

Noise Impact Study, 752 Queen Street East, St. Marys



July 30, 2020

Prepared for:
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Version Control

Revision	Date	Revision Description	Reviewer Initials
1.0	2020-07-30	Noise Impact Study, 752 Queen Street East, St. Marys	TMC



Executive Summary

Cambium Inc. was retained by Yao Zhang in response to a request by the Town of St. Marys, to complete a noise impact study for a proposed commercial development consisting of an expansion of the existing convenience store and gas station, with addition of a car wash, and a commercial retail building. The site is located at 752 Queen Street East, in the Town of St. Marys, Ontario. The purpose of this study is to provide an assessment of the potential noise impacts from the proposed operations of the site on the nearby residential properties.

As a reasonable worst case scenario, the primary operations of the site potentially include the following noise sources; the drive through menu order box, idling vehicles at the drive through and at the car wash, the car wash, a kitchen ventilation fan, and rooftop heating ventilation, and air conditioning units. The gas bar itself, parking, as well as occasional delivery of goods to the convenience store/fast food restaurant are not considered a noise source as per the Ministry of Environment, Conservation, and Parks publication NPC-300; Environmental Noise Guideline Stationary and Transportation Sources – Approval and Planning. Vehicle parking is provided on site. The facility is not expected to be a source of vibration.

The proposed aspects of the facility are not yet constructed, so source sound power data was obtained from manufacturing specifications or from Cambium's noise source library. The source sound power levels were used as input to a predictive model to quantify the potential environmental sound emissions associated with the Facility. Criteria were established in accordance with the sound level limits in NPC-300 with consideration for the Noise By-Law of the Town of St. Marys.

Cambium concludes the site as presented, under the conditions and assumptions of this report, can operate in compliance with provincial noise guidelines and local noise control by-laws and is therefore a feasible land use from a noise perspective.



Table of Contents

1.0	Introduction.....	1
2.0	Description of Proposed Development	3
3.0	Impact of the Proposed Development onto the Environment.....	4
3.1	Noise Source Summary	4
3.2	Assessment Criteria	6
3.2.1	Ambient Traffic Noise	6
3.2.2	Municipal By-Laws	8
3.3	Point of Reception Summary.....	9
3.4	Impact Assessment.....	11
3.4.1.1	Sound Power Level	11
3.4.1.2	Tonality Assessment	11
3.4.1.3	Variable Operations of Noise Sources.....	11
3.4.1.4	Noise Control Measures	13
3.5	Noise Impact Calculation Procedure	14
3.6	Calculation Assumptions	15
3.7	Acoustic Assessment Summary	15
4.0	Recommendations	17
5.0	Conclusions	19
6.0	References	20

List of Embedded Tables

Embedded Table 1	Time Period Ministry Exclusionary Sound Level Limit (dBA)	6
Embedded Table 2	Traffic Noise Impacts	7



List of Appended Figures

- Figure 1 Site Location Map
- Figure 2 Site Plan and Roof Layout
- Figure 3 Land Use Zoning Map

List of Appended Tables

- Table 1 Noise Source Summary Table
- Table 2 Point of Reception Noise Impact
- Table 3 Assessment Summary Tables

List of Appendices

- Appendix A Noise Source Supporting Information
- Appendix B Impact Assessment Results
- Appendix C Traffic Data and ORNAMENT Calculations



1.0 Introduction

Cambium Inc. (Cambium) was retained by Yao Zhang, in response to a request by the Town of St. Marys, to complete a noise impact study for the proposed development (the Site) consisting of an expansion of the existing convenience store and gas station, with the addition of a car wash, and a commercial retail building. The Site is located at 752 Queen Street East, in the Town of St, Marys, Ontario. The purpose of this study is to provide an assessment of the potential noise impacts from the proposed operations of the site on the nearby residential properties.

We conducted an assessment of the proposed development's noise impacts onto the surroundings. As a reasonable worst case scenario, the primary operations of the site potentially include the following noise sources; the drive through menu order box, idling vehicles at the drive through and at the car wash, car wash doors, a kitchen ventilation fan, and rooftop heating ventilation, and air conditioning (HVAC) units. The gas bar itself, parking areas, and occasional deliveries to convenience and fast food operations, are not considered to be noise sources as per the Ontario Ministry of Environment, Conservation, and Parks (the Ministry) document *NPC-300 – Environmental Noise Guideline – Stationary and Transportation Sources – Approval and Planning (NPC-300)* (MOECC, 2017). The facility is not expected to be a source of vibration.

Noise impact criteria were established in accordance with the sound level limits in NPC-300 and with consideration of the Town of St. Marys Noise By-Law (The Corporation of the Town of St. Marys, 2007).

Locations have been identified as being representative of the most sensitive points of reception in the vicinity of the Site. The Site and receptors, are located in a suburban area with commercial and residential zoning, and are in close proximity to Queen Street East, which is a relatively significant arterial road. There are nearby industrial facilities also located to the east of the site. The Site is therefore best defined as class 2 (semi-urban). The receptors close to Queen Street East are best defined as class 2, while the receptors further from the roadway



are defined as class 3. This determination was made following the procedures of NPC-300 with the support of local land use, traffic data, and Cambium's site measurements.



2.0 Description of Proposed Development

The proposed development is a commercial expansion to an existing facility. The development will consist of an expansion of the existing convenience store and gas station, with addition of a fast food restaurant and drive through, car wash, a commercial retail building. The Site is zoned as commercial, with nearby commercial, industrial, open space, and residential zoning.

A site location plan showing the Site and nearby roadways is provided on Figure 1.

Cambium will assess noise impacts in all three of the time frames outlined in NPC-300 including daytime (7 am to 7 pm), evening (7 pm to 11 pm), and nighttime (11 pm to 7 am), however, some noise sources are only active at certain times. The noise sources associated with the operation of the Site are described in section 3.1.

The North American Industrial Classification System (NAICS) code that best applies to this Site is 447110 (Gasoline stations with convenience stores). Other applicable codes may include; 811192 (Car washes), 722512 (Limited-service eating places).



3.0 Impact of the Proposed Development onto the Environment

The development is in the preliminary design stages, therefore this assessment is intended to confirm the site is capable of complying with NPC-300 and local by-laws at the nearby sensitive receptors. The additional road traffic as a result of this proposed development will not be significant in comparison to existing traffic levels in the area.

The Town of St. Marys Noise By-Law may be applicable to certain activities at the site. The specifics of the by-laws is detailed in section 3.2.2.

3.1 Noise Source Summary

The proposed aspects of the facility are not yet constructed, therefore direct measurements of the potential noise sources were not completed. Based on Cambium's experience assessing similar sites, the majority of the potential noise produced by this type of facility is produced by the drive through menu order box, the idling vehicles at the drive through and at the car wash, car wash doors, the kitchen ventilation fan, and the rooftop HVAC units. The gas bar itself is not considered a noise source as per NPC-300. Also, as per NPC-300 it has been assumed that general parking lot vehicle activity would not be considered as significant noise sources. This includes the occasional delivery and removal of goods and waste from convenience stores and fast food partner.

All significant sources are summarized in Table 2 and detailed below. The locations of the all the significant noise sources can be found on Figure 2.

- AH01, – A stationary point source representing the potential rooftop HVAC unit located on the existing Site buildings. The unit currently in use at the existing gas station with convenience store (AH01) is a Lennox, model LGH092. Manufacturer's sound specifications for this unit were utilized, the final selected units should compare their sound power levels to this report to confirm compliance. AH01 is currently installed such that roof features of the building provide noise screening in certain directions.
- AH02, AH03 – Stationary sources representing the potential rooftop HVAC units on the proposed retail building and the proposed fast food operation. Representative



manufacturer's sound specifications for these units were utilized, the final selected units should compare their sound power levels to this report to confirm compliance.

- EF01 – One stationary point source representing a potential rooftop exhaust servicing a kitchen area. A generic 2500 CFM fan was used. Manufacturer's sound specifications for a representative fan were utilized, the final selected unit should compare its sound power level to this report to confirm compliance.
- WD01_O – One stationary emitting façade sources representing the open exit doors of the self-serve automatic car wash. A representative sound power level measured by Cambium in a comparable situation was applied. The open entrance door of the car wash is assumed to be insignificant because the equipment will not be active at this point of the cycle.
- WD01_C, WD02_C – Two stationary emitting façade sources representing the closed doors of the self-serve automatic car wash. A representative sound power level reduction measured by Cambium in a comparable situation was applied.
- VC01, VC02 – These stationary sources represent the potential noise emissions from the proposed vehicle cleaning vacuum stations. A representative sound power level measured by Cambium in a comparable situation was applied.
- VH01 – VH21 – 21 stationary point sources representing potential idling cars at the car wash and/or drive through lineup area. A generic idling car sound power was used with sound specifications from US Department of Transportation.
- MB01, MB02 – Two stationary point sources representing potential drive through menu order boxes located at the drive through lineup area. A generic menu board or speaker post was used. Sound levels are based on Cambium's experience and general requirements of menu boards.

The following noise sources were considered insignificant:

- General ventilation of the buildings where fans are located inside the building envelope such as for washroom vents are considered insignificant.



3.2 Assessment Criteria

The Site is located in a suburban area with commercial and residential zoning, and is in close proximity to Queen Street East, which is a relatively significant arterial road. There are multiple nearby industrial facilities directly to the east of the Site on Industrial Road most of which included observed stationary noise sources and trucking noise sources. The Hydro One Networks Inc. St. Marys Transformer Station is located approximately 250 metres to the west of the Site. The Site is therefore best defined as class 2 (semi-urban). The receptors close to Queen Street East are best defined as class 2 as further supported in section 3.2.1, while the receptors further from the roadway can be defined as class 3 as traffic noise does not support Class 2 levels. The site and all receptors have been characterized to conform to NPC-300.

The Ministry exclusionary sound level limits for class 2 and 3 areas are described below.

Embedded Table 1 Time Period Ministry Exclusionary Sound Level Limit (dBA)

		Sound Level Limit – L_{eq} (dBA)		
		Day (07:00 – 19:00)	Evening (19:00-23:00)	Night (23:00 – 07:00)
Class 2 Plane of Window Noise Sensitive Spaces	Steady L_{eq}	50	50	45
Class 2 Outdoor Points of Reception	Steady L_{eq}	50	45	-
Class 3 Plane of Window Noise Sensitive Spaces	Steady L_{eq}	45	40	40
Class 3 Outdoor Points of Reception	Steady L_{eq}	45	40	-

The sound level limit as received at a POR for stationary sources in a class 2 and/or 3 area is the higher of either the Ministry exclusionary sound level limit (as described above), or the quietest one hour equivalent background sound level (L_{eq}) for each of the time periods described in the table above.

3.2.1 Ambient Traffic Noise

During the site visit, various short term on-site background noise measurements were taken at the Site which indicated that background noise due to road traffic was likely to be significant.

Of the on-site background measurements recorded, the lowest background noise level



measured was a 5 minute Leq of 53 dBA. This measurement location was approximately 15 metres north of POR06_A.

Traffic noise assessment was conducted using predictive calculations of road noise developed by the Ministry: *Ontario Road Noise Analysis Method for Environment and Transportation* (ORNAMENT) (MOE, 1999).

The 2018 traffic data used for the road noise assessment was a provided by the Town of St. Marys. Percentages of medium (7%) and heavy (5%) trucks were estimated with guidance from the City of Ottawa, Environmental Noise Control Guidelines.

Traffic data and ORNAMENT calculations are provided in Appendix C. ORNAMENT does not accept traffic levels below 40 vehicles per hour therefore only daytime and evening traffic impacts area assumed to have significant contributions.

Embedded Table 2 Traffic Noise Impacts

Source	Minimum hourly traffic ¹	Traffic Breakdown, (Day/Night) ²			Receptor	Impact due to background traffic (dBA)
		Cars	Med. Trucks	Heavy Trucks		Day
Queen Street East, Day	298	262	21	15	130 m from centerline, Front	46.66
Queen Street East, Evening	103	91	7	5		41.91
Queen Street East, Night	22	19	2	1		-

1 – From 2018 traffic data provided by the Town of St. Marys

2 - Medium (7%) and heavy (5%) truck percentage taken from City of Ottawa, Environmental Noise Control Guidelines

Therefore, the current traffic noise impacts support a noise class designation of the Site as Class 2 per NPC-300. Receptors within 130 meters of Queen Street East (POR05 and POR06) are shown to have traffic noise impacts above the Ministry exclusionary sound level limit for class 3, and therefore can be designated as class 2 especially when consideration is made for the nearby transformer station and existing commercial and industrial operations to the east of the receptors.



The specific receptors and applicable sound level limit are summarized in Table 2.

3.2.2 Municipal By-Laws

The Town of St. Marys Noise By-Law may be applicable to certain activities at the site, and defines noise as: *unwanted sound*. The by-law makes the following general prohibitions in section 2:

2. *No person shall, cause or permit noise or vibration which is likely to disturb the quiet, peace, rest, enjoyment, comfort or convenience of the inhabitants of the municipality.*

While the term “likely to disturb” can be subjective, it is assumed that compliance with the NPC-300 exclusionary sound level limits would also achieve compliance with the by-law definition. Note that NPC-300 limits are intended to ensure that there is no “adverse effect” as defined in the Environmental Protection Act.

The specific prohibition of section 3 states that:

3. *Without limiting section 2, no person shall emit or cause or permit the emission of a sound resulting from an act listed in Schedule 1, and which is clearly audible at a point of reception at anywhere within the municipality, at any time.*

Where Schedule 1 lists various types of noise sources such as: racing motorized vehicles, squealing tires, operating unmaintained engines, excessive engine idling, operation of a stereo in motor vehicle such that it can easily be heard outside the vehicle.

In section 4, the by-law also make a prohibition by time and place with reference to a schedule 2. Where schedule 2 lists various types of noise sources and prohibited times, such as: the operation of any electronic device intended for the amplification of sound, the operation of motorized conveyance other than on a place intended for its operation, yelling, shouting, barking. This section of the bylaw could be considered to apply to the drive through menu order box and would indicate it should not be operated from 23:00 one day to 07:00 the next day (09:00 on Sundays). However as discussed above, Cambium interprets that compliance with NPC-300 would indicate the noise is less likely to disturb.



Cambium must note that compliance with NPC-300 does not mean that the Site will not be audible at the point of reception, it means that the sound levels should be low enough to not cause adverse effect.

In section 5 of the by-law, it is stated that *it shall be lawful to emit or cause or permit the emission of sound or vibration in connection with emergency measures*. Other activities are exempted from the By-Law if the persons receive a grant of exemption, or if the activity is defined in schedule 3 of the by-law, such as: parades, fireworks, and events authorized by the municipality, preventative maintenance undertaken by the municipality, essential snow removal, garbage collection, church chimes.

3.3 Point of Reception Summary

Cambium staff visited the Site on June 6, 2020. Seven nearby dwellings were identified as being representative of the most sensitive receptors in the vicinity of the Site, labeled as POR01 through POR07 depicted on Figure 1. Ministry noise guidelines state a “Point of Reception” (POR) is a sensitive noise receptor including residential buildings, schools, places of worship, and hospitals (an office or commercial building is not considered a Point of Reception). For assessment purposes we selected the points with the predictable worst case noise impacts as follows:

- POR01_A represents a class 2 plane of window receptor, modeled at 4.5 metres, for a two storey residential building located on Queen Street East, northeast of the Site;
 - POR01_B is an outdoor living area POR at the same residence, located at the property line in the direction of the Site;
- POR02_A represents a class 2 plane of window receptor, modeled at 4.5 metres, for a two storey residential and commercial building located at 940 Queens Street East, east of the Site;
 - POR02_B is an outdoor living area POR at the same building, located 30 metres from the residence in the direction of the Site;



- POR03_A represents a class 3 plane of window receptor, modeled at 4.5 metres, for a two storey residential building located on Elgin Crescent, southwest of the Site;
 - POR03_B is an outdoor living area POR at the same private residence, located 30 metres from the residence in the direction of the Site;
- POR04_A represents a class 3 plane of window receptor, modeled at 4.5 metres, for a two storey residential building located on Elgin Crescent, southwest of the Site;
 - POR04_B is an outdoor living area POR at the same private residence, located 30 metres from the residence in the direction of the Site;
- POR05_A represents a class 2 plane of window receptor, modeled at 7.5 metres, for a three storey residential building located on Birch Drive, as part of the housing cooperative at 728 Queen Street East, west of the Site;
 - POR05_B is an outdoor living area POR at the same residence, located 30 metres from the residence in the direction of the Site;
- POR06_A represents a class 2 plane of window receptor, modeled at 7.5 metres, for a three storey residential building located on Birch Drive, as part of the housing cooperative at 728 Queen Street East, west of the Site;
 - POR06_B is an outdoor living area POR at the same residence, located 30 metres from the residence in the direction of the Site;
- POR07_A represents a class 3 plane of window receptor, modeled at 4.5 metres, for a two storey residential building located on Widder Street East, northwest of the Site;
 - POR07_B is an outdoor living area POR at the same residence, located 30 metres from the residence in the direction of the Site;

The surrounding area was assessed for vacant lots. No nearby vacant lots were identified as being more sensitive than the existing homes listed above.



3.4 Impact Assessment

Cambium's acoustic analysis at the PORs incorporates the noise emission points as described in Section 3.1. We based sound power levels for equipment on measurements on site, measurements at similar sites for generally assumed equipment, engineering calculations, and/or manufacturer's specifications.

We detail the corresponding sound power level calculations from each noise producing unit in Appendix A. The assumed, most conservative, sound power levels in accordance with the Ministry's requirement for "worst case" noise source sound power levels are summarized in Table 1.

We summarize the predicted sound levels at the identified PORs due to each noise source in Table 2. The table also includes the distance from each source to the identified POR. Our impact assessment results are provided in Appendix B and the expected Site noise impacts at the identified PORs are summarized in Table 3.

3.4.1.1 Sound Power Level

Sound power levels were based on calculations from measurements at the site and; at similar sites, engineering calculations, and manufacturer's specifications; the supporting information can be found in Appendix A. We completed all measurements following Ministry guidance for measurements including satisfactory weather conditions and pre-post calibrations.

3.4.1.2 Tonality Assessment

Generally, we do not expect the sources to be tonal in nature, however, a tonality is indicated in the manufactures specifications used for sources AH02 and AH03. Therefore the appropriate tonal penalties are included in the applied sound power levels.

3.4.1.3 Variable Operations of Noise Sources

For the purposes of NPC-300 assessment the following variability assumptions have been made.



Some noise sources are only active during defined times of the day, these time frames are treated as a noise control by this report since they must be complied with to achieve the required noise levels:

- WD01_O, WD01_C, WD02_C, (VH01 – VH05), VC01, VC02– Noise sources associated with the car wash and vacuums may occur during daytime hours only (07:00-19:00).

The following time restrictions have been selected by Cambium as realistic worst case scenarios. It is anticipated that these time restrictions will be met by the regular operations of the facility without implementing these items as formal controls:

- VH06 – VH21 – Noise sources associated with the idling cars in the line at the fast food partner operation. Cambium has assumed up to 12 vehicles could be idling in the evening and night (19:00-07:00). It was assumed up to 16 vehicles could be idling during daytime hours (07:00-19:00).
- AH01, AH02, AH03 - Point sources representing steady state HVAC noise are active only 75% of the time during daytime hours (07:00 – 19:00) and 50% of the time during evening and nighttime hours, when it is cooler. This represents the normal operating cycle of this type of equipment.
- WD01_O – The Noise source representing car wash open doors is active only 16% of the time (10 minutes of any given hour). This is a reasonable assumption since this door would only be open and emitting noise, when the cars are leaving the carwash.
- WD01_C, WD02_C –The closed doors are an active noise source for up to an additional 66% of the time (<=40 minutes of any given hour). Therefore, the car wash is not emitting significant noise for approximately 33% of the time (20 minutes of any given hour), this time of low emissions is consistent with the time it takes additional users to move into the carwash and wait for the carwash to begin operations. This represents a worst case scenario of the cycle during normal operation.



- VC01, VC02 - Noise sources representing vacuums were modelled as being active only 25% of the time (15 minutes of any given hour) which represents the normal operating cycle of this type of equipment.

These operating cycles were confirmed with the operator to be reasonable assumptions based on the expected maximum traffic flow through these processes.

3.4.1.4 Noise Control Measures

- The existing HVAC unit (AH01) located on the existing building is installed on the roof in such a way that roof features screen certain directions from the noise source. This roof feature screen was incorporated into the model as a barrier (BR01). This arrangement must remain in place.
- Cambium has been informed the proposed retail building, and proposed fast food restaurant designs both include parapet walls at 1 metre above the roof deck. These parapets must be installed as noise controls. Cambium modelled the air handling units in the centre of the rooftops with heights above the roof deck of 1 metre. If there is significant modification from this assumption, calculations should be modified during detailed design.

The noise barrier parapet must be constructed to meet a surface density of 20 kilograms per square metre, and be constructed with no cracks or gaps

3.4.2 Nighttime Carwash Scenario

Cambium has been requested to outline what noise controls may be required if in the future the car wash is proposed to operate in the evening and night (19:00-07:00). The following modifications would ensure nighttime compliance with evening/nighttime carwash operations:

- A two metre tall noise barrier, constructed with a surface density of 20 kilograms per square meter, constructed along the fast food partner's drive through line, screening the first six waiting cars from receptors POR03-POR06. This optional barrier is shown in Figure 2.



As an operational assumption, Cambium has assumed if the carwash operated at night that the following realistic reductions in traffic would be expected:

- Up to 3 cars would be waiting in the queue for nighttime car wash operations, versus 5 cars during the daytime hours.

3.5 Noise Impact Calculation Procedure

The noise impact calculations were performed using the Bruel Kjaer *Predictor Type 7810 version 2020* (Predictor) environmental noise prediction and control software. The calculations completed by this software are based on established prediction methods accepted by the Ministry; mainly ISO 9613-2 *Acoustics – Attenuation of Sound during Propagation Outdoors – Part 2: General Method of Calculation* (ISO, 1996). Predictor is an internationally marketed software package that offers calculation algorithms that comply with ISO 9613-2.

The Predictor software tool is a proprietary noise calculation package used to calculate, assess, predict, and display environmental noise. This software utilizes calculation algorithms and 3D visualization of the predicted noise emissions, often referred to as acoustic mapping. The software calculates the resultant noise level and takes into account a range of factors affecting the propagation of sound including:

- Sources with direct line of site to receivers ignore barriers;
- Negative ground attenuation over barriers is not subtracted;
- The Facility layout, which includes the position and elevation of each building, major equipment and other facades in the propagation path;
- The natural topography and vegetation;
- The magnitude of the noise source in terms of octave band sound power;
- The distance between the source and the POR;
- The presence of reflecting surfaces; and,
- The hardness of the ground between the sources and the POR.



