Thornton Tomasetti

Noise and Vibration Impact Study - Addendum

4103 Palladium Way
Burlington, Ontario

SW24201

Prepared For
Kimberley Harrison-McMillan, BES, MCIP, RPP
Director of Planning & Development

2669006 Ontario Inc.
C/O Better Life Living
441 Maple Avenue
Burlington, Ontario, L7S 1L8
Tel: 647-808-3955
kharrison@betterlifeliving.ca

Prepared By
Robert Fuller, P.Eng.
Project Engineer

Thornton Tomasetti
23-366 Revus Avenue
Mississauga, Ontario L5G 4S5
Tel: 647-769-7161
rfuller@thorntontomasetti.com
www.ThorntonTomasetti.com

November 12, 2024

1.0 Introduction

TT has previously prepared the following report for the subject Project:

- *Better Life Maple Villa, 4103 Palladium Way, Burlington, Ontario, SW21444, Noise and Vibration Impact Study*. Dated March 10, 2023, prepared by Robert Fuller of Thornton Tomasetti. (NVIS)

The purpose of these reports was to support an application for Zoning By-Law Amendment (ZBA) and Site Plan Approval (SPA) for the subject Project, which was approved by the City of Burlington.

The approved Project included a 5-storey Long Term Care (LTC) building, which is now under construction, and a 6-storey Retirement Home (RH).

TT understands that the Client now plans to extend the RH by 2 additional floors, to a total of 8-storeys. The footprint of the RH will remain unchanged. The LTC will remain unchanged.

As part of a Pre-Application Consultation (PAC) process, the Client was advised by the City of Burlington that an addendum would be required to the NVIS in order to address the modification to the previously approved design. This addendum is intended to address the requirement identified in the PAC.

For the purposes of this assessment, the two additional stories added to the RH are anticipated to add approximately 6m to its overall height.

2.0 Stationary Noise Assessment

Please refer to Appendix A for side-by-side illustrations of the original vs. modified stationary noise model results for the Project. The following sections provide a summary and discussion.

2.1 Project Noise Impacts on the Surroundings

The additional height of the modified RH results in reduced noise impacts to the surrounding properties (nearby residences to the east) compared to the original height, because rooftop mechanical equipment on the RH is moved further away from those receivers and is more occluded by the roof-edge.

2.2 Project Noise Impacts on Itself

Based on the latest shop drawings for rooftop noise barriers on the LTC, there is expected to be no significant change (+1 dBA) in the noise impacts on the top floor of the RH with the addition of 2 new floors.

The applicable guideline document (NPC-300) requires that sound level limits from stationary sources be met at the exterior of a building's façade but exempts the impacts from sources located on the same property, particularly in the case of dwellings.

In this case, the expected transportation noise impacts will be higher than the predicted stationary noise impacts. Because the building's exterior construction will be designed to achieve acceptable indoor sound level limits due to the transportation noise impacts, this is also expected to result in acceptable indoor noise levels from the stationary sources located on the Project Site.

2.3 Surrounding Noise Impacts on the Project

The additional height of the modified RH has negligible impact on the noise impacts from surrounding activities on the Project. The RH was already taller than nearby commercial properties and located at a sufficient distance from them to avoid significant noise impacts.

3.0 Transportation Noise Assessment

TT's previous NVIS provided an assessment of transportation noise impacts to each façade of each floor of both the LTC and RH.

For the purposes of this addendum, only the traffic noise impacts to the new top floor on the RH have been modeled.

3.1 Traffic Data Used

Due to the time which has passed since TT's previous assessment, TT contacted the City of Burlington to request updated traffic data related to the Project. TT was advised that the AADT data available on the City of Burlington's website (2022 volumes) were the most recent counts available. Please refer to Appendix B for a copy of TT's correspondence.

Table 1 provides a summary of the traffic data used in the previous NVIS vs. the latest data available.

Table 1: Traffic Data Comparison

Parameter	Palladium Way	Walkers Line	Highway 407 NB/EB	Highway 407 SB/WB
Previous NVIS Report				
Estimated AADT (2026)	5,500	6,140	-	-
Annual Growth Rate	2%	2%	-	-
Years of Growth	6	6	-	-
Estimated AADT (2032)*	6,195	6,915	60,000	60,000
Most Recent AADT Data				
AADT (2022)	962	4,436	-	-
Annual Growth Rate	2%	2%	-	-
Years of Growth	17	17	-	-
Estimated AADT (2034)*	1,220	5,626	-	-

*In the original NVIS, the AADT data was projected forward to 10 years from the date of the report (2032). The recent 2022 AADT was projected 10 years forward from the date of this assessment (2034).

Based on the data reviewed, the traffic volumes considered in TT's previous assessment are considered to be conservative in comparison to the most recent traffic counts conducted, and have been used as-is.

3.2 Traffic Noise Modelling

Calculations of traffic sound levels were performed using STAMSON 5.04, the software implementation of the MECP ORNAMENT model for road traffic which was developed and published by the MECP for transportation noise prediction. The calculated sound levels are summarized in Table 2. STAMSON calculation output reports for the traffic noise predictions are attached in Appendix A.

The calculation parameters used were identical to those in the previously accepted NVIS report, apart from height, which was set 6m higher.

Table 2: Traffic Noise Modelling Results

PORID	POR Location	Daytime Leq-16hr (07:00 – 23:00)	Nighttime Leq-8hr (23:00 – 07:00)
RN_POW8	North Façade of Retirement Home 8th Floor (~24.9m elevation)	72	65
RE_POW8	East Façade of Retirement Home 8th Floor (~24.9m elevation)	67	61
RS_POW8	South Façade of Retirement Home 8th Floor (~24.9m elevation)	57	51
RW_POW8	West Façade of Retirement Home 8th Floor (~24.9m elevation)	69	63

3.3 Traffic Noise Mitigation Recommendations

3.3.1 Ventilation

Based on the calculations performed, central air conditioning is required on the north, east, and west façades of the RH.

As noted in the previous NVIS report, the RH design will incorporate central heating and air conditioning for the full building. Therefore, this condition is considered to be met.

3.3.2 Construction Requirements

Based on the calculations performed, exterior constructions along the north, east and west façades of the RH must be designed to achieve indoor sound level requirements.

The construction requirements applicable to the two additional floors on the RH are consistent with those identified in the previous NVIS as follows:

RH North Façade Floor 7-8:

- Solid Façade – STC 39
- Fixed Glazing – STC 34
- Operable Glazing – STC 31

RH East & West Façade Floor 7-8:

- Solid Façade – STC 37
- Fixed Glazing – STC 32
- Operable Glazing – STC 29

3.3.3 Warning Clauses

In addition to the warning clauses identified in the previous NVIS report, the north, east and west façades of the RH floors 7 & 8 will be subject to a Type D warning clause.

