



Environmental Noise Assessment Report

Kiewit Marine Yard

Kiewit Engineering Group Canada ULC

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Executive Summary

SLR Consulting (Canada) Ltd. has been retained by Kiewit Engineering Group Canada ULC (Kiewit) to prepare an environmental noise assessment (ENA) for the proposed expansion of the Kiewit Marine Yard (the Project). The Project is located in Coquitlam, British Columbia (BC) on the north side of the Fraser River. The ENA is completed in accordance with the Vancouver Fraser Port Authority's (VFPA) Project & Environmental Review: Guidelines – Environmental Noise Assessment (Port Guidelines)

The property is actively used to service Kiewit's Canadian marine fleet and other construction equipment. Yard operations generally consist of staging equipment and materials on land, transferring materials to/from barges, and material preparation required for specific projects. Currently, a Disposal-At-Sea operation is also conducted from the facility. Kiewit is planning to build-out the Marine Yard to ensure it meets today's environmental and engineering standards. Construction of the project will be gradual, with full capacity aimed at 2027.

To complete the analysis, SLR has developed a sound prediction model using Cadna/A software to predict the base case and future case sound levels at two noise-sensitive receivers identified by Vancouver Fraser Port Authority (VFPA): Don Roberts Park and future Fraser Mills Development site. A baseline sound survey was completed in February 2024 to calibrate the sound prediction model.

Overall, the Total (Project + Non-Project) Noise increase was less than 1 dB when the Project will operate at full capacity in 2027. The future Total Noise level was predicted to be L_{den} (Day-Evening-Night noise level) 62 dBA at both Don Roberts Park and the most impacted Fraser Mills building. This result is expected considering that most of the changes from the base case scenario relate to an increase in operation capacity, and there are only minor changes to the equipment itself.

The increase in community noise exposure will result in an increase in the number of residents likely to be Highly Annoyed (%HA). The highest increase in %HA was calculated to be approximately 0.4% at the most impacted receiver. This increase in %HA is significantly lower than the 6.5% criterion from Health Canada.

To assess the potential annoyance from low-frequency noise, a conservative sound prediction model was built to predict the worst-case operation condition where all equipment runs simultaneously in the Marine Yard. It should be noted that this scenario is unlikely to happen but would provide a good indication of whether or not further analysis and/or mitigation are required. The predicted worst-case Low Frequency Noise level (L_{LF}) was 69 dB, below the 70 dB threshold level in the Port Guidelines.



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Glossary of Commonly Used Acoustical Terms

Term	Description
Airborne Sound:	Sound that reaches the point of interest by propagation through air.
Ambient or Background Sound:	The ambient sound from all sources other than the source of interest (i.e., sound other than that being measured).
Attenuation:	The reduction of sound intensity by various means (e.g., air, humidity, porous materials, etc.).
dB - Decibel:	The logarithmic units associated with sound pressure level, sound power level, or acceleration level. See sound pressure level, for example.
dBA - Decibel, A-Weighted:	The logarithmic units associated with a sound pressure level, where the sound pressure signal has been filtered using a frequency weighting that mimics the response of the human ear to quiet sound levels. The resultant sound pressure level is therefore representative of the subjective response of the human ear. A-weighted sound pressure levels are denoted by the suffix 'A' (i.e., dBA), and the term pressure is normally omitted from the description (i.e., sound level or noise level).
dB(C) - Decibel, C-Weighted:	The logarithmic units associated with a sound pressure level, where the sound pressure signal has been filtered using a frequency weighting that mimics the response of the human ear to loud sound levels. C-weighted sound pressure levels are denoted by the suffix 'C' (i.e., dB(C)). C-weighted levels are often used in low-frequency noise analysis, as the filtering effect is nearly flat at lower frequencies.
dB(L), dBLin or dB(Z) - Decibel, Linear:	The logarithmic units associated with a sound pressure level, where the sound pressure signal is unfiltered, and represents the full spectrum of incoming noise.
Calibrator (Acoustical):	A device which produces a known sound pressure on the microphone of a sound level measurement system and is used to adjust the system to standard specifications.
Directivity Factor (Q) (also, Directional or Directionality Factor):	A factor mathematically related to Directivity Index, used in calculating propagated sound levels to account for the effect of reflecting surfaces near to the source. For example, for a source in free space where the sound is radiating spherically, $Q = 1$. For a source located on or very near to a surface (such as the ground, a wall, rooftop, etc.), where the sound is radiating hemispherically, $Q = 2$. This accounts for the additional sound energy reflecting off the surface and translates into a +3 dB add.
Directivity Index:	In a given direction from a sound source, the difference in decibels between (a) the sound pressure level produced by the source in that direction, and (b) the space-average sound pressure level of that source, measured at the same distance.
Energy Equivalent Sound Level L_{eq} :	An energy-average sound level taken over a specified period of time. It represents the average sound pressure encountered for the period. The time period is often added as a suffix to the label (i.e., $L_{eq}(24)$ for the 24-hour equivalent sound level). L_{eq} is usually A-weighted. An L_{eq} value expressed in dBA is a good, single value descriptor of the annoyance of noise.



Term	Description
Exceedance Noise Level (L_N):	The noise level exceeded N% of the time. It is a statistical measure of the noise level. For highly varying sounds, the L_{90} represents the background noise level, L_{50} represents the median or typical noise level, and L_{10} represents the short-term peak noise levels, such as those due to occasional traffic or a barking dog.
Far Field:	Describes a region in free space where the sound pressure level from a source obeys the inverse-square law (the sound pressure level decreases 6 dB with each doubling of distance from the source). Also, in this region the sound particle velocity is in phase with the sound pressure. Closer to the source where these two conditions do not hold constitutes the “near field” region.
Free Sound Field (Free Field):	A sound field in which the effects of obstacles or boundaries on sound propagated in that field are negligible.
Frequency:	The number of times per second that the sine wave of sound or of a vibrating object repeats itself. Now expressed in hertz (Hz), formerly in cycles per second (cps).
Hertz (Hz):	Unit of measurement of frequency, numerically equal to cycles per second.
Impulsive Sound:	a) Single or multiple sound pressure peak(s) (with either a rise time less than 200 milliseconds or total duration less than 200 milliseconds) spaced at least by 500 millisecond pauses, b) A sharp sound pressure peak occurring in a short interval of time.
Infrasound:	Sounds of a frequency lower than 20 Hz.
Intensity:	The sound energy flow through a unit area in a unit time.
Low Frequency Noise/Sound (L_{LF}):	ANSI S12.9-2005 Part 4 Annex D suggests the logarithmic sum of sound levels in the 16, 31.5, and 63 Hz. Octave Bands, referred to as LLF, should be less than 70 dB to prevent the likelihood of noise-induced rattles.
Masking:	a) The process by which the threshold of audibility for a sound is raised by the presence of another (masking) sound, or b) The amount by which the threshold of audibility of a sound is raised by the presence of another (masking) sound.
Near Field:	The sound field very near to a source, where sound pressure does not obey the inverse-square law and the particle velocity is not in phase with the sound pressure.
Noise:	Unwanted sound.
Noise Level:	Same as Sound Level, except applied to unwanted sounds.
Peak Sound Pressure Level:	Same as Sound Pressure Level except that peak (not peak-to-peak) sound pressure values are used in place of RMS pressures.
Quasi-Steady Impulsive Sound:	Sound composed of a series of short, discrete events, characterized by rapid rise times, but with less than 0.5 seconds elapsing between events.
RMS Sound Pressure:	The square-root of the mean-squared pressure of a sound (usually the result of an RMS detector on a microphone signal).
Sound:	A dynamic (fluctuating) pressure.



Term	Description
Sound Exposure Level (SEL):	An L_{eq} referenced to a one second duration. Also known as the Single Event Level. It is a measure of the cumulative noise exposure for a single event. It provides a measure of the accumulation of sound energy over the duration of the event.
Sound Level:	The A-weighted Sound Pressure Level expressed in dBA.
Sound Level Meter:	An instrument comprised of a microphone, amplifier, output meter, and frequency-weighting networks which is used for the measurement of sound levels.
Sound Pressure Level (SPL):	The logarithmic ratio of the RMS sound pressure to the sound pressure at the threshold of hearing. The sound pressure level is defined by equation (1) where P is the RMS pressure due to a sound and P0 is the reference pressure. P0 is usually taken as 2.0×10^{-6} Pascals. $SPL (dB) = 20 \log(P_{RMS}/P_0)$
Sound Power Level (PWL):	The logarithmic ratio of the instantaneous sound power (energy) of a sound source to that of an international standard reference power. The sound power level is defined by equation (2) where W is the sound power of the source in watts, and W0 is the reference power of 10-12 watts. $PWL (dB) = 10 \log(W/W_0)$ Interrelationships between sound pressure level (SPL) and sound power level (PWL) depend on the location and type of source.
Spectrum/Spectra:	The description of a sound wave's resolution into its components of frequency and amplitude.
Threshold of Audibility (Threshold of Detectability):	The minimum sound pressure level at which a person can hear a specified frequency of sound over a specified number of trials.



1.0 Introduction

SLR Consulting (Canada) Ltd. has been retained by Kiewit Engineering Group Canada ULC (Kiewit) to prepare an environmental noise assessment (ENA) for the proposed development of the Kiewit Marine Yard (the Project). The Project is located in Coquitlam, British Columbia (BC) on the north side of the Fraser River. The ENA is conducted in accordance with the Port Metro Vancouver (The Port) Project & Environmental Review: Guidelines – Environmental Noise Assessment (PER Guidelines).

This report documents the procedures and results of the ENA for the Project.

2.0 Project Information

2.1 Facility Background

Kiewit owns and operates an industrial waterfront property located in the Fraser Mills area along the Fraser River, at 1950 Brigantine Drive in Coquitlam, BC (the Marine Yard). The property and area have had an industrial use since the late 1800's, the general area was originally developed with the Fraser Mills sawmill to the west. Further development in the area north of the property included the (now decommissioned) landfills to the north, around the 1960s and 1970s, and warehousing and light industrial buildings constructed in the early 1990s. Kiewit purchased the property in 2021 and began operating on the site in early 2022. The Marine Yard is split between a fee simple land owned by Kiewit, and a Vancouver Fraser Port Authority (VFPA) lease lot.

2.2 Current Facility Use

The property is actively used to service Kiewit's Canadian marine fleet and other construction equipment. Yard operations generally consist of staging equipment and materials on land, transferring materials to/from barges, and material preparation required for specific projects. Currently, a Disposal-At-Sea operation is also conducted from the facility. The Marine Yard has several structures and fixed facilities that were installed by the previous owner, including an office building, truck weigh scale, boat ramp, and two marine bulkhead wall structures. A portion of Kiewit's property at the eastern end of the site is currently leased to Quadrant Towing, which contains a fuel building, floating dock, and marine access ramp. Kiewit currently operates the yard from Monday to Friday, with work occurring on intermittent Saturdays. The yard operates with day shifts running from 6:00 AM to 5:00 PM and the night shift running from 6:00 PM to 4:00 AM.

2.3 Project Description

Kiewit is planning to build-out the Marine Yard to ensure it meets today's environmental and engineering standards. Development and expansion of Kiewit's Marine Yard involves the following activities and Project components:

- Construction of a pile-supported marine access trestle.
- Construction of a pile-supported conveyor structure.
- Construction of a Roll-on/Roll-off ramp structure (RoRo Ramp).
- Marine Yard expansion by infill and expansion of the stormwater treatment system.



- Dredging to remove accumulated sediments up to a depth of -6.5 chart datum (CD).
- Construction of three groupings of mooring dolphins.
- In-river marsh bench (habitat compensation area).
- Construction of a new truck weigh scale located in the upland area of the yard.
- Construction of a new truck wheel wash located in the upland area of the yard.
- Construction of buried electrical services used to power equipment and yard lighting at various locations within the yard.

Construction of the project will be gradual, with full capacity aimed at 2027. The site plan is provided in **Appendix A**. Supply Chain Information is attached in **Appendix B**.

3.0 Study Objectives

The objectives of this study include the following:

- Evaluate existing sound levels at noise sensitive receivers, including potentially affected residential receivers,
- Construct a sound prediction model to predict both the baseline and future sound levels of the facility,
- Compare predicted noise levels to the baseline modelled sound levels,
- Quantify any significant noise increases in terms of the rated annual average day-evening-night level (L_{Rden}), including appropriate adjustments for time periods, tonal, impulsive, and low frequency noise characteristics, and
- Recommend mitigation strategies to minimize potential noise impacts.

Noise impacts from any construction, demolition, or non-routine maintenance activities are not assessed in this study.

4.0 Assessment Criteria

VFPA's Project & Environmental Review: Guidelines – Environmental Noise Assessment (Port Noise Guidelines) specifies the criteria required to assess the noise impacts of operational activities and proposed projects under VFPA jurisdiction. All Category C or D projects with a Project Noise Score of 30 or greater are required to conduct a full ENA.

Based on the noise screening results for the Project provided by Kiewit and VFPA, the project Noise Score was assessed to be 53.2; thus, a full ENA is necessary. The noise assessment screening worksheets are in **Appendix C**.

The primary assessment metric is the project-related change in the annual average daily community noise exposures as quantified by the Day-Evening-Night Average noise level (L_{den}). At a minimum, mitigation is recommended when the L_{den} exceeds 75 dBA.

Mitigation of low frequency noise (L_{LF}), which is defined as the sum of the 16 Hz, 31.5 Hz, and 63 Hz octave bands, should be considered when more than 70 dB.



The Guidelines mention the percentage of highly annoyed people (%HA) as a relevant metric to determine the project's noise impact; however, no criterion is provided. Based on Health Canada's Guidance for Evaluating Human Health Impacts in Environmental Assessment, a threshold value of 6.5% increase in %HA is used in this study.

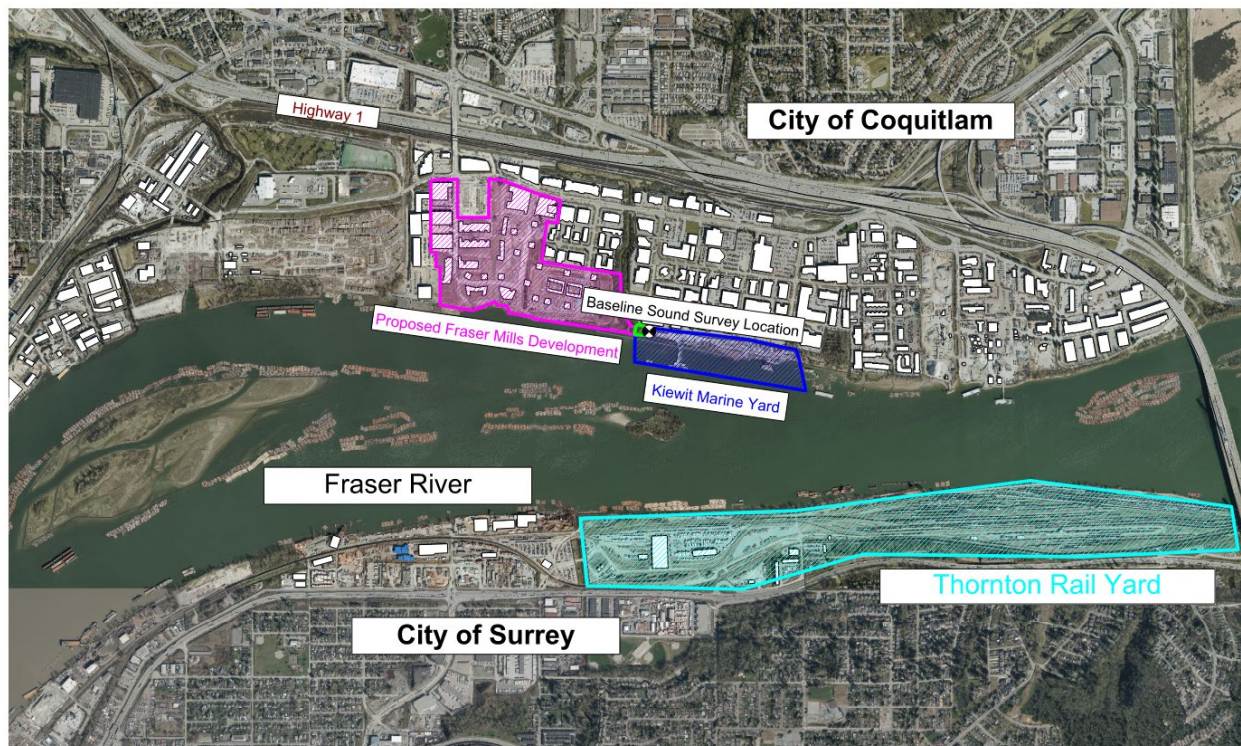
There are no specific criteria for maximum noise level (L_{AFmax}); however, it is listed as one of the reporting metrics in the Port Noise Guidelines.

5.0 Spatial and Temporal Boundaries

5.1 Spatial Boundaries

The Marine Yard is surrounded by commercial warehouses and businesses to the north, the Fraser River to the south. Approximately 0.8 km north of the Marine Yard is the heavily trafficked Trans-Canada highway (Highway 1) and four sets of freight rail tracks. Across the Fraser River, approximately 1.5 km southeast of the Marine Yard, is the Thornton Rail Yard. A thin row of trees blocks the view of the rail yard from the river in some sections, in other sections the Rail yard is in direct line-of-sight of the Marine Yard and other riverfront properties. Figure 1 shows an aerial image of the study area.

Figure 1: Study Area



5.2 Temporal Boundaries

The purpose of this study is to assess the change in noise levels due to the development of the Project. Two scenarios were used to assess this change: a baseline scenario and a future scenario. The baseline scenario is the current operation of the Marine Yard at full capacity; the future scenario is based on the predicted operation of the Marine Yard after the development, again at full capacity in 2027.

Noise associated with the construction of this Project has been excluded.

5.3 Noise Sensitive Receivers

Based on the meeting between SLR, Kiewit, and VFPA, two major noise-sensitive receivers were identified: the future Fraser Mills residential development proposed by Beedi Fraser Mills Limited Partnership and Don Roberts Park. Both of the receivers are located in close proximity, on the west side of the Marine Yard. Don Roberts Park is directly adjacent to the Marine Yard and is the most affected area.

The proposed Fraser Mills Development will include 5,500 residential units, office spaces, parks, natural areas, and community centres. It is approximately 0.3 km to the west of the Marine Yard and is considered the most affected dwelling area. Although the Development hasn't been constructed yet, VFPA has requested Kiewit and SLR include it in this study.

Besides the two noise-sensitive receivers, the Marine Yard is surrounded by industrial/commercial buildings to the east and north side and Fraser River to the south. The closest noise-sensitive dwelling area across the Fraser River is at least 1.3 km away from the Marine Yard and generally separated by local dominant noise sources, such as the Thornton Rail Yard and its associated railway, South Fraser Perimeter Road, and nearby industrial areas. Impacts from the Marine Yard operation are not expected at these dwelling areas in the City of Surrey.

The nearest currently occupied residential dwellings are located north of the Trans-Canada Highway (greater than 0.8 km away). Due to their proximity to the heavily trafficked highway, the noise impact from the Project at these residential locations was assumed to be insignificant compared to the noise impact from the Project on the proposed Fraser Mills Development.

6.0 Existing Environmental Conditions

6.1 Baseline Sound Survey

SLR measured the baseline sound level continuously from February 17th to February 25th, 2024. A sound level meter was set up near the west side of the yard adjacent to Don Roberts Park. This location was selected based on the discussions between Kiewit, SLR, and VFPA. The selected monitoring location would provide a representative ambient noise reading at Don Roberts Park and would facilitate the model calibration process to evaluate the noise impact at the Fraser Mills development. The Fraser Mills site wasn't available for baseline monitoring since there were ongoing construction activities that wouldn't allow SLR to take a representative noise measurement to assess the Kiewit Marine Yard activities. Measurement time histories are attached in **Appendix D**.



6.1.1 Measurement Instrumentation

One Svantek 307A sound monitoring kit was installed at the noise measurement location indicated in Section 6.1.2 to complete the noise monitoring. The Svantek 307A sound level meter meets the Class 1 specifications in accordance with the IEC 61672-1:2013 and IEC 61260-1:2014 standards. The sound level meters were calibrated before and after each monitoring period by using a Svantek SV33B calibrator which meets the Class 1 specifications in IEC/EN 60942 (2017) Class 1 and ANSI S1.40–2006 standards. The sound monitoring kit measured 1/3-octave band sound levels as well as statistical parameters. The meters collected levels in terms of one-second sound level averages.

During the measurement, a Davis Instrument Vantage Vue weather station was also installed near the central part of the Marine Yard, south of the commercial building at 1750 Brigantine Drive, to monitor the meteorological condition throughout the baseline monitoring period high wind, which may affect the measurement.

6.1.2 Measurement Location

The sound monitoring (SM) and weather monitoring (WM) locations are detailed in **Table 1** and shown in **Figure 1**.

Table 1: Measurement Location Details

Meter Label	Approximate Meter Position	Notes	Photo
SM	49°13'26.7"N 122°50'58.2"W	- The monitoring kit was installed at the west end of the yard, approximately 32 m south of the commercial building at 1400 Brigantine Drive. - The microphone was elevated at a height of 5 m, with an unobstructed line of sight to the activities at the Marine Yard. - Continuous monitoring over the course of the full survey period. - Traffic noise from Highway 1 and surrounding local traffic, train whistle noise, noise from marine traffic at Fraser River, and construction noise were audible at this location.	



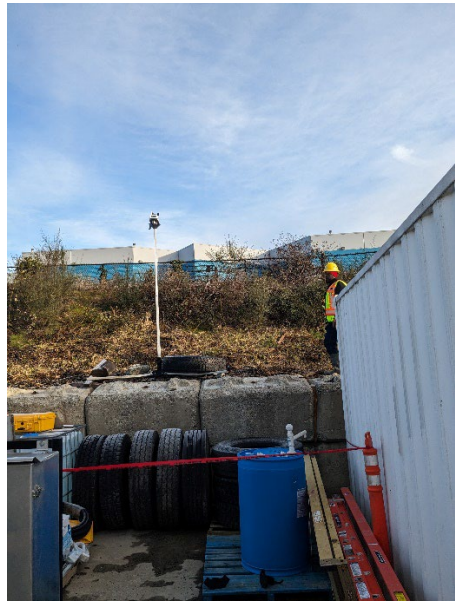
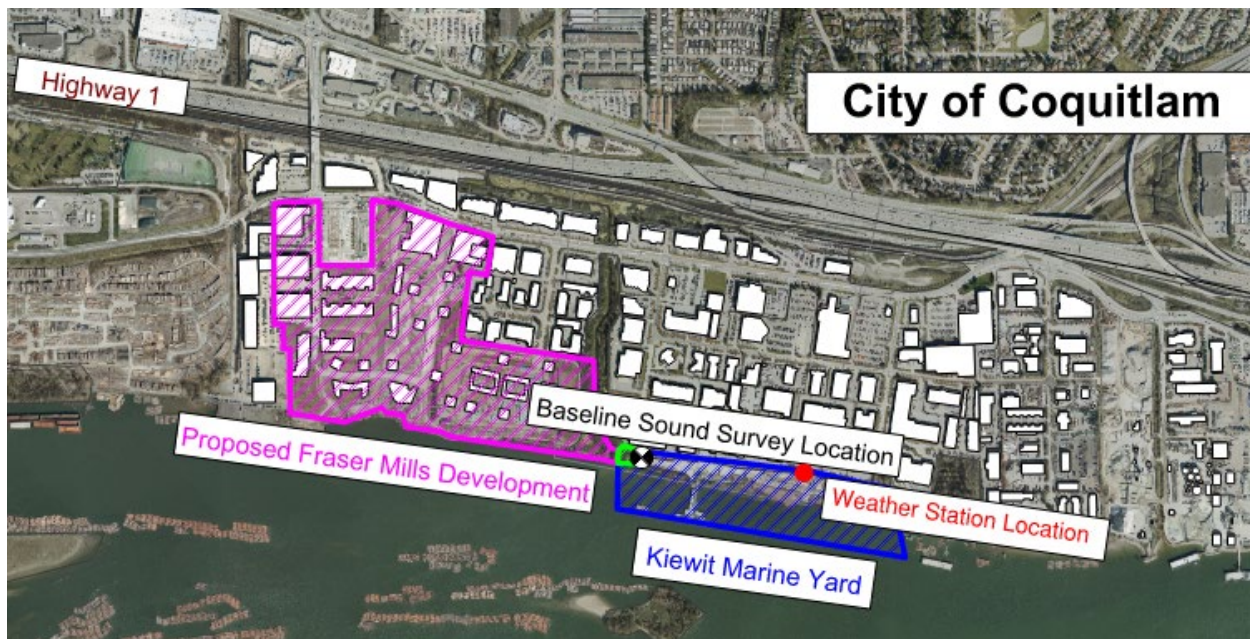
Meter Label	Approximate Meter Position	Notes	Photo
WM	49°13'25.3"N 122°50'35.9"W	- Located approximately 37 m south of 1750 Brigantine Drive. - Continuous monitoring over the course of the full survey period. - Measurement was taken in 15-minute averages	

Figure 2: Context Plan Showing Baseline Monitoring Locations



6.1.3 Meteorological Conditions During Baseline Monitoring Period

During the baseline monitoring period, the wind speed was mostly below 5 km/hr, with a high wind speed above 15 km/hr detected on February 25th, 2024. Periods of rain were detected between February 21st and February 25th. Weather measurement data are presented in **Appendix E**.



6.1.4 Baseline Sound Survey Results

The baseline sound survey results are summarized below.

Table 2: Baseline Sound Survey Results

Measurement Date	Day of the Week	Ld (dBA)	Ln (dBA)	Lden (dBA)	LAFmax (dBA)
February 17	Saturday	51	53	60	82
February 18	Sunday	51	54	60	80
February 19	Monday (Stat Holiday)	54	49	57	79
February 20	Tuesday	61	52	61	100
February 21	Wednesday	63	50	62	106
February 22	Thursday	68	53	66	110
February 23	Friday	72	51	70	107
February 24	Saturday	56	54	61	88
February 25	Sunday	57	54	61	82
*Average Weekday		66	51	65	
Range during Weekday		61 - 72	50 - 53	61 - 70	
*Average Weekend		54	54	60	
Range during Weekend		51 - 57	53 - 54	60 - 61	
Notes:					
Measurement on Monday, February 19, 2024 was excluded from the analysis since it was taken during a statutory holiday.					
Average values shown is arithmetic average					

As shown in the table above, L_{den} varies between 61 - 70 dBA during the weekday and 60 - 61 dBA during the weekend period. L_{AFmax} was noticeably high since there was a forklift moving materials in close proximity (<3m) to the sound monitoring kit. There were some occasions where sound levels reached above 100 dBA L_{AFmax} , most likely due to impulsive sound from material hitting the steel beam where the sound level meter was located. As shown during the weekend measurements, L_{AFmax} from non-project sources were between 80-88 dBA at the monitoring location.

6.2 Existing Community Interactions

Fraser Mills Development has not been developed yet. SLR is unaware of any noise-based complaints against the Marine Yard from the neighbouring properties.



7.0 Sound Propagation Modelling Methodology

A three-dimensional computer sound model was constructed using CadnaA®, version 2023, an environmental sound propagation program developed by DataKustik GmbH. The ISO 9613-2 calculation method for outdoor sound propagation from industrial facilities was used and accounts for the following:

- Geometric spreading;
- Ground attenuation;
- Atmospheric absorption;
- Barrier attenuation;
- Reflection from surfaces; and
- Moderate downwind conditions.

Predicted sound levels were calculated for a temperature of 10 degrees Celsius (°C) and a relative humidity of 80 percent (%), which represents average Coquitlam weather conditions. ISO 9613-2 standard meteorological conditions conservatively assume each receptor is downwind from every sound source. Downwind conditions produce downward refraction of airborne sound, resulting in enhanced sound propagation between the source and receptor.

The terrain was modeled using elevation data from the City of Coquitlam, the City of Surrey, and the City of New Westminster.

The default ground (G) factor was set to $G = 0$ across the study area with soft ground modelled at $G = 1$. Foliage was not included in the modelling as a conservative approach, which can allow for the potential of future deforestation.

The model was calibrated using the baseline sound survey results. To help with the model calibration process, all operation activities during the baseline monitoring period were logged by Kiewit and provided to SLR Consulting. The activity log is attached in **Appendix F**.

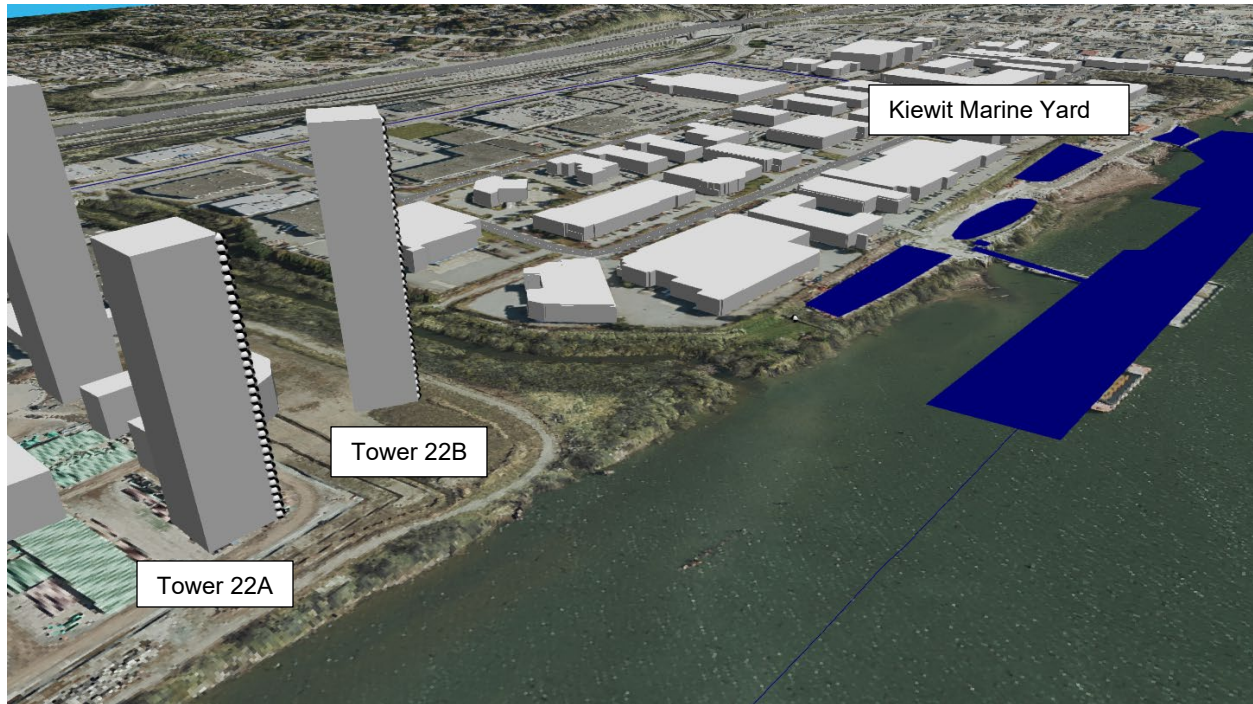
7.1 Project Sources

Most of the noise sources at the Marine Yard are mobile sources that would be used in certain areas of the yard. Because of this reason, the sources were modelled as area sources in the acoustic prediction model. Supply chain related sources, such as tugboats carrying materials through the Fraser River and trucks coming into the site, were modelled as line sources. Operation information for each equipment, which was provided by Kiewit, is summarized in **Appendix G**.

Equipment sound power data were gathered from short-term measurements at the Marine Yard, SLR's previous similar projects, the Roadway Construction Noise Model (RCNM) from the US Federal Highway Administration (FHWA), and BS 5228 Standards. Equipment sound power data is summarized in **Appendix H**.



Figure 3: Acoustic Prediction Model



7.2 Non-Project Sources

Noise sources from nearby dominant traffic sources were modelled by using the information from the City of Coquitlam and BC Ministry of Transportation and Infrastructure. An annual growth rate of 2% has been assumed to get the AADT volume for the current year and future year (2027).

Table 3: Road Traffic Information Used in the Model

Roadway Link	Most Recent AADT Data	Available AADT Year	2024 Traffic Volumes AADT	2027 Traffic Volumes AADT	% Heavy Vehicles	Posted Vehicle Speed (km/hr)
Brigantine Dr.	3473	2014	4234	4493	8.0%	50
Fawcett Rd.	3981	2017	4573	4853	17.0%	50
Hartley Ave	2526	2014	3079	3268	9.7%	50
Schooner St.	2578	2017	2961	3143	12.4%	50
United Blvd.	15906	2018	17913	19009	10.8%	50
Highway 1	168554	2023	171925	182448	11.1%	90
SFPR	39673	2023	40466	42943	25.1%	80



In addition to the traffic sources, train whistle noise and the impulsive component of the operation at the Thornton Rail Yard were modelled based on the baseline monitoring results and past SLR measurements. Due to the large distance from the nearby rail tracks (>500m), noise contributions from typical train passbys were not significant compared to the Kiewit Marine Yard operation and were not modelled. The passby events were not distinguishable above the ambient noise in the baseline noise monitoring results.

7.3 Consequential Noise Impacts Along Supply Chain

This project expects additional traffic (land-based and marine-based) to and from the site. The overall noise contribution from the increase in supply chain activities is relatively minimal compared to the already high ambient noise levels on site. Regardless, the supply chain sound sources are modeled for both base case and future case scenarios. These sources are modelled as line sources.

7.4 Sound Level Adjustments

The PER guidelines recommend that a low-frequency adjustment be applied to sources where the difference between the C-weighted and A-weighted levels is 10 dB or more. As an initial conservative estimate, a 5 dB sound level adjustment has been added to sources with low-frequency content, such as tugboats, forklifts, light plants, pressure washers, and others, as shown in **Appendix G**, to account for potential annoyance from low-frequency sound.

An additional 5 dB adjustment was also added to the forklift sources, which were mainly used to drop off and pick up materials at the Yard, to account for regular impulsive events from material handling. These impulsive events were captured during the baseline monitoring period.

To calculate the rated annual day-evening-night sound levels, 5 dB and 10 dB penalties were applied to the sound levels during the evening period (19:00 to 22:00) and nighttime (22:00 to 7:00), respectively.

8.0 Modelling Results

8.1 Noise Model Scenarios

Several modelling scenarios were completed to assess the noise impact at the sensitive receivers (Fraser Mills development and Don Roberts Park).



