	1.5	0.0	0.0	5.8	0.0	-0.0	16.6	16.6
6	566586.19	4737653.91	1.50	0	1000	91.0	91.0	0.0	0.0	58.8	0.9	-0.9	0.0	0.0	10.1	0.0	-0.0	22.1	22.1
7	566586.19	4737653.91	1.50	0	2000	89.7	89.7	0.0	0.0	58.8	2.4	-1.3	0.0	0.0	13.2	0.0	-0.0	16.6	16.6
8	566586.19	4737653.91	1.50	0	4000	88.2	88.2	0.0	0.0	58.8	8.1	-1.3	0.0	0.0	16.2	0.0	-0.0	6.5	6.5
9	566586.19	4737653.91	1.50	0	8000	83.8	83.8	0.0	0.0	58.8	28.7	-1.3	0.0	0.0	19.1	0.0	-0.0	-21.6	-21.6
10	566586.19	4737653.91	1.50	1	500	83.2	83.2	0.0	0.0	63.1	0.8	3.6	0.0	0.0	5.9	0.0	14.6	-4.9	-4.9
11	566586.19	4737653.91	1.50	1	1000	91.0	91.0	0.0	0.0	63.1	1.5	-0.2	0.0	0.0	12.8	0.0	14.6	-0.9	-0.9
12	566586.19	4737653.91	1.50	1	2000	89.7	89.7	0.0	0.0	63.1	3.9	-0.8	0.0	0.0	16.9	0.0	14.6	-8.1	-8.1
13	566586.19	4737653.91	1.50	1	4000	88.2	88.2	0.0	0.0	63.1	13.3	-0.8	0.0	0.0	20.6	0.0	14.6	-22.7	-22.7
14	566586.19	4737653.91	1.50	1	8000	83.8	83.8	0.0	0.0	63.1	47.3	-0.8	0.0	0.0	23.8	0.0	14.6	-64.4	-64.4
15	566586.19	4737653.91	1.50	1	1000	91.0	91.0	0.0	0.0	61.5	1.2	-1.2	0.0	0.0	13.6	0.0	2.0	13.9	13.9
16	566586.19	4737653.91	1.50	1	2000	89.7	89.7	0.0	0.0	61.5	3.2	-1.6	0.0	0.0	16.3	0.0	2.0	8.2	8.2
17	566586.19	4737653.91	1.50	1	4000	88.2	88.2	0.0	0.0	61.5	11.0	-1.6	0.0	0.0	19.2	0.0	2.0	-3.9	-3.9
18	566586.19	4737653.91	1.50	1	8000	83.8	83.8	0.0	0.0	61.5	39.2	-1.6	0.0	0.0	22.1	0.0	2.0	-39.4	-39.4
19	566586.19	4737653.91	1.50	1	500	83.2	83.2	0.0	0.0	59.8	0.5	1.4	0.0	0.0	11.0	0.0	2.0	8.5	8.5
20	566586.19	4737653.91	1.50	1	1000	91.0	91.0	0.0	0.0	59.8	1.0	-1.0	0.0	0.0	15.3	0.0	2.0	13.9	13.9
21	566586.19	4737653.91	1.50	1	2000	89.7	89.7	0.0	0.0	59.8	2.6	-1.3	0.0	0.0	18.1	0.0	2.0	8.5	8.5
22	566586.19	4737653.91	1.50	1	4000	88.2	88.2	0.0	0.0	59.8	9.0	-1.3	0.0	0.0	21.1	0.0	2.0	-2.3	-2.3
23	566586.19	4737653.91	1.50	1	8000	83.8	83.8	0.0	0.0	59.8	32.0	-1.3	0.0	0.0	24.0	0.0	2.0	-32.7	-32.7

Point Source, ISO 9613, Name: "Aerated Lagoon Blower", ID: "ALB3"																			
Nr.	X	Y	Z	Refl.	Freq.	LxT	LxN	K0	Dc	Adiv	Aatm	Agr	Afol	Ahous	Abar	Cmet	RL	LrT	LrN
	(m)	(m)	(m)		(Hz)	dB(A)	dB(A)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	dB(A)	dB(A)
1	566578.73	4737642.68	1.50	0	32	57.5	57.5	0.0	0.0	58.3	0.0	-3.7	0.0	0.0	2.4	0.0	-0.0	0.4	0.4
2	566578.73	4737642.68	1.50	0	63	67.6	67.6	0.0	0.0	58.3	0.0	-3.7	0.0	0.0	2.8	0.0	-0.0	10.1	10.1
3	566578.73	4737642.68	1.50	0	125	69.5	69.5	0.0	0.0	58.3	0.1	2.6	0.0	0.0	1.4	0.0	-0.0	7.1	7.1
4	566578.73	4737642.68	1.50	0	250	71.6	71.6	0.0	0.0	58.3	0.2	6.1	0.0	0.0	0.0	0.0	-0.0	6.8	6.8

Point Source, ISO 9613, Name: "Aerated Lagoon Blower", ID: "ALB3"																			
Nr.	X	Y	Z	Refl.	Freq.	LxT	LxN	K0	Dc	Adiv	Aatm	Agr	Afol	Ahous	Abar	Cmet	RL	LrT	LrN
	(m)	(m)	(m)		(Hz)	dB(A)	dB(A)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	dB(A)	dB(A)
5	566578.73	4737642.68	1.50	0	500	83.2	83.2	0.0	0.0	58.3	0.5	3.3	0.0	0.0	1.4	0.0	-0.0	19.7	19.7
6	566578.73	4737642.68	1.50	0	1000	91.0	91.0	0.0	0.0	58.3	0.9	-0.3	0.0	0.0	4.9	0.0	-0.0	27.2	27.2
7	566578.73	4737642.68	1.50	0	2000	89.7	89.7	0.0	0.0	58.3	2.3	-0.9	0.0	0.0	5.6	0.0	-0.0	24.4	24.4
8	566578.73	4737642.68	1.50	0	4000	88.2	88.2	0.0	0.0	58.3	7.6	-0.9	0.0	0.0	6.8	0.0	-0.0	16.3	16.3
9	566578.73	4737642.68	1.50	0	8000	83.8	83.8	0.0	0.0	58.3	27.2	-0.9	0.0	0.0	8.4	0.0	-0.0	-9.3	-9.3
10	566578.73	4737642.68	1.50	1	1000	91.0	91.0	0.0	0.0	61.1	1.2	-0.5	0.0	0.0	13.7	0.0	2.0	13.4	13.4
11	566578.73	4737642.68	1.50	1	2000	89.7	89.7	0.0	0.0	61.1	3.1	-1.1	0.0	0.0	16.5	0.0	2.0	8.0	8.0
12	566578.73	4737642.68	1.50	1	4000	88.2	88.2	0.0	0.0	61.1	10.5	-1.1	0.0	0.0	19.3	0.0	2.0	-3.8	-3.8
13	566578.73	4737642.68	1.50	1	8000	83.8	83.8	0.0	0.0	61.1	37.6	-1.1	0.0	0.0	22.3	0.0	2.0	-38.2	-38.2

Point Source, ISO 9613, Name: "Aerated Lagoon Blower", ID: "ALB4"																			
Nr.	X	Y	Z	Refl.	Freq.	LxT	LxN	K0	Dc	Adiv	Aatm	Agr	Afol	Ahous	Abar	Cmet	RL	LrT	LrN
	(m)	(m)	(m)		(Hz)	dB(A)	dB(A)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	dB(A)	dB(A)
1	566588.39	4737644.78	1.50	0	32	57.5	57.5	0.0	0.0	58.5	0.0	-3.7	0.0	0.0	1.8	0.0	-0.0	0.9	0.9
2	566588.39	4737644.78	1.50	0	63	67.6	67.6	0.0	0.0	58.5	0.0	-3.7	0.0	0.0	2.7	0.0	-0.0	10.0	10.0
3	566588.39	4737644.78	1.50	0	125	69.5	69.5	0.0	0.0	58.5	0.1	2.6	0.0	0.0	2.2	0.0	-0.0	6.1	6.1
4	566588.39	4737644.78	1.50	0	250	71.6	71.6	0.0	0.0	58.5	0.3	6.1	0.0	0.0	0.8	0.0	-0.0	5.8	5.8
5	566588.39	4737644.78	1.50	0	500	83.2	83.2	0.0	0.0	58.5	0.5	3.3	0.0	0.0	6.0	0.0	-0.0	14.9	14.9
6	566588.39	4737644.78	1.50	0	1000	91.0	91.0	0.0	0.0	58.5	0.9	-0.3	0.0	0.0	11.9	0.0	-0.0	20.0	20.0
7	566588.39	4737644.78	1.50	0	2000	89.7	89.7	0.0	0.0	58.5	2.3	-0.9	0.0	0.0	14.8	0.0	-0.0	14.9	14.9
8	566588.39	4737644.78	1.50	0	4000	88.2	88.2	0.0	0.0	58.5	7.8	-0.9	0.0	0.0	17.7	0.0	-0.0	5.0	5.0
9	566588.39	4737644.78	1.50	0	8000	83.8	83.8	0.0	0.0	58.5	27.8	-0.9	0.0	0.0	20.6	0.0	-0.0	-22.3	-22.3
10	566588.39	4737644.78	1.50	1	1000	91.0	91.0	0.0	0.0	61.4	1.2	-0.6	0.0	0.0	13.5	0.0	2.0	13.6	13.6
11	566588.39	4737644.78	1.50	1	2000	89.7	89.7	0.0	0.0	61.4	3.2	-1.2	0.0	0.0	16.2	0.0	2.0	8.1	8.1
12	566588.39	4737644.78	1.50	1	4000	88.2	88.2	0.0	0.0	61.4	10.8	-1.2	0.0	0.0	19.1	0.0	2.0	-3.9	-3.9
13	566588.39	4737644.78	1.50	1	8000	83.8	83.8	0.0	0.0	61.4	38.5	-1.2	0.0	0.0	22.0	0.0	2.0	-38.9	-38.9
14	566588.39	4737644.78	1.50	1	500	83.2	83.2	0.0	0.0	59.5	0.5	3.3	0.0	0.0	10.3	0.0	2.0	7.5	7.5
15	566588.39	4737644.78	1.50	1	1000	91.0	91.0	0.0	0.0	59.5	1.0	-0.4	0.0	0.0	16.3	0.0	2.0	12.5	12.5
16	566588.39	4737644.78	1.50	1	2000	89.7	89.7	0.0	0.0	59.5	2.6	-0.9	0.0	0.0	19.2	0.0	2.0	7.3	7.3
17	566588.39	4737644.78	1.50	1	4000	88.2	88.2	0.0	0.0	59.5	8.7	-0.9	0.0	0.0	22.1	0.0	2.0	-3.3	-3.3
18	566588.39	4737644.78	1.50	1	8000	83.8	83.8	0.0	0.0	59.5	31.2	-0.9	0.0	0.0	25.0	0.0	2.0	-33.0	-33.0

Point Source, ISO 9613, Name: "Clarifyer AMU", ID: "CAMU"																			
Nr.	X	Y	Z	Refl.	Freq.	LxT	LxN	K0	Dc	Adiv	Aatm	Agr	Afol	Ahous	Abar	Cmet	RL	LrT	LrN
	(m)	(m)	(m)		(Hz)	dB(A)	dB(A)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	dB(A)	dB(A)
1	566577.60	4737684.34	4.20	0	63	88.0	88.0	0.0	0.0	59.7	0.0	-3.1	0.0	0.0	2.0	0.0	-0.0	29.4	29.4
2	566577.60	4737684.34	4.20	0	125	93.0	93.0	0.0	0.0	59.7	0.1	4.4	0.0	0.0	0.5	0.0	-0.0	28.3	28.3
3	566577.60	4737684.34	4.20	0	250	78.0	78.0	0.0	0.0	59.7	0.3	2.1	0.0	0.0	3.5	0.0	-0.0	12.5	12.5
4	566577.60	4737684.34	4.20	0	500	77.0	77.0	0.0	0.0	59.7	0.5	-0.5	0.0	0.0	6.6	0.0	-0.0	10.7	10.7
5	566577.60	4737684.34	4.20	0	1000	76.0	76.0	0.0	0.0	59.7	1.0	-0.5	0.0	0.0	9.1	0.0	-0.0	6.8	6.8
6	566577.60	4737684.34	4.20	0	2000	74.0	74.0	0.0	0.0	59.7	2.6	-0.5	0.0	0.0	11.8	0.0	-0.0	0.5	0.5
7	566577.60	4737684.34	4.20	0	4000	72.0	72.0	0.0	0.0	59.7	8.9	-0.5	0.0	0.0	14.6	0.0	-0.0	-10.6	-10.6
8	566577.60	4737684.34	4.20	0	8000	66.0	66.0	0.0	0.0	59.7	31.8	-0.5	0.0	0.0	17.5	0.0	-0.0	-42.4	-42.4
9	566577.60	4737684.34	4.20	1	500	77.0	77.0	0.0	0.0	62.5	0.7	-0.9	0.0	0.0	9.5	0.0	13.9	-8.8	-8.8
10	566577.60	4737684.34	4.20	1	1000	76.0	76.0	0.0	0.0	62.5	1.4	-0.9	0.0	0.0	12.7	0.0	13.9	-13.6	-13.6
11	566577.60	4737684.34	4.20	1	2000	74.0	74.0	0.0	0.0	62.5	3.6	-0.9	0.0	0.0	16.7	0.0	13.9	-21.9	-21.9
12	566577.60	4737684.34	4.20	1	4000	72.0	72.0	0.0	0.0	62.5	12.4	-0.9	0.0	0.0	20.5	0.0	13.9	-36.4	-36.4
13	566577.60	4737684.34	4.20	1	8000	66.0	66.0	0.0	0.0	62.5	44.1	-0.9	0.0	0.0	23.8	0.0	13.9	-77.4	-77.4
14	566577.60	4737684.34	4.20	1	1000	76.0	76.0	0.0	0.0	62.0	1.3	-0.8	0.0	0.0	19.1	0.0	2.0	-7.6	-7.6
15	566577.60	4737684.34	4.20	1	2000	74.0	74.0	0.0	0.0	62.0	3.4	-0.8	0.0	0.0	22.1	0.0	2.0	-14.6	-14.6
16	566577.60	4737684.34	4.20	1	4000	72.0	72.0	0.0	0.0	62.0	11.6	-0.8	0.0	0.0	25.0	0.0	2.0	-27.8	-27.8
17	566577.60	4737684.34	4.20	1	8000	66.0	66.0	0.0	0.0	62.0	41.4	-0.8	0.0	0.0	25.0	0.0	2.0	-63.6	-63.6

Point Source, ISO 9613, Name: "Primary Building Vent 1", ID: "PBV1"																			
Nr.	X	Y	Z	Refl.	Freq.	LxT	LxN	K0	Dc	Adiv	Aatm	Agr	Afol	Ahous	Abar	Cmet	RL	LrT	LrN
	(m)	(m)	(m)		(Hz)	dB(A)	dB(A)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	dB(A)	dB(A)
1	566604.88	4737571.32	5.30	0	63	41.8	41.8	0.0	0.0	56.1	0.0	-3.0	0.0	0.0	0.0	0.0	-0.0	-11.3	-11.3
2	566604.88	4737571.32	5.30	0	125	57.9	57.9	0.0	0.0	56.1	0.1	3.8	0.0	0.0	0.0	0.0	-0.0	-2.1	-2.1
3	566604.88	4737571.32	5.30	0	250	72.4	72.4	0.0	0.0	56.1	0.2	0.9	0.0	0.0	0.0	0.0	-0.0	15.2	15.2
4	566604.88	4737571.32	5.30	0	500	72.8	72.8	0.0	0.0	56.1	0.4	-0.7	0.0	0.0	0.0	0.0	-0.0	17.1	17.1
5	566604.88	4737571.32	5.30	0	1000	74.0	74.0	0.0	0.0	56.1	0.7	-0.7	0.0	0.0	0.0	0.0	-0.0	17.9	17.9
6	566604.88	4737571.32	5.30	0	2000	72.2	72.2	0.0	0.0	56.1	1.7	-0.7	0.0	0.0	0.0	0.0	-0.0	15.1	15.1
7	566604.88	4737571.32	5.30	0	4000	66.0	66.0	0.0	0.0	56.1	5.9	-0.7	0.0	0.0	0.0	0.0	-0.0	4.7	4.7

Point Source, ISO 9613, Name: "Primary Building Vent 1", ID: "PBV1"																			
Nr.	X	Y	Z	Refl.	Freq.	LxT	LxN	K0	Dc	Adiv	Aatm	Agr	Afol	Ahous	Abar	Cmet	RL	LrT	LrN
	(m)	(m)	(m)		(Hz)	dB(A)	dB(A)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	dB(A)	dB(A)
8	566604.88	4737571.32	5.30	0	8000	57.9	57.9	0.0	0.0	56.1	21.0	-0.7	0.0	0.0	0.0	0.0	-0.0	-18.5	-18.5
9	566604.88	4737571.32	5.30	1	1000	74.0	74.0	0.0	0.0	57.5	0.8	-1.0	0.0	0.0	4.8	0.0	13.7	-1.7	-1.7
10	566604.88	4737571.32	5.30	1	2000	72.2	72.2	0.0	0.0	57.5	2.0	-1.0	0.0	0.0	4.8	0.0	13.7	-4.8	-4.8
11	566604.88	4737571.32	5.30	1	4000	66.0	66.0	0.0	0.0	57.5	6.9	-1.0	0.0	0.0	4.8	0.0	13.7	-15.9	-15.9
12	566604.88	4737571.32	5.30	1	8000	57.9	57.9	0.0	0.0	57.5	24.6	-1.0	0.0	0.0	4.8	0.0	13.7	-41.7	-41.7

Point Source, ISO 9613, Name: "Primary Building Vent 2", ID: "PBV2"																			
Nr.	X	Y	Z	Refl.	Freq.	LxT	LxN	K0	Dc	Adiv	Aatm	Agr	Afol	Ahous	Abar	Cmet	RL	LrT	LrN
	(m)	(m)	(m)		(Hz)	dB(A)	dB(A)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	dB(A)	dB(A)
1	566594.03	4737566.29	2.50	0	63	41.8	41.8	0.0	0.0	55.6	0.0	-3.0	0.0	0.0	0.0	0.0	-0.0	-10.8	-10.8
2	566594.03	4737566.29	2.50	0	125	57.9	57.9	0.0	0.0	55.6	0.1	2.4	0.0	0.0	0.0	0.0	-0.0	-0.1	-0.1
3	566594.03	4737566.29	2.50	0	250	72.4	72.4	0.0	0.0	55.6	0.2	2.8	0.0	0.0	0.0	0.0	-0.0	13.8	13.8
4	566594.03	4737566.29	2.50	0	500	72.8	72.8	0.0	0.0	55.6	0.3	-0.5	0.0	0.0	0.0	0.0	-0.0	17.4	17.4
5	566594.03	4737566.29	2.50	0	1000	74.0	74.0	0.0	0.0	55.6	0.6	-0.9	0.0	0.0	0.0	0.0	-0.0	18.7	18.7
6	566594.03	4737566.29	2.50	0	2000	72.2	72.2	0.0	0.0	55.6	1.6	-0.9	0.0	0.0	0.0	0.0	-0.0	15.9	15.9
7	566594.03	4737566.29	2.50	0	4000	66.0	66.0	0.0	0.0	55.6	5.6	-0.9	0.0	0.0	0.0	0.0	-0.0	5.8	5.8
8	566594.03	4737566.29	2.50	0	8000	57.9	57.9	0.0	0.0	55.6	19.8	-0.9	0.0	0.0	0.0	0.0	-0.0	-16.6	-16.6
9	566594.03	4737566.29	2.50	1	500	72.8	72.8	0.0	0.0	57.1	0.4	-1.2	0.0	0.0	21.3	0.0	12.6	-17.4	-17.4
10	566594.03	4737566.29	2.50	1	1000	74.0	74.0	0.0	0.0	57.1	0.7	-1.4	0.0	0.0	24.2	0.0	12.6	-19.3	-19.3
11	566594.03	4737566.29	2.50	1	2000	72.2	72.2	0.0	0.0	57.1	2.0	-1.4	0.0	0.0	25.0	0.0	12.6	-23.1	-23.1
12	566594.03	4737566.29	2.50	1	4000	66.0	66.0	0.0	0.0	57.1	6.6	-1.4	0.0	0.0	25.0	0.0	12.6	-34.0	-34.0
13	566594.03	4737566.29	2.50	1	8000	57.9	57.9	0.0	0.0	57.1	23.7	-1.4	0.0	0.0	25.0	0.0	12.6	-59.1	-59.1
14	566594.03	4737566.29	2.50	1	63	41.8	41.8	0.0	0.0	55.6	0.0	-3.0	0.0	0.0	0.0	0.0	2.0	-12.8	-12.8
15	566594.03	4737566.29	2.50	1	125	57.9	57.9	0.0	0.0	55.6	0.1	2.4	0.0	0.0	0.0	0.0	2.0	-2.1	-2.1
16	566594.03	4737566.29	2.50	1	250	72.4	72.4	0.0	0.0	55.6	0.2	2.8	0.0	0.0	0.0	0.0	2.0	11.8	11.8
17	566594.03	4737566.29	2.50	1	500	72.8	72.8	0.0	0.0	55.6	0.3	-0.5	0.0	0.0	0.0	0.0	2.0	15.4	15.4
18	566594.03	4737566.29	2.50	1	1000	74.0	74.0	0.0	0.0	55.6	0.6	-0.9	0.0	0.0	0.0	0.0	2.0	16.7	16.7
19	566594.03	4737566.29	2.50	1	2000	72.2	72.2	0.0	0.0	55.6	1.6	-0.9	0.0	0.0	0.0	0.0	2.0	13.9	13.9
20	566594.03	4737566.29	2.50	1	4000	66.0	66.0	0.0	0.0	55.6	5.6	-0.9	0.0	0.0	0.0	0.0	2.0	3.8	3.8
21	566594.03	4737566.29	2.50	1	8000	57.9	57.9	0.0	0.0	55.6	19.9	-0.9	0.0	0.0	0.0	0.0	2.0	-18.6	-18.6

Point Source, ISO 9613, Name: "Primary Building HVAC", ID: "PBHVAC"																			
Nr.	X	Y	Z	Refl.	Freq.	LxT	LxN	K0	Dc	Adiv	Aatm	Agr	Afol	Ahous	Abar	Cmet	RL	LrT	LrN
	(m)	(m)	(m)		(Hz)	dB(A)	dB(A)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	dB(A)	dB(A)
1	566598.93	4737582.56	2.50	0	63	60.8	57.8	0.0	0.0	56.4	0.0	-3.0	0.0	0.0	3.5	0.0	-0.0	3.9	0.9
2	566598.93	4737582.56	2.50	0	125	69.1	66.1	0.0	0.0	56.4	0.1	2.3	0.0	0.0	4.3	0.0	-0.0	6.0	3.0
3	566598.93	4737582.56	2.50	0	250	76.0	73.0	0.0	0.0	56.4	0.2	2.7	0.0	0.0	5.7	0.0	-0.0	11.0	8.0
4	566598.93	4737582.56	2.50	0	500	81.7	78.7	0.0	0.0	56.4	0.4	-0.6	0.0	0.0	7.8	0.0	-0.0	17.7	14.7
5	566598.93	4737582.56	2.50	0	1000	82.2	79.2	0.0	0.0	56.4	0.7	-1.0	0.0	0.0	10.0	0.0	-0.0	16.1	13.1
6	566598.93	4737582.56	2.50	0	2000	79.6	76.6	0.0	0.0	56.4	1.8	-1.0	0.0	0.0	12.4	0.0	-0.0	10.0	7.0
7	566598.93	4737582.56	2.50	0	4000	76.3	73.3	0.0	0.0	56.4	6.1	-1.0	0.0	0.0	14.9	0.0	-0.0	-0.1	-3.1
8	566598.93	4737582.56	2.50	0	8000	71.8	68.8	0.0	0.0	56.4	21.8	-1.0	0.0	0.0	17.3	0.0	-0.0	-22.7	-25.7
9	566598.93	4737582.56	2.50	1	1000	82.2	79.2	0.0	0.0	57.1	0.7	-1.1	0.0	0.0	25.0	0.0	13.7	-13.4	-16.4
10	566598.93	4737582.56	2.50	1	2000	79.6	76.6	0.0	0.0	57.1	2.0	-1.1	0.0	0.0	25.0	0.0	13.7	-17.2	-20.2
11	566598.93	4737582.56	2.50	1	4000	76.3	73.3	0.0	0.0	57.1	6.6	-1.1	0.0	0.0	25.0	0.0	13.7	-25.2	-28.2
12	566598.93	4737582.56	2.50	1	8000	71.8	68.8	0.0	0.0	57.1	23.7	-1.1	0.0	0.0	25.0	0.0	13.7	-46.7	-49.7
13	566598.93	4737582.56	2.50	1	2000	79.6	76.6	0.0	0.0	57.9	2.1	-1.2	0.0	0.0	5.5	0.0	14.0	1.3	-1.8
14	566598.93	4737582.56	2.50	1	4000	76.3	73.3	0.0	0.0	57.9	7.3	-1.2	0.0	0.0	6.2	0.0	14.0	-7.8	-10.8
15	566598.93	4737582.56	2.50	1	8000	71.8	68.8	0.0	0.0	57.9	25.9	-1.2	0.0	0.0	7.2	0.0	14.0	-32.0	-35.0
16	566598.93	4737582.56	2.50	1	2000	79.6	76.6	0.0	0.0	57.1	2.0	-1.4	0.0	0.0	4.8	0.0	13.9	3.2	0.2
17	566598.93	4737582.56	2.50	1	4000	76.3	73.3	0.0	0.0	57.1	6.6	-1.4	0.0	0.0	4.8	0.0	13.9	-4.8	-7.8
18	566598.93	4737582.56	2.50	1	8000	71.8	68.8	0.0	0.0	57.1	23.7	-1.4	0.0	0.0	4.8	0.0	13.9	-26.3	-29.3

Point Source, ISO 9613, Name: "Office Lab HVAC", ID: "OLHVAC1"																			
Nr.	X	Y	Z	Refl.	Freq.	LxT	LxN	K0	Dc	Adiv	Aatm	Agr	Afol	Ahous	Abar	Cmet	RL	LrT	LrN
	(m)	(m)	(m)		(Hz)	dB(A)	dB(A)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	dB(A)	dB(A)
1	566558.97	4737558.48	5.30	0	63	60.8	57.8	0.0	0.0	54.3	0.0	-3.0	0.0	0.0	0.0	0.0	-0.0	9.5	6.4
2	566558.97	4737558.48	5.30	0	125	69.1	66.1	0.0	0.0	54.3	0.1	3.5	0.0	0.0	0.0	0.0	-0.0	11.2	8.2
3	566558.97	4737558.48	5.30	0	250	76.0	73.0	0.0	0.0	54.3	0.2	0.8	0.0	0.0	0.0	0.0	-0.0	20.7	17.7
4	566558.97	4737558.48	5.30	0	500	81.7	78.7	0.0	0.0	54.3	0.3	-0.7	0.0	0.0	0.0	0.0	-0.0	27.8	24.8
5	566558.97	4737558.48	5.30	0	1000	82.2	79.2	0.0	0.0	54.3	0.5	-0.7	0.0	0.0	0.0	0.0	-0.0	28.1	25.1
6	566558.97	4737558.48	5.30	0	2000	79.6	76.6	0.0	0.0	54.3	1.4	-0.7	0.0	0.0	0.0	0.0	-0.0	24.6	21.6
7	566558.97	4737558.48	5.30	0	4000	76.3	73.3	0.0	0.0	54.3	4.8	-0.7	0.0	0.0	0.0	0.0	-0.0	17.9	14.9

Point Source, ISO 9613, Name: "Office Lab HVAC", ID: "OLHVAC1"																			
Nr.	X	Y	Z	Refl.	Freq.	LxT	LxN	K0	Dc	Adiv	Aatm	Agr	Afol	Ahous	Abar	Cmet	RL	LrT	LrN
	(m)	(m)	(m)		(Hz)	dB(A)	dB(A)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	dB(A)	dB(A)
8	566558.97	4737558.48	5.30	0	8000	71.8	68.8	0.0	0.0	54.3	17.2	-0.7	0.0	0.0	0.0	0.0	-0.0	1.0	-2.0
9	566558.97	4737558.48	5.30	1	500	81.7	78.7	0.0	0.0	56.8	0.4	-1.0	0.0	0.0	9.9	0.0	10.9	4.6	1.6
10	566558.97	4737558.48	5.30	1	1000	82.2	79.2	0.0	0.0	56.8	0.7	-1.0	0.0	0.0	12.4	0.0	10.9	2.3	-0.8
11	566558.97	4737558.48	5.30	1	2000	79.6	76.6	0.0	0.0	56.8	1.9	-1.0	0.0	0.0	15.7	0.0	10.9	-4.8	-7.8
12	566558.97	4737558.48	5.30	1	4000	76.3	73.3	0.0	0.0	56.8	6.4	-1.0	0.0	0.0	20.0	0.0	10.9	-16.9	-19.9
13	566558.97	4737558.48	5.30	1	8000	71.8	68.8	0.0	0.0	56.8	22.9	-1.0	0.0	0.0	24.2	0.0	10.9	-42.1	-45.2

Point Source, ISO 9613, Name: "Office Lab HVAC", ID: "OLHVAC2"																			
Nr.	X	Y	Z	Refl.	Freq.	LxT	LxN	K0	Dc	Adiv	Aatm	Agr	Afol	Ahous	Abar	Cmet	RL	LrT	LrN
	(m)	(m)	(m)		(Hz)	dB(A)	dB(A)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	dB(A)	dB(A)
1	566550.25	4737555.94	5.30	0	63	60.8	57.8	0.0	0.0	54.0	0.0	-3.0	0.0	0.0	1.7	0.0	-0.0	8.1	5.1
2	566550.25	4737555.94	5.30	0	125	69.1	66.1	0.0	0.0	54.0	0.1	3.4	0.0	0.0	1.2	0.0	-0.0	10.4	7.4
3	566550.25	4737555.94	5.30	0	250	76.0	73.0	0.0	0.0	54.0	0.2	0.7	0.0	0.0	4.0	0.0	-0.0	17.2	14.2
4	566550.25	4737555.94	5.30	0	500	81.7	78.7	0.0	0.0	54.0	0.3	-0.8	0.0	0.0	6.2	0.0	-0.0	22.0	18.9
5	566550.25	4737555.94	5.30	0	1000	82.2	79.2	0.0	0.0	54.0	0.5	-0.8	0.0	0.0	8.7	0.0	-0.0	19.7	16.7
6	566550.25	4737555.94	5.30	0	2000	79.6	76.6	0.0	0.0	54.0	1.4	-0.8	0.0	0.0	11.7	0.0	-0.0	13.3	10.3
7	566550.25	4737555.94	5.30	0	4000	76.3	73.3	0.0	0.0	54.0	4.6	-0.8	0.0	0.0	14.8	0.0	-0.0	3.6	0.6
8	566550.25	4737555.94	5.30	0	8000	71.8	68.8	0.0	0.0	54.0	16.5	-0.8	0.0	0.0	17.8	0.0	-0.0	-15.7	-18.7
9	566550.25	4737555.94	5.30	1	500	81.7	78.7	0.0	0.0	57.1	0.4	-1.0	0.0	0.0	0.0	0.0	11.5	13.6	10.6
10	566550.25	4737555.94	5.30	1	1000	82.2	79.2	0.0	0.0	57.1	0.7	-1.0	0.0	0.0	0.0	0.0	11.5	13.8	10.8
11	566550.25	4737555.94	5.30	1	2000	79.6	76.6	0.0	0.0	57.1	2.0	-1.0	0.0	0.0	0.0	0.0	11.5	10.0	7.0
12	566550.25	4737555.94	5.30	1	4000	76.3	73.3	0.0	0.0	57.1	6.6	-1.0	0.0	0.0	0.0	0.0	11.5	2.0	-1.0
13	566550.25	4737555.94	5.30	1	8000	71.8	68.8	0.0	0.0	57.1	23.6	-1.0	0.0	0.0	0.0	0.0	11.5	-19.4	-22.4

Point Source, ISO 9613, Name: "Office Lab Vent", ID: "OLV"																			
Nr.	X	Y	Z	Refl.	Freq.	LxT	LxN	K0	Dc	Adiv	Aatm	Agr	Afol	Ahous	Abar	Cmet	RL	LrT	LrN
	(m)	(m)	(m)		(Hz)	dB(A)	dB(A)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	dB(A)	dB(A)
1	566549.20	4737554.24	5.80	0	63	41.8	-88.0	0.0	0.0	53.9	0.0	-3.0	0.0	0.0	0.0	0.0	-0.0	-9.1	-88.0
2	566549.20	4737554.24	5.80	0	125	57.9	-88.0	0.0	0.0	53.9	0.1	3.3	0.0	0.0	0.0	0.0	-0.0	0.6	-88.0
3	566549.20	4737554.24	5.80	0	250	72.4	-88.0	0.0	0.0	53.9	0.2	0.6	0.0	0.0	0.0	0.0	-0.0	17.8	-88.0
4	566549.20	4737554.24	5.80	0	500	72.8	-88.0	0.0	0.0	53.9	0.3	-0.7	0.0	0.0	0.0	0.0	-0.0	19.4	-88.0
5	566549.20	4737554.24	5.80	0	1000	74.0	-88.0	0.0	0.0	53.9	0.5	-0.7	0.0	0.0	0.0	0.0	-0.0	20.3	-88.0
6	566549.20	4737554.24	5.80	0	2000	72.2	-88.0	0.0	0.0	53.9	1.4	-0.7	0.0	0.0	0.0	0.0	-0.0	17.7	-88.0
7	566549.20	4737554.24	5.80	0	4000	66.0	-88.0	0.0	0.0	53.9	4.6	-0.7	0.0	0.0	0.0	0.0	-0.0	8.3	-88.0
8	566549.20	4737554.24	5.80	0	8000	57.9	-88.0	0.0	0.0	53.9	16.3	-0.7	0.0	0.0	0.0	0.0	-0.0	-11.5	-88.0
9	566549.20	4737554.24	5.80	1	500	72.8	-88.0	0.0	0.0	57.2	0.4	-0.9	0.0	0.0	0.0	0.0	11.7	4.4	-88.0
10	566549.20	4737554.24	5.80	1	1000	74.0	-88.0	0.0	0.0	57.2	0.7	-0.9	0.0	0.0	0.0	0.0	11.7	5.3	-88.0
11	566549.20	4737554.24	5.80	1	2000	72.2	-88.0	0.0	0.0	57.2	2.0	-0.9	0.0	0.0	0.0	0.0	11.7	2.3	-88.0
12	566549.20	4737554.24	5.80	1	4000	66.0	-88.0	0.0	0.0	57.2	6.7	-0.9	0.0	0.0	0.0	0.0	11.7	-8.6	-88.0
13	566549.20	4737554.24	5.80	1	8000	57.9	-88.0	0.0	0.0	57.2	23.8	-0.9	0.0	0.0	0.0	0.0	11.7	-33.9	-88.0

Point Source, ISO 9613, Name: "Digested Sludge Transfer Pump", ID: "DSTP"																			
Nr.	X	Y	Z	Refl.	Freq.	LxT	LxN	K0	Dc	Adiv	Aatm	Agr	Afol	Ahous	Abar	Cmet	RL	LrT	LrN
	(m)	(m)	(m)		(Hz)	dB(A)	dB(A)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	dB(A)	dB(A)
1	566532.36	4737600.25	0.75	0	500	109.0	-88.0	0.0	0.0	56.1	0.4	-0.7	0.0	0.0	3.9	0.0	-0.0	49.3	-88.0

Point Source, ISO 9613, Name: "Digester Truck Idle", ID: "DTR"																			
Nr.	X	Y	Z	Refl.	Freq.	LxT	LxN	K0	Dc	Adiv	Aatm	Agr	Afol	Ahous	Abar	Cmet	RL	LrT	LrN
	(m)	(m)	(m)		(Hz)	dB(A)	dB(A)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	dB(A)	dB(A)
1	566527.60	4737604.11	1.50	0	500	96.0	-88.0	0.0	0.0	56.3	0.4	1.1	0.0	0.0	6.2	0.0	-0.0	32.1	-88.0

Point Source, ISO 9613, Name: "Sewage Truck Pump", ID: "STP"																			
Nr.	X	Y	Z	Refl.	Freq.	LxT	LxN	K0	Dc	Adiv	Aatm	Agr	Afol	Ahous	Abar	Cmet	RL	LrT	LrN
	(m)	(m)	(m)		(Hz)	dB(A)	dB(A)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	dB(A)	dB(A)
1	566601.07	4737558.12	1.00	0	500	104.0	-88.0	0.0	0.0	55.4	0.3	0.9	0.0	0.0	9.3	0.0	-0.0	38.1	-88.0
2	566601.07	4737558.12	1.00	1	500	104.0	-88.0	0.0	0.0	57.6	0.4	-2.3	0.0	0.0	21.7	0.0	13.3	13.4	-88.0
3	566601.07	4737558.12	1.00	1	500	104.0	-88.0	0.0	0.0	55.5	0.3	0.8	0.0	0.0	14.1	0.0	1.0	32.3	-88.0
4	566601.07	4737558.12	1.00	2	500	104.0	-88.0	0.0	0.0	55.5	0.3	0.7	0.0	0.0	13.0	0.0	2.0	32.6	-88.0
5	566601.07	4737558.12	1.00	2	500	104.0	-88.0	0.0	0.0	55.5	0.3	0.7	0.0	0.0	13.8	0.0	2.0	31.7	-88.0

Point Source, ISO 9613, Name: "Sewage Truck Idle", ID: "STR"																			
Nr.	X	Y	Z	Refl.	Freq.	LxT	LxN	K0	Dc	Adiv	Aatm	Agr	Afol	Ahous	Abar	Cmet	RL	LrT	LrN
	(m)	(m)	(m)		(Hz)	dB(A)	dB(A)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	dB(A)	dB(A)
1	566600.94	4737554.96	1.50	0	500	93.0	-88.0	0.0	0.0	55.3	0.3	0.7	0.0	0.0	0.0	0.0	-0.0	36.6	-88.0

Point Source, ISO 9613, Name: "Sewage Truck Idle", ID: "STR"																			
Nr.	X	Y	Z	Refl.	Freq.	LxT	LxN	K0	Dc	Adiv	Aatm	Agr	Afol	Ahous	Abar	Cmet	RL	LrT	LrN
	(m)	(m)	(m)		(Hz)	dB(A)	dB(A)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	dB(A)	dB(A)
2	566600.94	4737554.96	1.50	1	500	93.0	-88.0	0.0	0.0	57.6	0.4	-1.4	0.0	0.0	16.6	0.0	13.3	6.3	-88.0

Point Source, ISO 9613, Name: "Generator Combustion Exhaust Stack", ID: "EGEN_CE"																			
Nr.	X	Y	Z	Refl.	Freq.	LxT	LxN	K0	Dc	Adiv	Aatm	Agr	Afol	Ahous	Abar	Cmet	RL	LrT	LrN
	(m)	(m)	(m)		(Hz)	dB(A)	dB(A)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	dB(A)	dB(A)
1	566563.94	4737559.68	5.80	0	32	55.9	-88.0	0.0	0.0	54.5	0.0	-3.0	0.0	0.0	0.0	0.0	-0.0	4.3	-88.0
2	566563.94	4737559.68	5.80	0	63	77.6	-88.0	0.0	0.0	54.5	0.0	-3.0	0.0	0.0	0.0	0.0	-0.0	26.0	-88.0
3	566563.94	4737559.68	5.80	0	125	80.3	-88.0	0.0	0.0	54.5	0.1	3.5	0.0	0.0	0.0	0.0	-0.0	22.2	-88.0
4	566563.94	4737559.68	5.80	0	250	83.1	-88.0	0.0	0.0	54.5	0.2	0.6	0.0	0.0	0.0	0.0	-0.0	27.8	-88.0
5	566563.94	4737559.68	5.80	0	500	91.3	-88.0	0.0	0.0	54.5	0.3	-0.7	0.0	0.0	0.0	0.0	-0.0	37.2	-88.0
6	566563.94	4737559.68	5.80	0	1000	95.2	-88.0	0.0	0.0	54.5	0.6	-0.7	0.0	0.0	0.0	0.0	-0.0	40.8	-88.0
7	566563.94	4737559.68	5.80	0	2000	91.6	-88.0	0.0	0.0	54.5	1.5	-0.7	0.0	0.0	0.0	0.0	-0.0	36.3	-88.0
8	566563.94	4737559.68	5.80	0	4000	83.4	-88.0	0.0	0.0	54.5	4.9	-0.7	0.0	0.0	0.0	0.0	-0.0	24.7	-88.0
9	566563.94	4737559.68	5.80	0	8000	71.2	-88.0	0.0	0.0	54.5	17.5	-0.7	0.0	0.0	0.0	0.0	-0.0	-0.2	-88.0
10	566563.94	4737559.68	5.80	1	500	91.3	-88.0	0.0	0.0	56.8	0.4	-0.9	0.0	0.0	0.0	0.0	10.7	24.4	-88.0
11	566563.94	4737559.68	5.80	1	1000	95.2	-88.0	0.0	0.0	56.8	0.7	-0.9	0.0	0.0	0.0	0.0	10.7	28.0	-88.0
12	566563.94	4737559.68	5.80	1	2000	91.6	-88.0	0.0	0.0	56.8	1.9	-0.9	0.0	0.0	0.0	0.0	10.7	23.2	-88.0
13	566563.94	4737559.68	5.80	1	4000	83.4	-88.0	0.0	0.0	56.8	6.4	-0.9	0.0	0.0	0.0	0.0	10.7	10.5	-88.0
14	566563.94	4737559.68	5.80	1	8000	71.2	-88.0	0.0	0.0	56.8	22.7	-0.9	0.0	0.0	0.0	0.0	10.7	-18.0	-88.0

Point Source, ISO 9613, Name: "Generator Exhaust Fan", ID: "EGEN_EF"																			
Nr.	X	Y	Z	Refl.	Freq.	LxT	LxN	K0	Dc	Adiv	Aatm	Agr	Afol	Ahous	Abar	Cmet	RL	LrT	LrN
	(m)	(m)	(m)		(Hz)	dB(A)	dB(A)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	dB(A)	dB(A)
1	566567.19	4737558.43	2.00	0	32	55.9	-88.0	0.0	0.0	54.5	0.0	-3.0	0.0	0.0	3.4	0.0	-0.0	0.9	-88.0
2	566567.19	4737558.43	2.00	0	63	77.6	-88.0	0.0	0.0	54.5	0.0	-3.0	0.0	0.0	4.4	0.0	-0.0	21.6	-88.0
3	566567.19	4737558.43	2.00	0	125	80.3	-88.0	0.0	0.0	54.5	0.1	2.3	0.0	0.0	5.0	0.0	-0.0	18.4	-88.0
4	566567.19	4737558.43	2.00	0	250	83.1	-88.0	0.0	0.0	54.5	0.2	4.1	0.0	0.0	6.2	0.0	-0.0	18.1	-88.0
5	566567.19	4737558.43	2.00	0	500	91.3	-88.0	0.0	0.0	54.5	0.3	0.6	0.0	0.0	9.1	0.0	-0.0	26.7	-88.0
6	566567.19	4737558.43	2.00	0	1000	95.2	-88.0	0.0	0.0	54.5	0.6	-0.7	0.0	0.0	11.5	0.0	-0.0	29.3	-88.0
7	566567.19	4737558.43	2.00	0	2000	91.6	-88.0	0.0	0.0	54.5	1.5	-0.8	0.0	0.0	13.6	0.0	-0.0	22.8	-88.0
8	566567.19	4737558.43	2.00	0	4000	83.4	-88.0	0.0	0.0	54.5	4.9	-0.8	0.0	0.0	15.6	0.0	-0.0	9.2	-88.0
9	566567.19	4737558.43	2.00	0	8000	71.2	-88.0	0.0	0.0	54.5	17.5	-0.8	0.0	0.0	17.2	0.0	-0.0	-17.3	-88.0
10	566567.19	4737558.43	2.00	1	500	91.3	-88.0	0.0	0.0	56.8	0.4	-1.1	0.0	0.0	16.6	0.0	10.9	7.7	-88.0
11	566567.19	4737558.43	2.00	1	1000	95.2	-88.0	0.0	0.0	56.8	0.7	-1.5	0.0	0.0	19.5	0.0	10.9	8.8	-88.0
12	566567.19	4737558.43	2.00	1	2000	91.6	-88.0	0.0	0.0	56.8	1.9	-1.5	0.0	0.0	22.4	0.0	10.9	1.1	-88.0
13	566567.19	4737558.43	2.00	1	4000	83.4	-88.0	0.0	0.0	56.8	6.4	-1.5	0.0	0.0	25.0	0.0	10.9	-14.2	-88.0
14	566567.19	4737558.43	2.00	1	8000	71.2	-88.0	0.0	0.0	56.8	22.8	-1.5	0.0	0.0	25.0	0.0	10.9	-42.8	-88.0

Line Source, ISO 9613, Name: "Digester Truck Movements", ID: "DTRM"																			
Nr.	X	Y	Z	Refl.	Freq.	LxT	LxN	K0	Dc	Adiv	Aatm	Agr	Afol	Ahous	Abar	Cmet	RL	LrT	LrN
	(m)	(m)	(m)		(Hz)	dB(A)	dB(A)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	dB(A)	dB(A)
1	566568.09	4737538.69	2.40	0	32	50.4	-88.0	0.0	0.0	53.5	0.0	-3.0	0.0	0.0	0.0	0.0	-0.0	-0.1	-88.0
2	566568.09	4737538.69	2.40	0	63	56.3	-88.0	0.0	0.0	53.5	0.0	-3.0	0.0	0.0	0.0	0.0	-0.0	5.8	-88.0
3	566568.09	4737538.69	2.40	0	125	57.6	-88.0	0.0	0.0	53.5	0.1	2.9	0.0	0.0	0.0	0.0	-0.0	1.2	-88.0
4	566568.09	4737538.69	2.40	0	250	66.4	-88.0	0.0	0.0	53.5	0.1	4.4	0.0	0.0	0.0	0.0	-0.0	8.4	-88.0
5	566568.09	4737538.69	2.40	0	500	69.1	-88.0	0.0	0.0	53.5	0.3	0.2	0.0	0.0	0.0	0.0	-0.0	15.2	-88.0
6	566568.09	4737538.69	2.40	0	1000	73.6	-88.0	0.0	0.0	53.5	0.5	-0.5	0.0	0.0	0.0	0.0	-0.0	20.2	-88.0
7	566568.09	4737538.69	2.40	0	2000	72.8	-88.0	0.0	0.0	53.5	1.3	-0.5	0.0	0.0	0.0	0.0	-0.0	18.6	-88.0
8	566568.09	4737538.69	2.40	0	4000	70.7	-88.0	0.0	0.0	53.5	4.3	-0.5	0.0	0.0	0.0	0.0	-0.0	13.4	-88.0
9	566568.09	4737538.69	2.40	0	8000	64.1	-88.0	0.0	0.0	53.5	15.5	-0.5	0.0	0.0	0.0	0.0	-0.0	-4.3	-88.0
10	566535.42	4737556.45	2.40	0	32	50.3	-88.0	0.0	0.0	53.8	0.0	-3.0	0.0	0.0	0.0	0.0	-0.0	-0.5	-88.0
11	566535.42	4737556.45	2.40	0	63	56.2	-88.0	0.0	0.0	53.8	0.0	-3.0	0.0	0.0	0.0	0.0	-0.0	5.4	-88.0
12	566535.42	4737556.45	2.40	0	125	57.5	-88.0	0.0	0.0	53.8	0.1	2.8	0.0	0.0	0.0	0.0	-0.0	0.9	-88.0
13	566535.42	4737556.45	2.40	0	250	66.3	-88.0	0.0	0.0	53.8	0.1	4.3	0.0	0.0	0.0	0.0	-0.0	8.1	-88.0
14	566535.42	4737556.45	2.40	0	500	69.0	-88.0	0.0	0.0	53.8	0.3	0.2	0.0	0.0	0.0	0.0	-0.0	14.8	-88.0
15	566535.42	4737556.45	2.40	0	1000	73.5	-88.0	0.0	0.0	53.8	0.5	-0.6	0.0	0.0	0.0	0.0	-0.0	19.8	-88.0
16	566535.42	4737556.45	2.40	0	2000	72.7	-88.0	0.0	0.0	53.8	1.3	-0.6	0.0	0.0	0.0	0.0	-0.0	18.2	-88.0
17	566535.42	4737556.45	2.40	0	4000	70.6	-88.0	0.0	0.0	53.8	4.5	-0.6	0.0	0.0	0.0	0.0	-0.0	12.9	-88.0
18	566535.42	4737556.45	2.40	0	8000	64.0	-88.0	0.0	0.0	53.8	16.1	-0.6	0.0	0.0	0.0	0.0	-0.0	-5.3	-88.0
19	566509.69	4737642.21	2.40	0	32	53.3	-88.0	0.0	0.0	57.8	0.0	-3.2	0.0	0.0	2.1	0.0	-0.0	-3.5	-88.0
20	566509.69	4737642.21	2.40	0	63	59.2	-88.0	0.0	0.0	57.8	0.0	-3.2	0.0	0.0	2.5	0.0	-0.0	2.0	-88.0
21	566509.69	4737642.21	2.40	0	125	60.5	-88.0	0.0	0.0	57.8	0.1	3.4	0.0	0.0	1.4	0.0	-0.0	-2.2	-88.0
22	566509.69	4737642.21	2.40	0	250	69.3	-88.0	0.0	0.0	57.8	0.2	4.9	0.0	0.0	1.7	0.0	-0.0	4.6	-88.0

Line Source, ISO 9613, Name: "Digester Truck Movements", ID: "DTRM"																			
Nr.	X	Y	Z	Refl.	Freq.	LxT	LxN	K0	Dc	Adiv	Aatm	Agr	Afol	Ahous	Abar	Cmet	RL	LrT	LrN
	(m)	(m)	(m)		(Hz)	dB(A)	dB(A)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	dB(A)	dB(A)
23	566509.69	4737642.21	2.40	0	500	72.0	-88.0	0.0	0.0	57.8	0.4	0.3	0.0	0.0	5.2	0.0	-0.0	8.2	-88.0
24	566509.69	4737642.21	2.40	0	1000	76.5	-88.0	0.0	0.0	57.8	0.8	-0.5	0.0	0.0	6.9	0.0	-0.0	11.5	-88.0
25	566509.69	4737642.21	2.40	0	2000	75.7	-88.0	0.0	0.0	57.8	2.1	-0.5	0.0	0.0	8.8	0.0	-0.0	7.5	-88.0
26	566509.69	4737642.21	2.40	0	4000	73.6	-88.0	0.0	0.0	57.8	7.2	-0.5	0.0	0.0	11.0	0.0	-0.0	-1.9	-88.0
27	566509.69	4737642.21	2.40	0	8000	67.0	-88.0	0.0	0.0	57.8	25.7	-0.5	0.0	0.0	13.5	0.0	-0.0	-29.5	-88.0
28	566494.61	4737687.72	2.40	0	32	54.0	-88.0	0.0	0.0	59.5	0.0	-3.7	0.0	0.0	2.2	0.0	-0.0	-4.1	-88.0
29	566494.61	4737687.72	2.40	0	63	59.9	-88.0	0.0	0.0	59.5	0.0	-3.7	0.0	0.0	2.7	0.0	-0.0	1.4	-88.0
30	566494.61	4737687.72	2.40	0	125	61.2	-88.0	0.0	0.0	59.5	0.1	3.5	0.0	0.0	1.6	0.0	-0.0	-3.5	-88.0
31	566494.61	4737687.72	2.40	0	250	70.0	-88.0	0.0	0.0	59.5	0.3	4.7	0.0	0.0	2.7	0.0	-0.0	2.8	-88.0
32	566494.61	4737687.72	2.40	0	500	72.7	-88.0	0.0	0.0	59.5	0.5	0.1	0.0	0.0	6.9	0.0	-0.0	5.6	-88.0
33	566494.61	4737687.72	2.40	0	1000	77.2	-88.0	0.0	0.0	59.5	1.0	-0.7	0.0	0.0	9.2	0.0	-0.0	8.2	-88.0
34	566494.61	4737687.72	2.40	0	2000	76.4	-88.0	0.0	0.0	59.5	2.6	-0.7	0.0	0.0	11.7	0.0	-0.0	3.4	-88.0
35	566494.61	4737687.72	2.40	0	4000	74.3	-88.0	0.0	0.0	59.5	8.7	-0.7	0.0	0.0	14.4	0.0	-0.0	-7.6	-88.0
36	566494.61	4737687.72	2.40	0	8000	67.7	-88.0	0.0	0.0	59.5	31.1	-0.7	0.0	0.0	17.1	0.0	-0.0	-39.3	-88.0
37	566543.25	4737542.11	2.40	0	32	47.4	-88.0	0.0	0.0	53.0	0.0	-3.0	0.0	0.0	0.0	0.0	-0.0	-2.6	-88.0
38	566543.25	4737542.11	2.40	0	63	53.3	-88.0	0.0	0.0	53.0	0.0	-3.0	0.0	0.0	0.0	0.0	-0.0	3.3	-88.0
39	566543.25	4737542.11	2.40	0	125	54.6	-88.0	0.0	0.0	53.0	0.1	2.5	0.0	0.0	0.0	0.0	-0.0	-0.9	-88.0
40	566543.25	4737542.11	2.40	0	250	63.4	-88.0	0.0	0.0	53.0	0.1	4.1	0.0	0.0	0.0	0.0	-0.0	6.2	-88.0
41	566543.25	4737542.11	2.40	0	500	66.1	-88.0	0.0	0.0	53.0	0.2	0.1	0.0	0.0	0.0	0.0	-0.0	12.8	-88.0
42	566543.25	4737542.11	2.40	0	1000	70.6	-88.0	0.0	0.0	53.0	0.5	-0.6	0.0	0.0	0.0	0.0	-0.0	17.8	-88.0
43	566543.25	4737542.11	2.40	0	2000	69.8	-88.0	0.0	0.0	53.0	1.2	-0.7	0.0	0.0	0.0	0.0	-0.0	16.3	-88.0
44	566543.25	4737542.11	2.40	0	4000	67.7	-88.0	0.0	0.0	53.0	4.1	-0.7	0.0	0.0	0.0	0.0	-0.0	11.3	-88.0
45	566543.25	4737542.11	2.40	0	8000	61.1	-88.0	0.0	0.0	53.0	14.7	-0.7	0.0	0.0	0.0	0.0	-0.0	-5.9	-88.0
46	566552.33	4737537.19	2.40	0	32	46.8	-88.0	0.0	0.0	52.9	0.0	-3.0	0.0	0.0	0.0	0.0	-0.0	-3.2	-88.0
47	566552.33	4737537.19	2.40	0	63	52.7	-88.0	0.0	0.0	52.9	0.0	-3.0	0.0	0.0	0.0	0.0	-0.0	2.7	-88.0
48	566552.33	4737537.19	2.40	0	125	54.0	-88.0	0.0	0.0	52.9	0.1	2.5	0.0	0.0	0.0	0.0	-0.0	-1.5	-88.0
49	566552.33	4737537.19	2.40	0	250	62.8	-88.0	0.0	0.0	52.9	0.1	4.0	0.0	0.0	0.0	0.0	-0.0	5.7	-88.0
50	566552.33	4737537.19	2.40	0	500	65.5	-88.0	0.0	0.0	52.9	0.2	0.1	0.0	0.0	0.0	0.0	-0.0	12.3	-88.0
51	566552.33	4737537.19	2.40	0	1000	70.0	-88.0	0.0	0.0	52.9	0.5	-0.7	0.0	0.0	0.0	0.0	-0.0	17.2	-88.0
52	566552.33	4737537.19	2.40	0	2000	69.2	-88.0	0.0	0.0	52.9	1.2	-0.7	0.0	0.0	0.0	0.0	-0.0	15.7	-88.0
53	566552.33	4737537.19	2.40	0	4000	67.1	-88.0	0.0	0.0	52.9	4.1	-0.7	0.0	0.0	0.0	0.0	-0.0	10.7	-88.0
54	566552.33	4737537.19	2.40	0	8000	60.5	-88.0	0.0	0.0	52.9	14.6	-0.7	0.0	0.0	0.0	0.0	-0.0	-6.3	-88.0
55	566530.33	4737573.70	2.40	0	32	48.2	-88.0	0.0	0.0	54.7	0.0	-3.0	0.0	0.0	0.0	0.0	-0.0	-3.5	-88.0
56	566530.33	4737573.70	2.40	0	63	54.1	-88.0	0.0	0.0	54.7	0.0	-3.0	0.0	0.0	0.0	0.0	-0.0	2.4	-88.0
57	566530.33	4737573.70	2.40	0	125	55.4	-88.0	0.0	0.0	54.7	0.1	2.6	0.0	0.0	0.0	0.0	-0.0	-2.0	-88.0
58	566530.33	4737573.70	2.40	0	250	64.2	-88.0	0.0	0.0	54.7	0.2	4.1	0.0	0.0	0.0	0.0	-0.0	5.2	-88.0
59	566530.33	4737573.70	2.40	0	500	66.9	-88.0	0.0	0.0	54.7	0.3	0.0	0.0	0.0	0.0	0.0	-0.0	11.9	-88.0
60	566530.33	4737573.70	2.40	0	1000	71.4	-88.0	0.0	0.0	54.7	0.6	-0.7	0.0	0.0	0.0	0.0	-0.0	16.8	-88.0
61	566530.33	4737573.70	2.40	0	2000	70.6	-88.0	0.0	0.0	54.7	1.5	-0.7	0.0	0.0	0.0	0.0	-0.0	15.1	-88.0
62	566530.33	4737573.70	2.40	0	4000	68.5	-88.0	0.0	0.0	54.7	5.0	-0.7	0.0	0.0	0.0	0.0	-0.0	9.4	-88.0
63	566530.33	4737573.70	2.40	0	8000	61.9	-88.0	0.0	0.0	54.7	18.0	-0.7	0.0	0.0	0.0	0.0	-0.0	-10.1	-88.0
64	566585.17	4737542.28	2.40	0	32	47.8	-88.0	0.0	0.0	54.2	0.0	-3.0	0.0	0.0	0.0	0.0	-0.0	-3.5	-88.0
65	566585.17	4737542.28	2.40	0	63	53.7	-88.0	0.0	0.0	54.2	0.0	-3.0	0.0	0.0	0.0	0.0	-0.0	2.4	-88.0
66	566585.17	4737542.28	2.40	0	125	55.0	-88.0	0.0	0.0	54.2	0.1	3.0	0.0	0.0	0.0	0.0	-0.0	-2.3	-88.0
67	566585.17	4737542.28	2.40	0	250	63.8	-88.0	0.0	0.0	54.2	0.2	4.4	0.0	0.0	0.0	0.0	-0.0	5.0	-88.0
68	566585.17	4737542.28	2.40	0	500	66.5	-88.0	0.0	0.0	54.2	0.3	0.2	0.0	0.0	0.0	0.0	-0.0	11.8	-88.0
69	566585.17	4737542.28	2.40	0	1000	71.0	-88.0	0.0	0.0	54.2	0.5	-0.5	0.0	0.0	0.0	0.0	-0.0	16.7	-88.0
70	566585.17	4737542.28	2.40	0	2000	70.2	-88.0	0.0	0.0	54.2	1.4	-0.5	0.0	0.0	0.0	0.0	-0.0	15.1	-88.0
71	566585.17	4737542.28	2.40	0	4000	68.1	-88.0	0.0	0.0	54.2	4.7	-0.5	0.0	0.0	0.0	0.0	-0.0	9.6	-88.0
72	566585.17	4737542.28	2.40	0	8000	61.5	-88.0	0.0	0.0	54.2	16.9	-0.5	0.0	0.0	0.0	0.0	-0.0	-9.1	-88.0
73	566477.01	4737734.90	2.40	0	32	47.5	-88.0	0.0	0.0	60.9	0.0	-4.0	0.0	0.0	2.3	0.0	-0.0	-11.8	-88.0
74	566477.01	4737734.90	2.40	0	63	53.4	-88.0	0.0	0.0	60.9	0.0	-4.0	0.0	0.0	2.9	0.0	-0.0	-6.5	-88.0
75	566477.01	4737734.90	2.40	0	125	54.7	-88.0	0.0	0.0	60.9	0.1	2.9	0.0	0.0	2.5	0.0	-0.0	-11.8	-88.0
76	566477.01	4737734.90	2.40	0	250	63.5	-88.0	0.0	0.0	60.9	0.3	3.9	0.0	0.0	4.0	0.0	-0.0	-5.7	-88.0
77	566477.01	4737734.90	2.40	0	500	66.2	-88.0	0.0	0.0	60.9	0.6	-0.3	0.0	0.0	8.2	0.0	-0.0	-3.3	-88.0
78	566477.01	4737734.90	2.40	0	1000	70.7	-88.0	0.0	0.0	60.9	1.2	-1.0	0.0	0.0	10.6	0.0	-0.0	-1.1	-88.0
79	566477.01	4737734.90	2.40	0	2000	69.9	-88.0	0.0	0.0	60.9	3.0	-1.0	0.0	0.0	13.3	0.0	-0.0	-6.4	-88.0
80	566477.01	4737734.90	2.40	0	4000	67.8	-88.0	0.0	0.0	60.9	10.3	-1.0	0.0	0.0	16.1	0.0	-0.0	-18.6	-88.0
81	566477.01	4737734.90	2.40	0	8000	61.2	-88.0	0.0	0.0	60.9	36.7	-1.0	0.0	0.0	19.0	0.0	-0.0	-54.5	-88.0
82	566464.18	4737759.64	2.40	0	32	53.3	-88.0	0.0	0.0	61.6	0.0	-4.2	0.0	0.0	2.4	0.0	-0.0	-6.6	-88.0
83	566464.18	4737759.64	2.40	0	63	59.2	-88.0	0.0	0.0	61.6	0.0	-4.2	0.0	0.0	3.0	0.0	-0.0	-1.3	-88.0
84	566464.18	4737759.64	2.40	0	125	60.5	-88.0	0.0	0.0	61.6	0.1	3.1	0.0	0.0	2.5	0.0	-0.0	-6.9	-88.0
85	566464.18	4737759.64	2.40	0	250	69.3	-88.0	0.0	0.0	61.6	0.4	3.8	0.0	0.0	4.3	0.0	-0.0	-0.8	-88.0