4.0 Conclusions

The proposed addition of two floors to the proposed retirement home will result in minimal changes to the predicted noise impacts associated with the Project for both transportation and stationary noise.

Stationary noise impacts between the project and surrounding properties and from the project onto itself do not change in any significant way (+1 dBA for greatest impacts from the project onto itself).

Based on the analysis conducted for stationary noise, there are no changes to the recommendations or conclusions of the previous report.

Traffic noise impacts to the additional floors can be addressed through ventilation, construction measures, and warning clauses similar to those identified in the previous NVIS report.

Based on the analysis conducted for traffic noise, the only additional mitigation measures required are to provide the same STC rating of exterior façade and windows on the east side of the Retirement Home as was previously recommended on the west side of the Retirement Home. Otherwise, the conclusions of the assessment remain unchanged.

As the design of the development proceeds, and mechanical equipment is selected, acoustical modelling of the impacts of this equipment should be confirmed in order to evaluate compliance with applicable sound limits at surrounding sensitive receptors, and confirm that impacts to the Project itself will be acceptable.

Please do not hesitate to contact us if there are any questions.

Yours Truly,

Thornton Tomasetti



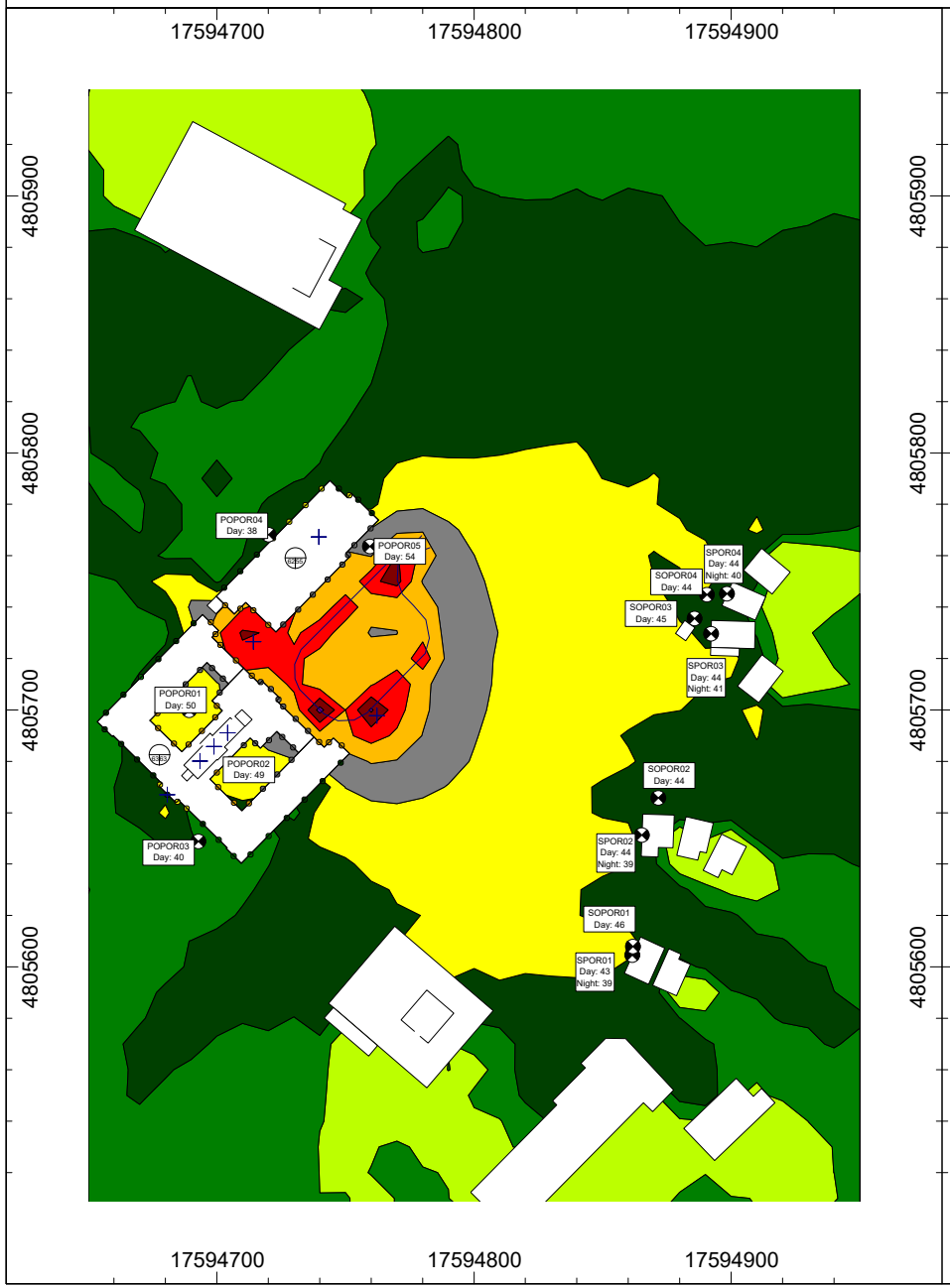
Robert Fuller, P.Eng.
Project Engineer

5.0 Disclaimer

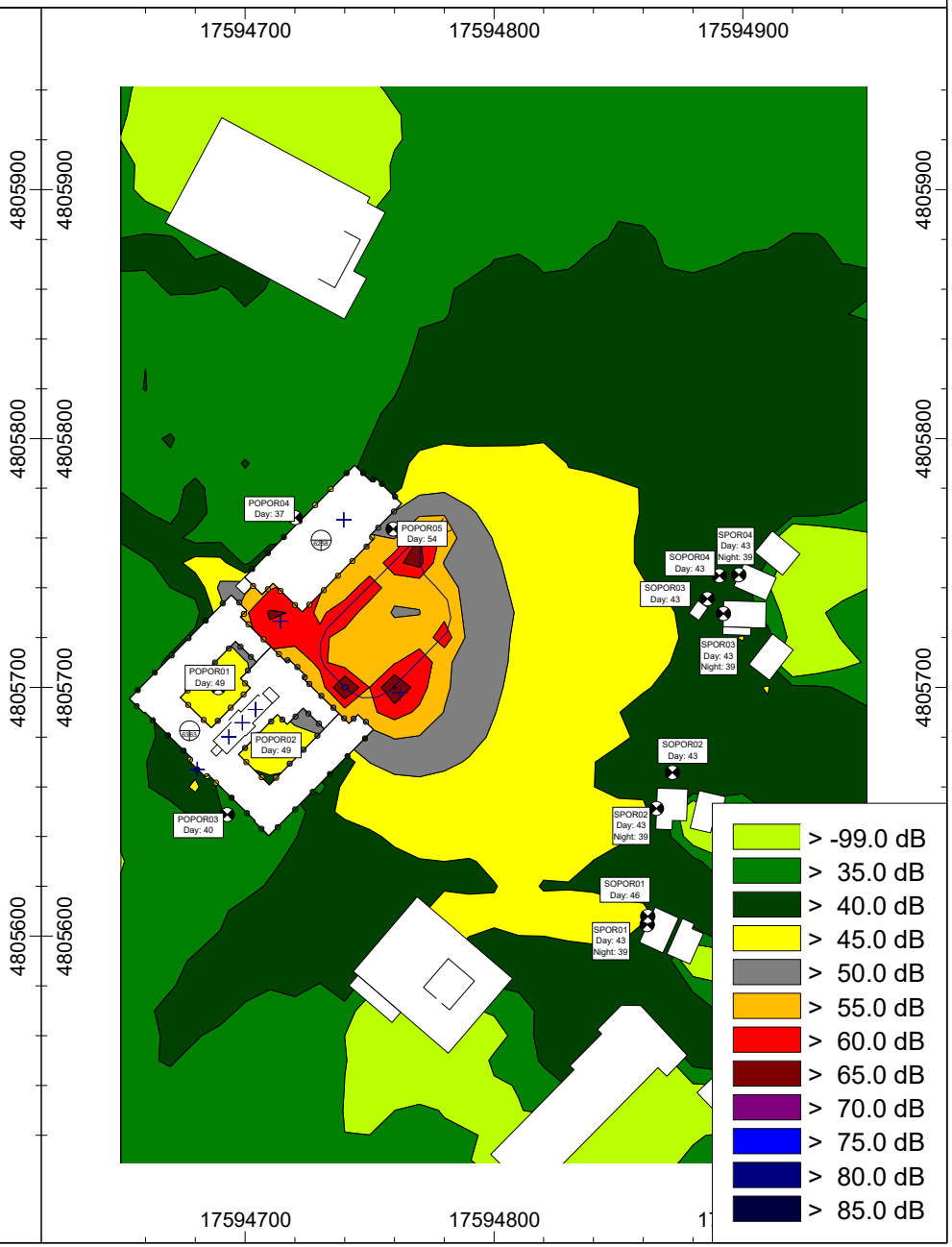
Achieving the required noise control requirements relies on correct incorporation of noise control recommendations into Architectural and Mechanical drawings and specifications, as well as correct installation during construction. On Request, TT will conduct drawing reviews and onsite reviews of noise control measures and provide observations as appropriate; however, notwithstanding the foregoing, it is expressly understood and agreed that TT shall not have control or charge of, and shall not be responsible for the acts or omissions, including but not limited to means, methods, techniques, sequences and procedures, of the Design Professionals and/or Contractors performing design and/or construction on the Project. Accordingly, TT shall not be held responsible for the failure of any party to properly incorporate the noise control measures stated in this report.

Appendix A – Updated Model Results

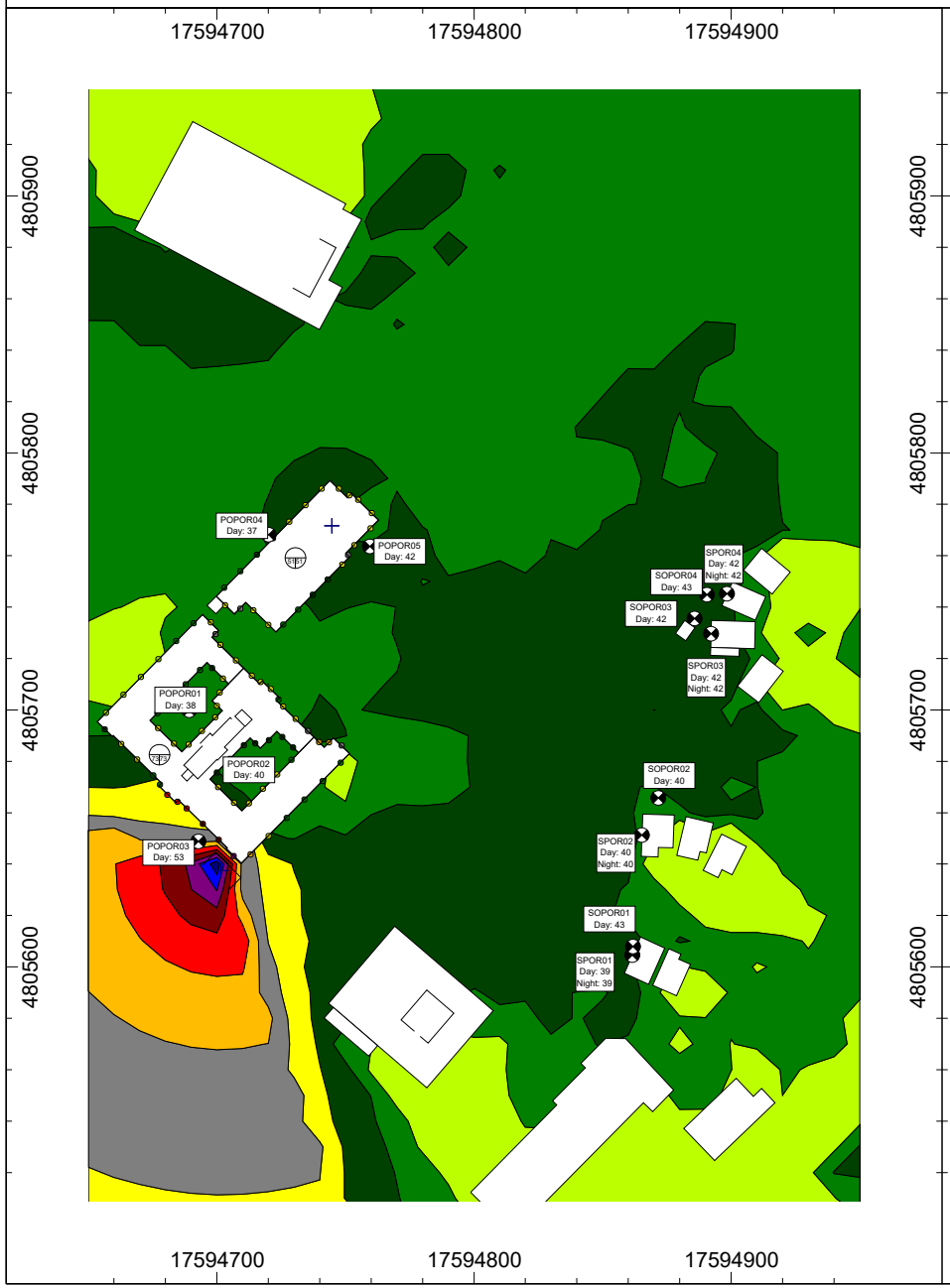
Steady Noise Impacts
Original Project Sources to Surroundings
Top Floor Flacade & Ground Level Contour