3.6 Calculation Assumptions

We have assessed the plane of window receptor at 1.5 metres and at the perimeter of the residence, representing the plane of a first storey exterior room door or window within which, a person may be exposed to sound if open. If the residence is multi-storey, we model the plane of window receptor at 4.5 metres for secondary storey, or 7.5 metres for third storey, etc. We assessed the outdoor receptors at a height of 1.5 metres.

We modelled the site and the surrounding area as acoustically absorptive with a ground factor of 1 which would correspond to soft ground. The proposed site parking areas and other areas that are mostly paved were modelled as hard ground with a ground factor of 0. Forested areas were not considered, and therefore we have conservatively not included any attenuation provided by foliage.

This version of Predictor allows for settings to ignore barrier effects if line of sight is not broken, as well as avoiding overestimating barrier effect due to porous ground in the case of a negative Agr value in Equation 12 of the ISO 9613-2 calculation method. We activated these settings:

- The terrain was modelled with consideration from Ontario Base Map sources; and
- Onsite buildings were considered, and were incorporated into the model as being mostly reflective, no other offsite sources of sound were considered (i.e. traffic, etc.).

Due to the numerous conservative assumptions that have been made, this assessment is likely an over-prediction.

3.7 Acoustic Assessment Summary

We summarize the model predicted sound pressure levels for each noise source in Table 2. The power levels used in this assessment are representative and indicate the allowable sound power levels based on preliminary design information. We present the total noise impact from the development at each receptor in Table 3. The sound pressure level contour plot files and the predicted sound levels at the receptors are provided in Appendix B. As indicated in Table 2 and Table 3, the development noise impact at each established POR is predicted to be less



than the applicable criteria set by the Ministry, provided recommendations of this report are followed.

The above assessment considered a worst case point of reception for indoor and outdoor receptors, and a worst case sound level from operations, thereby indicating conservative estimates for potential noise impact.



4.0 Recommendations

In summary Cambium has made the following recommendations:

- Layout of equipment and building features may affect noise impacts, and therefore the controls required. The site should be laid out generally as shown in this report or calculations may require revision;
 - The HVAC source AH01 on the existing roof, must remain installed as it is.
 - The HVAC sources AH02, AH03 must be screened from the receptors to the by the proposed parapet wall for retail building and fast food building. The Parapet must be constructed to meet 20 kilograms per square metre, and be constructed with no cracks or gaps. Cambium has assumed the HVAC units will be placed in the centre of the building.
 - AH02 and AH03 were modelled with representative sound powers provided in this report, final equipment selection must ensure that the selected units meet this sound power level rating.
- Car wash operations must be limited to daytime hours only (07:00-19:00) unless the additional mitigation measure of a 2 meter tall barrier wall screening the first 6 cars in the restaurant lineup from POR3 to POR6 is constructed. If the barrier is constructed it must be at least 20 kilograms per square meter, and be constructed with no cracks or gaps.
- When detailed design is finalized, equipment noise levels should be compared back to this report to confirm equivalent equipment is selected this includes the air handling units, kitchen exhaust, car wash, and vacuum sources;
- The Town of St. Marys Noise By-Law may be applicable to certain activities at the site. Some terms used in the by-law can be subjective, therefore it is assumed that compliance with the specific NPC-300 exclusionary sound level limits would also achieve compliance with the by-law definitions.



- Cambium would recommend that the final design of this proposed operation be reviewed for compliance with this report and/or NPC-300 by a qualified professional.



5.0 Conclusions

Cambium Inc. was retained by Yao Zhang, in response to a request by the Town of St. Marys, to complete a noise impact study for a proposed development located at 752 Queen Street East, in the Town of St, Marys.

The results of this noise impact study, under the defined conditions and assumptions, and based on the information provided to Cambium, indicate that the predicted noise impacts from the proposed Site, at the identified most sensitive points of reception, are less than the applicable limits listed in Ministry noise guideline, NPC-300.

It is Cambium's opinion that the proposed operation is capable of operating in compliance with NPC-300 and therefore is compatible with the surroundings.

Respectfully submitted,

Cambium Inc.

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6.0 References

ISO. (1996). *ISO 9613-2 Acoustics - Attenuation of Sound During Propagation Outdoors - Part 2: General Method of Calculation*. International Organization for Standardization.

MOE. (1999). *ORNAMENT Ontario Road Noise Analysis Method for Environment and Transportation*. Ontario Ministry of the Environment.

MOECC. (2017). *NPC-300 - Environmental Noise Guideline Stationary and Transportation Sources - Approval and Planning*. Ontario Ministry of the Environment and Climate Change.

The Corporation of the Town of St. Marys. (2007). *By-Law No. 43 of 2007*.



Appended Figures

NOISE IMPACT ASSESSMENT
YAO ZHANG
 752 Queen Street East,
 St. Marys, Ontario

LEGEND

- Receiver
- Major Road
- Minor Road
- Watercourse, Permanent
- Contour 5m Interval (Major)
- Contour 5m Interval (Minor)
- Water Area
- Building
- Built-Up Area
- Hard Ground
- Site (approximate)
- Wooded Area

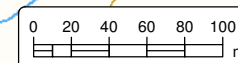
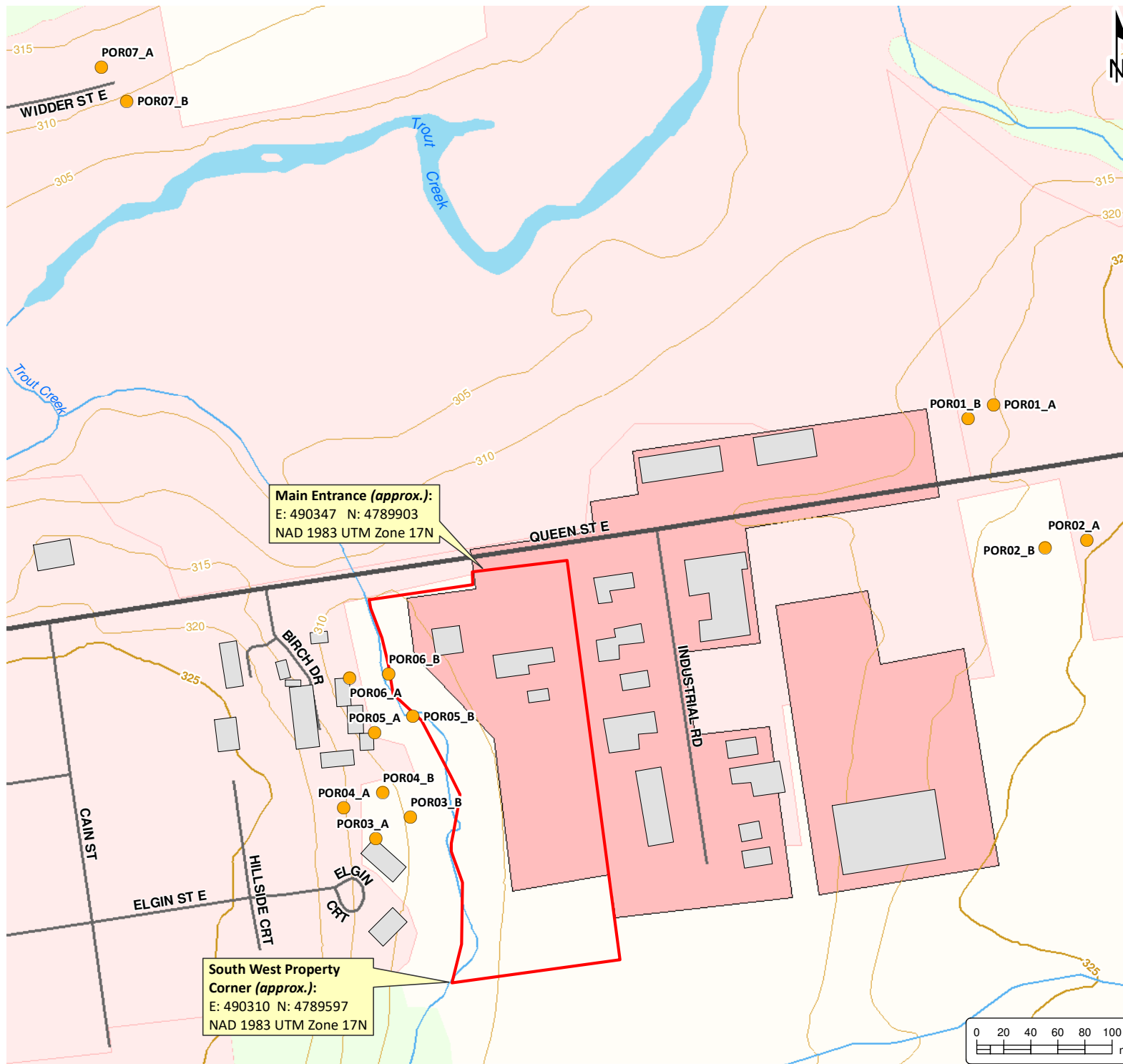
Notes:
 - Base mapping features are © Queen's Printer of Ontario, 2019 (this does not constitute an endorsement by the Ministry of Natural Resources or the Ontario Government).
 - Distances on this plan are in metres and can be converted to feet by dividing by 0.3048.
 - Cambium Inc. makes every effort to ensure this map is free from errors but cannot be held responsible for any damages due to error or omissions. This map should not be used for navigation or legal purposes. It is intended for general reference use only.



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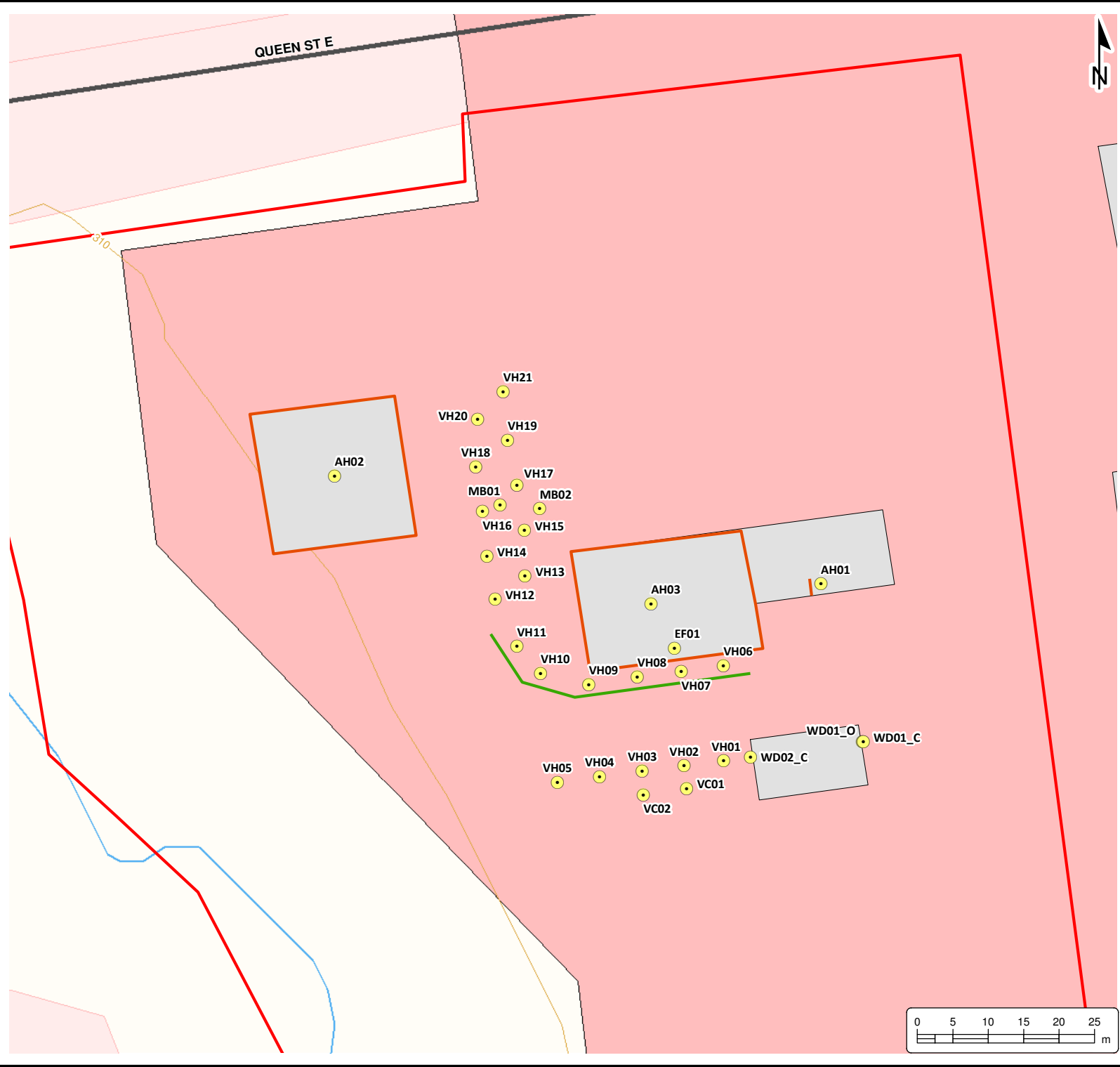
SITE LOCATION MAP

Project No.:	10699-001	Date:	July 2020
Scale:	1:4,000	Rev.:	
Created by:	MAT	Projection:	NAD 1983 UTM Zone 17N
Checked by:	TMC	Figure:	1



O:\GIS\project_L\MC\10600-10699-001 Yao Zhang - Noise Impact Assessment\752 Queen Street St. Marys\2020-07-01 FIG 1 - Site Location Map.mxd

O:\GIS\project_L\MC\01-10600-1-10699-001 Yao Zhang - Noise Impact Assessment 752 Queen Street St. Marys\2020-07-01 FIG 2 - Site Plan and Roof Layout.mxd



NOISE IMPACT ASSESSMENT
YAO ZHANG
 752 Queen Street East,
 St. Marys, Ontario

LEGEND

- Point Sources
- Optional Barrier
- Mandatory Barrier
- Major Road
- Watercourse, Permanent
- Contour 5m Interval (Minor)
- Building
- Built-Up Area
- Hard Ground
- Site (approximate)

Notes:
 - Base mapping features are © Queen's Printer of Ontario, 2019 (this does not constitute an endorsement by the Ministry of Natural Resources or the Ontario Government).
 - Distances on this plan are in metres and can be converted to feet by dividing by 0.3048.
 - Cambium Inc. makes every effort to ensure this map is free from errors but cannot be held responsible for any damages due to error or omissions. This map should not be used for navigation or legal purposes. It is intended for general reference use only.



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SITE PLAN AND ROOF LAYOUT

Project No.:	10699-001	Date:	July 2020
Scale:	1:750	Projection:	NAD 1983 UTM Zone 17N
Created by:	MAT	Checked by:	TMC
			2



NOISE IMPACT ASSESSMENT
YAO ZHANG
 752 Queen Street East,
 St. Marys, Ontario

LEGEND

- Zoning
- Site (approximate)

Zoning Schedule

- AG** Agricultural
- FP** Flood Plain
- GI** General Industrial
- HC** Highway Commercial
- IN** Institutional
- NRE** Natural Resource
- REC** Recreational
- RES** Residential

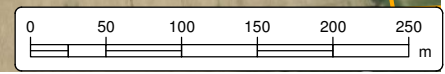
Notes:
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 - Distances on this plan are in metres and can be converted to feet by dividing by 0.3048.
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LAND USE ZONING MAP

Project No.: 10699-001	Date: July 2020
Scale: 1:5,000	Rev.: NAD 1983 UTM Zone 17N
Created by: MAT	Checked by: TMC
Figure: 3	





Appended Tables



Table 1 - Representative Noise Source Summary Table

Source ID	Description	A-Weighted Sound Power Level After Reduction								Total dBA	Data Source	Equipment Location	Operating Times/Limits day,evening,night (%)	Noise Quality ¹	Source Location	UTM Easting	UTM Northing	Height Above Rooftop or Ground
		63	125	250	500	1000	2000	4000	8000									
AH01	HVAC	0.0	76.0	79.0	84.0	83.0	79.0	73.0	66.0	88.3	Manufacturer's Specifications	BL01 - Existing	75,50,50	SS	Rooftop	490375	4789834	1.0
AH02	HVAC	0.0	77.0	80.0	81.0	78.0	72.0	65.0	55.0	85.5	Manufacturer's Specifications	BL01 - Expansion	75,50,50	SS	Rooftop	490307	4789849	1.0
AH03	HVAC	0.0	77.0	80.0	81.0	78.0	72.0	65.0	55.0	85.5	Manufacturer's Specifications	Proposed	75,50,50	SS	Rooftop	490351	4789831	1.0
EF01	Kitchen Fan	59.0	64.0	75.0	76.0	75.0	75.0	68.0	58.0	81.6	Manufacturer's Specifications	BL01 - Expansion	100,100,100	SS	Rooftop	490355	4789825	1.0
MB01	Menu Board	--	--	--	81.7	--	--	--	--	--	Manufacturer's Specifications	Drive	50,50,50	SS	At Grade	490330	4789845	1.0
MB02	Menu Board	--	--	--	81.7	--	--	--	--	--	Manufacturer's Specifications	Drive	50,50,50	SS	At Grade	490336	4789845	1.0
VC01	Vacuum	46.0	56.1	59.5	71.0	76.5	80.5	80.5	76.4	85.1	Manufacturer's Specifications	Car Wash	25,-,-	SS	At Grade	490356	4789805	1.8
VC02	Vacuum	46.0	56.1	59.5	71.0	76.5	80.5	80.5	76.4	85.1	Manufacturer's Specifications	Car Wash	25,-,-	SS	At Grade	490350	4789804	1.8
VH01	Idling Vehicle	65.8	73.9	77.4	72.8	72.0	72.2	69.0	56.9	81.6	Manufacturer's Specifications	Car Wash	100,-,-	SS	At Grade	490362	4789809	1.5
VH02	Idling Vehicle	65.8	73.9	77.4	72.8	72.0	72.2	69.0	56.9	81.6	Manufacturer's Specifications	Car Wash	100,-,-	SS	At Grade	490356	4789808	1.5
VH03	Idling Vehicle	65.8	73.9	77.4	72.8	72.0	72.2	69.0	56.9	81.6	Manufacturer's Specifications	Car Wash	100,-,-	SS	At Grade	490350	4789808	1.5
VH04	Idling Vehicle	65.8	73.9	77.4	72.8	72.0	72.2	69.0	56.9	81.6	Manufacturer's Specifications	Car Wash	100,-,-	SS	At Grade	490344	4789807	1.5
VH05	Idling Vehicle	65.8	73.9	77.4	72.8	72.0	72.2	69.0	56.9	81.6	Manufacturer's Specifications	Car Wash	100,-,-	SS	At Grade	490338	4789806	1.5
VH06	Idling Vehicle	65.8	73.9	77.4	72.8	72.0	72.2	69.0	56.9	81.6	Manufacturer's Specifications	Drive	100,100,100	SS	At Grade	490362	4789822	1.5
VH07	Idling Vehicle	65.8	73.9	77.4	72.8	72.0	72.2	69.0	56.9	81.6	Manufacturer's Specifications	Drive	100,100,100	SS	At Grade	490356	4789822	1.5
VH08	Idling Vehicle	65.8	73.9	77.4	72.8	72.0	72.2	69.0	56.9	81.6	Manufacturer's Specifications	Drive	100,100,100	SS	At Grade	490349	4789821	1.5
VH09	Idling Vehicle	65.8	73.9	77.4	72.8	72.0	72.2	69.0	56.9	81.6	Manufacturer's Specifications	Drive	100,100,100	SS	At Grade	490343	4789820	1.5
VH10	Idling Vehicle	65.8	73.9	77.4	72.8	72.0	72.2	69.0	56.9	81.6	Manufacturer's Specifications	Drive	100,100,100	SS	At Grade	490336	4789821	1.5
VH11	Idling Vehicle	65.8	73.9	77.4	72.8	72.0	72.2	69.0	56.9	81.6	Manufacturer's Specifications	Drive	100,100,100	SS	At Grade	490332	4789825	1.5
VH12	Idling Vehicle	65.8	73.9	77.4	72.8	72.0	72.2	69.0	56.9	81.6	Manufacturer's Specifications	Drive	100,-,-	SS	At Grade	490329	4789832	1.5
VH13	Idling Vehicle	65.8	73.9	77.4	72.8	72.0	72.2	69.0	56.9	81.6	Manufacturer's Specifications	Drive	100,-,-	SS	At Grade	490334	4789835	1.5
VH14	Idling Vehicle	65.8	73.9	77.4	72.8	72.0	72.2	69.0	56.9	81.6	Manufacturer's Specifications	Drive	100,-,-	SS	At Grade	490328	4789838	1.5
VH15	Idling Vehicle	65.8	73.9	77.4	72.8	72.0	72.2	69.0	56.9	81.6	Manufacturer's Specifications	Drive	100,100,100	SS	At Grade	490334	4789841	1.5
VH16	Idling Vehicle	65.8	73.9	77.4	72.8	72.0	72.2	69.0	56.9	81.6	Manufacturer's Specifications	Drive	100,100,100	SS	At Grade	490328	4789844	1.5
VH17	Idling Vehicle	65.8	73.9	77.4	72.8	72.0	72.2	69.0	56.9	81.6	Manufacturer's Specifications	Drive	100,100,100	SS	At Grade	490332	4789848	1.5



Table 1 - Representative Noise Source Summary Table

Source ID	Description	A-Weighted Sound Power Level After Reduction								Total dBA	Data Source	Equipment Location	Operating Times/Limits day, evening, night (%)	Noise Quality ¹	Source Location	UTM Easting	UTM Northing	Height Above Rooftop or Ground
		63	125	250	500	1000	2000	4000	8000									
VH18	Idling Vehicle	65.8	73.9	77.4	72.8	72.0	72.2	69.0	56.9	81.6	Manufacturer's Specifications	Drive	100,100,100	SS	At Grade	490327	4789850	1.5
VH19	Idling Vehicle	65.8	73.9	77.4	72.8	72.0	72.2	69.0	56.9	81.6	Manufacturer's Specifications	Drive	100,100,100	SS	At Grade	490331	4789854	1.5
VH20	Idling Vehicle	65.8	73.9	77.4	72.8	72.0	72.2	69.0	56.9	81.6	Manufacturer's Specifications	Drive	100,100,100	SS	At Grade	490327	4789857	1.5
VH21	Idling Vehicle	65.8	73.9	77.4	72.8	72.0	72.2	69.0	56.9	81.6	Manufacturer's Specifications	Drive	100,-,-	SS	At Grade	490331	4789861	1.5
WD01_C	Car Wash Door out - Closed	64.4	73.3	74.0	72.7	77.1	69.5	60.2	51.5	81.1	Manufacturer's Specifications	Car Wash	50,-,-	SS	At Grade	490381	4789812	3.0
WD01_O	Car Wash Door out - Open	74.1	83.7	88.0	91.9	93.8	91.8	87.8	82.3	98.5	Manufacturer's Specifications	Car Wash	16,-,-	SS	At Grade	490381	4789812	3.0
WD02_C	Car Wash Door in Closed	64.4	73.3	74.0	72.7	77.1	69.5	60.2	51.5	81.1	Manufacturer's Specifications	Car Wash	66,-,-	SS	At Grade	490365	4789809	3.0