Line Source, ISO 9613, Name: "Digester Truck Movements", ID: "DTRM"																			
Nr.	X	Y	Z	Refl.	Freq.	LxT	LxN	K0	Dc	Adiv	Aatm	Agr	Afol	Ahous	Abar	Cmet	RL	LrT	LrN
	(m)	(m)	(m)		(Hz)	dB(A)	dB(A)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	dB(A)	dB(A)
86	566464.18	4737759.64	2.40	0	500	72.0	-88.0	0.0	0.0	61.6	0.7	-0.3	0.0	0.0	8.7	0.0	-0.0	1.3	-88.0
87	566464.18	4737759.64	2.40	0	1000	76.5	-88.0	0.0	0.0	61.6	1.2	-1.0	0.0	0.0	11.3	0.0	-0.0	3.3	-88.0
88	566464.18	4737759.64	2.40	0	2000	75.7	-88.0	0.0	0.0	61.6	3.3	-1.0	0.0	0.0	14.0	0.0	-0.0	-2.2	-88.0
89	566464.18	4737759.64	2.40	0	4000	73.6	-88.0	0.0	0.0	61.6	11.1	-1.0	0.0	0.0	16.9	0.0	-0.0	-15.1	-88.0
90	566464.18	4737759.64	2.40	0	8000	67.0	-88.0	0.0	0.0	61.6	39.7	-1.0	0.0	0.0	19.8	0.0	-0.0	-53.2	-88.0
91	566530.08	4737595.74	2.40	0	32	44.8	-88.0	0.0	0.0	55.9	0.0	-3.0	0.0	0.0	0.0	0.0	-0.0	-8.1	-88.0
92	566530.08	4737595.74	2.40	0	63	50.7	-88.0	0.0	0.0	55.9	0.0	-3.0	0.0	0.0	0.0	0.0	-0.0	-2.2	-88.0
93	566530.08	4737595.74	2.40	0	125	52.0	-88.0	0.0	0.0	55.9	0.1	2.5	0.0	0.0	0.0	0.0	-0.0	-6.5	-88.0
94	566530.08	4737595.74	2.40	0	250	60.8	-88.0	0.0	0.0	55.9	0.2	3.7	0.0	0.0	0.0	0.0	-0.0	1.1	-88.0
95	566530.08	4737595.74	2.40	0	500	63.5	-88.0	0.0	0.0	55.9	0.3	-0.1	0.0	0.0	0.0	0.0	-0.0	7.4	-88.0
96	566530.08	4737595.74	2.40	0	1000	68.0	-88.0	0.0	0.0	55.9	0.6	-0.8	0.0	0.0	0.0	0.0	-0.0	12.3	-88.0
97	566530.08	4737595.74	2.40	0	2000	67.2	-88.0	0.0	0.0	55.9	1.7	-0.8	0.0	0.0	0.0	0.0	-0.0	10.4	-88.0
98	566530.08	4737595.74	2.40	0	4000	65.1	-88.0	0.0	0.0	55.9	5.8	-0.8	0.0	0.0	0.0	0.0	-0.0	4.3	-88.0
99	566530.08	4737595.74	2.40	0	8000	58.5	-88.0	0.0	0.0	55.9	20.5	-0.8	0.0	0.0	0.0	0.0	-0.0	-17.1	-88.0
100	566528.53	4737601.19	2.40	0	32	43.9	-88.0	0.0	0.0	56.1	0.0	-3.0	0.0	0.0	1.9	0.0	-0.0	-11.1	-88.0
101	566528.53	4737601.19	2.40	0	63	49.8	-88.0	0.0	0.0	56.1	0.0	-3.0	0.0	0.0	3.0	0.0	-0.0	-6.3	-88.0
102	566528.53	4737601.19	2.40	0	125	51.1	-88.0	0.0	0.0	56.1	0.1	2.6	0.0	0.0	3.1	0.0	-0.0	-10.8	-88.0
103	566528.53	4737601.19	2.40	0	250	59.9	-88.0	0.0	0.0	56.1	0.2	3.8	0.0	0.0	4.3	0.0	-0.0	-4.4	-88.0
104	566528.53	4737601.19	2.40	0	500	62.6	-88.0	0.0	0.0	56.1	0.4	-0.1	0.0	0.0	9.0	0.0	-0.0	-2.8	-88.0
105	566528.53	4737601.19	2.40	0	1000	67.1	-88.0	0.0	0.0	56.1	0.7	-0.8	0.0	0.0	11.6	0.0	-0.0	-0.6	-88.0
106	566528.53	4737601.19	2.40	0	2000	66.3	-88.0	0.0	0.0	56.1	1.7	-0.8	0.0	0.0	14.5	0.0	-0.0	-5.3	-88.0
107	566528.53	4737601.19	2.40	0	4000	64.2	-88.0	0.0	0.0	56.1	5.9	-0.8	0.0	0.0	17.4	0.0	-0.0	-14.4	-88.0
108	566528.53	4737601.19	2.40	0	8000	57.6	-88.0	0.0	0.0	56.1	21.1	-0.8	0.0	0.0	18.5	0.0	-0.0	-37.4	-88.0
109	566527.62	4737604.43	2.40	0	32	39.1	-88.0	0.0	0.0	56.3	0.0	-3.0	0.0	0.0	1.9	0.0	-0.0	-16.1	-88.0
110	566527.62	4737604.43	2.40	0	63	45.0	-88.0	0.0	0.0	56.3	0.0	-3.0	0.0	0.0	2.1	0.0	-0.0	-10.4	-88.0
111	566527.62	4737604.43	2.40	0	125	46.3	-88.0	0.0	0.0	56.3	0.1	2.6	0.0	0.0	0.7	0.0	-0.0	-13.4	-88.0
112	566527.62	4737604.43	2.40	0	250	55.1	-88.0	0.0	0.0	56.3	0.2	3.8	0.0	0.0	0.4	0.0	-0.0	-5.5	-88.0
113	566527.62	4737604.43	2.40	0	500	57.8	-88.0	0.0	0.0	56.3	0.4	-0.1	0.0	0.0	3.6	0.0	-0.0	-2.3	-88.0
114	566527.62	4737604.43	2.40	0	1000	62.3	-88.0	0.0	0.0	56.3	0.7	-0.8	0.0	0.0	4.8	0.0	-0.0	1.3	-88.0
115	566527.62	4737604.43	2.40	0	2000	61.5	-88.0	0.0	0.0	56.3	1.8	-0.8	0.0	0.0	6.5	0.0	-0.0	-2.3	-88.0
116	566527.62	4737604.43	2.40	0	4000	59.4	-88.0	0.0	0.0	56.3	6.0	-0.8	0.0	0.0	8.6	0.0	-0.0	-10.8	-88.0
117	566527.62	4737604.43	2.40	0	8000	52.8	-88.0	0.0	0.0	56.3	21.5	-0.8	0.0	0.0	11.1	0.0	-0.0	-35.3	-88.0
118	566595.47	4737537.43	2.40	0	32	45.6	-88.0	0.0	0.0	54.3	0.0	-3.0	0.0	0.0	0.0	0.0	-0.0	-5.7	-88.0
119	566595.47	4737537.43	2.40	0	63	51.5	-88.0	0.0	0.0	54.3	0.0	-3.0	0.0	0.0	0.0	0.0	-0.0	0.2	-88.0
120	566595.47	4737537.43	2.40	0	125	52.8	-88.0	0.0	0.0	54.3	0.1	3.0	0.0	0.0	0.0	0.0	-0.0	-4.6	-88.0
121	566595.47	4737537.43	2.40	0	250	61.6	-88.0	0.0	0.0	54.3	0.2	4.4	0.0	0.0	0.0	0.0	-0.0	2.7	-88.0
122	566595.47	4737537.43	2.40	0	500	64.3	-88.0	0.0	0.0	54.3	0.3	0.2	0.0	0.0	0.0	0.0	-0.0	9.5	-88.0
123	566595.47	4737537.43	2.40	0	1000	68.8	-88.0	0.0	0.0	54.3	0.5	-0.5	0.0	0.0	0.0	0.0	-0.0	14.5	-88.0
124	566595.47	4737537.43	2.40	0	2000	68.0	-88.0	0.0	0.0	54.3	1.4	-0.5	0.0	0.0	0.0	0.0	-0.0	12.8	-88.0
125	566595.47	4737537.43	2.40	0	4000	65.9	-88.0	0.0	0.0	54.3	4.8	-0.5	0.0	0.0	0.0	0.0	-0.0	7.3	-88.0
126	566595.47	4737537.43	2.40	0	8000	59.3	-88.0	0.0	0.0	54.3	17.2	-0.5	0.0	0.0	0.0	0.0	-0.0	-11.6	-88.0
127	566529.91	4737584.78	2.40	0	32	46.5	-88.0	0.0	0.0	55.3	0.0	-3.0	0.0	0.0	0.0	0.0	-0.0	-5.9	-88.0
128	566529.91	4737584.78	2.40	0	63	52.4	-88.0	0.0	0.0	55.3	0.0	-3.0	0.0	0.0	0.0	0.0	-0.0	0.0	-88.0
129	566529.91	4737584.78	2.40	0	125	53.7	-88.0	0.0	0.0	55.3	0.1	2.9	0.0	0.0	0.0	0.0	-0.0	-4.6	-88.0
130	566529.91	4737584.78	2.40	0	250	62.5	-88.0	0.0	0.0	55.3	0.2	4.5	0.0	0.0	0.0	0.0	-0.0	2.4	-88.0
131	566529.91	4737584.78	2.40	0	500	65.2	-88.0	0.0	0.0	55.3	0.3	0.2	0.0	0.0	0.0	0.0	-0.0	9.3	-88.0
132	566529.91	4737584.78	2.40	0	1000	69.7	-88.0	0.0	0.0	55.3	0.6	-0.6	0.0	0.0	0.0	0.0	-0.0	14.3	-88.0
133	566529.91	4737584.78	2.40	0	2000	68.9	-88.0	0.0	0.0	55.3	1.6	-0.6	0.0	0.0	0.0	0.0	-0.0	12.5	-88.0
134	566529.91	4737584.78	2.40	0	4000	66.8	-88.0	0.0	0.0	55.3	5.4	-0.6	0.0	0.0	0.0	0.0	-0.0	6.6	-88.0
135	566529.91	4737584.78	2.40	0	8000	60.2	-88.0	0.0	0.0	55.3	19.2	-0.6	0.0	0.0	0.0	0.0	-0.0	-13.8	-88.0
136	566519.91	4737617.20	2.40	0	32	47.3	-88.0	0.0	0.0	56.8	0.0	-3.0	0.0	0.0	2.1	0.0	-0.0	-8.6	-88.0
137	566519.91	4737617.20	2.40	0	63	53.2	-88.0	0.0	0.0	56.8	0.0	-3.0	0.0	0.0	2.4	0.0	-0.0	-3.0	-88.0
138	566519.91	4737617.20	2.40	0	125	54.5	-88.0	0.0	0.0	56.8	0.1	3.2	0.0	0.0	1.3	0.0	-0.0	-6.9	-88.0
139	566519.91	4737617.20	2.40	0	250	63.3	-88.0	0.0	0.0	56.8	0.2	4.6	0.0	0.0	1.4	0.0	-0.0	0.3	-88.0
140	566519.91	4737617.20	2.40	0	500	66.0	-88.0	0.0	0.0	56.8	0.4	0.2	0.0	0.0	3.9	0.0	-0.0	4.6	-88.0
141	566519.91	4737617.20	2.40	0	1000	70.5	-88.0	0.0	0.0	56.8	0.7	-0.5	0.0	0.0	4.7	0.0	-0.0	8.8	-88.0
142	566519.91	4737617.20	2.40	0	2000	69.7	-88.0	0.0	0.0	56.8	1.9	-0.6	0.0	0.0	5.5	0.0	-0.0	6.1	-88.0
143	566519.91	4737617.20	2.40	0	4000	67.6	-88.0	0.0	0.0	56.8	6.4	-0.6	0.0	0.0	6.4	0.0	-0.0	-1.5	-88.0
144	566519.91	4737617.20	2.40	0	8000	61.0	-88.0	0.0	0.0	56.8	22.9	-0.6	0.0	0.0	7.7	0.0	-0.0	-25.8	-88.0
145	566527.14	4737605.81	2.40	0	32	37.8	-88.0	0.0	0.0	56.3	0.0	-3.0	0.0	0.0	0.0	0.0	-0.0	-15.6	-88.0
146	566527.14	4737605.81	2.40	0	63	43.7	-88.0	0.0	0.0	56.3	0.0	-3.0	0.0	0.0	0.0	0.0	-0.0	-9.7	-88.0
147	566527.14	4737605.81	2.40	0	125	45.0	-88.0	0.0	0.0	56.3	0.1	2.7	0.0	0.0	0.0	0.0	-0.0	-14.2	-88.0
148	566527.14	4737605.81	2.40	0	250	53.8	-88.0	0.0	0.0	56.3	0.2	3.8	0.0	0.0	0.0	0.0	-0.0	-6.6	-88.0

Line Source, ISO 9613, Name: "Digester Truck Movements", ID: "DTRM"																			
Nr.	X	Y	Z	Refl.	Freq.	LxT	LxN	K0	Dc	Adiv	Aatm	Agr	Afol	Ahous	Abar	Cmet	RL	LrT	LrN
	(m)	(m)	(m)		(Hz)	dB(A)	dB(A)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	dB(A)	dB(A)
149	566527.14	4737605.81	2.40	0	500	56.5	-88.0	0.0	0.0	56.3	0.4	-0.1	0.0	0.0	0.0	0.0	-0.0	-0.2	-88.0
150	566527.14	4737605.81	2.40	0	1000	61.0	-88.0	0.0	0.0	56.3	0.7	-0.7	0.0	0.0	0.0	0.0	-0.0	4.7	-88.0
151	566527.14	4737605.81	2.40	0	2000	60.2	-88.0	0.0	0.0	56.3	1.8	-0.8	0.0	0.0	0.0	0.0	-0.0	2.8	-88.0
152	566527.14	4737605.81	2.40	0	4000	58.1	-88.0	0.0	0.0	56.3	6.1	-0.8	0.0	0.0	0.0	0.0	-0.0	-3.6	-88.0
153	566527.14	4737605.81	2.40	0	8000	51.5	-88.0	0.0	0.0	56.3	21.6	-0.8	0.0	0.0	0.0	0.0	-0.0	-25.8	-88.0
154	566526.26	4737607.89	2.40	0	32	42.0	-88.0	0.0	0.0	56.4	0.0	-3.0	0.0	0.0	0.0	0.0	-0.0	-11.4	-88.0
155	566526.26	4737607.89	2.40	0	63	47.9	-88.0	0.0	0.0	56.4	0.0	-3.0	0.0	0.0	0.0	0.0	-0.0	-5.5	-88.0
156	566526.26	4737607.89	2.40	0	125	49.2	-88.0	0.0	0.0	56.4	0.1	2.7	0.0	0.0	0.0	0.0	-0.0	-10.0	-88.0
157	566526.26	4737607.89	2.40	0	250	58.0	-88.0	0.0	0.0	56.4	0.2	3.8	0.0	0.0	0.0	0.0	-0.0	-2.4	-88.0
158	566526.26	4737607.89	2.40	0	500	60.7	-88.0	0.0	0.0	56.4	0.4	-0.1	0.0	0.0	0.0	0.0	-0.0	4.0	-88.0
159	566526.26	4737607.89	2.40	0	1000	65.2	-88.0	0.0	0.0	56.4	0.7	-0.7	0.0	0.0	0.0	0.0	-0.0	8.8	-88.0
160	566526.26	4737607.89	2.40	0	2000	64.4	-88.0	0.0	0.0	56.4	1.8	-0.8	0.0	0.0	0.0	0.0	-0.0	6.9	-88.0
161	566526.26	4737607.89	2.40	0	4000	62.3	-88.0	0.0	0.0	56.4	6.1	-0.8	0.0	0.0	0.0	0.0	-0.0	0.5	-88.0
162	566526.26	4737607.89	2.40	0	8000	55.7	-88.0	0.0	0.0	56.4	21.9	-0.8	0.0	0.0	0.0	0.0	-0.0	-21.8	-88.0
163	566524.76	4737611.39	2.40	0	32	43.2	-88.0	0.0	0.0	56.6	0.0	-3.0	0.0	0.0	2.1	0.0	-0.0	-12.5	-88.0
164	566524.76	4737611.39	2.40	0	63	49.1	-88.0	0.0	0.0	56.6	0.0	-3.0	0.0	0.0	2.3	0.0	-0.0	-6.9	-88.0
165	566524.76	4737611.39	2.40	0	125	50.4	-88.0	0.0	0.0	56.6	0.1	2.9	0.0	0.0	1.4	0.0	-0.0	-10.6	-88.0
166	566524.76	4737611.39	2.40	0	250	59.2	-88.0	0.0	0.0	56.6	0.2	4.0	0.0	0.0	1.6	0.0	-0.0	-3.2	-88.0
167	566524.76	4737611.39	2.40	0	500	61.9	-88.0	0.0	0.0	56.6	0.4	0.0	0.0	0.0	3.7	0.0	-0.0	1.2	-88.0
168	566524.76	4737611.39	2.40	0	1000	66.4	-88.0	0.0	0.0	56.6	0.7	-0.7	0.0	0.0	4.2	0.0	-0.0	5.6	-88.0
169	566524.76	4737611.39	2.40	0	2000	65.6	-88.0	0.0	0.0	56.6	1.8	-0.7	0.0	0.0	4.5	0.0	-0.0	3.4	-88.0
170	566524.76	4737611.39	2.40	0	4000	63.5	-88.0	0.0	0.0	56.6	6.2	-0.7	0.0	0.0	4.7	0.0	-0.0	-3.3	-88.0
171	566524.76	4737611.39	2.40	0	8000	56.9	-88.0	0.0	0.0	56.6	22.2	-0.7	0.0	0.0	4.8	0.0	-0.0	-26.1	-88.0
172	566482.71	4737720.93	2.40	0	32	49.6	-88.0	0.0	0.0	60.5	0.0	-3.9	0.0	0.0	2.3	0.0	-0.0	-9.3	-88.0
173	566482.71	4737720.93	2.40	0	63	55.5	-88.0	0.0	0.0	60.5	0.0	-3.9	0.0	0.0	2.8	0.0	-0.0	-4.0	-88.0
174	566482.71	4737720.93	2.40	0	125	56.8	-88.0	0.0	0.0	60.5	0.1	3.4	0.0	0.0	2.0	0.0	-0.0	-9.3	-88.0
175	566482.71	4737720.93	2.40	0	250	65.6	-88.0	0.0	0.0	60.5	0.3	4.8	0.0	0.0	3.3	0.0	-0.0	-3.3	-88.0
176	566482.71	4737720.93	2.40	0	500	68.3	-88.0	0.0	0.0	60.5	0.6	0.1	0.0	0.0	7.8	0.0	-0.0	-0.7	-88.0
177	566482.71	4737720.93	2.40	0	1000	72.8	-88.0	0.0	0.0	60.5	1.1	-0.8	0.0	0.0	10.2	0.0	-0.0	1.7	-88.0
178	566482.71	4737720.93	2.40	0	2000	72.0	-88.0	0.0	0.0	60.5	2.9	-0.8	0.0	0.0	12.9	0.0	-0.0	-3.5	-88.0
179	566482.71	4737720.93	2.40	0	4000	69.9	-88.0	0.0	0.0	60.5	9.8	-0.8	0.0	0.0	15.7	0.0	-0.0	-15.3	-88.0
180	566482.71	4737720.93	2.40	0	8000	63.3	-88.0	0.0	0.0	60.5	35.0	-0.8	0.0	0.0	18.5	0.0	-0.0	-50.0	-88.0
181	566593.05	4737542.18	2.40	0	32	43.0	-88.0	0.0	0.0	54.5	0.0	-3.0	0.0	0.0	0.0	0.0	-0.0	-8.5	-88.0
182	566593.05	4737542.18	2.40	0	63	48.9	-88.0	0.0	0.0	54.5	0.0	-3.0	0.0	0.0	0.0	0.0	-0.0	-2.6	-88.0
183	566593.05	4737542.18	2.40	0	125	50.2	-88.0	0.0	0.0	54.5	0.1	2.9	0.0	0.0	0.0	0.0	-0.0	-7.2	-88.0
184	566593.05	4737542.18	2.40	0	250	59.0	-88.0	0.0	0.0	54.5	0.2	4.2	0.0	0.0	0.0	0.0	-0.0	0.2	-88.0
185	566593.05	4737542.18	2.40	0	500	61.7	-88.0	0.0	0.0	54.5	0.3	0.1	0.0	0.0	0.0	0.0	-0.0	6.8	-88.0
186	566593.05	4737542.18	2.40	0	1000	66.2	-88.0	0.0	0.0	54.5	0.6	-0.6	0.0	0.0	0.0	0.0	-0.0	11.8	-88.0
187	566593.05	4737542.18	2.40	0	2000	65.4	-88.0	0.0	0.0	54.5	1.4	-0.6	0.0	0.0	0.0	0.0	-0.0	10.1	-88.0
188	566593.05	4737542.18	2.40	0	4000	63.3	-88.0	0.0	0.0	54.5	4.9	-0.6	0.0	0.0	0.0	0.0	-0.0	4.5	-88.0
189	566593.05	4737542.18	2.40	0	8000	56.7	-88.0	0.0	0.0	54.5	17.4	-0.6	0.0	0.0	0.0	0.0	-0.0	-14.6	-88.0
190	566531.04	4737590.19	2.40	0	32	39.8	-88.0	0.0	0.0	55.6	0.0	-3.0	0.0	0.0	0.0	0.0	-0.0	-12.8	-88.0
191	566531.04	4737590.19	2.40	0	63	45.7	-88.0	0.0	0.0	55.6	0.0	-3.0	0.0	0.0	0.0	0.0	-0.0	-6.9	-88.0
192	566531.04	4737590.19	2.40	0	125	47.0	-88.0	0.0	0.0	55.6	0.1	2.7	0.0	0.0	0.0	0.0	-0.0	-11.4	-88.0
193	566531.04	4737590.19	2.40	0	250	55.8	-88.0	0.0	0.0	55.6	0.2	4.0	0.0	0.0	0.0	0.0	-0.0	-4.0	-88.0
194	566531.04	4737590.19	2.40	0	500	58.5	-88.0	0.0	0.0	55.6	0.3	-0.0	0.0	0.0	0.0	0.0	-0.0	2.6	-88.0
195	566531.04	4737590.19	2.40	0	1000	63.0	-88.0	0.0	0.0	55.6	0.6	-0.7	0.0	0.0	0.0	0.0	-0.0	7.5	-88.0
196	566531.04	4737590.19	2.40	0	2000	62.2	-88.0	0.0	0.0	55.6	1.6	-0.7	0.0	0.0	0.0	0.0	-0.0	5.7	-88.0
197	566531.04	4737590.19	2.40	0	4000	60.1	-88.0	0.0	0.0	55.6	5.6	-0.7	0.0	0.0	0.0	0.0	-0.0	-0.4	-88.0
198	566531.04	4737590.19	2.40	0	8000	53.5	-88.0	0.0	0.0	55.6	19.9	-0.7	0.0	0.0	0.0	0.0	-0.0	-21.3	-88.0
199	566530.97	4737591.95	2.40	0	32	38.8	-88.0	0.0	0.0	55.7	0.0	-3.0	0.0	0.0	0.0	0.0	-0.0	-14.0	-88.0
200	566530.97	4737591.95	2.40	0	63	44.7	-88.0	0.0	0.0	55.7	0.0	-3.0	0.0	0.0	0.0	0.0	-0.0	-8.1	-88.0
201	566530.97	4737591.95	2.40	0	125	46.0	-88.0	0.0	0.0	55.7	0.1	2.6	0.0	0.0	0.0	0.0	-0.0	-12.4	-88.0
202	566530.97	4737591.95	2.40	0	250	54.8	-88.0	0.0	0.0	55.7	0.2	3.9	0.0	0.0	0.0	0.0	-0.0	-5.0	-88.0
203	566530.97	4737591.95	2.40	0	500	57.5	-88.0	0.0	0.0	55.7	0.3	-0.1	0.0	0.0	0.0	0.0	-0.0	1.5	-88.0
204	566530.97	4737591.95	2.40	0	1000	62.0	-88.0	0.0	0.0	55.7	0.6	-0.7	0.0	0.0	0.0	0.0	-0.0	6.4	-88.0
205	566530.97	4737591.95	2.40	0	2000	61.2	-88.0	0.0	0.0	55.7	1.7	-0.8	0.0	0.0	0.0	0.0	-0.0	4.5	-88.0
206	566530.97	4737591.95	2.40	0	4000	59.1	-88.0	0.0	0.0	55.7	5.6	-0.8	0.0	0.0	0.0	0.0	-0.0	-1.5	-88.0
207	566530.97	4737591.95	2.40	0	8000	52.5	-88.0	0.0	0.0	55.7	20.1	-0.8	0.0	0.0	0.0	0.0	-0.0	-22.6	-88.0
208	566568.09	4737538.69	2.40	1	500	69.1	-88.0	0.0	0.0	57.6	0.4	-1.1	0.0	0.0	8.1	0.0	12.6	-8.6	-88.0
209	566568.09	4737538.69	2.40	1	1000	73.6	-88.0	0.0	0.0	57.6	0.8	-1.4	0.0	0.0	10.0	0.0	12.6	-6.0	-88.0
210	566568.09	4737538.69	2.40	1	2000	72.8	-88.0	0.0	0.0	57.6	2.1	-1.4	0.0	0.0	12.3	0.0	12.6	-10.4	-88.0
211	566568.09	4737538.69	2.40	1	4000	70.7	-88.0	0.0	0.0	57.6	7.0	-1.4	0.0	0.0	14.9	0.0	12.6	-20.1	-88.0

Line Source, ISO 9613, Name: "Digester Truck Movements", ID: "DTRM"																			
Nr.	X	Y	Z	Refl.	Freq.	LxT	LxN	K0	Dc	Adiv	Aatm	Agr	Afol	Ahous	Abar	Cmet	RL	LrT	LrN
	(m)	(m)	(m)		(Hz)	dB(A)	dB(A)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	dB(A)	dB(A)
212	566568.09	4737538.69	2.40	1	8000	64.1	-88.0	0.0	0.0	57.6	25.1	-1.4	0.0	0.0	17.7	0.0	12.6	-47.6	-88.0
213	566573.97	4737540.12	2.40	1	1000	70.3	-88.0	0.0	0.0	55.3	0.6	-0.8	0.0	0.0	0.0	0.0	2.0	13.2	-88.0
214	566573.97	4737540.12	2.40	1	2000	69.5	-88.0	0.0	0.0	55.3	1.6	-0.8	0.0	0.0	0.0	0.0	2.0	11.4	-88.0
215	566573.97	4737540.12	2.40	1	4000	67.4	-88.0	0.0	0.0	55.3	5.4	-0.8	0.0	0.0	0.0	0.0	2.0	5.5	-88.0
216	566573.97	4737540.12	2.40	1	8000	60.8	-88.0	0.0	0.0	55.3	19.2	-0.8	0.0	0.0	0.0	0.0	2.0	-15.0	-88.0
217	566567.67	4737538.59	2.40	1	1000	63.9	-88.0	0.0	0.0	55.1	0.6	-0.9	0.0	0.0	0.0	0.0	2.0	7.1	-88.0
218	566567.67	4737538.59	2.40	1	2000	63.1	-88.0	0.0	0.0	55.1	1.6	-0.9	0.0	0.0	0.0	0.0	2.0	5.4	-88.0
219	566567.67	4737538.59	2.40	1	4000	61.0	-88.0	0.0	0.0	55.1	5.3	-0.9	0.0	0.0	0.0	0.0	2.0	-0.4	-88.0
220	566567.67	4737538.59	2.40	1	8000	54.4	-88.0	0.0	0.0	55.1	18.8	-0.9	0.0	0.0	0.0	0.0	2.0	-20.6	-88.0
221	566564.71	4737537.87	2.40	1	1000	65.7	-88.0	0.0	0.0	55.0	0.6	-0.8	0.0	0.0	0.0	0.0	2.0	8.8	-88.0
222	566564.71	4737537.87	2.40	1	2000	64.9	-88.0	0.0	0.0	55.0	1.5	-0.8	0.0	0.0	0.0	0.0	2.0	7.1	-88.0
223	566564.71	4737537.87	2.40	1	4000	62.8	-88.0	0.0	0.0	55.0	5.2	-0.8	0.0	0.0	0.0	0.0	2.0	1.3	-88.0
224	566564.71	4737537.87	2.40	1	8000	56.2	-88.0	0.0	0.0	55.0	18.6	-0.8	0.0	0.0	0.0	0.0	2.0	-18.7	-88.0
225	566577.32	4737540.93	2.40	1	4000	61.4	-88.0	0.0	0.0	55.7	5.6	-0.8	0.0	0.0	9.9	0.0	1.0	-9.9	-88.0
226	566577.32	4737540.93	2.40	1	8000	54.8	-88.0	0.0	0.0	55.7	20.0	-0.8	0.0	0.0	12.1	0.0	1.0	-33.2	-88.0
227	566535.42	4737556.45	2.40	1	500	69.0	-88.0	0.0	0.0	57.5	0.4	-1.0	0.0	0.0	9.5	0.0	12.4	-9.7	-88.0
228	566535.42	4737556.45	2.40	1	1000	73.5	-88.0	0.0	0.0	57.5	0.8	-1.3	0.0	0.0	11.7	0.0	12.4	-7.4	-88.0
229	566535.42	4737556.45	2.40	1	2000	72.7	-88.0	0.0	0.0	57.5	2.0	-1.3	0.0	0.0	14.3	0.0	12.4	-12.0	-88.0
230	566535.42	4737556.45	2.40	1	4000	70.6	-88.0	0.0	0.0	57.5	6.9	-1.3	0.0	0.0	17.0	0.0	12.4	-21.8	-88.0
231	566535.42	4737556.45	2.40	1	8000	64.0	-88.0	0.0	0.0	57.5	24.6	-1.3	0.0	0.0	19.9	0.0	12.4	-48.9	-88.0
232	566537.02	4737551.59	2.40	1	500	66.4	-88.0	0.0	0.0	55.1	0.3	-0.1	0.0	0.0	13.6	0.0	2.0	-4.5	-88.0
233	566537.02	4737551.59	2.40	1	1000	70.9	-88.0	0.0	0.0	55.1	0.6	-0.8	0.0	0.0	16.5	0.0	2.0	-2.5	-88.0
234	566537.02	4737551.59	2.40	1	2000	70.1	-88.0	0.0	0.0	55.1	1.6	-0.8	0.0	0.0	19.5	0.0	2.0	-7.2	-88.0
235	566537.02	4737551.59	2.40	1	4000	68.0	-88.0	0.0	0.0	55.1	5.3	-0.8	0.0	0.0	22.4	0.0	2.0	-16.0	-88.0
236	566537.02	4737551.59	2.40	1	8000	61.4	-88.0	0.0	0.0	55.1	18.8	-0.8	0.0	0.0	25.0	0.0	2.0	-38.6	-88.0
237	566509.69	4737642.21	2.40	1	2000	75.7	-88.0	0.0	0.0	59.0	2.4	-0.8	0.0	0.0	5.1	0.0	16.5	-6.5	-88.0
238	566509.69	4737642.21	2.40	1	4000	73.6	-88.0	0.0	0.0	59.0	8.2	-0.8	0.0	0.0	5.4	0.0	16.5	-14.7	-88.0
239	566509.69	4737642.21	2.40	1	8000	67.0	-88.0	0.0	0.0	59.0	29.3	-0.8	0.0	0.0	6.3	0.0	16.5	-43.2	-88.0
240	566509.69	4737642.21	2.40	1	500	72.0	-88.0	0.0	0.0	62.9	0.8	-0.2	0.0	0.0	9.7	0.0	14.1	-15.3	-88.0
241	566509.69	4737642.21	2.40	1	1000	76.5	-88.0	0.0	0.0	62.9	1.4	-0.9	0.0	0.0	13.2	0.0	14.1	-14.2	-88.0
242	566509.69	4737642.21	2.40	1	2000	75.7	-88.0	0.0	0.0	62.9	3.8	-0.9	0.0	0.0	17.2	0.0	14.1	-21.3	-88.0
243	566509.69	4737642.21	2.40	1	4000	73.6	-88.0	0.0	0.0	62.9	12.9	-0.9	0.0	0.0	20.7	0.0	14.1	-36.1	-88.0
244	566509.69	4737642.21	2.40	1	8000	67.0	-88.0	0.0	0.0	62.9	46.1	-0.9	0.0	0.0	23.9	0.0	14.1	-79.0	-88.0
245	566506.17	4737654.22	2.40	1	1000	72.9	-88.0	0.0	0.0	58.9	0.9	-1.1	0.0	0.0	16.3	0.0	2.0	-4.1	-88.0
246	566506.17	4737654.22	2.40	1	2000	72.1	-88.0	0.0	0.0	58.9	2.4	-1.2	0.0	0.0	19.3	0.0	2.0	-9.3	-88.0
247	566506.17	4737654.22	2.40	1	4000	70.0	-88.0	0.0	0.0	58.9	8.1	-1.2	0.0	0.0	22.2	0.0	2.0	-20.1	-88.0
248	566506.17	4737654.22	2.40	1	8000	63.4	-88.0	0.0	0.0	58.9	28.9	-1.2	0.0	0.0	25.0	0.0	2.0	-50.3	-88.0
249	566510.45	4737639.64	2.40	1	4000	68.3	-88.0	0.0	0.0	59.8	9.1	-0.7	0.0	0.0	0.0	0.0	2.0	-1.9	-88.0
250	566510.45	4737639.64	2.40	1	8000	61.7	-88.0	0.0	0.0	59.8	32.4	-0.7	0.0	0.0	0.0	0.0	2.0	-31.8	-88.0
251	566494.61	4737687.72	2.40	1	4000	74.3	-88.0	0.0	0.0	60.4	9.7	-1.1	0.0	0.0	4.9	0.0	17.7	-17.3	-88.0
252	566494.61	4737687.72	2.40	1	8000	67.7	-88.0	0.0	0.0	60.4	34.6	-1.1	0.0	0.0	5.1	0.0	17.7	-49.0	-88.0
253	566494.61	4737687.72	2.40	1	250	70.0	-88.0	0.0	0.0	62.0	0.4	2.9	0.0	0.0	4.9	0.0	12.6	-12.8	-88.0
254	566494.61	4737687.72	2.40	1	500	72.7	-88.0	0.0	0.0	62.0	0.7	-0.6	0.0	0.0	10.1	0.0	12.6	-12.1	-88.0
255	566494.61	4737687.72	2.40	1	1000	77.2	-88.0	0.0	0.0	62.0	1.3	-1.1	0.0	0.0	13.6	0.0	12.6	-11.2	-88.0
256	566494.61	4737687.72	2.40	1	2000	76.4	-88.0	0.0	0.0	62.0	3.4	-1.2	0.0	0.0	17.6	0.0	12.6	-18.1	-88.0
257	566494.61	4737687.72	2.40	1	4000	74.3	-88.0	0.0	0.0	62.0	11.7	-1.2	0.0	0.0	21.1	0.0	12.6	-31.9	-88.0
258	566494.61	4737687.72	2.40	1	8000	67.7	-88.0	0.0	0.0	62.0	41.6	-1.2	0.0	0.0	24.3	0.0	12.6	-71.6	-88.0
259	566496.31	4737683.04	2.40	1	1000	76.3	-88.0	0.0	0.0	59.8	1.0	-1.1	0.0	0.0	16.2	0.0	2.0	-1.6	-88.0
260	566496.31	4737683.04	2.40	1	2000	75.5	-88.0	0.0	0.0	59.8	2.6	-1.1	0.0	0.0	19.1	0.0	2.0	-6.9	-88.0
261	566496.31	4737683.04	2.40	1	4000	73.4	-88.0	0.0	0.0	59.8	9.0	-1.1	0.0	0.0	22.0	0.0	2.0	-18.3	-88.0
262	566496.31	4737683.04	2.40	1	8000	66.8	-88.0	0.0	0.0	59.8	32.0	-1.1	0.0	0.0	25.0	0.0	2.0	-50.9	-88.0
263	566543.25	4737542.11	2.40	1	1000	70.6	-88.0	0.0	0.0	57.7	0.8	-1.5	0.0	0.0	13.1	0.0	12.7	-12.2	-88.0
264	566543.25	4737542.11	2.40	1	2000	69.8	-88.0	0.0	0.0	57.7	2.1	-1.5	0.0	0.0	17.2	0.0	12.7	-18.4	-88.0
265	566543.25	4737542.11	2.40	1	4000	67.7	-88.0	0.0	0.0	57.7	7.1	-1.5	0.0	0.0	21.3	0.0	12.7	-29.6	-88.0
266	566543.25	4737542.11	2.40	1	8000	61.1	-88.0	0.0	0.0	57.7	25.4	-1.5	0.0	0.0	24.9	0.0	12.7	-58.0	-88.0
267	566539.31	4737545.52	2.40	1	500	55.7	-88.0	0.0	0.0	54.9	0.3	-0.1	0.0	0.0	13.5	0.0	2.0	-14.9	-88.0
268	566539.31	4737545.52	2.40	1	1000	60.2	-88.0	0.0	0.0	54.9	0.6	-0.8	0.0	0.0	16.4	0.0	2.0	-13.0	-88.0
269	566539.31	4737545.52	2.40	1	2000	59.4	-88.0	0.0	0.0	54.9	1.5	-0.8	0.0	0.0	19.4	0.0	2.0	-17.6	-88.0
270	566539.31	4737545.52	2.40	1	4000	57.3	-88.0	0.0	0.0	54.9	5.1	-0.8	0.0	0.0	22.4	0.0	2.0	-26.3	-88.0
271	566539.31	4737545.52	2.40	1	8000	50.7	-88.0	0.0	0.0	54.9	18.3	-0.8	0.0	0.0	25.0	0.0	2.0	-48.7	-88.0
272	566552.33	4737537.19	2.40	1	1000	70.0	-88.0	0.0	0.0	57.8	0.8	-1.5	0.0	0.0	10.0	0.0	12.7	-9.9	-88.0
273	566552.33	4737537.19	2.40	1	2000	69.2	-88.0	0.0	0.0	57.8	2.1	-1.5	0.0	0.0	12.3	0.0	12.7	-14.3	-88.0
274	566552.33	4737537.19	2.40	1	4000	67.1	-88.0	0.0	0.0	57.8	7.1	-1.5	0.0	0.0	14.9	0.0	12.7	-24.1	-88.0

Line Source, ISO 9613, Name: "Digester Truck Movements", ID: "DTRM"																			
Nr.	X	Y	Z	Refl.	Freq.	LxT	LxN	K0	Dc	Adiv	Aatm	Agr	Afol	Ahous	Abar	Cmet	RL	LrT	LrN
	(m)	(m)	(m)		(Hz)	dB(A)	dB(A)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	dB(A)	dB(A)
275	566552.33	4737537.19	2.40	1	8000	60.5	-88.0	0.0	0.0	57.8	25.5	-1.5	0.0	0.0	17.7	0.0	12.7	-51.8	-88.0
276	566530.33	4737573.70	2.40	1	500	66.9	-88.0	0.0	0.0	57.3	0.4	-0.7	0.0	0.0	5.3	0.0	12.3	-7.8	-88.0
277	566530.33	4737573.70	2.40	1	1000	71.4	-88.0	0.0	0.0	57.3	0.8	-1.1	0.0	0.0	6.0	0.0	12.3	-3.8	-88.0
278	566530.33	4737573.70	2.40	1	2000	70.6	-88.0	0.0	0.0	57.3	2.0	-1.2	0.0	0.0	6.9	0.0	12.3	-6.8	-88.0
279	566530.33	4737573.70	2.40	1	4000	68.5	-88.0	0.0	0.0	57.3	6.8	-1.2	0.0	0.0	8.4	0.0	12.3	-15.1	-88.0
280	566530.33	4737573.70	2.40	1	8000	61.9	-88.0	0.0	0.0	57.3	24.1	-1.2	0.0	0.0	10.4	0.0	12.3	-41.0	-88.0
281	566529.68	4737576.45	2.40	1	1000	69.1	-88.0	0.0	0.0	58.6	0.9	-0.9	0.0	0.0	14.6	0.0	2.0	-6.1	-88.0
282	566529.68	4737576.45	2.40	1	2000	68.3	-88.0	0.0	0.0	58.6	2.3	-0.9	0.0	0.0	17.4	0.0	2.0	-11.1	-88.0
283	566529.68	4737576.45	2.40	1	4000	66.2	-88.0	0.0	0.0	58.6	7.8	-0.9	0.0	0.0	20.3	0.0	2.0	-21.6	-88.0
284	566529.68	4737576.45	2.40	1	8000	59.6	-88.0	0.0	0.0	58.6	28.0	-0.9	0.0	0.0	23.2	0.0	2.0	-51.3	-88.0
285	566530.61	4737572.52	2.40	1	1000	68.1	-88.0	0.0	0.0	55.3	0.6	-1.0	0.0	0.0	0.0	0.0	2.0	11.2	-88.0
286	566530.61	4737572.52	2.40	1	2000	67.3	-88.0	0.0	0.0	55.3	1.6	-1.0	0.0	0.0	0.0	0.0	2.0	9.4	-88.0
287	566530.61	4737572.52	2.40	1	4000	65.2	-88.0	0.0	0.0	55.3	5.4	-1.0	0.0	0.0	0.0	0.0	2.0	3.5	-88.0
288	566530.61	4737572.52	2.40	1	8000	58.6	-88.0	0.0	0.0	55.3	19.2	-1.0	0.0	0.0	0.0	0.0	2.0	-16.9	-88.0
289	566529.39	4737577.65	2.40	1	1000	66.3	-88.0	0.0	0.0	55.5	0.6	-1.0	0.0	0.0	0.0	0.0	2.0	9.1	-88.0
290	566529.39	4737577.65	2.40	1	2000	65.5	-88.0	0.0	0.0	55.5	1.6	-1.0	0.0	0.0	0.0	0.0	2.0	7.3	-88.0
291	566529.39	4737577.65	2.40	1	4000	63.4	-88.0	0.0	0.0	55.5	5.5	-1.0	0.0	0.0	0.0	0.0	2.0	1.4	-88.0
292	566529.39	4737577.65	2.40	1	8000	56.8	-88.0	0.0	0.0	55.5	19.7	-1.0	0.0	0.0	0.0	0.0	2.0	-19.4	-88.0
293	566528.83	4737580.02	2.40	1	1000	58.5	-88.0	0.0	0.0	55.6	0.6	-1.1	0.0	0.0	0.0	0.0	2.0	1.3	-88.0
294	566528.83	4737580.02	2.40	1	2000	57.7	-88.0	0.0	0.0	55.6	1.7	-1.1	0.0	0.0	0.0	0.0	2.0	-0.5	-88.0
295	566528.83	4737580.02	2.40	1	4000	55.6	-88.0	0.0	0.0	55.6	5.6	-1.1	0.0	0.0	0.0	0.0	2.0	-6.5	-88.0
296	566528.83	4737580.02	2.40	1	8000	49.0	-88.0	0.0	0.0	55.6	19.9	-1.1	0.0	0.0	0.0	0.0	2.0	-27.5	-88.0
297	566585.17	4737542.28	2.40	1	500	66.5	-88.0	0.0	0.0	57.7	0.4	-0.9	0.0	0.0	5.1	0.0	12.9	-8.7	-88.0
298	566585.17	4737542.28	2.40	1	1000	71.0	-88.0	0.0	0.0	57.7	0.8	-1.3	0.0	0.0	5.5	0.0	12.9	-4.6	-88.0
299	566585.17	4737542.28	2.40	1	2000	70.2	-88.0	0.0	0.0	57.7	2.1	-1.3	0.0	0.0	6.1	0.0	12.9	-7.3	-88.0
300	566585.17	4737542.28	2.40	1	4000	68.1	-88.0	0.0	0.0	57.7	7.1	-1.3	0.0	0.0	7.2	0.0	12.9	-15.4	-88.0
301	566585.17	4737542.28	2.40	1	8000	61.5	-88.0	0.0	0.0	57.7	25.2	-1.3	0.0	0.0	8.7	0.0	12.9	-41.7	-88.0
302	566585.17	4737542.28	2.40	1	2000	70.2	-88.0	0.0	0.0	58.2	2.2	-1.9	0.0	0.0	4.8	0.0	16.2	-9.4	-88.0
303	566585.17	4737542.28	2.40	1	4000	68.1	-88.0	0.0	0.0	58.2	7.5	-1.9	0.0	0.0	4.8	0.0	16.2	-16.8	-88.0
304	566585.17	4737542.28	2.40	1	8000	61.5	-88.0	0.0	0.0	58.2	26.9	-1.9	0.0	0.0	4.8	0.0	16.2	-42.7	-88.0
305	566586.05	4737542.41	2.40	1	1000	70.3	-88.0	0.0	0.0	59.2	0.9	-1.3	0.0	0.0	11.8	0.0	2.0	-2.5	-88.0
306	566586.05	4737542.41	2.40	1	2000	69.5	-88.0	0.0	0.0	59.2	2.5	-1.3	0.0	0.0	14.4	0.0	2.0	-7.4	-88.0
307	566586.05	4737542.41	2.40	1	4000	67.4	-88.0	0.0	0.0	59.2	8.5	-1.3	0.0	0.0	17.2	0.0	2.0	-18.2	-88.0
308	566586.05	4737542.41	2.40	1	8000	60.8	-88.0	0.0	0.0	59.2	30.2	-1.3	0.0	0.0	20.1	0.0	2.0	-49.4	-88.0
309	566584.21	4737542.13	2.40	1	1000	64.3	-88.0	0.0	0.0	55.7	0.6	-0.7	0.0	0.0	0.0	0.0	2.0	6.7	-88.0
310	566584.21	4737542.13	2.40	1	2000	63.5	-88.0	0.0	0.0	55.7	1.7	-0.7	0.0	0.0	0.0	0.0	2.0	4.9	-88.0
311	566584.21	4737542.13	2.40	1	4000	61.4	-88.0	0.0	0.0	55.7	5.6	-0.7	0.0	0.0	0.0	0.0	2.0	-1.2	-88.0
312	566584.21	4737542.13	2.40	1	8000	54.8	-88.0	0.0	0.0	55.7	20.0	-0.7	0.0	0.0	0.0	0.0	2.0	-22.1	-88.0
313	566580.99	4737541.65	2.40	1	1000	65.9	-88.0	0.0	0.0	55.5	0.6	-0.8	0.0	0.0	0.0	0.0	2.0	8.5	-88.0
314	566580.99	4737541.65	2.40	1	2000	65.1	-88.0	0.0	0.0	55.5	1.6	-0.8	0.0	0.0	0.0	0.0	2.0	6.7	-88.0
315	566580.99	4737541.65	2.40	1	4000	63.0	-88.0	0.0	0.0	55.5	5.5	-0.8	0.0	0.0	0.0	0.0	2.0	0.7	-88.0
316	566580.99	4737541.65	2.40	1	8000	56.4	-88.0	0.0	0.0	55.5	19.7	-0.8	0.0	0.0	0.0	0.0	2.0	-20.1	-88.0
317	566589.87	4737542.99	2.40	1	1000	64.5	-88.0	0.0	0.0	56.4	0.7	-0.9	0.0	0.0	5.4	0.0	2.0	1.0	-88.0
318	566589.87	4737542.99	2.40	1	2000	63.7	-88.0	0.0	0.0	56.4	1.8	-1.0	0.0	0.0	6.0	0.0	2.0	-1.5	-88.0
319	566589.87	4737542.99	2.40	1	4000	61.6	-88.0	0.0	0.0	56.4	6.1	-1.0	0.0	0.0	7.0	0.0	2.0	-8.8	-88.0
320	566589.87	4737542.99	2.40	1	8000	55.0	-88.0	0.0	0.0	56.4	21.7	-1.0	0.0	0.0	8.4	0.0	2.0	-32.5	-88.0
321	566586.83	4737542.53	2.40	1	1000	65.3	-88.0	0.0	0.0	56.3	0.7	-1.0	0.0	0.0	5.8	0.0	2.0	1.6	-88.0
322	566586.83	4737542.53	2.40	1	2000	64.5	-88.0	0.0	0.0	56.3	1.8	-1.0	0.0	0.0	6.6	0.0	2.0	-1.1	-88.0
323	566586.83	4737542.53	2.40	1	4000	62.4	-88.0	0.0	0.0	56.3	6.0	-1.0	0.0	0.0	7.8	0.0	2.0	-8.7	-88.0
324	566586.83	4737542.53	2.40	1	8000	55.8	-88.0	0.0	0.0	56.3	21.5	-1.0	0.0	0.0	9.6	0.0	2.0	-32.6	-88.0
325	566580.23	4737541.53	2.40	1	1000	62.3	-88.0	0.0	0.0	56.1	0.7	-0.9	0.0	0.0	6.6	0.0	2.0	-2.1	-88.0
326	566580.23	4737541.53	2.40	1	2000	61.5	-88.0	0.0	0.0	56.1	1.7	-0.9	0.0	0.0	7.9	0.0	2.0	-5.3	-88.0
327	566580.23	4737541.53	2.40	1	4000	59.4	-88.0	0.0	0.0	56.1	5.9	-0.9	0.0	0.0	9.7	0.0	2.0	-13.3	-88.0
328	566580.23	4737541.53	2.40	1	8000	52.8	-88.0	0.0	0.0	56.1	21.0	-0.9	0.0	0.0	11.9	0.0	2.0	-37.3	-88.0
329	566477.01	4737734.90	2.40	1	500	66.2	-88.0	0.0	0.0	61.9	0.7	-0.6	0.0	0.0	10.4	0.0	13.4	-19.5	-88.0
330	566477.01	4737734.90	2.40	1	1000	70.7	-88.0	0.0	0.0	61.9	1.3	-1.1	0.0	0.0	14.0	0.0	13.4	-18.8	-88.0
331	566477.01	4737734.90	2.40	1	2000	69.9	-88.0	0.0	0.0	61.9	3.4	-1.1	0.0	0.0	17.9	0.0	13.4	-25.5	-88.0
332	566477.01	4737734.90	2.40	1	4000	67.8	-88.0	0.0	0.0	61.9	11.5	-1.1	0.0	0.0	21.3	0.0	13.4	-39.1	-88.0
333	566477.01	4737734.90	2.40	1	8000	61.2	-88.0	0.0	0.0	61.9	40.9	-1.1	0.0	0.0	24.4	0.0	13.4	-78.2	-88.0
334	566464.18	4737759.64	2.40	1	1000	76.5	-88.0	0.0	0.0	62.4	1.4	-1.1	0.0	0.0	14.0	0.0	15.6	-15.6	-88.0
335	566464.18	4737759.64	2.40	1	2000	75.7	-88.0	0.0	0.0	62.4	3.6	-1.2	0.0	0.0	17.8	0.0	15.6	-22.4	-88.0
336	566464.18	4737759.64	2.40	1	4000	73.6	-88.0	0.0	0.0	62.4	12.1	-1.2	0.0	0.0	21.1	0.0	15.6	-36.4	-88.0
337	566464.18	4737759.64	2.40	1	8000	67.0	-88.0	0.0	0.0	62.4	43.2	-1.2	0.0	0.0	24.2	0.0	15.6	-77.2	-88.0