Table 4: Descriptions of Modelled Scenarios

Scenario	Variations	Descriptions
Baseline (2024)	Average Annual Operation (Project + Non-Project)	This is the baseline model, which reflects the current operating condition at the Marine Yard. Both project and non-project noise sources were modelled in this scenario.
	Average Annual Operation (Project Only)	This model was created to check the overall contribution of the project sources compared to the non-project sources in the baseline scenario. Only the project noise sources were modelled in this scenario.
	Worst-Case Scenario, All Equipment Running Simultaneously	To assess the worst-case Low-Frequency Noise Level (L_{LF}), all noise sources were assumed to operate simultaneously across the Marine Yard. Based on these modelling results, mitigation recommendations can be formulated to limit equipment's operational hours to avoid cumulative effects on the overall L_{LF} value.
Future (2027)	Average Annual Operation (Project + Non-Project)	This is the baseline model, which reflects the current operating condition at the Marine Yard. Both project and non-project noise sources were modelled in this scenario.
	Average Annual Operation (Project Only)	This model was created to check the overall contribution of the project sources compared to the non-project sources in the baseline scenario. Only the project noise sources were modelled in this scenario.
	Worst-Case Scenario, All Equipment Running Simultaneously	To assess the worst-case L_{LF} , all noise sources were assumed to operate simultaneously across the Marine Yard. Based on these modelling results, mitigation recommendations can be formulated to limit the operational hours of equipment to avoid cumulative effects on the overall L_{LF} value.

8.2 Receiver Details

Based on the proximity to the Marine Yards, multiple noise receivers were included in the prediction model as summarized in the **Table 5** and **Figure 4**. The height of the buildings in the Fraser Mills Development Site was modelled based on the information available in the City of Coquitlam's Development Application Final Approval Letter, dated September 22, 2022.



Table 5: Modelled Noise Receiver Information

Receiver Name	Receiver Height	Notes
Don Roberts Park	1.5 m	This receiver location was placed near the park's east boundary line. A height of 1.5 m was selected to represent a typical sitting height.
Fraser Mills Building 22B	1.5m above floor slab on each storey.	Building 22B is located near the southeast corner of the Fraser Mills Development site. Due to its close proximity to the Marine Yard, it represents the most impacted building from the Marine Yard operation. Based on the information available, thirty-seven storeys were modelled.
Fraser Mills Building 22A	1.5m above floor slab on each storey.	Building 22B is located near the southeast corner of the Fraser Mills Development site. There is a line of sight between the building and the Marine Yard operation and tugboat traffic from the supply chain. Based on the information available, thirty-two storeys were modelled.
Fraser Mills Building 21B	1.5m above floor slab on each storey.	Building 21B is located near the southeast corner of the Fraser Mills Development site. There is a line-of-sight between the building and the Marine Yard operation and tugboats traffic from the supply chain. Six stories were modelled based on the information available.



Figure 4: Noise Receiver Locations in the Acoustic Prediction Model



8.3 Predicted Noise Levels

8.3.1 Annual Rated Day Evening Night Noise Levels.

Summary of the predicted L_{den} levels are summarized in the tables below. More detailed information is attached in **Appendix I**.

Table 6: Predicted Day Evening Night Sound Levels at Each Receiver

Receiver Location	Project Only Contribution			Total (Project + Non-Project)					
	Base Case L_{den} (dBA)	Future Case L_{den} (dBA)	Change in L_{den}	Base Case L_{den} (dBA)	Future Case L_{den} (dBA)	Change in L_{den}	%HA Base Case	%HA Future Case	Change in %HA
Don Roberts Park	60.2	60.5	0.3	61.9	62.2	0.3	9.4	9.7	0.4
Building 22B	51.6 - 55.3	51.8 - 55.6	0.2 - 0.4	58.9 - 61.6	59.1 - 61.8	0.2 - 0.3	6.3 - 8.9	6.6 - 9.2	0.2 - 0.3
Building 21B	44.7 - 49.7	44.8 - 49.9	0.1 - 0.5	51.1 - 55.3	51.4 - 55.5	0.2 - 0.3	2.4 - 4.0	2.5 - 4.2	0.1
Building 22A	49.2 - 55.0	49.5 - 55.3	0.2 - 0.4	54.7 - 61.7	55.0 - 62.0	0.2 - 0.3	3.8 - 9.0	3.9 - 9.3	0.2 - 0.4



Based on the results shown in the Table above, predicted annual rated Lden levels for the post-project environment are between 51.4 - 62.0 dBA, with the highest Lden levels predicted at the Don Roberts Park. No mitigation is required since the predicted Lden levels are below the 75 dBA threshold in the Guideline.

The percentage of highly annoyed residents increase by 0.1 - 0.4%.

8.3.2 Low Frequency Noise Levels (L_{LF}) Analysis

Low-frequency sound has the potential to induce the rattling of lightweight objects within residential buildings and may create a nuisance. The Guidelines recommend that Low-Frequency Noise Level, or L_{LF} , be assessed in accordance with ANSI S12.9-2005 Part 4 Annex D standard (ANSI Standard) and mitigation measures to be implemented if L_{LF} is above 70 dB. The ANSI Standard defines L_{LF} as the sum of sound levels in the 16, 31.5, and 63 Hz octave bands.

As a conservative estimate to predict the maximum L_{LF} under the worst-case scenario, all noise sources at the Marine Yard were modelled to be operating simultaneously. It should be noted that this scenario is not representative of the actual operating condition; however, it would be able to give an indication of whether or not more detailed analyses are required. If the predicted L_{LF} is below 70 dB, rattling concerns due to low-frequency noise are not likely to occur.

Table 7: Predicted L_{LF} at the Nearest Residential Buildings

Receiver Location	Base Case L_{LF} (dB)	Future Case L_{LF} (dB)	Change in L_{LF} (dB)
Building 22B	65.3 - 68.6	65.7-68.8	0-0.5
Building 21B	63.1 - 64.6	63.6-64.7	0.1-0.5
Building 22A	62.3 - 68.8	62.4-69.0	0.1-0.4
Notes: Most of the equipment's sound levels at 16Hz octave bands were not available, so they are assumed to be the same as the 31.5 Hz band as a conservative estimate.			

Under the worst-case scenario, where all equipment operates simultaneously at the Marine Yard, L_{LF} was predicted to be below 70 dB for all potentially impacted receivers. Based on these findings, no further analysis is required.

8.3.3 Maximum Noise Levels (L_{max}) Analysis

During the baseline measurement period, the L_{AFmax} noise levels were noticeably high (up to 100 dBA) due to the forklift picking up and dropping materials really close to where the sound level meter was mounted, within the 3 m distance.

To assess the maximum noise levels from the material handling activities at the west yard location, we have used the L1 values of the L_{AFmax} parameter (the noise level exceeded 1% of the time) to represent L_{AFmax} noise levels at the location. Since the same material handling operation may occur on both the baseline and future cases and this impulsive noise event were significantly higher than the ambient noise level, the worst-case L_{AFmax} values will be the same for both base case and future case scenarios. The predicted L_{AFmax} values at each receiver location are summarized below.



Table 8: Predicted LAFmax Values at Each Receiver

Receiver Location	Predicted LAFmax
Don Roberts Park	75
Building 22B	55
Building 21B	47
Building 22A	53

9.0 Assessment Conclusions

Based on the worst-case predicted noise levels at Don Roberts Park and the Fraser Mills Development, the predicted noise levels are below the threshold limit specified in the VFPA Guidelines. Overall changes in the total noise levels are minimal (<1 dB). This is expected considering that the ambient noise levels at the site are already high (L_{den} of around 60 dBA), as shown in the baseline sound survey results.

10.0 General Recommendations

We recommend that an operational noise management plan is implemented. The management plan should include best practices during material handling activities at the West Yard to minimize impulsive noise from materials banging against one another.

During SLR's site visit, we noticed that some equipment at the Marine Yard has two different backup alarm systems, tonal and broadband. Even though the predicted noise levels are below the threshold limit specified in the Guidelines, tonal backup alarms may still be audible at the outdoor amenity locations at the Fraser Mills Development and be considered a nuisance depending on the frequency of occurrence. We recommend that broadband backup alarms be widely adopted, especially for equipment working in the west part of the yard.

Based on SLR's previous experience, the City of Coquitlam doesn't have a mandatory requirement for an environmental noise study to be completed for new residential development during the Development and Building Permit application process. Environmental noise studies are usually required on a case-per-case basis, depending on the City Planner's review process. Due to the proximity to the industrial zones near the Fraser Mill Development Site, including the Kiewit Marine Yard, we recommend that VFPA coordinate with Beedie Fraser Mills Limited Partnership and the City of Coquitlam, such that an environmental noise study is conducted to assess outdoor noise ingress and the required exterior façade construction for the dwelling units at the development site.



11.0 Closure

Should you have any questions about the Environmental Noise Assessment described herein, please contact the undersigned.

Regards,

SLR Consulting (Canada) Ltd.



Banda Logawa, M.A. Sc., P. Eng.
Senior Acoustics Engineer

Arthur (Art) Küpper, P.Eng.
Principal Acoustics Engineer & Environmental
Team Lead

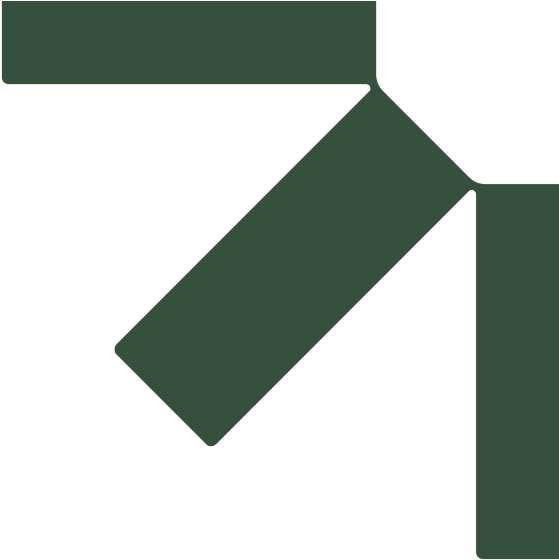
The Association of Professional Engineers and Geoscientists of the Province of British Columbia
Permit to Practice #1001562



12.0 References

- PMV 2023. Project & Environmental Review: Guidelines – Environmental Noise Assessment. Port Metro Vancouver. March 2023
- Health Canada. 2016. Guidance for Evaluating Human Health Impacts in Environmental Assessment: Noise. Healthy Environments and Consumer Safety Branch, Health Canada, Ottawa, Ontario. 2016





Appendix A Project Site Plan

Environmental Noise Assessment Report

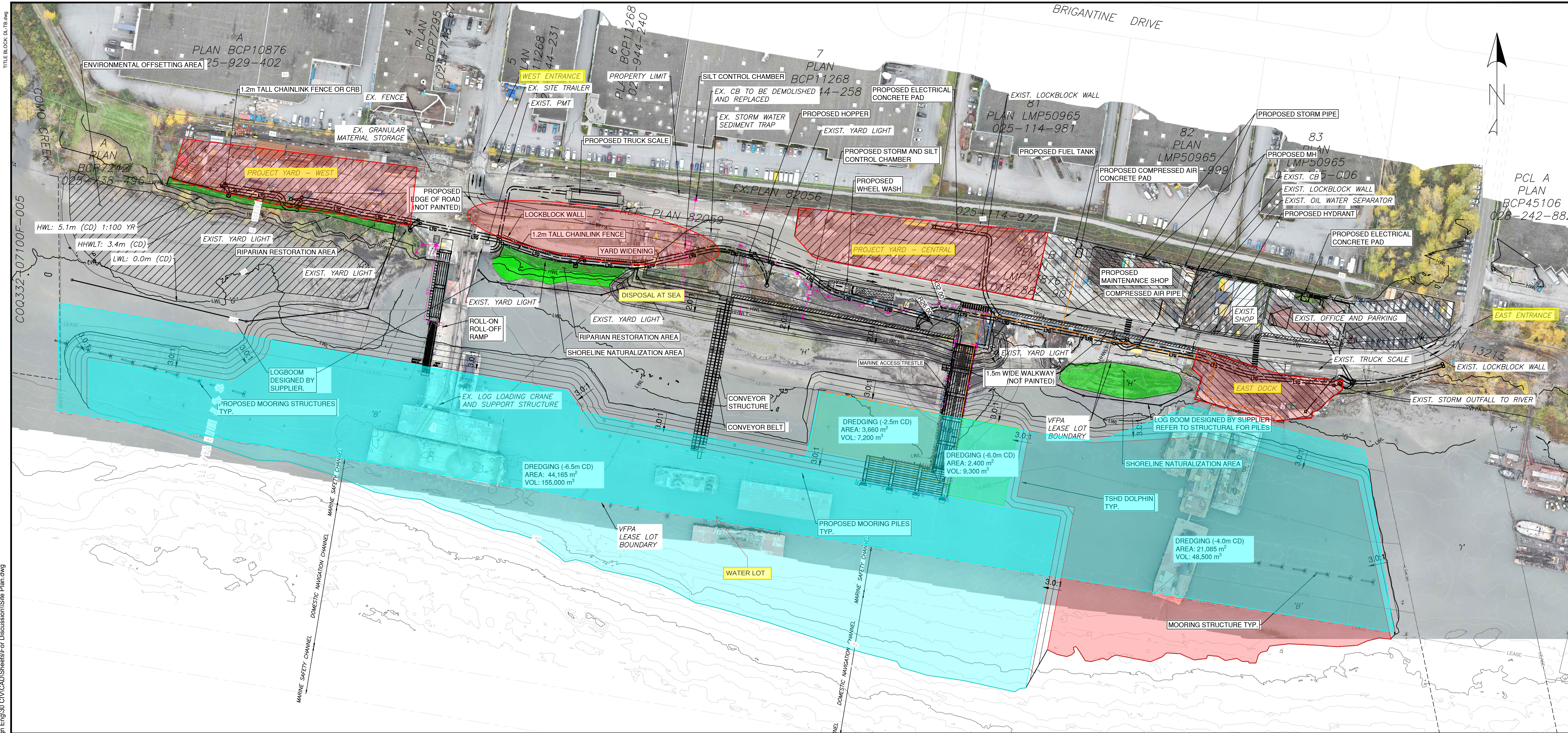
Kiewit Marine Yard

Kiewit Engineering Group Canada ULC

SLR Project No.: 201.088941.00001

May 13, 2024





DATE: 2024/02/26 - 4:45pm
PATH: C:\Users\Carson.Feng\Documents\Kiewit\WCD Marine Yard\Project Files\40 Design\Eng\30 CIMCAD\Sheets\For Discussion\Site Plan.dwg

Ref. No.	REFERENCE
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No.	Date	REVISION	Dr'n	Ch'd
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**PORT of
vancouver**

Vancouver Fraser
Port Authority

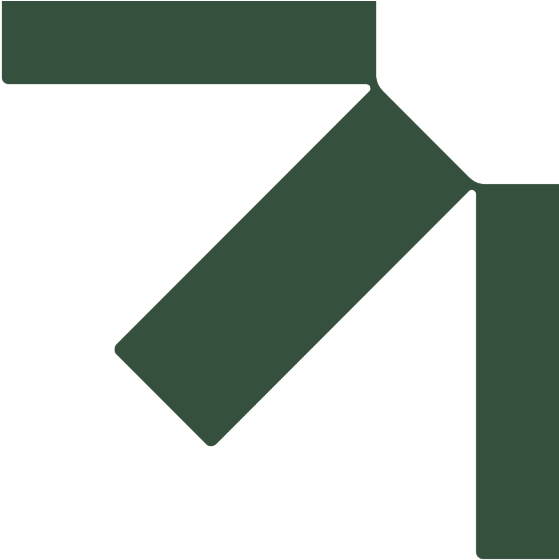
ENGINEERING DEPARTMENT

DESIGN BY	
DRAWN BY	C.F.
APPROVED	
DATE	2023-FEB-20
SCALE	1:1000
VFPA SITE	

WCD MARINE YARD BUILD-OUT
COQUITLAM, BC
SITE PLAN

SIZE	DWG.	SHEET	REV.
D		X of X	

VFPA DRAWING NUMBER:
XXX-XXX-XX-XXXX



Appendix B Supply Chain Information

Environmental Noise Assessment Report

Kiewit Marine Yard

Kiewit Engineering Group Canada ULC

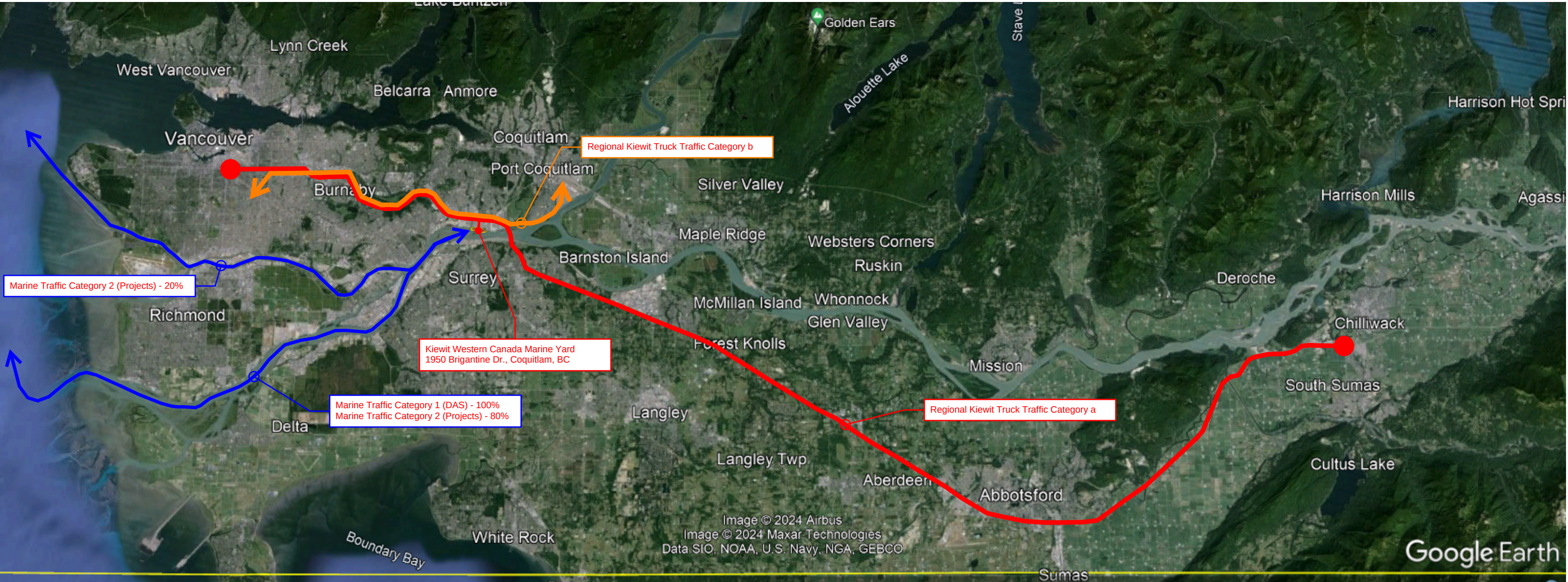
SLR Project No.: 201.088941.00001

May 13, 2024

Kiewit - WCD Marine Yard

Environmental Noise Assessment and Air Assessment 2024 - Supply Chain Boundary Maps - Figure 1 Marine and Regional Trucking Routes

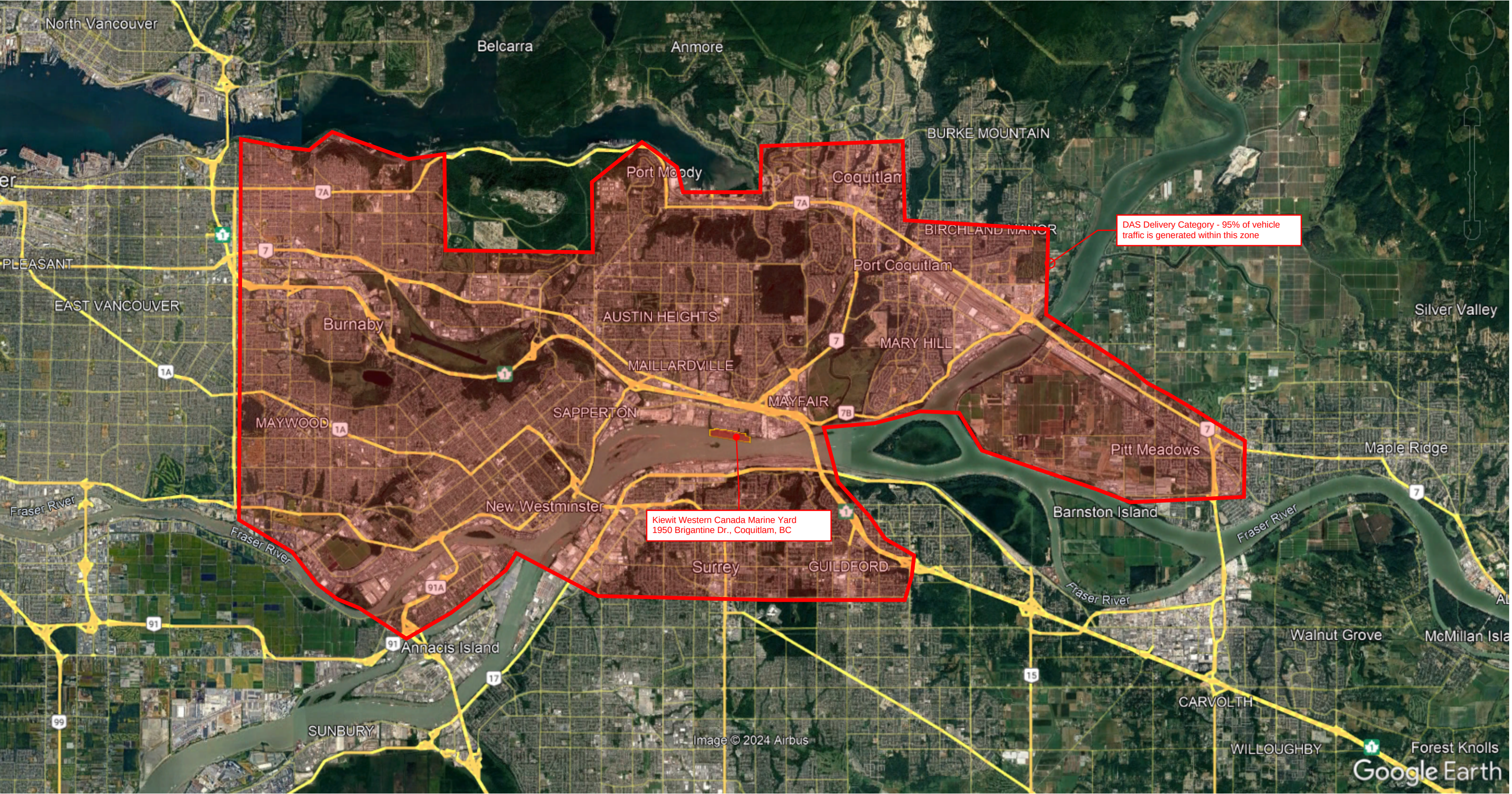
March 6, 2024



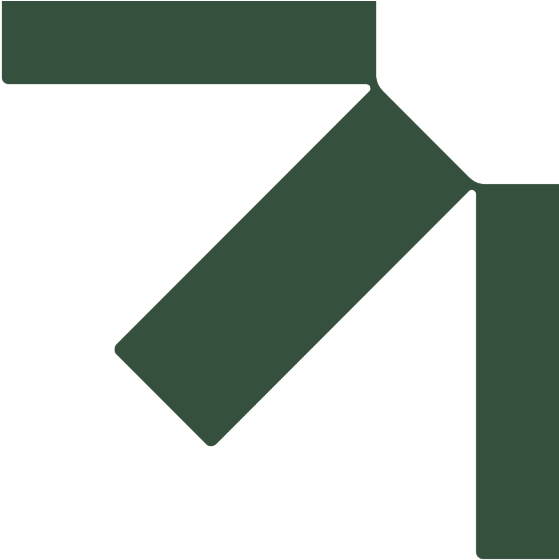
Kiewit - WCD Marine Yard

Environmental Noise Assessment and Air Assessment 2024 - Supply Chain Boundary Maps - Figure 2 DAS Delivery Category

March 6, 2024



Google Earth



Appendix C Noise Assessment Screening Worksheet

Environmental Noise Assessment Report

Kiewit Marine Yard

Kiewit Engineering Group Canada ULC

SLR Project No.: 201.088941.00001

May 13, 2024

(OPERATIONS/CONSTRUCTION - MIXED)

APPENDIX I – NOISE ASSESSMENT SCREENING WORKSHEET

This worksheet should be employed by one or more informed individuals representing the applicant in order to establish the potential to create noise impacts within surrounding areas. This screening procedure is opinion-based and largely qualitative in nature and involves completing a series of questions.

1. Complete this worksheet scoring each of the ten items.
2. Transfer the ten questionnaire scores into the Weighted Project Screening Scorecard provided as Appendix II – Noise Assessment Project Score.
3. Follow procedure in Appendix II

Question 1 – New Activity, Replacement or Expansion	5
Will the project involve only the replacement of existing equipment or activities or the expansion of a pre-existing facility or activity, or will it involve significant new noise sources or activities?	
• Replacement of Existing Equipment or Activities • Expansion of Existing Equipment or Activities • New Equipment or Activities	Score 1 point Score 3 points Score 5 points

VFPA considers operations as new activities
(compared to previous owner)

Question 2 – Noise Levels Expected on Project Site	3
Based on experience with similar operations at the current location or elsewhere, or on your best judgment, do you expect that noise levels within the project site will be:	
• Very Low • Low • Moderate • High • Very High	Score 1 point Score 2 points Score 3 points Score 4 points Score 5 points

Question 3 - Presence of Undesirable Characteristics	5
Will any of the key activities/sources create ongoing noise which:	
(1). is clearly tonal (hums, whirs, whines), (2). is impulsive or has very rapid onset (bumps, bangs, material handling impacts, rail car shunting, compressed air release etc.), or (3). contains strong low-frequency content (e.g. large diesel engines, large fans or air compressors).	
• No • Yes, noise will contain one such characteristic • Yes, noise will contain two or three such characteristics	Score 0 points Score 3 points Score 5 points

Question 4 – Presence of High-Energy Impulsive Noise	5
Will any activities create ongoing noise which could be classified as “High-energy Impulsive”? Examples of such sources are limited in the port context but could include the industrial use of explosives or explosive circuit breakers.	
• No • Yes	Score 0 points Score 5 points

(IE: Pile Driving)

Question 5 – Hours/Days of Operation	3
Will the normal operating schedule be:	
• Day Shift only (5 days/week)	Score 1 point
• Day Shift only (7 days per week)	Score 2 points
• Day & Evening Shifts (5 days/week)	Score 2 points
• Day & Evening Shifts (7 days/week) [Day & Evening Shifts (up 6 days/week)]	Score 3 points
• 24-hours per day (5 days /week)	Score 4 points
• 24-hours per day (7 days per week)	Score 5 points

Question 6 – Proximity to Noise-Sensitive Areas	3
How far is the nearest noise-sensitive land use (residences, schools, hospitals, passive parks etc.) from the property line of the project site?	
• More than 1,000 m	Score 0 points
• 500 to 1,000 m	Score 1 point
• 250 to 500 m - 830 m to homes north of Hwy 1	Score 2 points
• 125 to 250 m - over 900 m to homes south of Fraser River	Score 3 points
• 60 to 125 m - 200 m to proposed Fraser Mills Development	Score 4 points
• less than 60 m	Score 5 points

Question 7 – Presence of Noise Shielding or Reflection	4
Will buildings, structures and/or landforms partially or totally screen (that is, interrupt the line of sight and direct hearing) project noise sources from nearby noise receptors? Here consideration should be given to the relative elevations of the noise sources, the noise receivers (ground and upper floors) and the intervening buildings and/or landforms. Noise shielding effects are maximized when intervening buildings and/or landforms are higher and wider than both the noise source area and the noise receiver area. Alternatively, the project may involve construction of a building or other structure that, while not necessarily a significant source of noise itself, reflects noise from other sources towards adjacent noise-sensitive areas. This other noise may originate from project operations or from sources not related to the project, such as other port operations or transportation facilities related sources.	
• Substantial, continuous noise shielding	Score 0 points
• Substantial, but not total, screening	Score 1 point
• Intermittent shielding, e.g., row of smaller, non-adjoining buildings	Score 2 points
• Scattered shielding by objects, machinery, stockpiles	Score 3 points
• No shielding potential	Score 4 points
• No noise shielding and will reflect noise towards sensitive areas	Score 5 points

Question 8 – Baseline Noise Environment	1
How would you rate the baseline (pre-project) noise environment within the noise sensitive area nearest the project site?	
• Very noisy (near busy highway, busy port, airport, heavy industry)	Score 1 point
• Noisy (near busy arterial road, light industrial area, urban core)	Score 2 points
• Moderately noise (near collector road, suburban residential)	Score 3 points
• Quiet (suburban residential away from collector roads)	Score 4 points
• Very Quiet (rural residential, well away from industry or main roads)	Score 5 points

Question 9 – Population Potentially Exposed to Project Noise	5
Approximately how many residences or other noise sensitive land uses are located within 500 m of the project site's property line?	
• 5 or less	Score 1 point
• 5 to 15	Score 2 points
• 16 to 40	Score 3 points
• 41 to 100	Score 4 points
• more than 100	Score 5 points

Question 10 – Level of Community Concern about Noise	3
What level of concern (e.g., complaint history) currently exists among residents/users of adjacent noise sensitive lands regarding noise emissions from PMV lands in general and your project site in particular?	
• No history of concern or complaints	Score 1 point
• Minor concerns have been expressed	Score 2 points
• Unknown	Score 3 points
• Moderate level of concern, some complaints	Score 4 points
• High level of concern/organized complaints	Score 5 points

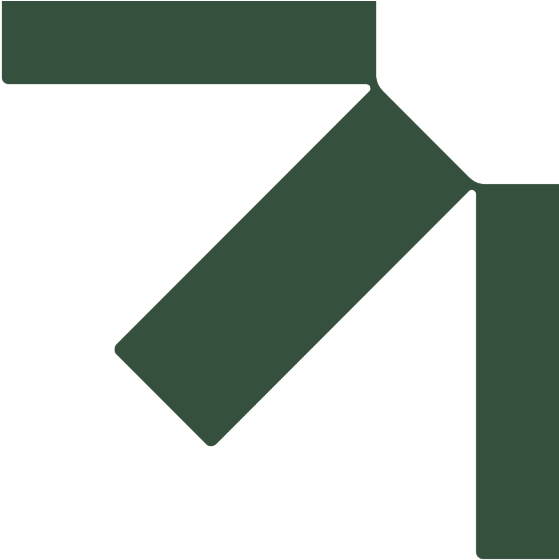
APPENDIX II – NOISE ASSESSMENT PROJECT SCORE

This worksheet should be used together with the questionnaire in Appendix I – Noise Assessment Screening Worksheet. For each of the ten questions, this worksheet applies a weighting factor that is reflective of the relative importance of that attribute in forecasting noise impact potential. The overall noise impact potential of the project is determined by tallying the weighted values of all response scores to obtain a *Total Weighted Project Score* as follows:

1. Complete the questionnaire as provided in Appendix I – Noise Assessment Screening Worksheet, scoring each of the ten items.
2. Transfer the ten questionnaire scores into the Weighted Project Screening Scorecard provided below.
3. Apply the *Importance Weighting* factor (multiplying the weighting factor by the questionnaire score) and determine a *Weighted Score* for each item.
4. Tally the *Weighted Scores* and determine the *Total Weighted Project Score*
5. Submit a completed project score worksheet as part of the PER project permit application

(OPERATIONS/CONSTRUCTION - MIXED)

No.	Attribute of Project or Project Setting	Questionnaire Score (Appendix I)	Importance Weighting	Weighted Score
1	New Activity, Replacement or Expansion	5	1.2	6.0
2	Noise Levels Expected on Project Site	3	1.8	5.4
3	Presence of Undesirable Characteristics	5	1.6	8.0
4	Presence of High Energy Impulsiveness Noise	5	1.6	8.0
5	Hours/Days of Operation	3	1.2	3.6
6	Proximity to Noise Sensitive Areas	3	1.6	4.8
7	Presence of Noise Shielding or Reflection	4	1.8	7.2
8	Baseline Noise Environment	1	1.6	1.6
9	Population Potentially Exposed to Project Noise	5	1.0	5.0
10	Level of Community Concern About Noise	3	1.2	3.6
Total Weighted Project Score :				53.2



Appendix D Baseline Sound Survey Time Histories

Environmental Noise Assessment Report

Kiewit Marine Yard

Kiewit Engineering Group Canada ULC

SLR Project No.: 201.088941.00001

May 13, 2024

A.1 24 hour – Noise Measurements Starting Sat., February 17, 2024

Figure A. 1: Graph showing the measured 1-second and calculated 1-hour L_{eq} time histories starting at 07:00.