¹ Noise Quality Descriptions:
 SS Steady State
 T Tonal
 I Impulse



Table 2 - Point of Reception Noise Impact

Receptor ID	Receptor Coordinates				Predicted SPL (dBA)			Predictor Source ID	Source ID	PWL (dBA)	Time Correction (%)			Source/Receptor Distance (m)
	X (m)	Y (m)	Ground Elevation	Height	Daytime	Evening	Nighttime				Day	Evening	Night	
POR01_A	490710	4790024	319.82	4.5	20.61	20.61	20.61	243	EF01	81.6	100.0	100.0	100.0	407
POR01_A	490710	4790024	319.82	4.5	27.84	26.08	26.08	244	AH01	88.3	75.0	50.0	50.0	385
POR01_A	490710	4790024	319.82	4.5	23.48	21.72	21.72	245	AH02	85.5	75.0	50.0	50.0	440
POR01_A	490710	4790024	319.82	4.5	16.19	-200	-200	253	VH01	81.6	100.0	--	--	410
POR01_A	490710	4790024	319.82	4.5	11.61	11.61	11.61	254	VH07	81.6	100.0	100.0	100.0	408
POR01_A	490710	4790024	319.82	4.5	18.67	18.67	18.67	257	MB01	--	50.0	50.0	50.0	420
POR01_A	490710	4790024	319.82	4.5	8.8	8.8	8.8	258	VH08	81.6	100.0	100.0	100.0	414
POR01_A	490710	4790024	319.82	4.5	16.35	-200	-200	261	VH12	81.6	100.0	--	--	427
POR01_A	490710	4790024	319.82	4.5	20.55	-200	-200	262	VH14	81.6	100.0	--	--	425
POR01_A	490710	4790024	319.82	4.5	13.8	13.8	13.8	266	VH06	81.6	100.0	100.0	100.0	403
POR01_A	490710	4790024	319.82	4.5	16.83	-200	-200	267	VH13	81.6	100.0	--	--	421
POR01_A	490710	4790024	319.82	4.5	30.9	-200	-200	297	WD01_O	98.5	16.0	--	--	392
POR01_A	490710	4790024	319.82	4.5	8.21	-200	-200	299	WD02_C	81.1	66.0	--	--	406
POR01_A	490710	4790024	319.82	4.5	19.11	-200	-200	300	WD01_C	81.1	50.0	--	--	391
POR01_A	490710	4790024	319.82	4.5	7.81	-200	-200	301	VC01	85.1	25.0	--	--	416
POR01_A	490710	4790024	319.82	4.5	13.78	-200	-200	303	VC02	85.1	25.0	--	--	422
POR01_A	490710	4790024	319.82	4.5	10.17	10.17	10.17	313	VH09	81.6	100.0	100.0	100.0	421
POR01_A	490710	4790024	319.82	4.5	10.87	10.87	10.87	314	VH10	81.6	100.0	100.0	100.0	426
POR01_A	490710	4790024	319.82	4.5	21.37	21.37	21.37	315	VH16	81.6	100.0	100.0	100.0	423
POR01_A	490710	4790024	319.82	4.5	12.24	12.24	12.24	316	VH11	81.6	100.0	100.0	100.0	427
POR01_A	490710	4790024	319.82	4.5	18.76	18.76	18.76	322	MB02	--	50.0	50.0	50.0	415
POR01_A	490710	4790024	319.82	4.5	20.36	-200	-200	344	VH02	81.6	100.0	--	--	415
POR01_A	490710	4790024	319.82	4.5	20.28	-200	-200	345	VH03	81.6	100.0	--	--	420
POR01_A	490710	4790024	319.82	4.5	20.2	-200	-200	346	VH04	81.6	100.0	--	--	426
POR01_A	490710	4790024	320	4.5	18.35	-200	-200	347	VH05	81.6	100.0	--	--	431
POR01_A	490710	4790024	320	4.5	21.41	21.41	21.41	348	VH18	81.6	100.0	100.0	100.0	421
POR01_A	490710	4790024	320	4.5	21.12	21.12	21.12	349	VH17	81.6	100.0	100.0	100.0	417
POR01_A	490710	4790024	320	4.5	21.08	21.08	21.08	350	VH15	81.6	100.0	100.0	100.0	419
POR01_A	490710	4790024	320	4.5	20.8	-200	-200	351	VH21	81.6	100.0	--	--	413
POR01_A	490710	4790024	320	4.5	21.12	21.12	21.12	352	VH20	81.6	100.0	100.0	100.0	418
POR01_A	490710	4790024	320	4.5	21.16	21.16	21.16	353	VH19	81.6	100.0	100.0	100.0	415
POR01_A	490710	4790024	320	4.5	23.93	22.17	22.17	354	AH03	85.5	75.0	50.0	50.0	407
POR01_B	490691	4790014	318	1.5	19.18	19.18	19.18	243	EF01	81.6	100.0	100.0	100.0	386
POR01_B	490691	4790014	318	1.5	27.03	25.27	25.27	244	AH01	88.3	75.0	50.0	50.0	364
POR01_B	490691	4790014	318	1.5	21.65	19.89	19.89	245	AH02	85.5	75.0	50.0	50.0	418
POR01_B	490691	4790014	318	1.5	14.7	-200	-200	253	VH01	81.6	100.0	--	--	388
POR01_B	490691	4790014	318	1.5	10.51	10.51	10.51	254	VH07	81.6	100.0	100.0	100.0	387
POR01_B	490691	4790014	318	1.5	15.81	15.81	15.81	257	MB01	--	50.0	50.0	50.0	399
POR01_B	490691	4790014	318	1.5	7.95	7.95	7.95	258	VH08	81.6	100.0	100.0	100.0	393
POR01_B	490691	4790014	318	1.5	14.66	-200	-200	261	VH12	81.6	100.0	--	--	405
POR01_B	490691	4790014	318	1.5	19.02	-200	-200	262	VH14	81.6	100.0	--	--	404
POR01_B	490691	4790014	318	1.5	12.46	12.46	12.46	266	VH06	81.6	100.0	100.0	100.0	381
POR01_B	490691	4790014	318	1.5	15.29	-200	-200	267	VH13	81.6	100.0	--	--	400
POR01_B	490691	4790014	318	1.5	30.14	-200	-200	297	WD01_O	98.5	16.0	--	--	370
POR01_B	490691.3	4790014	318.24	1.5	7.57	-200	-200	299	WD02_C	81.1	66.0	--	--	385
POR01_B	490691.3	4790014	318.24	1.5	18.35	-200	-200	300	WD01_C	81.1	50.0	--	--	370
POR01_B	490691.3	4790014	318.24	1.5	7.61	-200	-200	301	VC01	85.1	25.0	--	--	395
POR01_B	490691.3	4790014	318.24	1.5	14.03	-200	-200	303	VC02	85.1	25.0	--	--	400
POR01_B	490691.3	4790014	318.24	1.5	9.07	9.07	9.07	313	VH09	81.6	100.0	100.0	100.0	399
POR01_B	490691.3	4790014	318.24	1.5	9.56	9.56	9.56	314	VH10	81.6	100.0	100.0	100.0	404
POR01_B	490691.3	4790014	318.24	1.5	19.97	19.97	19.97	315	VH16	81.6	100.0	100.0	100.0	401
POR01_B	490691.3	4790014	318.24	1.5	10.79	10.79	10.79	316	VH11	81.6	100.0	100.0	100.0	405
POR01_B	490691.3	4790014	318.24	1.5	15.91	15.91	15.91	322	MB02	--	50.0	50.0	50.0	394
POR01_B	490691.3	4790014	318.24	1.5	18.8	-200	-200	344	VH02	81.6	100.0	--	--	393
POR01_B	490691.3	4790014	318.24	1.5	18.7	-200	-200	345	VH03	81.6	100.0	--	--	399
POR01_B	490691.3	4790014	318.24	1.5	18.6	-200	-200	346	VH04	81.6	100.0	--	--	404
POR01_B	490691.3	4790014	318.24	1.5	16.9	-200	-200	347	VH05	81.6	100.0	--	--	410
POR01_B	490691.3	4790014	318.24	1.5	20.03	20.03	20.03	348	VH18	81.6	100.0	100.0	100.0	400
POR01_B	490691.3	4790014	318.24	1.5	19.84	19.84	19.84	349	VH17	81.6	100.0	100.0	100.0	395
POR01_B	490691.3	4790014	318.24	1.5	19.78	19.78	19.78	350	VH15	81.6	100.0	100.0	100.0	397
POR01_B	490691.3	4790014	318.24	1.5	19.35	-200	-200	351	VH21	81.6	100.0	--	--	392
POR01_B	490691.3	4790014	318.24	1.5	20.1	20.1	20.1	352	VH20	81.6	100.0	100.0	100.0	397
POR01_B	490691.3	4790014	318.24	1.5	19.89	19.89	19.89	353	VH19	81.6	100.0	100.0	100.0	394
POR01_B	490691.3	4790014	318.24	1.5	22.14	20.38	20.38	354	AH03	85.5	75.0	50.0	50.0	386
POR02_A	490779	4789924	324.37	4.5	18.8	18.8	18.8	243	EF01	81.6	100.0	100.0	100.0	436
POR02_A	490779	4789924	324.37	4.5	27.05	25.29	25.29	244	AH01	88.3	75.0	50.0	50.0	414
POR02_A	490779	4789924	324.37	4.5	20.64	18.88	18.88	245	AH02	85.5	75.0	50.0	50.0	478
POR02_A	490779	4789924	324.37	4.5	11.83	-200	-200	253	VH01	81.6	100.0	--	--	433
POR02_A	490779	4789924	324.37	4.5	18.5	18.5	18.5	254	VH07	81.6	100.0	100.0	100.0	436
POR02_A	490779	4789924	324.37	4.5	16.3	16.3	16.3	257	MB01	--	50.0	50.0	50.0	456
POR02_A	490779	4789924	324.37	4.5	15.66	15.66	15.66	258	VH08	81.6	100.0	100.0	100.0	442
POR02_A	490779	4789924	324.37	4.5	11.08	-200	-200	261	VH12	81.6	100.0	--	--	459
POR02_A	490779	4789924	324.37	4.5	17.66	-200	-200	262	VH14	81.6	100.0	--	--	459
POR02_A	490779	4789924	324.37	4.5	18.61	18.61	18.61	266	VH06	81.6	100.0	100.0	100.0	430
POR02_A	490779	4789924	324.37	4.5	11.03	-200	-200	267	VH13	81.6	100.0	--	--	454
POR02_A	490779	4789924	324.37	4.5	29.46	-200	-200	297	WD01_O	98.5	16.0	--	--	414
POR02_A	490779	4789924	324.37	4.5	5.89	-200	-200	299	WD02_C	81.1	66.0	--	--	429
POR02_A	490779	4789924	324.37	4.5	17.44	-200	-200	300	WD01_C	81.1	50.0	--	--	413
POR02_A	490779	4789924	324.37	4.5	3.6	-200	-200	301	VC01	85.1	25.0	--	--	439
POR02_A	490779	4789924	324.37	4.5	6.21	-200	-200	303	VC02	85.1	25.0	--	--	445
POR02_A	490779	4789924	324.37	4.5	15.4	15.4	15.4	313	VH09	81.6	100.0	100.0	100.0	449
POR02_A	490779	4789924	324.37	4.5	10.51	10.51	10.51	314	VH10	81.6	100.0	100.0	100.0	455
POR02_A	490779	4789924	324.37	4.5	18.53	18.53	18.53	315	VH16	81.6	100.0	100.0	100.0	459
POR02_A	490779	4789924	324.37	4.5	9.31	9.31	9.31	316	VH11	81.6	100.0	100.0	100.0	458



Table 2 - Point of Reception Noise Impact

Receptor ID	Receptor Coordinates				Predicted SPL (dBA)			Predictor Source ID	Source ID	PWL (dBA)	Time Correction (%)			Source/Receptor Distance (m)
	X (m)	Y (m)	Ground Elevation	Height	Daytime	Evening	Nighttime				Day	Evening	Night	
POR02_A	490779	4789924	324.37	4.5	16.39	16.39	16.39	322	MB02	--	50.0	50.0	50.0	451
POR02_A	490779	4789924	324.37	4.5	14.87	-200	-200	344	VH02	81.6	100.0	--	--	439
POR02_A	490779	4789924	324.37	4.5	16.16	-200	-200	345	VH03	81.6	100.0	--	--	445
POR02_A	490779	4789924	324.37	4.5	18.22	-200	-200	346	VH04	81.6	100.0	--	--	451
POR02_A	490779	4789924	324.37	4.5	18.11	-200	-200	347	VH05	81.6	100.0	--	--	457
POR02_A	490779	4789924	324.37	4.5	18.53	18.53	18.53	348	VH18	81.6	100.0	100.0	100.0	459
POR02_A	490779	4789924	324.37	4.5	18.21	18.21	18.21	349	VH17	81.6	100.0	100.0	100.0	453
POR02_A	490779	4789924	324.37	4.5	17.76	17.76	17.76	350	VH15	81.6	100.0	100.0	100.0	453
POR02_A	490779	4789924	324.37	4.5	18.21	-200	-200	351	VH21	81.6	100.0	--	--	453
POR02_A	490779	4789924	324.37	4.5	18.55	18.55	18.55	352	VH20	81.6	100.0	100.0	100.0	457
POR02_A	490779	4789924	324.37	4.5	18.21	18.21	18.21	353	VH19	81.6	100.0	100.0	100.0	454
POR02_A	490779	4789924	324.37	4.5	21.58	19.82	19.82	354	AH03	85.5	75.0	50.0	50.0	438
POR02_B	490748	4789918	322.85	1.5	17.12	17.12	17.12	243	EF01	81.6	100.0	100.0	100.0	404
POR02_B	490748	4789918	322.85	1.5	25.44	23.68	23.68	244	AH01	88.3	75.0	50.0	50.0	382
POR02_B	490748	4789918	322.85	1.5	18.37	16.61	16.61	245	AH02	85.5	75.0	50.0	50.0	447
POR02_B	490748	4789918	322.85	1.5	11.27	-200	-200	253	VH01	81.6	100.0	--	--	402
POR02_B	490748	4789918	322.85	1.5	17.06	17.06	17.06	254	VH07	81.6	100.0	100.0	100.0	404
POR02_B	490748	4789918	322.85	1.5	12.1	12.1	12.1	257	MB01	--	50.0	50.0	50.0	424
POR02_B	490748	4789918	322.85	1.5	14.5	14.5	14.5	258	VH08	81.6	100.0	100.0	100.0	410
POR02_B	490748	4789918	322.85	1.5	10.47	-200	-200	261	VH12	81.6	100.0	--	--	428
POR02_B	490748	4789918	322.85	1.5	16.13	-200	-200	262	VH14	81.6	100.0	--	--	428
POR02_B	490748	4789918	322.85	1.5	17.2	17.2	17.2	266	VH06	81.6	100.0	100.0	100.0	398
POR02_B	490748	4789918	322.85	1.5	10.32	-200	-200	267	VH13	81.6	100.0	--	--	423
POR02_B	490748	4789918	322.85	1.5	28.66	-200	-200	297	WD01_O	98.5	16.0	--	--	382
POR02_B	490748	4789918	322.85	1.5	5.96	-200	-200	299	WD02_C	81.1	66.0	--	--	398
POR02_B	490748	4789918	322.85	1.5	16.86	-200	-200	300	WD01_C	81.1	50.0	--	--	382
POR02_B	490748	4789918	322.85	1.5	3.33	-200	-200	301	VC01	85.1	25.0	--	--	408
POR02_B	490748	4789918	322.85	1.5	5.99	-200	-200	303	VC02	85.1	25.0	--	--	414
POR02_B	490748	4789918	322.85	1.5	14.17	14.17	14.17	313	VH09	81.6	100.0	100.0	100.0	417
POR02_B	490748	4789918	322.85	1.5	9.92	9.92	9.92	314	VH10	81.6	100.0	100.0	100.0	424
POR02_B	490748	4789918	322.85	1.5	17.07	17.07	17.07	315	VH16	81.6	100.0	100.0	100.0	427
POR02_B	490748	4789918	322.85	1.5	9.44	9.44	9.44	316	VH11	81.6	100.0	100.0	100.0	426
POR02_B	490748	4789918	322.85	1.5	12.2	12.2	12.2	322	MB02	--	50.0	50.0	50.0	419
POR02_B	490748	4789918	322.85	1.5	13.97	-200	-200	344	VH02	81.6	100.0	--	--	407
POR02_B	490748	4789918	322.85	1.5	15.16	-200	-200	345	VH03	81.6	100.0	--	--	413
POR02_B	490748	4789918	322.85	1.5	16.72	-200	-200	346	VH04	81.6	100.0	--	--	419
POR02_B	490748	4789918	322.85	1.5	16.59	-200	-200	347	VH05	81.6	100.0	--	--	425
POR02_B	490748	4789918	322.85	1.5	17.07	17.07	17.07	348	VH18	81.6	100.0	100.0	100.0	427
POR02_B	490748	4789918	322.85	1.5	16.94	16.94	16.94	349	VH17	81.6	100.0	100.0	100.0	422
POR02_B	490748	4789918	322.85	1.5	16.25	16.25	16.25	350	VH15	81.6	100.0	100.0	100.0	422
POR02_B	490748	4789918	322.85	1.5	16.94	-200	-200	351	VH21	81.6	100.0	--	--	422
POR02_B	490748	4789918	322.85	1.5	17.08	17.08	17.08	352	VH20	81.6	100.0	100.0	100.0	426
POR02_B	490748	4789918	322.85	1.5	16.94	16.94	16.94	353	VH19	81.6	100.0	100.0	100.0	422
POR02_B	490748	4789918	322.85	1.5	19.38	17.62	17.62	354	AH03	85.5	75.0	50.0	50.0	406
POR03_A	490253.5	4789703	312.68	4.5	27.35	27.35	27.35	243	EF01	81.6	100.0	100.0	100.0	158
POR03_A	490253.5	4789703	312.68	4.5	29.35	27.59	27.59	244	AH01	88.3	75.0	50.0	50.0	179
POR03_A	490253.5	4789703	312.68	4.5	29.46	27.7	27.7	245	AH02	85.5	75.0	50.0	50.0	155
POR03_A	490253.5	4789703	312.68	4.5	27.86	-200	-200	253	VH01	81.6	100.0	--	--	151
POR03_A	490253.5	4789703	312.68	4.5	28.48	28.48	28.48	254	VH07	81.6	100.0	100.0	100.0	156
POR03_A	490253.5	4789703	312.68	4.5	24.91	24.91	24.91	257	MB01	--	50.0	50.0	50.0	161
POR03_A	490253.5	4789703	312.68	4.5	28.2	28.2	28.2	258	VH08	81.6	100.0	100.0	100.0	152
POR03_A	490253.5	4789703	312.68	4.5	26.31	-200	-200	261	VH12	81.6	100.0	--	--	149
POR03_A	490253.5	4789703	312.68	4.5	26.34	-200	-200	262	VH14	81.6	100.0	--	--	154
POR03_A	490253.5	4789703	312.68	4.5	28.59	28.59	28.59	266	VH06	81.6	100.0	100.0	100.0	161
POR03_A	490253.5	4789703	312.68	4.5	26.88	-200	-200	267	VH13	81.6	100.0	--	--	154
POR03_A	490253.5	4789703	312.68	4.5	22.44	-200	-200	297	WD01_O	98.5	16.0	--	--	167
POR03_A	490253.5	4789703	312.68	4.5	26.26	-200	-200	299	WD02_C	81.1	66.0	--	--	154
POR03_A	490253.5	4789703	312.68	4.5	12.74	-200	-200	300	WD01_C	81.1	50.0	--	--	168
POR03_A	490253.5	4789703	312.68	4.5	23.09	-200	-200	301	VC01	85.1	25.0	--	--	145
POR03_A	490253.5	4789703	312.68	4.5	23.29	-200	-200	303	VC02	85.1	25.0	--	--	140
POR03_A	490253.5	4789703	312.68	4.5	26.47	26.47	26.47	313	VH09	81.6	100.0	100.0	100.0	147
POR03_A	490253.5	4789703	312.68	4.5	26.29	26.29	26.29	314	VH10	81.6	100.0	100.0	100.0	144
POR03_A	490253.5	4789703	312.68	4.5	26.42	26.42	26.42	315	VH16	81.6	100.0	100.0	100.0	159
POR03_A	490253.5	4789703	312.68	4.5	26.22	26.22	26.22	316	VH11	81.6	100.0	100.0	100.0	145
POR03_A	490253.5	4789703	312.68	4.5	24.8	24.8	24.8	322	MB02	--	50.0	50.0	50.0	163
POR03_A	490253.5	4789703	312.68	4.5	27.04	-200	-200	344	VH02	81.6	100.0	--	--	147
POR03_A	490253.5	4789703	312.68	4.5	26.16	-200	-200	345	VH03	81.6	100.0	--	--	142
POR03_A	490253.5	4789703	312.68	4.5	26.08	-200	-200	346	VH04	81.6	100.0	--	--	138
POR03_A	490253.5	4789703	312.68	4.5	26.2	-200	-200	347	VH05	81.6	100.0	--	--	133
POR03_A	490253.5	4789703	312.68	4.5	26.22	26.22	26.22	348	VH18	81.6	100.0	100.0	100.0	164
POR03_A	490253.5	4789703	312.68	4.5	26.44	26.44	26.44	349	VH17	81.6	100.0	100.0	100.0	165
POR03_A	490253.5	4789703	312.68	4.5	26.98	26.98	26.98	350	VH15	81.6	100.0	100.0	100.0	160
POR03_A	490253.5	4789703	312.68	4.5	25.88	-200	-200	351	VH21	81.6	100.0	--	--	176
POR03_A	490253.5	4789703	312.68	4.5	26.14	26.14	26.14	352	VH20	81.6	100.0	100.0	100.0	171
POR03_A	490253.5	4789703	312.68	4.5	26.21	26.21	26.21	353	VH19	81.6	100.0	100.0	100.0	170
POR03_A	490253.5	4789703	312.68	4.5	29.9	28.14	28.14	354	AH03	85.5	75.0	50.0	50.0	161
POR03_B	490279.2	4789719	310	1.5	23.72	23.72	23.72	243	EF01	81.6	100.0	100.0	100.0	130
POR03_B	490279.2	4789719	310	1.5	29.28	27.52	27.52	244	AH01	88.3	75.0	50.0	50.0	150
POR03_B	490279.2	4789719	310	1.5	25.99	24.23	24.23	245	AH02	85.5	75.0	50.0	50.0	133
POR03_B	490279.2	4789719	310	1.5	28.35	-200	-200	253	VH01	81.6	100.0	--	--	122
POR03_B	490279.2	4789719	310	1.5	28.19	28.19	28.19	254	VH07	81.6	100.0	100.0	100.0	128
POR03_B	490279.2	4789719	310	1.5	21.92	21.92	21.92	257	MB01	--	50.0	50.0	50.0	136
POR03_B	490279.2	4789719	310	1.5	28.51	28.51	28.51	258	VH08	81.6	100.0	100.0	100.0	124
POR03_B	490279.2	4789719	310	1.5	26.44	-200	-200	261	VH12	81.6	100.0	--	--	123