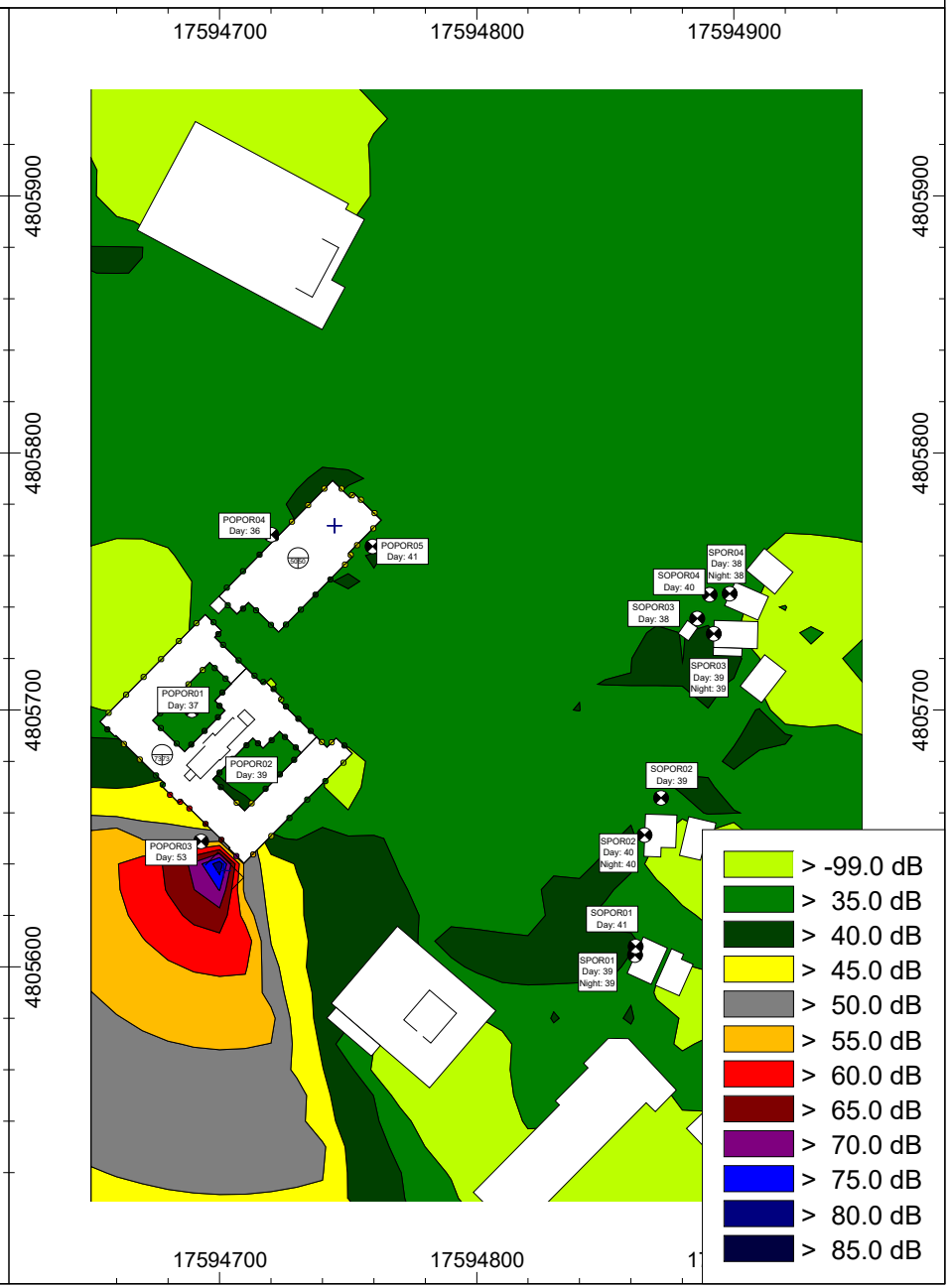
Steady Noise Impacts
Modified Project Sources to Surroundings
Top Floor Facade & Ground Level Contour



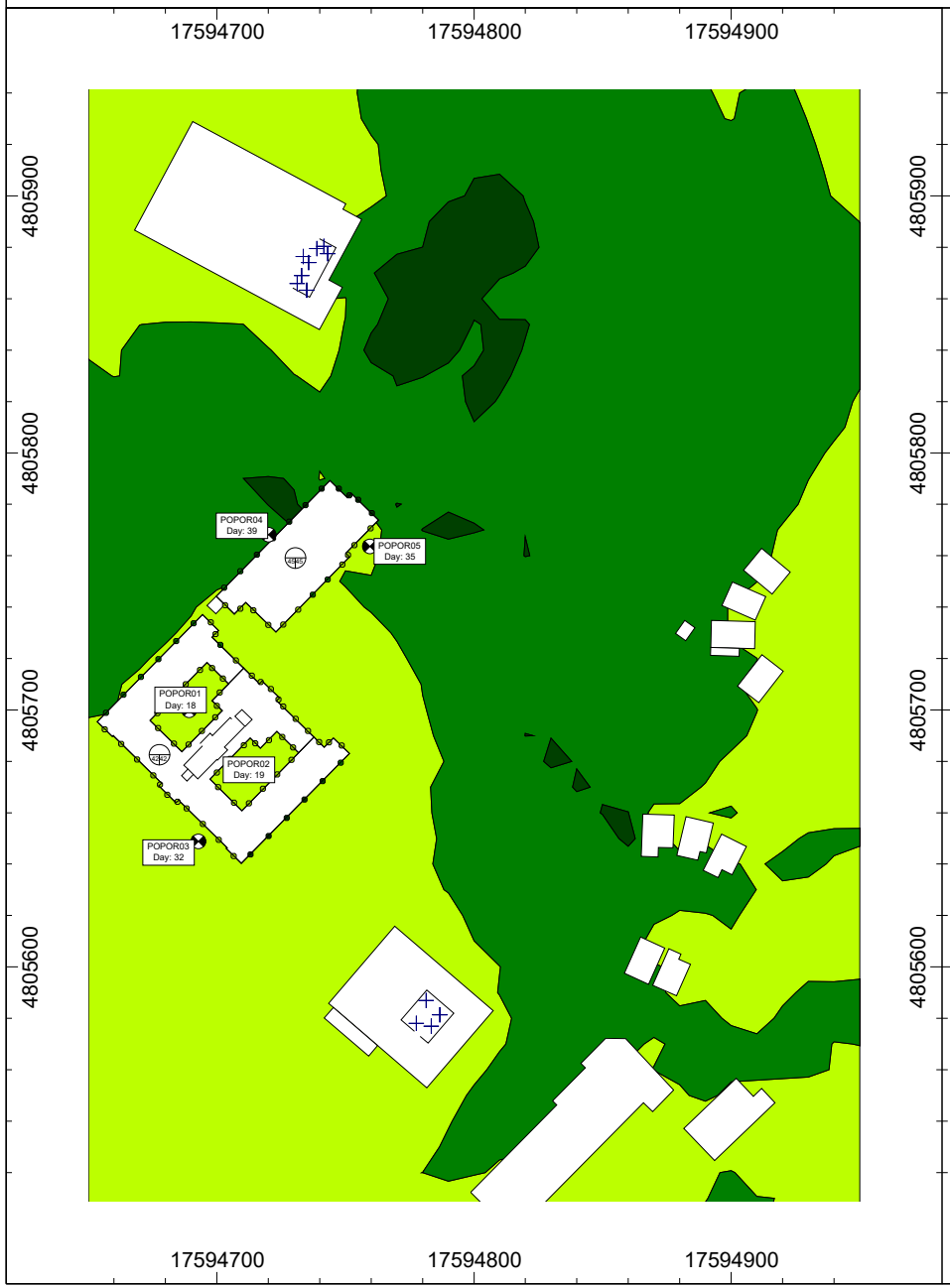
Emergency Testing Noise Impacts
Original Project Sources to Surroundings