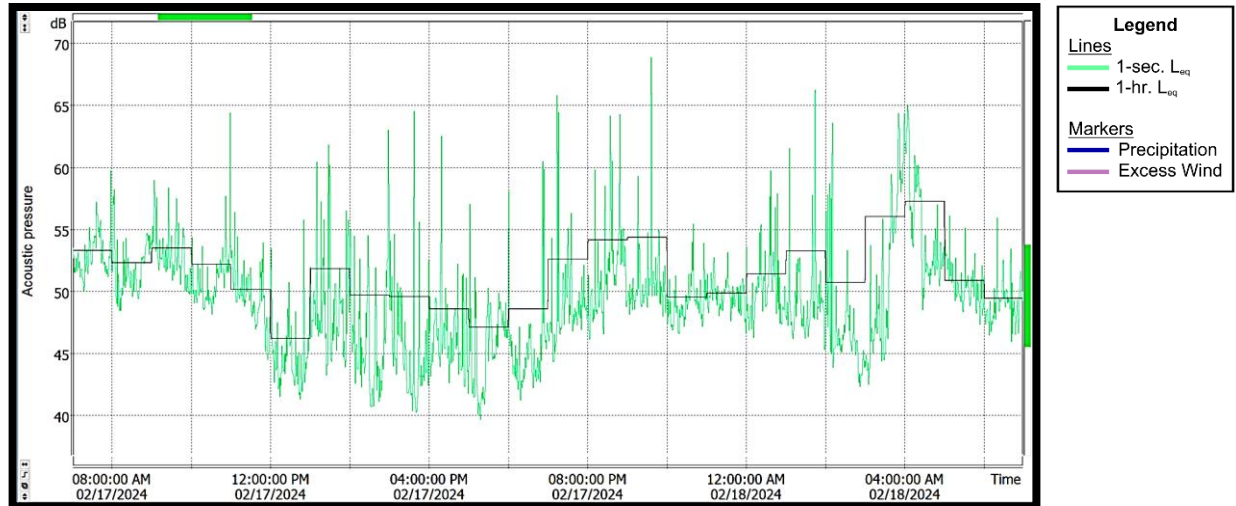


Table A. 1: Hourly Interval Report (All Sound Pressure Levels are in dBA)

Date	Time	Duration	$L_{eq} (L_{den})$	L_{max}	L_{min}	L_1	L_5	L_{10}	L_{50}	L_{90}	L_{95}	L_{99}
Total	-	24:00:00	52 (60)	82	37	62	56	54	49	44	42	41
2024-02-17	7:00	1:00:00	53	68	48	59	56	55	52	51	50	50
2024-02-17	8:00	1:00:00	52	78	47	60	55	54	51	49	49	48
2024-02-17	9:00	1:00:00	54	66	48	61	57	56	52	50	50	49
2024-02-17	10:00	1:00:00	52	76	45	59	55	54	50	48	47	47
2024-02-17	11:00	1:00:00	50	71	43	58	53	52	49	46	45	44
2024-02-17	12:00	1:00:00	46	68	39	55	50	48	44	42	41	41
2024-02-17	13:00	1:00:00	52	75	41	64	54	52	47	44	44	43
2024-02-17	14:00	1:00:00	50	75	38	57	54	52	45	41	40	39
2024-02-17	15:00	1:00:00	50	75	38	60	52	49	44	41	40	39
2024-02-17	16:00	1:00:00	49	73	40	57	51	49	45	43	42	41
2024-02-17	17:00	1:00:00	47	64	37	56	50	49	45	41	40	39
2024-02-17	18:00	1:00:00	49	74	40	58	48	47	44	42	42	41
2024-02-17	19:00	1:00:00	53	78	42	59	53	51	48	46	45	44
2024-02-17	20:00	1:00:00	54	78	44	65	57	55	51	47	46	45
2024-02-17	21:00	1:00:00	54	82	46	61	53	52	50	48	48	47
2024-02-17	22:00	1:00:00	50	75	45	55	52	51	49	47	46	46
2024-02-17	23:00	1:00:00	50	68	45	55	52	51	49	48	47	47
2024-02-18	0:00	1:00:00	51	71	44	61	54	53	50	47	46	46
2024-02-18	1:00	1:00:00	53	79	43	61	53	52	48	46	46	45
2024-02-18	2:00	1:00:00	51	77	41	60	51	49	46	44	43	42
2024-02-18	3:00	1:00:00	56	70	41	65	63	60	48	44	43	42
2024-02-18	4:00	1:00:00	57	70	47	66	63	61	53	50	50	48
2024-02-18	5:00	1:00:00	51	66	46	57	54	53	50	48	48	47
2024-02-18	6:00	1:00:00	49	65	44	57	53	51	48	46	46	45



A.2 24 hour – Noise Measurements Starting Sun., February 18, 2024

Figure A. 2: Graph showing the measured 1-second and calculated 1-hour L_{eq} time histories starting at 07:00.

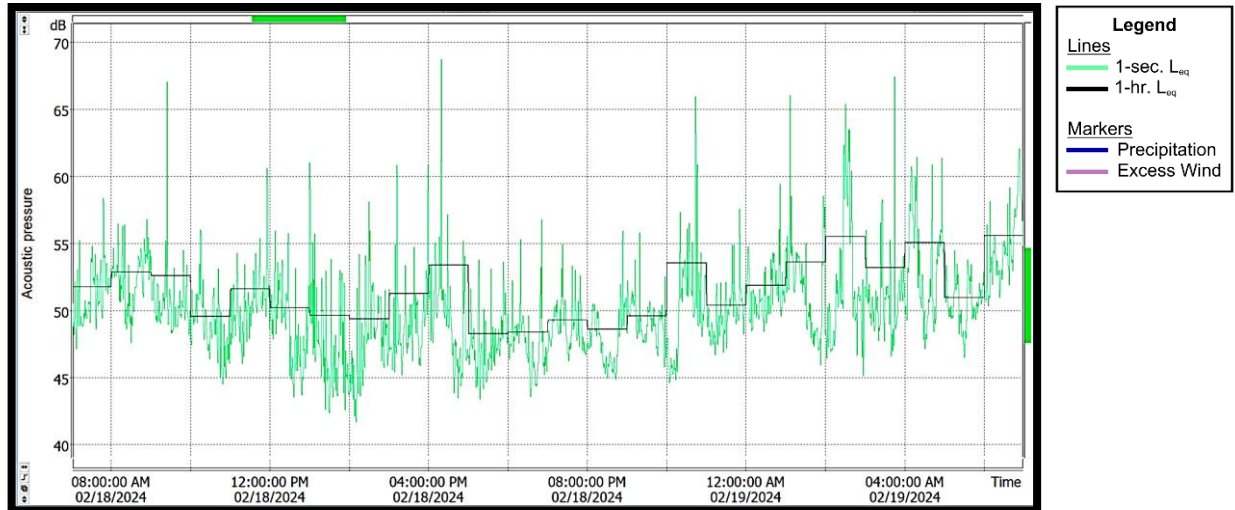


Table A. 2: Hourly Interval Report (All Sound Pressure Levels are in dBA)

Date	Time	Duration	$L_{eq} (L_{den})$	L_{max}	L_{min}	L_1	L_5	L_{10}	L_{50}	L_{90}	L_{95}	L_{99}
Total	-	24:00:00	52 (60)	80	40	61	55	54	49	46	45	43
2024-02-18	7:00	1:00:00	52	71	45	58	55	54	50	48	47	46
2024-02-18	8:00	1:00:00	53	69	46	58	56	55	52	49	48	47
2024-02-18	9:00	1:00:00	53	74	46	62	54	53	50	48	48	47
2024-02-18	10:00	1:00:00	50	65	43	57	53	52	48	45	45	44
2024-02-18	11:00	1:00:00	52	72	44	58	55	53	50	47	46	45
2024-02-18	12:00	1:00:00	50	71	42	58	54	52	48	45	44	43
2024-02-18	13:00	1:00:00	50	78	40	60	54	51	46	43	42	41
2024-02-18	14:00	1:00:00	49	73	40	57	53	51	47	43	42	41
2024-02-18	15:00	1:00:00	51	72	44	60	54	52	48	46	45	44
2024-02-18	16:00	1:00:00	53	80	42	60	55	53	49	45	44	43
2024-02-18	17:00	1:00:00	48	64	42	56	52	50	47	44	44	43
2024-02-18	18:00	1:00:00	48	64	42	58	51	50	47	45	44	43
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2024-02-18	20:00	1:00:00	49	69	43	53	51	50	48	45	45	44
2024-02-18	21:00	1:00:00	50	72	44	54	52	51	49	47	46	45
2024-02-18	22:00	1:00:00	54	77	43	61	55	54	50	45	45	44
2024-02-18	23:00	1:00:00	50	75	45	56	53	52	49	47	47	46
2024-02-19	0:00	1:00:00	52	73	47	58	55	54	51	49	48	48
2024-02-19	1:00	1:00:00	54	80	45	62	55	54	51	47	47	46
2024-02-19	2:00	1:00:00	56	79	44	67	60	58	50	47	46	45
2024-02-19	3:00	1:00:00	53	79	45	62	54	53	50	48	47	46
2024-02-19	4:00	1:00:00	55	72	45	63	60	59	52	48	48	47
2024-02-19	5:00	1:00:00	51	63	45	56	54	53	50	48	47	46
2024-02-19	6:00	1:00:00	56	74	49	66	60	56	54	51	51	50



A.3 24 hour – Noise Measurements Starting Mon., February 19, 2024

Figure A. 3: Graph showing the measured 1-second and calculated 1-hour L_{eq} time histories starting at 07:00.

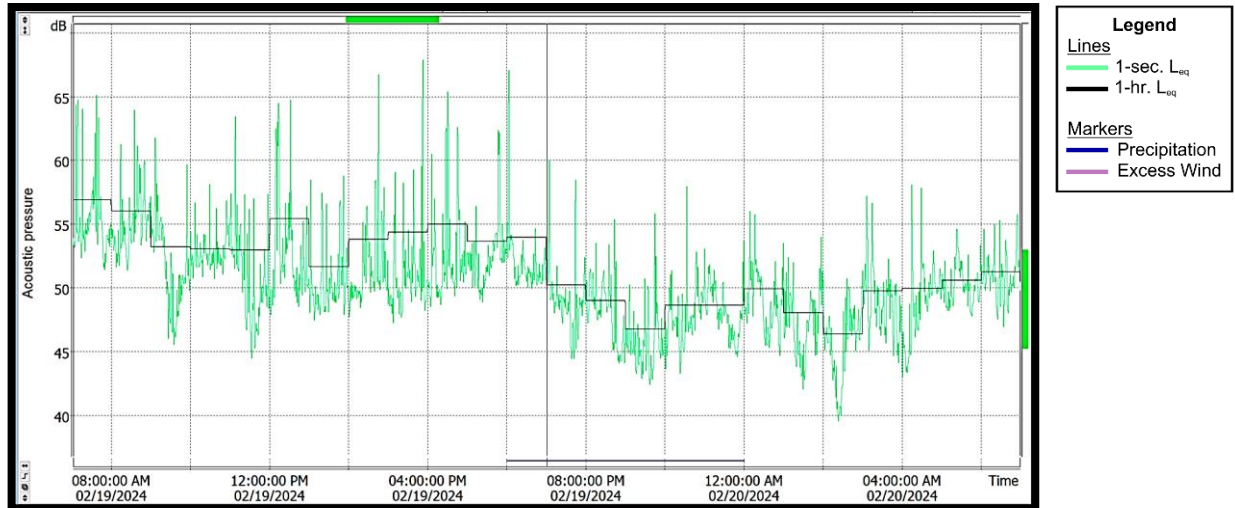


Table A. 3: Hourly Interval Report (All Sound Pressure Levels are in dBA)

Date	Time	Duration	$L_{eq} (L_{den})$	L_{max}	L_{min}	L_1	L_5	L_{10}	L_{50}	L_{90}	L_{95}	L_{99}
Total	-	24:00:00	53 (57)	79	38	60	56	54	50	45	44	42
2024-02-19	7:00	1:00:00	57	79	50	69	58	57	54	52	52	51
2024-02-19	8:00	1:00:00	56	78	49	65	59	57	54	52	51	51
2024-02-19	9:00	1:00:00	53	73	44	61	57	55	51	46	46	45
2024-02-19	10:00	1:00:00	53	76	48	59	56	55	52	51	50	50
2024-02-19	11:00	1:00:00	53	76	42	60	56	55	50	46	45	44
2024-02-19	12:00	1:00:00	55	79	46	68	57	55	51	49	48	47
2024-02-19	13:00	1:00:00	52	71	45	61	55	53	50	48	47	47
2024-02-19	14:00	1:00:00	54	77	46	63	56	54	50	49	48	47
2024-02-19	15:00	1:00:00	54	79	46	64	55	53	50	48	47	47
2024-02-19	16:00	1:00:00	55	78	47	65	57	54	51	49	48	48
2024-02-19	17:00	1:00:00	54	77	47	59	55	54	52	50	49	48
2024-02-19	18:00	1:00:00	54	79	48	57	55	54	51	50	49	49
2024-02-19	19:00	1:00:00	50	68	43	61	53	51	49	46	45	44
2024-02-19	20:00	1:00:00	49	67	42	56	52	51	48	44	44	43
2024-02-19	21:00	1:00:00	47	63	41	56	51	49	45	43	43	42
2024-02-19	22:00	1:00:00	49	76	42	55	51	50	47	45	44	43
2024-02-19	23:00	1:00:00	49	63	43	54	52	51	48	45	45	44
2024-02-20	0:00	1:00:00	50	64	43	57	54	52	49	45	45	44
2024-02-20	1:00	1:00:00	48	62	40	55	52	51	47	43	43	41
2024-02-20	2:00	1:00:00	46	61	38	52	50	49	46	41	40	39
2024-02-20	3:00	1:00:00	50	67	42	59	54	52	48	45	44	43
2024-02-20	4:00	1:00:00	50	69	41	57	53	52	49	44	43	42
2024-02-20	5:00	1:00:00	51	64	46	57	53	52	50	48	48	47
2024-02-20	6:00	1:00:00	51	70	45	58	55	53	50	48	47	46



A.4 24 hour – Noise Measurements Starting Tues., February 20, 2024

Figure A. 4: Graph showing the measured 1-second and calculated 1-hour L_{eq} time histories starting at 07:00.

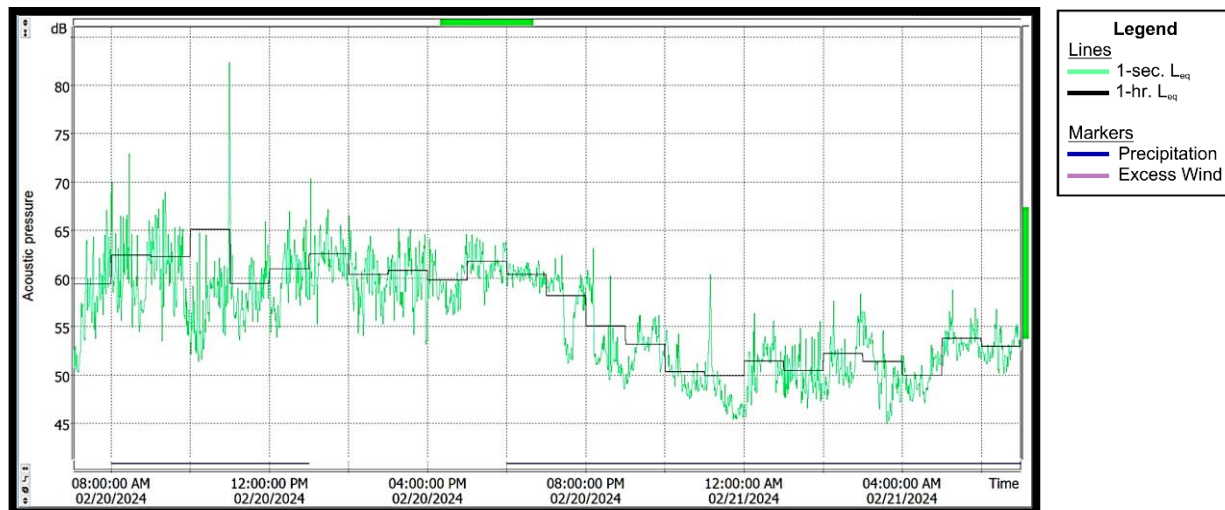


Table A. 4: Hourly Interval Report (All Sound Pressure Levels are in dBA)

Date	Time	Duration	$L_{eq} (L_{den})$	L_{max}	L_{min}	L_1	L_5	L_{10}	L_{50}	L_{90}	L_{95}	L_{99}
Total	-	24:00:00	59 (61)	100	44	68	64	62	55	49	47	46
2024-02-20	7:00	1:00:00	59	83	48	69	65	63	56	51	50	49
2024-02-20	8:00	1:00:00	62	94	52	71	66	64	58	55	55	54
2024-02-20	9:00	1:00:00	62	89	50	71	68	66	58	54	53	52
2024-02-20	10:00	1:00:00	65	100	49	69	64	61	56	52	51	51
2024-02-20	11:00	1:00:00	59	85	51	68	64	62	57	54	54	53
2024-02-20	12:00	1:00:00	61	86	52	69	65	64	59	55	54	53
2024-02-20	13:00	1:00:00	63	90	53	70	66	65	61	57	56	54
2024-02-20	14:00	1:00:00	60	83	50	68	65	64	58	54	54	52
2024-02-20	15:00	1:00:00	61	81	51	69	66	64	58	54	53	52
2024-02-20	16:00	1:00:00	60	80	52	67	64	62	58	55	55	53
2024-02-20	17:00	1:00:00	62	79	52	70	65	64	61	58	58	55
2024-02-20	18:00	1:00:00	60	72	53	64	63	62	60	58	57	55
2024-02-20	19:00	1:00:00	58	74	49	63	62	61	58	52	51	50
2024-02-20	20:00	1:00:00	55	71	47	63	61	59	52	50	49	48
2024-02-20	21:00	1:00:00	53	65	48	58	56	55	53	50	49	48
2024-02-20	22:00	1:00:00	50	64	46	56	54	53	49	48	47	47
2024-02-20	23:00	1:00:00	50	65	44	60	55	52	48	45	45	44
2024-02-21	0:00	1:00:00	51	69	44	58	55	54	51	47	46	45
2024-02-21	1:00	1:00:00	50	68	45	59	54	52	49	47	46	46
2024-02-21	2:00	1:00:00	52	66	45	59	57	56	50	48	47	46
2024-02-21	3:00	1:00:00	51	69	44	58	55	54	50	46	45	44
2024-02-21	4:00	1:00:00	50	61	45	54	53	52	49	47	47	46
2024-02-21	5:00	1:00:00	54	71	49	58	56	56	53	52	51	51
2024-02-21	6:00	1:00:00	53	65	48	58	56	55	52	51	50	49



A.5 24 hour – Noise Measurements Starting Wed., February 21, 2024

Figure A. 5: Graph showing the measured 1-second and calculated 1-hour L_{eq} time histories starting at 07:00.

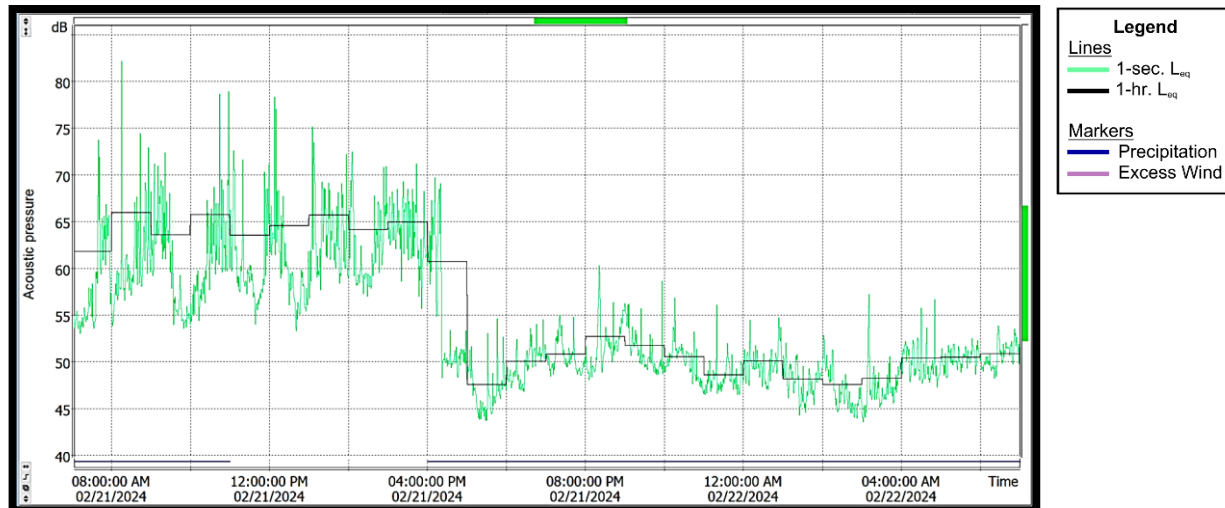


Table A. 5: Hourly Interval Report (All Sound Pressure Levels are in dBA)

Date	Time	Duration	$L_{eq} (L_{den})$	L_{max}	L_{min}	L_1	L_5	L_{10}	L_{50}	L_{90}	L_{95}	L_{99}
Total	-	24:00:00	61 (62)	106	41	71	65	63	51	47	46	44
2024-02-21	7:00	1:00:00	62	92	52	72	66	64	56	53	53	52
2024-02-21	8:00	1:00:00	66	106	52	70	67	64	58	56	55	53
2024-02-21	9:00	1:00:00	64	93	50	74	68	66	58	54	53	52
2024-02-21	10:00	1:00:00	66	102	52	73	68	66	58	55	54	53
2024-02-21	11:00	1:00:00	64	93	53	73	68	65	58	56	55	54
2024-02-21	12:00	1:00:00	65	102	52	71	67	65	59	55	54	53
2024-02-21	13:00	1:00:00	66	96	53	76	71	68	61	58	57	55
2024-02-21	14:00	1:00:00	64	87	54	75	70	67	60	57	57	56
2024-02-21	15:00	1:00:00	65	87	53	73	69	67	63	58	57	55
2024-02-21	16:00	1:00:00	61	89	47	72	67	64	51	49	48	48
2024-02-21	17:00	1:00:00	48	62	42	55	51	49	46	44	44	43
2024-02-21	18:00	1:00:00	50	66	46	55	53	52	49	47	47	46
2024-02-21	19:00	1:00:00	51	64	47	56	54	53	50	49	48	48
2024-02-21	20:00	1:00:00	53	74	47	60	57	55	51	49	48	48
2024-02-21	21:00	1:00:00	52	76	47	57	55	54	50	49	48	48
2024-02-21	22:00	1:00:00	51	72	45	55	53	52	50	48	47	46
2024-02-21	23:00	1:00:00	49	72	45	53	51	50	48	46	46	46
2024-02-22	0:00	1:00:00	50	67	45	56	54	52	49	47	47	46
2024-02-22	1:00	1:00:00	48	63	43	53	51	50	48	45	45	44
2024-02-22	2:00	1:00:00	48	58	41	54	51	50	46	44	44	43
2024-02-22	3:00	1:00:00	48	61	42	57	52	50	47	45	44	43
2024-02-22	4:00	1:00:00	50	65	45	58	53	52	49	48	47	47
2024-02-22	5:00	1:00:00	51	58	47	54	53	52	50	49	48	48
2024-02-22	6:00	1:00:00	51	67	47	56	53	52	50	49	48	48



A.6 24 hour – Noise Measurements Starting Thur., February 22, 2024

Figure A. 6: Graph showing the measured 1-second and calculated 1-hour L_{eq} time histories starting at 07:00.

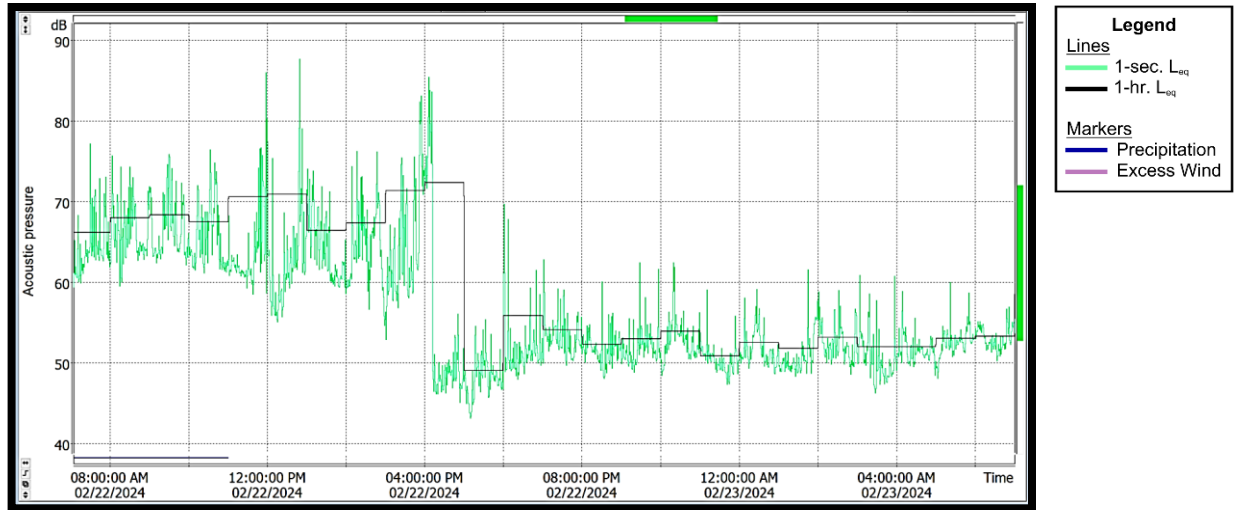


Table A. 6: Hourly Interval Report (All Sound Pressure Levels are in dBA)

Date	Time	Duration	$L_{eq} (L_{den})$	L_{max}	L_{min}	L_1	L_5	L_{10}	L_{50}	L_{90}	L_{95}	L_{99}
Total	-	24:00:00	66 (66)	110	37	76	69	65	53	49	48	46
2024-02-22	7:00	1:00:00	66	93	37	75	68	66	62	60	59	52
2024-02-22	8:00	1:00:00	68	98	56	78	73	71	64	60	59	58
2024-02-22	9:00	1:00:00	68	95	59	79	74	70	65	62	62	61
2024-02-22	10:00	1:00:00	68	98	58	77	73	70	63	61	60	60
2024-02-22	11:00	1:00:00	71	106	55	78	70	67	62	59	59	57
2024-02-22	12:00	1:00:00	71	110	52	76	70	67	60	56	55	54
2024-02-22	13:00	1:00:00	66	88	56	78	72	69	62	59	59	58
2024-02-22	14:00	1:00:00	67	94	51	78	72	70	62	57	56	53
2024-02-22	15:00	1:00:00	71	100	51	84	75	72	62	57	56	53
2024-02-22	16:00	1:00:00	72	101	44	86	75	72	48	46	45	45
2024-02-22	17:00	1:00:00	49	65	42	57	53	51	48	45	44	43
2024-02-22	18:00	1:00:00	56	84	45	70	58	54	50	48	48	47
2024-02-22	19:00	1:00:00	54	77	47	62	57	55	52	50	50	49
2024-02-22	20:00	1:00:00	52	73	47	58	55	54	51	49	48	47
2024-02-22	21:00	1:00:00	53	76	48	60	55	54	51	49	49	48
2024-02-22	22:00	1:00:00	54	76	47	62	58	56	52	50	49	48
2024-02-22	23:00	1:00:00	51	77	46	56	53	52	50	48	47	47
2024-02-23	0:00	1:00:00	53	71	47	61	55	54	51	49	49	48
2024-02-23	1:00	1:00:00	52	71	46	58	55	54	50	48	48	47
2024-02-23	2:00	1:00:00	53	69	46	62	56	55	52	49	49	48
2024-02-23	3:00	1:00:00	52	78	45	61	54	53	49	47	47	46
2024-02-23	4:00	1:00:00	52	69	47	57	54	53	51	49	49	48
2024-02-23	5:00	1:00:00	53	65	46	59	56	55	52	50	49	48
2024-02-23	6:00	1:00:00	53	67	49	59	56	55	53	51	50	50



A.7 24 hour – Noise Measurements Starting Fri., February 23, 2024

Figure A. 7: Graph showing the measured 1-second and calculated 1-hour L_{eq} time histories starting at 07:00.

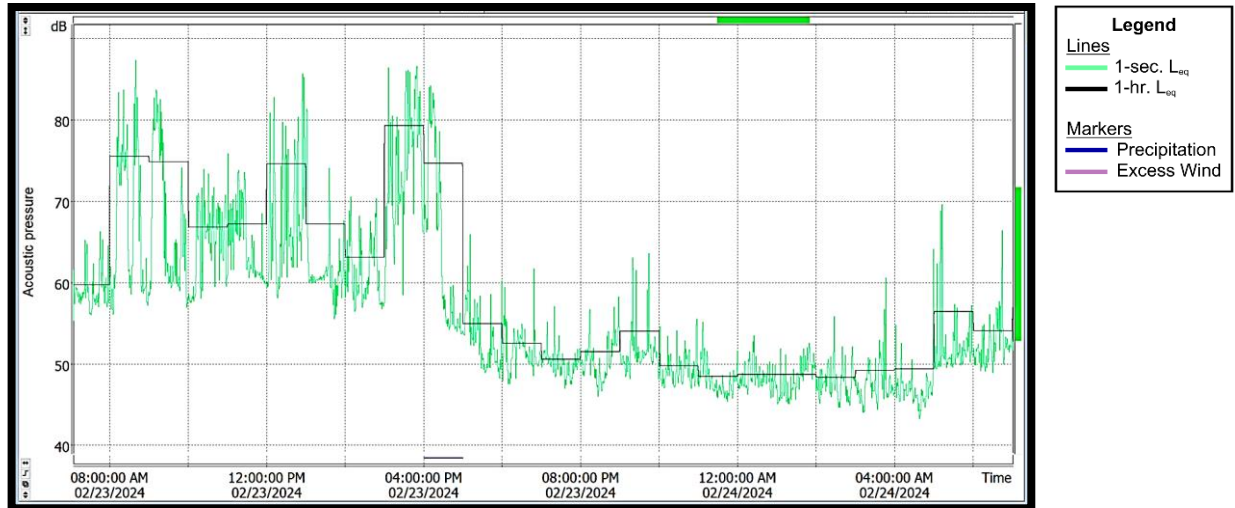


Table A. 7: Hourly Interval Report (All Sound Pressure Levels are in dBA)

Date	Time	Duration	$L_{eq} (L_{den})$	L_{max}	L_{min}	L_1	L_5	L_{10}	L_{50}	L_{90}	L_{95}	L_{99}
Total	-	24:00:00	70 (70)	107	42	82	73	68	52	47	46	44
2024-02-23	7:00	1:00:00	60	79	53	69	64	62	58	56	56	55
2024-02-23	8:00	1:00:00	76	103	54	89	81	76	63	57	56	55
2024-02-23	9:00	1:00:00	75	102	55	88	80	76	62	58	58	56
2024-02-23	10:00	1:00:00	67	90	55	77	73	71	61	58	57	56
2024-02-23	11:00	1:00:00	67	96	57	78	73	70	61	60	59	58
2024-02-23	12:00	1:00:00	75	104	57	88	77	73	65	59	58	57
2024-02-23	13:00	1:00:00	67	101	53	75	69	65	60	56	55	54
2024-02-23	14:00	1:00:00	63	90	53	73	69	66	59	56	55	54
2024-02-23	15:00	1:00:00	79	107	55	91	84	81	70	61	59	56
2024-02-23	16:00	1:00:00	75	102	53	87	81	79	58	54	54	53
2024-02-23	17:00	1:00:00	55	81	47	65	59	57	52	49	48	48
2024-02-23	18:00	1:00:00	53	72	46	59	56	55	51	48	48	47
2024-02-23	19:00	1:00:00	51	67	45	57	53	52	50	48	47	47
2024-02-23	20:00	1:00:00	52	75	44	59	54	53	50	47	47	46
2024-02-23	21:00	1:00:00	54	78	46	63	54	53	51	49	48	47
2024-02-23	22:00	1:00:00	50	76	45	56	52	51	48	47	46	46
2024-02-23	23:00	1:00:00	49	69	44	55	51	50	47	46	45	45
2024-02-24	0:00	1:00:00	49	64	44	55	52	51	48	46	46	45
2024-02-24	1:00	1:00:00	49	62	43	55	53	51	48	45	45	44
2024-02-24	2:00	1:00:00	48	66	43	55	52	50	47	45	44	44
2024-02-24	3:00	1:00:00	49	73	42	57	52	50	47	45	44	43
2024-02-24	4:00	1:00:00	49	76	42	54	49	49	46	45	44	43
2024-02-24	5:00	1:00:00	56	80	47	68	55	53	51	49	49	48
2024-02-24	6:00	1:00:00	54	80	47	60	57	55	52	49	49	48



A.8 24 hour – Noise Measurements Starting Sat., February 24, 2024

Figure A. 8: Graph showing the measured 1-second and calculated 1-hour L_{eq} time histories starting at 07:00.

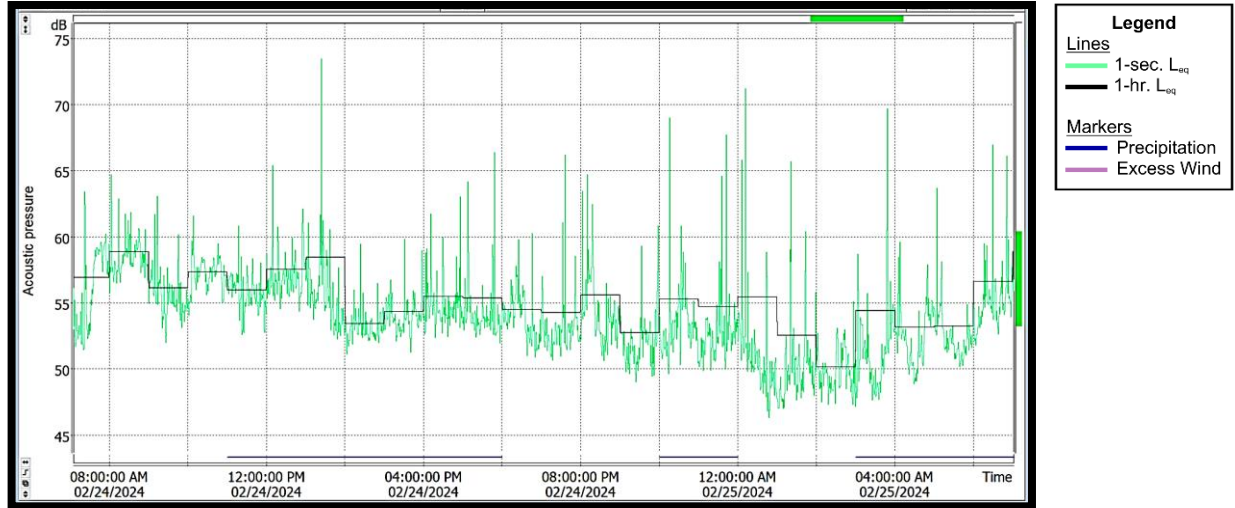


Table A. 8: Hourly Interval Report (All Sound Pressure Levels are in dBA)

Date	Time	Duration	$L_{eq} (L_{den})$	L_{max}	L_{min}	L_1	L_5	L_{10}	L_{50}	L_{90}	L_{95}	L_{99}
Total	-	24:00:00	56 (61)	88	45	62	59	58	53	50	49	47
2024-02-24	7:00	1:00:00	57	75	49	63	60	60	55	51	51	50
2024-02-24	8:00	1:00:00	59	79	53	66	61	60	58	56	56	55
2024-02-24	9:00	1:00:00	56	78	50	63	59	58	55	53	52	51
2024-02-24	10:00	1:00:00	57	73	52	62	60	59	57	55	54	53
2024-02-24	11:00	1:00:00	56	74	51	61	59	58	55	53	53	52
2024-02-24	12:00	1:00:00	58	76	52	64	61	59	56	54	54	53
2024-02-24	13:00	1:00:00	58	88	50	65	60	58	55	53	52	51
2024-02-24	14:00	1:00:00	53	69	50	59	55	55	53	52	51	51
2024-02-24	15:00	1:00:00	54	69	50	60	57	56	54	52	52	51
2024-02-24	16:00	1:00:00	56	74	50	64	58	56	54	53	52	52
2024-02-24	17:00	1:00:00	55	79	51	62	56	55	53	52	52	51
2024-02-24	18:00	1:00:00	54	78	49	59	57	56	54	51	51	50
2024-02-24	19:00	1:00:00	54	77	49	62	56	55	53	51	51	50
2024-02-24	20:00	1:00:00	56	77	49	63	59	57	53	51	51	50
2024-02-24	21:00	1:00:00	53	78	47	61	56	54	51	50	49	48
2024-02-24	22:00	1:00:00	55	81	48	61	56	55	53	51	50	49
2024-02-24	23:00	1:00:00	55	78	48	62	56	55	52	50	50	49
2024-02-25	0:00	1:00:00	55	85	45	61	54	53	50	47	47	46
2024-02-25	1:00	1:00:00	53	78	45	59	54	52	49	47	47	46
2024-02-25	2:00	1:00:00	50	68	45	56	53	52	49	47	47	46
2024-02-25	3:00	1:00:00	54	86	45	58	54	54	51	48	47	47
2024-02-25	4:00	1:00:00	53	71	47	59	56	55	52	50	49	48
2024-02-25	5:00	1:00:00	53	72	49	60	55	54	52	50	50	49
2024-02-25	6:00	1:00:00	57	79	50	64	58	57	55	53	52	51



A.9 24 hour – Noise Measurements Starting Sun., February 25, 2024

Figure A. 9: Graph showing the measured 1-second and calculated 1-hour L_{eq} time histories starting at 07:00.