Table 2 - Point of Reception Noise Impact

Receptor ID	Receptor Coordinates				Predicted SPL (dBA)			Predictor Source ID	Source ID	PWL (dBA)	Time Correction (%)			Source/Receptor Distance (m)
	X (m)	Y (m)	Ground Elevation	Height	Daytime	Evening	Nighttime				Day	Evening	Night	
POR03_B	490279.2	4789719	310	1.5	26.82	-200	-200	262	VH14	81.6	100.0	--	--	128
POR03_B	490279.2	4789719	310	1.5	28.13	28.13	28.13	266	VH06	81.6	100.0	100.0	100.0	132
POR03_B	490279.2	4789719	310	1.5	26.97	-200	-200	267	VH13	81.6	100.0	--	--	128
POR03_B	490279.2	4789719	310	1.5	21.05	-200	-200	297	WD01_O	98.5	16.0	--	--	138
POR03_B	490279.2	4789719	310	1.5	26.92	-200	-200	299	WD02_C	81.1	66.0	--	--	125
POR03_B	490279.2	4789719	310	1.5	12.58	-200	-200	300	WD01_C	81.1	50.0	--	--	138
POR03_B	490279.2	4789719	310	1.5	24.99	-200	-200	301	VC01	85.1	25.0	--	--	115
POR03_B	490279.2	4789719	310	1.5	25.27	-200	-200	303	VC02	85.1	25.0	--	--	111
POR03_B	490279.2	4789719	310	1.5	27.2	27.2	27.2	313	VH09	81.6	100.0	100.0	100.0	119
POR03_B	490279.2	4789719	310	1.5	27.14	27.14	27.14	314	VH10	81.6	100.0	100.0	100.0	117
POR03_B	490279.2	4789719	310	1.5	26.7	26.7	26.7	315	VH16	81.6	100.0	100.0	100.0	134
POR03_B	490279.2	4789719	310	1.5	27.02	27.02	27.02	316	VH11	81.6	100.0	100.0	100.0	119
POR03_B	490279.2	4789719	310	1.5	21.87	21.87	21.87	322	MB02	--	50.0	50.0	50.0	137
POR03_B	490279.2	4789719	310	1.5	26.93	-200	-200	344	VH02	81.6	100.0	--	--	118
POR03_B	490279.2	4789719	310	1.5	27.01	-200	-200	345	VH03	81.6	100.0	--	--	113
POR03_B	490279.2	4789719	310	1.5	27.1	-200	-200	346	VH04	81.6	100.0	--	--	109
POR03_B	490279.2	4789719	310	1.5	27.51	-200	-200	347	VH05	81.6	100.0	--	--	105
POR03_B	490279.2	4789719	310	1.5	26.21	26.21	26.21	348	VH18	81.6	100.0	100.0	100.0	140
POR03_B	490279.2	4789719	310	1.5	26.2	26.2	26.2	349	VH17	81.6	100.0	100.0	100.0	139
POR03_B	490279.2	4789719	310	1.5	26.86	26.86	26.86	350	VH15	81.6	100.0	100.0	100.0	134
POR03_B	490279.2	4789719	310	1.5	25.61	-200	-200	351	VH21	81.6	100.0	--	--	151
POR03_B	490279.2	4789719	310	1.5	25.82	25.82	25.82	352	VH20	81.6	100.0	100.0	100.0	146
POR03_B	490279.2	4789719	310	1.5	25.92	25.92	25.92	353	VH19	81.6	100.0	100.0	100.0	145
POR03_B	490279.2	4789719	310	1.5	26.17	24.41	24.41	354	AH03	85.5	75.0	50.0	50.0	133
POR04_A	490230	4789726	315.29	1.5	25.18	25.18	25.18	243	EF01	81.6	100.0	100.0	100.0	159
POR04_A	490230	4789726	315.29	1.5	26.28	24.52	24.52	244	AH01	88.3	75.0	50.0	50.0	181
POR04_A	490230	4789726	315.29	1.5	27.36	25.6	25.6	245	AH02	85.5	75.0	50.0	50.0	145
POR04_A	490230	4789726	315.29	1.5	26.01	-200	-200	253	VH01	81.6	100.0	--	--	156
POR04_A	490230	4789726	315.29	1.5	25.64	25.64	25.64	254	VH07	81.6	100.0	100.0	100.0	158
POR04_A	490230	4789726	315.29	1.5	20.49	20.49	20.49	257	MB01	--	50.0	50.0	50.0	156
POR04_A	490230	4789726	315.29	1.5	25.83	25.83	25.83	258	VH08	81.6	100.0	100.0	100.0	153
POR04_A	490230	4789726	315.29	1.5	26.07	-200	-200	261	VH12	81.6	100.0	--	--	145
POR04_A	490230	4789726	315.29	1.5	25.58	-200	-200	262	VH14	81.6	100.0	--	--	149
POR04_A	490230	4789726	315.29	1.5	25.59	25.59	25.59	266	VH06	81.6	100.0	100.0	100.0	163
POR04_A	490230	4789726	315.29	1.5	25.83	-200	-200	267	VH13	81.6	100.0	--	--	150
POR04_A	490230	4789726	315.29	1.5	20.75	-200	-200	297	WD01_O	98.5	16.0	--	--	174
POR04_A	490230	4789726	315.29	1.5	24.54	-200	-200	299	WD02_C	81.1	66.0	--	--	159
POR04_A	490230	4789726	315.29	1.5	11.41	-200	-200	300	WD01_C	81.1	50.0	--	--	174
POR04_A	490230	4789726	315.29	1.5	22.58	-200	-200	301	VC01	85.1	25.0	--	--	149
POR04_A	490230	4789726	315.29	1.5	22.84	-200	-200	303	VC02	85.1	25.0	--	--	144
POR04_A	490230	4789726	315.29	1.5	24.79	24.79	24.79	313	VH09	81.6	100.0	100.0	100.0	147
POR04_A	490230	4789726	315.29	1.5	25.23	25.23	25.23	314	VH10	81.6	100.0	100.0	100.0	142
POR04_A	490230	4789726	315.29	1.5	25.54	25.54	25.54	315	VH16	81.6	100.0	100.0	100.0	153
POR04_A	490230	4789726	315.29	1.5	25.25	25.25	25.25	316	VH11	81.6	100.0	100.0	100.0	143
POR04_A	490230	4789726	315.29	1.5	20.35	20.35	20.35	322	MB02	--	50.0	50.0	50.0	159
POR04_A	490230	4789726	315.29	1.5	25.7	-200	-200	344	VH02	81.6	100.0	--	--	151
POR04_A	490230	4789726	315.29	1.5	25.52	-200	-200	345	VH03	81.6	100.0	--	--	145
POR04_A	490230	4789726	315.29	1.5	24.77	-200	-200	346	VH04	81.6	100.0	--	--	140
POR04_A	490230	4789726	315.29	1.5	24.87	-200	-200	347	VH05	81.6	100.0	--	--	135
POR04_A	490230	4789726	315.29	1.5	24.67	24.67	24.67	348	VH18	81.6	100.0	100.0	100.0	158
POR04_A	490230	4789726	315.29	1.5	24.73	24.73	24.73	349	VH17	81.6	100.0	100.0	100.0	159
POR04_A	490230	4789726	315.29	1.5	25.8	25.8	25.8	350	VH15	81.6	100.0	100.0	100.0	155
POR04_A	490230	4789726	315.29	1.5	21.21	-200	-200	351	VH21	81.6	100.0	--	--	168
POR04_A	490230	4789726	315.29	1.5	20.4	20.4	20.4	352	VH20	81.6	100.0	100.0	100.0	163
POR04_A	490230	4789726	315.29	1.5	24.67	24.67	24.67	353	VH19	81.6	100.0	100.0	100.0	163
POR04_A	490230	4789726	315.29	1.5	27.41	25.65	25.65	354	AH03	85.5	75.0	50.0	50.0	161
POR04_B	490258.7	4789737	311.15	1.5	23.72	23.72	23.72	243	EF01	81.6	100.0	100.0	100.0	130
POR04_B	490258.7	4789737	311.15	1.5	26.36	24.6	24.6	244	AH01	88.3	75.0	50.0	50.0	151
POR04_B	490258.7	4789737	311.15	1.5	26.52	24.76	24.76	245	AH02	85.5	75.0	50.0	50.0	122
POR04_B	490258.7	4789737	311.15	1.5	28.06	-200	-200	253	VH01	81.6	100.0	--	--	125
POR04_B	490258.7	4789737	311.15	1.5	27.8	27.8	27.8	254	VH07	81.6	100.0	100.0	100.0	128
POR04_B	490258.7	4789737	311.15	1.5	22.36	22.36	22.36	257	MB01	--	50.0	50.0	50.0	129
POR04_B	490258.7	4789737	311.15	1.5	27.87	27.87	27.87	258	VH08	81.6	100.0	100.0	100.0	123
POR04_B	490258.7	4789737	311.15	1.5	27.64	-200	-200	261	VH12	81.6	100.0	--	--	118
POR04_B	490258.7	4789737	311.15	1.5	27.5	-200	-200	262	VH14	81.6	100.0	--	--	122
POR04_B	490258.7	4789737	311.15	1.5	27.7	27.7	27.7	266	VH06	81.6	100.0	100.0	100.0	133
POR04_B	490258.7	4789737	311.15	1.5	27.59	-200	-200	267	VH13	81.6	100.0	--	--	123
POR04_B	490258.7	4789737	311.15	1.5	20.01	-200	-200	297	WD01_O	98.5	16.0	--	--	143
POR04_B	490258.7	4789737	311.15	1.5	26.53	-200	-200	299	WD02_C	81.1	66.0	--	--	129
POR04_B	490258.7	4789737	311.15	1.5	11.62	-200	-200	300	WD01_C	81.1	50.0	--	--	143
POR04_B	490258.7	4789737	311.15	1.5	24.69	-200	-200	301	VC01	85.1	25.0	--	--	119
POR04_B	490258.7	4789737	311.15	1.5	25.33	-200	-200	303	VC02	85.1	25.0	--	--	113
POR04_B	490258.7	4789737	311.15	1.5	26.83	26.83	26.83	313	VH09	81.6	100.0	100.0	100.0	118
POR04_B	490258.7	4789737	311.15	1.5	27.33	27.33	27.33	314	VH10	81.6	100.0	100.0	100.0	114
POR04_B	490258.7	4789737	311.15	1.5	27.02	27.02	27.02	315	VH16	81.6	100.0	100.0	100.0	127
POR04_B	490258.7	4789737	311.15	1.5	27.33	27.33	27.33	316	VH11	81.6	100.0	100.0	100.0	115
POR04_B	490258.7	4789737	311.15	1.5	22.23	22.23	22.23	322	MB02	--	50.0	50.0	50.0	132
POR04_B	490258.7	4789737	311.15	1.5	27.76	-200	-200	344	VH02	81.6	100.0	--	--	120
POR04_B	490258.7	4789737	311.15	1.5	26.91	-200	-200	345	VH03	81.6	100.0	--	--	115
POR04_B	490258.7	4789737	311.15	1.5	27.06	-200	-200	346	VH04	81.6	100.0	--	--	110
POR04_B	490258.7	4789737	311.15	1.5	27.53	-200	-200	347	VH05	81.6	100.0	--	--	105
POR04_B	490258.7	4789737	311.15	1.5	26.45	26.45	26.45	348	VH18	81.6	100.0	100.0	100.0	132
POR04_B	490258.7	4789737	311.15	1.5	26.51	26.51	26.51	349	VH17	81.6	100.0	100.0	100.0	133
POR04_B	490258.7	4789737	311.15	1.5	27.49	27.49	27.49	350	VH15	81.6	100.0	100.0	100.0	128



Table 2 - Point of Reception Noise Impact

Receptor ID	Receptor Coordinates				Predicted SPL (dBA)			Predictor Source ID	Source ID	PWL (dBA)	Time Correction (%)			Source/Receptor Distance (m)
	X (m)	Y (m)	Ground Elevation	Height	Daytime	Evening	Nighttime				Day	Evening	Night	
POR04_B	490258.7	4789737	311.15	1.5	26.06	-200	-200	351	VH21	81.6	100.0	--	--	143
POR04_B	490258.7	4789737	311.15	1.5	23.22	23.22	23.22	352	VH20	81.6	100.0	100.0	100.0	138
POR04_B	490258.7	4789737	311.15	1.5	26.35	26.35	26.35	353	VH19	81.6	100.0	100.0	100.0	137
POR04_B	490258.7	4789737	311.15	1.5	26.28	24.52	24.52	354	AH03	85.5	75.0	50.0	50.0	132
POR05_A	490252.7	4789781	310	7.5	31.3	31.3	31.3	243	EF01	81.6	100.0	100.0	100.0	111
POR05_A	490252.7	4789781	310	7.5	30.43	28.67	28.67	244	AH01	88.3	75.0	50.0	50.0	133
POR05_A	490252.7	4789781	310	7.5	35.11	33.35	33.35	245	AH02	85.5	75.0	50.0	50.0	87
POR05_A	490252.7	4789781	310	7.5	32.45	-200	-200	253	VH01	81.6	100.0	--	--	112
POR05_A	490252.7	4789781	310	7.5	31.27	31.27	31.27	254	VH07	81.6	100.0	100.0	100.0	111
POR05_A	490252.7	4789781	310	7.5	29.57	29.57	29.57	257	MB01	--	50.0	50.0	50.0	100
POR05_A	490252.7	4789781	310	7.5	31.16	31.16	31.16	258	VH08	81.6	100.0	100.0	100.0	105
POR05_A	490252.7	4789781	310	7.5	32.25	-200	-200	261	VH12	81.6	100.0	--	--	92
POR05_A	490252.7	4789781	310	7.5	31.95	-200	-200	262	VH14	81.6	100.0	--	--	94
POR05_A	490252.7	4789781	310	7.5	30.86	30.86	30.86	266	VH06	81.6	100.0	100.0	100.0	116
POR05_A	490252.7	4789781	310	7.5	32.31	-200	-200	267	VH13	81.6	100.0	--	--	97
POR05_A	490252.7	4789781	310	7.5	24.68	-200	-200	297	WD01_O	98.5	16.0	--	--	132
POR05_A	490252.7	4789781	310	7.5	29.59	-200	-200	299	WD02_C	81.1	66.0	--	--	116
POR05_A	490252.7	4789781	310	7.5	14.99	-200	-200	300	WD01_C	81.1	50.0	--	--	132
POR05_A	490252.7	4789781	310	7.5	28.49	-200	-200	301	VC01	85.1	25.0	--	--	106
POR05_A	490252.7	4789781	310	7.5	28.51	-200	-200	303	VC02	85.1	25.0	--	--	100
POR05_A	490252.7	4789781	310	7.5	31.07	31.07	31.07	313	VH09	81.6	100.0	100.0	100.0	98
POR05_A	490252.7	4789781	310	7.5	31.16	31.16	31.16	314	VH10	81.6	100.0	100.0	100.0	92
POR05_A	490252.7	4789781	310	7.5	31.47	31.47	31.47	315	VH16	81.6	100.0	100.0	100.0	98
POR05_A	490252.7	4789781	310	7.5	32.24	32.24	32.24	316	VH11	81.6	100.0	100.0	100.0	91
POR05_A	490252.7	4789781	310	7.5	29.25	29.25	29.25	322	MB02	--	50.0	50.0	50.0	104
POR05_A	490252.7	4789781	310	7.5	31.47	-200	-200	344	VH02	81.6	100.0	--	--	107
POR05_A	490252.7	4789781	310	7.5	31.06	-200	-200	345	VH03	81.6	100.0	--	--	101
POR05_A	490252.7	4789781	310	7.5	31	-200	-200	346	VH04	81.6	100.0	--	--	95
POR05_A	490252.7	4789781	310	7.5	31.03	-200	-200	347	VH05	81.6	100.0	--	--	89
POR05_A	490252.7	4789781	310	7.5	26.81	26.81	26.81	348	VH18	81.6	100.0	100.0	100.0	101
POR05_A	490252.7	4789781	310	7.5	31.6	31.6	31.6	349	VH17	81.6	100.0	100.0	100.0	104
POR05_A	490252.7	4789781	310	7.5	31.48	31.48	31.48	350	VH15	81.6	100.0	100.0	100.0	101
POR05_A	490252.7	4789781	310	7.5	25.41	-200	-200	351	VH21	81.6	100.0	--	--	111
POR05_A	490252.7	4789781	310	7.5	24.78	24.78	24.78	352	VH20	81.6	100.0	100.0	100.0	106
POR05_A	490252.7	4789781	310	7.5	28.09	28.09	28.09	353	VH19	81.6	100.0	100.0	100.0	107
POR05_A	490252.7	4789781	310	7.5	34.21	32.45	32.45	354	AH03	85.5	75.0	50.0	50.0	110
POR05_B	490281	4789794	310	1.5	28.14	28.14	28.14	243	EF01	81.6	100.0	100.0	100.0	80
POR05_B	490281	4789794	310	1.5	26.06	24.3	24.3	244	AH01	88.3	75.0	50.0	50.0	103
POR05_B	490281	4789794	310	1.5	32.54	30.78	30.78	245	AH02	85.5	75.0	50.0	50.0	61
POR05_B	490281	4789794	310	1.5	32.87	-200	-200	253	VH01	81.6	100.0	--	--	82
POR05_B	490281	4789794	310	1.5	32.29	32.29	32.29	254	VH07	81.6	100.0	100.0	100.0	80
POR05_B	490281	4789794	310	1.5	29.71	29.71	29.71	257	MB01	--	50.0	50.0	50.0	71
POR05_B	490281	4789794	310	1.5	32.67	32.67	32.67	258	VH08	81.6	100.0	100.0	100.0	74
POR05_B	490281	4789794	310	1.5	34.78	-200	-200	261	VH12	81.6	100.0	--	--	62
POR05_B	490281	4789794	310	1.5	34.13	-200	-200	262	VH14	81.6	100.0	--	--	65
POR05_B	490281	4789794	310	1.5	31.49	31.49	31.49	266	VH06	81.6	100.0	100.0	100.0	86
POR05_B	490281	4789794	310	1.5	34.25	-200	-200	267	VH13	81.6	100.0	--	--	67
POR05_B	490281	4789794	310	1.5	23.11	-200	-200	297	WD01_O	98.5	16.0	--	--	102
POR05_B	490281	4789794	310	1.5	30.88	-200	-200	299	WD02_C	81.1	66.0	--	--	86
POR05_B	490281	4789794	310	1.5	14.84	-200	-200	300	WD01_C	81.1	50.0	--	--	102
POR05_B	490281	4789794	310	1.5	31.43	-200	-200	301	VC01	85.1	25.0	--	--	76
POR05_B	490281	4789794	310	1.5	32.19	-200	-200	303	VC02	85.1	25.0	--	--	70
POR05_B	490281	4789794	310	1.5	33.39	33.39	33.39	313	VH09	81.6	100.0	100.0	100.0	67
POR05_B	490281	4789794	310	1.5	33.98	33.98	33.98	314	VH10	81.6	100.0	100.0	100.0	62
POR05_B	490281	4789794	310	1.5	33.2	33.2	33.2	315	VH16	81.6	100.0	100.0	100.0	69
POR05_B	490281	4789794	310	1.5	34.97	34.97	34.97	316	VH11	81.6	100.0	100.0	100.0	60
POR05_B	490281	4789794	310	1.5	29.22	29.22	29.22	322	MB02	--	50.0	50.0	50.0	75
POR05_B	490281	4789794	310	1.5	32.75	-200	-200	344	VH02	81.6	100.0	--	--	77
POR05_B	490281	4789794	310	1.5	32.91	-200	-200	345	VH03	81.6	100.0	--	--	71
POR05_B	490281	4789794	310	1.5	33.54	-200	-200	346	VH04	81.6	100.0	--	--	65
POR05_B	490281	4789794	310	1.5	34.06	-200	-200	347	VH05	81.6	100.0	--	--	59
POR05_B	490281	4789794	310	1.5	32.9	32.9	32.9	348	VH18	81.6	100.0	100.0	100.0	73
POR05_B	490281	4789794	310	1.5	32.82	32.82	32.82	349	VH17	81.6	100.0	100.0	100.0	75
POR05_B	490281	4789794	310	1.5	33.05	33.05	33.05	350	VH15	81.6	100.0	100.0	100.0	71
POR05_B	490281	4789794	310	1.5	26.55	-200	-200	351	VH21	81.6	100.0	--	--	84
POR05_B	490281	4789794	310	1.5	26.14	26.14	26.14	352	VH20	81.6	100.0	100.0	100.0	79
POR05_B	490281	4789794	310	1.5	32.52	32.52	32.52	353	VH19	81.6	100.0	100.0	100.0	79
POR05_B	490281	4789794	310	1.5	30.58	28.82	28.82	354	AH03	85.5	75.0	50.0	50.0	80
POR06_A	490234.4	4789822	310	7.5	30.65	30.65	30.65	243	EF01	81.6	100.0	100.0	100.0	120
POR06_A	490234.4	4789822	310	7.5	30.09	28.33	28.33	244	AH01	88.3	75.0	50.0	50.0	141
POR06_A	490234.4	4789822	310	7.5	36.65	34.89	34.89	245	AH02	85.5	75.0	50.0	50.0	77
POR06_A	490234.4	4789822	310	7.5	31.64	-200	-200	253	VH01	81.6	100.0	--	--	128
POR06_A	490234.4	4789822	310	7.5	27.12	27.12	27.12	254	VH07	81.6	100.0	100.0	100.0	121
POR06_A	490234.4	4789822	310	7.5	24.1	24.1	24.1	257	MB01	--	50.0	50.0	50.0	99
POR06_A	490234.4	4789822	310	7.5	30.97	30.97	30.97	258	VH08	81.6	100.0	100.0	100.0	115
POR06_A	490234.4	4789822	310	7.5	32.51	-200	-200	261	VH12	81.6	100.0	--	--	96
POR06_A	490234.4	4789822	310	7.5	32.05	-200	-200	262	VH14	81.6	100.0	--	--	95
POR06_A	490234.4	4789822	310	7.5	26.29	26.29	26.29	266	VH06	81.6	100.0	100.0	100.0	127
POR06_A	490234.4	4789822	310	7.5	32.76	-200	-200	267	VH13	81.6	100.0	--	--	100
POR06_A	490234.4	4789822	310	7.5	25.14	-200	-200	297	WD01_O	98.5	16.0	--	--	147
POR06_A	490234.4	4789822	310	7.5	28.95	-200	-200	299	WD02_C	81.1	66.0	--	--	132
POR06_A	490234.4	4789822	310	7.5	15.48	-200	-200	300	WD01_C	81.1	50.0	--	--	147
POR06_A	490234.4	4789822	310	7.5	27.46	-200	-200	301	VC01	85.1	25.0	--	--	123
POR06_A	490234.4	4789822	310	7.5	27.39	-200	-200	303	VC02	85.1	25.0	--	--	117