Line Source, ISO 9613, Name: "Digester Truck Movements", ID: "DTRM"																			
Nr.	X	Y	Z	Refl.	Freq.	LxT	LxN	K0	Dc	Adiv	Aatm	Agr	Afol	Ahous	Abar	Cmet	RL	LrT	LrN
	(m)	(m)	(m)		(Hz)	dB(A)	dB(A)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	dB(A)	dB(A)
338	566530.08	4737595.74	2.40	1	500	63.5	-88.0	0.0	0.0	57.3	0.4	-0.5	0.0	0.0	5.2	0.0	13.2	-12.2	-88.0
339	566530.08	4737595.74	2.40	1	1000	68.0	-88.0	0.0	0.0	57.3	0.8	-1.0	0.0	0.0	5.8	0.0	13.2	-8.1	-88.0
340	566530.08	4737595.74	2.40	1	2000	67.2	-88.0	0.0	0.0	57.3	2.0	-1.0	0.0	0.0	6.7	0.0	13.2	-11.0	-88.0
341	566530.08	4737595.74	2.40	1	4000	65.1	-88.0	0.0	0.0	57.3	6.8	-1.0	0.0	0.0	8.1	0.0	13.2	-19.3	-88.0
342	566530.08	4737595.74	2.40	1	8000	58.5	-88.0	0.0	0.0	57.3	24.2	-1.0	0.0	0.0	10.0	0.0	13.2	-45.2	-88.0
343	566528.53	4737601.19	2.40	1	1000	67.1	-88.0	0.0	0.0	57.5	0.8	-1.0	0.0	0.0	18.4	0.0	13.7	-22.3	-88.0
344	566528.53	4737601.19	2.40	1	2000	66.3	-88.0	0.0	0.0	57.5	2.0	-1.0	0.0	0.0	21.3	0.0	13.7	-27.3	-88.0
345	566528.53	4737601.19	2.40	1	4000	64.2	-88.0	0.0	0.0	57.5	6.9	-1.0	0.0	0.0	24.3	0.0	13.7	-37.2	-88.0
346	566528.53	4737601.19	2.40	1	8000	57.6	-88.0	0.0	0.0	57.5	24.6	-1.0	0.0	0.0	25.0	0.0	13.7	-62.2	-88.0
347	566527.62	4737604.43	2.40	1	1000	62.3	-88.0	0.0	0.0	57.5	0.8	-0.9	0.0	0.0	5.4	0.0	14.0	-14.6	-88.0
348	566527.62	4737604.43	2.40	1	2000	61.5	-88.0	0.0	0.0	57.5	2.1	-1.0	0.0	0.0	6.1	0.0	14.0	-17.3	-88.0
349	566527.62	4737604.43	2.40	1	4000	59.4	-88.0	0.0	0.0	57.5	7.0	-1.0	0.0	0.0	7.1	0.0	14.0	-25.3	-88.0
350	566527.62	4737604.43	2.40	1	8000	52.8	-88.0	0.0	0.0	57.5	24.9	-1.0	0.0	0.0	8.7	0.0	14.0	-51.4	-88.0
351	566530.76	4737593.35	2.40	1	1000	61.2	-88.0	0.0	0.0	59.1	0.9	-1.0	0.0	0.0	14.6	0.0	2.0	-14.5	-88.0
352	566530.76	4737593.35	2.40	1	2000	60.4	-88.0	0.0	0.0	59.1	2.4	-1.0	0.0	0.0	17.4	0.0	2.0	-19.6	-88.0
353	566530.76	4737593.35	2.40	1	4000	58.3	-88.0	0.0	0.0	59.1	8.3	-1.0	0.0	0.0	20.3	0.0	2.0	-30.4	-88.0
354	566530.76	4737593.35	2.40	1	8000	51.7	-88.0	0.0	0.0	59.1	29.6	-1.0	0.0	0.0	23.3	0.0	2.0	-61.3	-88.0
355	566529.69	4737597.11	2.40	1	1000	68.2	-88.0	0.0	0.0	59.1	0.9	-0.9	0.0	0.0	14.7	0.0	2.0	-7.6	-88.0
356	566529.69	4737597.11	2.40	1	2000	67.4	-88.0	0.0	0.0	59.1	2.5	-1.0	0.0	0.0	17.5	0.0	2.0	-12.7	-88.0
357	566529.69	4737597.11	2.40	1	4000	65.3	-88.0	0.0	0.0	59.1	8.4	-1.0	0.0	0.0	20.4	0.0	2.0	-23.7	-88.0
358	566529.69	4737597.11	2.40	1	8000	58.7	-88.0	0.0	0.0	59.1	29.9	-1.0	0.0	0.0	23.3	0.0	2.0	-54.7	-88.0
359	566528.57	4737601.06	2.40	1	1000	62.4	-88.0	0.0	0.0	59.2	0.9	-0.9	0.0	0.0	21.5	0.0	2.0	-20.5	-88.0
360	566528.57	4737601.06	2.40	1	2000	61.6	-88.0	0.0	0.0	59.2	2.5	-0.9	0.0	0.0	24.5	0.0	2.0	-25.8	-88.0
361	566528.57	4737601.06	2.40	1	4000	59.5	-88.0	0.0	0.0	59.2	8.5	-0.9	0.0	0.0	25.0	0.0	2.0	-34.3	-88.0
362	566528.57	4737601.06	2.40	1	8000	52.9	-88.0	0.0	0.0	59.2	30.2	-0.9	0.0	0.0	25.0	0.0	2.0	-62.6	-88.0
363	566528.04	4737602.94	2.40	1	1000	63.4	-88.0	0.0	0.0	59.3	1.0	-0.9	0.0	0.0	14.7	0.0	2.0	-12.6	-88.0
364	566528.04	4737602.94	2.40	1	2000	62.6	-88.0	0.0	0.0	59.3	2.5	-0.9	0.0	0.0	17.5	0.0	2.0	-17.8	-88.0
365	566528.04	4737602.94	2.40	1	4000	60.5	-88.0	0.0	0.0	59.3	8.5	-0.9	0.0	0.0	20.4	0.0	2.0	-28.8	-88.0
366	566528.04	4737602.94	2.40	1	8000	53.9	-88.0	0.0	0.0	59.3	30.3	-0.9	0.0	0.0	23.4	0.0	2.0	-60.1	-88.0
367	566527.56	4737604.61	2.40	1	1000	61.2	-88.0	0.0	0.0	59.3	1.0	-0.9	0.0	0.0	14.7	0.0	2.0	-15.0	-88.0
368	566527.56	4737604.61	2.40	1	2000	60.4	-88.0	0.0	0.0	59.3	2.5	-0.9	0.0	0.0	17.5	0.0	2.0	-20.1	-88.0
369	566527.56	4737604.61	2.40	1	4000	58.3	-88.0	0.0	0.0	59.3	8.5	-0.9	0.0	0.0	20.4	0.0	2.0	-31.1	-88.0
370	566527.56	4737604.61	2.40	1	8000	51.7	-88.0	0.0	0.0	59.3	30.4	-0.9	0.0	0.0	23.4	0.0	2.0	-62.6	-88.0
371	566528.49	4737601.35	2.40	1	32	43.4	-88.0	0.0	0.0	56.1	0.0	-3.0	0.0	0.0	5.3	0.0	1.0	-16.0	-88.0
372	566528.49	4737601.35	2.40	1	63	49.3	-88.0	0.0	0.0	56.1	0.0	-3.0	0.0	0.0	5.8	0.0	1.0	-10.6	-88.0
373	566528.49	4737601.35	2.40	1	125	50.6	-88.0	0.0	0.0	56.1	0.1	2.6	0.0	0.0	3.9	0.0	1.0	-13.1	-88.0
374	566528.49	4737601.35	2.40	1	250	59.4	-88.0	0.0	0.0	56.1	0.2	3.8	0.0	0.0	4.0	0.0	1.0	-5.7	-88.0
375	566528.49	4737601.35	2.40	1	500	62.1	-88.0	0.0	0.0	56.1	0.4	-0.1	0.0	0.0	9.5	0.0	1.0	-4.8	-88.0
376	566528.49	4737601.35	2.40	1	1000	66.6	-88.0	0.0	0.0	56.1	0.7	-0.8	0.0	0.0	11.8	0.0	1.0	-2.2	-88.0
377	566528.49	4737601.35	2.40	1	2000	65.8	-88.0	0.0	0.0	56.1	1.8	-0.8	0.0	0.0	14.3	0.0	1.0	-6.6	-88.0
378	566528.49	4737601.35	2.40	1	4000	63.7	-88.0	0.0	0.0	56.1	5.9	-0.8	0.0	0.0	17.1	0.0	1.0	-15.7	-88.0
379	566528.49	4737601.35	2.40	1	8000	57.1	-88.0	0.0	0.0	56.1	21.2	-0.8	0.0	0.0	19.9	0.0	1.0	-40.4	-88.0
380	566529.34	4737598.34	2.40	1	1000	62.2	-88.0	0.0	0.0	56.8	0.7	-1.2	0.0	0.0	5.3	0.0	2.0	-1.4	-88.0
381	566529.34	4737598.34	2.40	1	2000	61.4	-88.0	0.0	0.0	56.8	1.9	-1.2	0.0	0.0	5.7	0.0	2.0	-3.8	-88.0
382	566529.34	4737598.34	2.40	1	4000	59.3	-88.0	0.0	0.0	56.8	6.4	-1.2	0.0	0.0	6.5	0.0	2.0	-11.1	-88.0
383	566529.34	4737598.34	2.40	1	8000	52.7	-88.0	0.0	0.0	56.8	22.7	-1.2	0.0	0.0	7.7	0.0	2.0	-35.2	-88.0
384	566528.92	4737599.82	2.40	1	1000	61.6	-88.0	0.0	0.0	56.8	0.7	-1.1	0.0	0.0	5.2	0.0	2.0	-2.0	-88.0
385	566528.92	4737599.82	2.40	1	2000	60.8	-88.0	0.0	0.0	56.8	1.9	-1.1	0.0	0.0	5.6	0.0	2.0	-4.3	-88.0
386	566528.92	4737599.82	2.40	1	4000	58.7	-88.0	0.0	0.0	56.8	6.4	-1.1	0.0	0.0	6.2	0.0	2.0	-11.6	-88.0
387	566528.92	4737599.82	2.40	1	8000	52.1	-88.0	0.0	0.0	56.8	22.9	-1.1	0.0	0.0	7.3	0.0	2.0	-35.8	-88.0
388	566595.47	4737537.43	2.40	1	1000	68.8	-88.0	0.0	0.0	58.0	0.8	-1.5	0.0	0.0	5.1	0.0	13.5	-7.1	-88.0
389	566595.47	4737537.43	2.40	1	2000	68.0	-88.0	0.0	0.0	58.0	2.2	-1.5	0.0	0.0	5.5	0.0	13.5	-9.6	-88.0
390	566595.47	4737537.43	2.40	1	4000	65.9	-88.0	0.0	0.0	58.0	7.4	-1.5	0.0	0.0	6.1	0.0	13.5	-17.6	-88.0
391	566595.47	4737537.43	2.40	1	8000	59.3	-88.0	0.0	0.0	58.0	26.3	-1.5	0.0	0.0	7.1	0.0	13.5	-44.1	-88.0
392	566595.47	4737537.43	2.40	1	2000	68.0	-88.0	0.0	0.0	58.2	2.2	-1.6	0.0	0.0	0.0	0.0	16.1	-6.8	-88.0
393	566595.47	4737537.43	2.40	1	4000	65.9	-88.0	0.0	0.0	58.2	7.5	-1.6	0.0	0.0	0.0	0.0	16.1	-14.2	-88.0
394	566595.47	4737537.43	2.40	1	8000	59.3	-88.0	0.0	0.0	58.2	26.7	-1.6	0.0	0.0	0.0	0.0	16.1	-40.0	-88.0
395	566595.06	4737539.89	2.40	1	1000	64.2	-88.0	0.0	0.0	59.4	1.0	-1.5	0.0	0.0	11.3	0.0	2.0	-8.1	-88.0
396	566595.06	4737539.89	2.40	1	2000	63.4	-88.0	0.0	0.0	59.4	2.5	-1.5	0.0	0.0	13.9	0.0	2.0	-13.0	-88.0
397	566595.06	4737539.89	2.40	1	4000	61.3	-88.0	0.0	0.0	59.4	8.7	-1.5	0.0	0.0	16.6	0.0	2.0	-23.9	-88.0
398	566595.06	4737539.89	2.40	1	8000	54.7	-88.0	0.0	0.0	59.4	30.9	-1.5	0.0	0.0	19.5	0.0	2.0	-55.6	-88.0
399	566595.86	4737535.05	2.40	1	1000	64.4	-88.0	0.0	0.0	59.4	1.0	-1.3	0.0	0.0	10.6	0.0	2.0	-7.2	-88.0
400	566595.86	4737535.05	2.40	1	2000	63.6	-88.0	0.0	0.0	59.4	2.5	-1.3	0.0	0.0	13.0	0.0	2.0	-12.0	-88.0

Line Source, ISO 9613, Name: "Digester Truck Movements", ID: "DTRM"																			
Nr.	X	Y	Z	Refl.	Freq.	LxT	LxN	K0	Dc	Adiv	Aatm	Agr	Afol	Ahous	Abar	Cmet	RL	LrT	LrN
	(m)	(m)	(m)		(Hz)	dB(A)	dB(A)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	dB(A)	dB(A)
401	566595.86	4737535.05	2.40	1	4000	61.5	-88.0	0.0	0.0	59.4	8.6	-1.3	0.0	0.0	15.7	0.0	2.0	-22.9	-88.0
402	566595.86	4737535.05	2.40	1	8000	54.9	-88.0	0.0	0.0	59.4	30.7	-1.3	0.0	0.0	18.5	0.0	2.0	-54.4	-88.0
403	566596.07	4737533.81	2.40	1	2000	52.9	-88.0	0.0	0.0	56.4	1.8	-0.8	0.0	0.0	0.0	0.0	2.0	-6.5	-88.0
404	566596.07	4737533.81	2.40	1	4000	50.8	-88.0	0.0	0.0	56.4	6.1	-0.8	0.0	0.0	0.0	0.0	2.0	-12.9	-88.0
405	566596.07	4737533.81	2.40	1	8000	44.2	-88.0	0.0	0.0	56.4	21.7	-0.8	0.0	0.0	0.0	0.0	2.0	-35.0	-88.0
406	566595.89	4737534.90	2.40	1	2000	63.1	-88.0	0.0	0.0	56.8	1.9	-1.1	0.0	0.0	5.4	0.0	2.0	-1.9	-88.0
407	566595.89	4737534.90	2.40	1	4000	61.0	-88.0	0.0	0.0	56.8	6.4	-1.1	0.0	0.0	5.9	0.0	2.0	-9.0	-88.0
408	566595.89	4737534.90	2.40	1	8000	54.4	-88.0	0.0	0.0	56.8	22.9	-1.1	0.0	0.0	6.8	0.0	2.0	-33.0	-88.0
409	566595.27	4737538.63	2.40	1	1000	67.2	-88.0	0.0	0.0	56.7	0.7	-1.1	0.0	0.0	5.1	0.0	2.0	3.7	-88.0
410	566595.27	4737538.63	2.40	1	2000	66.4	-88.0	0.0	0.0	56.7	1.9	-1.1	0.0	0.0	5.4	0.0	2.0	1.5	-88.0
411	566595.27	4737538.63	2.40	1	4000	64.3	-88.0	0.0	0.0	56.7	6.3	-1.1	0.0	0.0	6.0	0.0	2.0	-5.7	-88.0
412	566595.27	4737538.63	2.40	1	8000	57.7	-88.0	0.0	0.0	56.7	22.5	-1.1	0.0	0.0	6.9	0.0	2.0	-29.4	-88.0
413	566529.91	4737584.78	2.40	1	500	65.2	-88.0	0.0	0.0	57.2	0.4	-0.6	0.0	0.0	5.3	0.0	12.6	-9.8	-88.0
414	566529.91	4737584.78	2.40	1	1000	69.7	-88.0	0.0	0.0	57.2	0.8	-1.1	0.0	0.0	6.0	0.0	12.6	-5.8	-88.0
415	566529.91	4737584.78	2.40	1	2000	68.9	-88.0	0.0	0.0	57.2	2.0	-1.1	0.0	0.0	7.0	0.0	12.6	-8.9	-88.0
416	566529.91	4737584.78	2.40	1	4000	66.8	-88.0	0.0	0.0	57.2	6.7	-1.1	0.0	0.0	8.5	0.0	12.6	-17.2	-88.0
417	566529.91	4737584.78	2.40	1	8000	60.2	-88.0	0.0	0.0	57.2	24.0	-1.1	0.0	0.0	10.5	0.0	12.6	-43.1	-88.0
418	566529.91	4737584.78	2.40	1	1000	69.7	-88.0	0.0	0.0	58.8	0.9	-0.9	0.0	0.0	14.6	0.0	2.0	-5.8	-88.0
419	566529.91	4737584.78	2.40	1	2000	68.9	-88.0	0.0	0.0	58.8	2.4	-0.9	0.0	0.0	17.4	0.0	2.0	-10.8	-88.0
420	566529.91	4737584.78	2.40	1	4000	66.8	-88.0	0.0	0.0	58.8	8.1	-0.9	0.0	0.0	20.3	0.0	2.0	-21.5	-88.0
421	566529.91	4737584.78	2.40	1	8000	60.2	-88.0	0.0	0.0	58.8	28.8	-0.9	0.0	0.0	23.3	0.0	2.0	-51.7	-88.0
422	566529.16	4737581.93	2.40	1	1000	65.1	-88.0	0.0	0.0	55.7	0.6	-1.1	0.0	0.0	0.0	0.0	2.0	7.9	-88.0
423	566529.16	4737581.93	2.40	1	2000	64.3	-88.0	0.0	0.0	55.7	1.7	-1.1	0.0	0.0	0.0	0.0	2.0	6.0	-88.0
424	566529.16	4737581.93	2.40	1	4000	62.2	-88.0	0.0	0.0	55.7	5.6	-1.1	0.0	0.0	0.0	0.0	2.0	-0.0	-88.0
425	566529.16	4737581.93	2.40	1	8000	55.6	-88.0	0.0	0.0	55.7	20.1	-1.1	0.0	0.0	0.0	0.0	2.0	-21.1	-88.0
426	566530.26	4737586.09	2.40	1	4000	61.4	-88.0	0.0	0.0	55.9	5.8	-1.1	0.0	0.0	8.3	0.0	2.0	-9.5	-88.0
427	566530.26	4737586.09	2.40	1	8000	54.8	-88.0	0.0	0.0	55.9	20.6	-1.1	0.0	0.0	10.3	0.0	2.0	-32.9	-88.0
428	566530.93	4737588.62	2.40	1	1000	60.9	-88.0	0.0	0.0	56.4	0.7	-1.3	0.0	0.0	6.1	0.0	2.0	-3.0	-88.0
429	566530.93	4737588.62	2.40	1	2000	60.1	-88.0	0.0	0.0	56.4	1.8	-1.3	0.0	0.0	7.1	0.0	2.0	-5.9	-88.0
430	566530.93	4737588.62	2.40	1	4000	58.0	-88.0	0.0	0.0	56.4	6.1	-1.3	0.0	0.0	8.6	0.0	2.0	-13.8	-88.0
431	566530.93	4737588.62	2.40	1	8000	51.4	-88.0	0.0	0.0	56.4	21.7	-1.3	0.0	0.0	10.6	0.0	2.0	-38.0	-88.0
432	566519.91	4737617.20	2.40	1	1000	70.5	-88.0	0.0	0.0	58.1	0.8	-1.0	0.0	0.0	5.0	0.0	15.1	-7.6	-88.0
433	566519.91	4737617.20	2.40	1	2000	69.7	-88.0	0.0	0.0	58.1	2.2	-1.0	0.0	0.0	5.3	0.0	15.1	-10.0	-88.0
434	566519.91	4737617.20	2.40	1	4000	67.6	-88.0	0.0	0.0	58.1	7.4	-1.0	0.0	0.0	5.7	0.0	15.1	-17.8	-88.0
435	566519.91	4737617.20	2.40	1	8000	61.0	-88.0	0.0	0.0	58.1	26.4	-1.0	0.0	0.0	6.5	0.0	15.1	-44.2	-88.0
436	566523.03	4737614.22	2.40	1	1000	64.0	-88.0	0.0	0.0	59.5	1.0	-0.8	0.0	0.0	14.8	0.0	2.0	-12.6	-88.0
437	566523.03	4737614.22	2.40	1	2000	63.2	-88.0	0.0	0.0	59.5	2.6	-0.8	0.0	0.0	17.7	0.0	2.0	-17.8	-88.0
438	566523.03	4737614.22	2.40	1	4000	61.1	-88.0	0.0	0.0	59.5	8.7	-0.8	0.0	0.0	20.6	0.0	2.0	-28.9	-88.0
439	566523.03	4737614.22	2.40	1	8000	54.5	-88.0	0.0	0.0	59.5	31.1	-0.8	0.0	0.0	23.5	0.0	2.0	-60.8	-88.0
440	566520.71	4737616.45	2.40	1	1000	66.0	-88.0	0.0	0.0	59.5	1.0	-0.7	0.0	0.0	15.2	0.0	2.0	-10.9	-88.0
441	566520.71	4737616.45	2.40	1	2000	65.2	-88.0	0.0	0.0	59.5	2.6	-0.7	0.0	0.0	18.0	0.0	2.0	-16.1	-88.0
442	566520.71	4737616.45	2.40	1	4000	63.1	-88.0	0.0	0.0	59.5	8.7	-0.7	0.0	0.0	20.9	0.0	2.0	-27.3	-88.0
443	566520.71	4737616.45	2.40	1	8000	56.5	-88.0	0.0	0.0	59.5	31.1	-0.7	0.0	0.0	23.9	0.0	2.0	-59.2	-88.0
444	566527.14	4737605.81	2.40	1	1000	61.0	-88.0	0.0	0.0	57.6	0.8	-0.9	0.0	0.0	5.4	0.0	14.2	-16.0	-88.0
445	566527.14	4737605.81	2.40	1	2000	60.2	-88.0	0.0	0.0	57.6	2.1	-1.0	0.0	0.0	6.0	0.0	14.2	-18.7	-88.0
446	566527.14	4737605.81	2.40	1	4000	58.1	-88.0	0.0	0.0	57.6	7.0	-1.0	0.0	0.0	7.0	0.0	14.2	-26.7	-88.0
447	566527.14	4737605.81	2.40	1	8000	51.5	-88.0	0.0	0.0	57.6	25.0	-1.0	0.0	0.0	8.4	0.0	14.2	-52.8	-88.0
448	566526.26	4737607.89	2.40	1	1000	65.2	-88.0	0.0	0.0	57.7	0.8	-0.9	0.0	0.0	5.3	0.0	14.4	-12.0	-88.0
449	566526.26	4737607.89	2.40	1	2000	64.4	-88.0	0.0	0.0	57.7	2.1	-0.9	0.0	0.0	5.8	0.0	14.4	-14.6	-88.0
450	566526.26	4737607.89	2.40	1	4000	62.3	-88.0	0.0	0.0	57.7	7.1	-0.9	0.0	0.0	6.7	0.0	14.4	-22.5	-88.0
451	566526.26	4737607.89	2.40	1	8000	55.7	-88.0	0.0	0.0	57.7	25.2	-0.9	0.0	0.0	8.1	0.0	14.4	-48.6	-88.0
452	566524.76	4737611.39	2.40	1	1000	66.4	-88.0	0.0	0.0	57.8	0.8	-1.0	0.0	0.0	5.2	0.0	14.7	-11.1	-88.0
453	566524.76	4737611.39	2.40	1	2000	65.6	-88.0	0.0	0.0	57.8	2.1	-1.0	0.0	0.0	5.6	0.0	14.7	-13.6	-88.0
454	566524.76	4737611.39	2.40	1	4000	63.5	-88.0	0.0	0.0	57.8	7.2	-1.0	0.0	0.0	6.3	0.0	14.7	-21.5	-88.0
455	566524.76	4737611.39	2.40	1	8000	56.9	-88.0	0.0	0.0	57.8	25.6	-1.0	0.0	0.0	7.5	0.0	14.7	-47.7	-88.0
456	566525.65	4737609.30	2.40	1	1000	69.5	-88.0	0.0	0.0	59.4	1.0	-0.9	0.0	0.0	14.8	0.0	2.0	-6.8	-88.0
457	566525.65	4737609.30	2.40	1	2000	68.7	-88.0	0.0	0.0	59.4	2.5	-0.9	0.0	0.0	17.6	0.0	2.0	-11.9	-88.0
458	566525.65	4737609.30	2.40	1	4000	66.6	-88.0	0.0	0.0	59.4	8.6	-0.9	0.0	0.0	20.5	0.0	2.0	-23.0	-88.0
459	566525.65	4737609.30	2.40	1	8000	60.0	-88.0	0.0	0.0	59.4	30.7	-0.9	0.0	0.0	23.4	0.0	2.0	-54.7	-88.0
460	566482.71	4737720.93	2.40	1	250	65.6	-88.0	0.0	0.0	61.8	0.4	1.1	0.0	0.0	6.8	0.0	12.4	-16.9	-88.0
461	566482.71	4737720.93	2.40	1	500	68.3	-88.0	0.0	0.0	61.8	0.7	-1.3	0.0	0.0	10.3	0.0	12.4	-15.6	-88.0
462	566482.71	4737720.93	2.40	1	1000	72.8	-88.0	0.0	0.0	61.8	1.3	-1.6	0.0	0.0	14.0	0.0	12.4	-15.1	-88.0
463	566482.71	4737720.93	2.40	1	2000	72.0	-88.0	0.0	0.0	61.8	3.3	-1.6	0.0	0.0	17.9	0.0	12.4	-21.9	-88.0

Line Source, ISO 9613, Name: "Digester Truck Movements", ID: "DTRM"																			
Nr.	X	Y	Z	Refl.	Freq.	LxT	LxN	K0	Dc	Adiv	Aatm	Agr	Afol	Ahous	Abar	Cmet	RL	LrT	LrN
	(m)	(m)	(m)		(Hz)	dB(A)	dB(A)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	dB(A)	dB(A)
464	566482.71	4737720.93	2.40	1	4000	69.9	-88.0	0.0	0.0	61.8	11.3	-1.6	0.0	0.0	21.3	0.0	12.4	-35.3	-88.0
465	566482.71	4737720.93	2.40	1	8000	63.3	-88.0	0.0	0.0	61.8	40.4	-1.6	0.0	0.0	24.4	0.0	12.4	-74.1	-88.0
466	566593.05	4737542.18	2.40	1	1000	66.2	-88.0	0.0	0.0	57.8	0.8	-1.4	0.0	0.0	5.3	0.0	13.2	-9.6	-88.0
467	566593.05	4737542.18	2.40	1	2000	65.4	-88.0	0.0	0.0	57.8	2.1	-1.4	0.0	0.0	5.8	0.0	13.2	-12.2	-88.0
468	566593.05	4737542.18	2.40	1	4000	63.3	-88.0	0.0	0.0	57.8	7.2	-1.4	0.0	0.0	6.7	0.0	13.2	-20.2	-88.0
469	566593.05	4737542.18	2.40	1	8000	56.7	-88.0	0.0	0.0	57.8	25.7	-1.4	0.0	0.0	8.0	0.0	13.2	-46.6	-88.0
470	566593.05	4737542.18	2.40	1	2000	65.4	-88.0	0.0	0.0	58.0	2.2	-1.7	0.0	0.0	4.8	0.0	15.9	-13.8	-88.0
471	566593.05	4737542.18	2.40	1	4000	63.3	-88.0	0.0	0.0	58.0	7.4	-1.7	0.0	0.0	4.8	0.0	15.9	-21.1	-88.0
472	566593.05	4737542.18	2.40	1	8000	56.7	-88.0	0.0	0.0	58.0	26.3	-1.7	0.0	0.0	4.8	0.0	15.9	-46.6	-88.0
473	566593.05	4737542.18	2.40	1	1000	66.2	-88.0	0.0	0.0	59.4	1.0	-1.4	0.0	0.0	11.5	0.0	2.0	-6.3	-88.0
474	566593.05	4737542.18	2.40	1	2000	65.4	-88.0	0.0	0.0	59.4	2.5	-1.4	0.0	0.0	14.1	0.0	2.0	-11.2	-88.0
475	566593.05	4737542.18	2.40	1	4000	63.3	-88.0	0.0	0.0	59.4	8.6	-1.4	0.0	0.0	16.8	0.0	2.0	-22.1	-88.0
476	566593.05	4737542.18	2.40	1	8000	56.7	-88.0	0.0	0.0	59.4	30.8	-1.4	0.0	0.0	19.7	0.0	2.0	-53.8	-88.0
477	566593.05	4737542.18	2.40	1	1000	66.2	-88.0	0.0	0.0	56.5	0.7	-1.0	0.0	0.0	5.2	0.0	2.0	2.8	-88.0
478	566593.05	4737542.18	2.40	1	2000	65.4	-88.0	0.0	0.0	56.5	1.8	-1.0	0.0	0.0	5.6	0.0	2.0	0.5	-88.0
479	566593.05	4737542.18	2.40	1	4000	63.3	-88.0	0.0	0.0	56.5	6.2	-1.0	0.0	0.0	6.3	0.0	2.0	-6.7	-88.0
480	566593.05	4737542.18	2.40	1	8000	56.7	-88.0	0.0	0.0	56.5	22.0	-1.0	0.0	0.0	7.4	0.0	2.0	-30.3	-88.0
481	566531.04	4737590.19	2.40	1	500	58.5	-88.0	0.0	0.0	57.2	0.4	-0.5	0.0	0.0	5.3	0.0	12.8	-16.8	-88.0
482	566531.04	4737590.19	2.40	1	1000	63.0	-88.0	0.0	0.0	57.2	0.8	-1.0	0.0	0.0	6.0	0.0	12.8	-12.7	-88.0
483	566531.04	4737590.19	2.40	1	2000	62.2	-88.0	0.0	0.0	57.2	2.0	-1.0	0.0	0.0	7.1	0.0	12.8	-15.8	-88.0
484	566531.04	4737590.19	2.40	1	4000	60.1	-88.0	0.0	0.0	57.2	6.7	-1.0	0.0	0.0	8.6	0.0	12.8	-24.2	-88.0
485	566531.04	4737590.19	2.40	1	8000	53.5	-88.0	0.0	0.0	57.2	23.9	-1.0	0.0	0.0	10.6	0.0	12.8	-50.0	-88.0
486	566530.97	4737591.95	2.40	1	500	57.5	-88.0	0.0	0.0	57.2	0.4	-0.6	0.0	0.0	5.3	0.0	12.9	-17.8	-88.0
487	566530.97	4737591.95	2.40	1	1000	62.0	-88.0	0.0	0.0	57.2	0.8	-1.1	0.0	0.0	6.0	0.0	12.9	-13.8	-88.0
488	566530.97	4737591.95	2.40	1	2000	61.2	-88.0	0.0	0.0	57.2	2.0	-1.1	0.0	0.0	7.0	0.0	12.9	-16.9	-88.0
489	566530.97	4737591.95	2.40	1	4000	59.1	-88.0	0.0	0.0	57.2	6.7	-1.1	0.0	0.0	8.5	0.0	12.9	-25.2	-88.0
490	566530.97	4737591.95	2.40	1	8000	52.5	-88.0	0.0	0.0	57.2	24.0	-1.1	0.0	0.0	10.5	0.0	12.9	-51.1	-88.0
491	566531.01	4737590.96	2.40	1	1000	65.5	-88.0	0.0	0.0	59.0	0.9	-1.0	0.0	0.0	14.6	0.0	2.0	-10.0	-88.0
492	566531.01	4737590.96	2.40	1	2000	64.7	-88.0	0.0	0.0	59.0	2.4	-1.0	0.0	0.0	17.4	0.0	2.0	-15.1	-88.0
493	566531.01	4737590.96	2.40	1	4000	62.6	-88.0	0.0	0.0	59.0	8.2	-1.0	0.0	0.0	20.3	0.0	2.0	-25.9	-88.0
494	566531.01	4737590.96	2.40	1	8000	56.0	-88.0	0.0	0.0	59.0	29.4	-1.0	0.0	0.0	23.3	0.0	2.0	-56.6	-88.0
495	566530.94	4737592.70	2.40	1	500	42.1	-88.0	0.0	0.0	55.9	0.3	-0.2	0.0	0.0	0.0	0.0	1.0	-15.0	-88.0
496	566530.94	4737592.70	2.40	1	1000	46.6	-88.0	0.0	0.0	55.9	0.7	-0.8	0.0	0.0	0.0	0.0	1.0	-10.2	-88.0
497	566530.94	4737592.70	2.40	1	2000	45.8	-88.0	0.0	0.0	55.9	1.7	-0.9	0.0	0.0	0.0	0.0	1.0	-12.0	-88.0
498	566530.94	4737592.70	2.40	1	4000	43.7	-88.0	0.0	0.0	55.9	5.8	-0.9	0.0	0.0	0.0	0.0	1.0	-18.2	-88.0
499	566530.94	4737592.70	2.40	1	8000	37.1	-88.0	0.0	0.0	55.9	20.7	-0.9	0.0	0.0	0.0	0.0	1.0	-39.6	-88.0
500	566531.01	4737590.89	2.40	1	1000	65.3	-88.0	0.0	0.0	56.5	0.7	-1.3	0.0	0.0	5.8	0.0	2.0	1.6	-88.0
501	566531.01	4737590.89	2.40	1	2000	64.5	-88.0	0.0	0.0	56.5	1.8	-1.3	0.0	0.0	6.7	0.0	2.0	-1.1	-88.0
502	566531.01	4737590.89	2.40	1	4000	62.4	-88.0	0.0	0.0	56.5	6.1	-1.3	0.0	0.0	8.0	0.0	2.0	-8.9	-88.0
503	566531.01	4737590.89	2.40	1	8000	55.8	-88.0	0.0	0.0	56.5	21.9	-1.3	0.0	0.0	9.8	0.0	2.0	-33.0	-88.0
504	566566.96	4737538.42	2.40	2	4000	54.9	-88.0	0.0	0.0	57.5	6.9	-1.1	0.0	0.0	0.0	0.0	3.0	-11.4	-88.0
505	566566.96	4737538.42	2.40	2	8000	48.3	-88.0	0.0	0.0	57.5	24.8	-1.1	0.0	0.0	0.0	0.0	3.0	-35.9	-88.0
506	566531.73	4737567.81	2.40	2	1000	62.1	-88.0	0.0	0.0	56.5	0.7	-0.9	0.0	0.0	15.9	0.0	4.0	-14.2	-88.0
507	566531.73	4737567.81	2.40	2	2000	61.3	-88.0	0.0	0.0	56.5	1.8	-0.9	0.0	0.0	18.8	0.0	4.0	-19.0	-88.0
508	566531.73	4737567.81	2.40	2	4000	59.2	-88.0	0.0	0.0	56.5	6.2	-0.9	0.0	0.0	21.8	0.0	4.0	-28.4	-88.0
509	566531.73	4737567.81	2.40	2	8000	52.6	-88.0	0.0	0.0	56.5	22.1	-0.9	0.0	0.0	24.7	0.0	4.0	-53.8	-88.0
510	566530.55	4737572.78	2.40	2	1000	69.4	-88.0	0.0	0.0	56.7	0.7	-0.9	0.0	0.0	16.0	0.0	4.0	-7.0	-88.0
511	566530.55	4737572.78	2.40	2	2000	68.6	-88.0	0.0	0.0	56.7	1.9	-1.0	0.0	0.0	18.9	0.0	4.0	-11.9	-88.0
512	566530.55	4737572.78	2.40	2	4000	66.5	-88.0	0.0	0.0	56.7	6.3	-1.0	0.0	0.0	21.8	0.0	4.0	-21.4	-88.0
513	566530.55	4737572.78	2.40	2	8000	59.9	-88.0	0.0	0.0	56.7	22.5	-1.0	0.0	0.0	24.8	0.0	4.0	-47.1	-88.0
514	566529.02	4737579.23	2.40	2	2000	61.3	-88.0	0.0	0.0	57.0	1.9	-1.1	0.0	0.0	20.5	0.0	4.0	-21.0	-88.0
515	566529.02	4737579.23	2.40	2	4000	59.2	-88.0	0.0	0.0	57.0	6.6	-1.1	0.0	0.0	23.4	0.0	4.0	-30.7	-88.0
516	566529.02	4737579.23	2.40	2	8000	52.6	-88.0	0.0	0.0	57.0	23.4	-1.1	0.0	0.0	25.0	0.0	4.0	-55.7	-88.0
517	566528.79	4737580.19	2.40	2	2000	54.8	-88.0	0.0	0.0	57.1	2.0	-1.3	0.0	0.0	20.4	0.0	4.0	-27.5	-88.0
518	566528.79	4737580.19	2.40	2	4000	52.7	-88.0	0.0	0.0	57.1	6.6	-1.3	0.0	0.0	23.4	0.0	4.0	-37.2	-88.0
519	566528.79	4737580.19	2.40	2	8000	46.1	-88.0	0.0	0.0	57.1	23.5	-1.3	0.0	0.0	25.0	0.0	4.0	-62.3	-88.0
520	566589.01	4737542.86	2.40	2	4000	59.8	-88.0	0.0	0.0	56.8	6.4	-1.3	0.0	0.0	0.0	0.0	3.0	-5.3	-88.0
521	566589.01	4737542.86	2.40	2	8000	53.2	-88.0	0.0	0.0	56.8	22.9	-1.3	0.0	0.0	0.0	0.0	3.0	-28.4	-88.0
522	566470.53	4737747.39	2.40	2	500	64.2	-88.0	0.0	0.0	61.8	0.7	-0.1	0.0	0.0	0.0	0.0	4.0	-2.1	-88.0
523	566470.53	4737747.39	2.40	2	1000	68.7	-88.0	0.0	0.0	61.8	1.3	-0.9	0.0	0.0	0.0	0.0	4.0	2.5	-88.0
524	566470.53	4737747.39	2.40	2	2000	67.9	-88.0	0.0	0.0	61.8	3.3	-0.9	0.0	0.0	0.0	0.0	4.0	-0.3	-88.0
525	566470.53	4737747.39	2.40	2	4000	65.8	-88.0	0.0	0.0	61.8	11.4	-0.9	0.0	0.0	0.0	0.0	4.0	-10.5	-88.0
526	566470.53	4737747.39	2.40	2	8000	59.2	-88.0	0.0	0.0	61.8	40.5	-0.9	0.0	0.0	0.0	0.0	4.0	-46.2	-88.0

Line Source, ISO 9613, Name: "Digester Truck Movements", ID: "DTRM"																			
Nr.	X	Y	Z	Refl.	Freq.	LxT	LxN	K0	Dc	Adiv	Aatm	Agr	Afol	Ahous	Abar	Cmet	RL	LrT	LrN
	(m)	(m)	(m)		(Hz)	dB(A)	dB(A)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	dB(A)	dB(A)
527	566461.41	4737764.97	2.40	2	500	70.6	-88.0	0.0	0.0	62.3	0.7	-0.2	0.0	0.0	6.4	0.0	4.0	-2.5	-88.0
528	566461.41	4737764.97	2.40	2	1000	75.1	-88.0	0.0	0.0	62.3	1.3	-0.9	0.0	0.0	8.3	0.0	4.0	0.2	-88.0
529	566461.41	4737764.97	2.40	2	2000	74.3	-88.0	0.0	0.0	62.3	3.5	-0.9	0.0	0.0	10.6	0.0	4.0	-5.1	-88.0
530	566461.41	4737764.97	2.40	2	4000	72.2	-88.0	0.0	0.0	62.3	12.0	-0.9	0.0	0.0	13.2	0.0	4.0	-18.2	-88.0
531	566461.41	4737764.97	2.40	2	8000	65.6	-88.0	0.0	0.0	62.3	42.7	-0.9	0.0	0.0	15.9	0.0	4.0	-58.3	-88.0
532	566528.50	4737601.33	2.40	2	1000	61.4	-88.0	0.0	0.0	59.2	1.0	-0.9	0.0	0.0	18.9	0.0	3.0	-19.8	-88.0
533	566528.50	4737601.33	2.40	2	2000	60.6	-88.0	0.0	0.0	59.2	2.5	-0.9	0.0	0.0	21.8	0.0	3.0	-25.0	-88.0
534	566528.50	4737601.33	2.40	2	4000	58.5	-88.0	0.0	0.0	59.2	8.5	-0.9	0.0	0.0	24.8	0.0	3.0	-36.1	-88.0
535	566528.50	4737601.33	2.40	2	8000	51.9	-88.0	0.0	0.0	59.2	30.2	-0.9	0.0	0.0	25.0	0.0	3.0	-64.6	-88.0
536	566528.08	4737602.78	2.40	2	500	50.8	-88.0	0.0	0.0	56.2	0.4	-0.2	0.0	0.0	0.0	0.0	2.0	-7.6	-88.0
537	566528.08	4737602.78	2.40	2	1000	55.3	-88.0	0.0	0.0	56.2	0.7	-0.8	0.0	0.0	0.0	0.0	2.0	-2.8	-88.0
538	566528.08	4737602.78	2.40	2	2000	54.5	-88.0	0.0	0.0	56.2	1.8	-0.8	0.0	0.0	0.0	0.0	2.0	-4.7	-88.0
539	566528.08	4737602.78	2.40	2	4000	52.4	-88.0	0.0	0.0	56.2	6.0	-0.8	0.0	0.0	0.0	0.0	2.0	-11.1	-88.0
540	566528.08	4737602.78	2.40	2	8000	45.8	-88.0	0.0	0.0	56.2	21.4	-0.8	0.0	0.0	0.0	0.0	2.0	-33.0	-88.0
541	566528.97	4737581.21	2.40	2	2000	61.7	-88.0	0.0	0.0	57.1	2.0	-1.2	0.0	0.0	18.8	0.0	4.0	-19.0	-88.0
542	566528.97	4737581.21	2.40	2	4000	59.6	-88.0	0.0	0.0	57.1	6.6	-1.2	0.0	0.0	21.7	0.0	4.0	-28.7	-88.0
543	566528.97	4737581.21	2.40	2	8000	53.0	-88.0	0.0	0.0	57.1	23.6	-1.2	0.0	0.0	24.7	0.0	4.0	-55.2	-88.0
544	566530.75	4737587.95	2.40	2	1000	62.6	-88.0	0.0	0.0	57.6	0.8	-1.2	0.0	0.0	17.2	0.0	4.0	-15.9	-88.0
545	566530.75	4737587.95	2.40	2	2000	61.8	-88.0	0.0	0.0	57.6	2.1	-1.2	0.0	0.0	20.1	0.0	4.0	-20.9	-88.0
546	566530.75	4737587.95	2.40	2	4000	59.7	-88.0	0.0	0.0	57.6	7.0	-1.2	0.0	0.0	23.1	0.0	4.0	-30.9	-88.0
547	566530.75	4737587.95	2.40	2	8000	53.1	-88.0	0.0	0.0	57.6	25.1	-1.2	0.0	0.0	25.0	0.0	4.0	-57.5	-88.0
548	566530.99	4737588.86	2.40	2	1000	49.0	-88.0	0.0	0.0	57.7	0.8	-1.2	0.0	0.0	17.2	0.0	4.0	-29.4	-88.0
549	566530.99	4737588.86	2.40	2	2000	48.2	-88.0	0.0	0.0	57.7	2.1	-1.2	0.0	0.0	20.1	0.0	4.0	-34.4	-88.0
550	566530.99	4737588.86	2.40	2	4000	46.1	-88.0	0.0	0.0	57.7	7.1	-1.2	0.0	0.0	23.0	0.0	4.0	-44.4	-88.0
551	566530.99	4737588.86	2.40	2	8000	39.5	-88.0	0.0	0.0	57.7	25.2	-1.2	0.0	0.0	25.0	0.0	4.0	-71.1	-88.0
552	566529.48	4737583.13	2.40	2	2000	59.7	-88.0	0.0	0.0	57.1	2.0	-1.2	0.0	0.0	5.2	0.0	3.0	-6.4	-88.0
553	566529.48	4737583.13	2.40	2	4000	57.6	-88.0	0.0	0.0	57.1	6.6	-1.2	0.0	0.0	5.6	0.0	3.0	-13.5	-88.0
554	566529.48	4737583.13	2.40	2	8000	51.0	-88.0	0.0	0.0	57.1	23.7	-1.2	0.0	0.0	6.3	0.0	3.0	-37.9	-88.0

Line Source, ISO 9613, Name: "Sewage Truck Movements", ID: "STRM"																			
Nr.	X	Y	Z	Refl.	Freq.	LxT	LxN	K0	Dc	Adiv	Aatm	Agr	Afol	Ahous	Abar	Cmet	RL	LrT	LrN
	(m)	(m)	(m)		(Hz)	dB(A)	dB(A)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	dB(A)	dB(A)
1	566604.65	4737547.48	2.40	0	32	53.4	-88.0	0.0	0.0	55.1	0.0	-3.0	0.0	0.0	0.0	0.0	-0.0	1.3	-88.0
2	566604.65	4737547.48	2.40	0	63	59.3	-88.0	0.0	0.0	55.1	0.0	-3.0	0.0	0.0	0.0	0.0	-0.0	7.2	-88.0
3	566604.65	4737547.48	2.40	0	125	60.6	-88.0	0.0	0.0	55.1	0.1	2.6	0.0	0.0	0.0	0.0	-0.0	2.8	-88.0
4	566604.65	4737547.48	2.40	0	250	69.4	-88.0	0.0	0.0	55.1	0.2	3.5	0.0	0.0	0.0	0.0	-0.0	10.6	-88.0
5	566604.65	4737547.48	2.40	0	500	72.1	-88.0	0.0	0.0	55.1	0.3	-0.2	0.0	0.0	0.0	0.0	-0.0	16.9	-88.0
6	566604.65	4737547.48	2.40	0	1000	76.6	-88.0	0.0	0.0	55.1	0.6	-0.7	0.0	0.0	0.0	0.0	-0.0	21.7	-88.0
7	566604.65	4737547.48	2.40	0	2000	75.8	-88.0	0.0	0.0	55.1	1.6	-0.8	0.0	0.0	0.0	0.0	-0.0	19.9	-88.0
8	566604.65	4737547.48	2.40	0	4000	73.7	-88.0	0.0	0.0	55.1	5.3	-0.8	0.0	0.0	0.0	0.0	-0.0	14.1	-88.0
9	566604.65	4737547.48	2.40	0	8000	67.1	-88.0	0.0	0.0	55.1	18.8	-0.8	0.0	0.0	0.0	0.0	-0.0	-6.0	-88.0
10	566595.32	4737538.09	2.40	0	32	51.0	-88.0	0.0	0.0	54.4	0.0	-3.0	0.0	0.0	0.0	0.0	-0.0	-0.3	-88.0
11	566595.32	4737538.09	2.40	0	63	56.9	-88.0	0.0	0.0	54.4	0.0	-3.0	0.0	0.0	0.0	0.0	-0.0	5.6	-88.0
12	566595.32	4737538.09	2.40	0	125	58.2	-88.0	0.0	0.0	54.4	0.1	3.0	0.0	0.0	0.0	0.0	-0.0	0.8	-88.0
13	566595.32	4737538.09	2.40	0	250	67.0	-88.0	0.0	0.0	54.4	0.2	4.4	0.0	0.0	0.0	0.0	-0.0	8.1	-88.0
14	566595.32	4737538.09	2.40	0	500	69.7	-88.0	0.0	0.0	54.4	0.3	0.2	0.0	0.0	0.0	0.0	-0.0	14.9	-88.0
15	566595.32	4737538.09	2.40	0	1000	74.2	-88.0	0.0	0.0	54.4	0.5	-0.5	0.0	0.0	0.0	0.0	-0.0	19.9	-88.0
16	566595.32	4737538.09	2.40	0	2000	73.4	-88.0	0.0	0.0	54.4	1.4	-0.5	0.0	0.0	0.0	0.0	-0.0	18.2	-88.0
17	566595.32	4737538.09	2.40	0	4000	71.3	-88.0	0.0	0.0	54.4	4.8	-0.5	0.0	0.0	0.0	0.0	-0.0	12.7	-88.0
18	566595.32	4737538.09	2.40	0	8000	64.7	-88.0	0.0	0.0	54.4	17.2	-0.5	0.0	0.0	0.0	0.0	-0.0	-6.3	-88.0
19	566593.07	4737537.36	2.40	0	32	50.6	-88.0	0.0	0.0	54.3	0.0	-3.0	0.0	0.0	0.0	0.0	-0.0	-0.7	-88.0
20	566593.07	4737537.36	2.40	0	63	56.5	-88.0	0.0	0.0	54.3	0.0	-3.0	0.0	0.0	0.0	0.0	-0.0	5.2	-88.0
21	566593.07	4737537.36	2.40	0	125	57.8	-88.0	0.0	0.0	54.3	0.1	2.9	0.0	0.0	0.0	0.0	-0.0	0.5	-88.0
22	566593.07	4737537.36	2.40	0	250	66.6	-88.0	0.0	0.0	54.3	0.2	4.4	0.0	0.0	0.0	0.0	-0.0	7.8	-88.0
23	566593.07	4737537.36	2.40	0	500	69.3	-88.0	0.0	0.0	54.3	0.3	0.2	0.0	0.0	0.0	0.0	-0.0	14.6	-88.0
24	566593.07	4737537.36	2.40	0	1000	73.8	-88.0	0.0	0.0	54.3	0.5	-0.5	0.0	0.0	0.0	0.0	-0.0	19.5	-88.0
25	566593.07	4737537.36	2.40	0	2000	73.0	-88.0	0.0	0.0	54.3	1.4	-0.6	0.0	0.0	0.0	0.0	-0.0	17.9	-88.0
26	566593.07	4737537.36	2.40	0	4000	70.9	-88.0	0.0	0.0	54.3	4.8	-0.6	0.0	0.0	0.0	0.0	-0.0	12.4	-88.0
27	566593.07	4737537.36	2.40	0	8000	64.3	-88.0	0.0	0.0	54.3	17.0	-0.6	0.0	0.0	0.0	0.0	-0.0	-6.4	-88.0
28	566616.02	4737549.80	2.40	0	32	50.8	-88.0	0.0	0.0	55.6	0.0	-3.0	0.0	0.0	0.0	0.0	-0.0	-1.8	-88.0
29	566616.02	4737549.80	2.40	0	63	56.7	-88.0	0.0	0.0	55.6	0.0	-3.0	0.0	0.0	0.0	0.0	-0.0	4.1	-88.0
30	566616.02	4737549.80	2.40	0	125	58.0	-88.0	0.0	0.0	55.6	0.1	2.9	0.0	0.0	0.0	0.0	-0.0	-0.6	-88.0
31	566616.02	4737549.80	2.40	0	250	66.8	-88.0	0.0	0.0	55.6	0.2	4.0	0.0	0.0	0.0	0.0	-0.0	7.1	-88.0