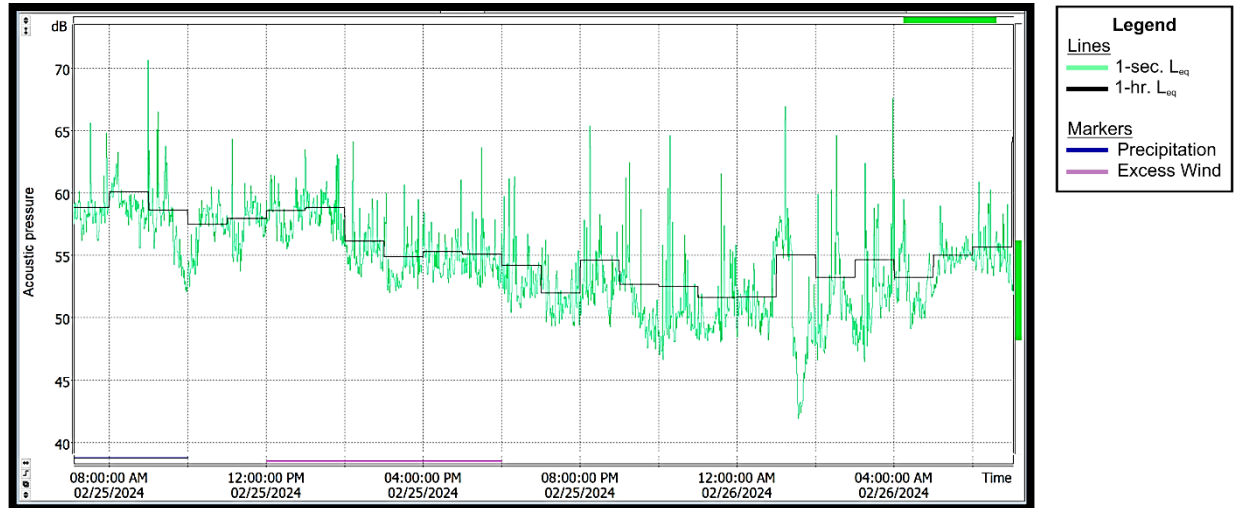
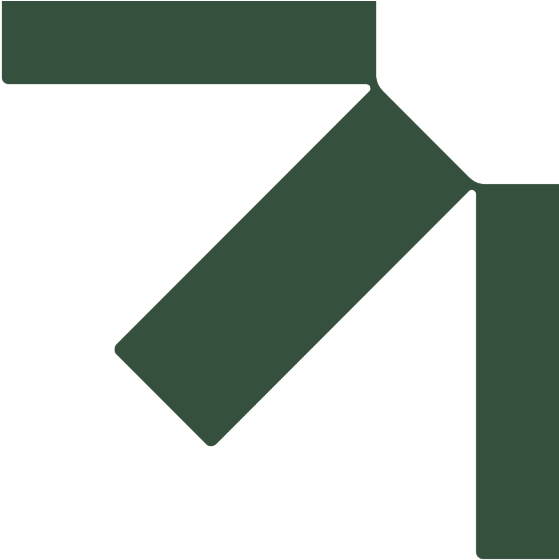


Table A. 9: Hourly Interval Report (All Sound Pressure Levels are in dBA)

Date	Time	Duration	$L_{eq} (L_{den})$	L_{max}	L_{min}	L_1	L_5	L_{10}	L_{50}	L_{90}	L_{95}	L_{99}
Total	-	24:00:00	56 (61)	82	41	63	60	59	54	49	48	46
2024-02-25	7:00	1:00:00	59	75	53	65	61	60	58	56	55	55
2024-02-25	8:00	1:00:00	60	82	53	67	63	62	59	56	56	54
2024-02-25	9:00	1:00:00	59	78	50	68	62	60	57	53	53	51
2024-02-25	10:00	1:00:00	57	70	51	62	61	60	57	54	53	52
2024-02-25	11:00	1:00:00	58	77	51	64	61	60	57	54	54	53
2024-02-25	12:00	1:00:00	59	75	53	64	62	61	58	56	55	54
2024-02-25	13:00	1:00:00	59	79	53	64	61	60	58	56	55	55
2024-02-25	14:00	1:00:00	56	73	52	63	59	58	55	53	53	52
2024-02-25	15:00	1:00:00	55	75	50	61	58	56	54	52	52	51
2024-02-25	16:00	1:00:00	55	72	51	61	58	57	54	53	52	52
2024-02-25	17:00	1:00:00	55	78	50	62	57	56	54	52	52	51
2024-02-25	18:00	1:00:00	54	75	49	63	56	54	52	51	50	50
2024-02-25	19:00	1:00:00	52	66	47	58	55	54	51	49	49	48
2024-02-25	20:00	1:00:00	55	80	48	62	57	55	52	50	50	49
2024-02-25	21:00	1:00:00	53	76	46	59	55	54	51	48	48	47
2024-02-25	22:00	1:00:00	53	77	45	61	53	52	49	48	47	46
2024-02-25	23:00	1:00:00	52	72	46	58	55	53	50	48	48	47
2024-02-26	0:00	1:00:00	52	62	46	58	55	54	51	49	48	47
2024-02-26	1:00	1:00:00	55	81	41	61	59	58	49	43	42	42
2024-02-26	2:00	1:00:00	53	76	45	63	56	54	51	48	47	46
2024-02-26	3:00	1:00:00	55	78	45	66	56	54	51	48	47	46
2024-02-26	4:00	1:00:00	53	67	47	60	57	56	52	50	49	48
2024-02-26	5:00	1:00:00	55	70	50	60	57	56	55	53	52	51
2024-02-26	6:00	1:00:00	56	73	51	62	59	57	55	53	53	52





Appendix E Baseline Survey Weather Measurement Data

Environmental Noise Assessment Report

Kiewit Marine Yard

Kiewit Engineering Group Canada ULC

SLR Project No.: 201.088941.00001

May 13, 2024

Date	Time	Temp Out	Hi Temp	Low Temp	Out Hum	Dew Pt.	Wind Speed	Wind Dir	Rain	Rain Rate
2/16/2024	12:15 PM	11.3	11.4	11.3	23	-9.1	3.2 W		3.4	2.2
2/16/2024	12:30 PM	10.9	11.3	10.7	23	-9.4	3.2 ENE		0	0
2/16/2024	12:45 PM	10.7	10.8	10.7	24	-9.1	3.2 ENE		0	0
2/16/2024	1:00 PM	10.8	11.1	10.7	22	-10.1	4.8 ENE		0	0
2/16/2024	1:15 PM	11.1	11.2	11.1	22	-9.9	3.2 ENE		0	0
2/16/2024	1:30 PM	11.4	11.7	11.2	22	-9.6	4.8 ENE		0	0
2/16/2024	1:45 PM	11.6	11.8	11.4	22	-9.4	4.8 ENE		0	0
2/16/2024	2:00 PM	11.8	12	11.6	24	-8.1	4.8 E		0	0
2/16/2024	2:15 PM	12.2	12.3	12	23	-8.4	3.2 E		0	0
2/16/2024	2:30 PM	12.2	12.3	12	23	-8.4	6.4 ESE		0	0
2/16/2024	2:45 PM	12.4	12.6	12.3	23	-8.2	3.2 ESE		0	0
2/16/2024	3:00 PM	12.5	12.7	12.2	26	-6.5	4.8 E		0	0
2/16/2024	3:15 PM	12.3	12.5	12.1	23	-8.3	4.8 ESE		0	0
2/16/2024	3:30 PM	12	12.1	11.9	24	-8	3.2 ESE		0	0
2/16/2024	3:45 PM	11.9	12.1	11.8	23	-8.6	3.2 ESE		0	0
2/16/2024	4:00 PM	11.5	11.9	11.1	24	-8.4	3.2 ENE		0	0
2/16/2024	4:15 PM	10.8	11.1	10.6	24	-9	3.2 ENE		0	0
2/16/2024	4:30 PM	10.5	10.6	10.4	24	-9.3	1.6 ENE		0	0
2/16/2024	4:45 PM	10.3	10.4	10.1	26	-8.4	0 NE		0	0
2/16/2024	5:00 PM	9.5	10.1	9.1	28	-8.1	1.6 WSW		0	0
2/16/2024	5:15 PM	8.9	9.2	8.6	36	-5.4	0 ESE		0	0
2/16/2024	5:30 PM	8.2	8.5	8.1	33	-7.2	1.6 SSW		0	0
2/16/2024	5:45 PM	8.1	8.2	8.1	31	-8	0 SW		0	0
2/16/2024	6:00 PM	8	8.2	7.8	35	-6.6	0 SW		0	0
2/16/2024	6:15 PM	7.6	7.8	7.2	43	-4.2	0 SW		0	0
2/16/2024	6:30 PM	6.9	7.2	6.6	43	-4.8	0 E		0	0
2/16/2024	6:45 PM	6.8	6.9	6.6	39	-6.2	0 E		0	0
2/16/2024	7:00 PM	6.3	6.8	5.7	48	-3.9	1.6 ENE		0	0
2/16/2024	7:15 PM	5.6	5.7	5.5	48	-4.6	3.2 ENE		0	0
2/16/2024	7:30 PM	5.5	5.6	5.3	48	-4.7	1.6 NE		0	0
2/16/2024	7:45 PM	5.3	5.3	5	50	-4.3	1.6 ENE		0	0
2/16/2024	8:00 PM	4.9	5	4.8	48	-5.2	1.6 ENE		0	0
2/16/2024	8:15 PM	4.7	4.9	4.5	50	-4.8	1.6 ENE		0	0
2/16/2024	8:30 PM	4.3	4.5	4.2	51	-4.9	1.6 ENE		0	0
2/16/2024	8:45 PM	4.2	4.3	4.1	51	-5.1	0 ENE		0	0
2/16/2024	9:00 PM	4.2	4.3	4.2	52	-4.8	1.6 ENE		0	0
2/16/2024	9:15 PM	4.2	4.3	4	52	-4.8	1.6 ENE		0	0
2/16/2024	9:30 PM	4	4.1	3.9	53	-4.7	1.6 NE		0	0
2/16/2024	9:45 PM	3.7	3.9	3.5	55	-4.5	1.6 ENE		0	0
2/16/2024	10:00 PM	3.4	3.6	3.2	58	-4.1	1.6 ENE		0	0
2/16/2024	10:15 PM	3.1	3.2	3	59	-4.1	1.6 ENE		0	0
2/16/2024	10:30 PM	3.3	3.3	3.2	56	-4.7	0 NE		0	0
2/16/2024	10:45 PM	3.3	3.3	3.2	57	-4.4	1.6 NE		0	0
2/16/2024	11:00 PM	3.2	3.2	3.1	54	-5.3	1.6 ENE		0	0
2/16/2024	11:15 PM	3.3	3.3	3.2	54	-5.2	1.6 ENE		0	0
2/16/2024	11:30 PM	3.2	3.3	3.1	55	-5	1.6 NE		0	0
2/16/2024	11:45 PM	2.8	3.1	2.6	55	-5.3	0 NNE		0	0
2/17/2024	12:00 AM	2.4	2.6	2.1	58	-5	0 ENE		0	0
2/17/2024	12:15 AM	1.9	2.1	1.7	60	-5.1	1.6 ENE		0	0
2/17/2024	12:30 AM	1.6	1.7	1.4	61	-5.2	0 ENE		0	0

2/17/2024	12:45 AM	1.6	1.7	1.4	58	-5.8	1.6 ENE	0	0
2/17/2024	1:00 AM	2	2.3	1.6	53	-6.6	1.6 ENE	0	0
2/17/2024	1:15 AM	2.6	2.8	2.3	49	-7.1	0 ENE	0	0
2/17/2024	1:30 AM	2.6	2.7	2.3	50	-6.8	0 ENE	0	0
2/17/2024	1:45 AM	2.4	2.4	2.2	50	-7	0 ENE	0	0
2/17/2024	2:00 AM	2.1	2.2	2.1	50	-7.2	0 ENE	0	0
2/17/2024	2:15 AM	2.2	2.3	2.1	52	-6.7	0 NNE	0	0
2/17/2024	2:30 AM	1.8	2.2	1.5	67	-3.7	0 E	0	0
2/17/2024	2:45 AM	1.6	1.9	1.4	55	-6.5	1.6 ENE	0	0
2/17/2024	3:00 AM	1.7	1.9	1.6	56	-6.1	0 E	0	0
2/17/2024	3:15 AM	1.4	1.7	1.2	59	-5.8	1.6 ENE	0	0
2/17/2024	3:30 AM	0.9	1.2	0.7	61	-5.8	0 N	0	0
2/17/2024	3:45 AM	0.8	0.9	0.7	61	-5.8	0 NNE	0	0
2/17/2024	4:00 AM	0.6	0.8	0.5	62	-5.8	0 ENE	0	0
2/17/2024	4:15 AM	0.4	0.6	0.4	61	-6.2	0 ENE	0	0
2/17/2024	4:30 AM	0.9	1.3	0.6	55	-7.1	0 NNE	0	0
2/17/2024	4:45 AM	1.6	1.7	1.3	52	-7.2	0 NE	0	0
2/17/2024	5:00 AM	1.8	1.9	1.7	62	-4.7	0 NE	0	0
2/17/2024	5:15 AM	1.3	1.8	0.8	69	-3.8	0 ENE	0	0
2/17/2024	5:30 AM	0.6	0.8	0.4	69	-4.4	0 ENE	0	0
2/17/2024	5:45 AM	0.3	0.4	0.3	73	-3.9	0 ENE	0	0
2/17/2024	6:00 AM	0.2	0.3	0	72	-4.3	0 ENE	0	0
2/17/2024	6:15 AM	0.1	0.2	-0.1	75	-3.9	0 ENE	0	0
2/17/2024	6:30 AM	-0.1	0	-0.2	76	-3.8	0 ENE	0	0
2/17/2024	6:45 AM	0.1	0.2	0	74	-4	0 ENE	0	0
2/17/2024	7:00 AM	0.2	0.2	0.2	71	-4.5	0 ENE	0	0
2/17/2024	7:15 AM	0.3	0.3	0.2	66	-5.3	0 ENE	0	0
2/17/2024	7:30 AM	0.4	0.5	0.3	66	-5.2	0 ENE	0	0
2/17/2024	7:45 AM	0.3	0.4	0.2	64	-5.7	0 ENE	0	0
2/17/2024	8:00 AM	0.4	0.5	0.4	61	-6.3	0 ENE	0	0
2/17/2024	8:15 AM	0.9	1.1	0.5	65	-5	0 NNE	0	0
2/17/2024	8:30 AM	1.1	1.6	0.8	63	-5.2	0 ENE	0	0
2/17/2024	8:45 AM	2.4	2.9	1.6	64	-3.7	1.6 ENE	0	0
2/17/2024	9:00 AM	3	3.3	2.8	53	-5.7	1.6 ENE	0	0
2/17/2024	9:15 AM	4.1	4.7	3.3	45	-6.8	1.6 ENE	0	0
2/17/2024	9:30 AM	4.9	5	4.7	43	-6.7	3.2 ENE	0	0
2/17/2024	9:45 AM	4.7	4.9	4.6	43	-6.9	3.2 ENE	0	0
2/17/2024	10:00 AM	4.6	4.7	4.6	43	-6.9	1.6 ENE	0	0
2/17/2024	10:15 AM	4.7	4.8	4.6	43	-6.8	1.6 ENE	0	0
2/17/2024	10:30 AM	4.9	5.2	4.8	42	-6.9	1.6 NE	0	0
2/17/2024	10:45 AM	5.3	5.4	5.2	44	-6	1.6 E	0	0
2/17/2024	11:00 AM	5.3	5.4	5.2	46	-5.4	0 ENE	0	0
2/17/2024	11:15 AM	5.6	5.7	5.2	50	-4.1	1.6 E	0	0
2/17/2024	11:30 AM	5.7	6	5.5	43	-5.9	0 E	0	0
2/17/2024	11:45 AM	6.6	6.9	6	42	-5.4	0 ESE	0	0
2/17/2024	12:00 PM	6.8	7	6.8	39	-6.2	1.6 ESE	0	0
2/17/2024	12:15 PM	7.5	7.7	7	38	-5.9	0 ESE	0	0
2/17/2024	12:30 PM	7.8	8.1	7.6	39	-5.3	1.6 ESE	0	0
2/17/2024	12:45 PM	8	8.1	7.9	36	-6.2	1.6 SE	0	0
2/17/2024	1:00 PM	8.2	8.2	8.1	36	-6	0 S	0	0
2/17/2024	1:15 PM	8.3	8.3	8.2	33	-7.1	0 S	0	0
2/17/2024	1:30 PM	8.7	9.3	8.3	34	-6.3	0 S	0	0

2/17/2024	1:45 PM	9.7	9.9	9.3	31	-6.7	0 ESE	0	0
2/17/2024	2:00 PM	9.6	9.6	9.5	30	-7.2	1.6 SSW	0	0
2/17/2024	2:15 PM	9.4	9.6	9.3	32	-6.5	1.6 SW	0	0
2/17/2024	2:30 PM	9.6	9.9	9.4	31	-6.7	0 WNW	0	0
2/17/2024	2:45 PM	10.3	10.4	10	31	-6.1	1.6 SW	0	0
2/17/2024	3:00 PM	10	10.4	9.7	33	-5.6	1.6 SSW	0	0
2/17/2024	3:15 PM	9.7	9.9	9.6	33	-5.9	1.6 SSW	0	0
2/17/2024	3:30 PM	10.2	10.4	9.9	35	-4.6	0 S	0	0
2/17/2024	3:45 PM	11.3	12	10.5	29	-6.1	0 S	0	0
2/17/2024	4:00 PM	11.5	12	10.9	32	-4.7	0 ESE	0	0
2/17/2024	4:15 PM	10.6	10.9	10.3	34	-4.7	0 ESE	0	0
2/17/2024	4:30 PM	10.2	10.3	10.2	33	-5.4	1.6 E	0	0
2/17/2024	4:45 PM	9.8	10.2	9.6	33	-5.7	0 ESE	0	0
2/17/2024	5:00 PM	9.6	9.7	9.5	33	-5.9	1.6 E	0	0
2/17/2024	5:15 PM	9.6	9.7	9.4	36	-4.8	0 E	0	0
2/17/2024	5:30 PM	9	9.4	8.7	37	-4.9	0 E	0	0
2/17/2024	5:45 PM	8.8	8.8	8.7	37	-5.1	0 E	0	0
2/17/2024	6:00 PM	8.7	8.8	8.6	38	-4.9	0 SSE	0	0
2/17/2024	6:15 PM	8.5	8.6	8.3	38	-5	0 ---	0	0
2/17/2024	6:30 PM	8.3	8.4	8.1	53	-0.7	0 SSE	0	0
2/17/2024	6:45 PM	7.6	8.1	7.2	51	-1.9	0 ---	0	0
2/17/2024	7:00 PM	7	7.2	6.9	49	-3	0 SSE	0	0
2/17/2024	7:15 PM	7.3	7.6	6.9	51	-2.2	0 SSE	0	0
2/17/2024	7:30 PM	7.4	7.4	7.3	53	-1.6	0 SSE	0	0
2/17/2024	7:45 PM	6.9	7.3	6.5	55	-1.5	0 E	0	0
2/17/2024	8:00 PM	6.6	6.6	6.4	54	-2.1	0 E	0	0
2/17/2024	8:15 PM	6.6	6.6	6.4	56	-1.6	0 S	0	0
2/17/2024	8:30 PM	6.3	6.4	6.2	57	-1.6	0 ---	0	0
2/17/2024	8:45 PM	6	6.2	5.7	62	-0.7	0 SSE	0	0
2/17/2024	9:00 PM	5.6	5.7	5.5	59	-1.8	0 ---	0	0
2/17/2024	9:15 PM	5.6	5.9	5.5	58	-2	0 ---	0	0
2/17/2024	9:30 PM	6	6.2	5.9	58	-1.6	0 SSE	0	0
2/17/2024	9:45 PM	6.2	6.2	6.1	57	-1.7	0 S	0	0
2/17/2024	10:00 PM	5.7	6.1	4.9	68	0.2	0 E	0	0
2/17/2024	10:15 PM	4.9	5	4.9	64	-1.3	0 ESE	0	0
2/17/2024	10:30 PM	4.8	4.9	4.6	65	-1.3	0 E	0	0
2/17/2024	10:45 PM	4.6	4.8	4.4	63	-1.8	0 ENE	0	0
2/17/2024	11:00 PM	4.7	4.8	4.4	67	-0.9	1.6 E	0	0
2/17/2024	11:15 PM	4.4	4.4	4.3	63	-2	0 E	0	0
2/17/2024	11:30 PM	4.3	4.3	4.2	65	-1.7	0 ENE	0	0
2/17/2024	11:45 PM	4.1	4.3	3.9	67	-1.5	0 ENE	0	0
2/18/2024	12:00 AM	4.2	4.3	3.9	66	-1.6	0 ENE	0	0
2/18/2024	12:15 AM	4.1	4.2	4	70	-0.9	0 ---	0	0
2/18/2024	12:30 AM	4.3	4.6	4.1	66	-1.5	0 ENE	0	0
2/18/2024	12:45 AM	4.6	4.6	4.4	73	0.1	0 ESE	0	0
2/18/2024	1:00 AM	4.1	4.4	3.9	74	-0.1	0 ESE	0	0
2/18/2024	1:15 AM	4.1	4.2	3.9	74	-0.2	0 ESE	0	0
2/18/2024	1:30 AM	3.9	4.2	3.8	75	-0.1	0 S	0	0
2/18/2024	1:45 AM	3.8	3.8	3.7	71	-1	0 ---	0	0
2/18/2024	2:00 AM	4.1	4.2	3.8	69	-1.1	0 ---	0	0
2/18/2024	2:15 AM	4.1	4.2	3.8	76	0.2	0 ---	0	0
2/18/2024	2:30 AM	3.6	3.8	3.5	73	-0.8	0 ---	0	0

2/18/2024	2:45 AM	3.8	3.9	3.6	72	-0.8	0 ---	0	0
2/18/2024	3:00 AM	4.1	4.1	3.9	72	-0.5	0 NE	0	0
2/18/2024	3:15 AM	3.8	4.1	3.5	76	-0.1	0 ESE	0	0
2/18/2024	3:30 AM	3.4	3.6	3.3	76	-0.4	0 ESE	0	0
2/18/2024	3:45 AM	3.5	3.6	3.3	79	0.2	0 ESE	0	0
2/18/2024	4:00 AM	3.4	3.7	3.3	74	-0.8	0 E	0	0
2/18/2024	4:15 AM	3.6	3.7	3.6	75	-0.4	1.6 ENE	0	0
2/18/2024	4:30 AM	3.5	3.6	3.5	75	-0.5	1.6 ENE	0	0
2/18/2024	4:45 AM	3.6	3.6	3.5	75	-0.5	0 ENE	0	0
2/18/2024	5:00 AM	3.6	3.6	3.5	74	-0.6	0 ENE	0	0
2/18/2024	5:15 AM	3.6	3.6	3.6	74	-0.6	0 ENE	0	0
2/18/2024	5:30 AM	3.6	3.7	3.6	73	-0.8	0 ENE	0	0
2/18/2024	5:45 AM	3.7	3.8	3.7	72	-0.9	0 ENE	0	0
2/18/2024	6:00 AM	3.9	3.9	3.8	73	-0.5	0 ENE	0	0
2/18/2024	6:15 AM	3.7	3.9	3.5	77	0	0 ENE	0	0
2/18/2024	6:30 AM	3.4	3.6	3.2	81	0.4	0 E	0	0
2/18/2024	6:45 AM	3.4	3.7	3.2	76	-0.4	0 E	0	0
2/18/2024	7:00 AM	3.7	3.8	3.7	74	-0.5	0 ENE	0	0
2/18/2024	7:15 AM	3.5	3.8	3.1	80	0.4	1.6 ENE	0	0
2/18/2024	7:30 AM	3.1	3.1	3.1	80	0	0 ENE	0	0
2/18/2024	7:45 AM	3.3	3.7	3.1	73	-1.1	1.6 NE	0	0
2/18/2024	8:00 AM	3.7	3.8	3.7	74	-0.5	0 NE	0	0
2/18/2024	8:15 AM	3.9	4.1	3.7	73	-0.5	0 NE	0	0
2/18/2024	8:30 AM	4.3	4.5	4.1	71	-0.5	0 ENE	0	0
2/18/2024	8:45 AM	4.6	4.7	4.4	76	0.7	1.6 ENE	0	0
2/18/2024	9:00 AM	4.4	4.7	4.3	73	0	0 E	0	0
2/18/2024	9:15 AM	4.8	5	4.7	71	0	1.6 ENE	0	0
2/18/2024	9:30 AM	5	5.1	4.9	73	0.6	0 E	0	0
2/18/2024	9:45 AM	4.8	5	4.6	72	0.2	0 E	0	0
2/18/2024	10:00 AM	4.8	4.9	4.7	70	-0.2	0 E	0	0
2/18/2024	10:15 AM	5.1	5.2	4.9	70	0	0 E	0	0
2/18/2024	10:30 AM	5.4	5.6	5.2	69	0.2	0 E	0	0
2/18/2024	10:45 AM	5.7	6	5.6	67	0.1	0 E	0	0
2/18/2024	11:00 AM	6	6.2	5.6	69	0.7	1.6 E	0	0
2/18/2024	11:15 AM	5.8	6.2	5.5	64	-0.5	1.6 ENE	0	0
2/18/2024	11:30 AM	6.5	6.6	6.2	61	-0.5	1.6 ENE	0	0
2/18/2024	11:45 AM	6.5	6.6	6.4	62	-0.3	1.6 E	0	0
2/18/2024	12:00 PM	6.6	6.6	6.5	59	-0.9	0 ESE	0	0
2/18/2024	12:15 PM	6.6	6.7	6.6	55	-1.8	1.6 E	0	0
2/18/2024	12:30 PM	6.8	7.1	6.6	54	-1.8	1.6 ENE	0	0
2/18/2024	12:45 PM	7.2	7.3	7.1	57	-0.7	0 ENE	0	0
2/18/2024	1:00 PM	7	7.1	6.9	57	-0.9	0 E	0	0
2/18/2024	1:15 PM	7.3	7.4	7.1	55	-1.2	0 ESE	0	0
2/18/2024	1:30 PM	7.7	7.9	7.4	55	-0.8	0 ESE	0	0
2/18/2024	1:45 PM	7.8	7.9	7.7	53	-1.2	0 ESE	0	0
2/18/2024	2:00 PM	8.2	8.7	7.9	50	-1.7	0 W	0	0
2/18/2024	2:15 PM	8.9	9.2	8.6	47	-1.8	1.6 W	0	0
2/18/2024	2:30 PM	9.2	9.3	8.9	51	-0.5	1.6 ESE	0	0
2/18/2024	2:45 PM	8.8	8.9	8.7	50	-1.1	1.6 SSW	0	0
2/18/2024	3:00 PM	8.7	8.7	8.6	51	-0.9	0 SSW	0	0
2/18/2024	3:15 PM	8.6	8.6	8.5	52	-0.8	0 SSW	0	0
2/18/2024	3:30 PM	8.5	8.6	8.5	51	-1.1	0 SSW	0	0

2/18/2024	3:45 PM	8.6	8.7	8.6	51	-1	0 ---	0	0
2/18/2024	4:00 PM	8.7	8.7	8.6	53	-0.4	0 ---	0	0
2/18/2024	4:15 PM	8.6	8.6	8.5	55	0	0 ---	0	0
2/18/2024	4:30 PM	8.6	8.8	8.4	51	-1	0 SSW	0	0
2/18/2024	4:45 PM	8.3	8.8	8.1	58	0.5	0 ESE	0	0
2/18/2024	5:00 PM	7.9	8.1	7.9	55	-0.6	1.6 ENE	0	0
2/18/2024	5:15 PM	8	8.1	7.9	56	-0.3	1.6 E	0	0
2/18/2024	5:30 PM	8.1	8.2	7.8	59	0.5	1.6 E	0	0
2/18/2024	5:45 PM	7.6	7.8	7.4	58	-0.2	0 E	0	0
2/18/2024	6:00 PM	7.4	7.4	7.4	58	-0.3	1.6 ENE	0	0
2/18/2024	6:15 PM	7.4	7.4	7.3	57	-0.6	0 ENE	0	0
2/18/2024	6:30 PM	7.4	7.5	7.4	55	-1	1.6 ENE	0	0
2/18/2024	6:45 PM	7.6	7.6	7.5	59	0	1.6 ENE	0	0
2/18/2024	7:00 PM	7.1	7.6	6.8	62	0.3	0 E	0	0
2/18/2024	7:15 PM	6.7	6.8	6.7	60	-0.5	0 E	0	0
2/18/2024	7:30 PM	6.9	7.2	6.8	59	-0.5	0 E	0	0
2/18/2024	7:45 PM	7.2	7.2	7.1	59	-0.3	0 ---	0	0
2/18/2024	8:00 PM	7.2	7.2	7.1	60	-0.1	0 ---	0	0
2/18/2024	8:15 PM	7.1	7.2	7	61	0.1	0 ENE	0	0
2/18/2024	8:30 PM	7	7.1	6.9	62	0.2	1.6 ENE	0	0
2/18/2024	8:45 PM	6.8	6.9	6.6	66	0.9	0 E	0	0
2/18/2024	9:00 PM	6.2	6.6	5.9	67	0.5	0 E	0	0
2/18/2024	9:15 PM	6	6.1	5.9	66	0.1	0 E	0	0
2/18/2024	9:30 PM	5.8	5.9	5.7	67	0.2	0 E	0	0
2/18/2024	9:45 PM	5.5	5.7	5.3	68	0.1	0 E	0	0
2/18/2024	10:00 PM	5.4	5.5	5.3	68	0	0 E	0	0
2/18/2024	10:15 PM	5.2	5.5	4.6	76	1.3	0 S	0	0
2/18/2024	10:30 PM	4.3	4.6	4.1	75	0.2	0 ---	0	0
2/18/2024	10:45 PM	4.7	4.9	4.2	72	0	0 ---	0	0
2/18/2024	11:00 PM	4.7	4.8	4.6	73	0.2	0 S	0	0
2/18/2024	11:15 PM	4.4	4.6	4.2	76	0.5	0 S	0	0
2/18/2024	11:30 PM	3.8	4.1	3.6	77	0.2	0 ---	0	0
2/18/2024	11:45 PM	3.7	4	3.3	80	0.5	0 ---	0	0
2/19/2024	12:00 AM	3.4	3.6	3.3	78	-0.1	0 S	0	0
2/19/2024	12:15 AM	3.6	3.7	3.6	77	0	1.6 NE	0	0
2/19/2024	12:30 AM	3.3	3.6	3.1	80	0.2	0 ENE	0	0
2/19/2024	12:45 AM	3.2	3.3	3.1	79	-0.1	0 ENE	0	0
2/19/2024	1:00 AM	3.1	3.2	3.1	79	-0.2	0 NE	0	0
2/19/2024	1:15 AM	3	3.1	2.8	82	0.2	0 NE	0	0
2/19/2024	1:30 AM	2.7	2.8	2.5	81	-0.3	0 ENE	0	0
2/19/2024	1:45 AM	2.4	2.5	2.3	85	0.1	0 E	0	0
2/19/2024	2:00 AM	2.3	2.3	2.2	82	-0.5	0 E	0	0
2/19/2024	2:15 AM	2.1	2.2	2	86	0	0 E	0	0
2/19/2024	2:30 AM	1.9	2	1.8	87	0	0 ESE	0	0
2/19/2024	2:45 AM	2.2	2.3	1.9	82	-0.6	3.2 WNW	0	0
2/19/2024	3:00 AM	2.2	2.3	2.1	85	0	0 ESE	0	0
2/19/2024	3:15 AM	2.2	2.3	2.1	84	-0.3	0 ESE	0	0
2/19/2024	3:30 AM	2.3	2.4	2.3	83	-0.3	0 ESE	0	0
2/19/2024	3:45 AM	2.3	2.4	2.2	82	-0.4	0 SSW	0	0
2/19/2024	4:00 AM	2.1	2.2	2	84	-0.4	0 NE	0	0
2/19/2024	4:15 AM	2	2.1	1.9	85	-0.3	1.6 E	0	0
2/19/2024	4:30 AM	2.1	2.2	2	83	-0.5	3.2 NNE	0	0