Table 2 - Point of Reception Noise Impact

Receptor ID	Receptor Coordinates				Predicted SPL (dBA)			Predictor Source ID	Source ID	PWL (dBA)	Time Correction (%)			Source/Receptor Distance (m)
	X (m)	Y (m)	Ground Elevation	Height	Daytime	Evening	Nighttime				Day	Evening	Night	
POR06_A	490234.4	4789822	310	7.5	31.21	31.21	31.21	313	VH09	81.6	100.0	100.0	100.0	108
POR06_A	490234.4	4789822	310	7.5	32.06	32.06	32.06	314	VH10	81.6	100.0	100.0	100.0	102
POR06_A	490234.4	4789822	310	7.5	27.49	27.49	27.49	315	VH16	81.6	100.0	100.0	100.0	96
POR06_A	490234.4	4789822	310	7.5	32.21	32.21	32.21	316	VH11	81.6	100.0	100.0	100.0	98
POR06_A	490234.4	4789822	310	7.5	29.39	29.39	29.39	322	MB02	--	50.0	50.0	50.0	104
POR06_A	490234.4	4789822	310	7.5	30.37	-200	-200	344	VH02	81.6	100.0	--	--	123
POR06_A	490234.4	4789822	310	7.5	30.54	-200	-200	345	VH03	81.6	100.0	--	--	117
POR06_A	490234.4	4789822	310	7.5	30.19	-200	-200	346	VH04	81.6	100.0	--	--	111
POR06_A	490234.4	4789822	310	7.5	29.9	-200	-200	347	VH05	81.6	100.0	--	--	105
POR06_A	490234.4	4789822	310	7.5	24.17	24.17	24.17	348	VH18	81.6	100.0	100.0	100.0	97
POR06_A	490234.4	4789822	310	7.5	26.59	26.59	26.59	349	VH17	81.6	100.0	100.0	100.0	102
POR06_A	490234.4	4789822	310	7.5	32.18	32.18	32.18	350	VH15	81.6	100.0	100.0	100.0	101
POR06_A	490234.4	4789822	310	7.5	24.62	-200	-200	351	VH21	81.6	100.0	--	--	104
POR06_A	490234.4	4789822	310	7.5	24.12	24.12	24.12	352	VH20	81.6	100.0	100.0	100.0	99
POR06_A	490234.4	4789822	310	7.5	25.03	25.03	25.03	353	VH19	81.6	100.0	100.0	100.0	102
POR06_A	490234.4	4789822	310	7.5	33.78	32.02	32.02	354	AH03	85.5	75.0	50.0	50.0	117
POR06_B	490263.2	4789825	310	1.5	26.95	26.95	26.95	243	EF01	81.6	100.0	100.0	100.0	92
POR06_B	490263.2	4789825	310	1.5	24.96	23.2	23.2	244	AH01	88.3	75.0	50.0	50.0	113
POR06_B	490263.2	4789825	310	1.5	34.11	32.35	32.35	245	AH02	85.5	75.0	50.0	50.0	50
POR06_B	490263.2	4789825	310	1.5	31.45	-200	-200	253	VH01	81.6	100.0	--	--	100
POR06_B	490263.2	4789825	310	1.5	26.7	26.7	26.7	254	VH07	81.6	100.0	100.0	100.0	93
POR06_B	490263.2	4789825	310	1.5	25.42	25.42	25.42	257	MB01	--	50.0	50.0	50.0	70
POR06_B	490263.2	4789825	310	1.5	31.51	31.51	31.51	258	VH08	81.6	100.0	100.0	100.0	86
POR06_B	490263.2	4789825	310	1.5	34.44	-200	-200	261	VH12	81.6	100.0	--	--	67
POR06_B	490263.2	4789825	310	1.5	34.04	-200	-200	262	VH14	81.6	100.0	--	--	66
POR06_B	490263.2	4789825	310	1.5	25.14	25.14	25.14	266	VH06	81.6	100.0	100.0	100.0	98
POR06_B	490263.2	4789825	310	1.5	34.37	-200	-200	267	VH13	81.6	100.0	--	--	71
POR06_B	490263.2	4789825	310	1.5	23.46	-200	-200	297	WD01_O	98.5	16.0	--	--	119
POR06_B	490263.2	4789825	310	1.5	29.5	-200	-200	299	WD02_C	81.1	66.0	--	--	103
POR06_B	490263.2	4789825	310	1.5	14.97	-200	-200	300	WD01_C	81.1	50.0	--	--	119
POR06_B	490263.2	4789825	310	1.5	29.47	-200	-200	301	VC01	85.1	25.0	--	--	95
POR06_B	490263.2	4789825	310	1.5	29.59	-200	-200	303	VC02	85.1	25.0	--	--	90
POR06_B	490263.2	4789825	310	1.5	32.24	32.24	32.24	313	VH09	81.6	100.0	100.0	100.0	80
POR06_B	490263.2	4789825	310	1.5	33.59	33.59	33.59	314	VH10	81.6	100.0	100.0	100.0	73
POR06_B	490263.2	4789825	310	1.5	29.6	29.6	29.6	315	VH16	81.6	100.0	100.0	100.0	67
POR06_B	490263.2	4789825	310	1.5	33.96	33.96	33.96	316	VH11	81.6	100.0	100.0	100.0	69
POR06_B	490263.2	4789825	310	1.5	29.87	29.87	29.87	322	MB02	--	50.0	50.0	50.0	75
POR06_B	490263.2	4789825	310	1.5	30.36	-200	-200	344	VH02	81.6	100.0	--	--	94
POR06_B	490263.2	4789825	310	1.5	30.74	-200	-200	345	VH03	81.6	100.0	--	--	89
POR06_B	490263.2	4789825	310	1.5	30.97	-200	-200	346	VH04	81.6	100.0	--	--	83
POR06_B	490263.2	4789825	310	1.5	31.07	-200	-200	347	VH05	81.6	100.0	--	--	77
POR06_B	490263.2	4789825	310	1.5	23.49	23.49	23.49	348	VH18	81.6	100.0	100.0	100.0	68
POR06_B	490263.2	4789825	310	1.5	27.03	27.03	27.03	349	VH17	81.6	100.0	100.0	100.0	73
POR06_B	490263.2	4789825	310	1.5	33.75	33.75	33.75	350	VH15	81.6	100.0	100.0	100.0	72
POR06_B	490263.2	4789825	310	1.5	22.17	-200	-200	351	VH21	81.6	100.0	--	--	76
POR06_B	490263.2	4789825	310	1.5	22.44	22.44	22.44	352	VH20	81.6	100.0	100.0	100.0	71
POR06_B	490263.2	4789825	310	1.5	23.29	23.29	23.29	353	VH19	81.6	100.0	100.0	100.0	74
POR06_B	490263.2	4789825	310	1.5	29.99	28.23	28.23	354	AH03	85.5	75.0	50.0	50.0	89
POR07_A	490051	4790274	312.46	4.5	15.3	15.3	15.3	243	EF01	81.6	100.0	100.0	100.0	542
POR07_A	490051	4790274	312.46	4.5	20.98	19.22	19.22	244	AH01	88.3	75.0	50.0	50.0	547
POR07_A	490051	4790274	312.46	4.5	19.1	17.34	17.34	245	AH02	85.5	75.0	50.0	50.0	496
POR07_A	490051	4790274	312.46	4.5	9.36	-200	-200	253	VH01	81.6	100.0	--	--	559
POR07_A	490051	4790274	312.46	4.5	2.91	2.91	2.91	254	VH07	81.6	100.0	100.0	100.0	545
POR07_A	490051	4790274	312.46	4.5	14.14	14.14	14.14	257	MB01	--	50.0	50.0	50.0	512
POR07_A	490051	4790274	312.46	4.5	3.75	3.75	3.75	258	VH08	81.6	100.0	100.0	100.0	543
POR07_A	490051	4790274	312.46	4.5	10.39	-200	-200	261	VH12	81.6	100.0	--	--	523
POR07_A	490051	4790274	312.46	4.5	13.23	-200	-200	262	VH14	81.6	100.0	--	--	517
POR07_A	490051	4790274	312.46	4.5	2.66	2.66	2.66	266	VH06	81.6	100.0	100.0	100.0	548
POR07_A	490051	4790274	312.46	4.5	15.51	-200	-200	267	VH13	81.6	100.0	--	--	522
POR07_A	490051	4790274	312.46	4.5	8.59	-200	-200	297	WD01_O	98.5	16.0	--	--	568
POR07_A	490051	4790274	312.46	4.5	9.78	-200	-200	299	WD02_C	81.1	66.0	--	--	561
POR07_A	490051	4790274	312.46	4.5	0.56	-200	-200	300	WD01_C	81.1	50.0	--	--	568
POR07_A	490051	4790274	312.46	4.5	2.14	-200	-200	301	VC01	85.1	25.0	--	--	560
POR07_A	490051	4790274	312.46	4.5	6.45	-200	-200	303	VC02	85.1	25.0	--	--	557
POR07_A	490051	4790274	312.46	4.5	15.28	15.28	15.28	313	VH09	81.6	100.0	100.0	100.0	540
POR07_A	490051	4790274	312.46	4.5	10.7	10.7	10.7	314	VH10	81.6	100.0	100.0	100.0	535
POR07_A	490051	4790274	312.46	4.5	15.66	15.66	15.66	315	VH16	81.6	100.0	100.0	100.0	511
POR07_A	490051	4790274	312.46	4.5	12.23	12.23	12.23	316	VH11	81.6	100.0	100.0	100.0	530
POR07_A	490051	4790274	312.46	4.5	14.08	14.08	14.08	322	MB02	--	50.0	50.0	50.0	515
POR07_A	490051	4790274	312.46	4.5	10.26	-200	-200	344	VH02	81.6	100.0	--	--	557
POR07_A	490051	4790274	312.46	4.5	15.09	-200	-200	345	VH03	81.6	100.0	--	--	554
POR07_A	490051	4790274	312.46	4.5	12.34	-200	-200	346	VH04	81.6	100.0	--	--	552
POR07_A	490051	4790274	312.46	4.5	11.58	-200	-200	347	VH05	81.6	100.0	--	--	549
POR07_A	490051	4790274	312.46	4.5	15.28	15.28	15.28	348	VH18	81.6	100.0	100.0	100.0	505
POR07_A	490051	4790274	312.46	4.5	15.65	15.65	15.65	349	VH17	81.6	100.0	100.0	100.0	511
POR07_A	490051	4790274	312.46	4.5	15.58	15.58	15.58	350	VH15	81.6	100.0	100.0	100.0	517
POR07_A	490051	4790274	312.46	4.5	14.18	-200	-200	351	VH21	81.6	100.0	--	--	499
POR07_A	490051	4790274	312.46	4.5	14.55	14.55	14.55	352	VH20	81.6	100.0	100.0	100.0	500
POR07_A	490051	4790274	312.46	4.5	14.92	14.92	14.92	353	VH19	81.6	100.0	100.0	100.0	505
POR07_A	490051	4790274	312.46	4.5	18.51	16.75	16.75	354	AH03	85.5	75.0	50.0	50.0	535
POR07_B	490069.7	4790249	309.41	1.5	10.72	10.72	10.72	243	EF01	81.6	100.0	100.0	100.0	511
POR07_B	490069.7	4790249	309.41	1.5	19	17.24	17.24	244	AH01	88.3	75.0	50.0	50.0	515
POR07_B	490069.7	4790249	309.41	1.5	14.23	12.47	12.47	245	AH02	85.5	75.0	50.0	50.0	465
POR07_B	490069.7	4790249	309.41	1.5	7.85	-200	-200	253	VH01	81.6	100.0	--	--	528



Table 2 - Point of Reception Noise Impact

Receptor ID	Receptor Coordinates				Predicted SPL (dBA)			Predictor Source ID	Source ID	PWL (dBA)	Time Correction (%)			Source/Receptor Distance (m)
	X (m)	Y (m)	Ground Elevation	Height	Daytime	Evening	Nighttime				Day	Evening	Night	
POR07_B	490069.7	4790249	309.41	1.5	1.17	1.17	1.17	254	VH07	81.6	100.0	100.0	100.0	514
POR07_B	490069.7	4790249	309.41	1.5	9.79	9.79	9.79	257	MB01	--	50.0	50.0	50.0	480
POR07_B	490069.7	4790249	309.41	1.5	2.42	2.42	2.42	258	VH08	81.6	100.0	100.0	100.0	511
POR07_B	490069.7	4790249	309.41	1.5	11.27	-200	-200	261	VH12	81.6	100.0	--	--	491
POR07_B	490069.7	4790249	309.41	1.5	12.03	-200	-200	262	VH14	81.6	100.0	--	--	485
POR07_B	490069.7	4790249	309.41	1.5	0.84	0.84	0.84	266	VH06	81.6	100.0	100.0	100.0	517
POR07_B	490069.7	4790249	309.41	1.5	13.79	-200	-200	267	VH13	81.6	100.0	--	--	491
POR07_B	490069.7	4790249	309.41	1.5	8.22	-200	-200	297	WD01_O	98.5	16.0	--	--	537
POR07_B	490069.7	4790249	309.41	1.5	8.77	-200	-200	299	WD02_C	81.1	66.0	--	--	530
POR07_B	490069.7	4790249	309.41	1.5	0.52	-200	-200	300	WD01_C	81.1	50.0	--	--	537
POR07_B	490069.7	4790249	309.41	1.5	-0.28	-200	-200	301	VC01	85.1	25.0	--	--	528
POR07_B	490069.7	4790249	309.41	1.5	3.86	-200	-200	303	VC02	85.1	25.0	--	--	526
POR07_B	490069.7	4790249	309.41	1.5	13.5	13.5	13.5	313	VH09	81.6	100.0	100.0	100.0	508
POR07_B	490069.7	4790249	309.41	1.5	11.59	11.59	11.59	314	VH10	81.6	100.0	100.0	100.0	503
POR07_B	490069.7	4790249	309.41	1.5	13.97	13.97	13.97	315	VH16	81.6	100.0	100.0	100.0	480
POR07_B	490069.7	4790249	309.41	1.5	11.26	11.26	11.26	316	VH11	81.6	100.0	100.0	100.0	498
POR07_B	490069.7	4790249	309.41	1.5	9.73	9.73	9.73	322	MB02	--	50.0	50.0	50.0	484
POR07_B	490069.7	4790249	309.41	1.5	8.96	-200	-200	344	VH02	81.6	100.0	--	--	525
POR07_B	490069.7	4790249	309.41	1.5	13.27	-200	-200	345	VH03	81.6	100.0	--	--	523
POR07_B	490069.7	4790249	309.41	1.5	11.59	-200	-200	346	VH04	81.6	100.0	--	--	520
POR07_B	490069.7	4790249	309.41	1.5	10.9	-200	-200	347	VH05	81.6	100.0	--	--	518
POR07_B	490069.7	4790249	309.41	1.5	13.76	13.76	13.76	348	VH18	81.6	100.0	100.0	100.0	474
POR07_B	490069.7	4790249	309.41	1.5	13.96	13.96	13.96	349	VH17	81.6	100.0	100.0	100.0	479
POR07_B	490069.7	4790249	309.41	1.5	13.87	13.87	13.87	350	VH15	81.6	100.0	100.0	100.0	485
POR07_B	490069.7	4790249	309.41	1.5	13.09	-200	-200	351	VH21	81.6	100.0	--	--	467
POR07_B	490069.7	4790249	309.41	1.5	13.32	13.32	13.32	352	VH20	81.6	100.0	100.0	100.0	468
POR07_B	490069.7	4790249	309.41	1.5	13.52	13.52	13.52	353	VH19	81.6	100.0	100.0	100.0	473
POR07_B	490069.7	4790249	309.41	1.5	13.52	11.76	11.76	354	AH03	85.5	75.0	50.0	50.0	504



Table 3 - Acoustic Assessment Summary

Point of Reception ID	Point of Reception Information					Noise Characteristic	Noise Level Limits			Predicted Impacts			Verified by Acoustic Audit (Yes or No)	Compliant with Limit?
	Description	UTM Easting	UTM Northing	Height POW	Height OLA		Daytime (dBA)	Evening (dBA)	Nighttime (dBA)	Daytime (dBA)	Evening (dBA)	Nighttime (dBA)		
POR01_A	0	490710	4790024	4.5	-	Steady State Leq	50	50	45	36.4	32.7	32.7	N	Yes
POR01_B	OLA	490691	4790014	-	1.5	Steady State Leq	50	45	-	35.2	31.3	-	N	Yes
POR02_A	0	490779	4789924	4.5	-	Steady State Leq	50	50	45	34.6	31.2	31.2	N	Yes
POR02_B	OLA	490748	4789918	-	1.5	Steady State Leq	50	45	-	33.3	29.5	-	N	Yes
POR03_A	0	490254	4789703	4.5	-	Steady State Leq	45	40	40	41.8	39.5	39.5	N	Yes
POR03_B	OLA	490279	4789719	-	1.5	Steady State Leq	45	40	-	41.5	38.9	-	N	Yes
POR04_A	0	490230	4789726	1.5	-	Steady State Leq	45	40	40	39.9	37.3	37.3	N	Yes
POR04_B	OLA	490259	4789737	-	1.5	Steady State Leq	45	40	-	41.5	38.7	-	N	Yes
POR05_A	0	490253	4789781	7.5	-	Steady State Leq	50	50	45	45.9	43.3	43.3	N	Yes
POR05_B	OLA	490281	4789794	-	1.5	Steady State Leq	50	45	-	47.2	44.4	-	N	Yes
POR06_A	0	490234	4789822	7.5	-	Steady State Leq	50	50	45	45.3	42.5	42.5	N	Yes
POR06_B	OLA	490263	4789825	-	1.5	Steady State Leq	50	45	-	45.6	42.4	-	N	Yes
POR07_A	0	490051	4790274	4.5	-	Steady State Leq	45	40	40	29.2	27.3	27.3	N	Yes
POR07_B	OLA	490070	4790249	-	1.5	Steady State Leq	45	40	-	27.1	25.0	-	N	Yes



Table 3B - Acoustic Assessment Summary - With Optional Barrier, and Nighttime Car Wash

Point of Reception ID	Point of Reception Information					Noise Characteristic	Noise Level Limits			Predicted Impacts			Verified by Acoustic Audit (Yes or No)	Compliant with Limit?
	Description	UTM Easting	UTM Northing	Height POW	Height OLA		Daytime (dBA)	Evening (dBA)	Nighttime (dBA)	Daytime (dBA)	Evening (dBA)	Nighttime (dBA)		
POR01_A	0	490710	4790024	4.5	-	Steady State Leq	50	50	45	36.4	35.4	35.4	N	Yes
POR01_B	OLA	490691	4790014	-	1.5	Steady State Leq	50	45	-	35.2	34.3	-	N	Yes
POR02_A	0	490779	4789924	4.5	-	Steady State Leq	50	50	45	34.6	33.7	33.7	N	Yes
POR02_B	OLA	490748	4789918	-	1.5	Steady State Leq	50	45	-	33.3	32.4	-	N	Yes
POR03_A	0	490254	4789703	4.5	-	Steady State Leq	45	40	40	41.1	39.7	39.7	N	Yes
POR03_B	OLA	490279	4789719	-	1.5	Steady State Leq	45	40	-	40.6	39.3	-	N	Yes
POR04_A	0	490230	4789726	1.5	-	Steady State Leq	45	40	40	39.3	37.9	37.9	N	Yes
POR04_B	OLA	490259	4789737	-	1.5	Steady State Leq	45	40	-	40.7	39.1	-	N	Yes
POR05_A	0	490253	4789781	7.5	-	Steady State Leq	50	50	45	45.4	43.9	43.9	N	Yes
POR05_B	OLA	490281	4789794	-	1.5	Steady State Leq	50	45	-	46.4	44.8	-	N	Yes
POR06_A	0	490234	4789822	7.5	-	Steady State Leq	50	50	45	45.1	43.5	43.5	N	Yes
POR06_B	OLA	490263	4789825	-	1.5	Steady State Leq	50	45	-	44.9	42.8	-	N	Yes
POR07_A	0	490051	4790274	4.5	-	Steady State Leq	45	40	40	29.1	27.7	27.7	N	Yes
POR07_B	OLA	490070	4790249	-	1.5	Steady State Leq	45	40	-	27.0	25.6	-	N	Yes



Appendix A

Noise Source Supporting Information



Raw Measurement Data

Source ID	1/3rd Octave Centre Frequency (Hz), Sound Pressure Level (dB)																								
	50	63	80	100	125	160	200	250	315	400	500	630	800	1000	1250	1600	2000	2500	3150	4000	5000	6300	8000	10000	
MB01	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
VH01	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
VC01	61.8	59.7	58.6	61.3	56.6	61.5	57.8	49.7	58.7	62.4	58.4	64.1	59.4	66.3	65.9	68.1	68.8	65.9	67.0	68.2	67.9	67.3	65.0	63.8	
WD01_O	63.0	63.6	64.7	65.1	61.4	63.0	62.7	58.5	59.8	57.5	59.2	59.0	56.7	58.4	57.3	56.3	53.9	52.5	51.6	50.2	49.4	48.8	46.8	44.6	
EF01	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
AH01	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
AH03	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
BKGD01	60.1	66.0	61.6	62.7	60.0	57.9	56.3	53.5	52.2	50.0	48.9	48.7	49.7	49.8	48.2	47.2	45.2	42.5	40.6	38.0	34.9	32.1	28.7	25.8	
BKGD02	57.3	58.3	56.1	49.1	48.4	48.6	48.7	45.9	44.5	47.6	44.8	45.5	46.1	46.2	43.6	42.5	40.3	35.4	32.8	31.7	28.0	22.3	18.6	15.0	
WD01_C	69.6	71.4	71.4	69.2	74.3	67.8	68.4	67.7	67.6	67.0	66.2	67.1	63.7	61.0	60.9	61.6	61.3	63.6	63.3	58.7	55.5	53.8	52.2	52.3	
WD01_C	60.6	62.1	60.7	59.7	63.2	58.5	55.5	53.9	51.6	48.2	47.2	47.3	45.0	43.5	46.8	43.4	37.1	34.8	32.6	34.9	29.1	24.2	21.3	18.5	