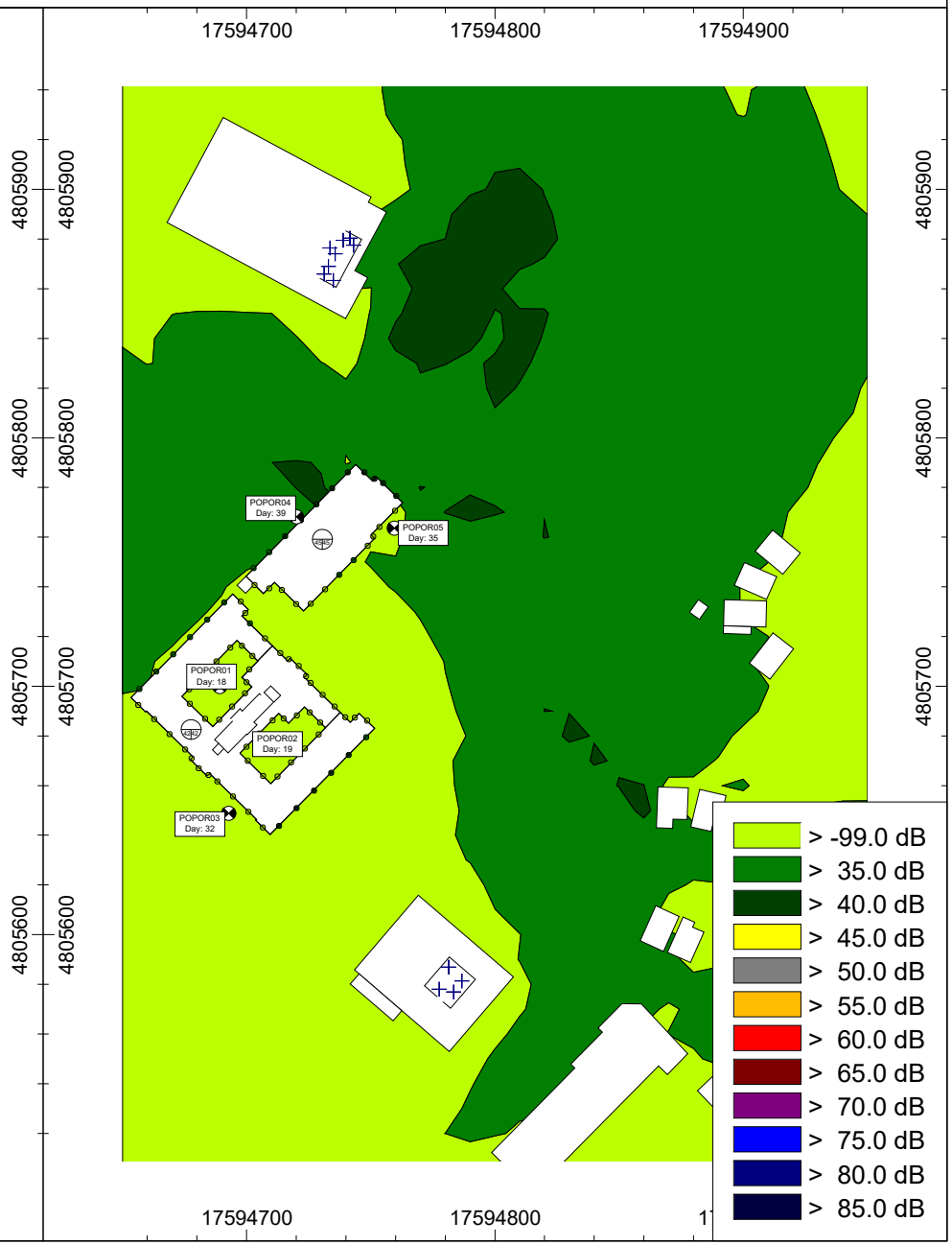
Emergency Testing Noise Impacts
Modified Project Sources to Surroundings