Line Source, ISO 9613, Name: "Sewage Truck Movements", ID: "STRM"																			
Nr.	X	Y	Z	Refl.	Freq.	LxT	LxN	K0	Dc	Adiv	Aatm	Agr	Afol	Ahous	Abar	Cmet	RL	LrT	LrN
	(m)	(m)	(m)		(Hz)	dB(A)	dB(A)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	dB(A)	dB(A)
32	566616.02	4737549.80	2.40	0	500	69.5	-88.0	0.0	0.0	55.6	0.3	0.0	0.0	0.0	0.0	0.0	-0.0	13.6	-88.0
33	566616.02	4737549.80	2.40	0	1000	74.0	-88.0	0.0	0.0	55.6	0.6	-0.6	0.0	0.0	0.0	0.0	-0.0	18.5	-88.0
34	566616.02	4737549.80	2.40	0	2000	73.2	-88.0	0.0	0.0	55.6	1.6	-0.7	0.0	0.0	0.0	0.0	-0.0	16.7	-88.0
35	566616.02	4737549.80	2.40	0	4000	71.1	-88.0	0.0	0.0	55.6	5.6	-0.7	0.0	0.0	0.0	0.0	-0.0	10.6	-88.0
36	566616.02	4737549.80	2.40	0	8000	64.5	-88.0	0.0	0.0	55.6	19.8	-0.7	0.0	0.0	0.0	0.0	-0.0	-10.2	-88.0
37	566616.22	4737548.87	2.40	0	32	50.7	-88.0	0.0	0.0	55.6	0.0	-3.0	0.0	0.0	0.0	0.0	-0.0	-1.9	-88.0
38	566616.22	4737548.87	2.40	0	63	56.6	-88.0	0.0	0.0	55.6	0.0	-3.0	0.0	0.0	0.0	0.0	-0.0	4.0	-88.0
39	566616.22	4737548.87	2.40	0	125	57.9	-88.0	0.0	0.0	55.6	0.1	3.0	0.0	0.0	0.0	0.0	-0.0	-0.8	-88.0
40	566616.22	4737548.87	2.40	0	250	66.7	-88.0	0.0	0.0	55.6	0.2	4.2	0.0	0.0	0.0	0.0	-0.0	6.7	-88.0
41	566616.22	4737548.87	2.40	0	500	69.4	-88.0	0.0	0.0	55.6	0.3	0.1	0.0	0.0	0.0	0.0	-0.0	13.4	-88.0
42	566616.22	4737548.87	2.40	0	1000	73.9	-88.0	0.0	0.0	55.6	0.6	-0.6	0.0	0.0	0.0	0.0	-0.0	18.3	-88.0
43	566616.22	4737548.87	2.40	0	2000	73.1	-88.0	0.0	0.0	55.6	1.6	-0.6	0.0	0.0	0.0	0.0	-0.0	16.5	-88.0
44	566616.22	4737548.87	2.40	0	4000	71.0	-88.0	0.0	0.0	55.6	5.5	-0.6	0.0	0.0	0.0	0.0	-0.0	10.5	-88.0
45	566616.22	4737548.87	2.40	0	8000	64.4	-88.0	0.0	0.0	55.6	19.8	-0.6	0.0	0.0	0.0	0.0	-0.0	-10.3	-88.0
46	566596.57	4737545.77	2.40	0	32	49.8	-88.0	0.0	0.0	54.8	0.0	-3.0	0.0	0.0	0.0	0.0	-0.0	-2.0	-88.0
47	566596.57	4737545.77	2.40	0	63	55.7	-88.0	0.0	0.0	54.8	0.0	-3.0	0.0	0.0	0.0	0.0	-0.0	3.9	-88.0
48	566596.57	4737545.77	2.40	0	125	57.0	-88.0	0.0	0.0	54.8	0.1	2.7	0.0	0.0	0.0	0.0	-0.0	-0.5	-88.0
49	566596.57	4737545.77	2.40	0	250	65.8	-88.0	0.0	0.0	54.8	0.2	3.8	0.0	0.0	0.0	0.0	-0.0	7.1	-88.0
50	566596.57	4737545.77	2.40	0	500	68.5	-88.0	0.0	0.0	54.8	0.3	-0.1	0.0	0.0	0.0	0.0	-0.0	13.5	-88.0
51	566596.57	4737545.77	2.40	0	1000	73.0	-88.0	0.0	0.0	54.8	0.6	-0.7	0.0	0.0	0.0	0.0	-0.0	18.3	-88.0
52	566596.57	4737545.77	2.40	0	2000	72.2	-88.0	0.0	0.0	54.8	1.5	-0.7	0.0	0.0	0.0	0.0	-0.0	16.6	-88.0
53	566596.57	4737545.77	2.40	0	4000	70.1	-88.0	0.0	0.0	54.8	5.0	-0.7	0.0	0.0	0.0	0.0	-0.0	11.0	-88.0
54	566596.57	4737545.77	2.40	0	8000	63.5	-88.0	0.0	0.0	54.8	18.0	-0.7	0.0	0.0	0.0	0.0	-0.0	-8.6	-88.0
55	566603.23	4737553.01	2.40	0	32	48.4	-88.0	0.0	0.0	55.3	0.0	-3.0	0.0	0.0	0.0	0.0	-0.0	-3.9	-88.0
56	566603.23	4737553.01	2.40	0	63	54.3	-88.0	0.0	0.0	55.3	0.0	-3.0	0.0	0.0	0.0	0.0	-0.0	2.0	-88.0
57	566603.23	4737553.01	2.40	0	125	55.6	-88.0	0.0	0.0	55.3	0.1	2.2	0.0	0.0	0.0	0.0	-0.0	-1.9	-88.0
58	566603.23	4737553.01	2.40	0	250	64.4	-88.0	0.0	0.0	55.3	0.2	2.7	0.0	0.0	0.0	0.0	-0.0	6.3	-88.0
59	566603.23	4737553.01	2.40	0	500	67.1	-88.0	0.0	0.0	55.3	0.3	-0.5	0.0	0.0	0.0	0.0	-0.0	12.0	-88.0
60	566603.23	4737553.01	2.40	0	1000	71.6	-88.0	0.0	0.0	55.3	0.6	-1.0	0.0	0.0	0.0	0.0	-0.0	16.7	-88.0
61	566603.23	4737553.01	2.40	0	2000	70.8	-88.0	0.0	0.0	55.3	1.6	-1.0	0.0	0.0	0.0	0.0	-0.0	14.9	-88.0
62	566603.23	4737553.01	2.40	0	4000	68.7	-88.0	0.0	0.0	55.3	5.4	-1.0	0.0	0.0	0.0	0.0	-0.0	9.1	-88.0
63	566603.23	4737553.01	2.40	0	8000	62.1	-88.0	0.0	0.0	55.3	19.2	-1.0	0.0	0.0	0.0	0.0	-0.0	-11.3	-88.0
64	566601.14	4737554.67	2.40	0	32	38.7	-88.0	0.0	0.0	55.3	0.0	-3.0	0.0	0.0	0.0	0.0	-0.0	-13.6	-88.0
65	566601.14	4737554.67	2.40	0	63	44.6	-88.0	0.0	0.0	55.3	0.0	-3.0	0.0	0.0	0.0	0.0	-0.0	-7.7	-88.0
66	566601.14	4737554.67	2.40	0	125	45.9	-88.0	0.0	0.0	55.3	0.1	2.3	0.0	0.0	0.0	0.0	-0.0	-11.8	-88.0
67	566601.14	4737554.67	2.40	0	250	54.7	-88.0	0.0	0.0	55.3	0.2	2.9	0.0	0.0	0.0	0.0	-0.0	-3.7	-88.0
68	566601.14	4737554.67	2.40	0	500	57.4	-88.0	0.0	0.0	55.3	0.3	-0.4	0.0	0.0	0.0	0.0	-0.0	2.2	-88.0
69	566601.14	4737554.67	2.40	0	1000	61.9	-88.0	0.0	0.0	55.3	0.6	-0.9	0.0	0.0	0.0	0.0	-0.0	6.9	-88.0
70	566601.14	4737554.67	2.40	0	2000	61.1	-88.0	0.0	0.0	55.3	1.6	-0.9	0.0	0.0	0.0	0.0	-0.0	5.1	-88.0
71	566601.14	4737554.67	2.40	0	4000	59.0	-88.0	0.0	0.0	55.3	5.4	-0.9	0.0	0.0	0.0	0.0	-0.0	-0.8	-88.0
72	566601.14	4737554.67	2.40	0	8000	52.4	-88.0	0.0	0.0	55.3	19.2	-0.9	0.0	0.0	0.0	0.0	-0.0	-21.2	-88.0
73	566595.98	4737543.71	2.40	0	32	47.6	-88.0	0.0	0.0	54.6	0.0	-3.0	0.0	0.0	0.0	0.0	-0.0	-4.1	-88.0
74	566595.98	4737543.71	2.40	0	63	53.5	-88.0	0.0	0.0	54.6	0.0	-3.0	0.0	0.0	0.0	0.0	-0.0	1.8	-88.0
75	566595.98	4737543.71	2.40	0	125	54.8	-88.0	0.0	0.0	54.6	0.1	2.7	0.0	0.0	0.0	0.0	-0.0	-2.6	-88.0
76	566595.98	4737543.71	2.40	0	250	63.6	-88.0	0.0	0.0	54.6	0.2	3.8	0.0	0.0	0.0	0.0	-0.0	5.0	-88.0
77	566595.98	4737543.71	2.40	0	500	66.3	-88.0	0.0	0.0	54.6	0.3	-0.1	0.0	0.0	0.0	0.0	-0.0	11.4	-88.0
78	566595.98	4737543.71	2.40	0	1000	70.8	-88.0	0.0	0.0	54.6	0.6	-0.7	0.0	0.0	0.0	0.0	-0.0	16.3	-88.0
79	566595.98	4737543.71	2.40	0	2000	70.0	-88.0	0.0	0.0	54.6	1.5	-0.7	0.0	0.0	0.0	0.0	-0.0	14.6	-88.0
80	566595.98	4737543.71	2.40	0	4000	67.9	-88.0	0.0	0.0	54.6	5.0	-0.7	0.0	0.0	0.0	0.0	-0.0	9.0	-88.0
81	566595.98	4737543.71	2.40	0	8000	61.3	-88.0	0.0	0.0	54.6	17.8	-0.7	0.0	0.0	0.0	0.0	-0.0	-10.5	-88.0
82	566592.87	4737542.99	2.40	0	32	47.4	-88.0	0.0	0.0	54.5	0.0	-3.0	0.0	0.0	0.0	0.0	-0.0	-4.1	-88.0
83	566592.87	4737542.99	2.40	0	63	53.3	-88.0	0.0	0.0	54.5	0.0	-3.0	0.0	0.0	0.0	0.0	-0.0	1.8	-88.0
84	566592.87	4737542.99	2.40	0	125	54.6	-88.0	0.0	0.0	54.5	0.1	2.9	0.0	0.0	0.0	0.0	-0.0	-2.9	-88.0
85	566592.87	4737542.99	2.40	0	250	63.4	-88.0	0.0	0.0	54.5	0.2	4.2	0.0	0.0	0.0	0.0	-0.0	4.5	-88.0
86	566592.87	4737542.99	2.40	0	500	66.1	-88.0	0.0	0.0	54.5	0.3	0.1	0.0	0.0	0.0	0.0	-0.0	11.2	-88.0
87	566592.87	4737542.99	2.40	0	1000	70.6	-88.0	0.0	0.0	54.5	0.6	-0.6	0.0	0.0	0.0	0.0	-0.0	16.1	-88.0
88	566592.87	4737542.99	2.40	0	2000	69.8	-88.0	0.0	0.0	54.5	1.5	-0.6	0.0	0.0	0.0	0.0	-0.0	14.4	-88.0
89	566592.87	4737542.99	2.40	0	4000	67.7	-88.0	0.0	0.0	54.5	4.9	-0.6	0.0	0.0	0.0	0.0	-0.0	8.9	-88.0
90	566592.87	4737542.99	2.40	0	8000	61.1	-88.0	0.0	0.0	54.5	17.5	-0.6	0.0	0.0	0.0	0.0	-0.0	-10.3	-88.0
91	566610.34	4737548.68	2.40	0	32	47.7	-88.0	0.0	0.0	55.3	0.0	-3.0	0.0	0.0	0.0	0.0	-0.0	-4.7	-88.0
92	566610.34	4737548.68	2.40	0	63	53.6	-88.0	0.0	0.0	55.3	0.0	-3.0	0.0	0.0	0.0	0.0	-0.0	1.2	-88.0
93	566610.34	4737548.68	2.40	0	125	54.9	-88.0	0.0	0.0	55.3	0.1	2.6	0.0	0.0	0.0	0.0	-0.0	-3.2	-88.0
94	566610.34	4737548.68	2.40	0	250	63.7	-88.0	0.0	0.0	55.3	0.2	3.3	0.0	0.0	0.0	0.0	-0.0	4.8	-88.0

Line Source, ISO 9613, Name: "Sewage Truck Movements", ID: "STRM"																			
Nr.	X	Y	Z	Refl.	Freq.	LxT	LxN	K0	Dc	Adiv	Aatm	Agr	Afol	Ahous	Abar	Cmet	RL	LrT	LrN
	(m)	(m)	(m)		(Hz)	dB(A)	dB(A)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	dB(A)	dB(A)
95	566610.34	4737548.68	2.40	0	500	66.4	-88.0	0.0	0.0	55.3	0.3	-0.2	0.0	0.0	0.0	0.0	-0.0	10.9	-88.0
96	566610.34	4737548.68	2.40	0	1000	70.9	-88.0	0.0	0.0	55.3	0.6	-0.8	0.0	0.0	0.0	0.0	-0.0	15.7	-88.0
97	566610.34	4737548.68	2.40	0	2000	70.1	-88.0	0.0	0.0	55.3	1.6	-0.8	0.0	0.0	0.0	0.0	-0.0	13.9	-88.0
98	566610.34	4737548.68	2.40	0	4000	68.0	-88.0	0.0	0.0	55.3	5.4	-0.8	0.0	0.0	0.0	0.0	-0.0	8.0	-88.0
99	566610.34	4737548.68	2.40	0	8000	61.4	-88.0	0.0	0.0	55.3	19.3	-0.8	0.0	0.0	0.0	0.0	-0.0	-12.5	-88.0
100	566606.76	4737550.40	2.40	0	32	47.6	-88.0	0.0	0.0	55.3	0.0	-3.0	0.0	0.0	0.0	0.0	-0.0	-4.7	-88.0
101	566606.76	4737550.40	2.40	0	63	53.5	-88.0	0.0	0.0	55.3	0.0	-3.0	0.0	0.0	0.0	0.0	-0.0	1.2	-88.0
102	566606.76	4737550.40	2.40	0	125	54.8	-88.0	0.0	0.0	55.3	0.1	2.5	0.0	0.0	0.0	0.0	-0.0	-3.1	-88.0
103	566606.76	4737550.40	2.40	0	250	63.6	-88.0	0.0	0.0	55.3	0.2	3.3	0.0	0.0	0.0	0.0	-0.0	4.8	-88.0
104	566606.76	4737550.40	2.40	0	500	66.3	-88.0	0.0	0.0	55.3	0.3	-0.2	0.0	0.0	0.0	0.0	-0.0	11.0	-88.0
105	566606.76	4737550.40	2.40	0	1000	70.8	-88.0	0.0	0.0	55.3	0.6	-0.8	0.0	0.0	0.0	0.0	-0.0	15.7	-88.0
106	566606.76	4737550.40	2.40	0	2000	70.0	-88.0	0.0	0.0	55.3	1.6	-0.8	0.0	0.0	0.0	0.0	-0.0	14.0	-88.0
107	566606.76	4737550.40	2.40	0	4000	67.9	-88.0	0.0	0.0	55.3	5.4	-0.8	0.0	0.0	0.0	0.0	-0.0	8.1	-88.0
108	566606.76	4737550.40	2.40	0	8000	61.3	-88.0	0.0	0.0	55.3	19.2	-0.8	0.0	0.0	0.0	0.0	-0.0	-12.3	-88.0
109	566600.70	4737547.98	2.40	0	32	46.6	-88.0	0.0	0.0	55.0	0.0	-3.0	0.0	0.0	0.0	0.0	-0.0	-5.4	-88.0
110	566600.70	4737547.98	2.40	0	63	52.5	-88.0	0.0	0.0	55.0	0.0	-3.0	0.0	0.0	0.0	0.0	-0.0	0.5	-88.0
111	566600.70	4737547.98	2.40	0	125	53.8	-88.0	0.0	0.0	55.0	0.1	2.5	0.0	0.0	0.0	0.0	-0.0	-3.7	-88.0
112	566600.70	4737547.98	2.40	0	250	62.6	-88.0	0.0	0.0	55.0	0.2	3.3	0.0	0.0	0.0	0.0	-0.0	4.1	-88.0
113	566600.70	4737547.98	2.40	0	500	65.3	-88.0	0.0	0.0	55.0	0.3	-0.2	0.0	0.0	0.0	0.0	-0.0	10.3	-88.0
114	566600.70	4737547.98	2.40	0	1000	69.8	-88.0	0.0	0.0	55.0	0.6	-0.8	0.0	0.0	0.0	0.0	-0.0	15.1	-88.0
115	566600.70	4737547.98	2.40	0	2000	69.0	-88.0	0.0	0.0	55.0	1.5	-0.8	0.0	0.0	0.0	0.0	-0.0	13.3	-88.0
116	566600.70	4737547.98	2.40	0	4000	66.9	-88.0	0.0	0.0	55.0	5.2	-0.8	0.0	0.0	0.0	0.0	-0.0	7.6	-88.0
117	566600.70	4737547.98	2.40	0	8000	60.3	-88.0	0.0	0.0	55.0	18.5	-0.8	0.0	0.0	0.0	0.0	-0.0	-12.4	-88.0
118	566601.36	4737553.21	2.40	0	32	46.9	-88.0	0.0	0.0	55.2	0.0	-3.0	0.0	0.0	0.0	0.0	-0.0	-5.4	-88.0
119	566601.36	4737553.21	2.40	0	63	52.8	-88.0	0.0	0.0	55.2	0.0	-3.0	0.0	0.0	0.0	0.0	-0.0	0.5	-88.0
120	566601.36	4737553.21	2.40	0	125	54.1	-88.0	0.0	0.0	55.2	0.1	2.3	0.0	0.0	0.0	0.0	-0.0	-3.6	-88.0
121	566601.36	4737553.21	2.40	0	250	62.9	-88.0	0.0	0.0	55.2	0.2	2.9	0.0	0.0	0.0	0.0	-0.0	4.5	-88.0
122	566601.36	4737553.21	2.40	0	500	65.6	-88.0	0.0	0.0	55.2	0.3	-0.4	0.0	0.0	0.0	0.0	-0.0	10.4	-88.0
123	566601.36	4737553.21	2.40	0	1000	70.1	-88.0	0.0	0.0	55.2	0.6	-0.9	0.0	0.0	0.0	0.0	-0.0	15.1	-88.0
124	566601.36	4737553.21	2.40	0	2000	69.3	-88.0	0.0	0.0	55.2	1.6	-0.9	0.0	0.0	0.0	0.0	-0.0	13.4	-88.0
125	566601.36	4737553.21	2.40	0	4000	67.2	-88.0	0.0	0.0	55.2	5.3	-0.9	0.0	0.0	0.0	0.0	-0.0	7.5	-88.0
126	566601.36	4737553.21	2.40	0	8000	60.6	-88.0	0.0	0.0	55.2	19.1	-0.9	0.0	0.0	0.0	0.0	-0.0	-12.8	-88.0
127	566601.76	4737550.39	2.40	0	32	45.4	-88.0	0.0	0.0	55.1	0.0	-3.0	0.0	0.0	0.0	0.0	-0.0	-6.7	-88.0
128	566601.76	4737550.39	2.40	0	63	51.3	-88.0	0.0	0.0	55.1	0.0	-3.0	0.0	0.0	0.0	0.0	-0.0	-0.8	-88.0
129	566601.76	4737550.39	2.40	0	125	52.6	-88.0	0.0	0.0	55.1	0.1	2.3	0.0	0.0	0.0	0.0	-0.0	-4.8	-88.0
130	566601.76	4737550.39	2.40	0	250	61.4	-88.0	0.0	0.0	55.1	0.2	2.9	0.0	0.0	0.0	0.0	-0.0	3.3	-88.0
131	566601.76	4737550.39	2.40	0	500	64.1	-88.0	0.0	0.0	55.1	0.3	-0.4	0.0	0.0	0.0	0.0	-0.0	9.1	-88.0
132	566601.76	4737550.39	2.40	0	1000	68.6	-88.0	0.0	0.0	55.1	0.6	-0.9	0.0	0.0	0.0	0.0	-0.0	13.8	-88.0
133	566601.76	4737550.39	2.40	0	2000	67.8	-88.0	0.0	0.0	55.1	1.6	-0.9	0.0	0.0	0.0	0.0	-0.0	12.1	-88.0
134	566601.76	4737550.39	2.40	0	4000	65.7	-88.0	0.0	0.0	55.1	5.3	-0.9	0.0	0.0	0.0	0.0	-0.0	6.3	-88.0
135	566601.76	4737550.39	2.40	0	8000	59.1	-88.0	0.0	0.0	55.1	18.8	-0.9	0.0	0.0	0.0	0.0	-0.0	-13.9	-88.0
136	566604.65	4737547.48	2.40	1	1000	76.6	-88.0	0.0	0.0	58.0	0.8	-1.8	0.0	0.0	5.2	0.0	13.7	0.8	-88.0
137	566604.65	4737547.48	2.40	1	2000	75.8	-88.0	0.0	0.0	58.0	2.1	-1.8	0.0	0.0	5.6	0.0	13.7	-1.8	-88.0
138	566604.65	4737547.48	2.40	1	4000	73.7	-88.0	0.0	0.0	58.0	7.3	-1.8	0.0	0.0	6.3	0.0	13.7	-9.7	-88.0
139	566604.65	4737547.48	2.40	1	8000	67.1	-88.0	0.0	0.0	58.0	26.0	-1.8	0.0	0.0	7.5	0.0	13.7	-36.2	-88.0
140	566604.65	4737547.48	2.40	1	4000	73.7	-88.0	0.0	0.0	59.0	8.2	-1.5	0.0	0.0	4.9	0.0	17.1	-13.9	-88.0
141	566604.65	4737547.48	2.40	1	8000	67.1	-88.0	0.0	0.0	59.0	29.3	-1.5	0.0	0.0	4.9	0.0	17.1	-41.7	-88.0
142	566604.65	4737547.48	2.40	1	2000	75.8	-88.0	0.0	0.0	57.7	2.1	-1.2	0.0	0.0	0.0	0.0	15.1	2.3	-88.0
143	566604.65	4737547.48	2.40	1	4000	73.7	-88.0	0.0	0.0	57.7	7.1	-1.2	0.0	0.0	0.0	0.0	15.1	-4.8	-88.0
144	566604.65	4737547.48	2.40	1	8000	67.1	-88.0	0.0	0.0	57.7	25.2	-1.2	0.0	0.0	0.0	0.0	15.1	-29.5	-88.0
145	566604.65	4737547.48	2.40	1	1000	76.6	-88.0	0.0	0.0	59.8	1.0	-1.7	0.0	0.0	11.1	0.0	2.0	4.3	-88.0
146	566604.65	4737547.48	2.40	1	2000	75.8	-88.0	0.0	0.0	59.8	2.7	-1.7	0.0	0.0	13.6	0.0	2.0	-0.6	-88.0
147	566604.65	4737547.48	2.40	1	4000	73.7	-88.0	0.0	0.0	59.8	9.1	-1.7	0.0	0.0	16.4	0.0	2.0	-11.8	-88.0
148	566604.65	4737547.48	2.40	1	8000	67.1	-88.0	0.0	0.0	59.8	32.3	-1.7	0.0	0.0	19.2	0.0	2.0	-44.5	-88.0
149	566595.32	4737538.09	2.40	1	1000	74.2	-88.0	0.0	0.0	58.0	0.8	-1.5	0.0	0.0	5.1	0.0	13.5	-1.7	-88.0
150	566595.32	4737538.09	2.40	1	2000	73.4	-88.0	0.0	0.0	58.0	2.2	-1.5	0.0	0.0	5.5	0.0	13.5	-4.2	-88.0
151	566595.32	4737538.09	2.40	1	4000	71.3	-88.0	0.0	0.0	58.0	7.3	-1.5	0.0	0.0	6.2	0.0	13.5	-12.1	-88.0
152	566595.32	4737538.09	2.40	1	8000	64.7	-88.0	0.0	0.0	58.0	26.2	-1.5	0.0	0.0	7.2	0.0	13.5	-38.6	-88.0
153	566595.32	4737538.09	2.40	1	2000	73.4	-88.0	0.0	0.0	58.1	2.2	-1.6	0.0	0.0	0.0	0.0	16.1	-1.4	-88.0
154	566595.32	4737538.09	2.40	1	4000	71.3	-88.0	0.0	0.0	58.1	7.5	-1.6	0.0	0.0	0.0	0.0	16.1	-8.7	-88.0
155	566595.32	4737538.09	2.40	1	8000	64.7	-88.0	0.0	0.0	58.1	26.6	-1.6	0.0	0.0	0.0	0.0	16.1	-34.5	-88.0
156	566594.88	4737540.49	2.40	1	1000	70.7	-88.0	0.0	0.0	59.4	1.0	-1.4	0.0	0.0	11.4	0.0	2.0	-1.7	-88.0
157	566594.88	4737540.49	2.40	1	2000	69.9	-88.0	0.0	0.0	59.4	2.5	-1.4	0.0	0.0	13.9	0.0	2.0	-6.6	-88.0

Line Source, ISO 9613, Name: "Sewage Truck Movements", ID: "STRM"																			
Nr.	X	Y	Z	Refl.	Freq.	LxT	LxN	K0	Dc	Adiv	Aatm	Agr	Afol	Ahous	Abar	Cmet	RL	LrT	LrN
	(m)	(m)	(m)		(Hz)	dB(A)	dB(A)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	dB(A)	dB(A)
158	566594.88	4737540.49	2.40	1	4000	67.8	-88.0	0.0	0.0	59.4	8.7	-1.4	0.0	0.0	16.6	0.0	2.0	-17.5	-88.0
159	566594.88	4737540.49	2.40	1	8000	61.2	-88.0	0.0	0.0	59.4	30.9	-1.4	0.0	0.0	19.5	0.0	2.0	-49.2	-88.0
160	566595.87	4737535.10	2.40	1	1000	69.1	-88.0	0.0	0.0	59.4	1.0	-1.4	0.0	0.0	10.6	0.0	2.0	-2.5	-88.0
161	566595.87	4737535.10	2.40	1	2000	68.3	-88.0	0.0	0.0	59.4	2.5	-1.4	0.0	0.0	13.0	0.0	2.0	-7.3	-88.0
162	566595.87	4737535.10	2.40	1	4000	66.2	-88.0	0.0	0.0	59.4	8.6	-1.4	0.0	0.0	15.7	0.0	2.0	-18.2	-88.0
163	566595.87	4737535.10	2.40	1	8000	59.6	-88.0	0.0	0.0	59.4	30.7	-1.4	0.0	0.0	18.5	0.0	2.0	-49.7	-88.0
164	566596.10	4737533.84	2.40	1	2000	53.9	-88.0	0.0	0.0	56.4	1.8	-0.8	0.0	0.0	0.0	0.0	2.0	-5.5	-88.0
165	566596.10	4737533.84	2.40	1	4000	51.8	-88.0	0.0	0.0	56.4	6.1	-0.8	0.0	0.0	0.0	0.0	2.0	-11.9	-88.0
166	566596.10	4737533.84	2.40	1	8000	45.2	-88.0	0.0	0.0	56.4	21.7	-0.8	0.0	0.0	0.0	0.0	2.0	-34.1	-88.0
167	566595.90	4737534.95	2.40	1	2000	67.7	-88.0	0.0	0.0	56.8	1.9	-1.1	0.0	0.0	5.4	0.0	2.0	2.8	-88.0
168	566595.90	4737534.95	2.40	1	4000	65.6	-88.0	0.0	0.0	56.8	6.4	-1.1	0.0	0.0	5.9	0.0	2.0	-4.4	-88.0
169	566595.90	4737534.95	2.40	1	8000	59.0	-88.0	0.0	0.0	56.8	22.9	-1.1	0.0	0.0	6.8	0.0	2.0	-28.3	-88.0
170	566595.11	4737539.25	2.40	1	1000	72.9	-88.0	0.0	0.0	56.7	0.7	-1.1	0.0	0.0	5.1	0.0	2.0	9.5	-88.0
171	566595.11	4737539.25	2.40	1	2000	72.1	-88.0	0.0	0.0	56.7	1.9	-1.1	0.0	0.0	5.4	0.0	2.0	7.2	-88.0
172	566595.11	4737539.25	2.40	1	4000	70.0	-88.0	0.0	0.0	56.7	6.3	-1.1	0.0	0.0	6.0	0.0	2.0	0.1	-88.0
173	566595.11	4737539.25	2.40	1	8000	63.4	-88.0	0.0	0.0	56.7	22.4	-1.1	0.0	0.0	7.0	0.0	2.0	-23.6	-88.0
174	566593.07	4737537.36	2.40	1	1000	73.8	-88.0	0.0	0.0	58.0	0.8	-1.4	0.0	0.0	5.2	0.0	13.4	-2.2	-88.0
175	566593.07	4737537.36	2.40	1	2000	73.0	-88.0	0.0	0.0	58.0	2.2	-1.4	0.0	0.0	5.5	0.0	13.4	-4.8	-88.0
176	566593.07	4737537.36	2.40	1	4000	70.9	-88.0	0.0	0.0	58.0	7.3	-1.4	0.0	0.0	6.2	0.0	13.4	-12.7	-88.0
177	566593.07	4737537.36	2.40	1	8000	64.3	-88.0	0.0	0.0	58.0	26.1	-1.4	0.0	0.0	7.3	0.0	13.4	-39.2	-88.0
178	566593.07	4737537.36	2.40	1	2000	73.0	-88.0	0.0	0.0	58.2	2.2	-1.8	0.0	0.0	0.0	0.0	16.2	-1.9	-88.0
179	566593.07	4737537.36	2.40	1	4000	70.9	-88.0	0.0	0.0	58.2	7.5	-1.8	0.0	0.0	0.0	0.0	16.2	-9.3	-88.0
180	566593.07	4737537.36	2.40	1	8000	64.3	-88.0	0.0	0.0	58.2	26.8	-1.8	0.0	0.0	0.0	0.0	16.2	-35.2	-88.0
181	566592.69	4737539.19	2.40	1	1000	71.0	-88.0	0.0	0.0	59.3	1.0	-1.4	0.0	0.0	11.4	0.0	2.0	-1.4	-88.0
182	566592.69	4737539.19	2.40	1	2000	70.2	-88.0	0.0	0.0	59.3	2.5	-1.4	0.0	0.0	14.0	0.0	2.0	-6.3	-88.0
183	566592.69	4737539.19	2.40	1	4000	68.1	-88.0	0.0	0.0	59.3	8.6	-1.4	0.0	0.0	16.7	0.0	2.0	-17.2	-88.0
184	566592.69	4737539.19	2.40	1	8000	61.5	-88.0	0.0	0.0	59.3	30.6	-1.4	0.0	0.0	19.6	0.0	2.0	-48.7	-88.0
185	566593.71	4737534.27	2.40	1	1000	66.7	-88.0	0.0	0.0	59.3	1.0	-1.3	0.0	0.0	10.6	0.0	2.0	-4.9	-88.0
186	566593.71	4737534.27	2.40	1	2000	65.9	-88.0	0.0	0.0	59.3	2.5	-1.3	0.0	0.0	13.1	0.0	2.0	-9.8	-88.0
187	566593.71	4737534.27	2.40	1	4000	63.8	-88.0	0.0	0.0	59.3	8.5	-1.3	0.0	0.0	15.8	0.0	2.0	-20.6	-88.0
188	566593.71	4737534.27	2.40	1	8000	57.2	-88.0	0.0	0.0	59.3	30.5	-1.3	0.0	0.0	18.6	0.0	2.0	-51.9	-88.0
189	566593.60	4737534.81	2.40	1	2000	68.2	-88.0	0.0	0.0	56.2	1.8	-0.8	0.0	0.0	0.0	0.0	2.0	9.0	-88.0
190	566593.60	4737534.81	2.40	1	4000	66.1	-88.0	0.0	0.0	56.2	6.0	-0.8	0.0	0.0	0.0	0.0	2.0	2.6	-88.0
191	566593.60	4737534.81	2.40	1	8000	59.5	-88.0	0.0	0.0	56.2	21.4	-0.8	0.0	0.0	0.0	0.0	2.0	-19.3	-88.0
192	566592.52	4737540.00	2.40	1	1000	68.7	-88.0	0.0	0.0	56.6	0.7	-1.0	0.0	0.0	5.3	0.0	2.0	5.2	-88.0
193	566592.52	4737540.00	2.40	1	2000	67.9	-88.0	0.0	0.0	56.6	1.8	-1.1	0.0	0.0	5.7	0.0	2.0	2.9	-88.0
194	566592.52	4737540.00	2.40	1	4000	65.8	-88.0	0.0	0.0	56.6	6.2	-1.1	0.0	0.0	6.4	0.0	2.0	-4.3	-88.0
195	566592.52	4737540.00	2.40	1	8000	59.2	-88.0	0.0	0.0	56.6	22.2	-1.1	0.0	0.0	7.6	0.0	2.0	-28.1	-88.0
196	566593.26	4737536.47	2.40	1	2000	70.8	-88.0	0.0	0.0	56.7	1.9	-1.2	0.0	0.0	5.6	0.0	2.0	5.8	-88.0
197	566593.26	4737536.47	2.40	1	4000	68.7	-88.0	0.0	0.0	56.7	6.3	-1.2	0.0	0.0	6.3	0.0	2.0	-1.5	-88.0
198	566593.26	4737536.47	2.40	1	8000	62.1	-88.0	0.0	0.0	56.7	22.5	-1.2	0.0	0.0	7.5	0.0	2.0	-25.4	-88.0
199	566616.02	4737549.80	2.40	1	1000	74.0	-88.0	0.0	0.0	58.2	0.8	-1.7	0.0	0.0	7.0	0.0	14.2	-4.6	-88.0
200	566616.02	4737549.80	2.40	1	2000	73.2	-88.0	0.0	0.0	58.2	2.2	-1.7	0.0	0.0	8.5	0.0	14.2	-8.3	-88.0
201	566616.02	4737549.80	2.40	1	4000	71.1	-88.0	0.0	0.0	58.2	7.5	-1.7	0.0	0.0	10.5	0.0	14.2	-17.7	-88.0
202	566616.02	4737549.80	2.40	1	8000	64.5	-88.0	0.0	0.0	58.2	26.9	-1.7	0.0	0.0	12.9	0.0	14.2	-46.1	-88.0
203	566616.02	4737549.80	2.40	1	2000	73.2	-88.0	0.0	0.0	57.5	2.0	-1.0	0.0	0.0	0.0	0.0	14.8	-0.2	-88.0
204	566616.02	4737549.80	2.40	1	4000	71.1	-88.0	0.0	0.0	57.5	7.0	-1.0	0.0	0.0	0.0	0.0	14.8	-7.2	-88.0
205	566616.02	4737549.80	2.40	1	8000	64.5	-88.0	0.0	0.0	57.5	24.8	-1.0	0.0	0.0	0.0	0.0	14.8	-31.6	-88.0
206	566612.11	4737549.92	2.40	1	1000	61.9	-88.0	0.0	0.0	60.1	1.0	-1.7	0.0	0.0	10.9	0.0	2.0	-10.4	-88.0
207	566612.11	4737549.92	2.40	1	2000	61.1	-88.0	0.0	0.0	60.1	2.7	-1.7	0.0	0.0	13.3	0.0	2.0	-15.3	-88.0
208	566612.11	4737549.92	2.40	1	4000	59.0	-88.0	0.0	0.0	60.1	9.3	-1.7	0.0	0.0	16.0	0.0	2.0	-26.7	-88.0
209	566612.11	4737549.92	2.40	1	8000	52.4	-88.0	0.0	0.0	60.1	33.2	-1.7	0.0	0.0	18.9	0.0	2.0	-60.0	-88.0
210	566617.99	4737549.74	2.40	1	1000	71.3	-88.0	0.0	0.0	60.2	1.1	-1.5	0.0	0.0	10.0	0.0	2.0	-0.5	-88.0
211	566617.99	4737549.74	2.40	1	2000	70.5	-88.0	0.0	0.0	60.2	2.8	-1.5	0.0	0.0	12.3	0.0	2.0	-5.4	-88.0
212	566617.99	4737549.74	2.40	1	4000	68.4	-88.0	0.0	0.0	60.2	9.5	-1.5	0.0	0.0	14.9	0.0	2.0	-16.8	-88.0
213	566617.99	4737549.74	2.40	1	8000	61.8	-88.0	0.0	0.0	60.2	33.8	-1.5	0.0	0.0	17.7	0.0	2.0	-50.5	-88.0
214	566618.39	4737549.72	2.40	1	8000	55.8	-88.0	0.0	0.0	56.4	21.8	-1.1	0.0	0.0	4.8	0.0	1.0	-27.1	-88.0
215	566619.57	4737549.69	2.40	1	8000	56.3	-88.0	0.0	0.0	56.4	21.9	-1.1	0.0	0.0	4.8	0.0	1.0	-26.7	-88.0
216	566615.06	4737549.83	2.40	1	8000	61.8	-88.0	0.0	0.0	56.1	21.1	-1.2	0.0	0.0	0.0	0.0	1.0	-15.2	-88.0
217	566617.33	4737549.76	2.40	1	1000	72.4	-88.0	0.0	0.0	56.9	0.7	-1.0	0.0	0.0	4.8	0.0	2.0	9.0	-88.0
218	566617.33	4737549.76	2.40	1	2000	71.6	-88.0	0.0	0.0	56.9	1.9	-1.1	0.0	0.0	4.8	0.0	2.0	7.0	-88.0
219	566617.33	4737549.76	2.40	1	4000	69.5	-88.0	0.0	0.0	56.9	6.5	-1.1	0.0	0.0	4.8	0.0	2.0	0.3	-88.0
220	566617.33	4737549.76	2.40	1	8000	62.9	-88.0	0.0	0.0	56.9	23.2	-1.1	0.0	0.0	4.8	0.0	2.0	-23.0	-88.0

Line Source, ISO 9613, Name: "Sewage Truck Movements", ID: "STRM"																			
Nr.	X	Y	Z	Refl.	Freq.	LxT	LxN	K0	Dc	Adiv	Aatm	Agr	Afol	Ahous	Abar	Cmet	RL	LrT	LrN
	(m)	(m)	(m)		(Hz)	dB(A)	dB(A)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	dB(A)	dB(A)
221	566616.22	4737548.87	2.40	1	1000	73.9	-88.0	0.0	0.0	58.3	0.8	-1.8	0.0	0.0	6.9	0.0	14.2	-4.6	-88.0
222	566616.22	4737548.87	2.40	1	2000	73.1	-88.0	0.0	0.0	58.3	2.2	-1.8	0.0	0.0	8.3	0.0	14.2	-8.2	-88.0
223	566616.22	4737548.87	2.40	1	4000	71.0	-88.0	0.0	0.0	58.3	7.6	-1.8	0.0	0.0	10.2	0.0	14.2	-17.5	-88.0
224	566616.22	4737548.87	2.40	1	8000	64.4	-88.0	0.0	0.0	58.3	27.0	-1.8	0.0	0.0	12.6	0.0	14.2	-45.9	-88.0
225	566616.22	4737548.87	2.40	1	2000	73.1	-88.0	0.0	0.0	57.6	2.1	-1.0	0.0	0.0	0.0	0.0	15.0	-0.5	-88.0
226	566616.22	4737548.87	2.40	1	4000	71.0	-88.0	0.0	0.0	57.6	7.0	-1.0	0.0	0.0	0.0	0.0	15.0	-7.5	-88.0
227	566616.22	4737548.87	2.40	1	8000	64.4	-88.0	0.0	0.0	57.6	24.9	-1.0	0.0	0.0	0.0	0.0	15.0	-32.0	-88.0
228	566616.90	4737549.01	2.40	1	1000	73.1	-88.0	0.0	0.0	60.2	1.1	-1.6	0.0	0.0	10.0	0.0	2.0	1.4	-88.0
229	566616.90	4737549.01	2.40	1	2000	72.3	-88.0	0.0	0.0	60.2	2.8	-1.6	0.0	0.0	12.4	0.0	2.0	-3.4	-88.0
230	566616.90	4737549.01	2.40	1	4000	70.2	-88.0	0.0	0.0	60.2	9.4	-1.6	0.0	0.0	15.0	0.0	2.0	-14.8	-88.0
231	566616.90	4737549.01	2.40	1	8000	63.6	-88.0	0.0	0.0	60.2	33.7	-1.6	0.0	0.0	17.8	0.0	2.0	-48.5	-88.0
232	566619.68	4737549.56	2.40	1	8000	55.5	-88.0	0.0	0.0	56.5	21.9	-1.1	0.0	0.0	4.8	0.0	1.0	-27.5	-88.0
233	566618.94	4737549.42	2.40	1	8000	51.9	-88.0	0.0	0.0	56.4	21.8	-1.2	0.0	0.0	4.8	0.0	1.0	-30.9	-88.0
234	566616.96	4737549.02	2.40	1	8000	59.9	-88.0	0.0	0.0	56.2	21.3	-1.2	0.0	0.0	0.0	0.0	1.0	-17.5	-88.0
235	566618.07	4737549.24	2.40	1	1000	71.2	-88.0	0.0	0.0	57.0	0.7	-1.0	0.0	0.0	4.8	0.0	2.0	7.7	-88.0
236	566618.07	4737549.24	2.40	1	2000	70.4	-88.0	0.0	0.0	57.0	1.9	-1.1	0.0	0.0	4.8	0.0	2.0	5.8	-88.0
237	566618.07	4737549.24	2.40	1	4000	68.3	-88.0	0.0	0.0	57.0	6.5	-1.1	0.0	0.0	4.8	0.0	2.0	-1.0	-88.0
238	566618.07	4737549.24	2.40	1	8000	61.7	-88.0	0.0	0.0	57.0	23.3	-1.1	0.0	0.0	4.8	0.0	2.0	-24.3	-88.0
239	566596.57	4737545.77	2.40	1	1000	73.0	-88.0	0.0	0.0	57.8	0.8	-1.6	0.0	0.0	5.4	0.0	13.3	-2.6	-88.0
240	566596.57	4737545.77	2.40	1	2000	72.2	-88.0	0.0	0.0	57.8	2.1	-1.7	0.0	0.0	5.9	0.0	13.3	-5.3	-88.0
241	566596.57	4737545.77	2.40	1	4000	70.1	-88.0	0.0	0.0	57.8	7.2	-1.7	0.0	0.0	6.8	0.0	13.3	-13.3	-88.0
242	566596.57	4737545.77	2.40	1	8000	63.5	-88.0	0.0	0.0	57.8	25.6	-1.7	0.0	0.0	8.2	0.0	13.3	-39.7	-88.0
243	566596.57	4737545.77	2.40	1	2000	72.2	-88.0	0.0	0.0	57.9	2.1	-1.7	0.0	0.0	0.0	0.0	15.5	-1.7	-88.0
244	566596.57	4737545.77	2.40	1	4000	70.1	-88.0	0.0	0.0	57.9	7.2	-1.7	0.0	0.0	0.0	0.0	15.5	-8.9	-88.0
245	566596.57	4737545.77	2.40	1	8000	63.5	-88.0	0.0	0.0	57.9	25.8	-1.7	0.0	0.0	0.0	0.0	15.5	-34.0	-88.0
246	566596.57	4737545.77	2.40	1	1000	73.0	-88.0	0.0	0.0	59.6	1.0	-1.4	0.0	0.0	11.5	0.0	2.0	0.3	-88.0
247	566596.57	4737545.77	2.40	1	2000	72.2	-88.0	0.0	0.0	59.6	2.6	-1.4	0.0	0.0	14.0	0.0	2.0	-4.6	-88.0
248	566596.57	4737545.77	2.40	1	4000	70.1	-88.0	0.0	0.0	59.6	8.8	-1.4	0.0	0.0	16.7	0.0	2.0	-15.7	-88.0
249	566596.57	4737545.77	2.40	1	8000	63.5	-88.0	0.0	0.0	59.6	31.4	-1.4	0.0	0.0	19.6	0.0	2.0	-47.7	-88.0
250	566603.23	4737553.01	2.40	1	1000	71.6	-88.0	0.0	0.0	57.8	0.8	-1.8	0.0	0.0	8.3	0.0	13.5	-6.9	-88.0
251	566603.23	4737553.01	2.40	1	2000	70.8	-88.0	0.0	0.0	57.8	2.1	-1.8	0.0	0.0	10.2	0.0	13.5	-11.0	-88.0
252	566603.23	4737553.01	2.40	1	4000	68.7	-88.0	0.0	0.0	57.8	7.1	-1.8	0.0	0.0	12.5	0.0	13.5	-20.4	-88.0
253	566603.23	4737553.01	2.40	1	8000	62.1	-88.0	0.0	0.0	57.8	25.5	-1.8	0.0	0.0	15.1	0.0	13.5	-48.0	-88.0
254	566603.23	4737553.01	2.40	1	4000	68.7	-88.0	0.0	0.0	58.8	8.1	-1.6	0.0	0.0	4.9	0.0	16.8	-18.3	-88.0
255	566603.23	4737553.01	2.40	1	8000	62.1	-88.0	0.0	0.0	58.8	28.7	-1.6	0.0	0.0	5.1	0.0	16.8	-45.7	-88.0
256	566603.23	4737553.01	2.40	1	2000	70.8	-88.0	0.0	0.0	57.5	2.0	-1.3	0.0	0.0	0.0	0.0	14.4	-1.8	-88.0
257	566603.23	4737553.01	2.40	1	4000	68.7	-88.0	0.0	0.0	57.5	6.9	-1.3	0.0	0.0	0.0	0.0	14.4	-8.7	-88.0
258	566603.23	4737553.01	2.40	1	8000	62.1	-88.0	0.0	0.0	57.5	24.6	-1.3	0.0	0.0	0.0	0.0	14.4	-33.1	-88.0
259	566601.14	4737554.67	2.40	1	500	57.4	-88.0	0.0	0.0	57.7	0.4	-1.6	0.0	0.0	8.7	0.0	13.4	-21.1	-88.0
260	566601.14	4737554.67	2.40	1	1000	61.9	-88.0	0.0	0.0	57.7	0.8	-1.7	0.0	0.0	10.7	0.0	13.4	-18.9	-88.0
261	566601.14	4737554.67	2.40	1	2000	61.1	-88.0	0.0	0.0	57.7	2.1	-1.7	0.0	0.0	13.1	0.0	13.4	-23.4	-88.0
262	566601.14	4737554.67	2.40	1	4000	59.0	-88.0	0.0	0.0	57.7	7.1	-1.7	0.0	0.0	15.8	0.0	13.4	-33.2	-88.0
263	566601.14	4737554.67	2.40	1	8000	52.4	-88.0	0.0	0.0	57.7	25.2	-1.7	0.0	0.0	18.6	0.0	13.4	-60.7	-88.0
264	566601.14	4737554.67	2.40	1	2000	61.1	-88.0	0.0	0.0	57.5	2.0	-1.5	0.0	0.0	0.0	0.0	14.3	-11.2	-88.0
265	566601.14	4737554.67	2.40	1	4000	59.0	-88.0	0.0	0.0	57.5	6.9	-1.5	0.0	0.0	0.0	0.0	14.3	-18.2	-88.0
266	566601.14	4737554.67	2.40	1	8000	52.4	-88.0	0.0	0.0	57.5	24.6	-1.5	0.0	0.0	0.0	0.0	14.3	-42.5	-88.0
267	566603.10	4737553.12	2.40	1	1000	71.9	-88.0	0.0	0.0	59.9	1.0	-1.6	0.0	0.0	11.4	0.0	2.0	-0.8	-88.0
268	566603.10	4737553.12	2.40	1	2000	71.1	-88.0	0.0	0.0	59.9	2.7	-1.6	0.0	0.0	13.9	0.0	2.0	-5.7	-88.0
269	566603.10	4737553.12	2.40	1	4000	69.0	-88.0	0.0	0.0	59.9	9.1	-1.6	0.0	0.0	16.7	0.0	2.0	-17.0	-88.0
270	566603.10	4737553.12	2.40	1	8000	62.4	-88.0	0.0	0.0	59.9	32.5	-1.6	0.0	0.0	19.5	0.0	2.0	-49.9	-88.0
271	566601.01	4737554.77	2.40	1	1000	57.4	-88.0	0.0	0.0	59.9	1.0	-1.6	0.0	0.0	11.5	0.0	2.0	-15.4	-88.0
272	566601.01	4737554.77	2.40	1	2000	56.6	-88.0	0.0	0.0	59.9	2.7	-1.6	0.0	0.0	14.1	0.0	2.0	-20.4	-88.0
273	566601.01	4737554.77	2.40	1	4000	54.5	-88.0	0.0	0.0	59.9	9.1	-1.6	0.0	0.0	16.8	0.0	2.0	-31.7	-88.0
274	566601.01	4737554.77	2.40	1	8000	47.9	-88.0	0.0	0.0	59.9	32.4	-1.6	0.0	0.0	19.7	0.0	2.0	-64.5	-88.0
275	566595.98	4737543.71	2.40	1	1000	70.8	-88.0	0.0	0.0	57.8	0.8	-1.6	0.0	0.0	5.3	0.0	13.3	-4.9	-88.0
276	566595.98	4737543.71	2.40	1	2000	70.0	-88.0	0.0	0.0	57.8	2.1	-1.6	0.0	0.0	5.8	0.0	13.3	-7.5	-88.0
277	566595.98	4737543.71	2.40	1	4000	67.9	-88.0	0.0	0.0	57.8	7.2	-1.6	0.0	0.0	6.6	0.0	13.3	-15.6	-88.0
278	566595.98	4737543.71	2.40	1	8000	61.3	-88.0	0.0	0.0	57.8	25.7	-1.6	0.0	0.0	7.9	0.0	13.3	-42.0	-88.0
279	566595.98	4737543.71	2.40	1	2000	70.0	-88.0	0.0	0.0	57.9	2.1	-1.7	0.0	0.0	0.0	0.0	15.7	-4.1	-88.0
280	566595.98	4737543.71	2.40	1	4000	67.9	-88.0	0.0	0.0	57.9	7.3	-1.7	0.0	0.0	0.0	0.0	15.7	-11.3	-88.0
281	566595.98	4737543.71	2.40	1	8000	61.3	-88.0	0.0	0.0	57.9	26.0	-1.7	0.0	0.0	0.0	0.0	15.7	-36.6	-88.0
282	566595.98	4737543.71	2.40	1	1000	70.8	-88.0	0.0	0.0	59.5	1.0	-1.5	0.0	0.0	11.4	0.0	2.0	-1.7	-88.0
283	566595.98	4737543.71	2.40	1	2000	70.0	-88.0	0.0	0.0	59.5	2.6	-1.5	0.0	0.0	14.0	0.0	2.0	-6.6	-88.0

Line Source, ISO 9613, Name: "Sewage Truck Movements", ID: "STRM"																			
Nr.	X	Y	Z	Refl.	Freq.	LxT	LxN	K0	Dc	Adiv	Aatm	Agr	Afol	Ahous	Abar	Cmet	RL	LrT	LrN
	(m)	(m)	(m)		(Hz)	dB(A)	dB(A)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	dB(A)	dB(A)
284	566595.98	4737543.71	2.40	1	4000	67.9	-88.0	0.0	0.0	59.5	8.8	-1.5	0.0	0.0	16.7	0.0	2.0	-17.6	-88.0
285	566595.98	4737543.71	2.40	1	8000	61.3	-88.0	0.0	0.0	59.5	31.2	-1.5	0.0	0.0	19.6	0.0	2.0	-49.5	-88.0
286	566594.81	4737542.65	2.40	1	1000	63.7	-88.0	0.0	0.0	56.5	0.7	-0.9	0.0	0.0	5.1	0.0	2.0	0.3	-88.0
287	566594.81	4737542.65	2.40	1	2000	62.9	-88.0	0.0	0.0	56.5	1.8	-0.9	0.0	0.0	5.4	0.0	2.0	-2.0	-88.0
288	566594.81	4737542.65	2.40	1	4000	60.8	-88.0	0.0	0.0	56.5	6.2	-0.9	0.0	0.0	6.0	0.0	2.0	-9.0	-88.0
289	566594.81	4737542.65	2.40	1	8000	54.2	-88.0	0.0	0.0	56.5	22.2	-0.9	0.0	0.0	7.0	0.0	2.0	-32.5	-88.0
290	566592.87	4737542.99	2.40	1	1000	70.6	-88.0	0.0	0.0	57.8	0.8	-1.3	0.0	0.0	5.3	0.0	13.2	-5.2	-88.0
291	566592.87	4737542.99	2.40	1	2000	69.8	-88.0	0.0	0.0	57.8	2.1	-1.3	0.0	0.0	5.9	0.0	13.2	-7.9	-88.0
292	566592.87	4737542.99	2.40	1	4000	67.7	-88.0	0.0	0.0	57.8	7.2	-1.3	0.0	0.0	6.8	0.0	13.2	-15.9	-88.0
293	566592.87	4737542.99	2.40	1	8000	61.1	-88.0	0.0	0.0	57.8	25.6	-1.3	0.0	0.0	8.2	0.0	13.2	-42.3	-88.0
294	566592.87	4737542.99	2.40	1	2000	69.8	-88.0	0.0	0.0	58.0	2.2	-1.8	0.0	0.0	4.8	0.0	15.9	-9.2	-88.0
295	566592.87	4737542.99	2.40	1	4000	67.7	-88.0	0.0	0.0	58.0	7.4	-1.8	0.0	0.0	4.8	0.0	15.9	-16.5	-88.0
296	566592.87	4737542.99	2.40	1	8000	61.1	-88.0	0.0	0.0	58.0	26.3	-1.8	0.0	0.0	4.8	0.0	15.9	-42.0	-88.0
297	566592.87	4737542.99	2.40	1	1000	70.6	-88.0	0.0	0.0	59.4	1.0	-1.3	0.0	0.0	11.5	0.0	2.0	-2.0	-88.0
298	566592.87	4737542.99	2.40	1	2000	69.8	-88.0	0.0	0.0	59.4	2.5	-1.4	0.0	0.0	14.1	0.0	2.0	-6.9	-88.0
299	566592.87	4737542.99	2.40	1	4000	67.7	-88.0	0.0	0.0	59.4	8.7	-1.4	0.0	0.0	16.9	0.0	2.0	-17.9	-88.0
300	566592.87	4737542.99	2.40	1	8000	61.1	-88.0	0.0	0.0	59.4	30.8	-1.4	0.0	0.0	19.7	0.0	2.0	-49.6	-88.0
301	566592.82	4737542.82	2.40	1	1000	70.2	-88.0	0.0	0.0	56.5	0.7	-0.9	0.0	0.0	5.2	0.0	2.0	6.7	-88.0
302	566592.82	4737542.82	2.40	1	2000	69.4	-88.0	0.0	0.0	56.5	1.8	-0.9	0.0	0.0	5.6	0.0	2.0	4.4	-88.0
303	566592.82	4737542.82	2.40	1	4000	67.3	-88.0	0.0	0.0	56.5	6.2	-0.9	0.0	0.0	6.3	0.0	2.0	-2.8	-88.0
304	566592.82	4737542.82	2.40	1	8000	60.7	-88.0	0.0	0.0	56.5	22.0	-0.9	0.0	0.0	7.5	0.0	2.0	-26.4	-88.0
305	566610.34	4737548.68	2.40	1	1000	70.9	-88.0	0.0	0.0	58.1	0.8	-1.8	0.0	0.0	6.2	0.0	14.0	-6.4	-88.0
306	566610.34	4737548.68	2.40	1	2000	70.1	-88.0	0.0	0.0	58.1	2.2	-1.9	0.0	0.0	7.3	0.0	14.0	-9.7	-88.0
307	566610.34	4737548.68	2.40	1	4000	68.0	-88.0	0.0	0.0	58.1	7.4	-1.9	0.0	0.0	8.9	0.0	14.0	-18.6	-88.0
308	566610.34	4737548.68	2.40	1	8000	61.4	-88.0	0.0	0.0	58.1	26.4	-1.9	0.0	0.0	11.0	0.0	14.0	-46.3	-88.0
309	566610.34	4737548.68	2.40	1	4000	68.0	-88.0	0.0	0.0	58.9	8.2	-1.5	0.0	0.0	4.9	0.0	17.1	-19.6	-88.0
310	566610.34	4737548.68	2.40	1	8000	61.4	-88.0	0.0	0.0	58.9	29.1	-1.5	0.0	0.0	5.0	0.0	17.1	-47.3	-88.0
311	566610.34	4737548.68	2.40	1	2000	70.1	-88.0	0.0	0.0	57.6	2.1	-1.1	0.0	0.0	0.0	0.0	14.9	-3.3	-88.0
312	566610.34	4737548.68	2.40	1	4000	68.0	-88.0	0.0	0.0	57.6	7.0	-1.1	0.0	0.0	0.0	0.0	14.9	-10.3	-88.0
313	566610.34	4737548.68	2.40	1	8000	61.4	-88.0	0.0	0.0	57.6	24.9	-1.1	0.0	0.0	0.0	0.0	14.9	-34.8	-88.0
314	566609.43	4737548.96	2.40	1	1000	68.1	-88.0	0.0	0.0	60.0	1.0	-1.6	0.0	0.0	10.9	0.0	2.0	-4.2	-88.0
315	566609.43	4737548.96	2.40	1	2000	67.3	-88.0	0.0	0.0	60.0	2.7	-1.6	0.0	0.0	13.4	0.0	2.0	-9.2	-88.0
316	566609.43	4737548.96	2.40	1	4000	65.2	-88.0	0.0	0.0	60.0	9.2	-1.6	0.0	0.0	16.1	0.0	2.0	-20.5	-88.0
317	566609.43	4737548.96	2.40	1	8000	58.6	-88.0	0.0	0.0	60.0	32.8	-1.6	0.0	0.0	19.0	0.0	2.0	-53.6	-88.0
318	566606.76	4737550.40	2.40	1	1000	70.8	-88.0	0.0	0.0	57.9	0.8	-1.8	0.0	0.0	6.9	0.0	13.8	-6.8	-88.0
319	566606.76	4737550.40	2.40	1	2000	70.0	-88.0	0.0	0.0	57.9	2.1	-1.8	0.0	0.0	8.4	0.0	13.8	-10.4	-88.0
320	566606.76	4737550.40	2.40	1	4000	67.9	-88.0	0.0	0.0	57.9	7.3	-1.8	0.0	0.0	10.3	0.0	13.8	-19.6	-88.0
321	566606.76	4737550.40	2.40	1	8000	61.3	-88.0	0.0	0.0	57.9	26.0	-1.8	0.0	0.0	12.6	0.0	13.8	-47.2	-88.0
322	566606.76	4737550.40	2.40	1	4000	67.9	-88.0	0.0	0.0	58.9	8.1	-1.5	0.0	0.0	4.9	0.0	17.0	-19.4	-88.0
323	566606.76	4737550.40	2.40	1	8000	61.3	-88.0	0.0	0.0	58.9	28.9	-1.5	0.0	0.0	5.0	0.0	17.0	-47.0	-88.0
324	566606.76	4737550.40	2.40	1	2000	70.0	-88.0	0.0	0.0	57.5	2.0	-1.0	0.0	0.0	0.0	0.0	14.7	-3.2	-88.0
325	566606.76	4737550.40	2.40	1	4000	67.9	-88.0	0.0	0.0	57.5	7.0	-1.0	0.0	0.0	0.0	0.0	14.7	-10.2	-88.0
326	566606.76	4737550.40	2.40	1	8000	61.3	-88.0	0.0	0.0	57.5	24.8	-1.0	0.0	0.0	0.0	0.0	14.7	-34.6	-88.0
327	566606.76	4737550.40	2.40	1	1000	70.8	-88.0	0.0	0.0	59.9	1.0	-1.6	0.0	0.0	11.1	0.0	2.0	-1.6	-88.0
328	566606.76	4737550.40	2.40	1	2000	70.0	-88.0	0.0	0.0	59.9	2.7	-1.6	0.0	0.0	13.6	0.0	2.0	-6.6	-88.0
329	566606.76	4737550.40	2.40	1	4000	67.9	-88.0	0.0	0.0	59.9	9.2	-1.6	0.0	0.0	16.4	0.0	2.0	-17.9	-88.0
330	566606.76	4737550.40	2.40	1	8000	61.3	-88.0	0.0	0.0	59.9	32.7	-1.6	0.0	0.0	19.2	0.0	2.0	-50.8	-88.0
331	566600.70	4737547.98	2.40	1	1000	69.8	-88.0	0.0	0.0	57.8	0.8	-1.8	0.0	0.0	5.3	0.0	13.5	-5.8	-88.0
332	566600.70	4737547.98	2.40	1	2000	69.0	-88.0	0.0	0.0	57.8	2.1	-1.8	0.0	0.0	5.8	0.0	13.5	-8.4	-88.0
333	566600.70	4737547.98	2.40	1	4000	66.9	-88.0	0.0	0.0	57.8	7.2	-1.8	0.0	0.0	6.7	0.0	13.5	-16.5	-88.0
334	566600.70	4737547.98	2.40	1	8000	60.3	-88.0	0.0	0.0	57.8	25.7	-1.8	0.0	0.0	8.0	0.0	13.5	-42.9	-88.0
335	566600.70	4737547.98	2.40	1	2000	69.0	-88.0	0.0	0.0	57.7	2.1	-1.5	0.0	0.0	0.0	0.0	15.1	-4.3	-88.0
336	566600.70	4737547.98	2.40	1	4000	66.9	-88.0	0.0	0.0	57.7	7.1	-1.5	0.0	0.0	0.0	0.0	15.1	-11.5	-88.0
337	566600.70	4737547.98	2.40	1	8000	60.3	-88.0	0.0	0.0	57.7	25.3	-1.5	0.0	0.0	0.0	0.0	15.1	-36.3	-88.0
338	566600.70	4737547.98	2.40	1	1000	69.8	-88.0	0.0	0.0	59.7	1.0	-1.5	0.0	0.0	11.3	0.0	2.0	-2.7	-88.0
339	566600.70	4737547.98	2.40	1	2000	69.0	-88.0	0.0	0.0	59.7	2.6	-1.5	0.0	0.0	13.9	0.0	2.0	-7.7	-88.0
340	566600.70	4737547.98	2.40	1	4000	66.9	-88.0	0.0	0.0	59.7	9.0	-1.5	0.0	0.0	16.6	0.0	2.0	-18.8	-88.0
341	566600.70	4737547.98	2.40	1	8000	60.3	-88.0	0.0	0.0	59.7	31.9	-1.5	0.0	0.0	19.5	0.0	2.0	-51.3	-88.0
342	566601.36	4737553.21	2.40	1	500	65.6	-88.0	0.0	0.0	57.7	0.4	-1.6	0.0	0.0	5.1	0.0	13.4	-9.5	-88.0
343	566601.36	4737553.21	2.40	1	1000	70.1	-88.0	0.0	0.0	57.7	0.8	-1.7	0.0	0.0	5.5	0.0	13.4	-5.6	-88.0
344	566601.36	4737553.21	2.40	1	2000	69.3	-88.0	0.0	0.0	57.7	2.1	-1.7	0.0	0.0	6.1	0.0	13.4	-8.3	-88.0
345	566601.36	4737553.21	2.40	1	4000	67.2	-88.0	0.0	0.0	57.7	7.1	-1.7	0.0	0.0	7.1	0.0	13.4	-16.4	-88.0
346	566601.36	4737553.21	2.40	1	8000	60.6	-88.0	0.0	0.0	57.7	25.3	-1.7	0.0	0.0	8.6	0.0	13.4	-42.8	-88.0

Line Source, ISO 9613, Name: "Sewage Truck Movements", ID: "STRM"																			
Nr.	X	Y	Z	Refl.	Freq.	LxT	LxN	K0	Dc	Adiv	Aatm	Agr	Afol	Ahous	Abar	Cmet	RL	LrT	LrN
	(m)	(m)	(m)		(Hz)	dB(A)	dB(A)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	dB(A)	dB(A)
347	566601.36	4737553.21	2.40	1	2000	69.3	-88.0	0.0	0.0	57.5	2.0	-1.5	0.0	0.0	0.0	0.0	14.5	-3.3	-88.0
348	566601.36	4737553.21	2.40	1	4000	67.2	-88.0	0.0	0.0	57.5	6.9	-1.5	0.0	0.0	0.0	0.0	14.5	-10.3	-88.0
349	566601.36	4737553.21	2.40	1	8000	60.6	-88.0	0.0	0.0	57.5	24.7	-1.5	0.0	0.0	0.0	0.0	14.5	-34.7	-88.0
350	566601.36	4737553.21	2.40	1	1000	70.1	-88.0	0.0	0.0	59.8	1.0	-1.6	0.0	0.0	11.5	0.0	2.0	-2.6	-88.0
351	566601.36	4737553.21	2.40	1	2000	69.3	-88.0	0.0	0.0	59.8	2.7	-1.6	0.0	0.0	14.0	0.0	2.0	-7.6	-88.0
352	566601.36	4737553.21	2.40	1	4000	67.2	-88.0	0.0	0.0	59.8	9.1	-1.6	0.0	0.0	16.7	0.0	2.0	-18.9	-88.0
353	566601.36	4737553.21	2.40	1	8000	60.6	-88.0	0.0	0.0	59.8	32.3	-1.6	0.0	0.0	19.6	0.0	2.0	-51.6	-88.0
354	566601.76	4737550.39	2.40	1	1000	68.6	-88.0	0.0	0.0	57.8	0.8	-1.8	0.0	0.0	5.4	0.0	13.5	-7.0	-88.0
355	566601.76	4737550.39	2.40	1	2000	67.8	-88.0	0.0	0.0	57.8	2.1	-1.8	0.0	0.0	5.9	0.0	13.5	-9.7	-88.0
356	566601.76	4737550.39	2.40	1	4000	65.7	-88.0	0.0	0.0	57.8	7.2	-1.8	0.0	0.0	6.8	0.0	13.5	-17.7	-88.0
357	566601.76	4737550.39	2.40	1	8000	59.1	-88.0	0.0	0.0	57.8	25.6	-1.8	0.0	0.0	8.2	0.0	13.5	-44.1	-88.0
358	566601.76	4737550.39	2.40	1	2000	67.8	-88.0	0.0	0.0	57.6	2.1	-1.4	0.0	0.0	0.0	0.0	14.8	-5.2	-88.0
359	566601.76	4737550.39	2.40	1	4000	65.7	-88.0	0.0	0.0	57.6	7.0	-1.4	0.0	0.0	0.0	0.0	14.8	-12.2	-88.0
360	566601.76	4737550.39	2.40	1	8000	59.1	-88.0	0.0	0.0	57.6	25.0	-1.4	0.0	0.0	0.0	0.0	14.8	-36.8	-88.0
361	566601.76	4737550.39	2.40	1	1000	68.6	-88.0	0.0	0.0	59.8	1.0	-1.6	0.0	0.0	11.4	0.0	2.0	-3.9	-88.0
362	566601.76	4737550.39	2.40	1	2000	67.8	-88.0	0.0	0.0	59.8	2.7	-1.6	0.0	0.0	13.9	0.0	2.0	-8.9	-88.0
363	566601.76	4737550.39	2.40	1	4000	65.7	-88.0	0.0	0.0	59.8	9.0	-1.6	0.0	0.0	16.6	0.0	2.0	-20.1	-88.0
364	566601.76	4737550.39	2.40	1	8000	59.1	-88.0	0.0	0.0	59.8	32.2	-1.6	0.0	0.0	19.5	0.0	2.0	-52.8	-88.0

RAMHANS CONDOS

38 NEW LAKESHORE ROAD

PORT DOVER, ON

TRAFFIC IMPACT BRIEF

Prepared by:

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File No.: 23-1496

September 2023

RAMHANS CONDOS, 38 NEW LAKESHORE ROAD, PORT DOVER, ON

TRAFFIC IMPACT BRIEF (SEPTEMBER 2023)

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INTRODUCTION AND BACKGROUND

A residential development is proposed for 38 New Lakeshore Road, in Port Dover, Ontario; the area plan is illustrated on Figure 1. New Lakeshore Road is an east / west collector roadway that begins at Erie Street at the west and runs easterly to the community of Nanticoke. Brown Street is a local cul-de-sac residential street which runs parallel to and south of New Lakeshore Road.