Point Source Sound Power Level Calculations

$$L_w = L_p + 20 \log(r) + 11 - 10 \log(Q)$$

$$L_p(\text{total}) = 10 \log(10(L_p(31\text{Hz})/10) + 10(L_p(63\text{Hz})/10) + \dots + 10(L_p(8\text{kHz})/10))$$

r is distance measurement was taken, Q is directivity index, t is operating time

File Name	Source ID	Source Description	Source Directionality	Operating Condition	Horizontal Measurement Distance (m)	SLM Height (m)	Source Height (m)	Total Measurement Distance (m)	Measurement Directionality (deg)	Source To Receptor Directionality (deg)	Directivity Factor (Q)	Tonal (Yes/No)	Octave Band (Hz)									
													63	125	250	500	1000	2000	4000	8000	Total	
Specs05	MB01	Menu Board, HME Electronics Inc.	None	Steady State	1.2192	0	0	1.22	N/A	N/A	2	No	Defined SPL (dBA)	0.00	0.00	0.00	72.00	0.00	0.00	0.00	0.00	72.00
													Calculated PWL (dBA)	9.71	9.71	9.71	81.71	9.71	9.71	9.71	9.71	81.71
													Msmnt Directionality Correction (dB)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
													Receptor Directionality Correction (dB)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
													Applied PWL with Penalties (dBA)	-	-	-	81.71	-	-	-	-	81.71
Specs06	VH01	Reference to US Dept. of Transportation	None	Steady State	0	0	0	0	N/A	N/A	0	No	Defined PWL (dBA)	65.80	73.90	77.40	72.80	72.00	72.20	69.00	56.90	81.56
													Calculated PWL (dBA)	65.80	73.90	77.40	72.80	72.00	72.20	69.00	56.90	81.56
													Msmnt Directionality Correction (dB)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
													Receptor Directionality Correction (dB)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
													Applied PWL with Penalties (dBA)	65.80	73.90	77.40	72.80	72.00	72.20	69.00	56.90	81.56
L_00081	VC01	Outdoor Vacuum	None	Steady State	5	1.75	1.75	5	N/A	N/A	2	No	Measured SPL (dB)	65.01	65.09	61.55	66.99	69.54	72.54	72.48	70.42	78.36
													Calculated PWL (dBA)	60.98	71.06	74.52	85.96	91.51	95.51	95.45	91.39	100.12
													Msmnt Directionality Correction (dB)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
													Receptor Directionality Correction (dB)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
													Applied PWL with Penalties (dBA)	60.98	71.06	74.52	85.96	91.51	95.51	95.45	91.39	100.12
L_00082	WD01_O	Auto Wash Door - Open	None	Steady State	15	1.5	1.5	15	N/A	N/A	2	No	Measured SPL (dB)	68.61	68.19	65.46	63.39	62.28	59.28	55.27	51.82	73.54
													Calculated PWL (dBA)	74.12	83.70	87.97	91.90	93.79	91.79	87.78	82.33	98.52
													Msmnt Directionality Correction (dB)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
													Receptor Directionality Correction (dB)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
													Applied PWL with Penalties (dBA)	74.12	83.70	87.97	91.90	93.79	91.79	87.78	82.33	98.52
Specs07	EF01	Cook CPA, 2500 cfm	None	Steady State	0	0	0	0	N/A	N/A	0	No	Defined PWL (dB)	85.00	80.00	84.00	79.00	75.00	74.00	67.00	59.00	89.08
													Calculated PWL (dBA)	59.00	64.00	75.00	76.00	75.00	75.00	68.00	58.00	81.61
													Msmnt Directionality Correction (dB)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
													Receptor Directionality Correction (dB)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
													Applied PWL with Penalties (dBA)	59.00	64.00	75.00	76.00	75.00	75.00	68.00	58.00	81.61
Specs08	AH01	Lennox, LGH092	None	Steady State	0	0	0	0	N/A	N/A	0	No	Defined PWL (dBA)	0.00	76.00	79.00	84.00	83.00	79.00	73.00	66.00	88.28
													Calculated PWL (dBA)	0.00	76.00	79.00	84.00	83.00	79.00	73.00	66.00	88.28
													Msmnt Directionality Correction (dB)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
													Receptor Directionality Correction (dB)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
													Applied PWL with Penalties (dBA)	0.00	76.00	79.00	84.00	83.00	79.00	73.00	66.00	88.28
Specs09	AH03	Allied Commercial, KDB122	None	Steady State	0	0	0	0	N/A	N/A	0	Yes (+5dB)	Defined PWL (dBA)	0.00	73.00	74.00	75.00	72.00	66.00	60.00	50.00	79.90
													Calculated PWL (dBA)	0.00	73.00	74.00	75.00	72.00	66.00	60.00	50.00	79.90
													Msmnt Directionality Correction (dB)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
													Receptor Directionality Correction (dB)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
													Applied PWL with Penalties (dBA)	0.00	77.00	80.00	81.00	78.00	72.00	65.00	55.00	85.54
L_00084	WD01_C	Area Scan Garage door open with Compressor	None	Steady State	0	0	0	0	N/A	N/A	0	No	Measured SPL (dB)	75.66	76.15	72.69	71.57	66.82	67.06	65.11	57.56	80.96
													Calculated PWL (dBA)	-	-	-	-	-	-	-	-	-
													Msmnt Directionality Correction (dB)	-	-	-	-	-	-	-	-	-
													Receptor Directionality Correction (dB)	-	-	-	-	-	-	-	-	-
													Applied PWL with Penalties (dBA)	-	-	-	-	-	-	-	-	-
L_00085	WD01_C	Area Scan Door closed with Compressor	None	Steady State	0	0	0	0	N/A	N/A	0	No	Measured SPL (dB)	65.94	65.72	58.69	52.38	50.10	44.79	37.53	26.71	69.40
													Calculated PWL (dBA)	-	-	-	-	-	-	-	-	-
													Msmnt Directionality Correction (dB)	-	-	-	-	-	-	-	-	-
													Receptor Directionality Correction (dB)	-	-	-	-	-	-	-	-	-
													Applied PWL with Penalties (dBA)	-	-	-	-	-	-	-	-	-

West Caldwell Calibration Laboratories Inc.

Certificate of Calibration

for

HANDHELD ANALYZER

Manufactured by: **BRUEL & KJAER**
Model No: **2270**
Serial No: **2679353**
Calibration Recall No: **30681**

Submitted By:

Customer: **Jade McGann**
Company: **Cambium Inc.**
Address: **52 Hunter Street East
Peterborough, On Cana K9H 1G5**

The subject instrument was calibrated to the indicated specification using standards traceable to the National Institute of Standards and Technology or to accepted values of natural physical constants. This document certifies that the instrument met the following specification upon its return to the submitter.

West Caldwell Calibration Laboratories Procedure No. 2270 BRUE

Upon receipt for Calibration, the instrument was found to be:

Within (X)

tolerance of the indicated specification. See attached Report of Calibration.
The information supplied relates to the calibrated item listed above.

West Caldwell Calibration Laboratories' calibration control system meets the following requirements, ISO 10012-1 MIL STD 45662A, ANSI/NCSL Z540-1, IEC Guide 25, ISO 9001:2015 and ISO 17025

Note: With this Certificate, Report of Calibration is included.

Approved by:

Calibration Date: 11-Feb-20

James Zhu

Certificate No: 30681 - 1

Quality Manager
ISO/IEC 17025:2005

QA Doc. #1051 Rev. 2.0 10/1/01

Certificate Page 1 of 1

West Caldwell Calibration Laboratories, Inc.
uncompromised calibration
1575 State Route 96, Victor, NY 14564, U.S.A.



Calibration Lab. Cert. # 1533.01

West Caldwell Calibration Laboratories Inc.

Certificate of Calibration

for

PRECISION ACOUSTIC CALIBRATOR

Manufactured by: LARSON DAVIS
Model No: CAL200
Serial No: 15401
Calibration Recall No: 30681

Submitted By:

Customer: Jade McGann
Company: Cambium Inc.
Address: 52 Hunter Street East
Peterborough, On Cana K9H 1G5

The subject instrument was calibrated to the indicated specification using standards traceable to the National Institute of Standards and Technology or to accepted values of natural physical constants. This document certifies that the instrument met the following specification upon its return to the submitter.

West Caldwell Calibration Laboratories Procedure No. CAL200 LARS

Upon receipt for Calibration, the instrument was found to be:

Within (X)

tolerance of the indicated specification. See attached Report of Calibration.
The information supplied relates to the calibrated item listed above.

West Caldwell Calibration Laboratories' calibration control system meets the following requirements, ISO 10012-1 MIL STD 45662A, ANSI/NCSL Z540-1, IEC Guide 25, ISO 9001:2015 and ISO 17025

Note: With this Certificate, Report of Calibration is included.

Approved by:

Calibration Date: 12-Feb-20

James Zhu

Certificate No: 30681 - 3

Quality Manager
ISO/IEC 17025:2005

QA Doc. #1051 Rev. 2.0 10/1/01

Certificate Page 1 of 1

West Caldwell Calibration Laboratories, Inc.
uncompromised calibration
1575 State Route 96, Victor, NY 14564, U.S.A.



Calibration Lab. Cert. # 1533.01

West Caldwell Calibration Laboratories Inc.

Certificate of Calibration

for

MICROPHONE

Manufactured by: BRUEL & KJAER
Model No: 4189
Serial No: 2695416
Calibration Recall No: 30681

Submitted By:

Customer: Jade McGann
Company: Cambium Inc.
Address: 52 Hunter Street East
Peterborough, On Cana K9H 1G5

The subject instrument was calibrated to the indicated specification using standards traceable to the National Institute of Standards and Technology or to accepted values of natural physical constants. This document certifies that the instrument met the following specification upon its return to the submitter.

West Caldwell Calibration Laboratories Procedure No. 4189 BRUE

Upon receipt for Calibration, the instrument was found to be:

Within (X)

tolerance of the indicated specification. See attached Report of Calibration.
The information supplied relates to the calibrated item listed above.

West Caldwell Calibration Laboratories' calibration control system meets the following requirements, ISO 10012-1 MIL STD 45662A, ANSI/NCSL Z540-1, IEC Guide 25, ISO 9001:2015 and ISO 17025

Note: With this Certificate, Report of Calibration is included.

Approved by:

Calibration Date: 13-Feb-20

James Zhu

Certificate No: 30681 - 2

Quality Manager
ISO/IEC 17025:2005

QA Doc. #1051 Rev. 2.0 10/1/01

Certificate Page 1 of 1

West Caldwell Calibration Laboratories, Inc.
uncompromised calibration
1575 State Route 96, Victor, NY 14564, U.S.A.



Calibration Lab. Cert. # 1533.01

Government
of CanadaGouvernement
du Canada[Home](#) > [Environment and natural resources](#) > [Weather, Climate and Hazard](#) > [Past weather and climate](#) > [Historical Data](#)

Hourly Data Report for June 18, 2020

All times are specified in Local Standard Time (LST). Add 1 hour to adjust for Daylight Saving Time where and when it is observed.

LONDON A ONTARIO

Current Station Operator: NAVCAN

Latitude: 43°01'59.000" N

Longitude: 81°09'04.000" W







Elevation: 278.00 m

Climate ID: 6144473

WMO ID: 71623

IC ID: YXU

TIME	Temp °C	Dew Point °C	Rel Hum %	Wind		Visibility km	Stn Press kPa	Hmdx	Wind Chill	Weather
				Dir 10's deg	Wind Spd km/h					
00:00	15.0	11.7	80	8	7	24.1	98.79			NA
01:00	14.0	11.6	85	9	4	24.1	98.75			Mainly Clear
02:00	12.8	10.6	87	5	4	24.1	98.74			NA
03:00	12.8	11.2	90	5	4	24.1	98.71			NA

TIME	Temp	Dew Point	Rel Hum	Wind Dir	Wind Spd	Visibility	Stn Press	Hmdx	Wind Chill	Weather
	°C 	°C 	% 	10's deg	km/h 	km 	kPa 			
04:00	13.4	10.9	85	4	5	24.1	98.73			Mainly Clear
05:00	12.4	10.6	89	7	7	24.1	98.74			NA
06:00	15.5	12.5	82	5	7	24.1	98.78			NA
07:00	19.0	13.7	71	7	5	24.1	98.78			Mainly Clear
08:00	22.8	13.2	54	9	9	24.1	98.81	26		NA
09:00	24.4	14.5	54	9	4	24.1	98.78	28		NA
10:00	26.1	14.1	47	10	11	24.1	98.75	30		Clear
11:00	27.1	13.6	43	10	12	24.1	98.73	30		NA
12:00	27.5	13.5	42	11	11	24.1	98.66	31		NA
13:00	27.9	14.9	45	8	12	24.1	98.59	32		Mostly Cloudy
14:00	28.4	12.5	37	9	12	24.1	98.54	31		NA
15:00	29.3	14.4	40	7	4	24.1	98.48	33		NA
16:00	29.2	12.6	35	4	10	24.1	98.39	32		Mainly Clear
17:00	29.2	13.6	38	10	8	24.1	98.36	32		NA
18:00	29.2	14.0	39	12	14	24.1	98.38	33		NA
19:00	26.1	14.1	47	19	13	24.1	98.37	30		Mainly Clear
20:00	21.6	15.8	69	28	3	24.1	98.41	26		NA
21:00	20.3	14.7	70	25	4	24.1	98.41			NA
22:00	18.6	14.6	78	36	3	24.1	98.43			Mainly Clear
23:00	18.4	14.3	77	36	2	24.1	98.41			NA

Legend

- E = Estimated

- M = Missing
- NA = Not Available*
- [empty] = Indicates an unobserved value

Date modified:

2019-12-04

Memo**Re: Drive-Thru Sound Pressure Levels From the Menu Board or Speaker Post**

The sound pressure levels from the menu board or speaker post are as follows:

1. Sound pressure level (SPL) contours (A weighted) were measured on a typical HME SPP2 speaker post. The test condition was for pink noise set to 84 dBA at 1 foot in front of the speaker. All measurements were conducted outside with the speaker post placed 8 feet from a non-absorbing building wall and at an oblique angle to the wall. These measurements should not be construed to guarantee performance with any particular speaker post in any particular environment. They are typical results obtained under the conditions described above.
2. The SPL levels are presented for different distances from the speaker post:

Distance from the Speaker (Feet)	SPL (dBA)
1 foot	84 dBA
2 feet	78 dBA
4 feet	72 dBA
8 feet	66 dBA
16 feet	60 dBA
32 feet	54 dBA

3. The above levels are based on factory recommended operating levels, which are preset for HME components and represent the optimum level for drive-thru operations in the majority of the installations.

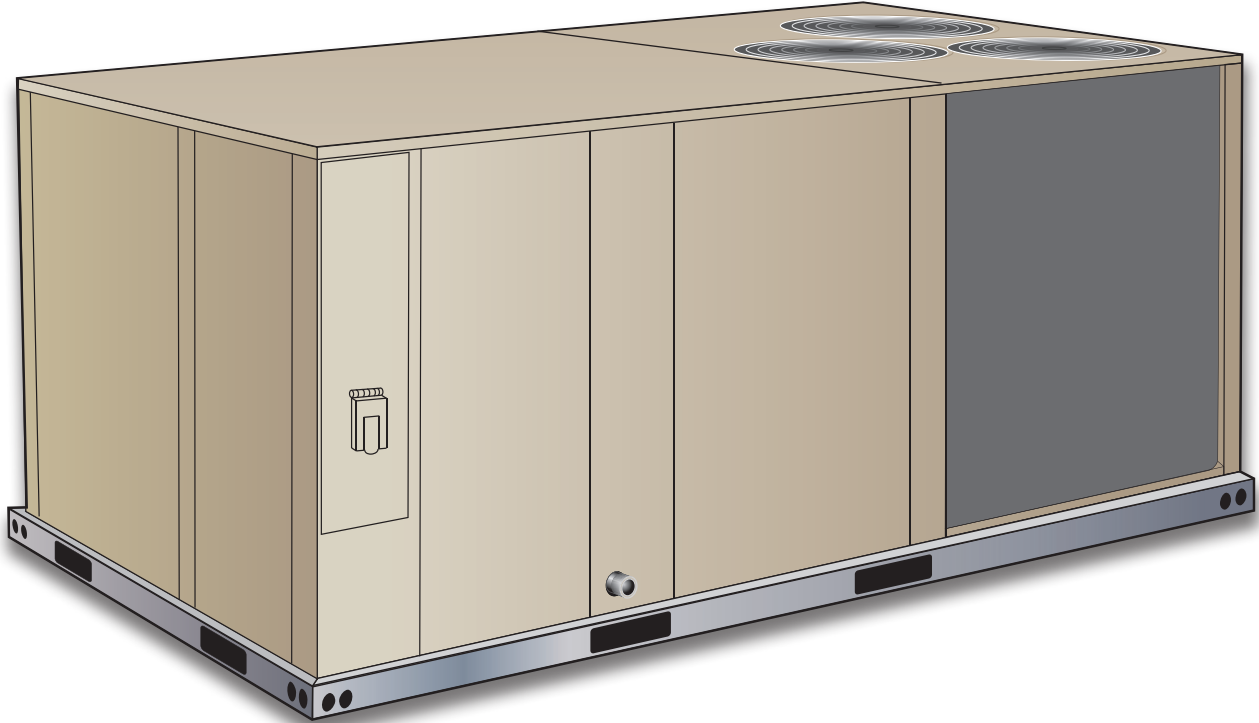
Also, HME incorporates automatic volume control (AVC) into many of our Systems. AVC will adjust the outbound volume based on the outdoor, ambient noise level. When ambient noise levels naturally decrease at night, AVC will reduce the outbound volume on the system. See below for example:

Distance from Outside Speaker	Decibel Level of standard system with 45 dB of outside noise <u>without</u> AVC	Decibel level of standard system with 45 dB of outside noise <u>with</u> AVC active
1 foot	84 dBA	60 dBA
2 feet	78 dBA	54 dBA
4 feet	72 dBA	48 dBA
8 feet	66 dBA	42 dBA
16 feet	60 dBA	36 dBA

If there are any further questions regarding this issue please contact HME customer service at 1-800-848-4468.

Thank you for your interest in HME's products.

PRODUCT SPECIFICATIONS



**ASHRAE 90.1
COMPLIANT**

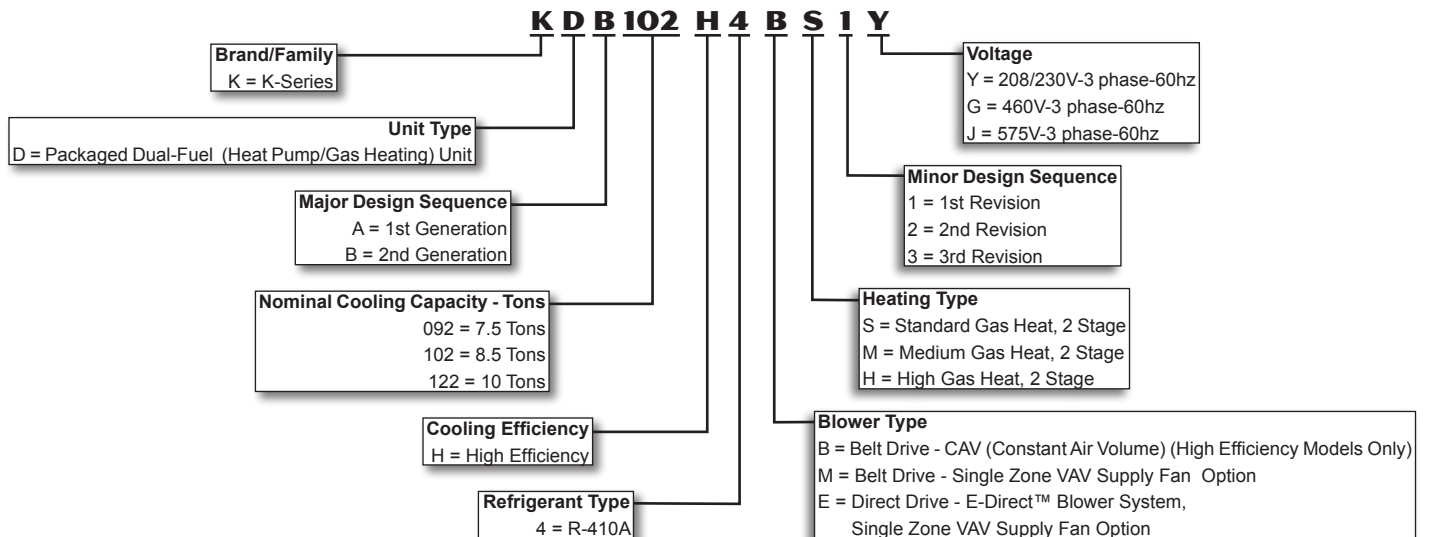
7.5 to 10 Tons

Net Cooling Capacity – 89,000 to 138,000 Btuh

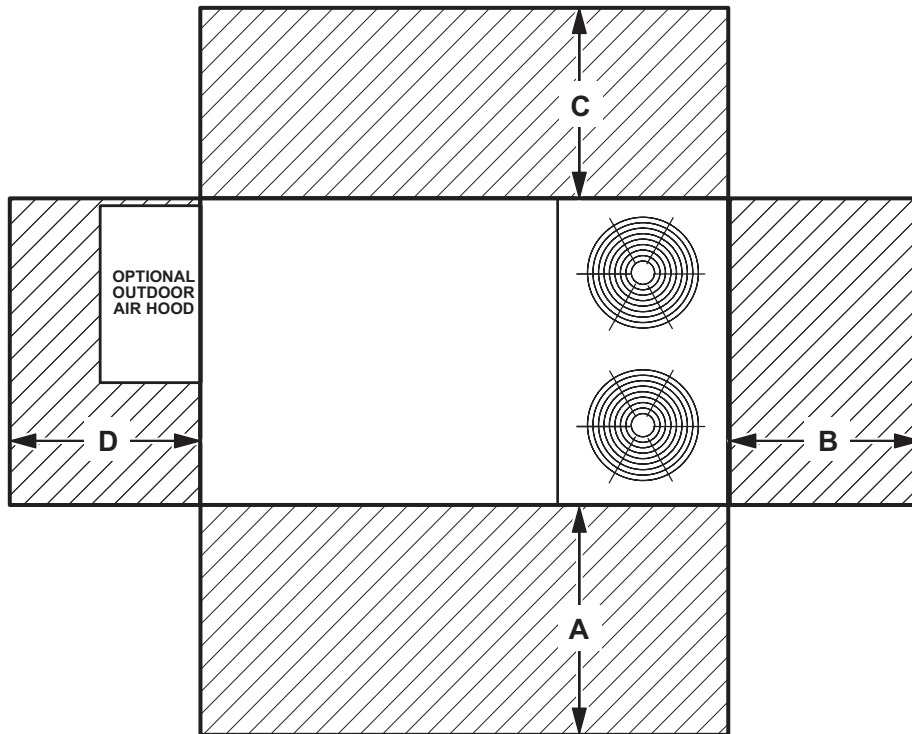
Net Heating Capacity - 86,000 to 138,000 Btuh

Gas Input Heat Capacity – 130,000 to 240,000 Btuh

MODEL NUMBER IDENTIFICATION



UNIT CLEARANCES



¹ Unit Clearance	A		B		C		D		Top Clearance
	in.	mm	in.	mm	in.	mm	in.	mm	
Service Clearance	60	1524	36	914	36	914	60	1524	Unobstructed
Minimum Operation Clearance	36	914	36	914	36	914	36	914	

NOTE - Entire perimeter of unit base requires support when elevated above the mounting surface.