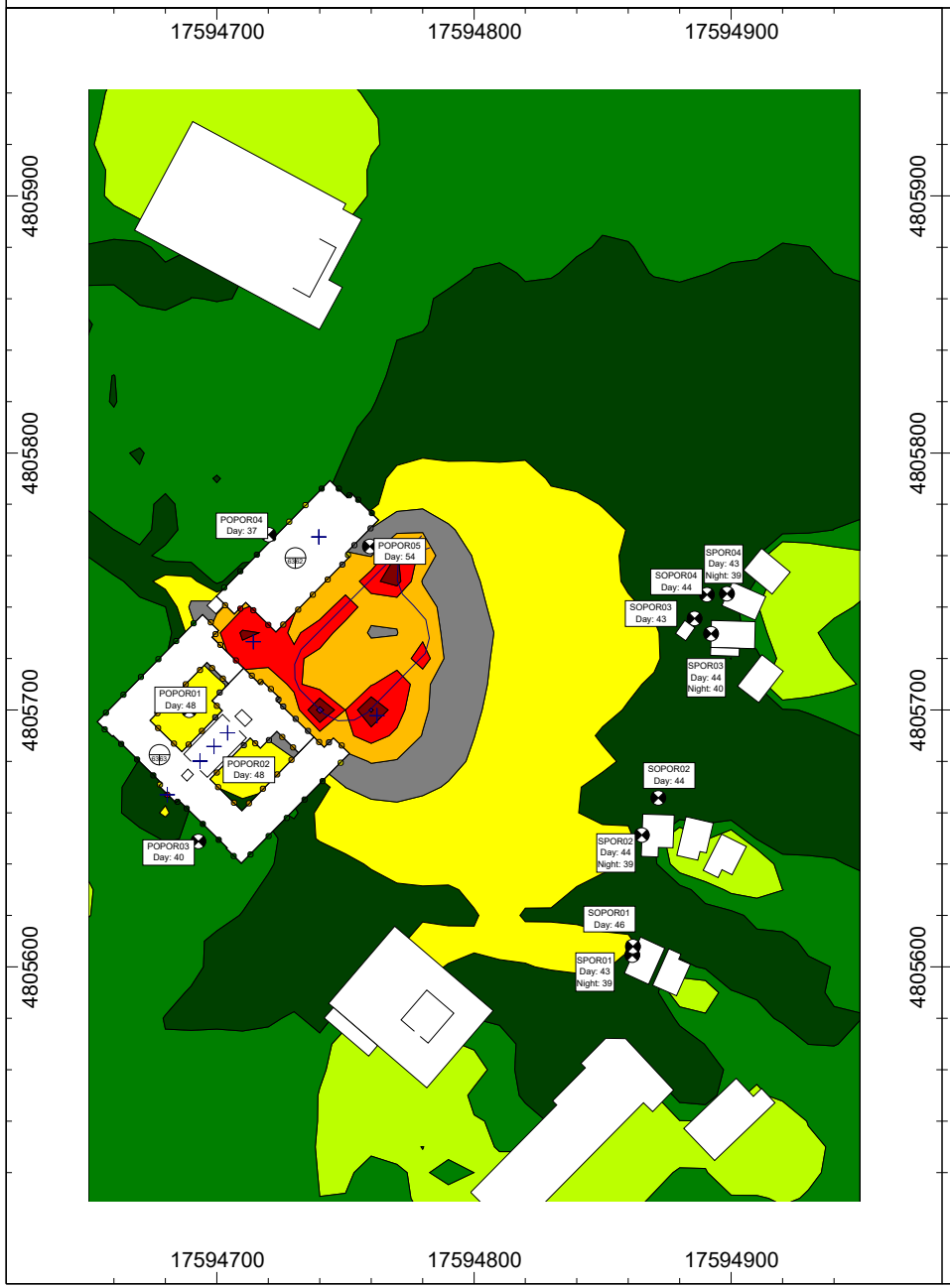
Steady Noise Impacts
Surrounding Sources to Original Project



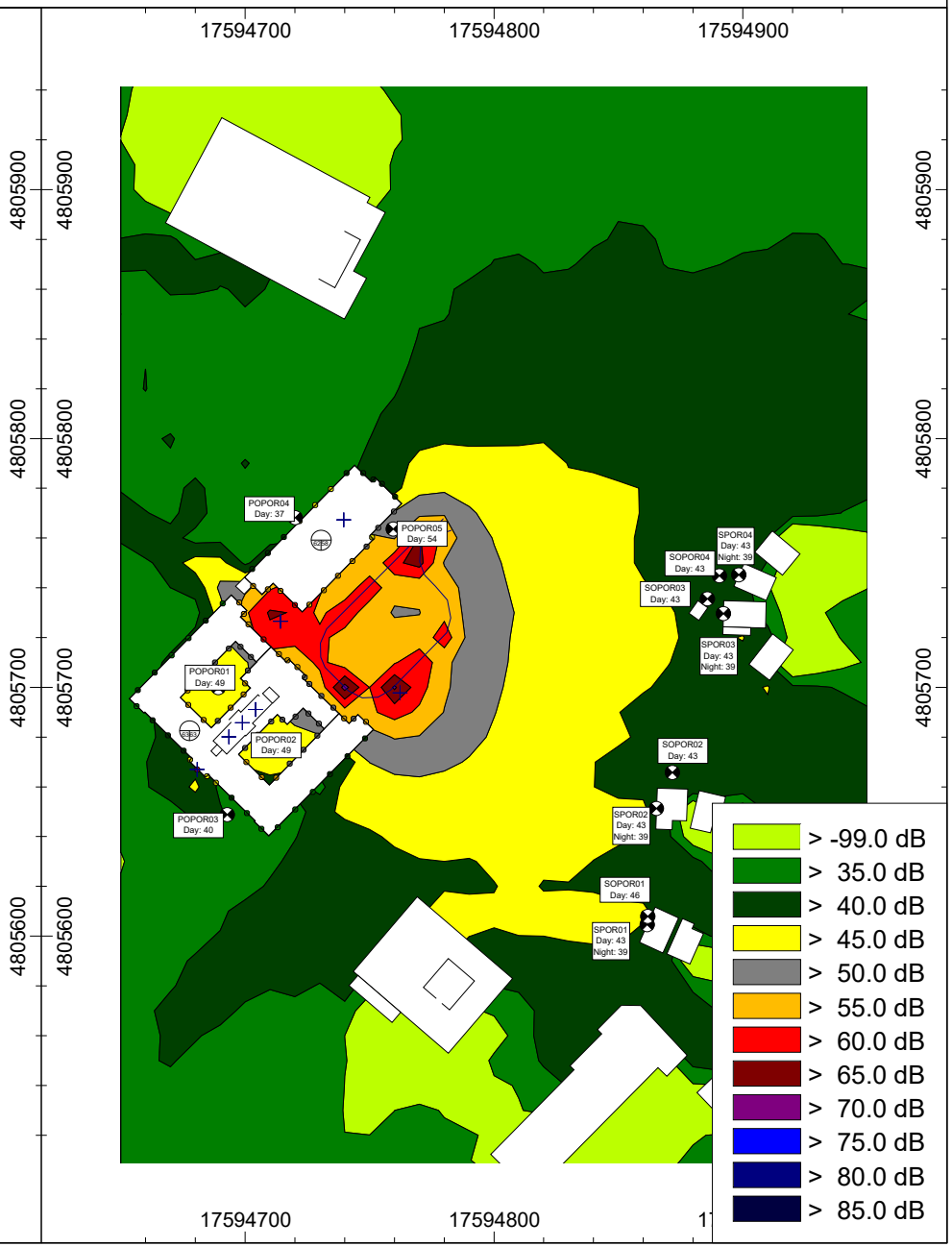
Steady Noise Impacts
Surrounding Sources to Modified Project



Steady Noise Impacts
Project Sources w. Prev. Recommended LTC Barrier
Max Facade & Ground Level Contour



Steady Noise Impacts
Project Sources w. Submitted LTC Barrier
Max Facade & Ground Level Contour



Appendix B – Traffic Data Correspondence

Fuller, Robert

From: Patrau, Florin <Florin.Patrau@burlington.ca>
Sent: Monday, September 16, 2024 1:34 PM
To: Fuller, Robert
Subject: RE: Traffic Data Request CRM:0064000000042

Hi Robert,
I must apologize for the delay, was going to respond the first day but something got on my mind and totally forget about it.