2/19/2024	4:45 AM	2.1	2.2	1.9	85	-0.1	1.6 ENE	0	0
2/19/2024	5:00 AM	1.9	1.9	1.8	87	0	0 ENE	0	0
2/19/2024	5:15 AM	1.8	1.9	1.7	85	-0.4	0 ENE	0	0
2/19/2024	5:30 AM	1.7	1.8	1.7	85	-0.5	0 WNW	0	0
2/19/2024	5:45 AM	1.7	1.7	1.7	85	-0.5	0 ENE	0	0
2/19/2024	6:00 AM	1.5	1.7	1.4	89	-0.1	0 E	0	0
2/19/2024	6:15 AM	1.5	1.6	1.4	88	-0.3	0 E	0	0
2/19/2024	6:30 AM	1.6	1.7	1.6	87	-0.3	0 ESE	0	0
2/19/2024	6:45 AM	1.6	1.6	1.6	89	-0.1	0 ESE	0	0
2/19/2024	7:00 AM	1.6	1.7	1.6	88	-0.2	0 ---	0	0
2/19/2024	7:15 AM	1.9	1.9	1.7	86	-0.2	0 WNW	0	0
2/19/2024	7:30 AM	1.9	2	1.9	86	-0.2	0 SSW	0	0
2/19/2024	7:45 AM	2.1	2.4	1.9	85	-0.1	0 SSW	0	0
2/19/2024	8:00 AM	2.5	2.6	2.4	85	0.2	1.6 SSW	0	0
2/19/2024	8:15 AM	2.6	2.8	2.4	85	0.3	1.6 SW	0	0
2/19/2024	8:30 AM	3.1	3.2	2.8	83	0.4	1.6 WSW	0	0
2/19/2024	8:45 AM	3.2	3.3	3.2	82	0.4	0 SW	0	0
2/19/2024	9:00 AM	3.4	3.8	3.3	81	0.5	0 SW	0	0
2/19/2024	9:15 AM	4.8	6	3.8	75	0.7	0 SW	0	0
2/19/2024	9:30 AM	6.5	6.8	6	71	1.6	1.6 E	0	0
2/19/2024	9:45 AM	6.7	6.8	6.6	71	1.8	4.8 ENE	0	0
2/19/2024	10:00 AM	6.5	6.7	6.3	72	1.8	6.4 NE	0	0
2/19/2024	10:15 AM	6.1	6.3	5.9	72	1.4	8 NE	0	0
2/19/2024	10:30 AM	6.1	6.2	5.7	73	1.6	6.4 ENE	0	0
2/19/2024	10:45 AM	5.8	6.2	5.7	73	1.4	6.4 ENE	0	0
2/19/2024	11:00 AM	6.9	7.4	6.2	68	1.4	3.2 ESE	0	0
2/19/2024	11:15 AM	8	8.5	7.4	63	1.4	1.6 E	0	0
2/19/2024	11:30 AM	9.2	9.6	8.5	59	1.6	1.6 NE	0	0
2/19/2024	11:45 AM	9.5	9.7	9.2	60	2.1	3.2 SW	0	0
2/19/2024	12:00 PM	9.2	9.3	9	59	1.6	3.2 WSW	0	0
2/19/2024	12:15 PM	9.3	9.3	9.2	59	1.7	1.6 SSW	0	0
2/19/2024	12:30 PM	9.2	9.4	9.1	59	1.6	3.2 SW	0	0
2/19/2024	12:45 PM	9.7	9.8	9.4	58	1.8	3.2 SW	0	0
2/19/2024	1:00 PM	9.9	9.9	9.8	58	2	1.6 SW	0	0
2/19/2024	1:15 PM	9.9	10	9.9	59	2.3	1.6 SSW	0	0
2/19/2024	1:30 PM	9.8	9.9	9.6	64	3.3	3.2 SSW	0	0
2/19/2024	1:45 PM	9.3	9.6	9	67	3.5	4.8 SW	0	0
2/19/2024	2:00 PM	8.9	9	8.7	68	3.4	3.2 SW	0	0
2/19/2024	2:15 PM	8.7	8.8	8.5	68	3.1	4.8 SW	0	0
2/19/2024	2:30 PM	8.7	8.8	8.6	66	2.7	3.2 SSW	0	0
2/19/2024	2:45 PM	8.7	8.8	8.4	65	2.4	3.2 SW	0	0
2/19/2024	3:00 PM	8.4	8.6	8.3	65	2.2	1.6 SSW	0	0
2/19/2024	3:15 PM	8.6	8.7	8.4	66	2.6	1.6 SSW	0	0
2/19/2024	3:30 PM	8.6	8.6	8.4	67	2.8	1.6 SW	0	0
2/19/2024	3:45 PM	8.3	8.4	8.2	68	2.8	1.6 SW	0	0
2/19/2024	4:00 PM	8.3	8.4	8.2	68	2.8	1.6 S	0	0
2/19/2024	4:15 PM	8.3	8.3	8.2	68	2.7	3.2 SW	0	0
2/19/2024	4:30 PM	7.9	8.2	7.8	70	2.8	3.2 SSW	0	0
2/19/2024	4:45 PM	7.8	7.9	7.6	74	3.4	3.2 SW	0	0
2/19/2024	5:00 PM	7.5	7.6	7.4	77	3.7	1.6 WSW	0	0
2/19/2024	5:15 PM	7.4	7.5	7.4	76	3.5	0 SW	0	0
2/19/2024	5:30 PM	7.2	7.4	7.2	78	3.6	0 SSW	0	0

2/19/2024	5:45 PM	7.2	7.2	7.2	77	3.5	0 SSW	0	0
2/19/2024	6:00 PM	7.3	7.3	7.2	82	4.4	0 ---	0.2	0
2/19/2024	6:15 PM	7.1	7.2	7	83	4.4	0 SSW	0.2	0
2/19/2024	6:30 PM	6.8	7	6.4	84	4.3	0 ---	0.2	0.8
2/19/2024	6:45 PM	6.2	6.4	6	87	4.2	0 ---	0.2	0.8
2/19/2024	7:00 PM	6.2	6.4	6	88	4.4	0 ---	0	0.8
2/19/2024	7:15 PM	6.4	6.4	6.4	88	4.5	0 ---	0.2	0.8
2/19/2024	7:30 PM	6.4	6.4	6.3	88	4.5	0 SSW	0.2	0
2/19/2024	7:45 PM	6.4	6.4	6.1	87	4.4	0 SSW	0.2	1.2
2/19/2024	8:00 PM	5.8	6.1	5.7	91	4.4	0 ESE	0.4	1.4
2/19/2024	8:15 PM	5.8	5.9	5.8	92	4.6	0 ESE	0.4	1.6
2/19/2024	8:30 PM	5.9	5.9	5.9	92	4.7	0 ESE	0.2	1.6
2/19/2024	8:45 PM	6	6.1	5.9	91	4.6	0 E	0	0
2/19/2024	9:00 PM	5.9	6.1	5.8	91	4.6	0 E	0	0
2/19/2024	9:15 PM	5.7	5.8	5.6	92	4.5	0 E	0.2	0
2/19/2024	9:30 PM	5.8	5.9	5.6	92	4.6	3.2 ENE	0	0
2/19/2024	9:45 PM	5.9	6	5.8	92	4.7	1.6 ENE	0	0
2/19/2024	10:00 PM	5.8	5.9	5.7	92	4.6	0 ENE	0	0
2/19/2024	10:15 PM	5.7	5.8	5.7	92	4.5	0 ENE	0.2	0
2/19/2024	10:30 PM	5.6	5.7	5.4	92	4.4	0 E	0	0
2/19/2024	10:45 PM	5.4	5.4	5.3	92	4.2	0 ---	0	0
2/19/2024	11:00 PM	5.6	5.7	5.4	93	4.5	0 ENE	0.2	0
2/19/2024	11:15 PM	5.6	5.7	5.6	93	4.6	0 E	0.2	0.8
2/19/2024	11:30 PM	5.7	5.8	5.6	93	4.6	1.6 ENE	0	0.8
2/19/2024	11:45 PM	5.9	5.9	5.8	92	4.7	1.6 ENE	0	0
2/20/2024	12:00 AM	5.9	5.9	5.9	92	4.7	0 ENE	0	0
2/20/2024	12:15 AM	6	6	5.9	92	4.8	0 ENE	0	0
2/20/2024	12:30 AM	6	6	6	91	4.6	1.6 E	0	0
2/20/2024	12:45 AM	5.9	6	5.8	91	4.6	0 ENE	0	0
2/20/2024	1:00 AM	5.9	5.9	5.8	91	4.5	1.6 ENE	0	0
2/20/2024	1:15 AM	6	6	5.9	91	4.6	1.6 ENE	0	0
2/20/2024	1:30 AM	5.9	6	5.9	91	4.6	3.2 ENE	0	0
2/20/2024	1:45 AM	5.9	5.9	5.9	91	4.5	1.6 ENE	0	0
2/20/2024	2:00 AM	5.9	6	5.9	91	4.6	1.6 ENE	0	0
2/20/2024	2:15 AM	6.1	6.1	6	91	4.7	0 ENE	0	0
2/20/2024	2:30 AM	6	6.1	5.9	91	4.6	0 ENE	0	0
2/20/2024	2:45 AM	5.8	5.9	5.8	92	4.6	0 ENE	0	0
2/20/2024	3:00 AM	5.7	5.8	5.6	92	4.5	0 ENE	0	0
2/20/2024	3:15 AM	5.6	5.6	5.6	93	4.6	0 ---	0	0
2/20/2024	3:30 AM	5.6	5.7	5.6	93	4.6	0 ENE	0	0
2/20/2024	3:45 AM	5.6	5.7	5.5	93	4.6	0 ENE	0	0
2/20/2024	4:00 AM	5.5	5.6	5.4	94	4.6	0 ENE	0	0
2/20/2024	4:15 AM	5.4	5.6	5.3	93	4.3	0 ---	0	0
2/20/2024	4:30 AM	5.3	5.6	5.2	94	4.4	0 ENE	0	0
2/20/2024	4:45 AM	5.7	5.7	5.6	93	4.6	0 ENE	0	0
2/20/2024	5:00 AM	5.8	5.9	5.7	93	4.8	0 ENE	0	0
2/20/2024	5:15 AM	5.8	5.9	5.4	91	4.4	0 E	0	0
2/20/2024	5:30 AM	5.3	5.4	5.2	93	4.2	0 ---	0	0
2/20/2024	5:45 AM	5.5	5.6	5.3	93	4.5	0 E	0	0
2/20/2024	6:00 AM	5.4	5.6	5.4	93	4.4	0 E	0	0
2/20/2024	6:15 AM	5.2	5.4	5.1	93	4.2	0 E	0	0
2/20/2024	6:30 AM	5.6	5.6	5.4	91	4.2	0 E	0	0

2/20/2024	6:45 AM	5.4	5.6	5.4	92	4.2	0 E	0	0
2/20/2024	7:00 AM	5.7	5.8	5.5	92	4.5	0 ENE	0	0
2/20/2024	7:15 AM	5.8	5.8	5.7	91	4.4	0 ENE	0	0
2/20/2024	7:30 AM	5.7	5.9	5.7	91	4.4	0 ENE	0	0
2/20/2024	7:45 AM	6	6.1	5.9	91	4.6	0 ENE	0	0
2/20/2024	8:00 AM	5.9	6	5.8	91	4.5	1.6 ENE	0	0
2/20/2024	8:15 AM	6.1	6.2	6	90	4.6	0 ENE	0	0
2/20/2024	8:30 AM	6.1	6.2	6.1	91	4.8	0 ENE	0.2	0
2/20/2024	8:45 AM	6.2	6.3	6.2	91	4.9	1.6 ENE	0.2	0
2/20/2024	9:00 AM	6.3	6.3	6.2	92	5.1	1.6 ENE	0.6	3.6
2/20/2024	9:15 AM	6.4	6.6	6.3	91	5.1	1.6 ENE	0.2	3.4
2/20/2024	9:30 AM	6.4	6.6	6.4	91	5.1	1.6 ENE	0	0
2/20/2024	9:45 AM	6.4	6.4	6.4	92	5.2	1.6 ENE	0.4	1.8
2/20/2024	10:00 AM	6.4	6.4	6.4	92	5.2	3.2 ENE	0.2	1.4
2/20/2024	10:15 AM	6.4	6.5	6.4	92	5.2	1.6 ENE	0	0
2/20/2024	10:30 AM	6.4	6.5	6.2	92	5.2	1.6 E	0.4	1
2/20/2024	10:45 AM	6.3	6.4	6.2	93	5.2	3.2 ENE	0.2	1
2/20/2024	11:00 AM	6.4	6.4	6.3	93	5.4	1.6 E	0.2	1
2/20/2024	11:15 AM	6.5	6.6	6.4	93	5.4	1.6 E	0.2	1
2/20/2024	11:30 AM	6.4	6.6	6.3	94	5.5	3.2 ENE	0	0
2/20/2024	11:45 AM	6.7	6.9	6.6	94	5.8	3.2 NE	0	0
2/20/2024	12:00 PM	6.9	7	6.8	94	6	3.2 ENE	0	0
2/20/2024	12:15 PM	7.1	7.3	7	93	6.1	3.2 ENE	0	0
2/20/2024	12:30 PM	7.3	7.4	7.1	92	6.1	3.2 ENE	0	0
2/20/2024	12:45 PM	6.9	7.1	6.9	93	5.9	1.6 E	0	0
2/20/2024	1:00 PM	7.1	7.1	7	93	6	1.6 E	0.2	0
2/20/2024	1:15 PM	7.2	7.3	7.1	94	6.3	1.6 E	0	0
2/20/2024	1:30 PM	7.3	7.5	7.3	94	6.4	1.6 E	0	0
2/20/2024	1:45 PM	7.7	7.8	7.5	93	6.6	1.6 ENE	0	0
2/20/2024	2:00 PM	7.6	7.7	7.6	93	6.6	1.6 E	0	0
2/20/2024	2:15 PM	7.7	7.9	7.6	92	6.5	0 E	0	0
2/20/2024	2:30 PM	7.9	7.9	7.9	92	6.7	1.6 E	0	0
2/20/2024	2:45 PM	7.8	7.9	7.7	92	6.6	1.6 ENE	0	0
2/20/2024	3:00 PM	7.8	7.9	7.8	92	6.6	1.6 ENE	0	0
2/20/2024	3:15 PM	7.9	8	7.9	92	6.7	1.6 ENE	0	0
2/20/2024	3:30 PM	8.1	8.1	8	93	7	1.6 ENE	0	0
2/20/2024	3:45 PM	8.1	8.1	8	92	6.9	1.6 E	0	0
2/20/2024	4:00 PM	7.9	8	7.9	92	6.7	1.6 ENE	0	0
2/20/2024	4:15 PM	7.8	7.9	7.8	93	6.8	1.6 ENE	0	0
2/20/2024	4:30 PM	7.8	7.8	7.8	93	6.7	1.6 ENE	0	0
2/20/2024	4:45 PM	7.8	7.8	7.7	92	6.6	1.6 E	0	0
2/20/2024	5:00 PM	7.7	7.7	7.6	92	6.4	1.6 ENE	0	0
2/20/2024	5:15 PM	7.5	7.6	7.4	93	6.4	1.6 E	0	0
2/20/2024	5:30 PM	7.5	7.6	7.5	93	6.4	1.6 ENE	0	0
2/20/2024	5:45 PM	7.4	7.5	7.3	93	6.3	1.6 ENE	0	0
2/20/2024	6:00 PM	7.4	7.4	7.3	93	6.3	1.6 E	0	0
2/20/2024	6:15 PM	7.3	7.3	7.3	93	6.2	1.6 ENE	0.2	0
2/20/2024	6:30 PM	7.2	7.3	7.2	93	6.2	1.6 ENE	0	0
2/20/2024	6:45 PM	7.2	7.3	7.2	94	6.3	1.6 ENE	0	0
2/20/2024	7:00 PM	7.2	7.2	7.1	94	6.3	1.6 ENE	0.4	2.2
2/20/2024	7:15 PM	7.1	7.1	7.1	94	6.2	1.6 ENE	0.2	2.2
2/20/2024	7:30 PM	7.1	7.1	7	94	6.2	1.6 ENE	0	0

2/20/2024	7:45 PM	7	7.1	7	94	6.1	1.6 ENE	0	0
2/20/2024	8:00 PM	6.9	7	6.9	94	6	3.2 ENE	0.2	0
2/20/2024	8:15 PM	6.9	6.9	6.9	94	6	1.6 ENE	0.2	0.8
2/20/2024	8:30 PM	6.9	6.9	6.9	94	6	1.6 ENE	0.4	3
2/20/2024	8:45 PM	6.9	6.9	6.9	94	6	1.6 ENE	0.2	3
2/20/2024	9:00 PM	6.9	6.9	6.9	94	6	1.6 ENE	0	0
2/20/2024	9:15 PM	6.9	7	6.9	94	6	1.6 ENE	0	0
2/20/2024	9:30 PM	7	7	6.9	94	6.1	1.6 ENE	0.2	0
2/20/2024	9:45 PM	7	7	6.9	94	6.1	1.6 ENE	0.6	2.2
2/20/2024	10:00 PM	7	7	6.9	94	6.1	1.6 ENE	0.6	4
2/20/2024	10:15 PM	7	7.1	7	94	6.1	1.6 ENE	0.6	4
2/20/2024	10:30 PM	7	7	6.9	94	6.1	0 ENE	0.4	2
2/20/2024	10:45 PM	6.9	6.9	6.9	94	6	1.6 ENE	0.2	2
2/20/2024	11:00 PM	6.9	6.9	6.9	95	6.1	1.6 ENE	0.2	1
2/20/2024	11:15 PM	6.9	7	6.7	94	6	1.6 ENE	0	0
2/20/2024	11:30 PM	6.7	6.8	6.7	95	5.9	0 E	0.2	0
2/20/2024	11:45 PM	6.7	6.8	6.7	95	6	0 ENE	0	0
2/21/2024	12:00 AM	6.7	6.7	6.7	95	6	1.6 ENE	0	0
2/21/2024	12:15 AM	6.7	6.8	6.7	95	6	1.6 ENE	0.2	0
2/21/2024	12:30 AM	6.8	6.8	6.8	95	6	1.6 ENE	0	0
2/21/2024	12:45 AM	6.8	6.8	6.8	95	6	1.6 ENE	0.2	0
2/21/2024	1:00 AM	6.8	6.8	6.7	95	6	3.2 ENE	0	0
2/21/2024	1:15 AM	6.7	6.8	6.7	95	6	3.2 ENE	0.4	1
2/21/2024	1:30 AM	6.8	6.8	6.7	95	6	3.2 ENE	0.2	1.2
2/21/2024	1:45 AM	6.8	6.8	6.7	95	6	3.2 NE	0	0
2/21/2024	2:00 AM	6.7	6.8	6.7	95	6	1.6 ENE	0.2	0
2/21/2024	2:15 AM	6.8	6.8	6.7	95	6	0 ENE	0	0
2/21/2024	2:30 AM	6.8	6.8	6.7	95	6	0 ENE	0.2	0
2/21/2024	2:45 AM	6.8	6.9	6.8	95	6.1	1.6 ENE	0	0
2/21/2024	3:00 AM	6.8	6.9	6.8	94	5.9	1.6 ENE	0	0
2/21/2024	3:15 AM	6.8	6.8	6.8	94	5.9	1.6 ENE	0.2	0
2/21/2024	3:30 AM	6.8	6.8	6.8	94	5.9	1.6 ENE	0	0
2/21/2024	3:45 AM	6.8	6.8	6.7	94	5.9	1.6 ENE	0.2	0
2/21/2024	4:00 AM	6.6	6.7	6.6	94	5.7	1.6 ENE	0.2	0
2/21/2024	4:15 AM	6.6	6.6	6.5	94	5.7	3.2 ENE	0	0
2/21/2024	4:30 AM	6.6	6.6	6.5	94	5.7	1.6 ENE	0	0
2/21/2024	4:45 AM	6.6	6.6	6.5	94	5.7	1.6 ENE	0.2	0
2/21/2024	5:00 AM	6.5	6.6	6.5	94	5.6	3.2 ENE	0	0
2/21/2024	5:15 AM	6.6	6.7	6.5	94	5.7	3.2 ENE	0.2	0
2/21/2024	5:30 AM	6.7	6.7	6.7	94	5.8	1.6 ENE	0	0
2/21/2024	5:45 AM	6.7	6.8	6.7	93	5.7	1.6 ENE	0.2	0
2/21/2024	6:00 AM	6.8	6.9	6.7	93	5.8	4.8 NE	0	0
2/21/2024	6:15 AM	7	7	6.9	93	5.9	3.2 ENE	0.2	0.8
2/21/2024	6:30 AM	6.8	6.9	6.7	94	5.9	0 ENE	0.2	0.8
2/21/2024	6:45 AM	6.6	6.8	6.6	93	5.6	1.6 ENE	0.2	0
2/21/2024	7:00 AM	6.6	6.6	6.5	94	5.7	1.6 ENE	0	0
2/21/2024	7:15 AM	6.6	6.7	6.6	94	5.7	1.6 ENE	0	0
2/21/2024	7:30 AM	6.7	6.7	6.7	93	5.6	1.6 ENE	0	0
2/21/2024	7:45 AM	6.7	6.7	6.6	94	5.8	1.6 ENE	0.4	1.4
2/21/2024	8:00 AM	6.8	6.8	6.7	94	5.9	1.6 ENE	0.2	1.4
2/21/2024	8:15 AM	6.8	6.8	6.8	94	5.9	1.6 ENE	0	0
2/21/2024	8:30 AM	6.8	6.9	6.8	94	5.9	1.6 ENE	0	0

2/21/2024	8:45 AM	6.9	7	6.9	93	5.9	3.2 ENE	0	0
2/21/2024	9:00 AM	7.1	7.2	7	93	6.1	3.2 ENE	0.2	0
2/21/2024	9:15 AM	7.2	7.3	7.1	94	6.3	3.2 ENE	0	0
2/21/2024	9:30 AM	7.4	7.6	7.2	93	6.3	3.2 NE	0	0
2/21/2024	9:45 AM	7.7	7.8	7.6	93	6.6	1.6 ENE	0	0
2/21/2024	10:00 AM	7.8	7.9	7.7	92	6.6	3.2 ENE	0	0
2/21/2024	10:15 AM	7.8	7.9	7.6	92	6.6	1.6 ENE	0	0
2/21/2024	10:30 AM	7.7	7.8	7.6	92	6.5	1.6 ENE	0.2	0
2/21/2024	10:45 AM	7.9	8.1	7.8	93	6.8	3.2 ENE	0.2	0.8
2/21/2024	11:00 AM	8.2	8.3	8	93	7.1	3.2 E	0	0
2/21/2024	11:15 AM	8.3	8.3	8.3	92	7.1	1.6 E	0	0
2/21/2024	11:30 AM	8.3	8.4	8.3	93	7.3	3.2 ENE	0	0
2/21/2024	11:45 AM	8.7	9	8.4	92	7.4	3.2 ENE	0	0
2/21/2024	12:00 PM	9	9.2	8.8	90	7.4	1.6 E	0	0
2/21/2024	12:15 PM	8.9	9	8.8	90	7.4	1.6 E	0	0
2/21/2024	12:30 PM	9.1	9.1	9	91	7.7	1.6 E	0	0
2/21/2024	12:45 PM	9.3	9.5	9.1	91	7.9	3.2 E	0	0
2/21/2024	1:00 PM	9.7	9.8	9.5	91	8.3	1.6 ENE	0	0
2/21/2024	1:15 PM	10.2	10.4	9.8	88	8.3	3.2 ENE	0	0
2/21/2024	1:30 PM	9.9	10.1	9.9	88	8	3.2 E	0	0
2/21/2024	1:45 PM	10	10.1	9.9	88	8.1	1.6 E	0	0
2/21/2024	2:00 PM	10	10.1	9.9	89	8.3	3.2 E	0	0
2/21/2024	2:15 PM	9.9	9.9	9.8	89	8.2	3.2 E	0	0
2/21/2024	2:30 PM	9.9	10	9.9	90	8.4	3.2 ENE	0	0
2/21/2024	2:45 PM	10.1	10.2	9.9	88	8.2	3.2 ENE	0	0
2/21/2024	3:00 PM	10.1	10.4	9.6	88	8.2	3.2 E	0	0
2/21/2024	3:15 PM	9.4	9.6	9.4	89	7.7	3.2 ENE	0	0
2/21/2024	3:30 PM	9.6	9.7	9.4	89	7.8	1.6 ENE	0	0
2/21/2024	3:45 PM	9.3	9.5	9.2	89	7.6	3.2 ENE	0	0
2/21/2024	4:00 PM	9.5	9.5	9.4	88	7.6	1.6 ENE	0	0
2/21/2024	4:15 PM	9.3	9.4	9.3	91	7.9	1.6 E	0.2	0
2/21/2024	4:30 PM	9.2	9.3	9.1	91	7.8	0 E	0	0
2/21/2024	4:45 PM	9.2	9.3	9.1	91	7.8	1.6 ESE	0	0
2/21/2024	5:00 PM	9.2	9.3	9	92	7.9	1.6 ENE	0	0
2/21/2024	5:15 PM	8.9	9	8.9	93	7.9	0 ENE	0.2	0
2/21/2024	5:30 PM	8.9	8.9	8.9	93	7.9	0 ENE	0	0
2/21/2024	5:45 PM	9	9	8.9	92	7.8	0 ENE	0	0
2/21/2024	6:00 PM	8.9	9	8.9	91	7.6	1.6 NNE	0	0
2/21/2024	6:15 PM	8.8	8.9	8.7	92	7.5	0 NE	0	0
2/21/2024	6:30 PM	8.6	8.8	8.4	93	7.5	0 E	0	0
2/21/2024	6:45 PM	8.4	8.4	8.4	94	7.5	1.6 E	0	0
2/21/2024	7:00 PM	8.4	8.6	8.3	93	7.4	1.6 ENE	0	0
2/21/2024	7:15 PM	8.3	8.5	8.3	94	7.4	1.6 ENE	0.2	0
2/21/2024	7:30 PM	8.3	8.4	8.3	93	7.3	3.2 ENE	0.2	1.4
2/21/2024	7:45 PM	8.3	8.4	8.3	94	7.4	1.6 ENE	0.2	1.2
2/21/2024	8:00 PM	8.2	8.4	8.1	94	7.3	1.6 ENE	0.2	0.8
2/21/2024	8:15 PM	8	8.1	7.9	94	7.1	0 ENE	0.2	1.2
2/21/2024	8:30 PM	7.9	7.9	7.8	95	7.1	1.6 ENE	0.6	2.8
2/21/2024	8:45 PM	7.8	7.9	7.8	95	7.1	3.2 ENE	0.6	3.8
2/21/2024	9:00 PM	7.7	7.8	7.6	95	7	3.2 ENE	1.6	8.6
2/21/2024	9:15 PM	7.9	8	7.8	95	7.2	3.2 NE	0.8	7.2
2/21/2024	9:30 PM	8.1	8.2	8	95	7.4	4.8 NE	0.6	3.8

2/21/2024	9:45 PM	8.1	8.1	8.1	95	7.4	3.2 ENE	0.6	2.6
2/21/2024	10:00 PM	8.1	8.2	8.1	95	7.4	4.8 ENE	0.4	2.4
2/21/2024	10:15 PM	8.1	8.2	8.1	95	7.4	3.2 ENE	0.2	1.2
2/21/2024	10:30 PM	8.2	8.2	8.1	94	7.3	3.2 ENE	0	0
2/21/2024	10:45 PM	8.2	8.2	8.2	94	7.3	4.8 ENE	0	0
2/21/2024	11:00 PM	8	8.2	7.8	94	7.1	1.6 ENE	0	0
2/21/2024	11:15 PM	7.8	7.8	7.7	94	6.9	1.6 E	0	0
2/21/2024	11:30 PM	7.6	7.7	7.6	95	6.9	1.6 ENE	0	0
2/21/2024	11:45 PM	7.7	7.8	7.6	94	6.8	3.2 E	0	0
2/22/2024	12:00 AM	7.7	7.8	7.7	94	6.8	3.2 ENE	0.2	0
2/22/2024	12:15 AM	7.7	7.7	7.7	94	6.8	3.2 ENE	0	0
2/22/2024	12:30 AM	7.7	7.8	7.7	94	6.8	3.2 ENE	0	0
2/22/2024	12:45 AM	7.6	7.7	7.4	94	6.7	1.6 ENE	0.2	0
2/22/2024	1:00 AM	7.6	7.6	7.5	94	6.7	1.6 ENE	0	0
2/22/2024	1:15 AM	7.6	7.7	7.6	94	6.7	1.6 ENE	0.2	0
2/22/2024	1:30 AM	7.7	7.7	7.7	93	6.7	1.6 ENE	0	0
2/22/2024	1:45 AM	7.7	7.7	7.6	94	6.8	1.6 ENE	0.4	1.4
2/22/2024	2:00 AM	7.6	7.7	7.5	94	6.7	1.6 ENE	0.6	2.6
2/22/2024	2:15 AM	7.6	7.7	7.5	94	6.7	4.8 NE	0.4	2.6
2/22/2024	2:30 AM	7.7	7.7	7.7	94	6.8	3.2 ENE	0.4	2.2
2/22/2024	2:45 AM	7.7	7.7	7.7	94	6.8	3.2 ENE	0.2	1.2
2/22/2024	3:00 AM	7.7	7.8	7.6	94	6.8	3.2 ENE	0	0
2/22/2024	3:15 AM	7.6	7.7	7.5	94	6.7	3.2 ENE	0.2	0
2/22/2024	3:30 AM	7.8	7.8	7.7	94	6.9	6.4 ENE	0.2	0.8
2/22/2024	3:45 AM	7.7	7.8	7.7	94	6.8	3.2 ENE	0.2	2.6
2/22/2024	4:00 AM	7.7	7.7	7.6	94	6.8	4.8 ENE	0.6	2.8
2/22/2024	4:15 AM	7.6	7.7	7.6	94	6.7	4.8 ENE	0.4	2.8
2/22/2024	4:30 AM	7.5	7.6	7.3	93	6.4	3.2 E	0.2	2
2/22/2024	4:45 AM	7.2	7.3	7.1	95	6.4	1.6 E	0	0
2/22/2024	5:00 AM	7.1	7.2	7.1	95	6.4	1.6 ENE	0.2	0
2/22/2024	5:15 AM	7.1	7.2	7.1	95	6.4	1.6 ENE	0	0
2/22/2024	5:30 AM	7.2	7.4	7.1	93	6.2	4.8 ENE	0	0
2/22/2024	5:45 AM	7.5	7.6	7.4	92	6.3	4.8 NE	0	0
2/22/2024	6:00 AM	7.6	7.7	7.6	92	6.4	4.8 ENE	0.6	4
2/22/2024	6:15 AM	7.4	7.6	7.4	93	6.4	3.2 NE	0	0.8
2/22/2024	6:30 AM	7.4	7.5	7.3	94	6.5	3.2 ENE	0	0
2/22/2024	6:45 AM	7.1	7.3	6.7	93	6	1.6 E	0.2	0
2/22/2024	7:00 AM	6.8	7	6.7	95	6.1	3.2 ENE	0	0
2/22/2024	7:15 AM	7.1	7.3	7	94	6.2	3.2 NE	0	0
2/22/2024	7:30 AM	7.2	7.4	7	94	6.3	1.6 E	0.4	1.8
2/22/2024	7:45 AM	7	7	6.9	95	6.3	1.6 ENE	0.2	1.6
2/22/2024	8:00 AM	7.1	7.3	7	95	6.3	1.6 E	0	0
2/22/2024	8:15 AM	7.3	7.4	7.2	93	6.3	1.6 E	0	0
2/22/2024	8:30 AM	7.1	7.2	7	94	6.2	3.2 ENE	0	0
2/22/2024	8:45 AM	7.2	7.3	7.2	93	6.2	3.2 ENE	0	0
2/22/2024	9:00 AM	7.3	7.3	7.2	93	6.2	1.6 ENE	0	0
2/22/2024	9:15 AM	7.2	7.3	7.2	94	6.3	3.2 ENE	0.2	0
2/22/2024	9:30 AM	7.2	7.3	7.1	94	6.3	3.2 ENE	0.4	1.6
2/22/2024	9:45 AM	7.3	7.4	7.3	94	6.4	3.2 ENE	0.2	1.4
2/22/2024	10:00 AM	7.6	7.7	7.4	94	6.7	3.2 ENE	0.2	1.8
2/22/2024	10:15 AM	7.7	7.7	7.6	93	6.6	3.2 ENE	0	0
2/22/2024	10:30 AM	7.7	8	7.6	94	6.8	1.6 ENE	0	0

2/22/2024	10:45 AM	8.1	8.1	7.9	92	6.8	3.2 ENE	0	0
2/22/2024	11:00 AM	8.1	8.2	8.1	92	6.9	1.6 E	0	0
2/22/2024	11:15 AM	8	8.1	7.8	91	6.6	1.6 ENE	0	0
2/22/2024	11:30 AM	7.8	8	7.7	94	6.9	3.2 ENE	0	0
2/22/2024	11:45 AM	8.1	8.2	8	93	7	1.6 E	0	0
2/22/2024	12:00 PM	8.4	8.8	8.2	92	7.2	3.2 ENE	0	0
2/22/2024	12:15 PM	8.7	8.8	8.6	92	7.4	1.6 E	0	0
2/22/2024	12:30 PM	9	9.2	8.7	90	7.4	3.2 ENE	0	0
2/22/2024	12:45 PM	9.3	9.4	9.2	88	7.4	3.2 ENE	0	0
2/22/2024	1:00 PM	9.5	9.7	9.4	89	7.8	3.2 ENE	0	0
2/22/2024	1:15 PM	9.8	10	9.7	88	7.9	3.2 ENE	0	0
2/22/2024	1:30 PM	10.1	10.1	10	86	7.8	3.2 NE	0	0
2/22/2024	1:45 PM	10	10.1	10	85	7.6	3.2 ENE	0	0
2/22/2024	2:00 PM	10	10	9.9	85	7.6	1.6 ENE	0	0
2/22/2024	2:15 PM	10	10.1	10	84	7.4	3.2 ENE	0	0
2/22/2024	2:30 PM	9.9	10	9.9	83	7.2	3.2 ENE	0	0
2/22/2024	2:45 PM	9.9	10	9.9	83	7.2	1.6 ENE	0	0
2/22/2024	3:00 PM	9.9	10.2	9.8	82	7	1.6 ENE	0	0
2/22/2024	3:15 PM	10.4	10.8	10.2	82	7.4	1.6 ENE	0	0
2/22/2024	3:30 PM	11.1	11.2	10.8	80	7.7	1.6 ENE	0	0
2/22/2024	3:45 PM	10.8	10.9	10.8	81	7.7	3.2 ENE	0	0
2/22/2024	4:00 PM	11.1	11.4	10.8	78	7.4	1.6 ENE	0	0
2/22/2024	4:15 PM	11.4	11.6	11.4	79	7.9	1.6 E	0	0
2/22/2024	4:30 PM	11.7	11.7	11.4	76	7.6	3.2 ENE	0	0
2/22/2024	4:45 PM	11.6	11.7	11.5	77	7.7	1.6 E	0	0
2/22/2024	5:00 PM	11.5	11.6	11.4	76	7.4	0 E	0	0
2/22/2024	5:15 PM	11.5	11.6	11.3	78	7.8	0 E	0	0
2/22/2024	5:30 PM	11.1	11.3	10.8	78	7.4	0 E	0	0
2/22/2024	5:45 PM	10.3	10.8	9.3	83	7.5	0 E	0	0
2/22/2024	6:00 PM	9	9.3	8.9	85	6.6	0 E	0	0
2/22/2024	6:15 PM	9	9.1	8.6	87	7	0 ENE	0	0
2/22/2024	6:30 PM	8.6	8.6	8.4	86	6.3	1.6 ENE	0	0
2/22/2024	6:45 PM	8.1	8.4	7.9	88	6.2	1.6 ENE	0	0
2/22/2024	7:00 PM	7.8	7.9	7.7	89	6.1	0 ENE	0	0
2/22/2024	7:15 PM	7.6	7.7	7.5	89	5.9	1.6 ENE	0	0
2/22/2024	7:30 PM	7.3	7.5	7.3	90	5.8	1.6 ENE	0	0
2/22/2024	7:45 PM	7.2	7.3	6.7	90	5.6	1.6 ENE	0	0
2/22/2024	8:00 PM	6.6	6.7	6.6	90	5.1	1.6 ENE	0	0
2/22/2024	8:15 PM	6.6	6.7	6.6	90	5.1	1.6 NE	0	0
2/22/2024	8:30 PM	6.5	6.6	6.3	90	5	0 ENE	0	0
2/22/2024	8:45 PM	6.2	6.3	6.1	91	4.8	0 ENE	0	0
2/22/2024	9:00 PM	6.1	6.1	6	91	4.7	1.6 ENE	0	0
2/22/2024	9:15 PM	6	6.1	5.9	91	4.6	1.6 ENE	0	0
2/22/2024	9:30 PM	5.8	5.9	5.6	92	4.6	1.6 ENE	0	0
2/22/2024	9:45 PM	5.6	5.6	5.6	92	4.4	1.6 ENE	0	0
2/22/2024	10:00 PM	5.4	5.6	5.3	92	4.2	0 ENE	0	0
2/22/2024	10:15 PM	5.1	5.3	5	92	3.9	1.6 ENE	0	0
2/22/2024	10:30 PM	5.1	5.2	5.1	93	4.1	1.6 ENE	0	0
2/22/2024	10:45 PM	5.2	5.3	5.1	92	4	1.6 ENE	0	0
2/22/2024	11:00 PM	5	5.1	4.9	93	4	1.6 ENE	0	0
2/22/2024	11:15 PM	4.8	4.9	4.7	93	3.8	1.6 ENE	0	0
2/22/2024	11:30 PM	4.7	4.7	4.6	93	3.6	0 ENE	0	0