¹ **Service Clearance** - Required for removal of serviceable parts.

Minimum Operation Clearance - Required clearance for proper unit operation.

OUTDOOR SOUND DATA

Unit Model Number	Octave Band Sound Power Levels dBA, re 10 ⁻¹² Watts Center Frequency - Hz							¹ Sound Rating Number (dBA)
	125	250	500	1000	2000	4000	8000	
KDB092, 102	72	75	76	73	67	60	50	86
KDB122	73	74	75	72	66	60	50	85

Note - The octave sound power data does not include tonal corrections.

¹ Sound Rating Number according to AHRI Standard 270-95 or AHRI Standard 370-2001 (includes pure tone penalty). Sound Rating Number is the overall A-Weighted Sound Power Level, (Lwa), dB (100 Hz to 10,000 Hz).



COOK



Loren Cook Company certifies that the model shown herein is licensed to bear the AMCA Seal. The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 211 and AMCA Publication 311 and comply with the requirements of the AMCA Certified Ratings Program.

CPA

Performance

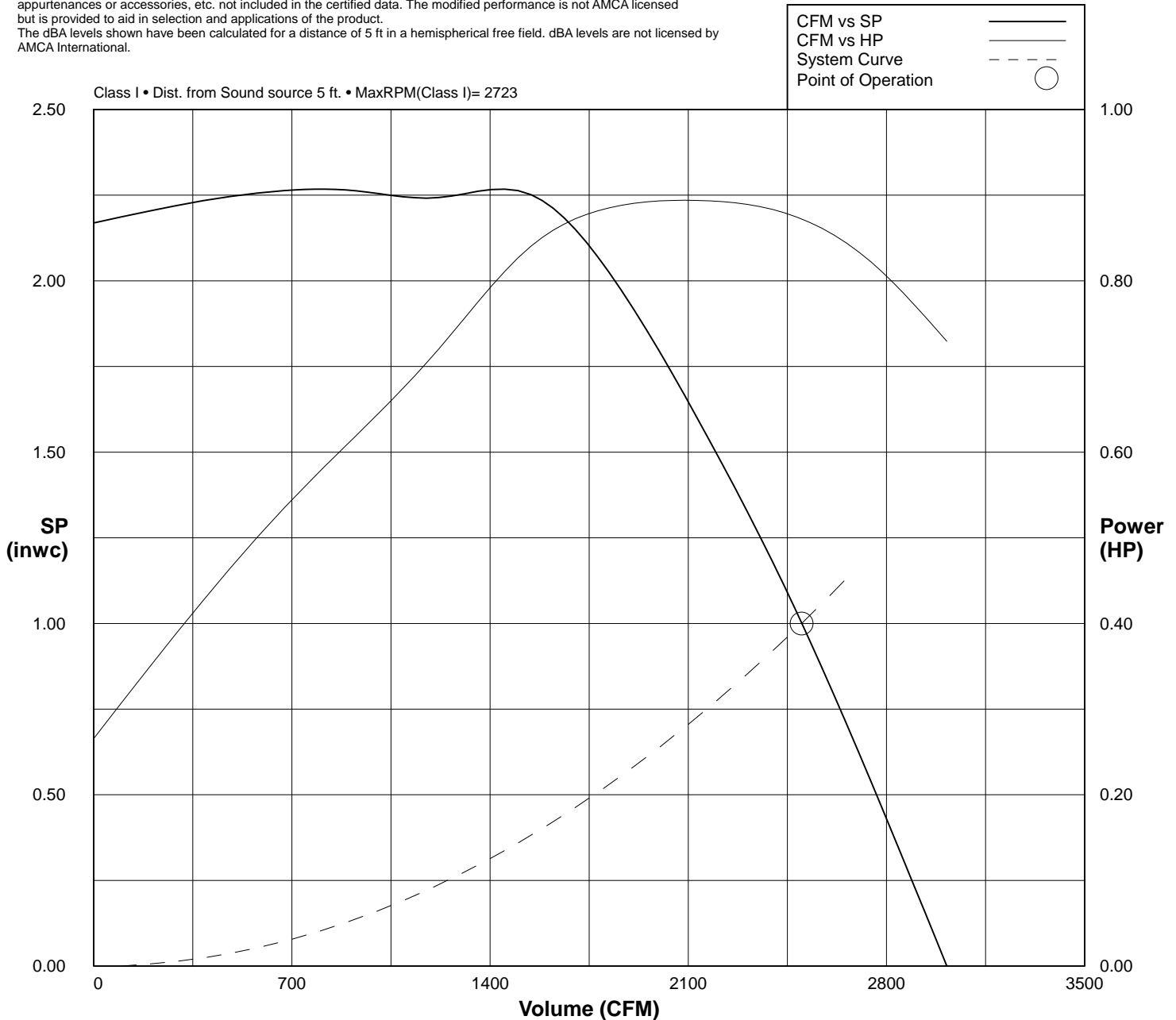
Catalog Number	CFM	SP	Fan RPM	Power* HP	Motor HP	OVEL (fpm)	TSPD (fpm)	SE	TEMP (°F)	ELEV (Ft)	*Drive Loss Included
150 CPA	2500	1	1661	.87	1	1914	6522	50%	70	846	10%

Sound Data 8 Octave Bands 10⁻¹² Watts

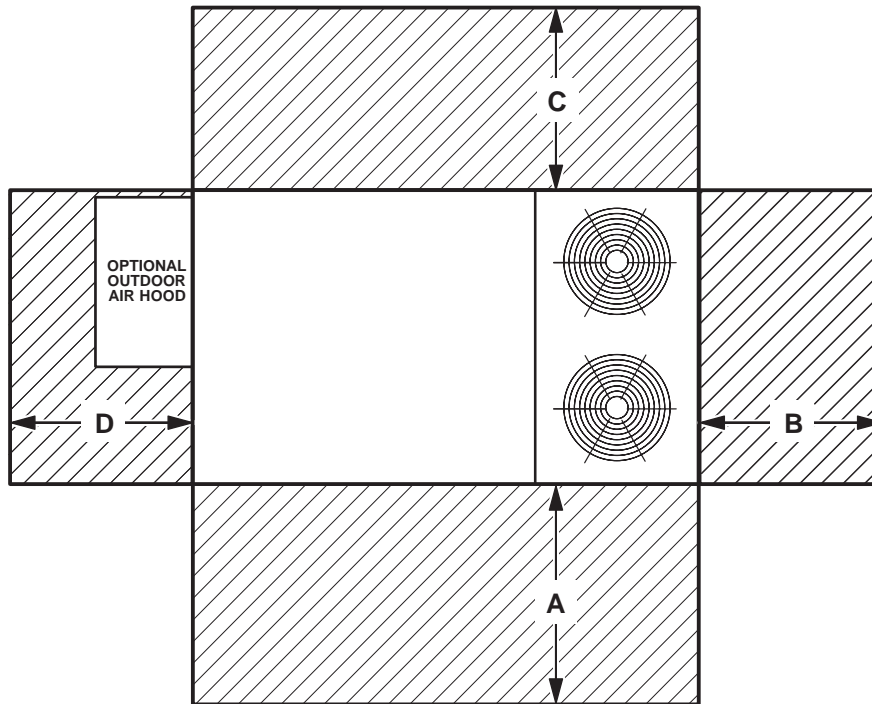
	1	2	3	4	5	6	7	8	LwA	dBA
Inlet	73	77	82	77	71	72	68	60	80	68
Outlet	85	80	84	79	75	74	67	59	82	70

Performance certified for installation type B: free inlet, ducted outlet. Power rating (BHP/kW) does not include transmission losses. Performance ratings do not include the effects of appurtenances (accessories). The sound power level ratings shown are in decibels, referred to 10⁻¹² watts calculated per AMCA Standard 301. Values shown are for inlet Lw_i, Lw_{iA} and outlet Lw_o, Lw_{oA} sound power levels for installation type B: free inlet, ducted outlet. Outlet ratings include the effects of duct end correction. The A-weighted sound ratings shown have been calculated per AMCA Standard 301. The AMCA International licensed air and/or sound performance data has been modified for installation, appurtenances or accessories, etc. not included in the certified data. The modified performance is not AMCA licensed but is provided to aid in selection and applications of the product.

The dBA levels shown have been calculated for a distance of 5 ft in a hemispherical free field. dBA levels are not licensed by AMCA International.



UNIT CLEARANCES



1 Unit Clearance	A		B		C		D		Top Clearance
	in.	mm	in.	mm	in.	mm	in.	mm	
Service Clearance	60	1524	36	914	36	934	60	1524	Unobstructed
Clearance to Combustibles	36	914	1	25	1	25	1	25	
Minimum Operation Clearance	36	914	36	914	36	914	36	914	

NOTE - Entire perimeter of unit base requires support when elevated above the mounting surface.

¹ Service Clearance - Required for removal of serviceable parts.

Clearance to Combustibles - Required clearance to combustible material.

Minimum Operation Clearance - Required clearance for proper unit operation.

OUTDOOR SOUND DATA

Unit Model Number	Octave Band Sound Power Levels dBA, re 10 ⁻¹² Watts - Center Frequency - Hz							1 Sound Rating Number (dBA)
	125	250	500	1000	2000	4000	8000	
092, 102 and 120	76	79	84	83	79	73	66	88
150	75	81	87	85	80	74	70	90

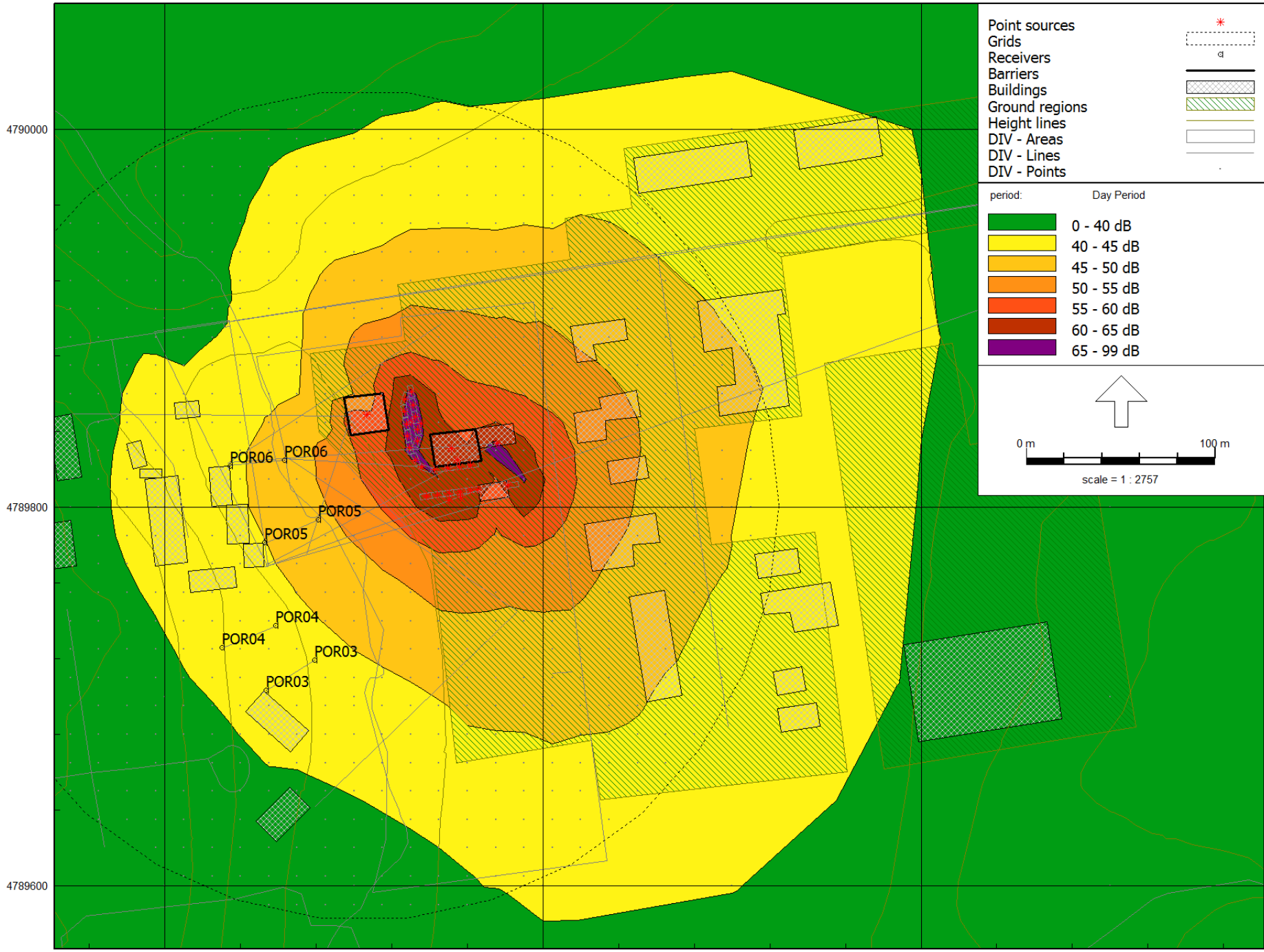
Note - The octave sound power data does not include tonal corrections.

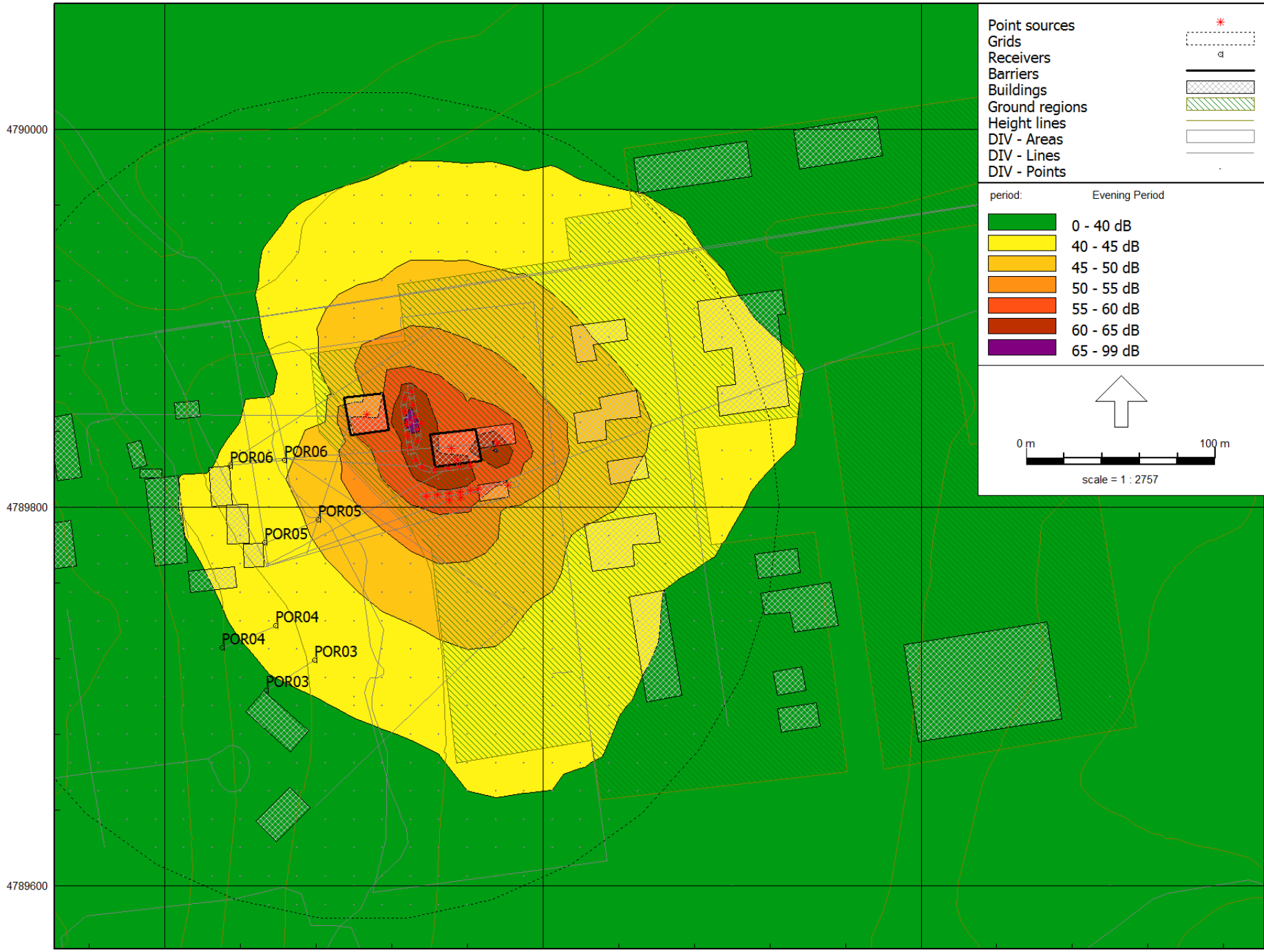
¹ Sound Rating Number according to AHRI Standard 370-2001 (includes pure tone penalty). Sound Rating Number is the overall A-Weighted Sound Power Level, (LWA), dBA (100 Hz to 10,000 Hz).

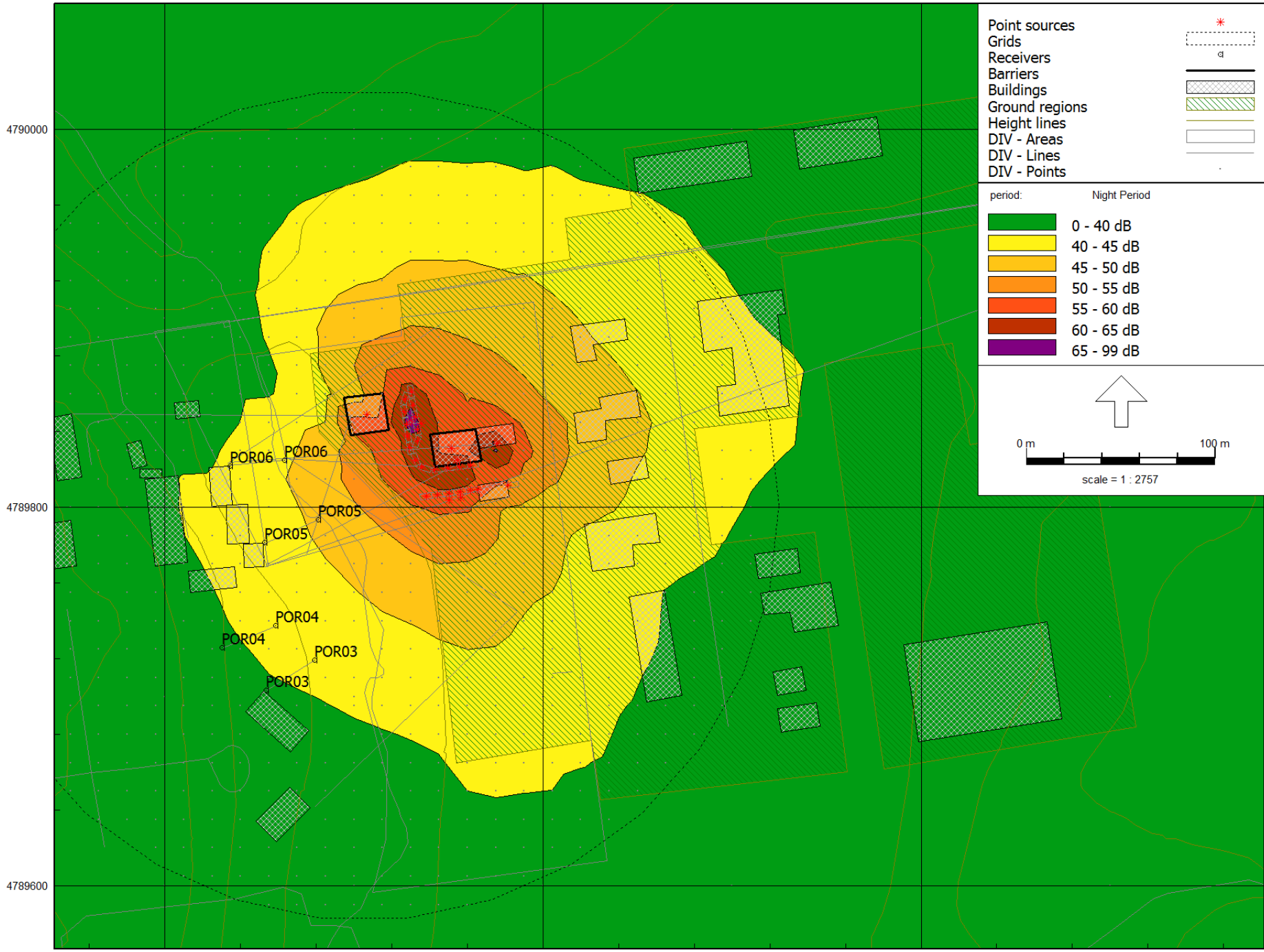


Appendix B

Impact Assessment Results







=====
 Testfile openend: 7/29/20 1:57:10 PM
 =====

=====
 >>> CALCULATION SPECIFICATION
 Version : 3.20
 Mapname : steady state update per client
 MethodID : 513
 Model bounds - Min : (487944.67, 4787823.72)
 Model bounds - Max : (493570.68, 4791862.01)
 Min. ground level : 0.00
 CalcTestLevel : 7
 Do Shape Export : No
 Fetching radius : -1.00
 ErrorMargin : 0.00
 Default ground factor : 1.00
 Meteo correction : None
 Max.barrier attenuation: According to ISO standard
 Dmax1 / Dmax2 : 20.00 / 25.00
 Full DTM : Yes
 Ground attenuation : Avoid overestimating barrier effect
 Barrier attenuation : No barrier effect for direct sight
 DIcalculation : No
 TemperatureK : 283.15
 Humidity : 70.00
 Pressure : 101.33
 GroundAttAlternative : No
 SpeedOfSound : 337.30
 Alu : 0.032 \ 0.122 \ 0.411 \ 1.043 \ 1.928 \ 3.658 \ 9.664 \ 32.770 \ 116.883
 =====