We don't have anything newer for aadt, I suggest using 2022 data from our portal unless you can wait until early next year when we should have the 2023 predictions. Based on what I see in our system, there is no significant difference between the two years.

I hope this helps, should you need anything else please let me know.

Regards,

Florin Patrau
Traffic Technologist
Transportation Services

(905) 335-7671 ext.7838
florin.patrau@burlington.ca

Our working hours may be different. You are not obligated to reply outside of your typical working hours.

From: Fuller, Robert <RFuller@ThorntonTomasetti.com>
Sent: Monday, September 16, 2024 1:05 PM
To: Patrau, Florin <Florin.Patrau@burlington.ca>
Subject: RE: Traffic Data Request CRM:0064000000042

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 Florin,

Just wanted to follow up on my previous email, since I believe you were out of the office at the time. Can you please let me know if you're able to provide the data described below?

Sincerely,

Robert Fuller, P.Eng. | Project Engineer
Thornton Tomasetti | 23-366 Revus Avenue, Mississauga, ON L5G 4S5, Canada
Direct +1.905.629.3583 | **Main** +1.905.271.7888 | **Cell** +1.647.769.7161
RFuller@ThorntonTomasetti.com | www.ThorntonTomasetti.com

From: Fuller, Robert
Sent: Tuesday, August 20, 2024 3:24 PM
To: florin.patrau@burlington.ca
Subject: FW: Traffic Data Request CRM:0064000000042

Good afternoon Florin,

I understand that you're the person to contact about my traffic data request. Could you please let me know if you have the requested data (below) available?

Sincerely,

Robert Fuller, P.Eng. | Project Engineer
Thornton Tomasetti | 23-366 Revus Avenue, Mississauga, ON L5G 4S5, Canada
Direct +1.905.629.3583 | **Main** +1.905.271.7888 | **Cell** +1.647.769.7161
RFuller@ThorntonTomasetti.com | www.ThorntonTomasetti.com

From: CRM, Transportation Planning <transportationplanning@burlington.ca>
Sent: Tuesday, August 20, 2024 3:22 PM
To: Fuller, Robert <RFuller@ThorntonTomasetti.com>
Subject: RE: Traffic Data Request CRM:0064000000042

> You don't often get email from transportationplanning@burlington.ca. Learn why this is important

[External Sender]

Hi Robert,
For the data, please contact florin.patrau@burlington.ca

Thanks,

Dan

---------- Original Message ----------
From: RFuller@ThorntonTomasetti.com
Received: Wed Aug 07 2024 11:03:22 GMT-0400 (Eastern Daylight Time)
To: Service Burlington; Service Burlington
Subject: Traffic Data Request

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.

Good morning,

I'm working on an update to a noise study that we prepared for the Property at 4103 Palladium Way in Burlington Ontario, and I would like to check that I am using the most recent / ultimate traffic forecast for the nearby roads:

- Palladium Way @ Walker's Line
- Walker's Line @ Palladium Way
- Highway 407 @ Walker's Line

I see that the City of Burlington has AADT data from 2022 publicly available through the Open Data Portal (AADT 2022 | AADT 2022 | Navigate Burlington (arcgis.com)), but wanted to check if there is a future / ultimate traffic forecast available which we could request to use in our study, and/or if any information regarding the traffic on Highway 407 is available?

Sincerely,

Robert Fuller, P.Eng. | Project Engineer
Thornton Tomasetti | 23-366 Revus Avenue, Mississauga, ON L5G 4S5, Canada
Direct +1.905.629.3583 | **Main** +1.905.271.7888 | **Cell** +1.647.769.7161
RFuller@ThorntonTomasetti.com | www.ThorntonTomasetti.com

This message, including any attachments, is privileged and intended only for the addressee(s) named above. If you are not the intended recipient, you must not read, use or disseminate the information contained in this email/fax. If you have received this email/fax transmission in error, please notify the sender immediately by telephone, fax or email and permanently delete this email from your computer/shred this fax, including any attachments, without making a copy. Access to this email/fax by anyone else is unauthorized. Thank you.

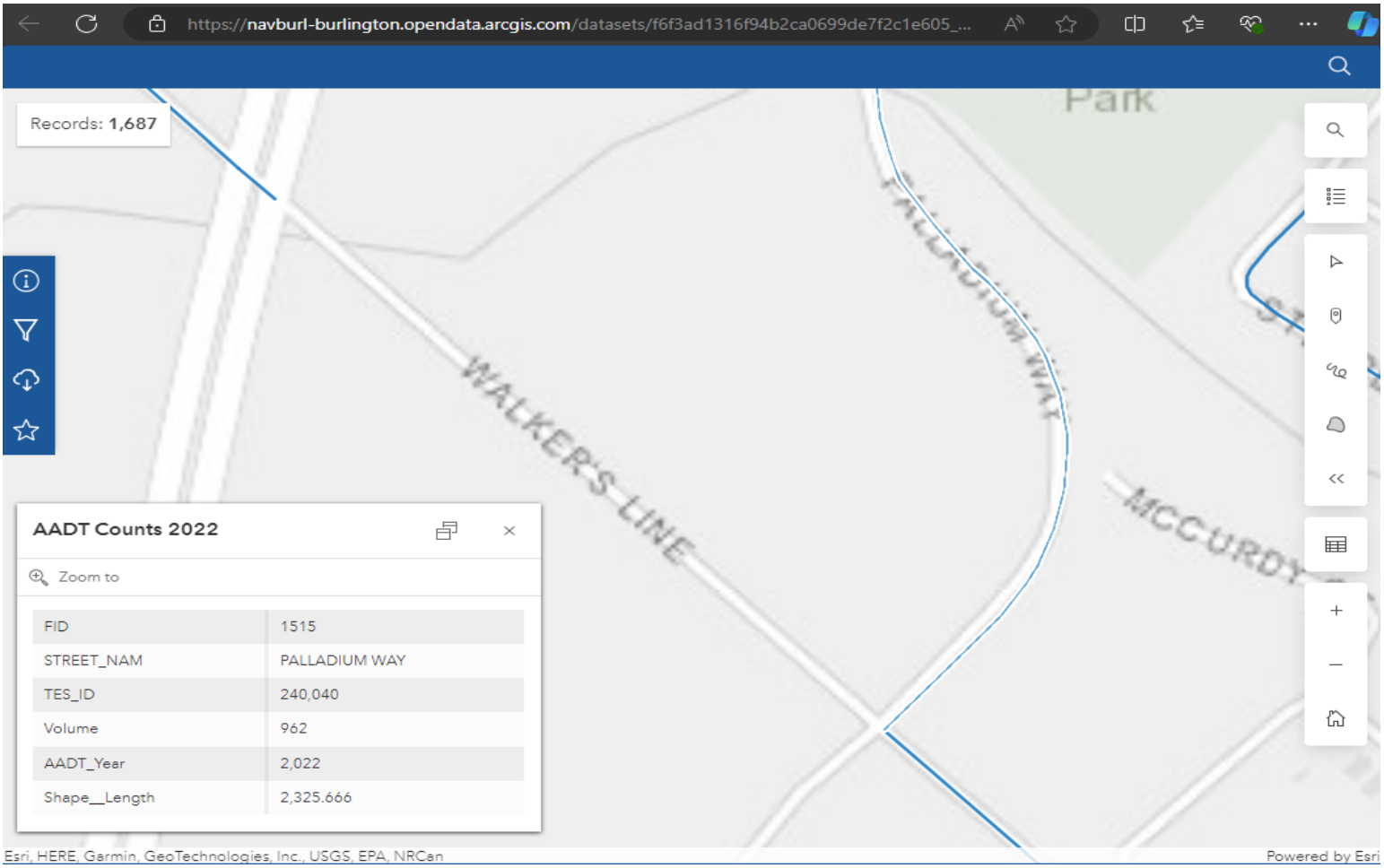
This email has been scanned by the Symantec Email Security.cloud service.
For more information please visit http://www.symanteccloud.com