The proposed updated site plan is illustrated on Figure 2; the development proposal consists of 28 dwelling units within seven condo / townhome buildings on the south side of New Lakeshore Road. Eleven visitor parking spaces, including one accessible space, are provided in addition to private driveway parking. To facilitate access to and from the development for residents and for municipal garbage collection, three accesses are proposed: a primary northerly access at New Lakeshore Road and two secondary southerly accesses at Brown Street.

The purpose of this traffic impact brief is to evaluate the proposed development's impact on area traffic operations, particularly at its proposed New Lakeshore Road site access. This report will also address strategies for mitigating potential "shortcutting" through the development.

TRAFFIC DATA COLLECTION

As provided in Appendix A, Pyramid Traffic Inc. collected turning movement counts on 6 June 2023 for the intersection of the Lakeshore Bluff Estates (14 New Lakeshore Road) at New Lakeshore Road; this is the development located immediately west of the subject site.

METHODOLOGY

The collected turning movements counts provided the basis for industry-standard traffic operations analysis; the software package utilized for the analysis (Synchro 11) calculates various parameters of intersection performance, such as level of service (LOS), intersection capacity utilization (ICU), control delay, and queue lengths on individual approaches. Unsignalized level of service results are reported based on the Highway Capacity Manual (6th Ed.):

Level of Service	Average Control Delay (sec/veh)
A	0 - 10
B	>10 - 15
C	>15 - 25
D	>25 - 35
E	>35 - 50
F	>50

TRIP GENERATION AND DISTRIBUTION

As referenced in Appendix B, trip generation was estimated from the Institute of Transportation Engineers (ITE) Trip Generation Manual (11th Edition). The dataset's average rate was used instead of the fitted curve equation because the independent variables are in the lower range of the dataset; the fitted curve equation does not pass through the origin.

ITE Land Use Code 215 – Single Family Attached Housing is the most appropriate code for the proposed 28 dwelling units. As detailed in Appendix B, this land use code provides generation rates of 0.48 trips per dwelling unit in the AM peak hour, with 31% entering and 69% exiting, and 0.57 trips per dwelling unit in the PM peak hour, with 57% entering and 43% exiting. Accordingly, the development is expected to generate 13 trips in the AM peak hour, with 4 entering and 9 exiting, and 16 trips in the PM peak hour, with 9 entering and 7 exiting.

Site generated traffic was distributed to and from New Lakeshore Road based on the east / west flow of traffic, as taken from the collected turning movement counts. To study the "worst-case" traffic scenario at New Lakeshore Road, no traffic was distributed to / from Brown Street. Realistically, residents of the few homes closest to the Brown Street accesses may choose to use this route; however, due to Brown Street being a cul-de-sac, all traffic to and from the Brown Street accesses must travel north to / past New Lakeshore Road. Therefore, it is anticipated that the Brown Street accesses will be utilized mainly as secondary accesses. All traffic to and from the area must use either Highway 6 or New Lakeshore Road; three streets to the west of the site and three streets to the east of the site provide access to and from Highway 6.

CAPACITY AND LEVEL OF SERVICE ANALYSIS

Figure 3 illustrates the "Site Generated Traffic", "Existing Traffic", and "Existing + Site Generated Traffic" for the respective weekday AM and PM peak hours. Detailed Synchro 11 analysis was carried out with respect to the "Existing + Site Generated Traffic" scenarios; the resulting Synchro 11 simulation reports are provided in Appendix C. The intersection's levels of service results are summarized in the following sections:

Site Access at New Lakeshore Road

The proposed northbound stop-controlled site access at New Lakeshore Road is to be comprised of shared lanes on all approaches. Based on the level of service results reported in Table 1, the addition of site generated traffic will have a nominal impact on New Lakeshore Road traffic operations. All legs are expected to operate at a good LOS A, with an 8.7 second control delay for northbound traffic (in the critical PM peak hour).

Table 1: Level of Service by Approach – Site Access at New Lakeshore Road

Scenario	Site Access at New Lakeshore Road							
	AM Peak Hour				PM Peak Hour			
	E/B	W/B	N/B	S/B	E/B	W/B	N/B	S/B
Existing + Site Gen. Traffic	A	A	A	-	A	A	A	-

Site Accesses at Brown Street

The two proposed southbound stop-controlled site accesses at Brown Street are to be comprised of shared lanes on all approaches. As previously stated, no traffic was distributed to / from Brown Street; however, some residents of the few homes closest to the Brown Street accesses may choose to use this route. Due to Brown Street being a cul-de-sac, it is anticipated that these accesses will be mainly utilized as secondary accesses. Therefore, it is the engineers' opinion that the proposed development will have no discernible impact on Brown Street traffic operations.

TRAFFIC CALMING / CONTROL MEASURES

Concern has arisen regarding potential "shortcutting" through the development. Currently, residents on the Brown Street cul-de-sac must access their homes to and from Ontario Street to the west. Conceivably, when the subject development is constructed, these residents may "cut through" the subject development to New Lakeshore Road; this route might be utilized by vehicles ultimately heading to or from the east, avoiding the "long way around." Neither of the Brown Street accesses provides a straight path through the development; however, the easterly of the two accesses facilitates the "path of least resistance".

Although signage alone may not discourage this practice, the developer could follow the model of the condominium development to the west; post or paint "Private Entrance" notices at the entrances to the development from Brown Street. If that treatment is deemed ineffective, the developer could consider installation of one or two speed humps on the easterly "aisle" within the development; residents should already be travelling at a low speed, and "cut-through" traffic will have to slow to navigate the vertical traffic calming treatments.

SIGHT LINE ANALYSIS

A sight line analysis was completed for the proposed site accesses at New Lakeshore Road and Brown Street. The speed limit on New Lakeshore Road and Brown Street is 50 km/h, so the analysis was completed for a 60 km/h design speed; a passenger car was selected as the design vehicle. According to the TAC Geometric Design Guide for Canadian Roads (2017), the sight line should be evaluated with the design vehicle located at 4.4m from the edge of the travelled lane.

As calculated in Appendix D, the minimum intersection sight distance is 125m for the worst-case left turn egress maneuver and 108m for the less-critical right turn egress maneuver. Based on the sight lines illustrated on Figures 4A to 4C, it is the engineers' opinion that there is sufficient sight distance for safe egress from the proposed site accesses; however, at the time of construction, the developer and the road authority should ensure that any remaining scrub brush along New Lakeshore Road is cleared to the road authority's satisfaction.

CONCLUSIONS AND RECOMMENDATIONS

A residential development is proposed for 38 New Lakeshore Road, in Port Dover, ON; the development proposal consists of 28 dwelling units within seven condo / townhome buildings. Eleven visitor parking spaces, including one accessible space, are provided in addition to private driveway parking. To facilitate access to and from the development for residents (and for municipal garbage collection), three accesses are proposed: a primary northerly access at New Lakeshore Road and two secondary southerly accesses at Brown Street.

Using recently obtained turning movement counts and applying the best available trip generation and distribution data and methodologies, an analysis was completed to quantify and qualify the potential impact of the proposed development on area traffic operations. Upon completion of the analysis, it was concluded that:

- The proposed northbound stop-controlled tee intersection of the site access at New Lakeshore Road will operate favourably; the proposed development will have a nominal impact on New Lakeshore Road traffic operations;
- The proposed southbound stop-controlled tee intersections of the site accesses at Brown Street will operate favourably; the proposed development will have a nominal impact on Brown Street traffic operations;
- Signs should be posted or painted at the Brown Street entrances as a means of discouraging "cut-through" traffic; speed humps could also be installed to discourage "short-cutting" through the development;
- There is sufficient sight distance in both directions for safe egress from the proposed site accesses at New Lakeshore Road and Brown Street.

Therefore, based on the results of the technical work, it is the engineers' opinion that the proposed development will not adversely impact area traffic operations. Geometric and / or traffic control improvements are not required.

All of which is respectfully submitted,

RC Spencer Associates Inc.

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Professional Engineers Ontario

NO.	REVISION	DATE	BY	APP
1.	COMPLETED REPORT FIGURES	15 SEP 2023	N.M.	A.D.B.

DESIGN A.D.B.
CHECKED A.D.B.
DRAWN M.M.
CHECKED A.D.B.
DATE JUNE 2023
SCALE N.T.S.

38 NEW LAKESHORE ROAD, PORT DOVER, ON

AREA PLAN

PROJECT NO. 23-1496
FIGURE NO. 1
OF 4

BEFORE STARTING WORK

- THE AUTHORITY HAVING JURISDICTION IS NORFOLK COUNTY
- THE CONTRACTOR SHALL NOTIFY THE AUTHORITY HAVING JURISDICTION, ARCHITECT & CONSULTANTS AT LEAST 48 HOURS PRIOR TO COMMENCING ANY CONST. OR DEMOLITION.
- THE POSITION OF THE POLE LINES, CONDUITS, WATER MAINS, SEWERS, & OTHER UTILITIES & STRUCTURES ARE NOT NECESSARILY SHOWN ON THE CONTRACT DWG'S. WHERE SHOWN, THE ACCURACY OF THE POSITION OF SUCH UTILITIES & STRUCTURES IS NOT GUARANTEED & ARE TO BE VERIFIED ON SITE.
- ALL POSITIONS OF THE EX. UNDERGROUND UTILITIES WITHIN THE LIMITS OF CONST. SHALL BE LOCATED, MARKED & PROTECTED BY THE CONTRACTOR. ANY UTILITIES DAMAGED OR DISTURBED DURING CONST. SHALL BE REPAIRED OR REPLACED TO THE SATISFACTION OF THE ENGINEER, AT THE CONTRACTOR'S EXPENSE.
- PRIOR TO THE COMMENCEMENT OF CONST., ALL BENCHMARKS, ELEVATIONS, DIMENSIONS, & GRADES MUST BE CHECKED BY THE CONTRACTOR. ANY DISCREPANCIES REPORTED TO THE ENGINEER / ARCHITECT

BENCHMARKS
TWO DIFFERENT BENCHMARKS MUST BE REFERRED TO & ALL THEIR ELEVATIONS ARE REFERRED TO GEODETIC BENCHMARK, ELEVATIONS TO BE VERIFIED ON AUTH. TOPOGRAPHIC GRADING PLAN & ENGINEER

SITE PLAN NOTES

- ALL WORK INVOLVED IN THE CONST., RELOCATION, REPAIR OF MUNICIPAL SERVICES FOR THE PROJECT SHALL BE TO THE SATISFACTION OF THE AUTHORITY HAVING JURISDICTION
- FIRE ROUTE SIGNS & 3-WAY FIRE HYDRANTS SHALL BE ESTABLISHED TO THE SATISFACTION OF THE LOCAL FIRE DEPARTMENT & AT THE EXPENSE OF THE OWNER.
- ALL DRIVEWAYS FROM PROPERTY LINES FOR THE FIRST 7.5m SHALL BE WITHIN 5% MAX. GRADE. THEREAFTER, ALL DRIVEWAYS SHALL BE WITHIN 10% MAX. GRADES.
- THE APPROVAL OF THIS PLAN DOES NOT EXEMPT THE CONTRACTOR FROM THE NEED TO OBTAIN THE VARIOUS PERMITS/APPROVALS AS MAY BE REQUIRED, SUCH AS, BUT NOT LIMITED TO:
  - BUILDING PERMIT
  - SANITARY / STORM & WATER PERMITS
  - ROAD CUT PERMITS
  - RELOCATION OF SERVICES
  - APPROACH APPROVAL PERMITS
  - ENCROACHMENT AGREEMENTS (IF REQ'D)
  - COMMITTEE OF ADJUSTMENT
  - ROAD OCCUPANCY PERMIT
  - SITE ALTERATION
- ABANDONED ACCESSES MUST BE REMOVED & THE CURB & BOULEVARD RESTORED IN KIND AT THE OWNER'S EXPENSE TO THE SATISFACTION OF THE TRAFFIC ENGINEERING SECTION & PUBLIC WORKS DEPARTMENT

GENERAL NOTES:

- FIRE ACCESS ROUTE TO BE POSTED & DESIGNATED UNDER MUNICIPAL BY-LAW (FIRE ACCESS ROUTE TO BE MIN. 6 m WIDE IN A MIN. 12 m CENTER LINE TURNING RADIUS & MAX. 6% SLOPE)
- LOCATE ON HIGH & LEG. SITE PLANS FOR ALL EX. & NEW LOCATIONS OF SERVICES & ENTRY OF SERVICES INTO THE BLDG. ENVELOPE. (ALL HIGH & ELEC. INFORMATION INDICATED ON ARCH. SITE DWG. A101 IS FOR GENERAL REFERENCE & LOCATE ONLY)
- LOCATE ON SITE GRADING PLAN FOR PROPOSED FINAL FINISH GRADE ELEV.'S & DRAINAGE SLOPES
- LOCATE ON LANDSCAPE SITE PLAN FOR LOCATIONS OF SEEDING, SODDING, PLANTING & PAVING & OTHER HARD SURFACING. LOCATE ON ARCH SITE PLAN
- TYP. DRIVEWAY & PARKING LOT CONC. CURBS AS INDICATED ON DRAWING. LOCATE ON GRSP DETAILS & SPECS FOR TYPICAL CURB TYPES
- THE SUB-GRADE SOILS EXPOSED AFTER EXCAVATION SHALL BE INSPECTED & CERTIFIED BY A GEOTECHNICALLY ENGINEERED PROFESSIONAL ENGINEER & A COPY OF THE CERTIFICATION SHALL BE SUBMITTED TO THE AUTHORITY HAVING JURISDICTION BUILDING DIVISION. WHERE THE FOOTING WILL BE SITUATED ON FILL MATERIAL THE FOOTINGS SHALL BE DESIGNED & APPROVED BY QUALIFIED REGISTERED PROFESSIONAL ENGINEER
- ALL FILL PLACED ON THE SITE SHALL BE COMPACTED TO A MINIMUM 95% STANDARD PROCTOR DENSITY. A SUFFICIENT NUMBER OF TESTS SHALL BE TAKEN AT VARIOUS LEVELS SATISFACTORY TO THE ENGINEER. TEST RESULTS SHALL BE SENT TO THE AUTHORITY HAVING JURISDICTION IN A LETTER, SIGNED & STAMPED BY THE SOILS ENGINEER, STATING THAT A SUFFICIENT NUMBER OF TESTS HAVE BEEN TAKEN & THE MIN. COMPACTION HAS BEEN REACHED
- APPROVAL OF THIS DWG. IS FOR MATERIAL ACCEPTABILITY ONLY. THE CONTRACTOR IS RESPONSIBLE FOR ALL DIMENSIONS ONLY. APPROVAL & INSPECTION BY THE MUNICIPALITY OF THE WORKS DOES NOT CERTIFY THE LINE & GRADE OF THE WORKS & IT IS THE OWNER'S RESPONSIBILITY TO HAVE THE ENGINEER CERTIFY THIS ACCORDINGLY
- SILTATION CONTROL DEVICES SHALL BE INSTALLED PRIOR TO WORKS COMMENCING ON THE SITE & SHALL BE MAINTAINED FOR THE DURATION OF CONST., TO THE SATISFACTION OF THE AUTHORITY HAVING JURISDICTION (LOCATION AS ALL PROPERTY LINES)
- PROVIDE CONST. GATES / FENCES / BOUNDARIES AS SHOWN / REQ'D TO THE AUTHORITY HAVING JURISDICTION REQ'S
- CONST. SHOP DWG'S FOR LOCATION & DETAILS OF A 2.4m HIGH CHAIN LINK FENCE W/ TERMINATE POSTS LOC. OR SIMILAR APPROVED SECURITY FENCE TO BE SUBMITTED TO THE AUTHORITY HAVING JURISDICTION TO BE ERECTED BY THE CONTRACTOR PRIOR TO THE COMMENCEMENT OF THE DEMOLITION PROCESS & SHALL REMAIN & BE MAINTAINED IN POSITION NOTATELY UNTIL COMPLETION OF NEW CONST. WORKS.
- PROVIDE HEAVY DUTY (HD) ASPHALT & ALL ROADWAYS PROVIDE MEDIUM DUTY (MD) ASPHALT & ALL DRIVEWAYS & PARKING SPACES
- PROVIDE LIGHT DUTY (LD) ASPHALT & WALKWAY AREAS ONLY (INC)
- CONTRACTOR IS RESPONSIBLE FOR PLANTING SOD, MAINTAINING & MAINTENANCE UNTIL SUBSTANTIAL PERFORMANCE IS ACHIEVED. THE WARRANTY PERIOD WILL COMMENCE UPON SUBSTANTIAL PERFORMANCE OF THIS WORK.

GENERAL NOTES:

- (A) GENERAL CONTRACTOR TO COORDINATE ALL WORK WITHIN THE BOULEVARD W/ THE AUTHORITY HAVING JURISDICTION & OBTAIN ALL NECESSARY PERMITS & APPROVALS FROM LOCAL AUTHORITIES. EXECUTE ALL WORK AS PER THE MUNICIPAL REQUIREMENTS
- (B) GENERAL CONTRACTOR TO EXECUTE WORK TO DRIVEWAY ENTRANCE AS PER MUNICIPAL REQUIREMENTS. PROVIDE NEW CONC. ENTRANCE. REFER TO ENTRANCE REQUIREMENTS WHERE EXIST. DRIVEWAY ENTRANCE TO BE MODIFIED OR INSTALLATION OF NEW ENTRANCE AS PER MUNICIPAL REQUIREMENTS. PROVIDE NEW CONC. ENTRANCE CURBS TO MATCH EXISTING WHERE INDICATED
- (L) PLANTING BEDS: TREE PLANTINGS, LANDSCAPE FEATURES & SODDED AREAS.
- (AC) ASPHALT TO GRADE DETAIL
  (LOCATE ON 'A' SERIES)
- (BR) BIKE RACK
  (LOCATE ON 'A')
- (BE) BENCH
  (LOCATE ON 'A')
- (A) BARRIER FREE RAMP
  (LOCATE ON 'A' SERIES DWG'S)
- (SA) SLOPED SITE ACCESS
  (LOCATE ON GRSP-SW2.010, SW2.020)
- (CC) CONCRETE CURB
  (LOCATE ON GRSP-SW2.010, SW2.020, SW2.030)
- (SW) CONCRETE SIDEWALK
  (LOCATE ON GRSP-SW2.010, SW2.020, SW2.030, SW2.040, SW2.050, SW2.060, SW2.070, SW2.080 & CONC. GUIDE)
- (CSC) CONCRETE SIDEWALK / CURB CURB
  (LOCATE ON GRSP-SW2.010, SW2.020, SW2.030, SW2.040, SW2.050, SW2.060, SW2.070, SW2.080 & CONC. GUIDE)
- (GB) GARBAGE ENCLOSURE
  (LOCATE ON 'A')
- (MW) MAIL WAIT
  PROVIDE MAIL WAIT BAY TO AUTHORITY HAVING JURISDICTION REQ'S
  (LOCATE ON 'A' SITE)
- (CP) CANADA POST
  (LOCATE ON 'A1.00')

SIGN LEGEND

- (A) STOP SIGN
- (F) NO PARKING - FIRE ROUTE
- (G) NO PARKING - FIRE HYDRANT
- (J) NO PARKING
- (L) NO PARKING, BY PERMIT ONLY, BARRIER FREE PARKING, VAN ACCESSIBLE - TYPE 'B'
- (O) VISITOR PARKING ONLY
- (P) ELECTRIC VEHICLE PARKING
- (Q) 15 MIN. PARKING ONLY, VIOLATORS WILL BE TOWED AWAY
- (R) PEDESTRIAN CROSSING SIGN
- (S) DO NOT BLOCK VEHICLE ACCESS NEEDED AT ALL TIMES
- (T) PRIVATE PROPERTY NO TRESPASSING
- (A) SPEED LIMIT 4 KM/H

NOTE:
CONFIRM LOCATION & CONTENT OF ALL SIGNAGE W/ THE OWNER & AUTHORITY HAVING JURISDICTION PRIOR TO FABRICATION & ERECTION. PROPOSED SITE SIGNAGE TO COMPLY W/ SIGNAGE BY-LAWS

NOTE:
ALL SIGNS TO BE CENTERED ON POSTS TYP.



ENTRANCE / EXIT DOOR
ENTRANCE/EXIT DOOR (OVERHEAD DOOR)
EARTH / GRADE (RELATIVE TO ARTIF NEW BLDG.)
PROPERTY BOUNDARY LINE(S)
SETBACKS
CHAIN LINK FENCE (OPPOSITE #12 WY), #12 SDE, #12 WDE, #12 SDE)
PET FENCE (TBD/DRW'T PRIVACY)
SNOW STORAGE
FIRE ROUTE (6m WIDE / 12m CENTER RADIUS)
CB COVERED ENTRANCE
PATIO (ON GRADE)
PAINTED GRAPHICS ON ASPHALT / CONC. (LOCATE ON THE CITY / TOWN HAVING JURISDICTION (HCEC) REF.)
• ELECTRIC VEHICLE CHARGING SIGN ON ASPHALT / CONC. (WHITE & GREEN COLOUR)
• ACCESSIBLE SIGN ON ASPHALT / CONC. (WHITE & BLUE COLOUR)
• CROSSWALK / CROSSWKS (WHITE COLOUR)
• VEHICULAR STALL MARKINGS (YELLOW COLOUR)
VSM = BARRIER FREE / ACCESSIBLE
V = VISITOR
1 - CAR REQ'D DWELLING PARKING
2 - TWO REQ'D DWELLING PARKING
• DIAGONAL MARKINGS (WHITE - YELLOW COLOUR)
• STOP SIGN (VEHICULAR MARKINGS (WHITE COLOUR)
BOL BOLLARD
SIGN (LOCATE ON SIGN LEGEND)
DROP CURB
PERENNIAL DROUGHT RESISTANT GRASSES
NON COMPENSIVE TREE
NON DECIDUOUS TREE
LOCATED ON THE PROPERTY LINES TYP.
VISIBILITY TRIANGLES / SIGHT / EASEMENT TO BE MAINTAINED (REMAIN CLEAR) + BOTH SIDES OF ALL LANEWAY / DRIVEWAYS & INTERSECTIONS. THE MAX HEIGHT OF ANY OBSTRUCTION WITHIN THE LIMITS OF THE VISIBILITY TRIANGLE / EASEMENT SHALL NOT EXCEED HEIGHT ABOVE THE CENTERLINE OF THE CORRESPONDING ADJACENT STREET
NORFOLK COUNTY
No 1 SW LANEWAY
No 1 NW INTERSECTION / STREET LINES
NO PARKING ANYTIME
N/A USED ZONE
NO PARKING ANYTIME
CB CATCH BASIN
EX. CB EX. CATCH BASIN
CB/MH CATCH BASIN / MAN HOLE
EX. CB/MH EX. CATCH BASIN / MAN HOLE
SAMH SANITARY MAN HOLE
STMH STORM MAN HOLE
EX. SA/MH EX. SANITARY MAN HOLE
EX. ST/MH EX. STORM MAN HOLE
FH NEW FIRE HYDRANT (PRIVATE/OWNED PTD. RED)
(MUNICIPAL OWNED PTD. YELLOW)
(MUNICIPAL OWNED PTD. YELLOW W/ BLUE TOP)
EX. FH EX. FIRE HYDRANT
LIGHT STD.
(LIGHT SHOP DWG. FROM APPROVED MANUFACTURER, TO BE SUBMITTED SHOWING PHOTOMETRIC PLAN, ALL LIGHTING TO BE DARK SKY COMPLIANT, STAMPED & SIGNED BY A PROFESSIONAL ENGINEER LICENSED IN ONTARIO (OPSD 2220.01) LOCATED IN SITE LIGHTING DWG'S)
HYDRO VAULT/TRANSFORMER ON CONC. PAD
FULL MTD. LIGHT FIXTURE
GROUND MOUNTED LIGHT BOLLARD STYLE
GEN GENERATOR ON CONC. PAD
GM GAS METER # ENCLOSURE
TACTILE WARNING SURFACE INDICATORS (600MM LENGTH - TILE) FOR SITE CONDITIONS ONLY (LOCATE ON 'A' SERIES DWG'S)
VARIES 2' - 0"
• MINIMUM ARMOR TILE CAMP IN PLACE IN NON SURFACES
(COLOUR TO BE VERIFIED BY ARCHITECT)

HATCH IDENTIFICATION LEGEND
ASPHALT
CONC. SIDEWALK / PAD / CROSSWALK / SIDEWALK / LANDING / STAIRS / ETC.
EX. CONC. SIDEWALK / PAD / CROSSWALK / SIDEWALK / LANDING / STAIRS / ETC.
AREA OF NEW SOD ON 150MM TOPSOIL (LOCATE ON 'A' SERIES DWG'S)
EX. GRADES
PERMEABLE PAVERS
RIVER STONES
MUD MAT
NEW BLDG. / ADDITION

GENERAL NOTES
• SHOP DWG'S ARE TO BE DIMENSIONED IN METRIC UNITS (IMPERIAL & METRIC BOTH SHOWN IS ACCEPTABLE)
• LOCATE ON EX. SURVEY DWG. FOR LOCATIONS & TYPES OF ALL EX. ITEMS TO BE REMOVED (COORDINATE WITH NOTATED LINE WEIGHTS & TYPES)
• ALL EX. ITEMS TO BE LABELLED IN 'EX' OR GRAY SCALE ON EX. SURVEY DWG'S & ARE TO REMAIN U/N/O OR SHOWN & NOTED IN DEMO PLANS TYP.
• PATCH & REPAIR ALL EX. ITEMS WHERE DISTURBED / DAMAGED BY CONST. / DEMO. PROVIDE CLEAN TRANSITIONS TYP. (PROVIDE SOD & ALL DAMAGED AREAS)

NO	DATE	REVISION
N/A		REVISION/S INTERNAL

PROPERTY LEGAL DESCRIPTION:
(DESCRIPTION)

APPLICANT:
(COMPANY NAME)
APPLICANT NAME
ADDRESS
CITY, PROVINCE
(POSTAL CODE)
(TEL# AND FAX#)

UPDATE TRUE NORTH TO PROJECT LOCATION NORTH - TURN ON NORTH ARROW TO ALL ENG. SHEETS THAT HAVE A PLAN TYP.

DO NOT SCALE DRAWINGS, CALL FOR ANY CLARIFICATIONS THAT ARE REQUIRED, FIELD VERIFY AT ALL BUILT CONDITIONS
ALL DWG'S ARE TO BE READ IN COLOUR
ORIGINAL PAGE SIZE: ARCH D - 24" x 36"

INSERT CLIENT LOGO HERE
SAVE IMAGE AS "LOGO - CLIENT" SAVE TO LOGO FOLDER

vallee
Consulting Engineers, Architects & Planners
G. DOUGLAS VALLEE LIMITED
2 TALBOT STREET NORTH
SIMCOE, ONTARIO N3Y 3W4
(519) 426-6270

STAMP ARCH | STAMP STRUCT

PROJECT TITLE
RAMHANS CONDOS
36 NEW LAKESHORE ROAD,
PORT DOVER, ON
N0A 1N3

DRAWING TITLE
SITE PLAN

CHECKED BY:	DRAWN BY:
LHR / JI	BM
DRAWING SCALE:	DRAWING NO:
AS PRESENTED	A101
PROJECT NO: 22-032	

FILE PATH: ...\Projects\2022\22-032 Ramhans Condos, 36 New Lakeshore Road\Drawings\Architectural\22-032 Ramhans Condos.rvt
DATE PLOTTED: 6/27/2023 9:41:15 PM PROJECT NUMBER & NAME: 22-032 RAMHANS CONDOS

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Leamington: 18 Talbot Street W. - Leamington, ON N8H 1M4
Chatham-Kent: 48 Raleigh Street - Chatham ON N7M 2G6
Professional Engineers Ontario

NO.	REVISION	DATE	BY	APP
1.	COMPLETED REPORT FIGURES	15 SEP 2023	N.M.	A.D.B.

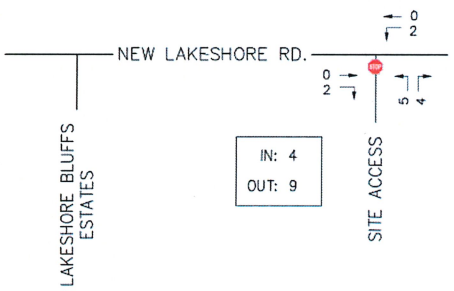
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CHECKED	A.D.B.
DRAWN	M.M.
CHECKED	A.D.B.
DATE	JUNE 2023
SCALE	N.T.S.

38 NEW LAKESHORE ROAD, PORT DOVER, ON

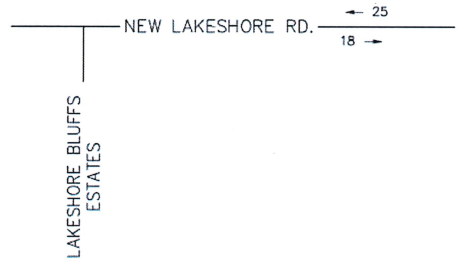
SITE PLAN

PROJECT NO. 23-1496
FIGURE NO. 2
OF 4

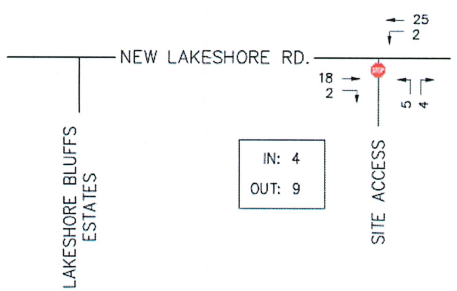
SITE GENERATED TRAFFIC
(AM PEAK HOUR)



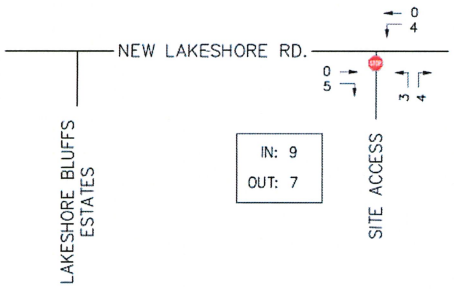
EXISTING TRAFFIC
(AM PEAK HOUR)



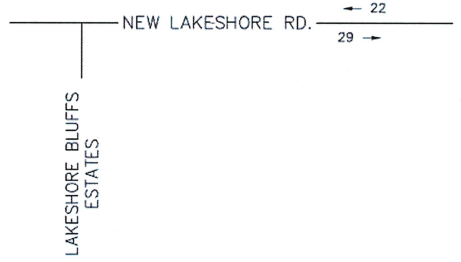
EXISTING + SITE GENERATED TRAFFIC
(AM PEAK HOUR)



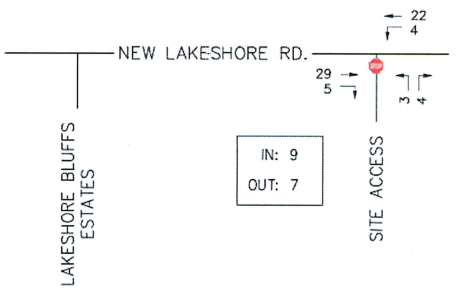
SITE GENERATED TRAFFIC
(PM PEAK HOUR)



EXISTING TRAFFIC
(PM PEAK HOUR)



EXISTING + SITE GENERATED TRAFFIC
(PM PEAK HOUR)



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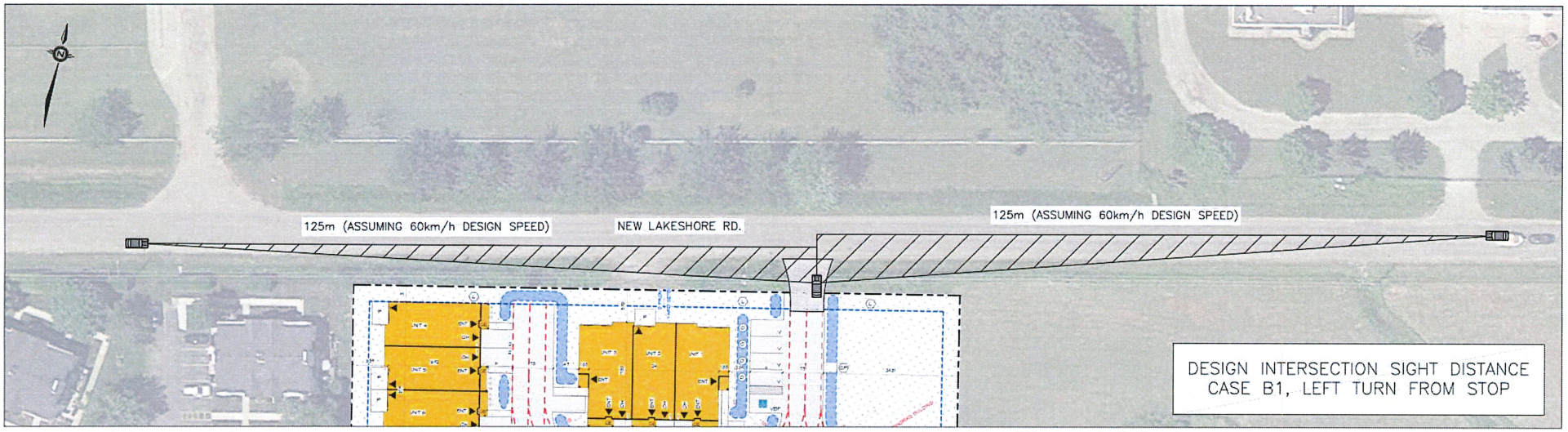
NO.	REVISION	DATE	BY	APP
1.	COMPLETED REPORT FIGURES	15 SEP 2023	N.M.	A.D.B.

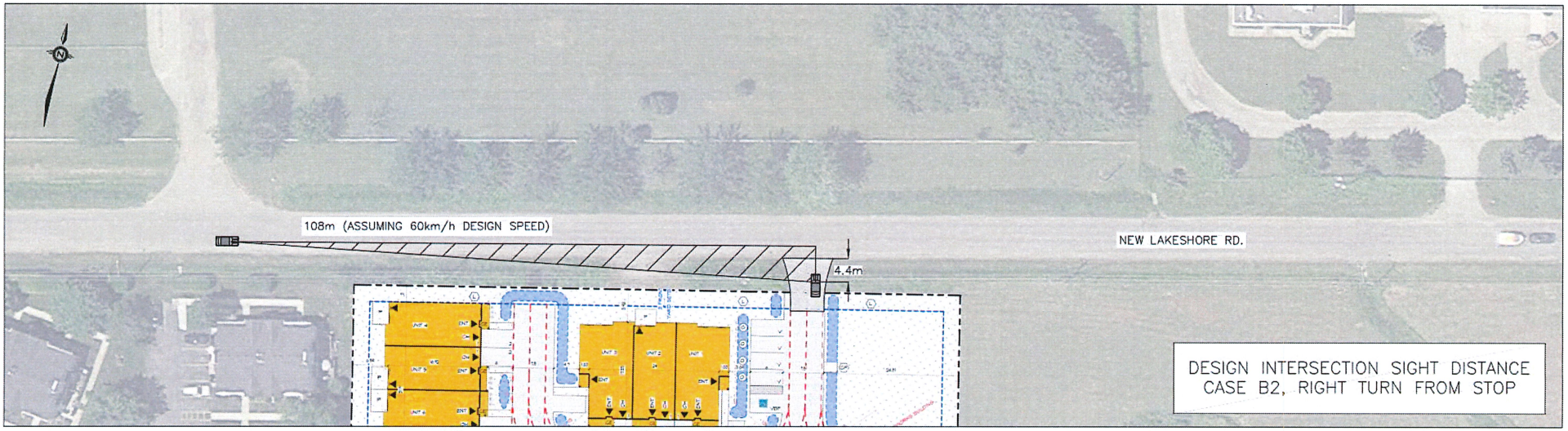
DESIGN A.D.B.
CHECKED A.D.B.
DRAWN M.M.
CHECKED A.D.B.
DATE JUNE 2023
SCALE N.T.S.

38 NEW LAKESHORE ROAD, PORT DOVER, ON

TURNING MOVEMENTS
(AM/PM PEAK HOUR)

PROJECT NO. 23-1496
FIGURE NO. 3
OF 4





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NO.	REVISION	DATE	BY	APP
1.	COMPLETED REPORT FIGURES	15 SEP 2023	N.M.	A.D.B.

DESIGN A.D.B.
CHECKED A.D.B.
DRAWN M.M.
CHECKED A.D.B.
DATE JUNE 2023
SCALE N.T.S.

38 NEW LAKESHORE ROAD, PORT DOVER, ON

SIGHT LINE ANALYSIS: SITE ACCESS AT NEW LAKESHORE RD.

PROJECT NO. 23-1496
FIGURE NO. 4A
OF 4





RC SPENCER ASSOCIATES INC.
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Leamington: 33 Talbot Street W. – Leamington ON N8H 1M4
Chatham-Kent: 49 Raleigh Street – Chatham ON N7M 2X6
Professional Engineers Ontario

NO.	REVISION	DATE	BY	APP
1.	COMPLETED REPORT FIGURES	15 SEP 2023	N.M.	A.D.B.

DESIGN	A.D.B.
CHECKED	A.D.B.
DRAWN	M.M.
CHECKED	A.D.B.
DATE	JUNE 2023
SCALE	N.T.S.

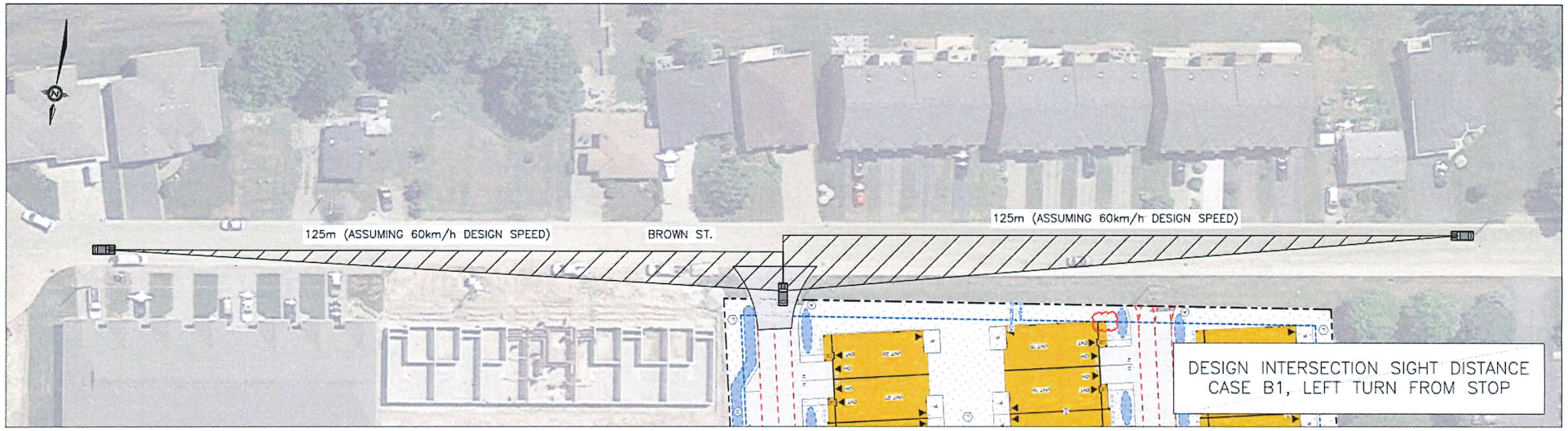
38 NEW LAKESHORE ROAD, PORT DOVER, ON

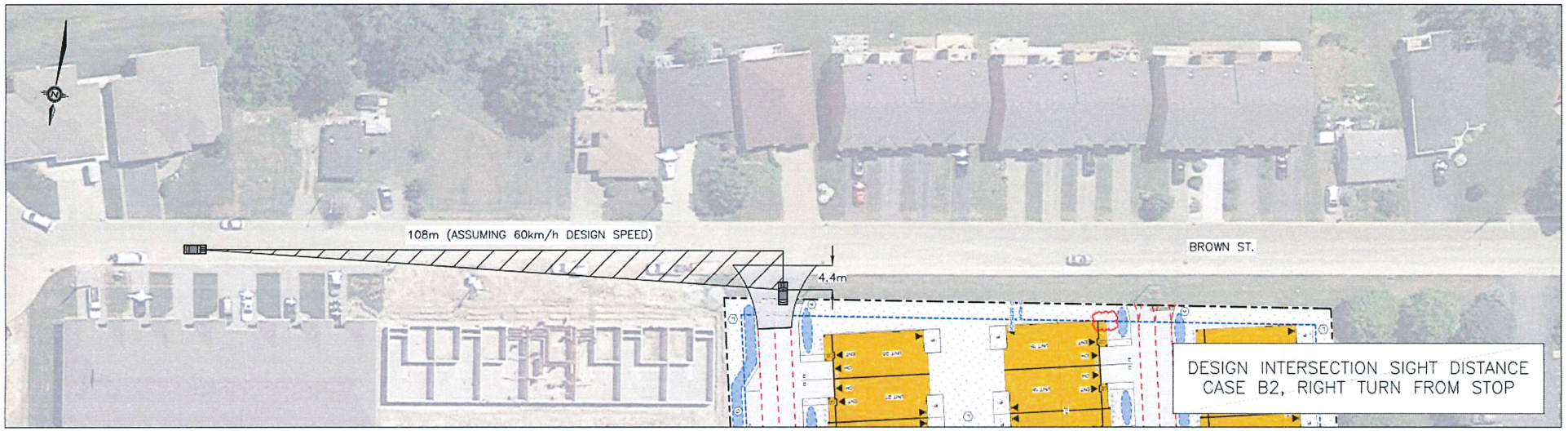
SIGHT LINE ANALYSIS: WESTERLY SITE ACCESS AT BROWN ST.

PROJECT NO. 23-1496

FIGURE NO. 4B

OF 4





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NO.	REVISION	DATE	BY	APP
1.	COMPLETED REPORT FIGURES	15 SEP 2023	N.M.	A.D.B.

DESIGN	A.D.B.
CHECKED	A.D.B.
DRAWN	M.M.
CHECKED	A.D.B.
DATE	JUNE 2023
SCALE	N.T.S.

38 NEW LAKESHORE ROAD, PORT DOVER, ON

SIGHT LINE ANALYSIS: EASTERLY SITE ACCESS AT BROWN ST.

PROJECT NO. 23-1496

FIGURE NO. 4C

OF 4

Appendix A

TRAFFIC DATA COLLECTION

Lakeshore Bluff Estates (14 New Lakeshore Road) at New Lakeshore Road

14 New Lake Shore Rd

Morning Peak Diagram

Specified Period
From: 7:00:00
To: 9:00:00

One Hour Peak
From: 7:30:00
To: 8:30:00

Municipality: Port Dover
Site #: 0000000001
Intersection: New Lake Shore Rd & Driveway
TFR File #: 1
Count date: 6-Jun-2023

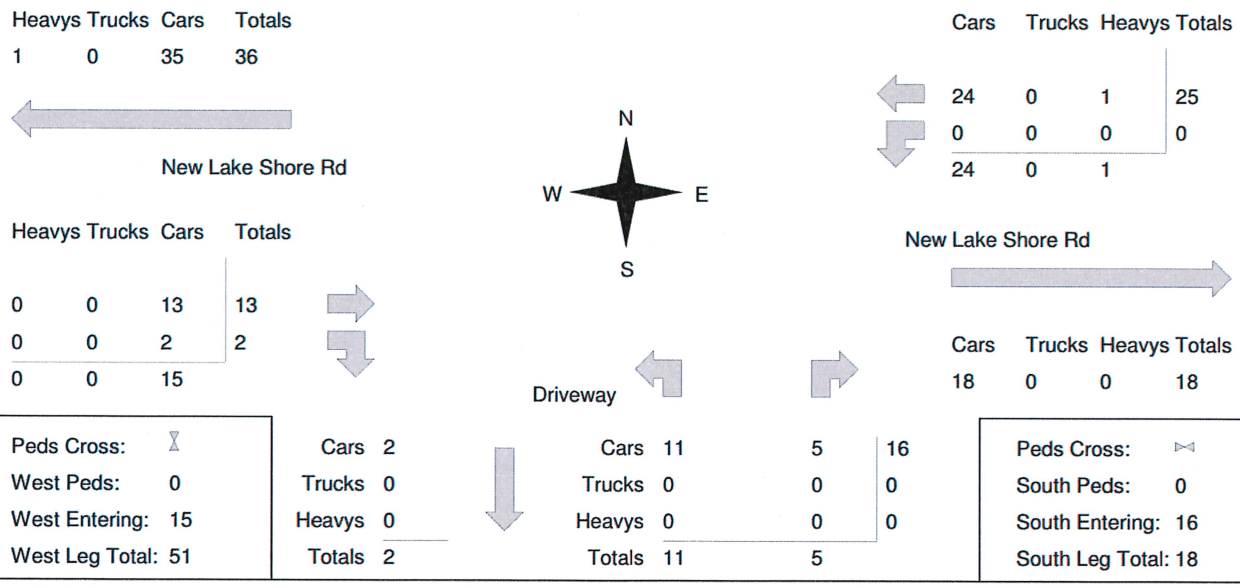
Weather conditions:
Clear/Dry

Person(s) who counted:
Cam

**** Non-Signalized Intersection ****

Major Road: New Lake Shore Rd runs W/E

East Leg Total: 43
East Entering: 25
East Peds: 12
Peds Cross:



Peds Cross:
West Peds: 0
West Entering: 15
West Leg Total: 51

Cars 2
Trucks 0
Heavys 0
Totals 2

Cars 11 5 16
Trucks 0 0 0
Heavys 0 0 0
Totals 11 5

Peds Cross:
South Peds: 0
South Entering: 16
South Leg Total: 18

Comments

14 New Lake Shore Rd

Mid-day Peak Diagram

Specified Period
From: 11:00:00
To: 14:00:00

One Hour Peak
From: 13:00:00
To: 14:00:00

Municipality: Port Dover
Site #: 0000000001
Intersection: New Lake Shore Rd & Driveway
TFR File #: 1
Count date: 6-Jun-2023

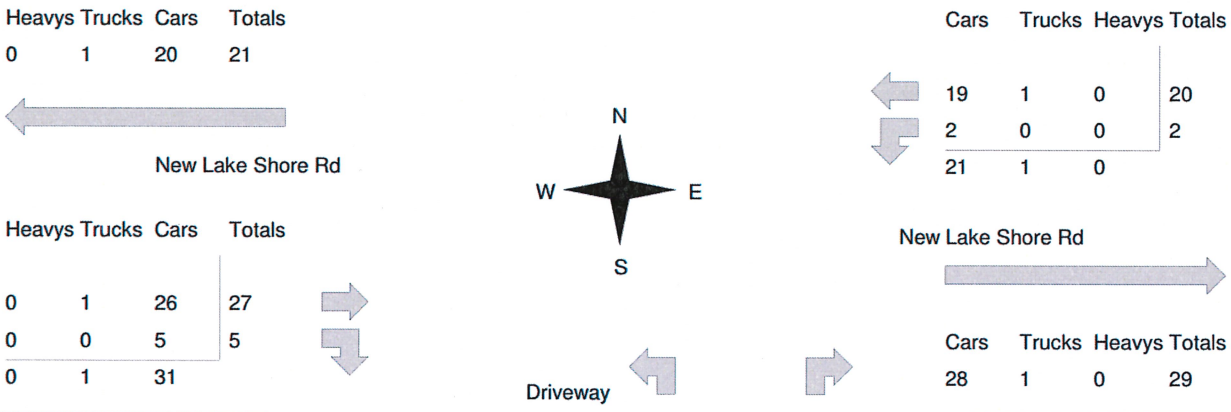
Weather conditions:
Clear/Dry

Person(s) who counted:
Cam

**** Non-Signalized Intersection ****

Major Road: New Lake Shore Rd runs W/E

East Leg Total: 51
East Entering: 22
East Peds: 1
Peds Cross:



Peds Cross:
West Peds: 0
West Entering: 32
West Leg Total: 53

Cars 7
Trucks 0
Heavys 0
Totals 7

Cars 1 2 3
Trucks 0 0 0
Heavys 0 0 0
Totals 1 2

Peds Cross:
South Peds: 0
South Entering: 3
South Leg Total: 10

Comments

14 New Lake Shore Rd

Afternoon Peak Diagram

Specified Period
From: 15:00:00
To: 18:00:00

One Hour Peak
From: 16:00:00
To: 17:00:00

Municipality: Port Dover
Site #: 0000000001
Intersection: New Lake Shore Rd & Driveway
TFR File #: 1
Count date: 6-Jun-2023

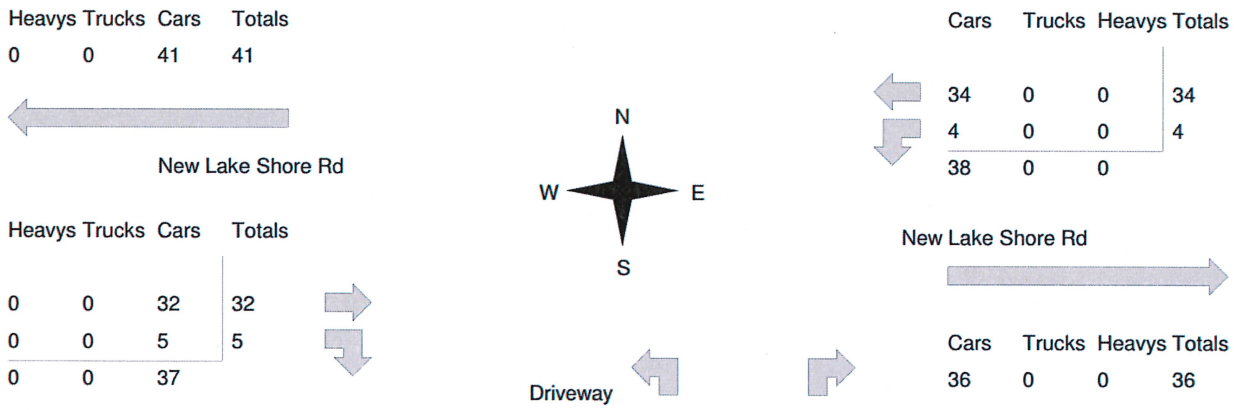
Weather conditions:
Clear/Dry

Person(s) who counted:
Cam

**** Non-Signalized Intersection ****

Major Road: New Lake Shore Rd runs W/E

East Leg Total: 74
East Entering: 38
East Peds: 1
Peds Cross:



Peds Cross:
West Peds: 0
West Entering: 37
West Leg Total: 78

Cars 9
Trucks 0
Heavys 0
Totals 9

Cars 7 4 11
Trucks 0 0 0
Heavys 0 0 0
Totals 7 4

Peds Cross:
South Peds: 0
South Entering: 11
South Leg Total: 20

Comments

14 New Lake Shore Rd

Total Count Diagram

Municipality: Port Dover
Site #: 0000000001
Intersection: New Lake Shore Rd & Driveway
TFR File #: 1
Count date: 6-Jun-2023