2/22/2024	11:45 PM	4.6	4.7	4.4	93	3.6	0 ENE	0	0
2/23/2024	12:00 AM	4.3	4.4	4.2	94	3.5	0 ENE	0	0
2/23/2024	12:15 AM	4.2	4.3	4.2	95	3.5	0 ENE	0	0
2/23/2024	12:30 AM	4.2	4.3	4.1	94	3.3	0 ENE	0	0
2/23/2024	12:45 AM	4	4.2	3.9	94	3.1	0 ENE	0	0
2/23/2024	1:00 AM	3.8	3.9	3.8	94	3	0 ENE	0	0
2/23/2024	1:15 AM	3.7	3.8	3.6	94	2.8	0 E	0	0
2/23/2024	1:30 AM	3.5	3.6	3.4	95	2.8	0 ---	0	0
2/23/2024	1:45 AM	3.6	3.7	3.5	95	2.9	0 E	0	0
2/23/2024	2:00 AM	3.8	3.9	3.7	95	3.1	0 E	0	0
2/23/2024	2:15 AM	3.8	3.9	3.7	95	3.1	0 E	0	0
2/23/2024	2:30 AM	3.8	3.8	3.7	95	3.1	0 ---	0	0
2/23/2024	2:45 AM	3.8	3.9	3.8	95	3.1	0 ---	0	0
2/23/2024	3:00 AM	3.8	3.8	3.7	95	3.1	0 ---	0	0
2/23/2024	3:15 AM	3.8	3.9	3.7	95	3.1	0 E	0	0
2/23/2024	3:30 AM	3.8	3.9	3.7	95	3.1	0 ---	0	0
2/23/2024	3:45 AM	3.7	3.7	3.6	95	2.9	0 E	0	0
2/23/2024	4:00 AM	3.6	3.7	3.4	95	2.8	0 ---	0	0
2/23/2024	4:15 AM	3.4	3.4	3.4	95	2.7	0 ---	0	0
2/23/2024	4:30 AM	3.3	3.4	3.2	95	2.6	0 E	0	0
2/23/2024	4:45 AM	3.4	3.6	3.2	96	2.9	0 E	0	0
2/23/2024	5:00 AM	3.7	3.8	3.6	96	3.1	0 E	0	0
2/23/2024	5:15 AM	3.8	3.8	3.7	95	3.1	0 ENE	0	0
2/23/2024	5:30 AM	3.8	3.9	3.7	95	3.1	0 ENE	0	0
2/23/2024	5:45 AM	3.8	3.9	3.8	95	3.1	0 NE	0	0
2/23/2024	6:00 AM	3.8	3.8	3.7	95	3.1	0 E	0	0
2/23/2024	6:15 AM	3.7	3.7	3.6	94	2.8	0 ENE	0	0
2/23/2024	6:30 AM	3.4	3.6	3.4	95	2.7	0 ENE	0	0
2/23/2024	6:45 AM	3.6	3.7	3.5	95	2.8	0 ENE	0	0
2/23/2024	7:00 AM	3.6	3.7	3.6	95	2.9	1.6 ENE	0	0
2/23/2024	7:15 AM	3.6	3.6	3.6	95	2.8	0 E	0	0
2/23/2024	7:30 AM	3.6	3.7	3.6	95	2.9	1.6 ENE	0	0
2/23/2024	7:45 AM	3.7	3.8	3.6	94	2.8	0 ENE	0	0
2/23/2024	8:00 AM	4.3	4.5	3.8	92	3.1	0 NE	0	0
2/23/2024	8:15 AM	4.3	4.4	4.2	93	3.3	0 NE	0	0
2/23/2024	8:30 AM	4	4.2	4	94	3.1	0 E	0	0
2/23/2024	8:45 AM	4.1	4.1	4	94	3.2	0 E	0	0
2/23/2024	9:00 AM	4.2	4.3	4.1	94	3.3	0 E	0	0
2/23/2024	9:15 AM	4.4	4.5	4.3	94	3.5	0 E	0	0
2/23/2024	9:30 AM	4.7	5	4.5	93	3.7	0 E	0	0
2/23/2024	9:45 AM	5.2	5.4	5	92	4	0 E	0	0
2/23/2024	10:00 AM	5.6	5.8	5.4	91	4.3	1.6 ENE	0	0
2/23/2024	10:15 AM	5.9	6.1	5.8	89	4.3	1.6 ENE	0	0
2/23/2024	10:30 AM	6.2	6.4	6.1	91	4.9	1.6 ENE	0	0
2/23/2024	10:45 AM	6.6	6.6	6.4	89	4.9	1.6 E	0	0
2/23/2024	11:00 AM	6.5	6.6	6.4	89	4.8	0 E	0	0
2/23/2024	11:15 AM	6.6	6.8	6.6	86	4.4	0 E	0	0
2/23/2024	11:30 AM	7.1	7.4	6.8	86	4.9	0 ---	0	0
2/23/2024	11:45 AM	7.8	8.1	7.5	85	5.4	0 ---	0	0
2/23/2024	12:00 PM	8.2	8.3	7.9	84	5.6	0 SSW	0	0
2/23/2024	12:15 PM	7.7	7.8	7.6	88	5.8	1.6 SW	0	0
2/23/2024	12:30 PM	7.6	7.7	7.5	88	5.7	3.2 SW	0	0

2/23/2024	12:45 PM	7.7	7.9	7.5	86	5.5	3.2 SW	0	0
2/23/2024	1:00 PM	8.1	8.3	7.9	86	5.9	3.2 SW	0	0
2/23/2024	1:15 PM	8.3	8.4	8.2	85	6	3.2 SW	0	0
2/23/2024	1:30 PM	8.4	8.6	8.3	85	6	3.2 SW	0	0
2/23/2024	1:45 PM	8.8	9.1	8.6	83	6	3.2 SW	0	0
2/23/2024	2:00 PM	9.2	9.4	9	83	6.4	3.2 SW	0	0
2/23/2024	2:15 PM	9.5	9.6	9.4	81	6.4	3.2 SW	0	0
2/23/2024	2:30 PM	9.4	9.5	9.3	80	6.1	4.8 SW	0	0
2/23/2024	2:45 PM	9.7	9.8	9.4	80	6.4	3.2 SW	0	0
2/23/2024	3:00 PM	9.8	9.9	9.7	78	6.2	3.2 SW	0	0
2/23/2024	3:15 PM	10.1	10.3	9.9	75	5.9	3.2 SW	0	0
2/23/2024	3:30 PM	10.2	10.3	10.1	76	6.1	3.2 SW	0	0
2/23/2024	3:45 PM	10.1	10.2	10	77	6.3	3.2 SW	0	0
2/23/2024	4:00 PM	9.8	10	9.7	77	6	4.8 SW	0	0
2/23/2024	4:15 PM	9.8	9.8	9.8	78	6.1	4.8 SW	0	0
2/23/2024	4:30 PM	9.7	9.8	9.7	79	6.3	4.8 SW	0	0
2/23/2024	4:45 PM	9.6	9.7	9.6	78	5.9	6.4 SW	0	0
2/23/2024	5:00 PM	9.5	9.6	9.4	77	5.7	4.8 SW	0	0
2/23/2024	5:15 PM	9.3	9.4	9.3	77	5.5	3.2 SW	0	0
2/23/2024	5:30 PM	9.1	9.3	9	77	5.3	1.6 SW	0	0
2/23/2024	5:45 PM	9.1	9.1	9	77	5.2	1.6 SSW	0	0
2/23/2024	6:00 PM	8.9	9.1	8.9	77	5.1	1.6 S	0	0
2/23/2024	6:15 PM	8.9	8.9	8.8	78	5.3	0 S	0	0
2/23/2024	6:30 PM	8.7	8.8	8.7	79	5.3	0 S	0	0
2/23/2024	6:45 PM	8.6	8.7	8.6	80	5.4	0 SSW	0	0
2/23/2024	7:00 PM	8.4	8.6	8.3	81	5.4	0 SSW	0	0
2/23/2024	7:15 PM	8.3	8.3	8.3	82	5.4	0 SSW	0	0
2/23/2024	7:30 PM	8.3	8.3	8.3	81	5.2	0 SSW	0	0
2/23/2024	7:45 PM	8.3	8.3	8.3	82	5.4	0 SSW	0	0
2/23/2024	8:00 PM	8.1	8.4	7.8	83	5.4	0 ---	0	0
2/23/2024	8:15 PM	7.7	7.8	7.6	84	5.1	0 SSW	0	0
2/23/2024	8:30 PM	7.5	7.6	7.4	85	5.1	0 ---	0	0
2/23/2024	8:45 PM	7.5	7.6	7.4	85	5.1	0 ESE	0	0
2/23/2024	9:00 PM	7.4	7.7	7.4	86	5.3	0 ESE	0	0
2/23/2024	9:15 PM	7.7	7.7	7.6	86	5.5	1.6 ESE	0	0
2/23/2024	9:30 PM	7.6	7.7	7.6	85	5.2	0 ESE	0	0
2/23/2024	9:45 PM	7.7	7.7	7.6	86	5.5	0 ESE	0	0
2/23/2024	10:00 PM	7.4	7.6	7.3	87	5.4	0 ENE	0	0
2/23/2024	10:15 PM	7.2	7.3	7.2	87	5.2	0 ENE	0	0
2/23/2024	10:30 PM	7.2	7.3	7.2	88	5.4	0 ENE	0	0
2/23/2024	10:45 PM	7.2	7.2	7.1	88	5.3	0 ENE	0	0
2/23/2024	11:00 PM	7.3	7.5	7.1	87	5.3	0 ENE	0	0
2/23/2024	11:15 PM	7.5	7.5	7.4	87	5.5	0 ENE	0	0
2/23/2024	11:30 PM	7.3	7.4	7.2	87	5.3	1.6 ENE	0	0
2/23/2024	11:45 PM	7.4	7.4	7.3	87	5.4	1.6 ENE	0	0
2/24/2024	12:00 AM	7.2	7.4	7.1	88	5.4	1.6 ENE	0	0
2/24/2024	12:15 AM	7.2	7.2	7.1	88	5.3	3.2 ENE	0	0
2/24/2024	12:30 AM	7.2	7.2	7.2	87	5.2	3.2 ENE	0	0
2/24/2024	12:45 AM	7.2	7.2	7.1	88	5.4	3.2 ENE	0	0
2/24/2024	1:00 AM	7.1	7.2	7.1	88	5.3	3.2 ENE	0	0
2/24/2024	1:15 AM	7.1	7.2	7.1	88	5.3	1.6 ENE	0	0
2/24/2024	1:30 AM	7.1	7.2	7.1	88	5.3	1.6 ENE	0	0

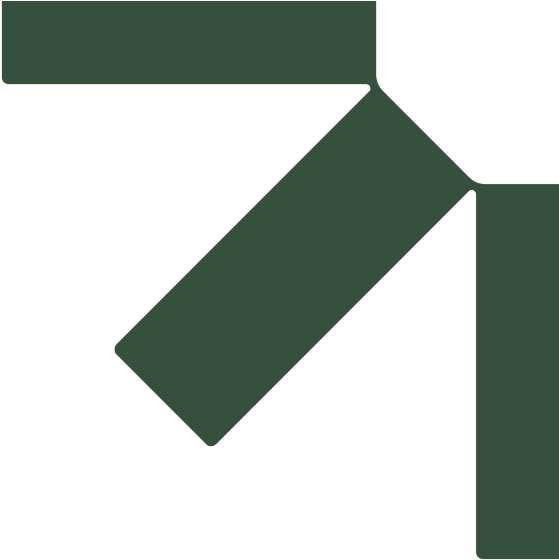
2/24/2024	1:45 AM	6.6	7.1	6.4	90	5.1	3.2 ENE	0	0
2/24/2024	2:00 AM	6.5	6.6	6.4	90	5	1.6 ENE	0	0
2/24/2024	2:15 AM	6.7	6.7	6.6	89	5	1.6 ENE	0	0
2/24/2024	2:30 AM	6.5	6.7	6.4	90	5	0 ESE	0	0
2/24/2024	2:45 AM	6.6	6.8	6.4	89	4.9	0 ESE	0	0
2/24/2024	3:00 AM	6.8	6.8	6.7	89	5.1	0 ENE	0	0
2/24/2024	3:15 AM	6.4	6.7	6.3	91	5	1.6 E	0	0
2/24/2024	3:30 AM	6.5	6.6	6.3	90	5	0 E	0	0
2/24/2024	3:45 AM	6.2	6.3	6.2	91	4.9	0 E	0	0
2/24/2024	4:00 AM	6.2	6.3	6.2	92	5	0 E	0	0
2/24/2024	4:15 AM	6.1	6.2	6.1	92	4.9	0 E	0	0
2/24/2024	4:30 AM	6.1	6.1	6	92	4.9	0 E	0	0
2/24/2024	4:45 AM	6	6.1	5.9	92	4.8	0 E	0	0
2/24/2024	5:00 AM	5.9	6	5.9	93	4.9	0 E	0	0
2/24/2024	5:15 AM	5.9	5.9	5.8	93	4.8	0 SSE	0	0
2/24/2024	5:30 AM	6	6.2	5.9	92	4.8	0 S	0	0
2/24/2024	5:45 AM	6.2	6.3	6.2	91	4.9	0 S	0	0
2/24/2024	6:00 AM	6.2	6.3	6.1	92	5	0 ---	0	0
2/24/2024	6:15 AM	6.1	6.1	6	92	4.9	0 ---	0	0
2/24/2024	6:30 AM	5.9	6	5.8	93	4.8	0 ---	0	0
2/24/2024	6:45 AM	5.9	6.1	5.7	94	5	0 S	0	0
2/24/2024	7:00 AM	6.2	6.2	6.1	93	5.1	0 SW	0	0
2/24/2024	7:15 AM	6.2	6.3	6.2	93	5.2	0 SSW	0	0
2/24/2024	7:30 AM	6.3	6.3	6.2	93	5.2	0 SW	0	0
2/24/2024	7:45 AM	6.3	6.3	6.2	93	5.2	0 SW	0	0
2/24/2024	8:00 AM	6.3	6.3	6.2	93	5.2	0 SW	0	0
2/24/2024	8:15 AM	6.4	6.6	6.3	93	5.3	0 SW	0	0
2/24/2024	8:30 AM	6.6	6.8	6.6	92	5.4	0 SW	0	0
2/24/2024	8:45 AM	6.9	7	6.8	91	5.5	0 ---	0	0
2/24/2024	9:00 AM	7.1	7.2	7	91	5.7	0 ---	0	0
2/24/2024	9:15 AM	7.2	7.3	7.2	90	5.7	0 ---	0	0
2/24/2024	9:30 AM	7.2	7.4	7.2	90	5.7	0 ---	0	0
2/24/2024	9:45 AM	7.5	7.6	7.4	90	6	0 ---	0	0
2/24/2024	10:00 AM	7.6	7.7	7.6	89	5.9	0 ---	0	0
2/24/2024	10:15 AM	7.6	7.7	7.6	87	5.6	0 SW	0	0
2/24/2024	10:30 AM	7.9	8.1	7.7	85	5.6	0 SW	0	0
2/24/2024	10:45 AM	8	8.1	7.9	87	6	0 SW	0	0
2/24/2024	11:00 AM	8.2	8.2	8.1	84	5.6	0 SE	0	0
2/24/2024	11:15 AM	8.2	8.2	8.1	84	5.6	1.6 SE	0	0
2/24/2024	11:30 AM	8.3	8.4	8.2	82	5.4	3.2 ESE	0	0
2/24/2024	11:45 AM	8.4	8.4	8.3	82	5.5	1.6 S	0.2	0
2/24/2024	12:00 PM	8.3	8.4	8.3	82	5.4	3.2 S	0	0
2/24/2024	12:15 PM	8.3	8.3	8.2	83	5.6	1.6 S	0.2	0
2/24/2024	12:30 PM	8.3	8.4	8.2	83	5.6	3.2 ESE	0	0
2/24/2024	12:45 PM	8.4	8.4	8.3	85	6	3.2 S	0.2	0
2/24/2024	1:00 PM	8.3	8.4	8.3	84	5.8	3.2 S	0	0
2/24/2024	1:15 PM	8.4	8.4	8.3	85	6	3.2 SE	0.2	0
2/24/2024	1:30 PM	8.4	8.4	8.3	86	6.2	3.2 SE	0	0
2/24/2024	1:45 PM	8.4	8.4	8.3	86	6.2	4.8 ESE	0.2	0
2/24/2024	2:00 PM	8.3	8.4	8.3	87	6.3	3.2 ESE	0.2	0
2/24/2024	2:15 PM	8.4	8.4	8.3	87	6.3	3.2 ESE	0	0
2/24/2024	2:30 PM	8.5	8.6	8.4	87	6.5	3.2 SE	0	0

2/24/2024	2:45 PM	8.6	8.6	8.6	88	6.7	3.2 ESE	0.2	0
2/24/2024	3:00 PM	8.5	8.6	8.4	87	6.5	4.8 SE	0	0
2/24/2024	3:15 PM	8.4	8.4	8.4	87	6.4	6.4 SE	0	0
2/24/2024	3:30 PM	8.4	8.4	8.3	87	6.3	6.4 SE	0	0
2/24/2024	3:45 PM	8.3	8.4	8.3	88	6.5	8 ESE	0.2	0
2/24/2024	4:00 PM	8.3	8.3	8.2	88	6.4	6.4 SE	0	0
2/24/2024	4:15 PM	8.2	8.3	8.2	87	6.2	8 S	0	0
2/24/2024	4:30 PM	8.2	8.2	8.1	88	6.3	8 ESE	0	0
2/24/2024	4:45 PM	8.1	8.1	8	88	6.2	8 SE	0.2	0
2/24/2024	5:00 PM	8	8	8	88	6.1	6.4 SE	0	0
2/24/2024	5:15 PM	8	8.1	8	88	6.1	6.4 S	0	0
2/24/2024	5:30 PM	8	8.1	7.9	88	6.1	6.4 S	0	0
2/24/2024	5:45 PM	8	8	7.9	88	6.1	6.4 SE	0	0
2/24/2024	6:00 PM	8	8	7.9	89	6.3	8 SSE	0	0
2/24/2024	6:15 PM	7.9	7.9	7.9	89	6.2	8 SE	0	0
2/24/2024	6:30 PM	7.9	8	7.9	88	6.1	8 SSE	0	0
2/24/2024	6:45 PM	8.1	8.1	8	88	6.2	6.4 SSE	0	0
2/24/2024	7:00 PM	8.1	8.1	8	87	6	8 S	0	0
2/24/2024	7:15 PM	8.1	8.1	8	88	6.2	9.7 SE	0	0
2/24/2024	7:30 PM	8	8	7.9	87	6	8 S	0	0
2/24/2024	7:45 PM	7.9	8	7.9	87	5.9	8 SE	0	0
2/24/2024	8:00 PM	7.9	8	7.9	88	6.1	6.4 SE	0	0
2/24/2024	8:15 PM	7.9	7.9	7.9	88	6.1	4.8 SE	0	0
2/24/2024	8:30 PM	7.9	7.9	7.9	88	6.1	3.2 SE	0	0
2/24/2024	8:45 PM	7.9	7.9	7.9	88	6	1.6 ESE	0	0
2/24/2024	9:00 PM	7.9	7.9	7.9	87	5.9	3.2 S	0	0
2/24/2024	9:15 PM	7.9	7.9	7.9	87	5.9	3.2 SE	0	0
2/24/2024	9:30 PM	7.9	8	7.9	86	5.7	3.2 ESE	0	0
2/24/2024	9:45 PM	8	8	7.9	86	5.8	1.6 ESE	0	0
2/24/2024	10:00 PM	8	8	7.9	87	6	0 ESE	0	0
2/24/2024	10:15 PM	7.9	7.9	7.8	89	6.2	0 ESE	0	0
2/24/2024	10:30 PM	7.8	7.9	7.8	87	5.8	1.6 ESE	0	0
2/24/2024	10:45 PM	7.8	7.9	7.7	88	5.9	3.2 SE	0	0
2/24/2024	11:00 PM	7.7	7.7	7.6	89	6	3.2 SE	0.2	0
2/24/2024	11:15 PM	7.6	7.6	7.5	90	6	3.2 ESE	0	0
2/24/2024	11:30 PM	7.5	7.5	7.4	90	6	3.2 ESE	0	0
2/24/2024	11:45 PM	7.4	7.4	7.4	90	5.9	4.8 ESE	0.2	0
2/25/2024	12:00 AM	7.4	7.4	7.4	91	6.1	4.8 ESE	0	0
2/25/2024	12:15 AM	7.4	7.4	7.3	91	6	1.6 ESE	0	0
2/25/2024	12:30 AM	7.4	7.4	7.4	91	6	0 S	0	0
2/25/2024	12:45 AM	7.5	7.6	7.4	91	6.1	0 ESE	0	0
2/25/2024	1:00 AM	7.6	7.6	7.6	91	6.2	1.6 ESE	0	0
2/25/2024	1:15 AM	7.6	7.7	7.6	91	6.2	1.6 ENE	0	0
2/25/2024	1:30 AM	7.5	7.6	7.4	92	6.3	1.6 NE	0	0
2/25/2024	1:45 AM	7.6	7.8	7.4	90	6.1	3.2 E	0	0
2/25/2024	2:00 AM	7.8	7.8	7.7	90	6.2	3.2 ESE	0	0
2/25/2024	2:15 AM	7.8	7.8	7.8	89	6.1	3.2 SE	0	0
2/25/2024	2:30 AM	7.8	7.9	7.8	89	6.1	3.2 ESE	0	0
2/25/2024	2:45 AM	7.9	8	7.9	88	6.1	4.8 SSE	0	0
2/25/2024	3:00 AM	8	8.1	8	88	6.1	6.4 SE	0	0
2/25/2024	3:15 AM	8	8	8	87	6	8 SE	0	0
2/25/2024	3:30 AM	8.1	8.1	8	87	6	8 SE	0	0

2/25/2024	3:45 AM	8	8.1	7.9	88	6.1	9.7 SE	0	0
2/25/2024	4:00 AM	7.9	7.9	7.8	89	6.2	8 SE	0.2	0
2/25/2024	4:15 AM	7.8	7.8	7.7	90	6.2	8 SE	0.4	1.2
2/25/2024	4:30 AM	7.7	7.7	7.7	90	6.2	8 SE	0.4	1.4
2/25/2024	4:45 AM	7.7	7.7	7.6	90	6.1	6.4 SE	0.2	1.2
2/25/2024	5:00 AM	7.6	7.6	7.6	90	6.1	9.7 SE	0.6	2.2
2/25/2024	5:15 AM	7.6	7.6	7.5	91	6.2	9.7 SE	0.4	1.8
2/25/2024	5:30 AM	7.5	7.6	7.5	91	6.1	9.7 SE	0.4	1.8
2/25/2024	5:45 AM	7.5	7.6	7.5	91	6.1	9.7 SE	0.6	2
2/25/2024	6:00 AM	7.4	7.5	7.4	91	6.1	8 SE	0.4	2
2/25/2024	6:15 AM	7.4	7.5	7.4	91	6.1	8 SE	0.8	3.8
2/25/2024	6:30 AM	7.4	7.5	7.4	91	6.1	6.4 SE	1	4.2
2/25/2024	6:45 AM	7.5	7.5	7.4	91	6.1	8 SE	0.6	4.2
2/25/2024	7:00 AM	7.5	7.6	7.5	90	6	6.4 ESE	0.4	2.2
2/25/2024	7:15 AM	7.6	7.6	7.5	90	6	6.4 SE	0.2	1.6
2/25/2024	7:30 AM	7.6	7.6	7.6	90	6	8 SE	0.4	1.2
2/25/2024	7:45 AM	7.6	7.6	7.6	90	6	9.7 ESE	0.2	1
2/25/2024	8:00 AM	7.6	7.6	7.5	90	6	9.7 ESE	0.2	1
2/25/2024	8:15 AM	7.6	7.6	7.5	89	5.9	9.7 ESE	0.2	1
2/25/2024	8:30 AM	7.6	7.6	7.5	89	5.9	9.7 ESE	0	0
2/25/2024	8:45 AM	7.6	7.7	7.6	89	5.9	8 ESE	0.2	0
2/25/2024	9:00 AM	7.7	7.7	7.7	88	5.8	8 ESE	0	0
2/25/2024	9:15 AM	7.7	7.8	7.7	87	5.7	6.4 SSE	0	0
2/25/2024	9:30 AM	7.7	7.8	7.7	87	5.7	4.8 S	0.2	0
2/25/2024	9:45 AM	7.8	7.9	7.8	86	5.6	6.4 S	0	0
2/25/2024	10:00 AM	7.9	7.9	7.9	86	5.7	6.4 S	0	0
2/25/2024	10:15 AM	8.1	8.1	7.9	85	5.7	8 ESE	0	0
2/25/2024	10:30 AM	8.1	8.1	8.1	85	5.7	9.7 SE	0	0
2/25/2024	10:45 AM	8.2	8.3	8.1	84	5.6	12.9 SE	0	0
2/25/2024	11:00 AM	8.3	8.4	8.3	84	5.8	9.7 SE	0	0
2/25/2024	11:15 AM	8.4	8.4	8.4	84	5.9	8 S	0	0
2/25/2024	11:30 AM	8.5	8.6	8.4	84	5.9	9.7 S	0	0
2/25/2024	11:45 AM	8.6	8.6	8.5	85	6.2	11.3 S	0	0
2/25/2024	12:00 PM	8.6	8.6	8.6	85	6.2	12.9 S	0	0
2/25/2024	12:15 PM	8.6	8.6	8.5	86	6.3	16.1 S	0	0
2/25/2024	12:30 PM	8.4	8.5	8.4	86	6.2	16.1 SE	0	0
2/25/2024	12:45 PM	8.4	8.5	8.4	85	6.1	17.7 SE	0	0
2/25/2024	1:00 PM	8.6	8.7	8.5	85	6.2	17.7 SE	0	0
2/25/2024	1:15 PM	8.7	8.8	8.7	85	6.3	16.1 SE	0	0
2/25/2024	1:30 PM	8.9	8.9	8.8	85	6.5	16.1 SSE	0	0
2/25/2024	1:45 PM	9	9.1	8.9	85	6.6	17.7 S	0	0
2/25/2024	2:00 PM	9.1	9.2	9	84	6.5	12.9 SE	0	0
2/25/2024	2:15 PM	9.4	9.6	9.2	80	6.1	12.9 S	0	0
2/25/2024	2:30 PM	9.7	9.7	9.6	79	6.2	11.3 SSW	0	0
2/25/2024	2:45 PM	9.7	9.8	9.4	72	4.9	19.3 SW	0	0
2/25/2024	3:00 PM	8.9	9.4	8.6	72	4.2	19.3 WSW	0	0
2/25/2024	3:15 PM	8.4	8.6	8.2	70	3.2	14.5 WSW	0	0
2/25/2024	3:30 PM	8.3	8.3	8.2	68	2.7	16.1 WSW	0	0
2/25/2024	3:45 PM	8.1	8.3	7.8	64	1.7	19.3 WSW	0	0
2/25/2024	4:00 PM	7.7	7.8	7.7	63	1.1	19.3 WSW	0	0
2/25/2024	4:15 PM	7.5	7.7	7.3	62	0.7	22.5 WSW	0	0
2/25/2024	4:30 PM	7.1	7.3	7	64	0.8	17.7 WSW	0	0

2/25/2024	4:45 PM	6.9	7	6.9	63	0.4	19.3 WSW	0	0
2/25/2024	5:00 PM	6.8	6.9	6.7	64	0.4	19.3 WSW	0	0
2/25/2024	5:15 PM	6.6	6.7	6.5	63	0.1	17.7 SW	0	0
2/25/2024	5:30 PM	6.4	6.5	6.3	66	0.5	17.7 WSW	0	0
2/25/2024	5:45 PM	6.3	6.3	6.2	66	0.4	16.1 SW	0	0
2/25/2024	6:00 PM	6.1	6.2	6.1	68	0.6	14.5 SW	0	0
2/25/2024	6:15 PM	5.9	6.1	5.8	70	0.9	11.3 SW	0	0
2/25/2024	6:30 PM	5.8	5.8	5.7	68	0.3	12.9 SW	0	0
2/25/2024	6:45 PM	5.7	5.7	5.6	70	0.6	11.3 SW	0	0
2/25/2024	7:00 PM	5.5	5.6	5.4	71	0.7	11.3 SW	0	0
2/25/2024	7:15 PM	5.4	5.4	5.3	72	0.7	8 SW	0	0
2/25/2024	7:30 PM	5.3	5.4	5.3	69	0.1	11.3 SW	0	0
2/25/2024	7:45 PM	5.1	5.3	4.8	71	0.3	16.1 WSW	0	0
2/25/2024	8:00 PM	4.8	4.8	4.7	73	0.3	11.3 SW	0	0
2/25/2024	8:15 PM	4.7	4.7	4.5	74	0.4	12.9 SW	0	0
2/25/2024	8:30 PM	4.3	4.5	3.9	76	0.4	16.1 SW	0	0
2/25/2024	8:45 PM	3.2	3.9	2.8	81	0.2	12.9 WSW	0	0
2/25/2024	9:00 PM	2.7	2.8	2.7	82	0	9.7 WSW	0	0
2/25/2024	9:15 PM	2.8	2.9	2.7	80	-0.3	8 SW	0	0
2/25/2024	9:30 PM	2.9	3.1	2.9	76	-0.9	9.7 WSW	0	0
2/25/2024	9:45 PM	3.3	3.4	3.1	78	-0.1	8 SW	0	0
2/25/2024	10:00 PM	3.3	3.4	3.1	80	0.2	8 SW	0	0
2/25/2024	10:15 PM	3.1	3.2	3	79	-0.2	8 WSW	0	0
2/25/2024	10:30 PM	2.8	3.1	2.7	78	-0.6	4.8 SW	0	0
2/25/2024	10:45 PM	2.9	3.1	2.7	81	-0.1	8 SW	0	0
2/25/2024	11:00 PM	3.1	3.2	3.1	82	0.3	8 SW	0	0
2/25/2024	11:15 PM	2.9	3.1	2.8	82	0.2	6.4 SSW	0	0
2/25/2024	11:30 PM	2.7	2.8	2.6	84	0.3	4.8 SSW	0	0
2/25/2024	11:45 PM	2.7	2.8	2.7	83	0.1	4.8 SW	0	0
2/26/2024	12:00 AM	2.4	2.7	2.3	83	-0.2	0 WSW	0	0
2/26/2024	12:15 AM	2.3	2.3	2.2	85	0	1.6 SSW	0	0
2/26/2024	12:30 AM	2.3	2.3	2.2	84	-0.1	1.6 SW	0	0
2/26/2024	12:45 AM	2.1	2.2	2	85	-0.2	1.6 SW	0	0
2/26/2024	1:00 AM	2	2.1	2	85	-0.3	1.6 SSW	0	0
2/26/2024	1:15 AM	1.9	2	1.8	84	-0.5	0 S	0	0
2/26/2024	1:30 AM	1.7	1.9	1.6	85	-0.5	1.6 SW	0	0
2/26/2024	1:45 AM	1.6	1.7	1.3	85	-0.6	1.6 ENE	0	0
2/26/2024	2:00 AM	1	1.3	0.8	88	-0.8	1.6 ENE	0	0
2/26/2024	2:15 AM	0.8	0.8	0.7	88	-1	1.6 E	0	0
2/26/2024	2:30 AM	0.7	0.8	0.5	88	-1	0 ENE	0	0
2/26/2024	2:45 AM	0.2	0.5	0	90	-1.2	0 E	0	0
2/26/2024	3:00 AM	0.1	0.1	-0.1	90	-1.4	0 ENE	0	0
2/26/2024	3:15 AM	-0.1	0	-0.2	91	-1.4	1.6 ENE	0	0
2/26/2024	3:30 AM	0	0.2	-0.2	90	-1.4	1.6 E	0	0
2/26/2024	3:45 AM	0.1	0.2	-0.2	90	-1.4	0 E	0	0
2/26/2024	4:00 AM	-0.3	-0.2	-0.5	90	-1.8	0 ---	0	0
2/26/2024	4:15 AM	-0.7	-0.5	-0.8	91	-2	0 ---	0	0
2/26/2024	4:30 AM	-0.8	-0.7	-0.8	91	-2.1	0 ---	0	0
2/26/2024	4:45 AM	-0.7	-0.6	-0.7	92	-1.8	0 ---	0	0
2/26/2024	5:00 AM	-0.7	-0.7	-0.8	92	-1.9	1.6 ENE	0	0
2/26/2024	5:15 AM	-0.8	-0.7	-0.9	92	-2	0 ENE	0	0
2/26/2024	5:30 AM	-0.9	-0.9	-1	92	-2.1	0 E	0	0