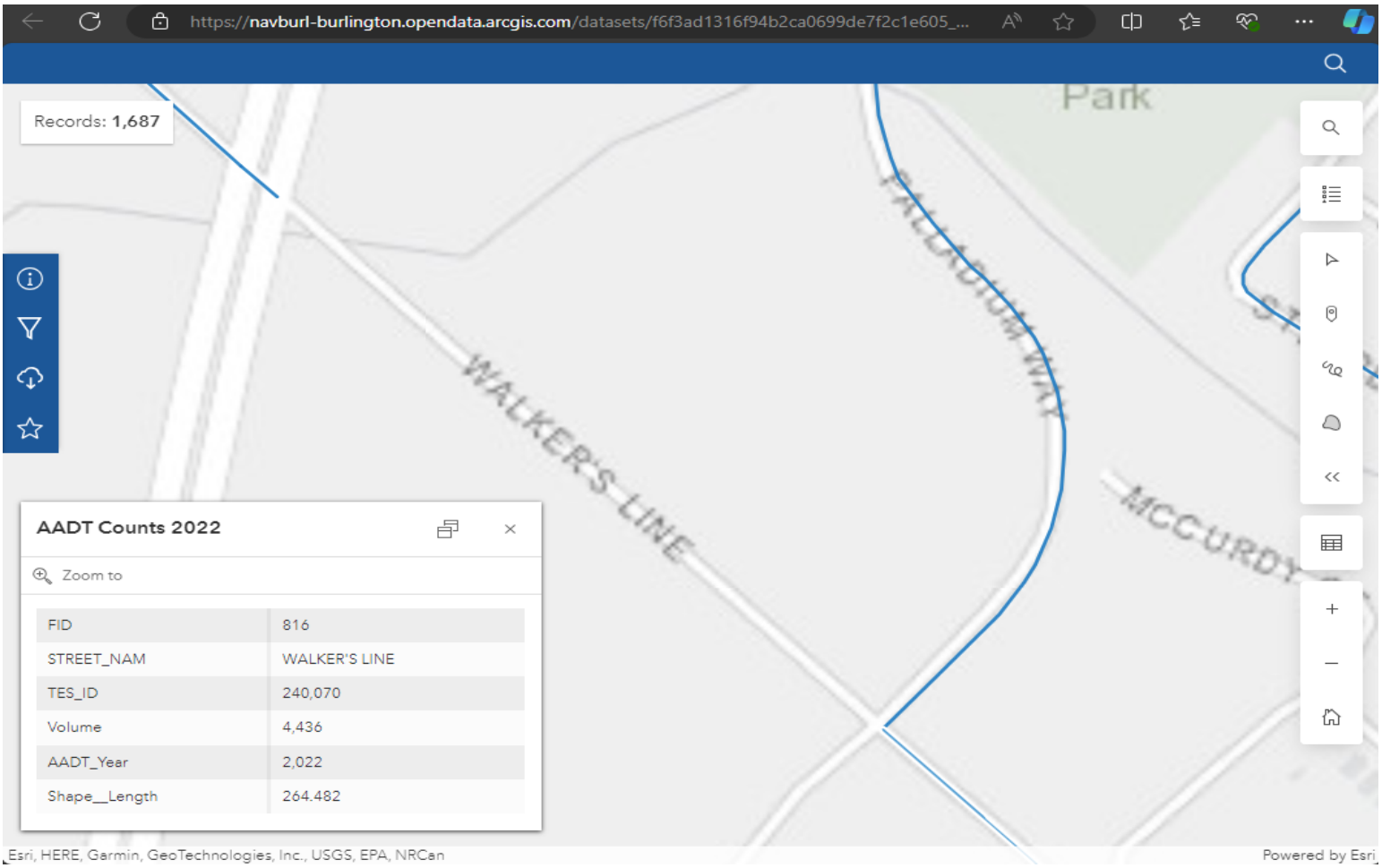
---

This message, including any attachments, is privileged and intended only for the addressee(s) named above. If you are not the intended recipient, you must not read, use or disseminate the information contained in this email/fax. If you have received this email/fax transmission in error, please notify the sender immediately by telephone, fax or email and permanently delete this email from your computer/shred this fax, including any attachments, without making a copy. Access to this email/fax by anyone else is unauthorized. Thank you.

This email has been scanned by the Symantec Email Security.cloud service.
For more information please visit http://www.symanteccloud.com

---


https://navburl-burlington.opendata.arcgis.com/datasets/f6f3ad1316f94b2ca0699de7f2c1e605_...
Records: 1,687
Park
PALLADIUM WAY
WALKER'S LINE
MCCURDY
AADT Counts 2022
Zoom to
FID 1515
STREET_NAM PALLADIUM WAY
TES_ID 240,040
Volume 962
AADT_Year 2,022
Shape__Length 2,325.666
Esri, HERE, Garmin, GeoTechnologies, Inc., USGS, EPA, NRCan
Powered by Esri


https://navburl-burlington.opendata.arcgis.com/datasets/f6f3ad1316f94b2ca0699de7f2c1e605_...
Records: 1,687
Park
PALLADIUM WAY
WALKER'S LINE
MCCURDY
AADT Counts 2022
Zoom to
FID 816
STREET_NAM WALKER'S LINE
TES_ID 240,070
Volume 4,436
AADT_Year 2,022
Shape__Length 264.482
Esri, HERE, Garmin, GeoTechnologies, Inc., USGS, EPA, NRCan
Powered by Esri