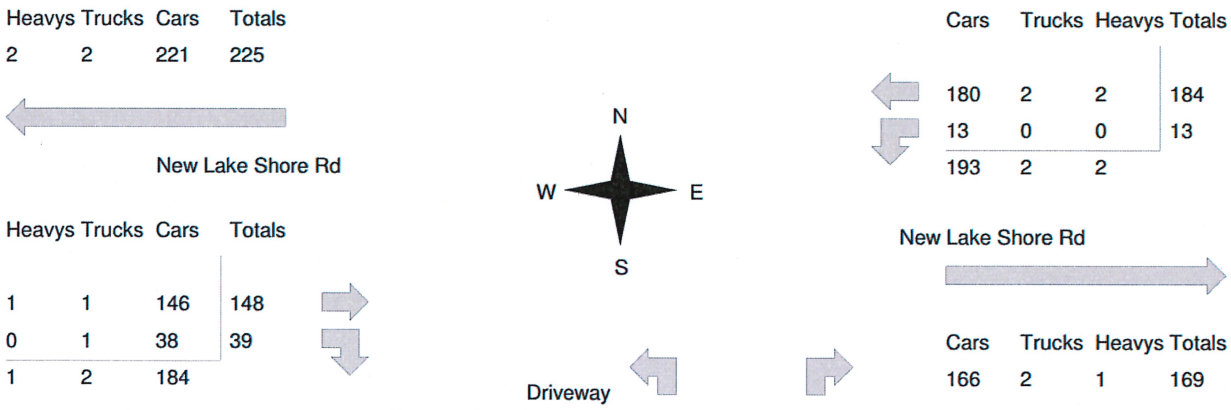
Weather conditions:
Clear/Dry

Person(s) who counted:
Cam

**** Non-Signalized Intersection ****

Major Road: New Lake Shore Rd runs W/E

East Leg Total: 366
East Entering: 197
East Peds: 32
Peds Cross:



Peds Cross:
West Peds: 0
West Entering: 187
West Leg Total: 412

Cars 51
Trucks 1
Heavys 0
Totals 52

Cars 41 20 61
Trucks 0 1 1
Heavys 0 0 0
Totals 41 21

Peds Cross:
South Peds: 3
South Entering: 62
South Leg Total: 114

Comments

Appendix B

ITE TRIP GENERATION MANUAL – 11TH EDITION REFERENCES

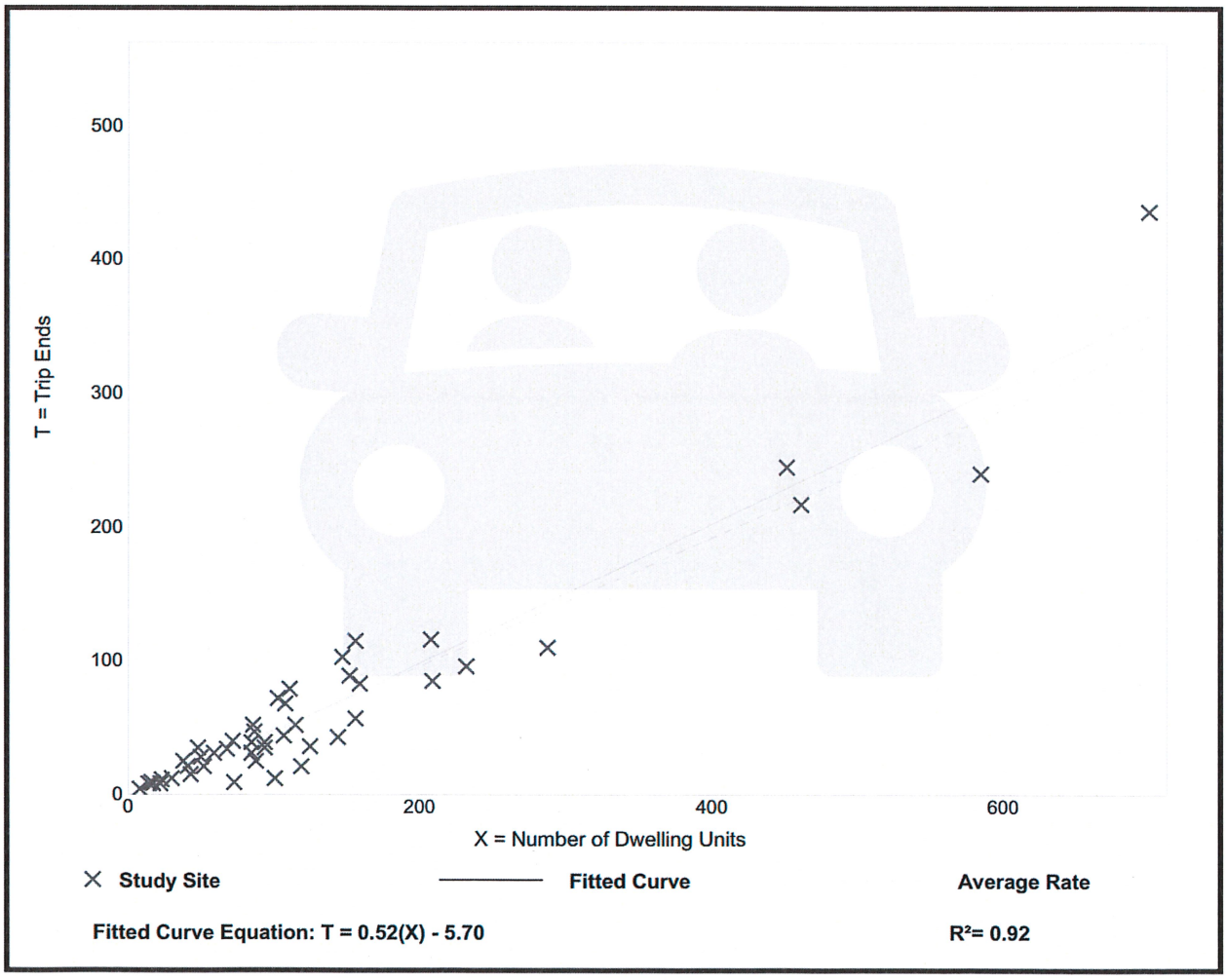
Single-Family Attached Housing
(215)

Vehicle Trip Ends vs: **Dwelling Units**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.
Setting/Location: **General Urban/Suburban**
Number of Studies: 46
Avg. Num. of Dwelling Units: 135
Directional Distribution: 31% entering, 69% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.48	0.12 - 0.74	0.14

Data Plot and Equation



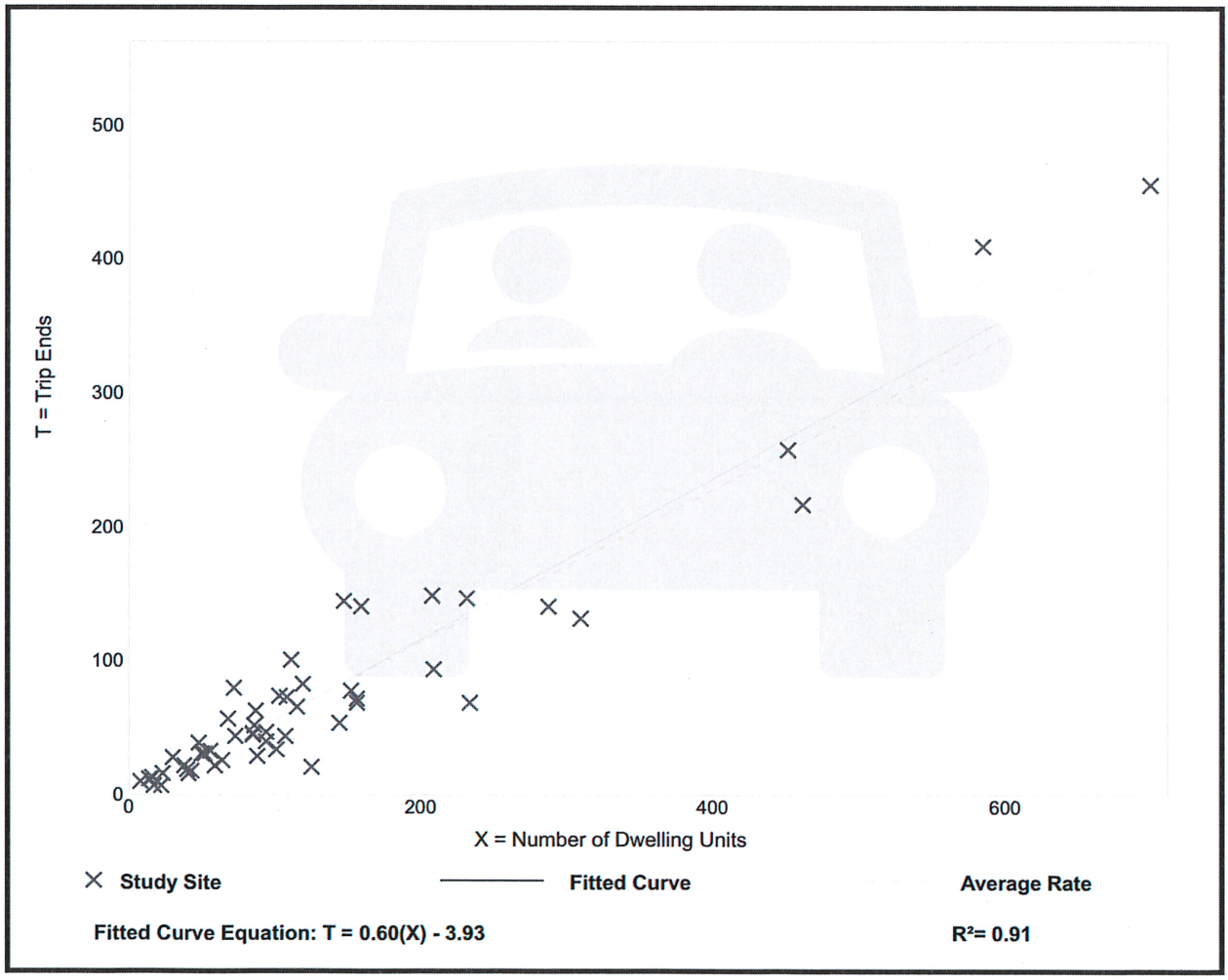
Single-Family Attached Housing
(215)

Vehicle Trip Ends vs: **Dwelling Units**
On a: **Weekday,**
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.
Setting/Location: **General Urban/Suburban**
Number of Studies: 51
Avg. Num. of Dwelling Units: 136
Directional Distribution: 57% entering, 43% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.57	0.17 - 1.25	0.18

Data Plot and Equation



Proposed Site Development Trip Generation and Distribution

Project: Ramhans Condos

Site: 38 Lakeshore Road, Port Dover, Ontario

Assumed Land Use (1): Single Family Attached Housing - ITE No. 215

Average Vehicle Trip Ends vs.: Dwelling Units

ITE Trip Generation Data collected on a: Weekday

AM Peak Hour:	0.48	= Average Rate	31	% Entering
			69	% Exiting
PM Peak Hour:	0.57	= Average Rate	57	% Entering
			43	% Exiting

Assumed Land Use (1): Single Family Attached Housing - ITE No. 215				
	Dwelling Units	**Trips Generated**	**Trips Entering**	**Trips Exiting**
AM Peak	28	13	4	9
PM Peak	28	16	9	7

Total Trips		
	Trips Entering	**Trips Exiting**
AM Peak	4	9
PM Peak	9	7

Appendix C

DETAILED SYNCHRO RESULTS

Proposed Site Access at New Lakeshore Road

Intersection	
Int Delay, s/veh	1.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	18	2	2	25	5	4
Future Vol, veh/h	18	2	2	25	5	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	20	2	2	27	5	4

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	22	0	52	21
Stage 1	-	-	-	-	21	-
Stage 2	-	-	-	-	31	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1593	-	957	1056
Stage 1	-	-	-	-	1002	-
Stage 2	-	-	-	-	992	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1593	-	956	1056
Mov Cap-2 Maneuver	-	-	-	-	956	-
Stage 1	-	-	-	-	1002	-
Stage 2	-	-	-	-	991	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.5	8.6
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	998	-	-	1593	-
HCM Lane V/C Ratio	0.01	-	-	0.001	-
HCM Control Delay (s)	8.6	-	-	7.3	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	0	-

Intersection	
Int Delay, s/veh	1.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	29	5	4	22	3	4
Future Vol, veh/h	29	5	4	22	3	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	32	5	4	24	3	4

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	37	0	67	35
Stage 1	-	-	-	-	35	-
Stage 2	-	-	-	-	32	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1574	-	938	1038
Stage 1	-	-	-	-	987	-
Stage 2	-	-	-	-	991	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1574	-	935	1038
Mov Cap-2 Maneuver	-	-	-	-	935	-
Stage 1	-	-	-	-	987	-
Stage 2	-	-	-	-	988	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.1	8.7
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	991	-	-	1574	-
HCM Lane V/C Ratio	0.008	-	-	0.003	-
HCM Control Delay (s)	8.7	-	-	7.3	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	0	-

Appendix D

SIGHT LINE CALCULATIONS

Proposed Site Access at New Lakeshore Road
Proposed Site Accesses at Brown Street

23-1496: 38 New Lakeshore Road, Port Dover, Ontario - Sight Line Analysis

Design Intersection Sight Distance (TAC Geometric Design Guide for Canadian Roads)

Design Speed: 60km/h (Posted Speed Limit = 50 km/h)

Table 9.9.3: Time Gap for Case B1, Left Turn from Stop

Design Vehicle	Time Gap (t_g)(s) at Design Speed of Major Road
Passenger car	7.5
Single-unit truck	9.5
Combination truck (WB 19 and WB 20)	11.5
Longer truck	To be established by road authority

Intersection Stopping Distance **(ISD)** = 0.278 V_{major} t_g

Where:

ISD = intersection sight distance (m)
(length of the leg of sight triangle along the major road)
V_{major} = design speed of the major road (km/h)
t_g = time gap for minor road vehicle to enter the major road (s)

ISD $_{passenger\ car}$ (left turn from stop) = 0.278 x 60 x 7.5 = **125 m**

Table 9.9.5: Time Gap for Case B2—Right Turn from Stop and Case B3—Crossing Maneuver

Design Vehicle	Time Gap (t_g)(s) at Design Speed of Major Road
Passenger car	6.5
Single-unit truck	8.5
Combination truck (WB 19 and WB 20)	10.5

ISD $_{passenger\ car}$ (right turn from stop) = 0.278 x 60 x 6.5 = **108 m**

RAMHANS DEVELOPMENT (OFF SITE)

Estimated Cost and Securities

Rev1 - Dec 2023 19

Project# 22-032

ITEM	DESCRIPTION	UNIT	APPROX. QUANTITY	UNIT PRICE	AMOUNT	SECURITY %	SECURITY AMOUNT
	A. STORM SEWERS						
1	Supply and install storm sewers:						
	a) EFO8 to STMH3 (450mm)	metre	8.90	$250.00	$2,225	100%	$2,225
	b) STMH3 to STMH4 (450mm)	metre	9.70	$250.00	$2,425	100%	$2,425
	c) STMH4 to STMH5 (450mm)	metre	80.4	$250.00	$20,100	100%	$20,100
	d) STMH5 to STMH6 (450mm)	metre	69.7	$250.00	$17,425	100%	$17,425
	e) STMH6 to STMH 7 (450mm)	metre	9.8	$250.00	$2,450	100%	$2,450
2	Supply and install precast concrete maintenance holes complete with benching:						
	a) STMH3 - 1200mm	L.S.	1	$6,500	$6,500	100%	$6,500
	b) STMH4 - 1200mm	L.S.	1	$6,500	$6,500	100%	$6,500
	c) STMH5 - 1200mm	L.S.	1	$6,500	$6,500	100%	$6,500
	d) STMH6 - 1200mm	L.S.	1	$6,500	$6,500	100%	$6,500
5	Flush and CCTV Video Storm System	L.S.	1	$2,500.00	$2,500	10%	$250
	TOTAL STORM SEWER				**$73,125**		**$70,875**

SECURITY SUMMARY

A.	STORM SEWERS	$70,875
B.	RECORD DRAWINGS (Included in Internal Site Works)	$0
	TOTAL SECURITIES NORFOLK COUNTY	$70,875

GRAND TOTAL

$70,875



RAMHAN CONDOS 38 NEW LAKESHORE RD.

NORFOLK COUNTY

Estimated Cost and Securities (ON SITE WORKS)

Rev0 - December 19, 2023 - 1st submission

Project#22-032

ITEM	DESCRIPTION	UNIT	APPROX. QUANTITY	UNIT PRICE	AMOUNT	SECURITY %	SECURITY AMOUNT
	A. SANITARY SEWERS						
1	Supply and install doghouse manhole SAMH1	L.S.	1	$7,500	$7,500	100%	$7,500
2	Supply and install all Sainitary services including all fittings (short side).	Each.	14	$800	$11,200	10%	$1,120
3	Supply and install all Sainitary services including all fittings. (long side)	Each.	14	$500	$7,000	10%	$700
4	Supply and install sanitary sewers:						
	a) SAMH1 to SAMH2 (200mm) External	metre	6.4	$150.00	$960	100%	$960
	a) SAMH1 to SAMH2 (200mm) Internal	metre	35.8	$150.00	$5,370	10%	$537
	b) SAMH2 to SAMH3 (200mm)	metre	43.8	$150.00	$6,570	10%	$657
	c) SAMH3 to SAMH4 (200mm)	metre	32.2	$150.00	$4,830	10%	$483
	d) SAMH3 to SAMH5 (200mm)	metre	58.3	$150.00	$8,745	10%	$875
	e) SAMH2 to SAMH6 (200mm)	metre	18.9	$150.00	$2,835	10%	$284
	f) SAMH6 to SAMH7 (200mm)	metre	58.4	$150.00	$8,760	10%	$876
5	Construct 1200mm dia. precast concrete maintenance holes:						
	a) SAMH2	L.S.	1	$4,500	$4,500	10%	$450
	b) SAMH3	L.S.	1	$4,500	$4,500	10%	$450
	c) SAMH4	L.S.	1	$4,500	$4,500	10%	$450
	d) SAMH5	L.S.	1	$4,500	$4,500	10%	$450
	e) SAMH6	L.S.	1	$4,500	$4,500	10%	$450
	f) SAMH7	L.S.	1	$4,500	$4,500	10%	$450
6	Flush and CCTV Video Sanitary System.	L.S.	1	$2,500	$2,500	10%	$250
	TOTAL SANITARY SEWERS				**$93,270**		**$16,941**
	B. WATERMAINS						
1	Connect new 100mm water service to existing 150mm watermain on Brown St. complete with water	L.S.	1	$1,500	$1,500	100%	$1,500
2	Supply and install 200mm dia. water service including all fittings and anodes.	metre	228	$100	$22,800	10%	$2,280
3	Supply and install water service including all fittings curbstop and anodes. (short side)	each	18	$500	$9,000	10%	$900
4	Supply and install water service including all fittings, curbstop and anodes. (long side)	each	10	$750	$7,500	10%	$750
5	Supply and install blowoff complete with anodes, valve, housing.	each	2	$1,200	$2,400	10%	$240
	TOTAL WATERMAIN				**$43,200**		**$5,670**

ITEM	DESCRIPTION	UNIT	APPROX. QUANTITY	UNIT PRICE	AMOUNT	SECURITY %	SECURITY AMOUNT
	C. STORM SEWERS						
1	Supply and install storm sewers:						
	a) STMH1 to CBMH1 (450mm)	metre	10.6	$250	$2,650	10%	$265
	b) CBMH1 to CBMH2 (450mm)	metre	30.0	$250	$7,500	10%	$750
	c) CBMH2 to CBMH3 (450mm)	metre	19.7	$250	$4,925	10%	$493
	d) CBMH3 to CB2 (300mm)	metre	31.7	$150	$4,755	10%	$476
	e) CB2 to CB1 (300mm)	metre	30.7	$150	$4,605	10%	$461
	f) CB2 to CB3 (300mm)	metre	34.7	$150	$5,205	10%	$521
	g) CBMH3 to CBMH4 (300mm)	metre	55.0	$150	$8,250	10%	$825
	h) CBMH4 to CB4 (300mm)	metre	13.5	$150	$2,025	10%	$203
	i) CB5 to STMH2 (300mm)	metre	19.3	$150	$2,895	10%	$290
	j) CB6 to STMH2 (300mm)	metre	14.8	$150	$2,220	10%	$222
	k) STMH2 to CBMH5 (300mm)	metre	14.5	$150	$2,175	10%	$218
	l) CBMH5 to CBMH6 (300mm)	metre	30.3	$150	$4,545	10%	$455
	m) STMH3 to EFO8 (450mm)	metre	30.3	$150	$4,545	10%	$455
	n) STMH3 to EFO8 (450mm)	metre	30.3	$150	$4,545	10%	$455
2	Construct precast concrete maintenance holes complete with benching:						
	a) CBMH1 - 1200mm	L.S.	1	$8,000	$8,000	10%	$800
	b) CBMH2 - 1200mm	L.S.	1	$8,000	$8,000	10%	$800
	c) CBMH3 - 1200mm	L.S.	1	$8,000	$8,000	10%	$800
	d) CBMH4 - 1200mm	L.S.	1	$8,000	$8,000	10%	$800
	e) CBMH5 - 1200mm	L.S.	1	$8,000	$8,000	10%	$800
	f) STMH2 - 1200mm	L.S.	1	$6,500	$6,500	10%	$650
4	Construct 600x600 precast concrete catch basins complete with grate, connections, and subdrains.	each	6	$1,700	$10,200	10%	$1,020
5	Construct Storm Water Storage Chambers	L.S.	1	$250,000	$250,000	10%	$25,000
6	Flush and CCTV Video Storm System	L.S.	1	$2,500	$2,500	10%	$250
	TOTAL STORM SEWER				**$370,040**		**$37,004**

ITEM	DESCRIPTION	UNIT	APPROX. QUANTITY	UNIT PRICE	AMOUNT	SECURITY %	SECURITY AMOUNT
	D. ROAD CONSTRUCTION						
1	Sub-excavation to a depth of 605mm below finish grade for proposed asphalt areas.	L.S.	1	$37,320	$37,320	10%	$3,732
2	Supply, place and compact 350mm Granular 'B' Type 2 100% crushed limestone for asphalt area.	tonne	2065	$20	$41,296	10%	$4,130
3	Supply, place and compact 150mm Granular 'A' 100% crushed limestone for asphalt area.	tonne	817	$25	$20,421	10%	$2,042
4	Supply, place and compact 65mm of HL8 base asphalt pavement for asphalt area.	tonne	369	$100	$36,871	10%	$3,687
5	Supply, place and compact 40mm of HL3 top asphalt pavement for asphalt area.	tonne	227	$130	$29,497	10%	$2,950
6	Supply, place and compact 350mm Granular 'B' Type 2 100% crushed limestone for road restoration on New Lakeshore Road.	tonne	46	$20	$910	100%	$910
7	Supply, place and compact 150mm Granular 'A' 100% crushed limestone for road restoration on New Lakeshore Road.	tonne	18	$25	$450	100%	$450
8	Supply, place and compact 65mm of HL8 base asphalt pavement for road restoration on New Lakeshore Road.	tonne	8	$100	$813	100%	$813
9	Supply, place and compact 65mm of HL3 top asphalt pavement road restoration on New Lakeshore Road.	tonne	10	$130	$1,300	100%	$1,300
10	Supply, place and compact 200mm Granular 'B' 100% crushed limestone for Driveways	tonne	306	$30	$9,173	10%	$917
11	Supply, place and compact 150mm Granular 'A' 100% crushed limestone for Driveways	tonne	212	$100	$21,168	10%	$2,117
12	Supply, place and compact 65mm of HL3 top asphalt pavement for Driveways	tonne	96	$100	$9,555	10%	$956
13	Supply, place and compact 150mm Granular 'A' 100% crushed limestone for Sidewalks	tonne	3	$30	$97	10%	$10
14	Supply, form and place 100mm thick 32 Mpa Concrete for Sidewalk restoration	m3	9	$230	$2,070	10%	$207
	TOTAL ROAD CONSTRUCTION				**$210,941**		**$24,219**
	E. LANDSCAPING						
1	Landscaping Allowance	L.S.	1	$30,000	$30,000	10%	$3,000
2	Supply and install silt fence pre-construction activities	metre	420	$35	$14,700	10%	$1,470
TOTAL ROAD CONSTRUCTION					**$44,700**		**$4,470**

ITEM	DESCRIPTION	UNIT	APPROX. QUANTITY	UNIT PRICE	AMOUNT	SECURITY %	SECURITY AMOUNT

SECURITY SUMMARY

A.	SANITARY SEWERS	$16,941
B.	WATERMAIN	$5,670
C.	STORM SEWERS	$37,004
D.	ROAD CONSTRUCTION	$24,219
E.	LANDSCAPING ALLOWANCE	$4,470
F.	AS RECORDED DRAWINGS	$3,500
	TOTAL SECURITIES NORFOLK COUNTY	$91,804

GRAND TOTAL

$91,804



D-2 COMPATIBILITY ASSESSMENT

38 New Lake Shore Road, Port Dover ON

October 5, 2022 RV1

Prepared for:

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Project 1085

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ATTACHMENTS

Attachment A: Subject Site Layout, Location and Zoning Figures
Attachment B: Separation Distance Figures
Attachment C: Noise and Odour Figures, Noise Measurement Data
Attachment D: Port Dover WWTP ECA

1.0 INTRODUCTION

CCS Engineering Inc. (CCS) was retained by Ramhams Investments Inc to work with G. Douglas Vallee Limited to prepare D-2 Land Use Compatibility Assessment in accordance with "D-2 Compatibility between Sewage Treatment and Sensitive Land Use" published by the Ontario Ministry of the Environment Conservation and Parks (MOECP) as Guideline D-2 (D-2 Guideline) to assess potential impacts at the proposed development at 38 New Lake Shore Road, Port Dover ON (subject property).

The purpose of this assessment is to determine if the Port Dover Wastewater Treatment Plant (WWTP) noise, odour, vibration, light or dust emissions might adversely impact the subject property sensitive land uses and show that the proposed development is appropriate given the proximity to the WWTP in accordance with MOE D-2 and D-6 Guidelines.

This report describes the surrounding residential and recreational land uses, focusing on the nearby sensitive receptors to the WWTP and the subject property.

2.0 SITE AND NEIGHBOURHOOD DESCRIPTION

The subject property is located at 38 New Lake Shore Road, Port Dover ON.

The subject property is located to the east of residential town houses located on New Lake Shore Road and north west of residential town houses located on Brown St. Directly to the east of the subject property is open space undeveloped field. North of the subject property, north of New Lake Shore Road is Norfolk County Kinsmen Park (ball diamonds, dog park, etc.).

A satellite site location (Figure 1) and Norfolk County zoning map (Figure 2) given in Attachment A show the general site location and subject property.

2.1 GUIDELINE D-2 LAND USE COMPATIBILITY

Ministry of Environment Conservation and Parks Guideline D-2 Compatibility between Sewage Treatment and Sensitive Land Use (D-2 Guideline) outlines recommended separation distances by capacity classification of the treatment plant, identifying an area of influence and establishing recommended minimum setback distances between the sewage treatment operations and sensitive land uses. The D-2 Guideline is a specific application of general compatibility concepts contained in Guideline D-1.

Guideline D-1 indicates that adverse effects may be related to, but not limited to, one or more of the following:

1. noise and vibration;
2. visual impact (only for landfills under O. Regulation 347);
3. odours and other air emissions;
4. litter, dust and other particulates; and
5. other contaminants.

Guideline D-2 provides recommended separation distances relative to the capacity of the sewage treatment plant. The Ministry has identified in the D-2 Guideline potential influence areas as areas within which adverse effects may be experienced. These capacities and distances are summarized in the table below.

Sewage Treatment Plant Capacity	Recommended Separation Distance (m)	Minimum Separation Distance (m)
Equal to or Less than 500 m3/d	100	Case by case basis
Greater than 500 m3/d and less than 25000 m3/d	150	100
Greater than 25000 m3/d	Case by case basis	Case by case basis

Guideline D-2 suggests that distances typically be measured between property lines but can also be measured from a specific source to sensitive receptor (for example, an edge of a pond or mechanical pump station, to a property line, a point of reception in an outdoor living area or plane of window on a house).

Guideline D-2 indicates the following:

> **Measuring separation distance (3.1.1)**
>
> Separation distances will be measured from the periphery of the noise/odour-producing source-structure, to the property/lot line of the sensitive land use.
> Inquiries regarding the point(s) of reception for noise, or point(s) of impingement for odour, should be directed to MOEE Noise Assessment and MOEE Air Approvals respectively.

The Ministry of Environment Conservation and Parks “Requirements for Odour Emissions” outlines how the distance should be measured as depicted below:

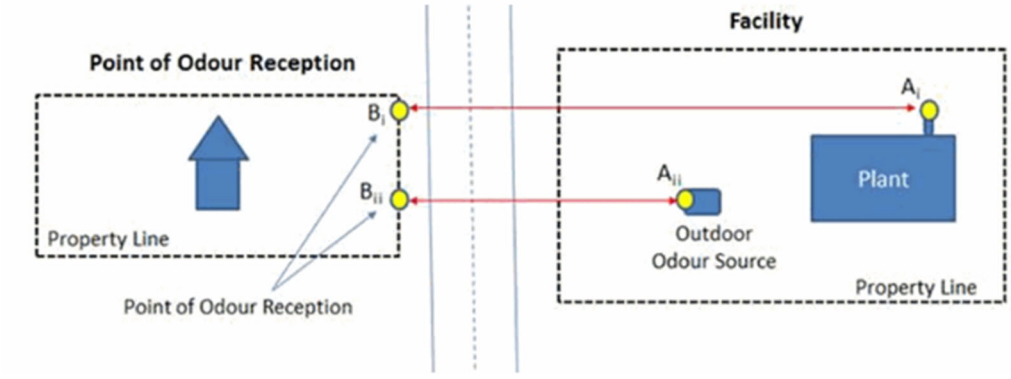


Figure 2: A depiction showing how to calculate the distance between point A, a odour source, and the property boundary of a point of the odour reception, point B.

Furthermore, Guideline D-6 Compatibility between Industrial Facilities (D-6 Guideline) indicates the following for measuring and providing separation distances and buffers:

Ancillary land uses (sensitive land use) (4.4.4)

For sensitive land uses, where the established use of on-site lands are not of a sensitive nature, such as a parking lot servicing a hospital, the land area comprising the parking lot may be included within the separation distance (i.e. measure from where the actual sensitive activities occur).

Note: This approach could restrict future expansion of existing land uses. See Section 4.2.4, "On-Site Separation Distance" also.

On-site separation distance (4.2.4)

There is merit in providing a required separation distance on the facility site. However, there may be a change in industrial land use that does not require a change in zoning, but which nevertheless produces a different influence area not covered off by the existing on-site buffer area.

Therefore, when separation distance is provided partially or entirely on-site, the Ministry recommends that where feasible, some site-specific notification (e.g. spot zoning or requirement for re-zoning by the municipality) is put in place to ensure future changes in use which would not normally require re-zoning will comply with this guideline. The same problem could occur when a buffer area is provided on the sensitive site.

3.0 SEWAGE TREATMENT CLASSIFICATION AND SURROUNDING LAND USE

The Port Dover WWTP is classified as having an average daily influent flow (m3/d) of 5400 m3/d currently and upon completion of construction of all approved works would be 6,100 m3/d.

The WWTP would be considered less than 25000 m3/d. The anticipated actual operation of the WWTP, approximately 6100 m3/d, is only about 25% of the 25000 m3/d maximum capacity.

Based on the sewage treatment capacity, Guideline D-2 recommended separation distance and minimum separation distance are given below.

Sewage Treatment Plant Capacity	**Recommended Separation Distance (m)**	**Minimum Separation Distance (m)**
Greater than 500 m3/d and less than 25000 m3/d	150	100

Figure 3 in Attachment B shows a recommended separation distance of 150 m from the nearest potential odour source at the WWTP – the head house building or preliminary treatment building. The head house is the nearest potential odour source located on the WWTP property where there can be an exhaust from the building. This is a conservative potential source since the influent receiving and pumping operations are located inside the building.

Five (5) existing residential houses on New Lake Shore Road (80 – unit 20 to 25) and eight (8) existing town house units on Brown Street (139 – 153) are all within the recommended separation distance of 150 m.

A portion of the north east corner of the subject property is located within the recommended distance or 150m.

Figure 4 in Attachment B shows the minimum recommended separation distance of 100 m from the nearest potential odour source at the WWTP – the head house building or preliminary treatment building. No residential houses are within this minimum recommended distance. The residential development to the SE of the WWTP has a tennis court within the minimum distance.

The subject property would not be located within the 100 m minimum recommended separation distance as measured in accordance with Guideline D-2 - 3.1.1, MOECP Requirements for Odour Emissions and Guideline D-6 4.2.4 and 4.4.4.

The corporation of Norfolk County must comply with the terms and conditions of the AMENDED ENVIRONMENTAL COMPLIANCE APPROVAL NUMBER 7884-C94HQT Issue Date: January 14, 2022, which include but are not limited to the following:

f. a spill prevention and contingency plan, consisting of procedures and contingency plans, including notification to the District Manager, to reduce the risk of spills of pollutants and prevent, eliminate or ameliorate any adverse effects that result or may result from spills of pollutants;

g. procedures for receiving, responding and recording public complaints, including recording any follow up actions taken.

i. a summary of any complaints received and any steps taken to address the complaints;

4.0 NOISE IMPACT ASSESSMENT

4.1 INDUSTRIAL NOISE IMPACTS

NPC 300 is the Environmental Noise Guideline for Stationary and Transportation Sources - Approval and Planning outlining the proper control of sources of noise emissions to the environment. The Ministry of the Environment, Conservation and Parks (MOECP) ensures sources of emissions to the environment are adequately controlled to prevent potential negative effects.

In the province of Ontario, contaminants released by local industrial and commercial facilities are regulated by the MOECP under the Environmental Protection Act. Other Acts including the Planning Act, Municipal Act, etc. establish rules that may require assessment of the effects of noise emissions. The definition of "contaminant" includes sound. Industrial facilities are required to meet NPC 300 guidelines that may apply to limit exposure to noise and vibration that can affect human health and the environment.

The applicable noise limit at the sensitive point of reception is the higher of the existing ambient sound level from road traffic/existing approved industry (background sound level) or the exclusion limit outlined in the NPC 300 guideline.

MOECP NPC 300 provides various definitions for noise sensitive buildings and uses:

> **"Noise sensitive commercial purpose building"**
>
> means a building used for a commercial purpose that includes one or more habitable rooms used as sleeping facilities such as a hotel and a motel.
>
> **"Noise sensitive institutional purpose building"**
>
> means a building used for an institutional purpose, including an educational facility, a day nursery, a hospital, a health care facility, a shelter for emergency housing, a community centre, a place of worship and a detention centre. *A place of worship located in commercially or industrially zoned lands is not considered a noise sensitive institutional purpose building.*
>
> **"Noise sensitive land use"** means:
>
> - a property of a person that accommodates a dwelling and includes a legal nonconforming residential use; or
> - a property of a person that accommodates a building used for a noise sensitive commercial purpose; or
> - a property of a person that accommodates a building used for a noise sensitive institutional purpose.
>
> **"Noise sensitive space"**
>
> means the living and sleeping quarters of dwellings and sleeping quarters of noise sensitive commercial or institutional land uses. Examples include, but are not limited to bedrooms, sleeping quarters such as patient rooms, living/dining rooms, eat-in kitchens, dens, lounges, classrooms, therapy or treatment rooms, assembly spaces for worship, sleeping quarters of detention centres.

4.2 SEWAGE TREATMENT PLANT NOISE IMPACTS

The WWTP site and operation was toured on August 3, 2022 and noise measurements were taken for stationary sources at the wastewater treatment plant.

Noticeable stationary noise sources were the surface aerator motors located at the aeration tanks.

The stationary noise source measurement locations from the WWTP system are shown in Figure 5 in Attachment C. These outline sound level measurements on the WWTP western driveway at the sludge loading rack of 46.6 dBA (the surface aerator motors were audible at this location), and sound level measurements at the SW corner of the WWTP property at 46.4 dBA (no WWTP process noise was audible at this location). .

The MOECP NPC 300 sound level limits range between 45 and 50 dBA for a Class 2 area.

A class 2 area is defined as an area with an acoustical environment that has qualities representative of a class 1 urban area with sound levels dominated by the activities of people and traffic during the day time and a class 3 rural area with sounds having little or no road traffic during the night time.

The subject property and surrounding area would be classified as a Class 2 area.

Based on sound level measurements at these locations, the potential sound levels at the subject property will be below MOECP NPC 300 limits of 45 dBA at night.

Sound levels from current stationary WWTP sources at the subject property were not audible. Future WWTP upgrades include removing the surface aeration system on the aeration tanks and replacing it with a bubble diffuser system. Mechanical equipment will be located inside a mechanical building onsite and not outdoors on the aeration tank structure.

Future upgrades to the WWTP will remove stationary noise sources and result in even lower potential noise emissions from the WWTP operation. Sound impacts will be lower than those measured during the site visit review which were below MOECP NPC 300 limits of 45 dBA at night at the subject property.

Mobile noise sources at the WWTP could be truck traffic. Facility staff indicated that all truck traffic comes onto the WWTP site from the north off of Highway 6. Solids management trucks come on site one (1) or two (2) times per year for a few days to remove underground stored solids. The site could accept approximately 8 to 10 septic trucks per day – approximately one truck per hour.

Truck movement will be along on the paved driveway to the north west side of the WWTP. Driveways and parking areas at the WWTP are paved. Truck movements are 10 km/hr on site.

Based on the speed, location and frequency of truck traffic at the WWTP site, sound levels at the subject property will be insignificant compared to road traffic along New Lakeshore and Highway 6.

Secondary noise screening calculations are attached showing that the predicted sound levels at the subject property associated with hourly WWTP truck traffic conservatively running for 10 minutes at the nearest location (SW corner of WWTP site – where no truck would run for 10 minutes or any period of time) is below 45 dBA.

The sound impacts associated with the WWTP operations (aeration motor drive, truck traffic) are below the NPC 300 sound level limits at the north east corner of the subject property.

The rest of the subject property would experience even lower potential noise levels than the NE corner of the subject property since it is further away from the WWTP.

The measurements, calculations and observations indicated that the subject property will not be impacted by the WWTP noise sources.

5.0 ODOUR AND DUST

The subject property is located at 38 New Lake Shore Road, Port Dover ON.

The subject property NE corner is located approximately 65 m from the SW corner of the WWTP property (property line to property line). The nearest potential odour source at the WWTP is the head house building or preliminary treatment building general roof exhaust which is located approximately 125 m from the subject property NE corner.

Prevailing winds are typically from the West. The subject property is not typically down wind from the WWTP. The subject property is not expected to typically be in the path of prevailing winds coming from the WWTP property and therefore would not be subject to potential fugitive odour emissions from the WWTP.

The existing residential development to the E of the WWTP (SE development on New Lakeshore and E development along Woodhouse Ave) could typically be impacted by prevailing winds coming from the WWTP site with prevailing winds generally coming from the W across the WWTP site towards the E.

The Port Dover WWTP consists of an enclosed head house building or preliminary treatment building which has a general exhaust on the roof. It is unknown whether there is any odour emission control at this general exhaust, however, it could be easily implemented if there ever were any complaints. Potential septic trucks would discharge their effluent into this building. This represents the nearest potential odour source to the subject property. It is approximately 125 m to the NE corner of the subject property, which is greater than the recommended D-2 minimum separation distance of 100 m.

During the site visit on August 3, 2022, no odour was observed based on detected smell around the head house building or preliminary treatment building to the N, S, E or W.

Winds were coming from the S and going towards the N during the site visit August 3, 2022.

Effluent from the head house building or preliminary treatment building will be directed to the outdoor primary tanks, aeration tanks and then clarifier tanks all situated north of the head house preliminary treatment building.

During the site visit on August 3, 2022, slight odour was observed based on detected smell within 10 feet of the aeration and clarifier tanks. It was an earthy or musty type odour and was not strong or offensive. No odour was detected along the ring road adjacent to these tanks to the E, N or W of the outdoor primary tanks, aeration tanks and clarifier tanks.

The outdoor primary tanks, aeration tanks and clarifier tanks all have five foot high closed fencing around the tanks. These fence enclosures help to reduce any potential fugitive odours emissions associated with the tanks and restrict ambient winds from blowing across the surface of the tanks (this also prevents tank surfaces freezing in the winter).

These WWTP tanks are located between 180 m and 140 m from the subject property NE corner.

Figure 6 shows the locations where odour was detected (orange “x’s”) and where no odour was detected (yellow “x’s”) at the WWTP.

Based on the site review observations, odour detections, the WWTP tanks and operations locations, and the separation distances between the WWTP potential odour sources and the subject property, the potential for odour impacts at the subject property from the WWTP is considered to be negligible.

The WWTP site is paved. There are no dust impacts expected from the WWTP. There are no operations that would impart significant dust emissions from the WWTP. The proposed modifications to the WWTP do not include process or site changes that would be a source of significant dust emissions.

6.0 CONCLUSIONS AND RECOMMENDATIONS

Based on the Compatibility Assessment in accordance with D-2 Guideline and site visit review, the subject property located at 38 New Lake Shore Road, Port Dover ON is not expected to be adversely impacted by the Port Dover Wastewater Treatment Plant (WWTP) with noise, dust, or odour emissions.

The subject property is not located within the D-2 Guideline minimum recommended separation distance of 100 m and only a portion of the North East corner of the subject property (where a proposed stormwater pond, landscaping and parking would be) is located within the recommended distance of 150 m. D-2 Guidelines recommend these separation distances for WWTP systems up to 25,000 m3/d. The Port Dover WWTP will be approximately 6100 m3/d, is only about 25% of the allowable 25000 m3/d maximum capacity for these separation distances. Under these circumstances and considering the proposed WWTP upgrades (removal of surface aerators, mechanical equipment in a building, potential for odour abatement on the headhouse exhaust), the D-2 Guideline minimum recommended separation distance of 100 m is more appropriate than the 150 m recommended separation distance.

Five (5) existing residential houses on New Lake Shore Road (80 – unit 20 to 25) and eight (8) existing town house units on Brown Street (139 – 153) are all within the recommended separation distance of 150 m.

The subject property proposed development does not have any condominiums within the 150 m separation distance.

Prevailing winds are typically from the West. The subject property would typically not be down wind from the WWTP. The subject property is not expected to be impacted by potential odour from the WWTP due to prevailing winds.

The WWTP outdoor primary tanks, aeration tanks and clarifier tanks all have five foot high closed fencing around the tanks. These fence enclosures help to reduce any potential fugitive odour emissions associated with the tanks and restrict ambient winds from blowing across the surface of the tanks (this also prevent tank surfaces freezing in the winter). These tanks are located in the center of the WWTP property between 140 and 180 m from the NE corner property line of the subject property.

The noise measurements and noise calculations show that the subject property will not be impacted by potential stationary or mobile noise sources from the WWTP operations. WWTP future operations will be removing current stationary noise sources and enclosing some

mechanical equipment indoors. This would further reduce potential noise emission from the WWTP operations.

The WWTP site is paved and is not a source of potential dust emissions.

The subject property is not located within the 100 m minimum recommended separation distance as measured in accordance with Guideline D-2 Section 3.1.1, MOECP Requirements for Odour Emissions, and Guideline D-6 4.2.4 and 4.4.4.

The NE corner of the subject property is a stormwater management pond, landscaping and parking areas, where there are no sensitive receptor areas. This design enables no sensitive receptors to be located within the 150 m recommended separation distance in accordance with the Guideline D-2 - 3.1.1, and Guideline D-6 4.2.4 and 4.4.4.

It is recommended that the subject property development include a warning clause such as the following that would serve to warn potential buyers about odour nuisance that might occur infrequently:

> "Due to the proximity to the Norfolk County Port Dover Wastewater Treatment facility, odour levels on this property may occasionally cause concern to some individuals".

This recommendation follows MOECP guidance per Guideline D-3 Section 4.0 and Guideline D-6 Section 4.10.6 per:

> **Comments on sensitive land use applications (4.0)**
>
> … [1] In cases where the level of odour nuisance is minimal, occurring sporadically and infrequently despite the application of all reasonable and practical on-site mitigation measures, the Ministry may request that the subdivision agreement for new developments require warnings in offers of purchase and sale for potentially affected building lots. Such warnings would advise prospective buyers of the presence of a sewage treatment plant in the area, and of the possible presence of related odours.
>
> **Environmental warnings for sensitive land uses (4.10.6)**
>
> When the new development is sensitive, the Ministry recommends that a warning of anticipated nuisance effects be included in any offers of purchase and sale. A means of notifying ensuing purchasers should be determined by the local municipality. A warning may be included in a document which can be registered on title according to the Ministry of Consumer and Commercial Relations Bulletin No. 91003, "Environmental Warnings/Restrictions" (Appendix D).

Based on the nature of the WWTP operation, system site layout and process locations, and the separation distance to the subject property, CCS Engineering is of the opinion that the subject property located at 38 New Lake Shore Road, Port Dover ON is not expected to be adversely impacted by the Port Dover WWTP operations with noise, dust, or odour emissions.

If you have any questions, please contact the undersigned.

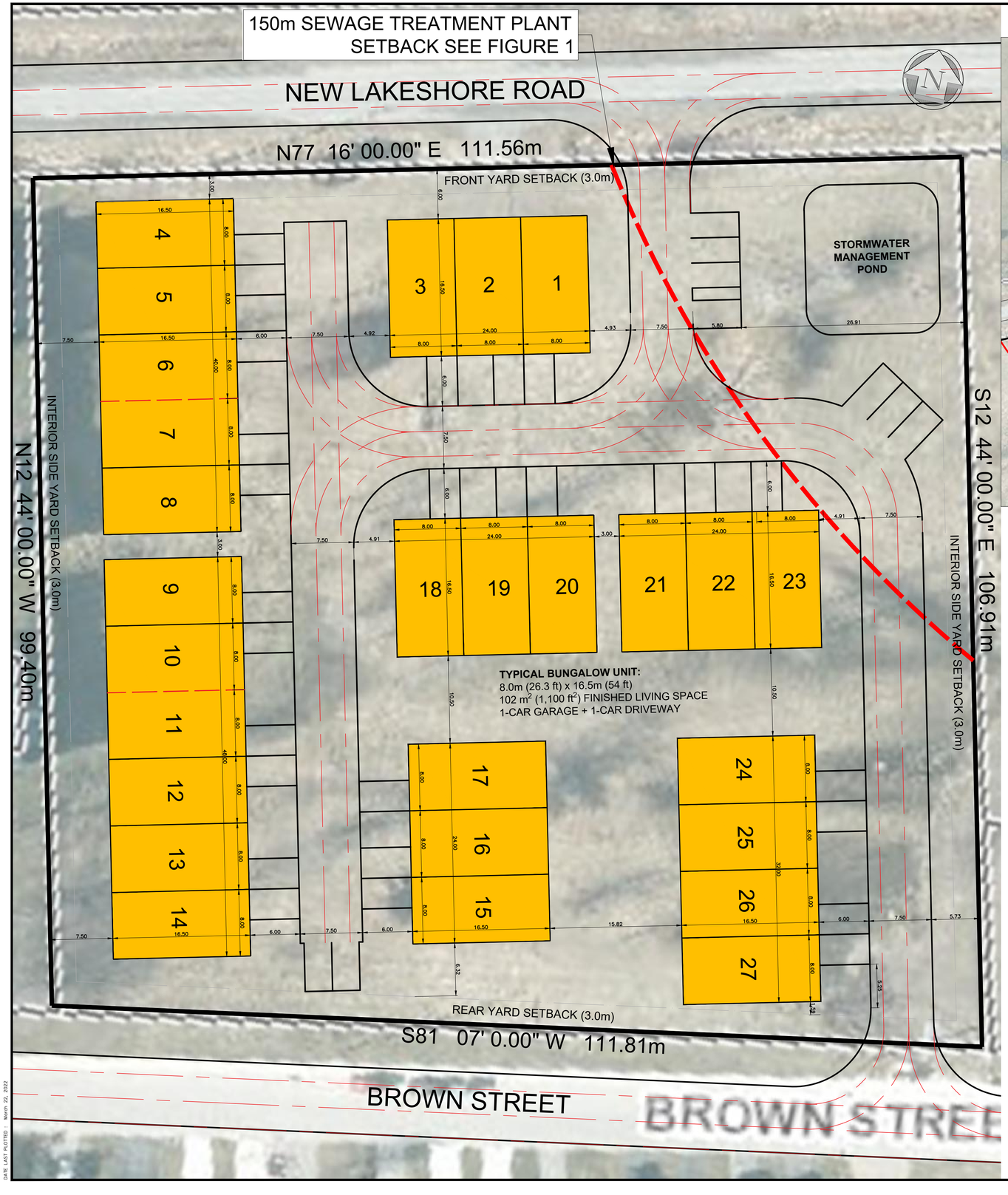
Yours truly,
CCS Engineering Inc.



Jim Anderson, M.Eng., P.Eng.
Principal
JA/JA
Attachments

ATTACHMENT A

SUBJECT SITE LAYOUT
LOCATION AND ZONING FIGURES



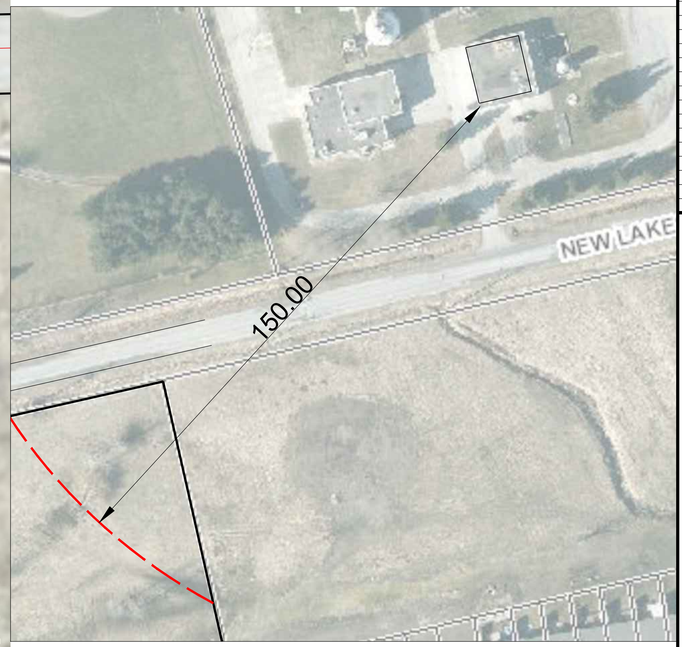


FIGURE 1

150m STP SETBACK

NTS

REV. No.	DATE	REVISION

NOTE:
THE CONTRACTOR IS CAUTIONED THAT ALL OF THE EXISTING UTILITIES ARE NOT INDICATED ON THIS DRAWING. THE CONTRACTOR MUST ARRANGE FOR LOCATES FROM EACH AREA UTILITY COMPANY PRIOR TO ANY CONSTRUCTION OR EXCAVATION. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR THE PROTECTION OF ALL UTILITIES INCLUDING THOSE NOT INDICATED ON THIS DRAWING. G. DOUGLAS VALLEE LTD. CAN NOT ACCEPT RESPONSIBILITY FOR DAMAGE TO ANY EXISTING UTILITY WHICH MAY OR MAY NOT BE INDICATED ON THIS DRAWING.

SCALE:
0 5 10 15
HORIZONTAL : 1:250

vallee
Consulting Engineers, Architects & Planners
G. DOUGLAS VALLEE LIMITED
2 TALBOT STREET NORTH
SIMCOE, ONTARIO N3Y 3W4
(519) 426-6270

Stamp

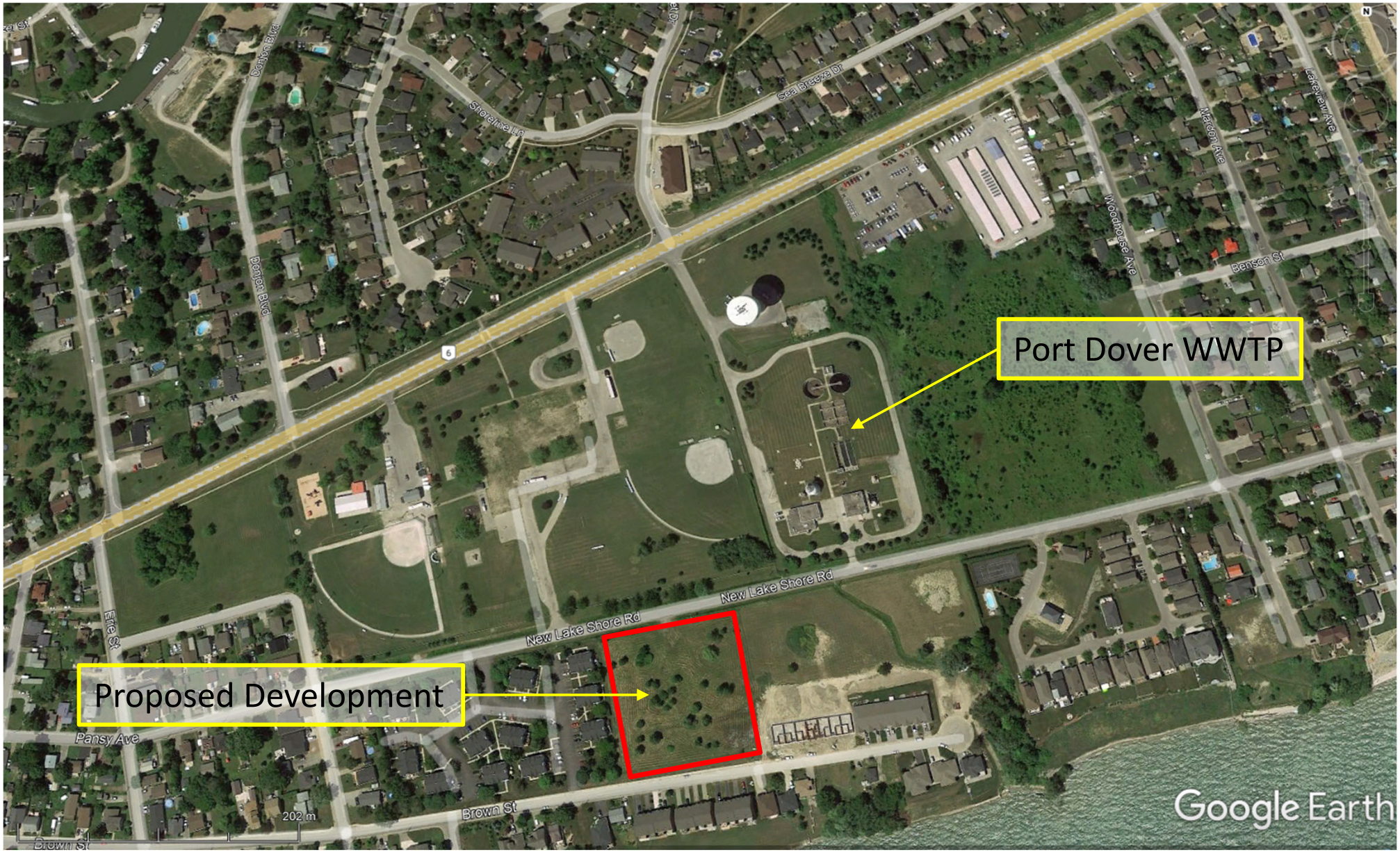
PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION

Project Title
RAMHANS CONDOS
38 NEW LAKESHORE ROAD
PORT DOVER

Drawing Title
PROPOSED SITE PLAN - OPT. 1a

Designed by :	Drawn By : NBN / LHR
Checked by :	Date Started : MARCH 22, 2022
Drawing Scale : 1:250	Drawing No. 01
Project No. 22-032	

DATE LAST PLOTTED : March 22, 2022



Source: Google Earth

Approximate Scale Metres

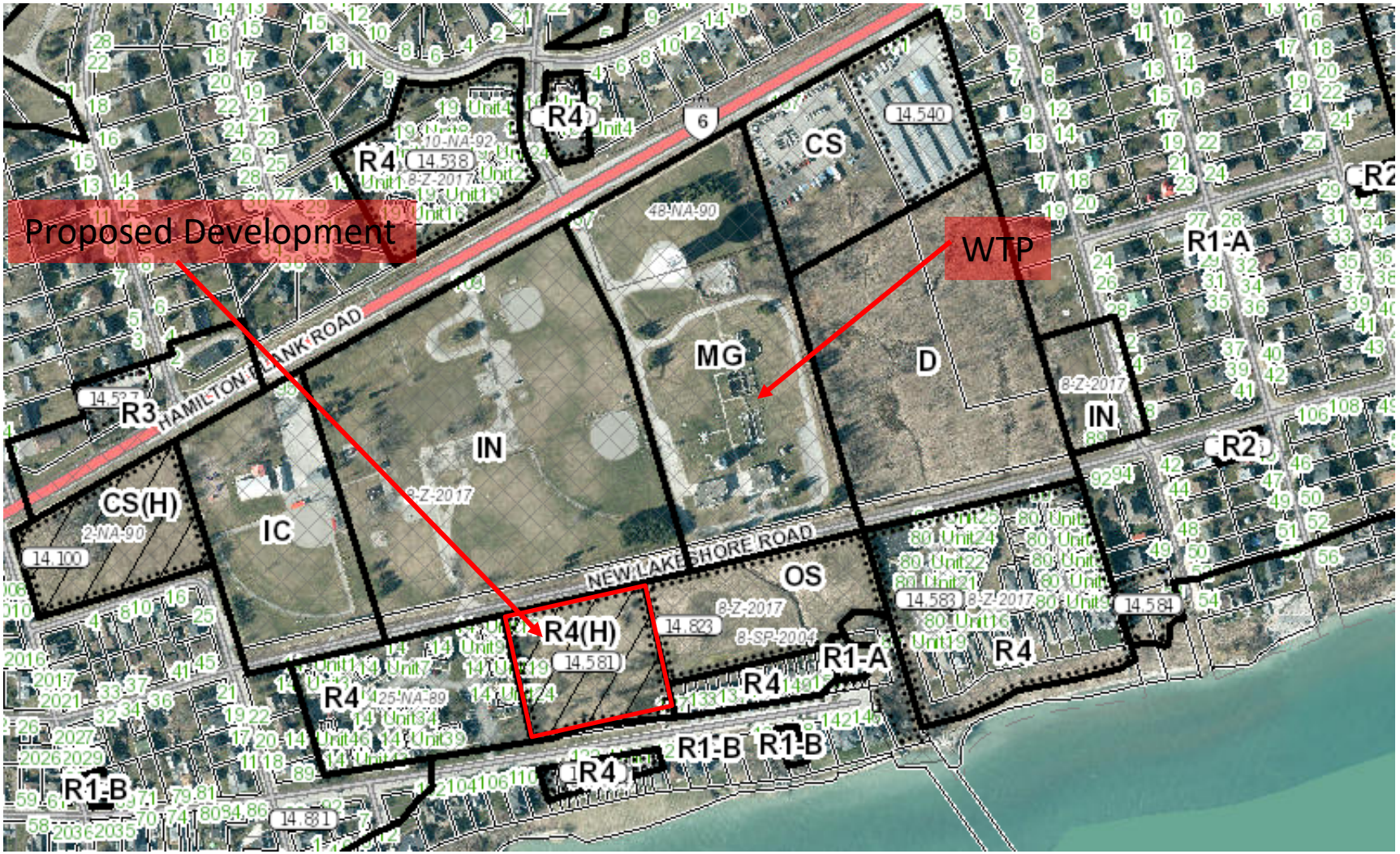
0 200

CCS Engineering Inc.