 Cross section for receiver POR05 (Id=-49) and source AH02 (Id=245)

ItemType	Id	Distance	X	Y	Hgrnd	Height	GrndFact	Cluster
Receiver	POR05	0.000	490252.72	4789781.45	310.00	7.50	1.00	
Heightline	meshline41214	16.978	490263.30	4789794.72	310.00	0.00	1.00	
Heightline	meshline41481	16.978	490263.30	4789794.72	310.00	0.00	1.00	
Heightline	meshline39354	41.783	490278.77	4789814.11	310.00	0.00	1.00	
Heightline	meshline41483	41.783	490278.77	4789814.11	310.00	0.00	1.00	
Ground	GD01	61.680	490291.18	4789829.66	0.00	0.00	0.00	
Building	BL03	72.778	490298.11	4789838.34	310.00	4.00	0.00	25
Barrier	BL03	72.778	490298.11	4789838.34	314.00	1.00	0.00	25
Heightline	meshline39355	77.240	490300.89	4789841.83	310.00	0.00	0.00	
Heightline	meshline39789	77.240	490300.89	4789841.83	310.00	0.00	0.00	
Heightline	meshline39492	77.863	490301.28	4789842.31	310.00	0.00	0.00	
Heightline	meshline39790	77.863	490301.28	4789842.31	310.00	0.00	0.00	
Pointsource	AH02	86.678	490306.77	4789849.20	314.00	1.00	0.00	

```

L(wr)          --      0.00   77.00   80.00   81.00   78.00   72.00   65.00   55.00
G(rec) = 0.71; G(mid) = 1.00; G(src) = 0.17
A(ground;rec) -1.50  -1.50   0.40  -0.40  -0.43  -0.43  -0.43  -0.43  -0.43
A(ground;mid)  0.00   0.00   0.00   0.00   0.00   0.00   0.00   0.00   0.00
A(ground;src) -1.50  -1.50  -1.17  -0.17  -0.04  -0.97  -1.25  -1.25  -1.25
A(ground;tot) -3.00  -3.00  -0.77  -0.57  -0.47  -1.40  -1.68  -1.68  -1.68

```

```

Screening      Vertical: no detour
Screening      Left: no detour
Screening      Right: no detour

```

```

A(barrier, v)  0.00   0.00   0.00   0.00   0.00   0.00   0.00   0.00   0.00
A(barrier, l)  --      --      --      --      --      --      --      --      --
A(barrier, r)  --      --      --      --      --      --      --      --      --
A(barrier, tot) 0.00   0.00   0.00   0.00   0.00   0.00   0.00   0.00   0.00

A(veg)         0.00   0.00   0.00   0.00   0.00   0.00   0.00   0.00   0.00
A(sit)         0.00   0.00   0.00   0.00   0.00   0.00   0.00   0.00   0.00
A(bld)         0.00   0.00   0.00   0.00   0.00   0.00   0.00   0.00   0.00
A(air)         0.00   0.01   0.04   0.09   0.17   0.32   0.84   2.84   10.14
A(geo)        49.75  49.75  49.75  49.75  49.75  49.75  49.75  49.75  49.75
C(meteo)       0.00   0.00   0.00   0.00   0.00   0.00   0.00   0.00   0.00

```

```

-----
L(p)          -- -46.76  27.98  30.73  31.55  29.33  23.09  14.09 -3.21 | 36.36

```

```

=====

```

Height	Source	Per	LAeq	32	63	125	250	500	1000	2000	4000	8000
7.50	AH02	1	35.11	--	-48.01	26.73	29.48	30.30	28.08	21.84	12.84	-4.46
7.50	AH02	2	33.35	--	-49.77	24.97	27.72	28.54	26.32	20.08	11.08	-6.22
7.50	AH02	3	33.35	--	-49.77	24.97	27.72	28.54	26.32	20.08	11.08	-6.22
7.50	AH02	4	--	--	--	--	--	--	--	--	--	--

```

=====

```

Height	Per	LAeq	32	63	125	250	500	1000	2000	4000	8000
7.50	1	35.11	--	-48.01	26.73	29.48	30.30	28.08	21.84	12.84	-4.46
7.50	2	33.35	--	-49.77	24.97	27.72	28.54	26.32	20.08	11.08	-6.22
7.50	3	33.35	--	-49.77	24.97	27.72	28.54	26.32	20.08	11.08	-6.22
7.50	4	--	--	--	--	--	--	--	--	--	--

```

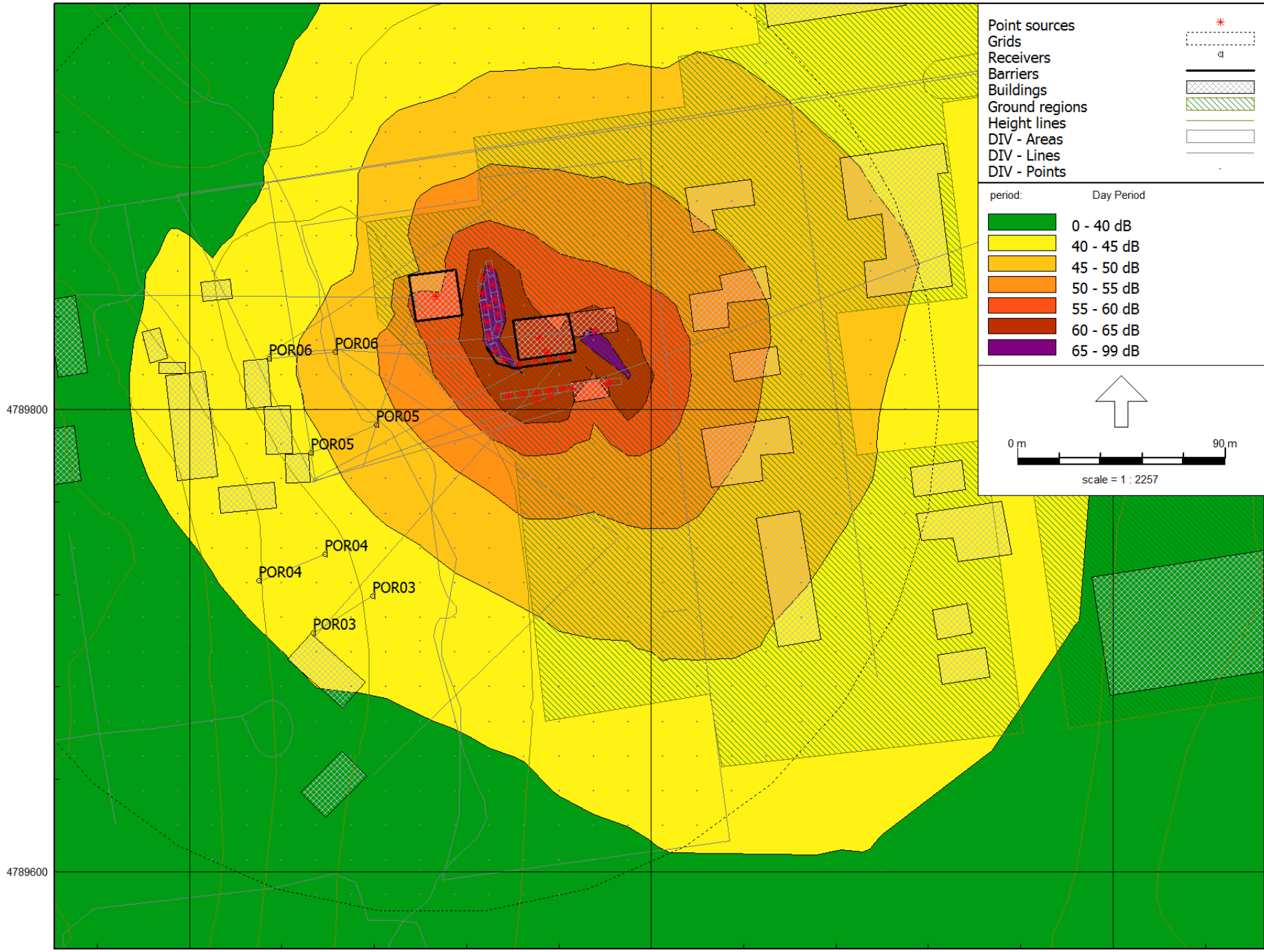
-----
0.0001;      194;    0.0000003; "TTimerSet - overhead"
0.0179;      1;      0.0179299; "TMeshLineList.AddLines"
0.0034;      96;      0.0000354; "WriteTestString"
-----

```

```

=====
Testfile closed: 7/29/20 1:57:10 PM
=====

```



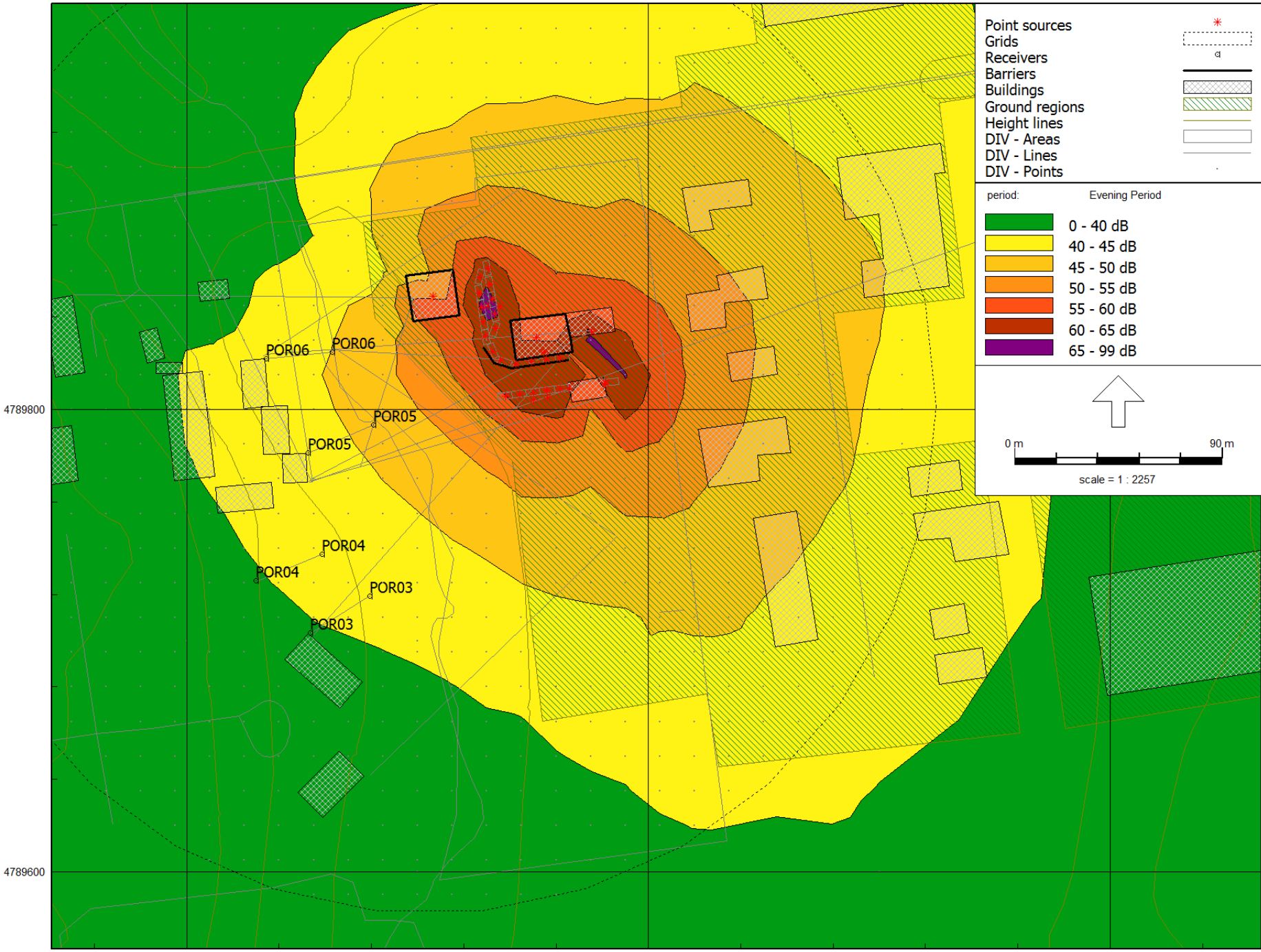
- Point sources *
- Grids □
- Receivers □
- Barriers —
- Buildings ▨
- Ground regions ▩
- Height lines —
- DIV - Areas □
- DIV - Lines —
- DIV - Points *

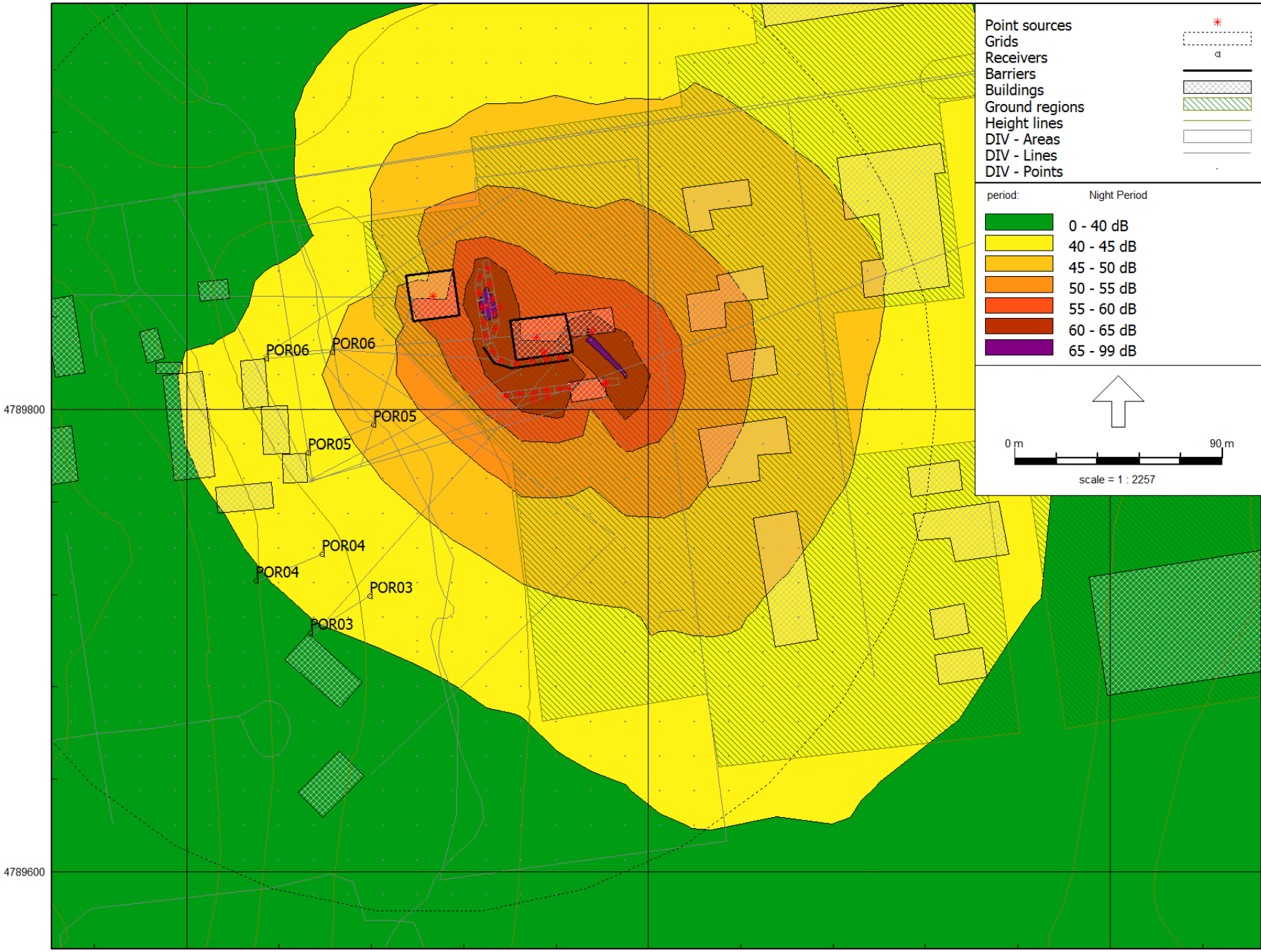
period:	Day Period
0 - 40 dB	Green
40 - 45 dB	Yellow
45 - 50 dB	Orange
50 - 55 dB	Red-Orange
55 - 60 dB	Red
60 - 65 dB	Dark Red
65 - 99 dB	Purple

0 m 90 m

↑

scale = 1 : 2257







Appendix C

Traffic Data and ORNAMENT Calculations

Weekly Report - Vehicle Count

Location: Queen St East - Eastbound
 Address: 521 Queen St East - Pole SM0405, , Ontario, Canada
 Speed Limit: From schedule 51 km/h

Report Period: 02/12/2018 to 02/18/2018
 Total Vehicle Count: 22817

Hour	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Weekday Average	Weekend Average	Week Average	Speed Average (km/h)	85% Speed (km/h)
00:00-01:00	9	11	19	10	14	15	18	13	17	14	52	62
01:00-02:00	7	15	15	9	12	15	9	12	12	12	52	60
02:00-03:00	6	12	18	8	12	14	9	11	12	11	50	58
03:00-04:00	8	25	11	14	17	6	8	15	7	13	51	58
04:00-05:00	35	42	37	33	35	11	9	36	10	29	53	61
05:00-06:00	72	66	68	59	61	33	12	65	23	53	51	59
06:00-07:00	177	184	172	190	167	53	28	178	41	139	49	58
07:00-08:00	263	244	249	218	209	102	41	237	72	189	50	58
08:00-09:00	211	236	211	202	200	150	113	212	132	189	49	58
09:00-10:00	205	223	215	189	226	200	162	212	181	203	50	58
10:00-11:00	230	225	225	229	238	259	218	229	239	232	50	58
11:00-12:00	231	251	237	222	253	238	226	239	232	237	50	58
12:00-13:00	240	274	239	218	239	H 272	H 245	242	259	247	50	58
13:00-14:00	240	257	224	226	248	250	H 245	239	248	241	50	58
14:00-15:00	234	258	249	245	251	227	228	247	228	242	50	58
15:00-16:00	H 275	229	H 269	H 258	H 282	243	237	263	240	256	50	58
16:00-17:00	259	H 279	255	252	266	211	205	262	208	247	50	58
17:00-18:00	216	223	222	195	236	159	147	218	153	200	50	58
18:00-19:00	168	206	174	176	159	153	119	177	136	165	48	56
19:00-20:00	126	157	133	94	101	99	131	122	115	120	48	56
20:00-21:00	105	101	100	90	86	70	69	96	70	89	48	57
21:00-22:00	53	45	57	57	64	58	43	55	51	54	48	57
22:00-23:00	54	58	57	59	53	46	36	56	41	52	50	58
23:00-24:00	32	32	29	30	31	18	20	31	19	27	50	58
Summary	3456	3653	3485	3283	3460	2902	2578	3467	2746	3261	AVG: 50	AVG: 58

* H - highest value in the column, **bolded H** is highest H value in report

** "n/a" - means the sign did not collect any data at the time stipulated in the report. "n/a" values are NOT included in calculations.

Weekly Report - Vehicle Count

Location: Queen St. East - Westbound
 Address: 587 Queen St. E, , Ontario, Canada
 Speed Limit: From schedule 51 km/h

Report Period: 02/12/2018 to 02/18/2018
 Total Vehicle Count: 22056

Hour	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Weekday Average	Weekend Average	Week Average	Speed Average (km/h)	85% Speed (km/h)
00:00-01:00	6	22	30	25	25	18	30	22	24	22	52	60
01:00-02:00	8	17	19	15	11	19	14	14	17	15	55	65
02:00-03:00	9	17	15	12	9	8	11	12	10	12	53	65
03:00-04:00	8	12	12	10	12	3	8	11	6	9	54	65
04:00-05:00	20	18	12	14	20	5	4	17	5	13	50	59
05:00-06:00	39	45	28	31	30	17	10	35	14	29	52	58
06:00-07:00	70	79	74	73	80	30	32	75	31	63	51	58
07:00-08:00	122	138	145	137	129	70	22	134	46	109	51	58
08:00-09:00	145	161	167	155	162	83	69	158	76	135	50	58
09:00-10:00	164	161	172	155	192	136	111	169	124	156	48	57
10:00-11:00	195	209	207	165	195	214	157	194	186	192	47	57
11:00-12:00	218	247	214	226	252	H 265	187	231	226	230	47	56
12:00-13:00	236	272	238	244	241	245	238	246	242	245	48	57
13:00-14:00	253	263	229	213	233	231	H 296	238	264	245	47	57
14:00-15:00	231	260	250	233	257	263	268	246	266	252	46	57
15:00-16:00	275	282	274	291	295	249	239	283	244	272	47	56
16:00-17:00	H 325	H 335	H 311	H 303	295	238	226	314	232	290	47	57
17:00-18:00	300	313	H 311	263	H 312	179	186	300	183	266	48	57
18:00-19:00	174	236	208	203	226	156	134	209	145	191	46	55
19:00-20:00	166	151	173	109	141	101	116	148	109	137	46	56
20:00-21:00	127	127	107	122	115	83	86	120	85	110	47	56
21:00-22:00	62	71	76	68	80	58	49	71	54	66	49	55
22:00-23:00	54	60	63	51	52	42	34	56	38	51	52	58
23:00-24:00	41	54	46	36	53	35	31	46	33	42	52	59
Summary	3248	3550	3381	3154	3417	2748	2558	3349	2660	3152	AVG: 49	AVG: 58

* H - highest value in the column, **bolded H** is highest H value in report

** "n/a" - means the sign did not collect any data at the time stipulated in the report. "n/a" values are NOT included in calculations.

Filename: Q130E.te Time Period: 1 hours
 Description: Q130E

Road data, segment # 1: Queen

 Car traffic volume : 91 veh/TimePeriod
 Medium truck volume : 7 veh/TimePeriod
 Heavy truck volume : 5 veh/TimePeriod
 Posted speed limit : 50 km/h
 Road gradient : 0 %
 Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 1: Queen

 Angle1 Angle2 : -17.00 deg 80.00 deg
 Wood depth : 0 (No woods.)
 No of house rows : 0
 Surface : 1 (Absorptive ground surface)
 Receiver source distance : 130.00 m
 Receiver height : 7.50 m
 Topography : 1 (Flat/gentle slope; no barrier)
 Reference angle : 0.00

♀
 Results segment # 1: Queen

 Source height = 1.48 m

ROAD (0.00 + 41.91 + 0.00) = 41.91 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-17	80	0.48	59.15	0.00	-13.88	-3.35	0.00	0.00	0.00	41.91

Segment Leq : 41.91 dBA

Total Leq All Segments: 41.91 dBA

♀

TOTAL Leq FROM ALL SOURCES: 41.91

♀
 ♀