2/26/2024	5:45 AM	-0.9	-0.9	-1.1	92	-2.1	0 E	0	0
2/26/2024	6:00 AM	-1.1	-1.1	-1.2	93	-2.1	0 E	0	0
2/26/2024	6:15 AM	-1.1	-1.1	-1.2	93	-2.1	0 S	0	0
2/26/2024	6:30 AM	-1.1	-1	-1.2	92	-2.2	0 S	0	0
2/26/2024	6:45 AM	-1.2	-1.1	-1.3	93	-2.2	0 ---	0	0
2/26/2024	7:00 AM	-0.9	-0.9	-1.1	91	-2.2	0 S	0	0
2/26/2024	7:15 AM	-0.9	-0.9	-1	92	-2.1	0 ---	0	0
2/26/2024	7:30 AM	-0.9	-0.8	-0.9	92	-2	0 ---	0	0
2/26/2024	7:45 AM	-0.4	0.2	-0.8	91	-1.7	0 ESE	0	0
2/26/2024	8:00 AM	0.5	0.7	0.2	89	-1.1	0 E	0	0
2/26/2024	8:15 AM	0.5	0.6	0.4	90	-1	0 E	0	0
2/26/2024	8:30 AM	0.7	1.1	0.5	90	-0.8	0 ---	0	0
2/26/2024	8:45 AM	1.2	1.4	1.1	88	-0.5	0 ENE	0	0



Appendix F Activity Log During Baseline Monitoring Period

Environmental Noise Assessment Report

Kiewit Marine Yard

Kiewit Engineering Group Canada ULC

SLR Project No.: 201.088941.00001

May 13, 2024

Kiewit: Western Canada Marine Yard - Noise Monitoring Program Activity Tracker

Document No.: 105716-S00-WCD-OPS-DAT-0001
Revision: Rev. 0
Date: 28-Feb-24

Log Recorded by:	Location		Marine Water Lot East									East Dock						Central Project Yard						Kenworth Dump Trucks	Misc. Equipment (ie: compressor, grinder, etc)	West Project Yard						Misc. Equipment (ie: compressor, grinder, etc)	Disposal at Sea										Misc. Equipment (ie: compressor, grinder, etc)	Elgin Sweeper																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
	Equipment Classification:		Derrick Barge		Tug Boats		Delivery Trucks		Telehandler		Excavator		Forklift		Loader		Manlift		Land Crane		Misc. Equipment (ie: compressor, grinder, etc)		Telehandler			Excavator		Forklift		Loader			Manlift		Land Crane		Dump Trucks		CAT980M	CAT 325	CAT 305	Feeder			Conveyor	Stacker	Tugs																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
	Instructions:		Vessel name and total number of operational hours within time period recorded below:				Various delivery vehicles or trucks. Each vehicle on-site for about max. 15 minutes. Quantity of vchiles per hour recorded below:				Equipment name and total number of operational hours within time period recorded below:				Equipment type and total number of operational hours within time period recorded below: Dump Trucks: Qty of truck trips leaving facility at East Gate				Equipment name and total number of operational hours within time period recorded below:				Insert operation hours			Equipment type and total number of operational hours within time period recorded below:				Equipment name and total number of operational hours within time period recorded below:						Equipment type and total number of operational hours within time period recorded below:				Dump Trucks: Qty of truck trips entering facility at West Gate, depositing load at DAS						Operational hours within time period recorded below.						Equipment type and total number of operational hours within time period recorded below:		Sweeper travelled from DAS to Office and Back, operational hours within time period recorded below:																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
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Kiewit: Western Canada Marine Yard - Noise Monitoring Program Activity Tracker

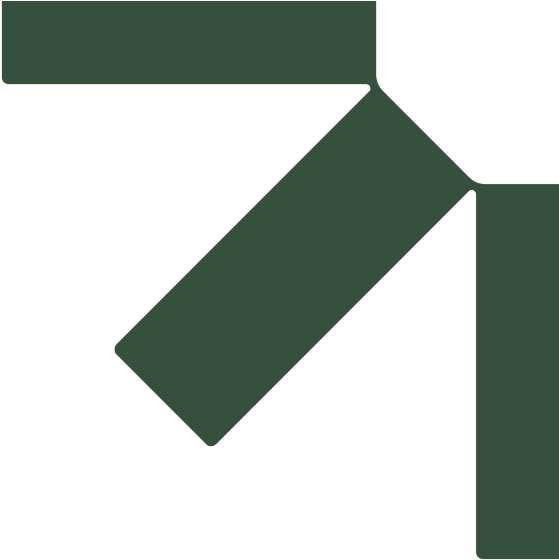
Document No.: 105716-S00-WCD-OPS-DAT-0001
Revision: Rev. 0
Date: 28-Feb-24

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Kiewit: Western Canada Marine Yard - Noise Monitoring Program Activity Tracker

Document No.: 105716-500-WCO-OPS-DAT-0001
Revision: Rev. 0
Date: 28-Feb-24

Location		Marine Water Lot East			East Dock										Central Project Yard							West Project Yard							Disposal at Sea																																							
Equipment Classification:		Derrick Barge		Tug Boats	Delivery Trucks		Telehandler	Excavator	Forklift	Loader	Manlift	Land Crane	Misc. Equipment (ie: compressor, grinder, etc)		Telehandler	Excavator	Forklift	Loader	Manlift	Land Crane	Kenworth Dump Trucks	Misc. Equipment (ie: compressor, grinder, etc)		Telehandler	Excavator	Forklift	Loader	Manlift	Land Crane	Misc. Equipment (ie: compressor, grinder, etc)		Dump Trucks	CAT980M	CAT 325	CAT 305	Feeder	Conveyor	Stacker	Tugs	Misc. Equipment (ie: compressor, grinder, etc)		Elgin Sweeper																										
Instructions:		Vessel name and total number of operational hours within time period recorded below:			Various delivery vehicles or trucks. Each vehicle on-site for about max. 15 minutes. Quantity of vehicles per hour recorded below:										Equipment name and total number of operational hours within time period recorded below:										Equipment type and total number of operational hours within time period recorded below: Dump Trucks: Qty of truck trips leaving facility at East Gate		Equipment name and total number of operational hours within time period recorded below:							insert operation hours	Equipment type and total number of operational hours within time period recorded below:		Equipment name and total number of operational hours within time period recorded below:							Equipment type and total number of operational hours within time period recorded below:		Dump Trucks: Qty of truck trips entering facility at West Gate, depositing load at DAS	Operational hours within time period recorded below:										Equipment type and total number of operational hours within time period recorded below:		Sweeper travelled from DAS to Office and Back, operational hours within time period recorded below:									
Log Recorded by:	Date	Time																																																																		
	23-Feb-24	11:00	DB General : DB Bremerton : HS 8300 : 3 hrs			1										Xtreme Telehandler (operation between Central Yard to East										DAS Trucks: 24 (leaving site from DAS area)		Xtreme Telehandler: 1 hr																Pressure washer: 1 Hr		24	1 1 1 1 1 1										Elgin Sweeper: 1 Hr											
	23-Feb-24	12:00	DB General : DB Bremerton : HS 8300 : 3 hrs			Harken 7 + Quadrant Partner: 2 hrs										1										Xtreme Telehandler (operation between Central Yard to East										DAS Trucks: 24 (leaving site from DAS area)		Xtreme Telehandler: 1 hr									1							Pressure washer: 1 Hr		24	1 1 1 1 1 1										Elgin Sweeper: 1 Hr	
	23-Feb-24	13:00	DB General : DB Bremerton : HS 8300 : 3 hrs			1										Xtreme Telehandler (operation between Central Yard to East										DAS Trucks: 24 (leaving site from DAS area)		Xtreme Telehandler: 1 hr									1							Pressure washer: 1 Hr		24	1 1 1 1 1 1										Elgin Sweeper: 1 Hr											
	23-Feb-24	14:00	DB General : DB Bremerton : 2 hrs			1										Xtreme Telehandler (operation between Central Yard to East										DAS Trucks: 24 (leaving site from DAS area)		Xtreme Telehandler: 1 hr									1							Pressure washer: 1 Hr		24	1 1 1 1 1 1										Elgin Sweeper: 1 Hr											
	23-Feb-24	15:00	DB General : DB Bremerton : 2 hrs			Harken 7 + Quadrant Partner: 2 hrs																				DAS Trucks: 24 (leaving site from DAS area)											1							Pressure washer: 1 Hr		24	1 1 1 1 1 1										Elgin Sweeper: 1 Hr											
	23-Feb-24	16:00	DB General : DB Bremerton : 2 hrs			1																															1							Pressure washer: 1 Hr		24	1 1 1 1 1 1										Elgin Sweeper: 0.5 Hr											
	23-Feb-24	17:00				1																																																														
	23-Feb-24	18:00																																																																		
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	24-Feb-24	5:00																																																																		
	24-Feb-24	6:00																																																																		
	24-Feb-24	7:00	DB General : DB Bremerton : 2 hrs																																									1 1		1 1 1 1 1 1										Elgin Sweeper: 1 Hr												
	24-Feb-24	8:00	DB General : DB Bremerton : 2 hrs																																		1							1 1		1 1 1 1 1 1										Elgin Sweeper: 1 Hr												
	24-Feb-24	9:00	DB General : DB Bremerton : HS 8300 : 3 hrs			Harken 7 + Quadrant Partner: 2 hrs																															1							1 1		1 1 1 1 1 1										Elgin Sweeper: 1 Hr												
	24-Feb-24	10:00	DB General : DB Bremerton : HS 8300 : 3 hrs			Harken 7 + Quadrant Partner: 2 hrs																															1							1 1		1 1 1 1 1 1										Elgin Sweeper: 1 Hr												
	24-Feb-24	11:00	DB General : DB Bremerton : HS 8300 : 3 hrs																																		1							1 1		1 1 1 1 1 1										Elgin Sweeper: 1 Hr												
	24-Feb-24	12:00	DB General : DB Bremerton : HS 8300 : 3 hrs			Harken 7 + Quadrant Partner: 2 hrs																															1							1 1		1 1 1 1 1 1										Elgin Sweeper: 1 Hr												
	24-Feb-24	13:00	DB General : DB Bremerton : HS 8300 : 3 hrs			Harken 7 + Quadrant Partner: 2 hrs																															1							1 1		1 1 1 1 1 1										Elgin Sweeper: 1 Hr												
	24-Feb-24	14:00	DB General : DB Bremerton : 2 hrs																																		1							1 1		1 1 1 1 1 1										Elgin Sweeper: 1 Hr												
	24-Feb-24	15:00	DB General : DB Bremerton : 2 hrs																																																					Quadrant Partner: 1 Hr												
	24-Feb-24	16:00	DB General : DB Bremerton : 2 hrs																																																					Quadrant Partner: 1 Hr												
	24-Feb-24	17:00																																																																		
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Appendix G Equipment Operational Information

Environmental Noise Assessment Report

Kiewit Marine Yard

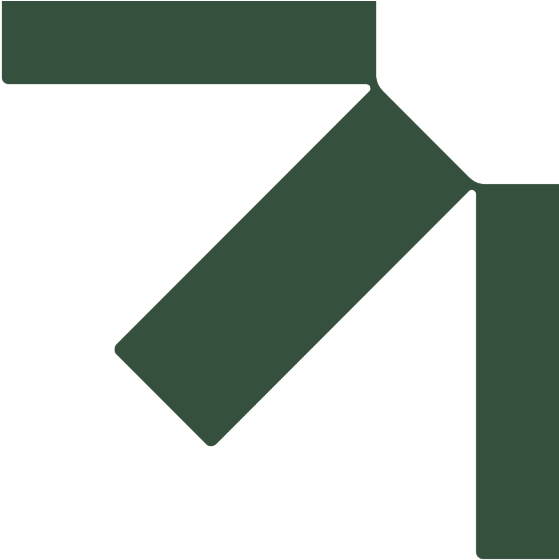
Kiewit Engineering Group Canada ULC

SLR Project No.: 201.088941.00001

May 13, 2024

Noise Modelling Matrix													
Model Case	Yard Location	Operational Category	Equipment Type	Manufacturer	Equipment Model	Power Rating (If applicable)	Fuel Type	Dayshift Operational Hours (Maximum and Average) (7 am to 8 pm) - Includes description of quantity of equipment in operation per shift	Evening Operational Hours (Maximum and Average) (8 pm to 10 pm) - Includes description of quantity of equipment in operation per shift	Nightshift Operational Hours (Maximum and Average) (10 pm to 7 am) - Includes description of quantity of equipment in operation per shift	Weekend Operational Hours- (If different from weekdays).	Average Use Factor/load value (the equipment will not work at max load all the time)	Supply Chain (Y/N and Category)
Base Case	Marine Water Lot East / West	Marine Support Vessels	Derrick Barges / Tones Provider Crane	LIEBHERR	HS 895 HD	898 HP	Marine Diesel	Maximum Operating Hours: 36 hours per shift. Based on three Derrick Barges (3 x 13 hrs) in operation simultaneously. Average Operating Hours: 6 hours per shift, average 4 shifts /wk (one each of Crane and Deck Generator). Average is based on one Derrick Barge (1x6 hrs). *Note, typically only one Derrick Barge Crane, and one Derrick Barge Generator is simultaneously in use at a given time (average condition), however some instances multiple may be in operation (maximum condition), assume maximum three DB Cranes and Generators at one time.	Maximum Operating Hours: 6 hours per shift. Based on three Derrick Barges (3 x 2 hours) in operation simultaneously. Average Operating Hours: 1 hours per shift, average 1 shifts /wk (one each of Crane and Deck Generator). Average is based on one Derrick Barge (1 x 1 hour). *Note, typically only one Derrick Barge Crane, and one Derrick Barge Generator is simultaneously in use at a given time (average condition), however some instances multiple may be in operation (maximum condition), assume maximum three DB Cranes and Generators at one time.	Maximum Operating Hours: 9 hours per shift. Based on one Derrick Barge in operation. Average Operating Hours: 1 hours per shift, average 4 shifts /wk (one each of Crane and Deck Generator (6 am to 7 am)). Average is based on one Derrick Barge (1 x 1 hour). *Note, typically only one Derrick Barge Crane, and one Derrick Barge Generator is simultaneously in use at a given time (average condition), however some instances multiple may be in operation (maximum condition), assume maximum three DB Cranes and Generators at one time.	Average weekend Operating Hours: 6 hours per shift, average 1 shifts /month (one each of Crane and Deck Generator). Based on one Derrick Barge in operation.	Operating output: 5% time Idle: 95% time	No
Base Case	Marine Water Lot East / West	Marine Support Vessels	Derrick Barges / Tones Provider Deck Generator	MULTIQUIP	DCA45SSU4F	66 HP	Marine Diesel						
Base Case	Marine Water Lot East / West	Marine Support Vessels	Derrick Barges / DB Olympia Crane	DRAVO/WELLMAN	413	700 HP	Marine Diesel						
Base Case	Marine Water Lot East / West	Marine Support Vessels	Derrick Barges / DB Olympia Deck Generator	SHINDAIIWA	DGK100D	153 HP	Marine Diesel						
Base Case	Marine Water Lot East / West	Marine Support Vessels	Derrick Barges / DB General Crane	CLYDE	52-49	Two @ 700 HP ea (1400 HP Total)	Marine Diesel						
Base Case	Marine Water Lot East / West	Marine Support Vessels	Derrick Barges / DB General Deck Generator	SHINDAIIWA	DKG150D	190 HP	Marine Diesel						
Base Case	Marine Water Lot East / West	Marine Support Vessels	Derrick Barges / DB Bremerton Crane	DRAVO/WELLMAN	413D	700 HP	Marine Diesel						
Base Case	Marine Water Lot East / West	Marine Support Vessels	Derrick Barges / DB Bremerton Deck Generator	MULTIQUIP	DCA45US4CAN	67 HP	Marine Diesel						
Base Case	Marine Water Lot East / West	Marine Support Vessels	Derrick Barges / DB Columbia Crane	DRAVO/WELLMAN	413D	700 HP	Marine Diesel						
Base Case	Marine Water Lot East / West	Marine Support Vessels	Derrick Barges / DB Columbia Deck Generator	MULTIQUIP	DCA70SSU4F	95 HP	Marine Diesel						
Base Case	Marine Water Lot East / West	Marine Support Vessels	Tug Boat	Unknown	Quadrant Partner	1,400 HP	Marine Diesel	Maximum Operating Hours: 10 hours per shift. Based on two tugs in operation simultaneously (2 x 5 hrs). Average Operating Hours: 3 hours per shift, average avg. 4 shifts /wk. Based on two tugs in operation simultaneously (2 x 1.5 hrs).	Maximum Operating Hours: 4 hours per shift. Based on two tugs in operation simultaneously (2 x 5 hrs). Average Operating Hours: 2 hours per shift, average avg. 1 shifts /month. Based on two tugs in operation simultaneously (2 x 1 hrs).	Maximum Operating Hours: 10 hours per shift. Based on two tugs in operation simultaneously (2 x 5 hrs). Average Operating Hours: 3 hours per shift, 1 shift per week. Based on two tugs in operation simultaneously (2 x 1.5 hrs).	Average weekend Operating Hours: 3 hours per shift, average 1 shifts /month. Based on two tugs in operation simultaneously (2 x 1.5 hrs).	Operating output: 50% time Idle: 50% time	Yes - Marine Traffic Category 2 (Projects) 100% of "Operational Hours" are within the Marine Yard Property. Supply Chain Traffic - Two (2) Tugs per week. Total distance: 160 km (86.5 nautical miles) per week.
Base Case	Marine Water Lot East / West	Marine Support Vessels	Tug Boat	Unknown	Ken Mackenzie	1,100 HP	Marine Diesel						
Base Case	Marine Water Lot East / West	Marine Support Vessels	Tug Boat	Unknown	Rose Mackenzie	1,125 HP	Marine Diesel						
Base Case	Marine Water Lot East / West	Marine Support Vessels	Tug Boat	Unknown	Granny Hutch	1,200 HP	Marine Diesel						
Base Case	Marine Water Lot East / West	Marine Support Vessels	Tug Boat	Unknown	Seaspan Protector	1,014 HP	Marine Diesel						
Base Case	Marine Water Lot East / West	Marine Support Vessels	Tug Boat	Unknown	Cadal	1,000 HP	Marine Diesel						
Base Case	Marine Water Lot East / West	Marine Support Vessels	Tug Boat	Unknown	Quadrant Warrior	1,000 HP	Marine Diesel						
Base Case	Marine Water Lot East / West	Marine Support Vessels	Tug Boat	Unknown	Ocean Defiant	N/A	Marine Diesel						
Base Case	Marine Water Lot East / West	Marine Support Vessels	Tug Boat	Unknown	Tim Mackenzie	N/A	Marine Diesel						
Base Case	Marine Water Lot East / West	Marine Support Vessels	Tug Boat	Unknown	North Arm Victor	N/A	Marine Diesel						
Base Case	Marine Water Lot East / West	Marine Support Vessels	Tug Boat	Unknown	Ocean Greg	1,600 HP	Marine Diesel						
Base Case	Marine Water Lot East / West	Marine Support Vessels	Tug Boat	Unknown	Harken No. 7	1,125 HP	Marine Diesel						
Base Case	Marine Water Lot East / West	Marine Support Vessels	Tug Boat	Unknown	Ocean Betty	1,200 HP	Marine Diesel						
Base Case	Marine Water Lot East / West	Marine Support Vessels	Tug Boat	Unknown	Ocean Warlock	1,600 HP	Marine Diesel						
Base Case	East Dock, Central Project Yard, West Project Yard	Land based project support vehicles	Telehandler	Telehandler	JLG 943	110 HP	Biodiesel	Maximum Operating Hours Per Shift: 13 hours. Average Operating Hours Per Shift: 3 hours (avg. 5 shifts /wk). Only one telehandler in operation at a given time.	Maximum Operating Hours Per Shift: 2 hours. Average Operating Hours Per Shift: 1 hour (avg. 1 shifts /wk). Only one telehandler in operation at a given time.	Maximum Operating Hours Per Shift: 9 hours. Average Operating Hours Per Shift: 1 hour (avg. 1 shifts /wk). Only one telehandler in operation at a given time.	None	Operating output: 50% time Idle: 50% time	No
Base Case	East Dock, Central Project Yard, West Project Yard	Land based project support vehicles	Forklift	KALMAR	DCD 250-12LB	243 HP	Biodiesel	Maximum Operating Hours Per Shift: 13 hours. Average Operating Hours Per Shift: 3 hours (avg. 5 shifts /wk). Only one forklift in operation at a given time.	Maximum Operating Hours Per Shift: 2 hours. Average Operating Hours Per Shift: 1 hour (avg. 1 shifts /wk). Only one forklift in operation at a given time.	Maximum Operating Hours Per Shift: 9 hours. Average Operating Hours Per Shift: 1 hour (avg. 1 shifts /wk). Only one forklift in operation at a given time.	None	Operating output: 50% time Idle: 50% time	No
Base Case	East Dock, Central Project Yard, West Project Yard	Land based project support vehicles	Skidsteer	CATERPILLAR	262D3	74.3 HP	Biodiesel	Maximum Operating Hours Per Shift: 13 hours. Average Operating Hours Per Shift: 3 hours (avg. 5 shifts /wk). Only one skidsteer in operation at a given time.	Maximum Operating Hours Per Shift: 2 hours. Average Operating Hours Per Shift: 1 hour (avg. 1 shifts /wk). Only one skidsteer in operation at a given time.	Maximum Operating Hours Per Shift: 9 hours. Average Operating Hours Per Shift: 1 hour (avg. 1 shifts /wk). Only one skidsteer in operation at a given time.	None	Operating output: 50% time Idle: 50% time	No
Base Case	East Dock, Central Project Yard, West Project Yard	Land based project support vehicles	Elevated work platform	JLG	600S telescopic boom lift	48.8 HP	Biodiesel	Maximum Operating Hours Per Shift: 13 hours. Average Operating Hours Per Shift: 1 hours (avg. 1 shifts /wk)	None	None	None	Operating output: 50% time Idle: 50% time	No
Base Case	East Dock	Land based project support vehicles	Delivery Trucks	Various highway rated delivery trucks	varies	varies	Diesel/Gasoline	Average 12 trucks per day. Maximum two to three trucks running simultaneously.	None	None	None	Operating output: 5% time Idle: 95% time	Yes - Local Delivery Traffic Category 90% of deliveries come from lower mainland west of Port Mann Bridge, 10% come from lower mainland east of Port Mann Bridge. Total distance data is unavailable, however it is assumed to be less than 100 km/day. Not all deliveries are single use trip from source location to Kiewit yard, some fraction of delivery trips will go on to other non-Kiewit owned locations.
Base Case	Central Project Yard, then Off-site for entire shift (within Lower Mainland)	Land based project support vehicles	Kiewit Trucking	Kenworth	T-880s	510 HP	Biodiesel	Maximum Operating Hours Per Shift: 4 hours Average Operating Hours Per Shift: 4 hours (avg. 5 shifts/wk). Based on seven trucks running simultaneously.	Maximum Operating Hours / Shift: 2 hours Average Operating Hours / Shift: 2 hours (avg. 5 shifts per week) Based on seven trucks running simultaneously.	Maximum Operating Hours / Shift: 2 hours Average Operating Hours / Shift: 2 hours (avg. 5 shifts per week) Based on seven trucks running simultaneously.	None	Operating output: 5% time Idle: 95% time	Yes - Regional Kiewit Truck Traffic Category a and b. a. 180 hours of weekly operational travel offsite, from Vancouver to Chilliwack, spread across 5 night shifts per week (10,000 km/week). b. 135 hours weekly operational travel time offsite, within lower mainland, remaining west of Port Mann Bridge, spread across 5 night shifts per week (1,650 km/week).
Base Case	East Dock, Central Project Yard, West Project Yard	Land based project support vehicles	Land Based Cranes	LIEBHERR	LR1300	603 HP	Biodiesel	Maximum Operating Hours Per Shift: 13 hours. Average Operating Hours: 2 hours / wk. *Note typically only one crane operating at a time.	None	None	None	Operating output: 50% time Idle: 50% time	No
Base Case	East Dock, Central Project Yard, West Project Yard	Land based project support vehicles	Land Based Cranes	TADANO	GR-1000XL	270 HP	Biodiesel	Maximum Operating Hours per Shift: 13 hours Average Operating Hours: 30 hours per week Based on a single welder.	None	None	None	N/A	No
Base Case	East Dock, Central Project Yard, West Project Yard	Equipment/Tools	Welder	Miller Electric	MFG SKU: 907321	N/A	Electric	Maximum Operating Hours per Shift: 13 hours Average Operating Hours: 30 hours per week Based on a single welder.	None	None	None	N/A	No
Base Case	East Dock, Central Project Yard, West Project Yard	Equipment/Tools	Air compressor	Ingersoll Rand	230V 50 HP Air Compressor.	N/A	Electric	Maximum Operating Hours per Shift: 13 hours Average Operating Hours: 1 hour per week Based on a single compressor	None	None	None	N/A	No
Base Case	East Dock, Central Project Yard, West Project Yard	Equipment/Tools	Angle Grinders	Makita or Equivalent	GAB2020 or Equivalent	N/A	Electric	Maximum Operating Hours per Shift: 13 hours Average Operating Hours: 2 hours per week Assume up to two pieces of equipment operating simultaneously.	None	None	None	N/A	No
Base Case	East Dock, Central Project Yard, West Project Yard	Equipment/Tools	Miscellaneous carpentry tools (saws, drills, impact driver, etc)	Various	Various	N/A	Electric	Maximum Operating Hours per Shift: 13 hours Average Operating Hours: average 1 hour per week Assumed up to two pieces of equipment operating simultaneously.	None	None	None	N/A	No
Base Case	East Dock, Central Project Yard, West Project Yard	Equipment/Tools	Pressure Washer	Honda or Equivalent	SKU: 896405B or equivalent	N/A	Gasoline	Maximum Operating Hours per Shift: 13 hours Average Operating Hours per Shift: 5 hour (avg. 1 shifts /wk) Assumed a single piece of equipment operating at a given time.	None	None	None	Operating output: 75% time Idle: 25% time	No
Base Case	Disposal at Sea	DAS - Yard Equipment	Loader	CATERPILLAR	980M	431 HP	Biodiesel	Maximum Operating Hours per Shift: 13 hours Average Operating Hours per Shift: 7.5 hours (avg. 5 shifts /wk) Based on single loader.	Maximum Operating Hours per Shift: 2 hours Average Operating Hours per Shift: 1 hours (avg. 4 shifts /wk) Based on single loader.	Maximum Operating Hours per Shift: 9 hours Average Operating Hours per Shift: 4.5 hours (avg. 4 shifts /wk) Based on single loader.	Average Operating Hours per Shift: 5 hours (average 2 shifts per month) Based on single loader.	Operating output: 50% time Idle: 50% time	No
Base Case	Disposal at Sea	DAS - Yard Equipment	Excavator	CATERPILLAR	325	172 HP	Biodiesel	Maximum Operating Hours per Shift: 13 hours Average Operating Hours per Shift: 2 hours (avg. 5 shifts /wk) Based on single excavator.	Maximum Operating Hours per Shift: 2 hours Average Operating Hours per Shift: Negligible Based on single excavator.	Maximum Operating Hours per Shift: 9 hours Average Operating Hours per Shift: 0.5 hours (avg. 4 shifts /wk) Based on single excavator.	Average Operating Hours per Shift: 2 hours (average 2 shifts per month) Based on single excavator.	Operating output: 50% time Idle: 50% time	No
Base Case	Disposal at Sea	DAS - Yard Equipment	Excavator	CATERPILLAR	305	45 HP	Biodiesel	Maximum Operating Hours per Shift: 13 hours Average Operating Hours per Shift: 2 hours (avg. 5 shifts /wk) Based on single excavator.	Maximum Operating Hours per Shift: 2 hours Average Operating Hours per Shift: Negligible Based on single excavator.	Maximum Operating Hours per Shift: 9 hours Average Operating Hours per Shift: 0.5 hours (avg. 4 shifts /wk) Based on single excavator.	Average Operating Hours per Shift: 2 hours (average 2 shifts per month) Based on single excavator.	Operating output: 50% time Idle: 50% time	No
Base Case	Disposal at Sea	DAS - Yard Equipment	Light Plant	ALLMAND-MAXI-LITE	4 LAMP 8KW CAT LED	14 HP	Biodiesel	Maximum Operating Hours per Shift: 3 hours Average Operating Hours per Shift: 2 hours (avg. 16 wks / year) Based on single light plant.	Maximum Operating Hours per Shift: 2 hours Average Operating Hours per Shift: Negligible Based on single light plant.	Maximum Operating Hours per Shift: 9 hours Average Operating Hours per Shift: 2 hours (avg. 16 wks / year) Based on single light plant.	Average Operating Hours per Shift: 2 hours (average 2 shifts per month) Based on single light plant.	Idle: 100%	No
Base Case	Disposal at Sea	DAS - Yard Equipment	Material Feeder	MORMAK	4248 FEEDER	N/A	Electric	Maximum Operating Hours per Shift: 13 hours Average Operating Hours per Shift: 8 hours (avg. 5 shifts /wk) Based on single Feeder.	Maximum Operating Hours per Shift: 2 hours Average Operating Hours per Shift: 1 hours (avg. 4 shifts /wk) Based on single Feeder.	Maximum Operating Hours per Shift: 4 hours Average Operating Hours per Shift: 2 hours (avg. 4 shifts /wk) Based on single Feeder.	Average Operating Hours per Shift: 8 hours (average 2 shifts per month) Based on single Feeder.	N/A	No
Base Case	Disposal at Sea	DAS - Yard Equipment	Conveyors	VALE	42"x70" ROLL PACK CONVEYOR	N/A	Electric	Maximum Operating Hours per Shift: 39 hours (3 x 13 hrs) Average Operating Hours per Shift: 24 hours (avg. 5 shifts /wk) (3 x 8 hrs) Based on three conveyors.	Maximum Operating Hours per Shift: 6 hours (3 x 2 hrs) Average Operating Hours per Shift: 3 hours (avg. 4 shifts /wk) (3 x 1 hr) Based on three conveyors.	Maximum Operating Hours per Shift: 12 hours (3 x 4 hrs) Average Operating Hours per Shift: 6 hours (avg. 4 shifts /wk) (3 x 2 hrs) Based on three conveyors.	Average Operating Hours per Shift: 24 hours (average 2 shifts per month) (3 x 8 hrs) Based on three conveyors.	N/A	No
Base Case	Disposal at Sea	DAS - Yard Equipment	Stacker	THOR	T150X36-0800 THORSTACKER	N/A	Electric	Maximum Operating Hours per Shift: 13 hours Average Operating Hours per Shift: 8 hours (avg. 5 shifts /wk) Based on single stacker.	Maximum Operating Hours per Shift: 2 hours Average Operating Hours per Shift: 1 hours (avg. 4 shifts /wk) Based on single stacker.	Maximum Operating Hours per Shift: 4 hours Average Operating Hours per Shift: 2 hours (avg. 4 shifts /wk) Based on single stacker.	Average Operating Hours per Shift: 8 hours (average 2 shifts per month)	N/A	No
Base Case	DAS Conveyor Berth to Straight of Georgia and back	Disposal at Sea Tug Operation	Tug Boat	Unknown	Quadrant Partner	1,400 HP	Marine Diesel	Average Operating Hours: 21 hours per week Based on two tugs operating simultaneously.	None	None	Average operating Hours: 3 hours per month. Based on two tugs operating simultaneously.	Operating output: 50% time Idle: 50% time	Yes - Marine Vessel Category 1 (DAS) Seven (7) trips to/from Straight of Georgia each week. Total distance of 1,120 km (605 nautical miles).
Base Case	DAS Conveyor Berth to Straight of Georgia and back	Disposal at Sea Tug Operation	Tug Boat	Unknown	Ken Mackenzie	1,100 HP	Marine Diesel						
Base Case	DAS Conveyor Berth to Straight of Georgia and back	Disposal at Sea Tug Operation	Tug Boat	Unknown	Rose Mackenzie	1,125 HP	Marine Diesel						
Base Case	DAS Conveyor Berth to Straight of Georgia and back	Disposal at Sea Tug Operation	Tug Boat	Unknown	Granny Hutch	1,200 HP	Marine Diesel						
Base Case	DAS Conveyor Berth to Straight of Georgia and back	Disposal at Sea Tug Operation	Tug Boat	Unknown	Seaspan Protector	1,014 HP	Marine Diesel						
Base Case	DAS Conveyor Berth to Straight of Georgia and back	Disposal at Sea Tug Operation	Tug Boat	Unknown	Cadal	1,000 HP	Marine Diesel						
Base Case	DAS Conveyor Berth to Straight of Georgia and back	Disposal at Sea Tug Operation	Tug Boat	Unknown	Quadrant Warrior	1,000 HP	Marine Diesel						
Base Case	DAS Conveyor Berth to Straight of Georgia and back	Disposal at Sea Tug Operation	Tug Boat	Unknown	Ocean Defiant	NA	Marine Diesel						
Base Case	DAS Conveyor Berth to Straight of Georgia and back	Disposal at Sea Tug Operation	Tug Boat	Unknown	Tim Mackenzie	NA	Marine Diesel						
Base Case	DAS Conveyor Berth to Straight of Georgia and back	Disposal at Sea Tug Operation	Tug Boat	Unknown	North Arm Victor	NA	Marine Diesel						
Base Case	DAS Conveyor Berth to Straight of Georgia and back	Disposal at Sea Tug Operation	Tug Boat	Unknown	Ocean Greg	1,600 HP	Marine Diesel						
Base Case	DAS Conveyor Berth to Straight of Georgia and back	Disposal at Sea Tug Operation	Tug Boat	Unknown	Harken No. 7	1,125 HP	Marine Diesel						
Base Case	DAS Conveyor Berth to Straight of Georgia and back	Disposal at Sea Tug Operation	Tug Boat	Unknown	Ocean Betty	1,200 HP	Marine Diesel						
Base Case	DAS Conveyor Berth to Straight of Georgia and back	Disposal at Sea Tug Operation	Tug Boat	Unknown	Ocean Warlock	1,600 HP	Marine Diesel						
Base Case	Trucks deliver to west area of the yard, where existing Disposal at Sea Conveyors are located. Trucks then proceed to leave yard at east gate	DAS - Delivery	Dump Truck	Various	Typical Dump Trucks , mixture of Tandem Dumps, Tridem Dumps, End Dumps, both individually and with truck and trailer combinations.	Varies	Diesel	Maximum up to 150 loads per day shift. Average of 80 loads per shift, 5 days per week. *One load involves truck entering site at west entrance, depositing load, and leaving site at east entrance.	None	None	Average of 80 loads per shift, 2 days per month. *One load involves truck entering site at west entrance, depositing load, and leaving site at east entrance.	Operating output: 50% time Idle: 50% time	Yes - DAS Delivery Category 100% of trips are generated in lower mainland, within 15 km from Marine Yard property. All deliveries are generated from west of Port Mann Bridge. See operational hour columns for quantity of trips per shift. Each trip could be up to 30 km round trip, but likely closer to 20 km round trip on average.
Base Case	Equipment operates in west area of the yard, where existing Disposal at Sea Conveyors are located	Disposal at Sea	Sweeper Truck	PETERBILT	220/ELGIN-CROSSWIND SE	Single-engine System: 240 HP Chassis Engine: 200 HP	Diesel	Maximum Operating Hours per Shift: 13 hours Average Operating Hours per Shift: 3 hours (avg. 5 shifts /wk) Based on single sweeper truck.	None	None	Average Operating Hours per Shift: 3 hours (average 2 shifts per month) Based on single sweeper truck.	Operating output: 50% time Idle: 50% time	No