SITE LOCATION
28 New Lake Shore Road
PORT DOVER, ONTARIO

By: JA	Date: 9 Aug 2022	Project No. 1085

Figure 1



R- Residential, IC – Community Institutional, IN - Neighbourhood Institutional, OS – Open Space, D- Development Zone, MG – General Industrial, CS – service Commercial

Norfolk County Kinsmen Park = IC – Community Institutional and IN - Neighbourhood Institutional. Port Dover WTP = MG – General Industrial

Source: Norfolk County Community Web Map

Approximate Scale 100 m

CCS Engineering Inc.

ZONING
28 New Lake Shore Road
PORT DOVER, ONTARIO

By: JA	Date: 9 Aug2022	Project No. 1085

Figure 2

ATTACHMENT B

SEPARATION FIGURES



Source: Google Earth

Approximate Scale Metres

0 150

CCS Engineering Inc.

RECOMMENDED SEPARATION
28 New Lake Shore Road
PORT DOVER, ONTARIO

By: JA	Date: 12 Aug 2022	Project No. 1085

Figure 3



Source: Google Earth

Approximate Scale Metres

0 100

CCS Engineering Inc.

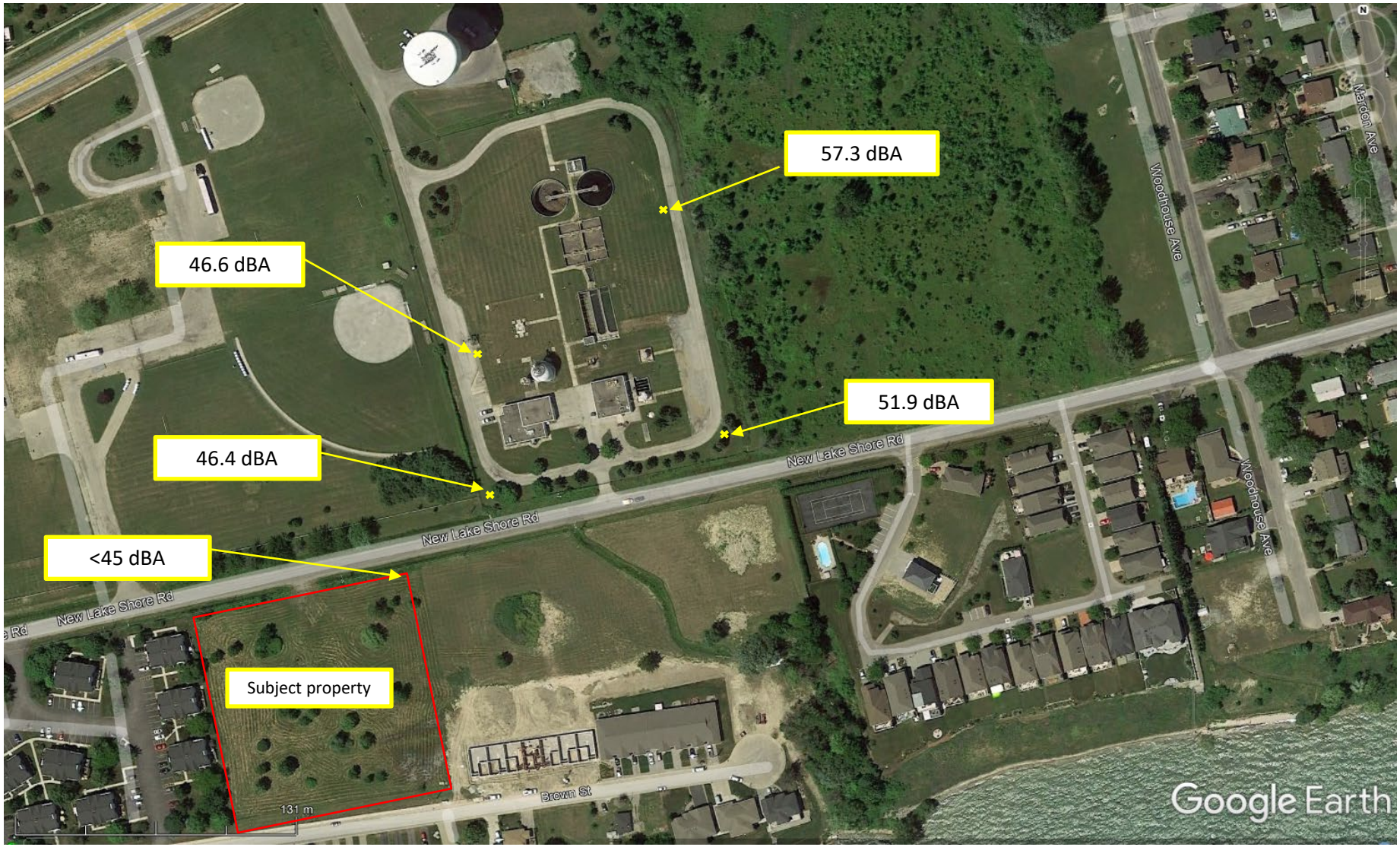
MINIMUM RECOMMENDED SEPARATION
28 New Lake Shore Road
PORT DOVER, ONTARIO

By: JA	Date: 12 Aug 2022	Project No. 1085

Figure 4

ATTACHMENT C

NOISE and ODOUR FIGURES
NOISE DATA



Source: Google Earth

Approximate Scale Metres

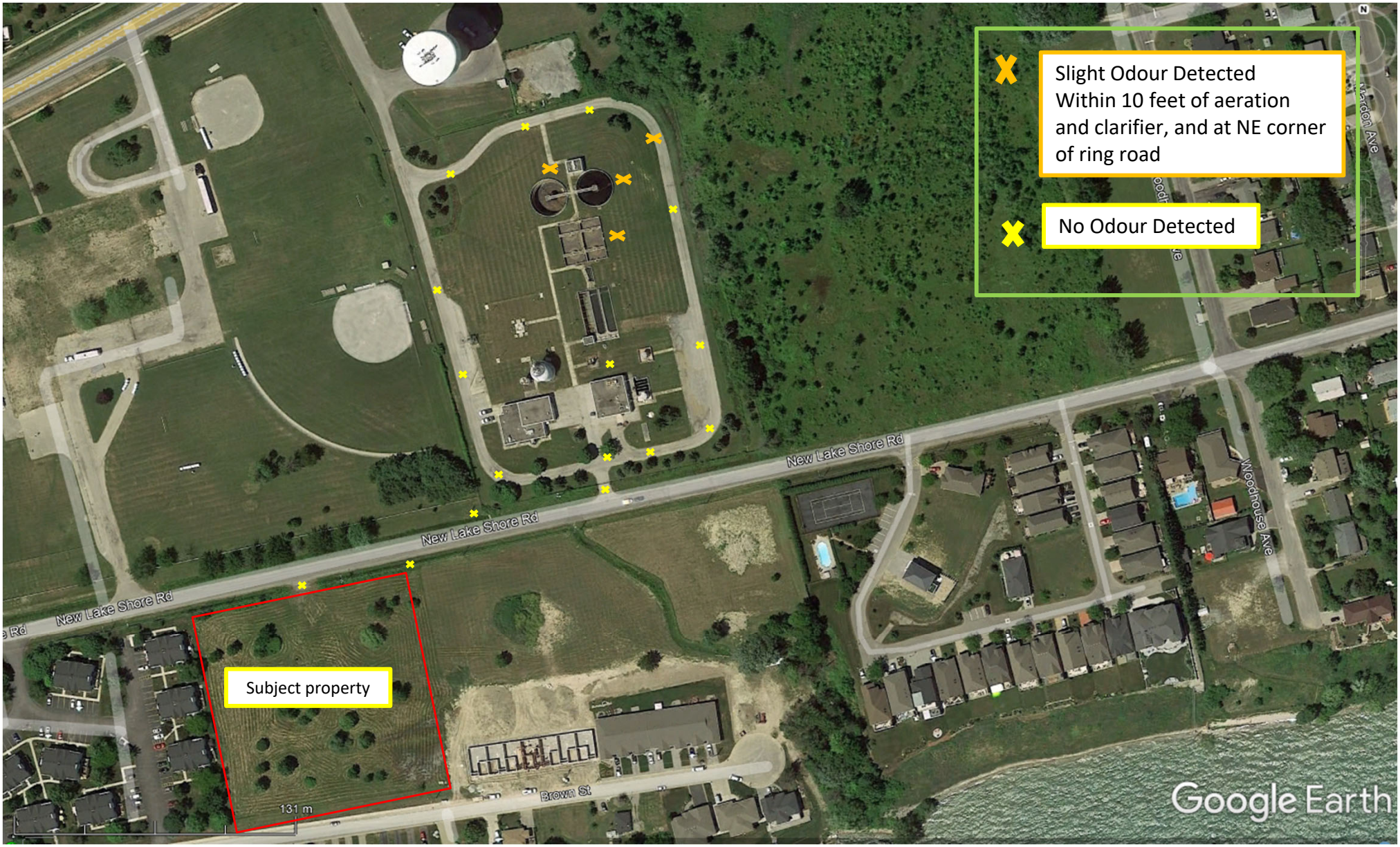
0 100

CCS Engineering Inc.

Noise Measurement Locations
28 New Lake Shore Road
PORT DOVER, ONTARIO

By: JA	Date: 12 Aug 2022	Project No. 1085

Figure 5



Source: Google Earth

Approximate Scale Metres

0 100

CCS Engineering Inc.

Odour Detection Locations
28 New Lake Shore Road
PORT DOVER, ONTARIO

By: JA	Date: 12 Aug 2022	Project No. 1085

Figure 5

Summary

File Name on Meter	LxT_Data.187	
File Name on PC	SLM_0004137_LxT_Data_187.00.ldbin	
Serial Number	0004137	
Model	SoundExpert® LxT	
Firmware Version	2.404	
User	Jim Anderson	
Location	Port Dover WWTP	
Job Description	1085 Vallee D2 Assessment	
Note		

Measurement

Description		
Start	2022-08-03 10:09:11	
Stop	2022-08-03 10:10:00	
Duration	00:00:48.5	
Run Time	00:00:48.5	
Pause	00:00:00.0	
Pre Calibration	2022-07-20 08:21:51	
Post Calibration	None	
Calibration Deviation	---	

Overall Settings

RMS Weight	A Weighting	
Peak Weight	Z Weighting	
Detector	Slow	
Preamp	PRMLxT1L	
Microphone Correction	Off	
Integration Method	Exponential	
OBA Range	Normal	
OBA Bandwidth	1/1 and 1/3	
OBA Freq. Weighting	A Weighting	
OBA Max Spectrum	Bin Max	
Overload	122.0 dB	
	A	**C**
Under Range Peak	78.5	75.5
Under Range Limit	**24.1**	25.0
Noise Floor	15.0	15.9

Results

L_{ASeq}	46.6		
LASE	63.5		
EAS	0.248	µPa²h	
$LZ_{Speak\ (max)}$	2022-08-03 10:09:31		95.6
LAS_{max}	2022-08-03 10:09:12		49.1
LAS_{min}	2022-08-03 10:09:39		44.7
SEA	-99.94	dB	
LAS > 85.0 dB (Exceedance Counts / Duration)	0		0.0
LAS > 115.0 dB (Exceedance Counts / Duration)	0		0.0
LZ_{Speak} > 135.0 dB (Exceedance Counts / Duration)	0		0.0
LZ_{Speak} > 137.0 dB (Exceedance Counts / Duration)	0		0.0
LZ_{Speak} > 140.0 dB (Exceedance Counts / Duration)	0		0.0
Community Noise	**Ldn**		**LDay 07:00-22:00**
	46.6		46.6
LC_{Seq}	60.9	dB	
LA_{Seq}	46.6	dB	
LC_{Seq} - LA_{Seq}	14.2	dB	
LAI_{eq}	48.3	dB	
LA_{eq}	46.6	dB	
LAI_{eq} - LA_{eq}	1.8	dB	

	A	
	dB	**Time Stamp**
L_{eq}	46.6	
$L_{S(max)}$	49.1	2022/08/03 10:09:12
$L_{S(min)}$	44.7	2022/08/03 10:09:39
$L_{Peak(max)}$		

# Overloads	0	
Overload Duration	0.0	s
# OBA Overloads	0	
OBA Overload Duration	0.0	s

Summary

File Name on Meter	LxT_Data.188
File Name on PC	SLM_0004137_LxT_Data_188.00.ldbin
Serial Number	0004137
Model	SoundExpert® LxT
Firmware Version	2.404
User	Jim Anderson
Location	Port Dover WWTP
Job Description	1085 Vallee D2 Assessment
Note	SW corner of WWTP property

Measurement

Description		
Start	2022-08-03 10:11:43	
Stop	2022-08-03 10:12:14	
Duration	00:00:31.8	
Run Time	00:00:31.8	
Pause	00:00:00.0	
Pre Calibration	2022-07-20 08:21:51	
Post Calibration	None	
Calibration Deviation	---	

Overall Settings

RMS Weight	A Weighting	
Peak Weight	Z Weighting	
Detector	Slow	
Preamp	PRMLxT1L	
Microphone Correction	Off	
Integration Method	Exponential	
OBA Range	Normal	
OBA Bandwidth	1/1 and 1/3	
OBA Freq. Weighting	A Weighting	
OBA Max Spectrum	Bin Max	
Overload	122.0 dB	
	A	**C**
Under Range Peak	78.5	75.5
Under Range Limit	**24.1**	25.0
Noise Floor	15.0	15.9

Results

LA_{Seq}	46.4	
LASE	61.4	
EAS	0.153 µPa²h	
$LZ_{Speak\ (max)}$	2022-08-03 10:12:07	101.2
LAS_{max}	2022-08-03 10:11:46	50.4
LAS_{min}	2022-08-03 10:11:45	44.9
SEA	-99.94 dB	
LAS > 85.0 dB (Exceedance Counts / Duration)	0	0.0
LAS > 115.0 dB (Exceedance Counts / Duration)	0	0.0
LZ_{Speak} > 135.0 dB (Exceedance Counts / Duration)	0	0.0
LZ_{Speak} > 137.0 dB (Exceedance Counts / Duration)	0	0.0
LZ_{Speak} > 140.0 dB (Exceedance Counts / Duration)	0	0.0
Community Noise	**Ldn**	**LDay 07:00-22:00**
	46.4	46.4
LC_{Seq}	60.2 dB	
LA_{Seq}	46.4 dB	
LC_{Seq} - LA_{Seq}	13.8 dB	
LAI_{eq}	50.8 dB	
LA_{eq}	46.4 dB	
LAI_{eq} - LA_{eq}	4.4 dB	

	A	
	dB	**Time Stamp**
L_{eq}	46.4	
$L_{S(max)}$	50.4	2022/08/03 10:11:46
$L_{S(min)}$	44.9	2022/08/03 10:11:45
$L_{Peak(max)}$		

# Overloads	0
Overload Duration	0.0 s
# OBA Overloads	0
OBA Overload Duration	0.0 s

Summary

File Name on Meter	LxT_Data.189
File Name on PC	SLM_0004137_LxT_Data_189.00.ldbin
Serial Number	0004137
Model	SoundExpert® LxT
Firmware Version	2.404
User	Jim Anderson
Location	Port Dover WWTP
Job Description	1085 Vallee D2 Assessment
Note	SE Corner of WWTP property

Measurement

Description		
Start	2022-08-03 10:14:16	
Stop	2022-08-03 10:14:56	
Duration	00:00:40.1	
Run Time	00:00:40.1	
Pause	00:00:00.0	
Pre Calibration	2022-07-20 08:21:51	
Post Calibration	None	
Calibration Deviation	---	

Overall Settings

RMS Weight	A Weighting		
Peak Weight	Z Weighting		
Detector	Slow		
Preamp	PRMLxT1L		
Microphone Correction	Off		
Integration Method	Exponential		
OBA Range	Normal		
OBA Bandwidth	1/1 and 1/3		
OBA Freq. Weighting	A Weighting		
OBA Max Spectrum	Bin Max		
Overload	122.0	dB	
	A		**C**
Under Range Peak	78.5		75.5
Under Range Limit	**24.1**		25.0
Noise Floor	15.0		15.9

Results

LA_{Seq}	51.9		
LASE	67.9		
EAS	0.688	µPa²h	
$LZ_{Speak\ (max)}$	2022-08-03 10:14:33		94.7
LAS_{max}	2022-08-03 10:14:31		60.4
LAS_{min}	2022-08-03 10:14:40		45.5
SEA	-99.94	dB	
LAS > 85.0 dB (Exceedance Counts / Duration)	0		0.0
LAS > 115.0 dB (Exceedance Counts / Duration)	0		0.0
LZ_{Speak} > 135.0 dB (Exceedance Counts / Duration)	0		0.0
LZ_{Speak} > 137.0 dB (Exceedance Counts / Duration)	0		0.0
LZ_{Speak} > 140.0 dB (Exceedance Counts / Duration)	0		0.0
Community Noise	**Ldn**		**LDay 07:00-22:00**
	51.9		51.9
LC_{Seq}	61.3	dB	
LA_{Seq}	51.9	dB	
LC_{Seq} - LA_{Seq}	9.5	dB	
LAI_{eq}	59.3	dB	
LA_{eq}	52.0	dB	
LAI_{eq} - LA_{eq}	7.3	dB	

	A	
	dB	**Time Stamp**
L_{eq}	52.0	
$L_{S(max)}$	60.4	2022/08/03 10:14:31
$L_{S(min)}$	45.5	2022/08/03 10:14:40
$L_{Peak(max)}$		

# Overloads	0	
Overload Duration	0.0	s
# OBA Overloads	0	
OBA Overload Duration	0.0	s

Summary

File Name on Meter	LxT_Data.190
File Name on PC	SLM_0004137_LxT_Data_190.00.ldbin
Serial Number	0004137
Model	SoundExpert® LxT
Firmware Version	2.404
User	Jim Anderson
Location	Port Dover WWTP
Job Description	1085 Vallee D2 Assessment
Note	Ring Road east of aeration and clarifier tanks

Measurement

Description		
Start	2022-08-03 10:16:39	
Stop	2022-08-03 10:17:28	
Duration	00:00:49.2	
Run Time	00:00:49.2	
Pause	00:00:00.0	
Pre Calibration	2022-07-20 08:21:51	
Post Calibration	None	
Calibration Deviation	---	

Overall Settings

RMS Weight	A Weighting	
Peak Weight	Z Weighting	
Detector	Slow	
Preamp	PRMLxT1L	
Microphone Correction	Off	
Integration Method	Exponential	
OBA Range	Normal	
OBA Bandwidth	1/1 and 1/3	
OBA Freq. Weighting	A Weighting	
OBA Max Spectrum	Bin Max	
Overload	122.0 dB	
	A	**C**
Under Range Peak	78.5	75.5
Under Range Limit	**24.1**	25.0
Noise Floor	15.0	15.9

Results

L_{ASeq}	57.3		
LASE	74.2		
EAS	2.953	µPa²h	
$LZ_{Speak\ (max)}$	2022-08-03 10:16:40		96.2
LAS_{max}	2022-08-03 10:16:40		58.6
LAS_{min}	2022-08-03 10:17:14		56.0
SEA	-99.94	dB	
LAS > 85.0 dB (Exceedance Counts / Duration)	0		0.0
LAS > 115.0 dB (Exceedance Counts / Duration)	0		0.0
LZ_{Speak} > 135.0 dB (Exceedance Counts / Duration)	0		0.0
LZ_{Speak} > 137.0 dB (Exceedance Counts / Duration)	0		0.0
LZ_{Speak} > 140.0 dB (Exceedance Counts / Duration)	0		0.0
Community Noise	**Ldn**		**LDay 07:00-22:00**
	57.3		57.3
LC_{Seq}	62.5	dB	
LA_{Seq}	57.3	dB	
LC_{Seq} - LA_{Seq}	5.1	dB	
LAI_{eq}	58.1	dB	
LA_{eq}	57.3	dB	
LAI_{eq} - LA_{eq}	0.8	dB	

	A	
	dB	**Time Stamp**
L_{eq}	57.3	
$L_{S(max)}$	58.6	2022/08/03 10:16:40
$L_{S(min)}$	56.0	2022/08/03 10:17:14
$L_{Peak(max)}$		

# Overloads	0	
Overload Duration	0.0	s
# OBA Overloads	0	
OBA Overload Duration	0.0	s

Ontario

Ministry of the Environment, Conservation and Parks

Secondary Noise Screening Method

Fields marked with an asterisk (*) are mandatory.

General Information and Instructions

General:

The *Environmental Protection Act* (EPA) defines "contaminant" to mean any solid, liquid, gas, odour, heat, sound, vibration, radiation or combination of any of them resulting directly or indirectly from human activities that causes or may cause an adverse effect. The intended audience for this form are persons who discharge sound to air in Ontario. The form is not meant to be used in respect of any other jurisdiction. While every effort has been made to ensure the accuracy of the information contained in this form, it should not be construed as legal advice. In the event of a conflict with requirements of the EPA or O. Reg. 1/17, the legislative requirements shall determine the appropriate approach.

Information provided in this form and in any supporting information is collected and maintained by the Client Services and Permissions Branch of the Ministry of the Environment, Conservation and Parks ("MECP") under the authority of the *Environmental Protection Act*, R.S.O. 1990, c. E.19, as amended ("EPA"), and will be used to evaluate compliance with MECP noise guidelines for an application for an Environmental Compliance Approval (Air & Noise) made under section 20.2 of Part II.1 of the EPA for approval to engage in an activity mentioned in subsection 9(1) of the EPA. This Secondary Noise Screening Method may also be used in order to prepare a noise report under O. Reg. 1/17 Registrations under Part II.2 of the *Act - Activities Requiring Assessment of Air Emissions*. Supporting information may be claimed as confidential; however, the collection, use and dissemination of this information are governed by the *Freedom of Information and Protection of Privacy Act*, R.S.O. 1990, c. F.31, as amended. Questions about this collection should be directed to the Customer Services and Outreach Unit Supervisor, Client Services and Permissions Branch, 135 St. Clair Ave. W, 1st Floor, Toronto ON M4V 1P5. Telephone outside Toronto 1-800-461-6290 or in Toronto 416-314-8001.

Instructions:

Refer to the Secondary Noise Screening Method Guide for information and instructions on how to complete this form.

Facility Information

Company Name *
Port Dover WTP

Site Name

North American Industry Classification System (NAICS) Code *
221320

Site Address - Street information (applies to an address that has civic numbering and street information - includes street number, name, type and direction)

Unit Number	Street Number	Street Name	PO Box
	137	Hamilton Plank	

Survey Address (used for a rural location specified for a subdivided township, an unsubdivided township or unsurveyed territory)

Non Address Information (includes any additional information to clarify clients' physical location)

Municipality/Unorganized Township	County/District	
City/Town * Port Dover	Province * ON	Postal Code * N0A 1N8

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Step 1 - Confirm Eligibility and Describe Facility *

1. Do any of the following cases apply to the facility?

a) Facility has a Point of Reception in a Class 4 Area.	☐ Yes	☑ No
b) Application for a Renewable Energy Approval.	☐ Yes	☑ No
c) Includes trucks that have refrigeration units or truck loading/unloading utilizing truck-mounted blowers or pumps.	☐ Yes	☑ No
d) Facility/operations use significant impulsive and/or vibration sources, including, but not limited to, stamping presses or forging hammers.	☐ Yes	☑ No

2. Provide a description of the facility that meets the Secondary Noise Screening Method Guide's requirements.
WWTP

3. What are the facility's hours of operation? Check all that apply.

☑ Daytime Operation 07:00 to 19:00 hours

☑ Evening Operation 19:00 to 23:00 hours

☑ Nighttime Operation 23:00 to 07:00 hours

4. How many Points of Reception have been identified for assessment, as outlined in Step 3 of the Secondary Noise Screening Method Guide?
1

5. Provide a description of the surrounding area, including transportation corridors and other factors relevant in the determination of the acoustical classification of the study area.
Residential

Step 2 - Identify Noise Sources *

6. How many significant noise sources are present at the facility?
1

7. Identify the facility's significant noise sources.

1. Trucks – on-site idling, loading and unloading

Unique Source Label
Truck

Source Description
Septic trucks or Solids trucks

8. What are the facility's insignificant noise sources, if any?
all other

Step 3 - Complete Secondary Noise Screening Assessment

POR - 1

Step 3.1 - Identify and Describe the Affected Points of Reception *

Provide a description of POR - 1 including a description of its zoning and structures (e.g., two-storey single family dwellings), and direction relative to the facility (e.g., north-west).
Subject property NE corner

What is the acoustical classification for POR - 1?

Class 2

Is POR - 1 located within 100 metres of the edge of pavement of a 400 series highway; or within 30 metres of the edge of pavement of a provincial highway or a regional road?

☐ Yes ☑ No

Step 3.2 - Identify the Applicable Sound Level Limits *

What is the Sound Level limit (dBA) for POR - 1?

45

Step 3.3 - Calculate Sound Level

What noise sources identified in Question 7 contribute to the Sound Level at POR - 1? Check all that apply.

Noise Sources *

1. ☑ Truck

Source of Data
Trucks – On-site

Required Variables *

L_w ▶ 96 dBA D_A ▶ 65 m N ▶ 1 t ▶ 10 min/hour

Adjustments *

Barrier Adjustment (BA)	Number of Trucks Adjustment	Intermittency Adjustment (IA)
0 dBA	0.00 dBA	-7.78 dBA

Equation

$$SL = Lw - 10\log_{10}\left(2\pi D_A^{\,2}\right) + 10\log_{10}(N) - BA + IA$$

Sound Level

SL ▶ 43.98 dBA

Step 3.4 - Calculate Cumulative Impact/Combined Sound Levels

Equation

$$SL_{Total} = 10\mathrm{Log}_{10}\left[\left(10^{\left(SL_1/10\right)}\right) + \left(10^{\left(SL_2/10\right)}\right) + \ldots + \left(10^{\left(SL_N/10\right)}\right)\right]$$

Cumulative Impact / Combined SL ▶ 44 dBA

See Appendix A

The facility meets the requirements of the Secondary Noise Screening Method

Step 4 - Appendices

☐ Tables in Appendix A demonstrate that the combined sound level at each affected POR does not exceed the MECP SL limit *

☐ A Site Plan is appended that meets the Secondary Noise Screening Method Guide's requirements *

☐ A Land Use Zoning Designation Plan is appended that meets the Secondary Noise Screening Method Guide's requirements *

☐ A Scaled Area Location Plan is appended that meets the Secondary Noise Screening Method Guide's requirements *

☐ A Summary of Noise Red Flag Table Data used is appended, if applicable

☐ Manufacturer's Noise Data is appended, if applicable

Step 5 - Preparer Statement *

Sign the below Preparer Statement.

By signing this statement you are verifying that:

- I am a representative of the company identified in "Facility Information", or have been retained by the company, for the purposes of completing this Secondary Noise Screening Method form;
- I have confirmed that the facility is eligible to use the Secondary Noise Screening Method (Step 1);
- I have identified the facility's noise sources, and provided appropriate source descriptions (Step 2);
- I have completed the Secondary Noise Screening Assessment in accordance with the Secondary Noise Screening Method Guide (Step 3);
- I have ensured that the applicable sound level limits, sources of data, required variables and adjustments have been entered appropriately (Step 3);
- The required appendices are attached to the Secondary Noise Screening Method form (Step 4);
- To my knowledge, the statements made in the Secondary Noise Screening Method form are true and representative of the facility.
- The facility meets the requirements of the Secondary Noise Screening Method.

Preparer Last Name	Preparer First Name
Anderson	Jim

Preparer Title	Company
Engineer	CCS Engineering Inc.

Signature	Date (yyyy/mm/dd)
	2022/08/12

Appendix A

Table 1.1 - Summary of Sound Level Predictions

Point of Reception Identification	Acoustical Classification	Sound Level Limit (dBA)
POR - 1	Class 2	45

Hours of Operation

Daytime Operation 07:00 to 19:00 hours Evening Operation 19:00 to 23:00 hours Nighttime Operation 23:00 to 07:00 hours

Is POR - 1 located within 100 metres of the edge of pavement of a 400 series highway; or within 30 metres of the edge of pavement of a provincial highway or a regional road?

No

Unique Source Label	Source Description	Source of Data	D_A (metres)	D_{50} (metres)	Sound Power Level (dBA)	Reference Sound Level (dBA)	Reference Distance (metres)	Barrier Adjustment (dBA)	Tonality Adjustment / Number of Trucks Adjustment (dBA)	Intermittency Adjustment (dBA)	Predicted SL at POR (dBA)
Truck	Septic trucks or Solids trucks	Trucks – On-site	65		96			0	0.00	-7.78	43.98
Cumulative Impact / Combined SL											44
Compliance with Ministry Limits											Yes
Acoustic Assessment Report Required											No

Note: Impacts from noise sources must be calculated according to the principle of the "predictable worst case" noise impact, as defined in NPC-300.

ATTACHMENT D

PORT DOVER WWTP ECA

Ontario

Ministry of the Environment, Conservation and Parks
Ministère de l'Environnement, de la Protection de la nature et des Parcs

AMENDED ENVIRONMENTAL COMPLIANCE APPROVAL

NUMBER 7884-C94HQT
Issue Date: January 14, 2022

The Corporation of Norfolk County
185 Robinson Street,
Simcoe, Ontario
N3Y 5L6

Site Location: 137 Hamilton Plank Road
Norfolk County, N0A 1N8

You have applied under section 20.2 of Part II.1 of the Environmental Protection Act, R.S.O. 1990, c. E. 19 (Environmental Protection Act) for approval of:

alteration, extension, usage and operation of existing municipal sewage works, for the treatment of sanitary sewage and disposal of effluent to Lake Erie via a Sewage Treatment Plant (Port Dover Wastewater Treatment Plant) and Final Effluent disposal facilities as follows:

Classification of Collection System: Nominally Separate Sewer System

Classification of Sewage Treatment Plant: Secondary

Design Capacity of Sewage Treatment Plant

Design Capacity with All Treatment Trains in Operation	Prior to Completion of Construction of All Proposed Works	Upon Completion of Construction of All Proposed Works
Rated Capacity	5,400 m^3/d	6,100 m^3/d

Influent, Imported Sewage and Processed Organic Waste

Receiving Location	Types
In Collection System	Sanitary Sewage/Septage/Holding Tank Waste/Portable Toilet Waste/Pretreated Industrial Wastewater
At Sewage Treatment Plant	Septage/Holding Tank Waste/Portable Toilet Waste

Proposed Works:

Sanitary Sewage Pumping Stations

Woodhouse Pumping Station

- decommissioning of the Woodhouse Pumping Station;

Port Dover Wastewater Treatment Plant (WWTP)

Influent Sewer

- 600 mm diameter sanitary sewer with a hydraulic capacity of 47,520 m^3/d, discharging to the inlet channel in the Headworks Building;

Imported Sewage Receiving Facility

- one (1) septage receiving station to receive truck delivered Imported Sewage generated within Norfolk County, equipped with a flow meter and an actuated plug valve, discharging into the inlet channel in the Headworks Building via a 150 mm diameter gravity pipe;

Preliminary Treatment System (Headworks Building)

- Inlet Channel
  - replacement of the existing inlet channels with two (2) 1.2 m x 0.915 m inlet channels (one standby) equipped with isolation gates;
- Screening
  - replacement of the two (2) existing manual bar racks with two (2) 19 mm mechanical bar screens (one standby), each with a Peak Instantaneous Flow Rate of 393 L/s;

- Wet Well and Equalization Tanks
    - one (1) 3.12 m x 12.52 m x 4.5 m wet well with a total storage volume of 158 m^3 and two (2) 13 m x 5.96 m x 3 m equalization tanks each with a storage volume of 190 m^3, providing a total storage volume of 538 m^3;
    - replacement of the three (3) existing raw sewage pumps with four (4) submersible raw sewage pumps each with a rated capacity of 105 L/s at a TDH of 14.8 m and one (1) submersible raw sewage pump with a rated capacity of 12 L/s at a TDH of 15.0 m, all equipped with VFDs providing a total firm capacity of 315 L/s to the grit vortex chamber via a 450 mm diameter forcemain;
- Overflow
    - replacement of the one (1) existing overflow chamber upstream of the preliminary treatment system with one (1) overflow chamber within the equalization tanks, equipped with a sharp-crested rectangular weir and level transmitter, to convey influent flows to the plant outfall (downstream of the final effluent sampling);
- Grit Removal
    - one (1) circular grit vortex chamber with a Peak Hourly Flow Rate of 315 L/s;
    - one (1) separator cyclone;
    - one (1) grit pump with a rated capacity of 12.5 L/s;
    - one (1) grit classifier;
    - one (1) grit screw conveyor;
    - one (1) grit air blower;
    - one (1) grit and screenings collection bin;
    - one (1) grit removal bypass on the 450 mm forcemain, discharging to the primary splitter box;

Influent Flow Measurement and Sampling Point

- One (1) flow meter in the Headworks Building downstream of the wet well;
- One (1) flow meter in the Imported Sewage Facilities;

- Influent automatic composite sampler at the primary splitter box, downstream of the grit removal system;

Overflow Flow Measurement

- one (1) flow meter in the Headworks Building at the overflow weir in the wet well;

Primary Treatment System

- one (1) splitter box with three (3) V-notch weir gates to split flow between the three (3) primary clarifiers;

- modification and expansion of the primary effluent troughs and V-notch weir plates in the three (3) primary clarifiers to increase the Peak Hourly Flow of the primary treatment system to 315 L/s;

- replacement of the one (1) existing raw sludge pump with two (2) new plunger-style positive displacement sludge and scum pumps (one standby) with a rated capacity of 5 L/s to convey sludge and scum from the four (4) 100 mm suction headers (three for sludge, one for scum) to the top of the existing above-ground digester;

Secondary Treatment System

- decommissioning of the secondary bypass pipe, manhole and associated weirs;

- Biological Treatment

    - extension of the common aeration inlet channel to the one (1) new aeration tank with a sluice gate at the tank inlet to control the flow;

    - one (1) additional aeration tank, consisting of a 19 m x 9.5 m x 3.7 m side water depth (SWD) tank, equipped with fine bubble aeration system;

    - replacement of the four (4) mechanical surface aerators in the two (2) existing aeration tanks with a fine bubble aeration system;

    - three (3) blowers each rated at 1,800 m^3/hr at 40 kPa (one standby), all equipped with VFDs;

    - extension of the the common aeration effluent channel to the one (1) new secondary clarifier with an isolation gate to isolate flows from the one (1) new aeration tank to the one (1) new secondary clarifier;

- Secondary Sedimentation

    - one (1) 19 m diameter x 4.6 m SWD secondary clarifier;

- replacement of the three (3) existing return activated sludge pumps with four (4) return activated sludge pumps each with a rated capacity of 47 L/s at a TDH of 10 m (one standby), all equipped with VFDs, discharging to a common 250 mm header;

- the common 250 mm header conveys return activated sludge to the primary effluent channel and waste activated sludge to the primary splitter box via a 100 mm waste activated sludge header with a pinch valve for flow trimming;

Sludge Flow Measurement

- one (1) return activated sludge flow meter on the common discharge of the return activated sludge pumps;

- one (1) waste activated sludge flow meter in the waste activated sludge header;

Disinfection System

- replacement of the existing chlorination disinfection system with one (1) 11.87 m x 0.85 m x 0.84 m SWD UV disinfection channel equipped with two (2) banks of UV lamps (one standby), each with a total Peak Hourly Flow Rate of 27,232 m^3/h;

Phosphorous Removal

- replacement of the existing one (1) 27.3 m^3 ferrous chloride storage tank with one (1) 15 m^3 ferrous chloride storage tank;

Outfall

- replacement and relocation of a portion of the 600 mm diameter outfall pipe extending from the disinfection system to the Lake Erie shoreline, receiving Secondary Effluent and raw sewage Overflows;

- a temporary 600 mm diameter sewer to convey sewage from the relocated outfall (Manhole S8) to the existing outfall at New Lakeshore Road (Manhole S6) during the construction period of the Proposed Works (to be decommissioned upon construction of the Proposed Works);

Interim Works:

Port Dover Wastewater Treatment Plant (WWTP)

Disinfection System

- Chlorination

    - one (1) sodium hypochlorite dosing line from the existing metering pumps to the outlet of the

existing secondary clarifier;

- Dechlorination

    - spill containment system designed to capture and contain spills and leaks from two (2) 210 L drums of Calcium Thiosulphate (or Sodium Bisulphite, Sodium Sulphite, or Sodium Metabisulphite) solution;

    - two (2) dechlorination chemical solution peristaltic metering pumps (one duty, one standby), with an expected operating range of 10 - 82 mL/min, installed within the proposed temporary building, delivering dechlorination chemical solution to the existing chlorine contact chamber outlet;

Existing Works:

Sanitary Sewage Pumping Stations

Woodhouse Pumping Station

- a 2.4 m diameter wet well type sewage pumping station located at the south end of the WWTP, equipped with two (2) submersible pumps (one standby) with variable frequency drives, each rated at 20 L/s at a TDH of 8.0 m;

- a 200 mm diameter forcemain on easements from Woodhouse Sewage Pumping Station discharging to the Preliminary Treatment System;

Port Dover Wastewater Treatment Plant

Influent Sewers

- a 600 mm diameter inlet sewer to the Preliminary Treatment System;

- emergency overflow pipe with Parshall flume discharging to the effluent outfall manhole;

Overflow

- one (1) overflow chamber upstream of the preliminary treatment system, discharging to the final outfall (downstream of the final effluent sampling);

Preliminary Treatment System

- Screening

    - two (2) mechanical bar screens, each with a Peak Flow Rate of 18,000 m^3/d and 20 mm bar

spacing;

- screenings dewatering screw with a rated capacity of 0.34 m^3/h;

- Raw Sewage Pumping

  - two (2) raw sewage pumps, each with rated capacity of 477 m^3/h and equipped with VFDs and one (1) raw sewage pump with a rated capacity of 400 m^3/h, providing a firm capacity of 18,000 m^3/d;

- Grit Removal

  - one (1) vortex type aerated grit chamber with a Peak Flow Rate of 310 L/s, complete with mixer, blower and classifier;

Influent Flow Measurement

- one (1) flow meter installed on the common discharge piping of the raw sewage pumps;

Primary Treatment System

- three (3) 22.9 m x 4.6 m x 3.0 m SWD primary clarifiers, with sludge and scum removal mechanisms, discharging to the common aeration tanks distribution channels;

- one (1) raw sludge/ scum pump with a capacity of 3.6 L/s;

Secondary Treatment System

- Biological Treatment

  - two (2) 19 m x 9.5 m x 3.7 m SWD aerations basins

  - four (4) mechanical surface aerators (two in each aeration basin) each powered by a 11.25 kW motor;

- Secondary Sedimentation

  - two (2) 17 m diameter x 4.6 m SWD secondary clarifiers;

  - three (3) return activated sludge pumps each with a capacity of 32 L/s;

Sludge Management

- Sludge Digestion
    - one (1) 6 m diameter x 18 m egg shape single stage anaerobic digester with a volume of 666 m^3 and a rated capacity of 48 m^3/d,
    - two (2) centrifugal pumps each with a rated capacity of 37.8 L/s and a central draft tube for mixing;
- Biosolids Storage
    - four (4) 13.5 m x 13.5 m x 6 m SWD underground storage tanks equipped with four (4) submersible mixers providing a total storage volume of 4,375 m^3;
    - two (2) supernatant pumps with a rated capacity of 4.0 L/s;
    - two (2) sludge transfer pumps with a rated capacity of 4.0 L/s;

Disinfection

- Chlorination
    - one (1) 27.3 m^3 sodium hypochlorite storage tank and two (2) sodium hypochlorite metering pumps, each rated at 1.8 L/min;
    - one (1) 6.5 m x 5.5 m x 1.9 m SWD chlorine contact chamber providing a volume of 68 m^3;

Phosphorous Removal

- one (1) 27.3 m^3 ferrous chloride storage tank and two (2) ferrous chloride metering pumps, each rated at 3 L/min;

Outfall

- 600 mm diameter outfall pipe with a 25 m long six-port staged diffuser;

Final Effluent Flow Measurement and Sampling Point

- flow measurement device and automatic composite sampler at outlet of disinfection system prior to the outfall;

including all other mechanical system, electrical system, instrumentation and control system, standby power system, piping, pumps, valves and appurtenances essential for the proper, safe and reliable operation of the Works in accordance with this Approval, in the context of process performance and general principles of

wastewater engineering only;

all in accordance with the submitted supporting documents listed in Schedule A.

For the purpose of this environmental compliance approval, the following definitions apply:

1. "Annual Average Daily Effluent Flow" means the cumulative total Final Effluent discharged during a calendar year divided by the number of days during which Final Effluent was discharged that year;

2. "Approval" means this environmental compliance approval and any schedules attached to it, and the application;

3. "BOD5" (also known as TBOD5) means five day biochemical oxygen demand measured in an unfiltered sample and includes carbonaceous and nitrogenous oxygen demands;

4. "Bypass" means diversion of sewage around one or more treatment processes, excluding Preliminary Treatment System, within the Sewage Treatment Plant with the diverted sewage flows being returned to the Sewage Treatment Plant treatment train upstream of the Final Effluent sampling point(s) and discharged via the approved effluent disposal facilities;

5. "CBOD5" means five day carbonaceous (nitrification inhibited) biochemical oxygen demand measured in an unfiltered sample;

6. "Combined Sewers" means pipes that collect and convey both wastewater from residential, commercial, institutional and industrial buildings and facilities (including infiltration and inflow) and stormwater runoff through a single-pipe system, but do not include Nominally Separate Sewers;

7. "Director" means a person appointed by the Minister pursuant to section 5 of the EPA for the purposes of Part II.1 of the EPA;

8. "District Manager" means the District Manager of the appropriate local district office of the Ministry where the Works is geographically located;

9. "*E. coli* " refers to coliform bacteria that possess the enzyme beta-glucuronidase and are capable of cleaving a fluorogenic or chromogenic substrate with the corresponding release of a fluorogen or chromogen, that produces fluorescence under long wavelength (366 nm) UV light, or color development, respectively. Enumeration methods include tube, membrane filter, or multi-well procedures. Depending on the method selected, incubation temperatures include 35.5 $\pm$ 0.5 °C or 44.5 $\pm$ 0.2 °C (to enumerate thermotolerant species). Depending on the procedure used, data are reported as either colony forming units (CFU) per 100 mL (for membrane filtration methods) or as most probable number (MPN) per 100 mL (for tube or multi-well methods);

10. "EPA" means the *Environmental Protection Act* , R.S.O. 1990, c.E.19, as amended;

11. "Equivalent Equipment" means alternate piece(s) of equipment that meets the design requirements and

performance specifications of the piece(s) of equipment to be substituted;

12. "Event" means an action or occurrence, at a given location within the Works that causes a Bypass or Overflow. An Event ends when there is no recurrence of Bypass or Overflow in the 12-hour period following the last Bypass or Overflow. Overflows and Bypasses are separate Events even when they occur concurrently;

13. "Existing Works" means those portions of the Works included in the Approval that have been constructed previously;

14. "Final Effluent" means effluent that is discharged to the environment through the approved effluent disposal facilities, including all Bypasses, that are required to meet the compliance limits stipulated in the Approval for the Sewage Treatment Plant at the Final Effluent sampling point(s);

15. "Imported Sewage" means sewage hauled to the Sewage Treatment Plant by licensed waste management system operators of the types and quantities approved for co-treatment in the Sewage Treatment Plant, including hauled sewage and leachate within the meaning of R.R.O. 1990, Regulation 347: General – Waste Management, as amended;

16. "Influent" means flows to the Sewage Treatment Plant from the collection system and Imported Sewage but excluding process return flows;

17. "Interim Works" means the interim Works, described in this Approval and that are to be used for short-term purposes only in accordance with this Approval, until otherwise approval for an extension of this period has been granted;

18. "Limited Operational Flexibility" (LOF) means the conditions that the Owner shall follow in order to undertake any modification that is pre-authorized as part of this Approval;

19. "Ministry" means the ministry of the government of Ontario responsible for the EPA and OWRA and includes all officials, employees or other persons acting on its behalf;

20. "Monthly Average Effluent Concentration" is the mean of all Single Sample Results of the concentration of a contaminant in the Final Effluent sampled or measured during a calendar month, calculated and reported as per the methodology specified in Schedule F;

21. "Monthly Average Daily Effluent Flow" means the cumulative total Final Effluent discharged during a calendar month divided by the number of days during which Final Effluent was discharged that month;

22. "Monthly Average Daily Effluent Loading" means the value obtained by multiplying the Monthly Average Effluent Concentration of a contaminant by the Monthly Average Daily Effluent Flow over the same calendar month;

23. "Monthly Geometric Mean Density" is the mean of all Single Sample Results of *E. coli* measurement in the samples taken during a calendar month, calculated and reported as per the methodology specified in

Schedule F;

24. "Nominally Separate Sewer Systems" means wastewater collection systems that comprised of Sanitary Sewers and Nominally Separate Sewers while runoff from precipitation and snowmelt are separately collected in Storm Sewers;

25. "Nominally Separate Sewers" means Sanitary Sewers that also have connections from roof leaders and foundation drains, and are not considered to be Combined Sewers;

26. "Normal Operating Condition" means the condition when all unit process(es), excluding Preliminary Treatment System, in a treatment train is operating within its design capacity;

27. "Operating Agency" means the Owner or the entity that is authorized by the Owner for the management, operation, maintenance, or alteration of the Works in accordance with this Approval;

28. "Overflow" means a discharge to the environment from the Works at designed location(s) other than the approved effluent disposal facilities or via the effluent disposal facilities downstream of the Final Effluent sampling point;

29. "Owner" means the Corporation of Norfolk County and its successors and assignees;

30. "OWRA" means the *Ontario Water Resources Act* , R.S.O. 1990, c. O.40, as amended;

31. "Peak Hourly Flow Rate" (also referred to as maximum hourly flow or maximum hour flow) means the largest volume of flow to be received during a one-hour period for which the sewage treatment process unit or equipment is designed to handle;

32. "Peak Instantaneous Flow Rate" means the instantaneous maximum flow rate as measured by a metering device for which the sewage treatment process unit or equipment is designed to handle;

33. "Preliminary Treatment System" means all facilities in the Sewage Treatment Plant associated with screening and grit removal;

34. "Primary Treatment System" means all facilities in the Sewage Treatment Plant associated with the primary sedimentation unit process and includes chemically enhanced primary treatment;

35. "Professional Engineer" means a person entitled to practice as a Professional Engineer in the Province of Ontario under a license issued under the Professional Engineers Act;

36. "Proposed Works" means those portions of the Works included in the Approval that are under construction or to be constructed;

37. "Rated Capacity" means the Annual Average Daily Influent Flow for which the Sewage Treatment Plant is designed to handle;

38. "Sanitary Sewers" means pipes that collect and convey wastewater from residential, commercial, institutional and industrial buildings, and some infiltration and inflow from extraneous sources such as groundwater and surface runoff through means other than stormwater catch basins;

39. "Secondary Effluent" means the effluent from the Secondary Treatment System that are required to meet the compliance limits stipulated in the Approval for the Sewage Treatment Plant at the Secondary Treatment Effluent sampling point;

40. "Secondary Treatment System" means all facilities in the Sewage Treatment Plant associated with biological treatment, secondary sedimentation and phosphorus removal unit processes;

41. "Sewage Treatment Plant" means all the facilities related to sewage treatment within the sewage treatment plant site excluding the Final Effluent disposal facilities;

42. "Single Sample Result" means the test result of a parameter in the effluent discharged on any day, as measured by a probe, analyzer or in a composite or grab sample, as required;

43. "Storm Sewers" means pipes that collect and convey runoff resulting from precipitation and snowmelt (including infiltration and inflow);

44. "Works" means the approved sewage works, and includes Proposed Works, Interim Works, Existing Works and modifications made under Limited Operational Flexibility.

You are hereby notified that this environmental compliance approval is issued to you subject to the terms and conditions outlined below:

TERMS AND CONDITIONS

1. GENERAL PROVISIONS

1. The Owner shall ensure that any person authorized to carry out work on or operate any aspect of the Works is notified of this Approval and the terms and conditions herein and shall take all reasonable measures to ensure any such person complies with the same.

2. The Owner shall design, construct, operate and maintain the Works in accordance with the conditions of this Approval.

3. Where there is a conflict between a provision of any document referred to in this Approval and the conditions of this Approval, the conditions in this Approval shall take precedence.

2. CHANGE OF OWNER AND OPERATING AGENCY

1. The Owner shall, within thirty (30) calendar days of issuance of this Approval, prepare/update and submit to the District Manager the Municipal and Local Services Board Wastewater System Profile

Information Form, as amended (Schedule G) under any of the following situations:

a. the form has not been previously submitted for the Works;

b. this Approval is issued for extension, re-rating or process treatment upgrade of the Works;

c. when a notification is provided to the District Manager in compliance with requirements of change of Owner or Operating Agency under this condition.

2. The Owner shall notify the District Manager and the Director, in writing, of any of the following changes within thirty (30) days of the change occurring:

   a. change of address of Owner;

   b. change of Owner, including address of new owner;

   c. change of partners where the Owner is or at any time becomes a partnership, and a copy of the most recent declaration filed under the *Business Names Act, R.S.O. 1990, c. B.17* , as amended, shall be included in the notification;

   d. change of name of the corporation where the Owner is or at any time becomes a corporation, and a copy of the most current information filed under the *Corporations Information Act, R.S.O. 1990, c. C.39* , as amended, shall be included in the notification.

3. The Owner shall notify the District Manager, in writing, of any of the following changes within thirty (30) days of the change occurring:

   a. change of address of Operating Agency;

   b. change of Operating Agency, including address of new Operating Agency.

4. In the event of any change in ownership of the Works, the Owner shall notify the succeeding owner in writing, of the existence of this Approval, and forward a copy of the notice to the District Manager.

5. The Owner shall ensure that all communications made pursuant to this condition refer to the environmental compliance approval number.

3. CONSTRUCTION OF INTERIM WORKS/ PROPOSED WORKS

1. All Proposed Works in this Approval shall be constructed and installed and must commence operation before April 10, 2025, after which time the Approval ceases to apply in respect of any portions of the Works not in operation. In the event that the construction, installation and/or operation of any portion of the Proposed Works is anticipated to be delayed beyond the time period stipulated, the Owner shall submit to the Director an application to amend the Approval to extend this time period, at least six (6) months prior to the end of the period. The amendment application shall include the reason(s) for the

delay and whether there is any design change(s).

2. Within thirty (30) days of commencement of construction, the Owner shall prepare and submit to the District Manager a schedule for the completion of construction and commissioning operation of the Interim Works/ Proposed Works. The Owner shall notify the District Manager within thirty (30) days of the commissioning operation of any Interim Works/ Proposed Works. Upon completion of construction of the Interim Works/ Proposed Works, the Owner shall prepare and submit a statement to the District Manager, certified by a Professional Engineer, that the Interim Works/ Proposed Works is constructed in accordance with this Approval.

3. Within one (1) year of completion of construction of the Interim Works/ Proposed Works, a set of record drawings of the Works shall be prepared or updated. These drawings shall be kept up to date through revisions undertaken from time to time and a copy shall be readily accessible for reference at the Works.

4. This Approval to the Interim Works shall expire and become null and void upon completion of construction, installation, and the commencement of operation of the proposed UV disinfection system.

4. BYPASSES

1. Any Bypass is prohibited, except:

   a. an emergency Bypass when a structural, mechanical or electrical failure causes a temporary reduction in the capacity of a treatment process or when an unforeseen flow condition exceeds the design capacity of a treatment process that is likely to result in personal injury, loss of life, health hazard, basement flooding, severe property damage, equipment damage or treatment process upset, if a portion of the flow is not bypassed;

   b. a planned Bypass that is a direct and unavoidable result of a planned repair and maintenance procedure or other circumstance(s), the Owner having notified the District Manager in writing at least fifteen (15) days prior to the occurrence of Bypass, including an estimated quantity and duration of the Bypass, an assessment of the impact on the quality of the Final Effluent and the mitigation measures if necessary, and the District Manager has given written consent of the Bypass;

2. Notwithstanding the exceptions given in Paragraph 1, the Operating Agency shall undertake everything practicable to maximize the flow through the downstream treatment process(es) prior to bypassing.

3. At the beginning of a Bypass Event, the Owner shall immediately notify the Spills Action Centre (SAC) and the local Medical Officer of Health. This notice shall include, at a minimum, the following information:

   a. the type of the Bypass as indicated in Paragraph 1 and the reason(s) for the Bypass;

   b. the date and time of the beginning of the Bypass;

c. the treatment process(es) gone through prior to the Bypass and the treatment process(es) bypassed;

d. the effort(s) done to maximize the flow through the downstream treatment process(es) and the reason(s) why the Bypass was not avoided.

4. Upon confirmation of the end of a Bypass Event, the Owner shall immediately notify the Spills Action Centre (SAC) and the local Medical Officer of Health. This notice shall include, at a minimum, the following information:

   a. the date and time of the end of the Bypass;

   b. the estimated or measured volume of Bypass.

5. For any Bypass Event, the Owner shall collect daily sample(s) of the Final Effluent, inclusive of the Event and analyze for all effluent parameters outlined in Compliance Limits condition that require composite samples, following the same protocol specified in the Monitoring and Recording condition for the regular samples. The sample(s) shall be in addition to the regular Final Effluent samples required under the monitoring and recording condition. If the Event occurs on a scheduled monitoring day, the regular sampling requirements prevail. If representative sample for the effluent parameter(s) that require grab sample cannot be obtained, they shall be collected after the Event at the earliest time when situation returns to normal.

6. The Owner shall submit a summary report of the Bypass Event(s) to the District Manager on a quarterly basis, no later than each of the following dates for each calendar year: February 15, May 15, August 15, and November 15. The summary reports shall contain, at a minimum, the types of information set out in Paragraphs (3), (4) and (5) and either a statement of compliance or a summary of the non-compliance notifications submitted as required under Paragraph 1 of Condition 11. If there is no Bypass Event during a quarter, a statement of no occurrence of Bypass is deemed sufficient.

7. The Owner shall develop a notification procedure in consultation with the District Manager and SAC and notify the public and downstream water users that may be adversely impacted by any Bypass Event.

5. OVERFLOWS

1. Any Overflow is prohibited, except:

   a. an emergency Overflow in an emergency situation when a structural, mechanical or electrical failure causes a temporary reduction in the capacity of the Works or when an unforeseen flow condition exceeds the design capacity of the Works that is likely to result in personal injury, loss of life, health hazard, basement flooding, severe property damage, equipment damage or treatment process upset, if a portion of the flow is not overflowed;

   b. a planned Overflow that is a direct and unavoidable result of a planned repair and maintenance procedure or other circumstance(s), the Owner having notified the District Manager in writing at least fifteen (15) days prior to the occurrence of Overflow, including an estimated quantity and

duration of the Overflow, an assessment of the impact on the environment and the mitigation measures if necessary, and the District Manager has given written consent of the Overflow;

2. Notwithstanding the exceptions given in Paragraph 1, the Operating Agency shall undertake everything practicable to maximize the flow through the downstream treatment process(es) and Bypass(es) prior to overflowing.

3. At the beginning of an Overflow Event, the Owner shall immediately notify the Spills Action Centre (SAC) and the local Medical Officer of Health. This notice shall include, at a minimum, the following information:

   a. the type of the Overflow as indicated in Paragraph 1 and the reason(s) for the Overflow;

   b. the date and time of the beginning of the Overflow;

   c. the point of the Overflow from the Works, the treatment process(es) gone through prior to the Overflow, the disinfection status of the Overflow and whether the Overflow is discharged through the effluent disposal facilities or an alternate location;

   d. the effort(s) done to maximize the flow through the downstream treatment process(es) and Bypass(es) and the reason(s) why the Overflow was not avoided.

4. Upon confirmation of the end of an Overflow Event, the Owner shall immediately notify the Spills Action Centre (SAC) and the local Medical Officer of Health. This notice shall include, at a minimum, the following information:

   a. the date and time of the end of the Overflow;

   b. the estimated or measured volume of the Overflow.

5. For any Overflow Event

   a. in the Sewage Treatment Plant, the Owner shall collect grab sample(s) of the Overflow, one near the beginning of the Event and one every eight (8) hours for the duration of the Event, and have them analyzed at least for CBOD5, total suspended solids, total phosphorus, total ammonia nitrogen, nitrate as N, nitrite as N, total Kjeldahl nitrogen, and *E. coli.* except that raw sewage and primary treated effluent Overflow shall be analyzed for BOD5, total suspended solids, total phosphorus and total Kjeldahl nitrogen only.

6. The Owner shall submit a summary report of the Overflow Event(s) to the District Manager on a quarterly basis, no later than each of the following dates for each calendar year: February 15, May 15, August 15, and November 15. The summary report shall contain, at a minimum, the types of information set out in Paragraphs (3), (4) and (5). If there is no Overflow Event during a quarter, a statement of no occurrence of Overflow is deemed sufficient.

7. The Owner shall develop a notification procedure in consultation with the District Manager and SAC and notify the public and downstream water users that may be adversely impacted by any Overflow Event.

6. DESIGN OBJECTIVES

1. The Owner shall design and undertake everything practicable to operate the Sewage Treatment Plant in accordance with the following objectives:

   a. Final Effluent parameters design objectives listed in the table(s) included in Schedule B.

   b. Final Effluent is essentially free of floating and settleable solids and does not contain oil or any other substance in amounts sufficient to create a visible film or sheen or foam or discolouration on the receiving waters.

   c. Total Residual Chlorine (TRC) in the Final Effluent shall be non-detectable as measured by a method with a sensitivity of at least 0.02 mg/L. Normal operation of de-chlorination equipment should provide for an excess of reagents to ensure that total chlorine residuals are not detected.

   d. Annual Average Daily Influent Flow is within the Rated Capacity of the Sewage Treatment Plant.

7. COMPLIANCE LIMITS

1. The Owner shall operate and maintain the Sewage Treatment Plant such that compliance limits for the Final Effluent parameters listed in the table(s) included in Schedule C are met.

2. The Owner shall operate and maintain the Sewage Treatment Plant such that the Final Effluent is disinfected continuously year-round.

8. OPERATION AND MAINTENANCE

1. The Owner shall ensure that, at all times, the Works and the related equipment and appurtenances used to achieve compliance with this Approval are properly operated and maintained. Proper operation and maintenance shall include effective performance, adequate funding, adequate staffing and training, including training in all procedures and other requirements of this Approval and the OWRA and regulations, adequate laboratory facilities, process controls and alarms and the use of process chemicals and other substances used in the Works.

2. The Owner shall update the operations manual for the Works within six (6) months of completion of construction of the Interim Works/ Proposed Works, that includes, but not necessarily limited to, the following information:

   a. operating procedures for the Works under Normal Operating Conditions;

   b. inspection programs, including frequency of inspection, for the Works and the methods or tests

employed to detect when maintenance is necessary;

c. repair and maintenance programs, including the frequency of repair and maintenance for the Works;

d. procedures for the inspection and calibration of monitoring equipment;

e. operating procedures for the Works to handle situations outside Normal Operating Conditions and emergency situations such as a structural, mechanical or electrical failure, or an unforeseen flow condition, including procedures to minimize Bypasses and Overflows;

f. a spill prevention and contingency plan, consisting of procedures and contingency plans, including notification to the District Manager, to reduce the risk of spills of pollutants and prevent, eliminate or ameliorate any adverse effects that result or may result from spills of pollutants;

g. procedures for receiving, responding and recording public complaints, including recording any followup actions taken.

3. The Owner shall maintain the operations manual up-to-date and make the manual readily accessible for reference at the Works.

4. The Owner shall ensure that the Operating Agency fulfills the requirements under O. Reg. 129/04, as amended for the Works, including the classification of facilities, licensing of operators and operating standards.

9. MONITORING AND RECORDING

1. The Owner shall, upon commencement of operation of the Works, carry out a scheduled monitoring program of collecting samples at the required sampling points, at the frequency specified or higher, by means of the specified sample type and analyzed for each parameter listed in the tables under the monitoring program included in Schedule D and record all results, as follows:

   a. all samples and measurements are to be taken at a time and in a location characteristic of the quality and quantity of the sewage stream over the time period being monitored.

   b. definitions and preparation requirements for each sample type are included in document referenced in Paragraph 3.b.

   c. definitions for frequency:

      i. Daily means once every day;

      ii. Weekly means once every week;

      iii. Monthly means once every month;

iv. Quarterly means once every three months;

v. Annually means once every year;

d. a schedule of the day of the week/month for the scheduled sampling shall be created. The sampling schedule shall be revised and updated every year through rotation of the day of the week/month for the scheduled sampling program, except when the actual scheduled monitoring frequency is three (3) or more times per week.

2. In addition to the scheduled monitoring program required in Paragraph 1, the Owner shall collect daily sample(s) of the Final Effluent, on any day when there is any situation outside Normal Operating Conditions, and analyze for all effluent parameters outlined in Compliance Limits condition that require composite samples, following the same protocol specified in this condition for the regular samples. If the Event occurs on a scheduled monitoring day, the regular sampling requirements prevail. If representative sample for the effluent parameter(s) that require grab sample cannot be obtained, they shall be collected after the Event at the earliest time when situation returns to normal.

3. The methods and protocols for sampling, analysis and recording shall conform, in order of precedence, to the methods and protocols specified in the following documents and all analysis shall be conducted by a laboratory accredited to the ISO/IEC:17025 standard or as directed by the District Manager:

   a. the Ministry's Procedure F-10-1, “Procedures for Sampling and Analysis Requirements for Municipal and Private Sewage Treatment Works (Liquid Waste Streams Only), as amended;

   b. the Ministry's publication "Protocol for the Sampling and Analysis of Industrial/Municipal Wastewater Version 2.0" (January 2016), PIBS 2724e02, as amended;

   c. the publication "Standard Methods for the Examination of Water and Wastewater", as amended.

4. If the Owner monitors Bisulphite Residual as a surrogate to Total Residual Chlorine, then detected levels of Bisulphite Residual in the sample shall be deemed to confirm absence of Total Residual Chlorine.

5. The Owner shall monitor and record the flow rate and daily quantity using flow measuring devices or other methods of measurement as approved below calibrated to an accuracy within plus or minus 15 per cent (+/- 15%) of the actual flowrate of the following:

   a. Influent flow to the Sewage Treatment Plant by continuous flow measuring devices and instrumentations, or in lieu of an actual installation of equipment, adopt the flow measurements of the Final Effluent for the purpose of estimating Influent flows if the Influent and Final Effluent streams are considered not significantly different in flow rates and quantities;

   b. Final Effluent discharged from the Sewage Treatment Plant by continuous flow measuring devices and instrumentations, or in lieu of an actual installation of equipment, adopt the flow measurements of the Influent for the purpose of estimating Final Effluent flows if the Influent and Final Effluent streams are considered not significantly different in flow rates and quantities;

   c. each type of Imported Sewage received for co-treatment at the Sewage Treatment Plant by flow

measuring devices/pumping rates/haul truck manifests;

6. The Owner shall retain for a minimum of five (5) years from the date of their creation, all records and information related to or resulting from the monitoring activities required by this Approval.

10. LIMITED OPERATIONAL FLEXIBILITY

1. The Owner may make pre-authorized modifications to the Sewage Treatment Plant in Works in accordance with the document "Limited Operational Flexibility - Protocol for Pre-Authorized Modifications to Municipal Sewage Works" (Schedule E), as amended, subject to the following:

   a. the modifications will not involve the addition of any new treatment process or the removal of an existing treatment process, including chemical systems, from the liquid or solids treatment trains as originally designed and approved.

   b. the scope and technical aspects of the modifications are in line with those delineated in Schedule E and conform with the Ministry's publication "Design Guidelines for Sewage Works 2008", as amended, Ministry's regulations, policies, guidelines, and industry engineering standards;

   c. the modifications shall not negatively impact on the performance of any process or equipment in the Works or result in deterioration in the Final Effluent quality;

   d. where the pre-authorized modification requires notification, a "Notice of Modifications to Sewage Works" (Schedule E), as amended shall be completed with declarations from a Professional Engineer and the Owner and retained on-site prior to the scheduled implementation date. All supporting information including technical memorandum, engineering plans and specifications, as applicable and appropriate to support the declarations that the modifications conform with LOF shall remain on-site for future inspection.

2. The following modifications are not pre-authorized under Limited Operational Flexibility:

   a. Modifications that involve addition or extension of process structures, tankages or channels;

   b. Modifications that involve relocation of the Final Effluent outfall or any other discharge location or that may require reassessment of the impact to the receiver or environment;

   c. Modifications that involve addition of or change in technology of a treatment process or that may involve reassessment of the treatment train process design;

   d. Modifications that require changes to be made to the emergency response, spill prevention and contingency plan; or

   e. Modifications that are required pursuant to an order issued by the Ministry.

11. REPORTING

1. The Owner shall report to the District Manager orally as soon as possible any non-compliance with the compliance limits, and in writing within seven (7) days of non-compliance.

2. The Owner shall, within fifteen (15) days of occurrence of a spill within the meaning of Part X of the EPA, submit a full written report of the occurrence to the District Manager describing the cause and discovery of the spill, clean-up and recovery measures taken, preventative measures to be taken and schedule of implementation, in addition to fulfilling the requirements under the EPA and O. Reg. 675/98 "Classification and Exemption of Spills and Reporting of Discharges".

3. The Owner shall, upon request, make all manuals, plans, records, data, procedures and supporting documentation available to Ministry staff.

4. The Owner shall prepare performance reports on a calendar year basis and submit to the District Manager by March 31 of the calendar year following the period being reported upon. The reports shall contain, but shall not be limited to, the following information pertaining to the reporting period:

    a. a summary and interpretation of all Influent and Imported Sewage monitoring data, and a review of the historical trend of the sewage characteristics and flow rates;

    b. a summary and interpretation of all Final Effluent monitoring data, including concentration, flow rates, loading and a comparison to the design objectives and compliance limits in this Approval, including an overview of the success and adequacy of the Works;

    c. a summary of all operating issues encountered and corrective actions taken;

    d. a summary of all normal and emergency repairs and maintenance activities carried out on any major structure, equipment, apparatus or mechanism forming part of the Works;

    e. a summary of any effluent quality assurance or control measures undertaken;

    f. a summary of the calibration and maintenance carried out on all Influent, Imported Sewage and Final Effluent monitoring equipment to ensure that the accuracy is within the tolerance of that equipment as required in this Approval or recommended by the manufacturer;

    g. a summary of efforts made to achieve the design objectives in this Approval, including an assessment of the issues and recommendations for pro-active actions if any are required under the following situations:

        i. when any of the design objectives is not achieved more than 50% of the time in a year, or there is an increasing trend in deterioration of Final Effluent quality;

        ii. when the Annual Average Daily Influent Flow reaches 80% of the Rated Capacity;

h. a tabulation of the volume of sludge generated, an outline of anticipated volumes to be generated in the next reporting period and a summary of the locations to where the sludge was disposed;

i. a summary of any complaints received and any steps taken to address the complaints;

j. a summary of all Bypasses, Overflows, other situations outside Normal Operating Conditions and spills within the meaning of Part X of EPA and abnormal discharge events;

k. a summary of all Notice of Modifications to Sewage Works completed under Paragraph 1.d. of Condition 10, including a report on status of implementation of all modification;

l. a summary of efforts made to achieve conformance with Procedure F-5-1 including but not limited to projects undertaken and completed in the sanitary sewer system that result in overall Bypass/Overflow elimination including expenditures and proposed projects to eliminate Bypass/Overflows with estimated budget forecast for the year following that for which the report is submitted;

m. any changes or updates to the schedule for the completion of construction and commissioning operation of major process(es) / equipment groups in the Interim Works/ Proposed Works; and,

n. a summary of any deviation from the monitoring schedule and reasons for the current reporting year and a schedule for the next reporting year.

The reasons for the imposition of these terms and conditions are as follows:

1. Condition 1 regarding general provisions is imposed to ensure that the Works are constructed and operated in the manner in which they were described and upon which approval was granted.

2. Condition 2 regarding change of Owner and Operating Agency is included to ensure that the Ministry records are kept accurate and current with respect to ownership and Operating Agency of the Works and to ensure that subsequent owners of the Works are made aware of the Approval and continue to operate the Works in compliance with it.

3. Condition 3 regarding construction of Interim Works/ Proposed Works is included to ensure that the Works are constructed in a timely manner so that standards applicable at the time of Approval of the Works are still applicable at the time of construction to ensure the ongoing protection of the environment, and that prior to the commencement of construction of the portion of the Works that are approved in principle only, the Director will have the opportunity to review detailed design drawings, specifications and an engineer's report containing detailed design calculations for that portion of the Works, to determine capability to comply with the Ministry's requirements stipulated in the terms and conditions of the Approval, and also ensure that the Works are constructed in accordance with the Approval and that record drawings of the Works "as constructed" are updated and maintained for future references.

4. Condition 4 regarding Bypasses is included to indicate that Bypass is prohibited, except in circumstances where the failure to Bypass could result in greater damage to the environment than the Bypass itself. The notification and documentation requirements allow the Ministry to take action in an informed manner and will ensure the Owner is aware of the extent and frequency of Bypass Events.

5. Condition 5 regarding Overflows is included to indicate that Overflow of untreated or partially treated sewage to the receiver is prohibited, except in circumstances where the failure to Overflow could result in greater damage to the environment than the Overflow itself. The notification and documentation requirements allow the Ministry to take action in an informed manner and will ensure the Owner is aware of the extent and frequency of Overflow Events.

6. Condition 6 regarding design objectives is imposed to establish non-enforceable design objectives to be used as a mechanism to trigger corrective action proactively and voluntarily before environmental impairment occurs.

7. Condition 7 regarding compliance limits is imposed to ensure that the Final Effluent discharged from the Works to the environment meets the Ministry's effluent quality requirements.

8. Condition 8 regarding operation and maintenance is included to require that the Works be properly operated, maintained, funded, staffed and equipped such that the environment is protected and deterioration, loss, injury or damage to any person or property is prevented. As well, the inclusion of a comprehensive operations manual governing all significant areas of operation, maintenance and repair is prepared,

implemented and kept up-to-date by the Owner. Such a manual is an integral part of the operation of the Works. Its compilation and use should assist the Owner in staff training, in proper plant operation and in identifying and planning for contingencies during possible abnormal conditions. The manual will also act as a benchmark for Ministry staff when reviewing the Owner's operation of the Works.

9. Condition 9 regarding monitoring and recording is included to enable the Owner to evaluate and demonstrate the performance of the Works, on a continual basis, so that the Works are properly operated and maintained at a level which is consistent with the design objectives and compliance limits.

10. Condition 10 regarding Limited Operational Flexibility is included to ensure that the Works are constructed, maintained and operated in accordance with the Approval, and that any pre-approved modification will not negatively impact on the performance of the Works.

11. Condition 11 regarding reporting is included to provide a performance record for future references, to ensure that the Ministry is made aware of problems as they arise, and to provide a compliance record for this Approval.

Schedule A

1. Application for Environmental Compliance Approval dated September 21, 2021 and received on September 21, 2021, prepared by the Corporation of Norfolk County;

2. Email Request for Letter of Concurrence, addressed to the Ministry (Aziz Ahmed), dated July 6, 2021, prepared by Wood Environment & Infrastructure Solutions;

3. Technical Memorandum: Port Dover WPCP - Dechlorination Evaluation and Options, dated November 5, 2021, prepared by Wood Environment & Infrastructure Solutions;

4. Application for Environmental Compliance Approval submitted by Gary Houghton of Norfolk County received on February 28, 2019 for the proposed Municipal and Private Sewage Works (plant upgrades), including Environmental Study Report, design report, final plans and specifications;

5. Port Dover Wastewater Treatment Facility Upgrades Detailed Design Report, dated January 28, 2020 and prepared by R.V. Anderson Associates Ltd.;

6. Set of stamped Engineering Drawings, dated September 2, 2018, prepared by R.V. Anderson Associates Ltd.;

7. Application for Environmental Compliance Approval received on September, 2019 for the proposed Municipal and Private Sewage Works (outfall relocation), including Environmental Study Report, design report, final plans and specifications;

8. Sanitary Effluent Outfall Design Brief, dated August 23, 2019 and prepared by K. Smart Associates Ltd.;

9. Set of ten (10) stamped Engineering Drawings, dated August 23, 2019, prepared by K. Smart Associates Ltd..

Schedule B

Final Effluent Design Objectives

Concentration Objectives prior to completion of construction of all Interim/ Proposed Works

Final Effluent Parameter	Averaging Calculator	Objective (milligrams per litre unless otherwise indicated)
CBOD5	Monthly Average Effluent Concentration	15.0 mg/L
Total Suspended Solids	Monthly Average Effluent Concentration	15.0 mg/L
Total Phosphorus	Monthly Average Effluent Concentration	0.80 mg/L
E. coli	Monthly Geometric Mean Density	*200 CFU/100 mL
pH	Single Sample Result	6.5 - 9.0 inclusive

*If the MPN method is utilized for *E. coli* analysis the objective shall be 200 MPN/100 mL.

Concentration Objectives upon completion of construction of all Interim Works and prior to completion of construction of all Proposed Works

Final Effluent Parameter	Averaging Calculator	Objective (milligrams per litre unless otherwise indicated)
CBOD5	Monthly Average Effluent Concentration	15.0 mg/L
Total Suspended Solids	Monthly Average Effluent Concentration	15.0 mg/L
Total Phosphorus	Monthly Average Effluent Concentration	0.80 mg/L
E. coli	Monthly Geometric Mean Density	*200 CFU/100 mL
pH	Single Sample Result	6.5 - 9.0 inclusive
Total Residual Chlorine**	Single Sample Result	Non-detectable

*If the MPN method is utilized for *E. coli* analysis the objective shall be 200 MPN/100 mL.
**Total Residual Chlorine shall be non-detectable as measured by a method with a sensitivity of at least 0.02 mg/L

Concentration Objectives upon completion of construction of all Proposed Works

Final Effluent Parameter	Averaging Calculator	Objective
CBOD5	Monthly Average Effluent Concentration	15.0 mg/L
Total Suspended Solids	Monthly Average Effluent Concentration	15.0 mg/L
Total Phosphorus	Monthly Average Effluent Concentration	0.70 mg/L
Total Ammonia Nitrogen	Monthly Average Effluent Concentration	8.0 mg/L (November 1 - April 30) 5.0 mg/L (May 1 - October 31)
E. coli	Monthly Geometric Mean Density	*100 CFU/100 mL
pH	Single Sample Result	6.5 - 8.5 inclusive

*If the MPN method is utilized for *E. coli* analysis the objective shall be 100 MPN/100 mL

Schedule C

Final Effluent Compliance Limits

Concentration Limits prior to completion of construction of all Interim/ Proposed Works

Final Effluent Parameter	Averaging Calculator	Limit (maximum unless otherwise indicated)
CBOD5	Monthly Average Effluent Concentration	25.0 mg/L
Total Suspended Solids	Monthly Average Effluent Concentration	25.0 mg/L
Total Phosphorus	Monthly Average Effluent Concentration	1.0 mg/L
pH	Single Sample Result	between 6.0 - 9.5 inclusive

Concentration Limits upon completion of construction of all Interim Works and prior to completion of construction of all Proposed Works

Final Effluent Parameter	Averaging Calculator	Limit (maximum unless otherwise indicated)
CBOD5	Monthly Average Effluent Concentration	25.0 mg/L
Total Suspended Solids	Monthly Average Effluent Concentration	25.0 mg/L
Total Phosphorus	Monthly Average Effluent Concentration	1.0 mg/L
pH	Single Sample Result	between 6.0 - 9.5 inclusive
Total Residual Chlorine	Single Sample Result	0.02 mg/L*

*If continuous analyzer is used for monitoring of Total Residual Chlorine, reading shall be recorded at a minimum frequency of every 5 minutes and any record is not to exceed 0.1 mg/L and any two-hour moving average is not to exceed 0.02 mg/L

Concentration Limits upon completion of construction of all Proposed Works

Final Effluent Parameter	Averaging Calculator	Limit (maximum unless otherwise indicated)
CBOD5	Monthly Average Effluent Concentration	20.0 mg/L
Total Suspended Solids	Monthly Average Effluent Concentration	20.0 mg/L
Total Phosphorus	Monthly Average Effluent Concentration	0.80 mg/L
Total Ammonia Nitrogen	Monthly Average Effluent Concentration	10.0 mg/L (November 1 - April 30) 7.0 mg/L (May 1 - October 31)
E. coli	Monthly Geometric Mean Density	*200 CFU/100 mL
pH	Single Sample Result	6.0 - 9.0 inclusive

*If the MPN method is utilized for *E. coli* analysis the limit shall be 200 MPN/100 mL

Loading Limits prior to completion of construction of all Proposed Works

Final Effluent Parameter	**Averaging Calculator**	**Limit** (maximum unless otherwise indicated)
CBOD5	Monthly Average Daily Effluent Loading	135.0 kg/d
Total Suspended Solids	Monthly Average Daily Effluent Loading	135.0 kg/d
Total Phosphorus	Monthly Average Daily Effluent Loading	5.4 kg/d

Schedule D

Monitoring Program

Influent - Influent sampling point

Parameters	Sample Type	Minimum Frequency
BOD5	24 hour composite	Weekly
Total Suspended Solids	24 hour composite	Weekly
Total Phosphorus	24 hour composite	Weekly
Total Kjeldahl Nitrogen	24 hour composite	Weekly
pH	24 hour composite	Weekly
Alkalinity	24 hour composite	Weekly

Imported Sewage - Imported Sewage Receiving Station

Parameters	Sample Type	Minimum Frequency
BOD5	Grab	Weekly
Total Suspended Solids	Grab	Weekly
Total Phosphorus	Grab	Weekly
Total Kjeldahl Nitrogen	Grab	Weekly
pH	Grab	Weekly
Alkalinity	Grab	Weekly

Final Effluent - Final Effluent sampling point

Parameters	Sample Type	Minimum Frequency
CBOD5	24 hour composite	Weekly
Total Suspended Solids	24 hour composite	Weekly
Total Phosphorus	24 hour composite	Weekly
Total Ammonia Nitrogen	24 hour composite	Weekly
Total Kjeldahl Nitrogen	24 hour composite	Weekly
Nitrate as Nitrogen	24 hour composite	Weekly
Nitrite as Nitrogen	24 hour composite	Weekly
E. coli	Grab	Weekly
Total Residual Chlorine*	Grab	Daily**
Dissolved Oxygen	Grab	Daily**/ Weekly
pH***	Grab	Daily**/ Weekly
Temperature***	Grab	Daily**/ Weekly
Un-ionized Ammonia****	As Calculated	Weekly

*Not required upon commencement of operation of the UV disinfection system.

**Daily sampling required upon commencement of operation of the Interim Works and prior to commencement of operation of the UV disinfection system - samples shall be collected every working day, normally Monday to Friday. Weekly sampling required where indicated prior to commencement of operation of Interim Works and following commencement of operation of the UV disinfection system.

***pH and temperature of the Final Effluent shall be determined in the field at the time of sampling for Total Ammonia Nitrogen.

****The concentration of un-ionized ammonia shall be calculated using the total ammonia concentration, pH and temperature using the methodology stipulated in "Ontario's Provincial Water Quality Objectives" dated July 1994, as amended.

Sludge/Biosolids – holding tank/truck loading bay

Parameters	Sample Type	Minimum Frequency
Total Solids	Grab	Quarterly
Total Phosphorus	Grab	Quarterly
Total Ammonia Nitrogen	Grab	Quarterly
Nitrate as Nitrogen	Grab	Quarterly
Metal Scan - Arsenic - Cadmium - Cobalt - Chromium - Copper - Lead - Mercury - Molybdenum - Nickel - Potassium - Selenium - Zinc	Grab	Quarterly

Schedule E

Limited Operational Flexibility

Protocol for Pre-Authorized Modifications to Municipal Sewage Works

1. General

1. Pre-authorized modifications are permitted only where Limited Operational Flexibility has already been granted in the Approval and only permitted to be made at the pumping stations and sewage treatment plant in the Works, subject to the conditions of the Approval.

2. Where there is a conflict between the types and scope of pre-authorized modifications listed in this document, and the Approval where Limited Operational Flexibility has been granted, the Approval shall take precedence.

3. The Owner shall consult the District Manager on any proposed modifications that may fall within the scope and intention of the Limited Operational Flexibility but is not listed explicitly or included as an example in this document.

4. The Owner shall ensure that any pre-authorized modifications will not:

    a. adversely affect the hydraulic profile of the Sewage Treatment Plant or the performance of any upstream or downstream processes, both in terms of hydraulics and treatment performance;

    b. result in new Overflow or Bypass locations, or any potential increase in frequency or quantity of Overflow(s) or Bypass(es).

    c. result in a reduction in the required Peak Flow Rate of the treatment process or equipment as originally designed.

2. Modifications that do not require pre-authorization:

1. Sewage works that are exempt from Ministry approval requirements;

2. Modifications to the electrical system, instrumentation and control system.

3. Pre-authorized modifications that do not require preparation of "Notice of Modification to Sewage Works"

1. Normal or emergency maintenance activities, such as repairs, renovations, refurbishments and replacements with Equivalent Equipment, or other improvements to an existing approved piece of equipment of a treatment process do not require pre-authorization. Examples of these activities are:

a. Repairing a piece of equipment and putting it back into operation, including replacement of minor components such as belts, gear boxes, seals, bearings;

b. Repairing a piece of equipment by replacing a major component of the equipment such as motor, with the same make and model or another with the same or very close power rating but the capacity of the pump or blower will still be essentially the same as originally designed and approved;

c. Replacing the entire piece of equipment with Equivalent Equipment.

2. Improvements to equipment efficiency or treatment process control do not require pre-authorization. Examples of these activities are:

a. Adding variable frequency drive to pumps;

b. Adding on-line analyzer, dissolved oxygen probe, ORP probe, flow measurement or other process control device.

4. Pre-Authorized Modifications that require preparation of "Notice of Modification to Sewage Works"

1. Pumping Stations

a. Replacement, realignment of existing sewers including manholes, valves, gates, weirs and associated appurtenances provided that the modifications will not add new influent source(s) or result in an increase in flow from existing sources as originally approved.

b. Extension or partition of wetwell to increase retention time for emergency response and improve station maintenance and pump operation;

c. Replacement or installation of inlet screens to the wetwell;

d. Replacement or installation of flowmeters, construction of station bypass;

e. Replacement, reconfiguration or addition of pumps and modifications to pump suctions and discharge pipings including valve, gates, motors, variable frequency drives and associated appurtenances to maintain firm pumping capacity or modulate the pump rate provided that the modifications will not result in a reduction in the firm pumping capacity or discharge head or an increase in the peak pumping rate of the pumping station as originally designed;

f. Replacement, realignment of existing forcemain(s) including valves, gates, and associated appurtenances provided that the modifications will not reduce the flow capacity or increase the total dynamic head and transient in the forcemain.

2. Sewage Treatment Plant

1. Sewers and appurtenances

    a. Replacement, realignment of existing sewers (including pipes and channels) or construction of new sewers, including manholes, valves, gates, weirs and associated appurtenances within the a sewage treatment plant, provided that the modifications will not add new influent source(s) or result in an increase in flow from existing sources as originally approved and that the modifications will remove hydraulic bottlenecks or improve the conveyance of sewage into and through the Works.

2. Flow Distribution Chambers/Splitters

    a. Replacement or modification of existing flow distribution chamber/splitters or construction of new flow distribution chamber/splitters, including replacements or installation of sluice gates, weirs, valves for distribution of flows to the downstream process trains, provided that the modifications will not result in a change in flow distribution ratio to the downstream process trains as originally designed.

3. Imported Sewage Receiving Facility

    a. Replacement, relocation or installation of loading bays, connect/disconnect hook-up systems and unloading/transferring systems;

    b. Replacement, relocation or installation of screens, grit removal units and compactors;

    c. Replacement, relocation or installation of pumps, such as dosing pumps and transfer pumps, valves, piping and appurtenances;

    d. Replacement, relocation or installation of storage tanks/chambers and spill containment systems;

    e. Replacement, relocation or installation of flow measurement and sampling equipment;

    f. Changes to the source(s) or quantity from each source, provided that changes will not result in an increase in the total quantity and waste loading of each type of Imported Sewage already approved for co-treatment.

4. Preliminary Treatment System

    a. Replacement of existing screens and grit removal units with equipment of the same or higher process performance technology, including where necessary replacement or upgrading of existing screenings dewatering washing compactors, hydrocyclones, grit classifiers, grit pumps, air blowers conveyor system, disposal bins and other ancillary equipment to the screening and grit removal processes.

    b. Replacement or installation of channel aeration systems, including air blowers, air supply main, air headers, air laterals, air distribution grids and diffusers.

5. Primary Treatment System

    a. Replacement of existing sludge removal mechanism, including sludge chamber;

    b. Replacement or installation of scum removal mechanism, including scum chamber;

    c. Replacement or installation of primary sludge pumps, scum pumps, provided that:the modifications will not result in a reduction in the firm pumping capacity or discharge head that the primary sludge pump(s) and scum pump(s) are originally designed to handle.

6. Secondary Treatment System

    1. Biological Treatment

        a. Conversion of complete mix aeration tank to plug-flow multi-pass aeration tank, including modifications to internal structural configuration;

        b. Addition of inlet gates in multi-pass aeration tank for step-feed operation mode;

        c. Partitioning of an anoxic/flip zone in the inlet of the aeration tank, including installation of submersible mixer(s);

        d. Replacement of aeration system including air blowers, air supply main, air headers, air laterals, air distribution grids and diffusers, provided that the modifications will not result in a reduction in the firm capacity or discharge pressure that the blowers are originally designed to supply or in the net oxygen transferred to the wastewater required for biological treatment as originally required.

    2. Secondary Sedimentation

        a. Replacement of sludge removal mechanism, including sludge chamber;

        b. Replacement or installation of scum removal mechanism, including scum chamber;

        c. Replacement or installation of return activated sludge pump(s), waste activated sludge pump(s), scum pump(s), provided that the modifications will not result in a reduction in the firm pumping capacity or discharge head that the activated sludge pump(s) and scum pump(s) are originally designed to handle.

7. Post-Secondary Treatment System

    a. Replacement of filtration system with equipment of the same filtration technology, including feed pumps, backwash pumps, filter reject pumps, filtrate extract pumps, holding tanks associated with the pumping system, provided that the modifications will not result in a reduction in the capacity of

the filtration system as originally designed.

8. Disinfection System

    1. UV Irradiation

        a. Replacement of UV irradiation system, provided that the modifications will not result in a reduction in the design capacity of the disinfection system or the radiation level as originally designed.

    2. Chlorination/Dechlorination and Ozonation Systems

        a. Extension and reconfiguration of contact tank to increase retention time for effective disinfection and reduce dead zones and minimize short-circuiting;

        b. Replacement or installation of chemical storage tanks, provided that the tanks are provided with effective spill containment.

9. Supplementary Treatment Systems

    1. Chemical systems

        a. Replacement, relocation or installation of chemical storage tanks for existing chemical systems only, provided that the tanks are sited with effective spill containment;

        b. Replacement or installation of chemical dosing pumps provided that the modifications will not result in a reduction in the firm capacity that the dosing pumps are originally designed to handle.

        c. Relocation and addition of chemical dosing point(s) including chemical feed pipes and valves and controls, to improve phosphorus removal efficiency;

        d. Use of an alternate chemical provided that it is a non-proprietary product and is a commonly used alternative to the chemical approved in the Works, provided that the chemical storage tanks, chemical dosing pumps, feed pipes and controls are also upgraded, as necessary..

10. Sludge Management System

    1. Sludge Holding and Thickening

        a. Replacement or installation of sludge holding tanks, sludge handling pumps, such as transfer pumps, feed pumps, recirculation pumps, provided that modifications will not result in reduction in the solids storage or handling capacities;

    2. Sludge Digestion

a. Replacement or installation of digesters, sludge handling pumps, such as transfer pumps, feed pumps, recirculation pumps, provided that modifications will not result in reduction in the solids storage or handling capacities;

b. replacement of sludge digester covers.

3. Sludge Dewatering and Disposal

a. Replacement of sludge dewatering equipment, sludge handling pumps, such as transfer pumps, feed pumps, cake pumps, loading pumps, provided that modifications will not result in reduction in solids storage or handling capacities.

4. Processed Organic Waste

a. Changes to the source(s) or quantity from each source, provided that changes will not result in an increase in the total quantity already approved for co-processing.

11. Standby Power System

1. Replacement or installation of standby power system, including feed from alternate power grid, emergency power generator, fuel supply and storage systems, provided that the existing standby power generation capacity is not reduced.

12. Pilot Study

1. Small side-stream pilot study for existing or new technologies, alternative treatment process or chemical, provided:

a. all effluent from the pilot system is hauled off-site for proper disposal or returned back to the sewage treatment plant for at a point no further than immediately downstream of the location from where the side-stream is drawn;

b. no proprietary treatment process or propriety chemical is involved in the pilot study;

c. the effluent from the pilot system returned to the sewage treatment plant does not significantly alter the composition/concentration of or add any new contaminant/inhibiting substances to the sewage to be treated in the downstream process;

d. the pilot study will not have any negative impacts on the operation of the sewage treatment plant or cause a deterioration of effluent quality;

e. the pilot study does not exceed a maximum of two years and a notification of completion shall be submitted to the District Manager within one month of completion of the pilot project.

13. Lagoons

    a. installing baffles in lagoon provided that the operating capacity of the lagoon system is not reduced;

    b. raise top elevation of lagoon berms to increase free-board;

    c. replace or install interconnecting pipes and chambers between cells, provided that the process design operating sequence is not changed;

    d. replace or install mechanical aerators, or replace mechanical aerators with diffused aeration system provided that the mixing and aeration capacity are not reduced;

    e. removal of accumulated sludge and disposal to an approved location offsite.

3. Final Effluent Disposal Facilities

    a. Replacement or realignment of the Final Effluent channel, sewer or forcemain, including manholes, valves and appurtenances from the end of the treatment train to the discharge outfall section, provided that the sewer conveys only effluent discharged from the Sewage Treatment Plant and that the replacement or re-aligned sewer has similar dimensions and performance criteria and is in the same or approximately the same location and that the hydraulic capacity will not be reduced.

This page contains an image of the form entitled "Notice of Modification to Sewage Works". A digital copy can be obtained from the District Manager.

Ontario

Ministry of the Environment, Conservation and Parks

Notice of Modification to Sewage Works

RETAIN COPY OF COMPLETED FORM AS PART OF THE ECA ON-SITE PRIOR TO THE SCHEDULED IMPLEMENTATION DATE.

Part 1 – Environmental Compliance Approval (ECA) with Limited Operational Flexibility

(Insert the ECA's owner, number and issuance date and notice number, which should start with "01" and consecutive numbers thereafter)

ECA Number	Issuance Date (mm/dd/yy)	Notice number (if applicable)

ECA Owner	Municipality

Part 2: Description of the modifications as part of the Limited Operational Flexibility

(Attach a detailed description of the sewage works)

Description shall include:
1. A detail description of the modifications and/or operations to the sewage works (e.g. sewage work component, location, size, equipment type/model, material, process name, etc.)
2. Confirmation that the anticipated environmental effects are negligible.
3. List of updated versions of, or amendments to, all relevant technical documents that are affected by the modifications as applicable, i.e. submission of documentation is not required, but the listing of updated documents is (design brief, drawings, emergency plan, etc.)

Part 3 – Declaration by Professional Engineer

I hereby declare that I have verified the scope and technical aspects of this modification and confirm that the design:
1. Has been prepared or reviewed by a Professional Engineer who is licensed to practice in the Province of Ontario;
2. Has been designed in accordance with the Limited Operational Flexibility as described in the ECA;
3. Has been designed consistent with Ministry's Design Guidelines, adhering to engineering standards, industry's best management practices, and demonstrating ongoing compliance with s.53 of the Ontario Water Resources Act; and other appropriate regulations.

I hereby declare that to the best of my knowledge, information and belief the information contained in this form is complete and accurate

Name (Print)	PEO License Number

Signature	Date (mm/dd/yy)

Name of Employer

Part 4 – Declaration by Owner

I hereby declare that:
1. I am authorized by the Owner to complete this Declaration;
2. The Owner consents to the modification; and
3. This modifications to the sewage works are proposed in accordance with the Limited Operational Flexibility as described in the ECA.
4. The Owner has fulfilled all applicable requirements of the *Environmental Assessment Act*.

I hereby declare that to the best of my knowledge, information and belief the information contained in this form is complete and accurate

Name of Owner Representative (Print)	Owner representative's title (Print)

Owner Representative's Signature	Date (mm/dd/yy)

Schedule F

Methodology for Calculating and Reporting Monthly Average Effluent Concentration, Annual Average Effluent Concentration and Monthly Geometric Mean Density

1. Monthly Average Effluent Concentration

Step 1: Calculate the arithmetic mean of all Single Sample Results of the concentration of a contaminant in the Final Effluent sampled or measured during a calendar month and proceed as follows depending on the result of the calculation:

a. If the arithmetic mean does not exceed the compliance limit for the contaminant, then report and use this arithmetic mean as the Monthly Average Effluent Concentration for this parameter where applicable in this Approval;

b. If the arithmetic mean exceeds the compliance limit for the contaminant and there was no Bypass Event during the calendar month, then report and use this arithmetic mean as the Monthly Average Effluent Concentration for this parameter where applicable in this Approval;

c. If the arithmetic mean exceeds the compliance limit for the contaminant and there was Bypass Event(s) during the calendar month, then proceed to Step 2;

d. If the arithmetic mean does not exceed the compliance limit for the contaminant and there was Bypass Event(s) during the calendar month, the Owner may still elect to proceed to Step 2 calculation of the flow-weighted arithmetic mean.

Step 2: Calculate the flow-weighted arithmetic mean of all Single Sample Results of the concentration of a contaminant in the Final Effluent sampled or measured during a calendar month and proceed depending on the result of the calculation:

a. Group No Bypass Days (**NBPD**) data and Bypass Days (**BPD**) data during a calendar month separately;

b. Calculate the arithmetic mean of all Single Sample Results of the concentration of a contaminant in the Final Effluent sampled or measured on all NBPD during a calendar month and record it as **Monthly Average NBPD Effluent Concentration**;

c. Obtain the "**Total Monthly NBPD Flow**" which is the total amount of Final Effluent discharged on all NBPD during the calendar month;

d. Calculate the arithmetic mean of all Single Sample Results of the concentration of a contaminant in the Final Effluent sampled or measured on all BPD during a calendar month

and record it as **Monthly Average BPD Effluent Concentration**;

e. Obtain the "**Total Monthly BPD Flow**" which is the total amount of Final Effluent discharged on all BPD during the calendar month;

f. Calculate the flow-weighted arithmetic mean using the following formula:

[(Monthly Average NBPD Effluent Concentration × Total Monthly NBPD Flow) + (Monthly Average BPD Effluent Concentration × Total Monthly BPD Flow)] ÷ (Total Monthly NBPD Flow + Total Monthly BPD Flow)

It should be noted that in this method, if there are no Bypass Event for the month, the calculated result would be the same as the non-flow-weighted arithmetic mean method;

g. Report and use the lesser of the flow-weighted arithmetic mean obtained in Step 2 and the arithmetic mean obtained in Step 1 as the Monthly Average Effluent Concentration for this parameter where applicable in this Approval.

2. Annual Average Effluent Concentration

Step 1: Calculate the arithmetic mean of all Single Sample Results of the concentration of a contaminant in the Final Effluent sampled or measured during a calendar year and proceed as follows depending on the result of the calculation:

a. If the arithmetic mean does not exceed the compliance limit for the contaminant, then report and use this arithmetic mean as the Annual Average Effluent Concentration for this parameter where applicable in this Approval;

b. If the arithmetic mean exceeds the compliance limit for the contaminant and there was no Bypass Event during the calendar year, then report and use this arithmetic mean as the Annual Average Effluent Concentration for this parameter where applicable in this Approval;

c. If the arithmetic mean exceeds the compliance limit for the contaminant and there was Bypass Event(s) during the calendar year, then proceed to Step 2;

d. If the arithmetic mean does not exceed the compliance limit for the contaminant and there was Bypass Event(s) during the calendar year, the Owner may still elect to proceed to Step 2 calculation of the flow-weighted arithmetic mean.

Step 2: Calculate the flow-weighted arithmetic mean of all Single Sample Results of the concentration of a contaminant in the Final Effluent sampled or measured during a calendar year and proceed depending on the result of the calculation:

a. Group No Bypass Days (**NBPD**) data and Bypass Days (**BPD**) data during a calendar year

separately;

b. Calculate the arithmetic mean of all Single Sample Results of the concentration of a contaminant in the Final Effluent sampled or measured on all NBPD during a calendar year and record it as **Annual Average NBPD Effluent Concentration**;

c. Obtain the "**Total Annual NBPD Flow**" which is the total amount of Final Effluent discharged on all NBPD during the calendar year;

d. Calculate the arithmetic mean of all Single Sample Results of the concentration of a contaminant in the Final Effluent sampled or measured on all BPD during a calendar year and record it as **Annual Average BPD Effluent Concentration**;

e. Obtain the "**Total Annual BPD Flow**" which is the total amount of Final Effluent discharged on all BPD during the calendar year;

f. Calculate the flow-weighted arithmetic mean using the following formula:

[(Annual Average NBPD Effluent Concentration × Total Annual NBPD Flow) + (Annual Average BPD Effluent Concentration × Total Annual BPD Flow)] ÷ (Total Annual NBPD Flow + Total Annual BPD Flow)

It should be noted that in this method, if there are no Bypass Event for the calendar year, the calculated result would be the same as the non-flow-weighted arithmetic mean method;

g. Report and use the lesser of the flow-weighted arithmetic mean obtained in Step 2 and the arithmetic mean obtained in Step 1 as the Annual Average Effluent Concentration for this parameter where applicable in this Approval.

3. Monthly Geometric Mean Density

Geometric mean is defined as the n^{th} root of the product of n numbers. In the context of calculating Monthly Geometric Mean Density for *E. coli*, the following formula shall be used:

$$\sqrt[n]{x_1 x_2 x_3 \cdots x_n}$$

in which,

"n" is the number of samples collected during the calendar month; and

"x" is the value of each Single Sample Result.

For example, four weekly grab samples were collected and tested for *E. coli* during the calendar month. The *E. coli* densities in the Final Effluent were found below:

Sample Number	*E. coli* Densities* (CFU/100 mL)
1	10
2	100
3	300
4	50

The Geometric Mean Density for these data:

$$\sqrt[4]{10 \times 100 \times 300 \times 50} = 62$$

*If a particular result is zero (0), then a value of one (1) will be substituted into the calculation of the Monthly Geometric Mean Density. If the MPN method is utilized for E. coli analysis, values in the table shall be MPN/100 mL.

Schedule G

Municipal and Local Services Board Wastewater System
Profile Information Form

(For reference only, images of the form are attached on the next four pages. A digital copy can be obtained from the District Manger.)

Ontario

Ministry of the Environment, Conservation and Parks

Municipal and Local Services Board Wastewater System Profile Information Form

The information in this form is necessary to administer the Ministry's approvals, compliance and enforcement programs with respect to wastewater treatment and collection systems owned by municipalities and local services boards. These programs are authorized under the *Ontario Water Resources Act*, the *Environmental Protection Act*, the *Nutrient Management Act* and their respective regulations.

Email the completed form to: waterforms@ontario.ca
For any questions call 1-866-793-2588.

[A] SYSTEM PROFILE INFORMATION

Wastewater System Number *(if assigned)*

☐ New Profile
☐ Update Existing Profile

Name of System

Name of Municipality or Local Services Board

Level of Treatment (select one*)
☐ Primary
☐ Secondary
☐ Tertiary
☐ Secondary Equivalent
☐ Other (specify):

*See Terms and Concepts on page 4

Population Served	Population (Design)	Type of System
		☐ Treatment & Collection System ☐ Collection System Only

Design Rated Capacity (m^3/day)	Peak Flow Rate (m^3/day)	Current Environmental Compliance Approval (ECA) Number	Current ECA Issue Date (yyyy/mm/dd):

The treatment plant receives sewage from: (Check all that applies.* If you have checked more than one option below, indicate the approximate %)

☐ Sanitary Sewer ☐ Combined Sewer
☐ Nominally Separated Sewer ☐ Partially Separated Sewer

*See Terms and Concepts on page 4

[B] OWNER INFORMATION

Legal Name of Municipality or Local Services Board

Unit No	Street No.	Street Name.	Street Type (St, Rd, etc)	Street Direction (N,S,E,W)

PO Box	City/Town	Postal Code

☐ Dr ☐ Miss ☐ Mr ☐ Mrs ☐ Ms	Owner Contact First Name	Owner Contact Last Name	Owner Contact Job Title

Tel. No.	Fax Number	Email address
( ) - ext.	( ) -	

[C] OPERATING AUTHORITY ☐ Check if same as owner

Legal Name of Operator

Unit No	Street No.	Street Name.	Street Type (St, Rd, etc)	Street Direction (N,S,E,W)

PO Box	City/Town	Postal Code

☐ Dr ☐ Miss ☐ Mr ☐ Mrs ☐ Ms	Operator Contact First Name	Operator Contact Last Name	Operator Contact Job Title

Tel. No.	Fax Number	Email address
( ) - ext.	( ) -	

[D] 24/7 CONTACT

☐ Dr ☐ Miss ☒ Mr ☐ Mrs ☐ Ms	First Name	Last Name	Job Title

Tel. No. ( ) - ext.	Fax Number ( ) -	Email address

[E] SYSTEM CIVIC LOCATION ADDRESS (I.E. ADDRESS OF TREATMENT PLANT)

Unit No	Street No.	Street Name.	Street Type (St, Rd, etc)	Street Direction (N,S,E,W)

PO Box	City/Town	Postal Code

If the Wastewater System has no street address

Geographical Township	Lot	Concession

Geographical Referencing (if known, enter the Geographical Reference Information for this Wastewater System)

Map Datum	Geo-Referencing Method	Accuracy Estimate	Location Reference	
Latitude	**Longitude**	**Zone**	**Easting**	**Northing**

[F] TREATMENT PROCESS

Preliminary	Primary	Secondary	Secondary Equivalent	Post-Secondary	Additional Treatment
☐ Screening	☐ Settling/sedimentation/ clarification	☐ Conventional Activated Sludge (CAS)	☐ Aerated Lagoon	☐ Filtration	☐ Phosphorous Removal ☐ Biological ☐ Chemical
☐ Shredding/ grinding	☐ Scum Removal	☐ Extended Aeration	☐ Facultative Lagoon	☐ Clarification	If chemical is used, specify:
☐ Grit Removal	☐ Polymer Addition	☐ Membrane Bioreactor (MBR)	☐ Anaerobic Lagoon	☐ Intermittent Sand Filter (after lagoons)	☐ Nitrification
☐ Other(specify):	☐ Other(specify):	☐ Sequencing Batch Reactor (SBR)	☐ Aerobic Lagoon	☐ Polishing Wetlands	☐ Denitrification
		☐ Rotating Biological Contactor (RBC)	☐ Other(specify):	☐ Polishing Lagoons	☐ Other(specify):
		☐ Trickling Filter (TF)		☐ Other(specify):	
		☐ Biological Aerated Filter (BAF)			
		☐ Other(specify):			

[G] DISINFECTION

Method of Disinfection	Disinfection Period
☐ Chlorination If you chlorinate, do you practice de-chlorination? ☐ Yes ☐ No	☐ Continuous ☐ Seasonal
☐ Ultraviolet Irradiation	☐ Continuous ☐ Seasonal
☐ Other (specify):	☐ Continuous ☐ Seasonal

[H] SLUDGE	
Sludge Stabilization Process	Method of Sludge Disposal/Utilization
☐ Aerobic Digestion	☐ Agricultural
☐ Anaerobic Digestion	☐ Landfill
☐ Drying & Pelletization	☐ Incineration
☐ Lime Treatment	☐ Other (specify):
☐ Composting	
☐ Other (specify):	

Available Sludge Storage Capacity (m^3):

[I] EFFLUENT	
Effluent Disposal Method	Effluent Discharge Frequency
☐ Surface Water Receiving Water Body Name:	☐ Continuous ☐ Seasonal
☐ Subsurface	☐ Continuous ☐ Seasonal
☐ Other (specify):	☐ Continuous ☐ Seasonal

Is the effluent discharged in a vulnerable area identified in the local source protection assessment report approved under the Clean Water Act, 2006?
☐ Yes ☐ No

[J] INFLUENT

Does the plant receive sewage from another municipality or local services board either through an interconnected collection system or hauled sewage?
☐ Yes ☐ No
(if yes, name(s) of other municipality or local services board):

Plant receives:
☐ Leachate (approximate annual volume in m^3):
☐ Septage (approximate annual volume in m^3):
☐ Industrial input (approximate annual volume in m^3):
or (approximate volume in %):

Terms and Concepts

The following Terms and Concepts are provided to assist you when completing Wastewater System Profile Information Form.

In order to determine the level of treatment that applies to the wastewater system, the effluent quality objectives that the wastewater treatment plant was designed to meet must be considered. The process based approach often used in the past has led to confusion and is open to interpretation due to recent developments and practices in the wastewater treatment industry. For example, a plant with a high rate filter (often referred to as a tertiary filter) after its secondary treatment was considered a tertiary treatment in the past since the filter was designed and operated to produce a tertiary quality effluent. However, secondary plants are now being constructed with these filters as a safeguard against any potential secondary clarifier performance degradation and not for the purpose of ensuring tertiary treatment performance. Also, new technologies have evolved that can produce tertiary quality effluent without having these high rate filters (e.g., membrane bioreactors). Lagoons were considered in the past as being capable of providing only secondary equivalent treatment. However, with add-on treatment after the lagoons (e.g. intermittent sand filters), many lagoon treatment systems are capable of producing secondary or tertiary quality effluent.

During the establishment of sewage works, site-specific effluent limits (including averaging periods) are provided by the Ministry's Regional Technical Support Section, considering the assimilative capacity of the receivers and the minimum treatment requirements provided in Procedure F-5-1. The designer of the sewage works then selects objective values that are acceptable to the Ministry and are less (i.e. more stringent) than the effluent limits , in order to provide an adequate safety factor based on the designer's confidence/experience with the technology chosen and other site-specific conditions. The sewage works are then designed (and operated) to meet these design objectives in a reliable and consistent manner. Therefore, the values that are to be used in the determination of the level of treatment that applies to the sewage works must be based on the design objectives, and not the effluent limits.

Two common parameters used in almost all sewage works designs and performance evaluations are $CBOD_5$ (carbonaceous biochemical oxygen demand) (BOD_5 – biochemical oxygen demand - for primary sewage works) and total suspended solids (TSS). Therefore, it is logical that the **objective values** of these two parameters are used to determine the level of treatment at the sewage works.

Level of Treatment:

Primary:
Wastewater treatment plants that have only settling/sedimentation (with or without chemical addition) and providing 30% and 50% or better reduction of BOD_5 and TSS respectively are considered primary plants (MOE Procedures F-5-1 and F-5-5).

Secondary:
Wastewater treatment plants that have biological processes (e.g. activated sludge process and its variations, fixed film processes) or physical-chemical processes producing an effluent quality of $CBOD_5$ and TSS of 15 mg/L or better are considered secondary plants (MOE Design Guidelines for Sewage Works, 2008).

Secondary Equivalent:
Wastewater treatment plants producing an effluent quality of $CBOD_5$ of 25 mg/L and TSS of 30 mg/L or better are considered as secondary equivalent plants.

Note: Wastewater treatment plants that provide only primary settling of solids and the addition of chemicals to improve the removal of TSS (and phosphorus) are not considered as secondary treatment plants or secondary equivalent plants (MOE Design Guidelines for Sewage Works, 2008).

Tertiary:
Wastewater treatment plants that have biological processes (e.g. activated sludge process and its variations, fixed film processes) and/or physical-chemical processes producing an effluent quality of $CBOD_5$ and TSS of 5 mg/L or better are considered tertiary plants.

Note: Biological processes such as nitrification, denitrification and enhanced biological phosphorus removal can be part of either a secondary or tertiary treatment plant. They may be described as secondary treatment plant with nitrification, secondary treatment plant with enhanced biological phosphorus removal, tertiary treatment plant with nitrification etc.

Sewer System Type:

Sanitary Sewers:
Pipes that convey sanitary sewage flows made up of wastewater discharges from residential, commercial, institutional and industrial establishments plus extraneous flow components from such sources as groundwater and surface run off.

Combined Sewers:
Pipes that convey both sanitary sewage and stormwater runoff through a single-pipe system.

Partially Separated Sewers:
Exist when either a portion of the combined sewer area was retrofitted to separate (sanitary and storm) sewers and/or a service area with combined sewers has had a new development area with separate sewers added to the service area; whatever the case may be, the final flows will be combined sewage.

Nominally Separated Sewers:
These sewers are constructed as separate sewers, but the sanitary sewers accept stormwater from roof and foundation drains (i.e., these are separated sewers in name only).

Upon issuance of the environmental compliance approval, I hereby revoke Approval No(s). 5437-BLYN9F issued on April 9, 2020

In accordance with Section 139 of the *Environmental Protection Act,* you may by written notice served upon me and the Ontario Land Tribunal within 15 days after receipt of this notice, require a hearing by the Tribunal. Section 142 of the *Environmental Protection Act* provides that the notice requiring the hearing ("the Notice") shall state:

a. The portions of the environmental compliance approval or each term or condition in the environmental compliance approval in respect of which the hearing is required, and;
b. The grounds on which you intend to rely at the hearing in relation to each portion appealed.

Pursuant to subsection 139(3) of the *Environmental Protection Act,* a hearing may not be required with respect to any terms and conditions in this environmental compliance approval, if the terms and conditions are substantially the same as those contained in an approval that is amended or revoked by this environmental compliance approval.

The Notice should also include:

1. The name of the appellant;
2. The address of the appellant;
3. The environmental compliance approval number;
4. The date of the environmental compliance approval;
5. The name of the Director, and;
6. The municipality or municipalities within which the project is to be engaged in.

And the Notice should be signed and dated by the appellant.

This Notice must be served upon:

Registrar*
Ontario Land Tribunal
655 Bay Street, Suite 1500
Toronto, Ontario
M5G 1E5
OLT.Registrar@ontario.ca

and

The Director appointed for the purposes of Part II.1 of the *Environmental Protection Act*
Ministry of the Environment, Conservation and Parks
135 St. Clair Avenue West, 1st Floor
Toronto, Ontario
M4V 1P5

*** Further information on the Ontario Land Tribunal's requirements for an appeal can be obtained directly from the Tribunal at: Tel: (416) 212-6349 or 1 (866) 448-2248, or www.olt.gov.on.ca**

The above noted activity is approved under s.20.3 of Part II.1 of the *Environmental Protection Act.*

DATED AT TORONTO this 14th day of January, 2022

A. Ahmed

Aziz Ahmed, P.Eng.
Director

appointed for the purposes of Part II.1 of the *Environmental Protection Act*

JW/

c: District Manager, DWECD, MECP Hamilton District Office
Stephanie Davis, The Corporation of Norfolk County