Noise Modelling Matrix													
Model Case	Yard Location	Operational Category	Equipment Type	Manufacturer	Equipment Model	Power Rating (If applicable)	Fuel Type	Dayshift Operational Hours (Maximum and Average) (7 am to 8 pm) - Includes description of quantity of equipment in operation per shift	Evening Operational Hours (Maximum and Average) (8 pm to 10 pm) - Includes description of quantity of equipment in operation per shift	Nightshift Operational Hours (Maximum and Average) (10 pm to 7 am) - Includes description of quantity of equipment in operation per shift	Weekend Operational Hours - (If different from weekdays).	Average Use Factor/load value (the equipment will not work at max load all the time)	Supply Chain (Y/N and Category)
Future Case	Marine Water Lot East / West	Marine Support Vessels	Derrick Barges / Tones Provider Crane	LIEBHERR	HS 895 HD	898 HP	Marine Diesel	Maximum Operating Hours: 36 hours per shift. Based on three Derrick Barges (3 x 13 hrs) in operation simultaneously. Average Operating Hours: 6 hours per shift, average 4 shifts /wk (one each of Crane and Deck Generator). Average is based on one Derrick Barge (146 hrs). *Note, typically only one Derrick Barge Crane, and one Derrick Barge Generator is simultaneously in use at a given time (average condition), however some instances multiple may be in operation (maximum condition), assume maximum three DB Cranes and Generators at one time.	Maximum Operating Hours: 6 hours per shift. Based on three Derrick Barges (3 x 2 hours) in operation simultaneously. Average Operating Hours: 1 hours per shift, average 1 shifts /wk (one each of Crane and Deck Generator). Average is based on one Derrick Barge (1 x 1 hour). *Note, typically only one Derrick Barge Crane, and one Derrick Barge Generator is simultaneously in use at a given time (average condition), however some instances multiple may be in operation (maximum condition), assume maximum three DB Cranes and Generators at one time.	Maximum Operating Hours: 9 hours per shift. Based on one Derrick Barge in operation. Average Operating Hours: 1 hours per shift, average 4 shift /wk (one each of Crane and Deck Generator 6 am to 7 am). Average is based on one Derrick Barge (1 x 1 hours). *Note, typically only one Derrick Barge Crane, and one Derrick Barge Generator is simultaneously in use at a given time (average condition), however some instances multiple may be in operation (maximum condition), assume maximum three DB Cranes and Generators at one time.	Average weekend Operating Hours: 6 hours per shift, average 1 shifts /month (one each of Crane and Deck Generator). Based on one Derrick Barge in operation.	Operating output: 5% time Idle: 95% time	No
Future Case	Marine Water Lot East / West	Marine Support Vessels	Derrick Barges / Tones Provider Deck Generator	MULTIQUIP	DCA555U4F	66 HP	Marine Diesel						
Future Case	Marine Water Lot East / West	Marine Support Vessels	Derrick Barges / DB Olympia Crane	DRAVO/WELLMAN	413	700 HP	Marine Diesel						
Future Case	Marine Water Lot East / West	Marine Support Vessels	Derrick Barges / DB Olympia Deck Generator	SHINDAIWA	DGK100D	153 HP	Marine Diesel						
Future Case	Marine Water Lot East / West	Marine Support Vessels	Derrick Barges / DB General Crane	CLYDE	52-49	Two @ 700 HP ea (1400 HP Total)	Marine Diesel						
Future Case	Marine Water Lot East / West	Marine Support Vessels	Derrick Barges / DB General Deck Generator	SHINDAIWA	DKG150D	190 HP	Marine Diesel						
Future Case	Marine Water Lot East / West	Marine Support Vessels	Derrick Barges / DB Bremerton Crane	DRAVO/WELLMAN	413D	700 HP	Marine Diesel						
Future Case	Marine Water Lot East / West	Marine Support Vessels	Derrick Barges / DB Bremerton Deck Generator	MULTIQUIP	DCA5U54CAN	67 HP	Marine Diesel						
Future Case	Marine Water Lot East / West	Marine Support Vessels	Derrick Barges / DB Columbia Crane	DRAVO/WELLMAN	413D	700 HP	Marine Diesel						
Future Case	Marine Water Lot East / West	Marine Support Vessels	Derrick Barges / DB Columbia Deck Generator	MULTIQUIP	DCA7055U4F	95 HP	Marine Diesel						
Future Case	Marine Water Lot East / West	Marine Support Vessels	Tug Boat	Unknown	Quadrant Partner	1,400 HP	Marine Diesel	Maximum Operating Hours: 10 hours per shift. Based on two tugs in operation simultaneously (2 x 5 hrs). Average Operating Hours: 3 hours per shift, average avg. 4 shifts /wk. Based on two tugs in operation simultaneously (2 x 1.5 hrs).	Maximum Operating Hours: 4 hours per shift. Based on two tugs in operation simultaneously (2 x 5 hrs). Average Operating Hours: 2 hours per shift, average avg. 1 shifts /month. Based on two tugs in operation simultaneously (2 x 1 hrs).	Maximum Operating Hours: 10 hours per shift. Based on two tugs in operation simultaneously (2 x 5 hrs). Average Operating Hours: 3 hours per shift, 1 shift per week. Based on two tugs in operation simultaneously (2 x 1.5 hrs).	Average weekend Operating Hours: 3 hours per shift, average 1 shifts /month. Based on two tugs in operation simultaneously (2 x 1.5 hrs).	Operating output: 50% time Idle: 50% time	Yes - Marine Traffic Category 2 (Projects) 100% of "Operational Hours" are within the Marine Yard Property. Supply Chain Traffic = Two (2) Tugs per week. Total distance: 160 km (86.5 nautical miles) per week.
Future Case	Marine Water Lot East / West	Marine Support Vessels	Tug Boat	Unknown	Ken Mackenzie	1,100 HP	Marine Diesel						
Future Case	Marine Water Lot East / West	Marine Support Vessels	Tug Boat	Unknown	Rose Mackenzie	1,125 HP	Marine Diesel						
Future Case	Marine Water Lot East / West	Marine Support Vessels	Tug Boat	Unknown	Granny Hutch	1,200 HP	Marine Diesel						
Future Case	Marine Water Lot East / West	Marine Support Vessels	Tug Boat	Unknown	Seaspan Protector	1,014 HP	Marine Diesel						
Future Case	Marine Water Lot East / West	Marine Support Vessels	Tug Boat	Unknown	Cadaf	1,000 HP	Marine Diesel						
Future Case	Marine Water Lot East / West	Marine Support Vessels	Tug Boat	Unknown	Quadrant Warrior	1,000 HP	Marine Diesel						
Future Case	Marine Water Lot East / West	Marine Support Vessels	Tug Boat	Unknown	Ocean Defiant	N/A	Marine Diesel						
Future Case	Marine Water Lot East / West	Marine Support Vessels	Tug Boat	Unknown	Tim MacKenzie	N/A	Marine Diesel						
Future Case	Marine Water Lot East / West	Marine Support Vessels	Tug Boat	Unknown	North Arm Victor	N/A	Marine Diesel						
Future Case	Marine Water Lot East / West	Marine Support Vessels	Tug Boat	Unknown	Ocean Greg	1,600 HP	Marine Diesel						
Future Case	Marine Water Lot East / West	Marine Support Vessels	Tug Boat	Unknown	Harken No. 7	1,125 HP	Marine Diesel						
Future Case	Marine Water Lot East / West	Marine Support Vessels	Tug Boat	Unknown	Ocean Betty	1,200 HP	Marine Diesel						
Future Case	Marine Water Lot East / West	Marine Support Vessels	Tug Boat	Unknown	Ocean Warlock	1,600 HP	Marine Diesel						
Future Case	East Dock, Central Project Yard, West Project Yard	Land based project support vehicles	Telehandler	Telehandler	JLG 943	110 HP	Biodiesel	Maximum Operating Hours Per Shift: 13 hours. Average Operating Hours Per Shift: 3 hours (avg. 5 shifts /wk). Only one telehandler in operation at a given time.	Maximum Operating Hours Per Shift: 2 hours. Average Operating Hours Per Shift: 1 hour (avg. 1 shifts /wk). Only one telehandler in operation at a given time.	Maximum Operating Hours Per Shift: 9 hours. Average Operating Hours Per Shift: 1 hour (avg. 1 shifts /wk). Only one telehandler in operation at a given time.	None	Operating output: 50% time Idle: 50% time	No
Future Case	East Dock, Central Project Yard, West Project Yard	Land based project support vehicles	Forklift	KALMAR	DOD 250-12LB	243 HP	Biodiesel	Maximum Operating Hours Per Shift: 13 hours. Average Operating Hours Per Shift: 3 hours (avg. 5 shifts /wk). Only one forklift in operation at a given time.	Maximum Operating Hours Per Shift: 2 hours. Average Operating Hours Per Shift: 1 hour (avg. 1 shifts /wk). Only one forklift in operation at a given time.	Maximum Operating Hours Per Shift: 9 hours. Average Operating Hours Per Shift: 1 hour (avg. 1 shifts /wk). Only one forklift in operation at a given time.	None	Operating output: 50% time Idle: 50% time	No
Future Case	East Dock, Central Project Yard, West Project Yard	Land based project support vehicles	Skidsteer	CATERPILLAR	26D3	74.3 HP	Biodiesel	Maximum Operating Hours Per Shift: 13 hours. Average Operating Hours Per Shift: 3 hours (avg. 5 shifts /wk). Only one skidsteer in operation at a given time.	Maximum Operating Hours Per Shift: 2 hours. Average Operating Hours Per Shift: 1 hour (avg. 1 shifts /wk). Only one skidsteer in operation at a given time.	Maximum Operating Hours Per Shift: 9 hours. Average Operating Hours Per Shift: 1 hour (avg. 1 shifts /wk). Only one skidsteer in operation at a given time.	None	Operating output: 50% time Idle: 50% time	No
Future Case	East Dock, Central Project Yard, West Project Yard	Land based project support vehicles	Elevated work platform	JLG	600S telescopic boom lift	48.8 HP	Biodiesel	Maximum Operating Hours Per Shift: 13 hours. Average Operating Hours Per Shift: 1 hours (avg. 1 shifts /wk) Based on one boom lift in operation at a given time.	None	None	None	Operating output: 50% time Idle: 50% time	No
Future Case	East Dock	Land based project support vehicles	Delivery Trucks	Various highway rated delivery trucks	varies	varies	Diesel/Gasoline	Average 12 trucks per day. Maximum two to three trucks running simultaneously.	None	None	None	Operating output: 5% time Idle: 95% time	Yes - Local Delivery Traffic Category 90% of deliveries come from lower mainland west of Port Mann Bridge, 10% come from lower mainland east of Port Mann Bridge. Total distance data is unavailable, however it is assumed to be less than 100 km/day. Not all deliveries are single use trip from source location to Kiewit yard, some fraction of delivery trips will go on to other non-Kiewit owned locations.
Future Case	Central Project Yard, then Off-site for entire shift (within Lower Mainland)	Land based project support vehicles	Kiewit Trucking	Kenworth	T-880s	510 HP	Biodiesel	Maximum Operating Hours Per Shift: 7 hours Average Operating Hours Per Shift: 7 hours (avg. 5 shifts /wk) Based on 12 trucks running simultaneously.	Maximum Operating Hours / Shift: 3 hours Average Operating Hours / Shift: 3 hours (avg. 5 shifts per week) Based on 12 trucks running simultaneously.	Maximum Operating Hours / Shift: 3 hours Average Operating Hours / Shift: 3.5 hours (avg. 5 shifts per week) Based on 12 trucks running simultaneously.	None	Operating output: 5% time Idle: 95% time	Yes - Regional Kiewit Truck Traffic Category a and b. a and b. future case unknown as it is contract dependent, assume similar to Base Case.
Future Case	East Dock, Central Project Yard, West Project Yard	Land based project support vehicles	Land Based Cranes	LIEBHERR	LR1300	603 HP	Biodiesel	Maximum Operating Hours Per Shift: 13 hours. Average Operating Hours: 2 hours / wk. *Note typically only one crane operating at a time.	None	None	None	Operating output: 50% time Idle: 50% time	No
	East Dock, Central Project Yard, West Project Yard	Land based project support vehicles	Land Based Cranes	TADANO	GR-1000XL	270 HP	Biodiesel						
Future Case	East Dock, Central Project Yard, West Project Yard	Equipment/Tools	Welder	Miller Electric	MFG SKU: 907321	N/A	Electric	Maximum Operating Hours per Shift: 13 hours Average Operating Hours: 30 hours per week Based on a single welder.	None	None	None	N/A	No
Future Case	East Dock, Central Project Yard, West Project Yard	Equipment/Tools	Air compressor	Ingersoll Rand	RS185 250 HP	N/A	Electric	Maximum Operating Hours per Shift: 13 hours Average Operating Hours: 1 hour per week Based on a single compressor.	None	None	None	N/A	No
Future Case	East Dock, Central Project Yard, West Project Yard	Equipment/Tools	Angle Grinders	Makita or Equivalent	GAG620 or Equivalent	N/A	Electric	Maximum Operating Hours per Shift: 13 hours Average Operating Hours: 2 hours per week Assume up to two pieces of equipment operating simultaneously.	None	None	None	N/A	No
Future Case	East Dock, Central Project Yard, West Project Yard	Equipment/Tools	Miscellaneous carpentry tools (saws, drills, impact driver, etc)	Various	Various	N/A	Electric	Maximum Operating Hours per Shift: 13 hours Average Operating Hours: average 1 hour per week Assumed up to two pieces of equipment operating simultaneously.	None	None	None	N/A	No
Future Case	East Dock, Central Project Yard, West Project Yard	Equipment/Tools	Pressure Washer	Honda or Equivalent	SKU: 8964058 or equivalent	N/A	Gasoline	Maximum Operating Hours per Shift: 13 hours Average Operating Hours per Shift: 5 hour (avg. 1 shifts /wk) Assumed a single piece of equipment operating at a given time.	None	None	None	Operating output: 75% time Idle: 25% time	No
Future Case	Disposal at Sea	DAS - Yard Equipment	Loader	CATERPILLAR	980M	431 HP	Biodiesel	Maximum Operating Hours per Shift: 13 hours Average Operating Hours per Shift: 9.5 hours (avg. 5 shifts /wk) Based on single loader.	Maximum Operating Hours per Shift: 2 hours Average Operating Hours per Shift: 1.5 hours (avg. 4 shifts /wk) Based on single loader.	Maximum Operating Hours per Shift: 9 hours Average Operating Hours per Shift: 5.5 hours (avg. 4 shifts /wk) Based on single loader.	Average Operating Hours per Shift: 5 hours (average 2 shifts per month) Based on single loader.	Operating output: 50% time Idle: 50% time	No
Future Case	Disposal at Sea	DAS - Yard Equipment	Excavator	CATERPILLAR	325	172 HP	Biodiesel	Maximum Operating Hours per Shift: 13 hours Average Operating Hours per Shift: 5.5 hours (avg. 5 shifts /wk) Based on single excavator.	Maximum Operating Hours per Shift: 2 hours Average Operating Hours per Shift: 2.5 hours (avg. 5 shifts /wk) Based on single excavator.	Maximum Operating Hours per Shift: 9 hours Average Operating Hours per Shift: 0.5 hours (avg. 4 shifts /wk) Based on single excavator.	Average Operating Hours per Shift: 2 hours (average 2 shifts per month) Based on single excavator.	Operating output: 50% time Idle: 50% time	No
Future Case	Disposal at Sea	DAS - Yard Equipment	Excavator	CATERPILLAR	305	45 HP	Biodiesel	Maximum Operating Hours per Shift: 13 hours Average Operating Hours per Shift: 2.5 hours (avg. 5 shifts /wk) Based on single excavator.	Maximum Operating Hours per Shift: 2 hours Average Operating Hours per Shift: Negligible Based on single excavator.	Maximum Operating Hours per Shift: 9 hours Average Operating Hours per Shift: 0.5 hours (avg. 4 shifts /wk) Based on single excavator.	Average Operating Hours per Shift: 2 hours (average 2 shifts per month) Based on single excavator.	Operating output: 50% time Idle: 50% time	No
Future Case	Disposal at Sea	DAS - Yard Equipment	Light Plant	ALLMAND-MAXI-LITE	4 LAMP BKW CAT LED	14 HP	Biodiesel	Maximum Operating Hours per Shift: 3 hours Average Operating Hours per Shift: 2.5 hours (avg. 16 wks / year) Based on single light plant.	Maximum Operating Hours per Shift: 2 hours Average Operating Hours per Shift: negligible Based on single light plant.	Maximum Operating Hours per Shift: 9 hours Average Operating Hours per Shift: 2 hours (avg. 16 wks / year) Based on single light plant.	Average Operating Hours per Shift: 2 hours (average 2 shifts per month) Based on single light plant.	Idle: 100%	No
Future Case	Disposal at Sea	DAS - Yard Equipment	Material Feeder	MORMAK	4248 FEEDER	N/A	Electric	Maximum Operating Hours per Shift: 13 hours Average Operating Hours per Shift: 10 hours (avg. 5 shifts /wk) Based on single feeder.	Maximum Operating Hours per Shift: 2 hours Average Operating Hours per Shift: 1 hours (avg. 4 shifts /wk) Based on single feeder.	Maximum Operating Hours per Shift: 4 hours Average Operating Hours per Shift: 2 hours (avg. 4 shifts /wk) Based on single feeder.	Average Operating Hours per Shift: 8 hours (average 2 shifts per month) Based on single feeder.	N/A	No
Future Case	Disposal at Sea	DAS - Yard Equipment	Conveyors	VALE	42"X70" ROLL PACK CONVEYOR	N/A	Electric	Maximum Operating Hours per Shift: 39 hours (3 x 13 hrs) Average Operating Hours per Shift: 30 hours (avg. 5 shifts /wk) (3 x 10 hrs) Based on three conveyors.	Maximum Operating Hours per Shift: 3 hours (3 x 2 hrs) Average Operating Hours per Shift: 3.75 hours (avg. 4 shifts /wk) (3 x 1.25 hr) Based on three conveyors.	Maximum Operating Hours per Shift: 12 hours (3 x 4 hrs) Average Operating Hours per Shift: 7.5 hours (avg. 4 shifts /wk) (3 x 2.5 hrs) Based on three conveyors.	Average Operating Hours per Shift: 24 hours (average 2 shifts per month) (3 x 8 hrs) Based on three conveyors.	N/A	No
Future Case	DAS Conveyor Berth to Straight of Georgia and back	Disposal at Sea Tug Operation	Tug Boat	Unknown	Quadrant Partner	1,400 HP	Marine Diesel	Average Operating Hours: 26.5 hours per week Based on two tugs operating simultaneously.	None	None	Average operating Hours: 3 hours per month. Based on two tugs operating simultaneously.	Operating output: 50% time Idle: 50% time	Yes - Marine Vessel Category 1 (DAS) Seven (7) trips to/from Straight of Georgia each week. Total distance of 1,120 km (605 nautical miles).
Future Case	DAS Conveyor Berth to Straight of Georgia and back	Disposal at Sea Tug Operation	Tug Boat	Unknown	Ken Mackenzie	1,100 HP	Marine Diesel						
Future Case	DAS Conveyor Berth to Straight of Georgia and back	Disposal at Sea Tug Operation	Tug Boat	Unknown	Rose Mackenzie	1,125 HP	Marine Diesel						
Future Case	DAS Conveyor Berth to Straight of Georgia and back	Disposal at Sea Tug Operation	Tug Boat	Unknown	Granny Hutch	1,200 HP	Marine Diesel						
Future Case	DAS Conveyor Berth to Straight of Georgia and back	Disposal at Sea Tug Operation	Tug Boat	Unknown	Seaspan Protector	1,014 HP	Marine Diesel						
Future Case	DAS Conveyor Berth to Straight of Georgia and back	Disposal at Sea Tug Operation	Tug Boat	Unknown	Cadaf	1,000 HP	Marine Diesel						
Future Case	DAS Conveyor Berth to Straight of Georgia and back	Disposal at Sea Tug Operation	Tug Boat	Unknown	Quadrant Warrior	1,000 HP	Marine Diesel						
Future Case	DAS Conveyor Berth to Straight of Georgia and back	Disposal at Sea Tug Operation	Tug Boat	Unknown	Ocean Defiant	NA	Marine Diesel						
Future Case	DAS Conveyor Berth to Straight of Georgia and back	Disposal at Sea Tug Operation	Tug Boat	Unknown	Tim MacKenzie	NA	Marine Diesel						
Future Case	DAS Conveyor Berth to Straight of Georgia and back	Disposal at Sea Tug Operation	Tug Boat	Unknown	North Arm Victor	NA	Marine Diesel						
Future Case	DAS Conveyor Berth to Straight of Georgia and back	Disposal at Sea Tug Operation	Tug Boat	Unknown	Ocean Greg	1,600 HP	Marine Diesel						
Future Case	DAS Conveyor Berth to Straight of Georgia and back	Disposal at Sea Tug Operation	Tug Boat	Unknown	Harken No. 7	1,125 HP	Marine Diesel						
Future Case	DAS Conveyor Berth to Straight of Georgia and back	Disposal at Sea Tug Operation	Tug Boat	Unknown	Ocean Betty	1,200 HP	Marine Diesel						
Future Case	DAS Conveyor Berth to Straight of Georgia and back	Disposal at Sea Tug Operation	Tug Boat	Unknown	Ocean Warlock	1,600 HP	Marine Diesel						
Future Case	Equipment operates in west area of the yard, where existing Disposal at Sea Conveyors are located	Disposal at Sea	Dump Truck	Various	Typical Dump Trucks, mixture of Tandem Dumps, Tridem Dumps, End Dumps, both individually and with truck and trailer combinations.	Varies	Diesel	Maximum up to 200 loads per day shift. Average of 100 loads per shift, 5 days per week. *One load involves truck entering site at west entrance, depositing load, and leaving site at east entrance.	None	None	Average of 100 loads per shift, 2 days per month. *One load involves truck entering site at west entrance, depositing load, and leaving site at east entrance.	Operating output: 50% time Idle: 50% time	Yes - DAS Delivery Category 100% of trips are generated in lower mainland, within 15 km from Marine Yard property. All deliveries are generated from west of Port Mann Bridge. See operational hour columns for quantity of trips per shift. Each trip could be up to 30 km round trip, but likely closer to 20 km round trip on average.
Future Case	Equipment operates in west area of the yard, where existing Disposal at Sea Conveyors are located	Disposal at Sea	Sweeper Truck	PETERBLT	220/ELGIN-CROSSWIND SE	Single-engine System: 240 HP Chassis Engine: 200 HP	Diesel	Maximum Operating Hours per Shift: 11 hours Average Operating Hours per Shift: 4 hours (avg. 5 shifts /wk) Based on single sweeper	None	None	Average Operating Hours per Shift: 4 hours (average 2 shifts per month) Based on single sweeper.	Operating output: 50% time Idle: 50% time	No



Appendix H Equipment Sound Power Data

Environmental Noise Assessment Report

Kiewit Marine Yard

Kiewit Engineering Group Canada ULC

SLR Project No.: 201.088941.00001

May 13, 2024

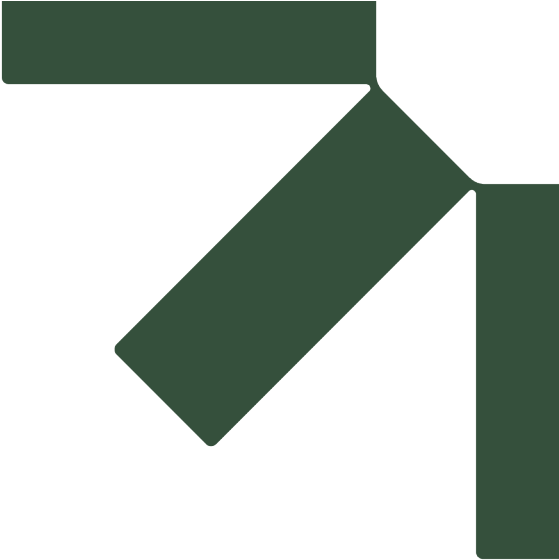
Table H1: Source Sound Power Level

Noise Source Name	Location	Total Average Hours Per Year	Time	Sound Power Level Octave Band in Octave Band (Hz)									SWL	Data Reference	Notes
				31.5	63	125	250	500	1000	2000	4000	8000	dBA		
Derrick Barges - Operating	Water Lot	76	Anytime	0.0	96.0	99.0	96.0	90.0	94.0	94.0	83.0	74.0	98.6	See LIEBHERR Land Based Crane - Operating	
Derrick Barges - Idling	Water Lot	1446	Anytime	0.0	94.0	95.0	88.0	89.0	90.0	89.0	78.0	68.0	94.3	See LIEBHERR Land Based Crane - Idling	
Derrick Barge Deck Generator - Operating	Water Lot	1522	Anytime	91.0	96.7	99.5	102.2	97.2	91.1	86.3	82.2	76.6	98.5	RCNM 2.0	
Tugboat Idling	Water Lot & Disposal at Sea	948	Anytime	96.5	103.9	94.4	90.0	85.2	82.3	75.0	65.7	55.6	88.1	SLR	Low Frequency +5 dB
Tugboat Full Throttle	Water Lot & Disposal at Sea	948	Anytime	104.3	112.4	110.1	114.4	108.2	98.4	97.0	91.9	81.9	70.9	SLR	Low Frequency +5 dB
Telehandler - Operating	East Dock, Central Project Yard, West Project Yard	850	Anytime Weekdays	91.6	108.6	103.4	94.0	92.7	101.7	92.2	83.1	76.1	102.8	BS 5228 RCNM 2.0	
Forklift - Operating	East Dock, Central Project Yard, West Project Yard	850	Anytime Weekdays	89.1	112	96.1	95.7	96.2	94.5	92.7	91.8	85.4	100.2	SLR	Low Frequency +5 dB, Regular Impulsive (Material Handling) +5 dB
Skidsteer - Operating	East Dock, Central Project Yard, West Project Yard	425	Anytime Weekdays	0.0	102.0	94.0	92.0	92.0	91.0	88.0	87.0	78.0	95.8	BS 5228	
Skidsteer - Idling	East Dock, Central Project Yard, West Project Yard	425	Anytime Weekdays	0.0	88.0	81.0	77.0	80.0	79.0	76.0	71.0	61.0	83.2	BS 5228	
Elevated Work Platform - Operating	East Dock, Central Project Yard, West Project Yard	25	Dayshift Weekdays	88.0	110.8	102.5	104.7	99.8	95.1	89.9	85.6	78.4	101.6	BS 5228 & RCNM 2.0	Low Frequency +5 dB
Elevated Work Platform - Idling	East Dock, Central Project Yard, West Project Yard	25	Dayshift Weekdays	0.0	100.0	99.0	87.0	87.0	84.0	84.0	80.0	73.0	91.0	BS 5228	Low Frequency +5 dB
Delivery Truck Passby	East Dock	1000	Dayshift Weekdays	79.2	99.3	101.5	103.6	99.9	94.2	94.9	94.2	93.6	87.0	SLR	
Kiewit Trucking Idling	Central Project Yard	1600	Anytime Weekdays	98.3	100.7	100.3	95.7	95.8	95.0	91.4	84.2	77.6	99.0	SLR	
LIEBHERR Land Based Crane - Operating	East Dock, Central Project Yard, West Project Yard	25	Dayshift Weekdays	0.0	96.0	99.0	96.0	90.0	94.0	94.0	83.0	74.0	98.6	BS 5228	
LIEBHERR Land Based Crane - Idling	East Dock, Central Project Yard, West Project Yard	25	Dayshift Weekdays	0.0	94.0	95.0	88.0	89.0	90.0	89.0	78.0	68.0	94.3	BS 5228	
TADANO Land Based Crane - Operating	East Dock, Central Project Yard, West Project Yard	25	Dayshift Weekdays	0.0	106.0	97.0	95.0	92.0	90.0	85.0	77.0	68.0	94.6	BS 5228	Low Frequency +5 dB
TADANO Land Based Crane - Idling	East Dock, Central Project Yard, West Project Yard	25	Dayshift Weekdays	0.0	95.0	94.0	87.0	86.0	84.0	81.0	72.0	63.0	88.8	BS 5228	
Welder - Operating	East Dock, Central Project Yard, West Project Yard	1500	Dayshift Weekdays	88.7	99.9	98.0	99.5	99.1	97.7	94.1	89.4	83.3	102.0	BS 5228 & RCNM 2.0	
Air Compressor - Operating	East Dock, Central Project Yard, West Project Yard	50	Dayshift Weekdays	88.0	109.5	100.8	96.6	94.7	95.0	92.7	87.4	82.6	99.5	BS 5228 & RCNM 2.0	Low Frequency +5 dB



Noise Source Name	Location	Total Average Hours Per Year	Time	Sound Power Level Octave Band in Octave Band (Hz)									SWL	Data Reference	Notes
				31.5	63	125	250	500	1000	2000	4000	8000	dBA		
Angle Grinders - Operating	East Dock, Central Project Yard, West Project Yard	100	Dayshift Weekdays	81.5	85.1	81.7	84.4	89.4	95.4	102.2	98.7	98.7	106.1	BS 5228 & RCNM 2.0	
Miscellaneous Carpentry Tools - Operating	East Dock, Central Project Yard, West Project Yard	50	Dayshift Weekdays	85.7	87.8	90.9	87.5	93.6	95.8	95.4	94.2	91.0	101.4	RCNM 2.0	
Pressure Washer	East Dock, Central Project Yard, West Project Yard	250	Dayshift Weekdays	88.0	109.5	100.8	96.6	94.7	95.0	92.7	87.4	82.6	99.5	See Air Compressor	Low Frequency +5 dB
Loader - Operating	Disposal At Sea	3095	Anytime	92.1	113.5	113.8	110.0	107.2	107.7	103.9	99.4	96.3	111.8	BS 5228 & RCNM 2.0	
Excavator (CAT 325) - Operating	Disposal At Sea	324	Anytime Except Evenings	91.7	109.2	110.0	107.2	105.2	103.4	100.5	95.8	90.1	108.3	BS 5228 & RCNM 2.0	
Excavator (CAT 325) - Idling	Disposal At Sea	324	Anytime Except Evenings	0.0	87.0	77.0	73.0	73.0	77.0	74.0	67.0	59.0	80.2	BS 5228	
Excavator (CAT 305) - Operating	Disposal At Sea	648	Anytime Except Evenings	0.0	107.3	99.5	97.2	94.4	94.4	95.2	86.8	79.9	100.1	BS 5228	
Light Plant - Operating	Disposal At Sea	480	Anytime Except Evenings	97.4	104.1	99.5	85.2	81.6	84.3	76.7	72.4	66.9	88.8	SLR	Low Frequency +5 dB
Material Feeder - Operating	Disposal At Sea	2792	Anytime	124.5	125.3	118.7	109.6	111.4	110.5	107.9	102.6	95.0	115.1	SLR	Low Frequency +5 dB
Conveyors - Operating	Disposal At Sea	2792	Anytime	0.0	100.1	100.9	99.2	100.1	101.2	95.5	92.7	86.1	104.3	BS 5228	
Stacker - Operating	Disposal At Sea	2792	Anytime	0.0	100.1	100.9	99.2	100.1	101.2	95.5	92.7	86.1	104.3	BS 5228	
Dump Truck - Operating	Disposal At Sea	1096	Dayshift Weekdays & Weekends	0.0	115.8	110.1	107.9	107.2	105.9	104.4	99.9	92.6	111.0	BS 5228	
Dump Truck - Idling	Disposal At Sea	1096	Dayshift Weekdays & Weekends	92.6	94.2	98.0	98.8	95.7	90.1	85.5	81.8	76.6	66.8	SLR	
Sweeper Truck	Disposal At Sea	822	Dayshift Weekdays & Weekends	111.5	113.7	110.9	110.0	110.4	107.4	106.1	104.3	100.4	99.7	SLR	
Average Train Horn	Ground Level Crossings	*	Anytime	117	118	109	128	139	139	131	124	113	141.6	SLR	
Measured Train Horn	Gound Level Crossings	*	Anytime	66	69	58	68	72	68	54	36	30	72.1	SLR	
Notes: * 39 Trains per day across the river & 18 trains per day on same side of river based on information in Transport Canada Rail Network and Crossings GIS															





Appendix I Predicted Sound Levels

Environmental Noise Assessment Report

Kiewit Marine Yard

Kiewit Engineering Group Canada ULC

SLR Project No.: 201.088941.00001

May 13, 2024

Table I1: Predicted Sound Levels

Closest Receivers	Project Only Scenario						Total (Project + Non-Project)									Worst-Case ⁴ LLF ³		
	Base Case L _{den} ¹ (dBA)	Future Project L _{den} ¹ (dBA)	Change in L _{den} ¹ (dBA)	Base Case L _n ² (dBA)	Future Project L _n ² (dBA)	Change in L _n ² (dBA)	Base Case L _{den} ¹ (dBA)	Future Project L _{den} ¹ (dBA)	Change in L _{den} ¹ (dBA)	Base Case L _n ² (dBA)	Future Project L _n ² (dBA)	Change in L _n ² (dBA)	%HA Base Case	%HA Future Project Case	Change in %HA	Base Case LLF ³ (dB)	Future Case LLF ³ (dB)	Change in LLF ³ (dB)
Don Roberts Park	60.2	60.5	0.3	51.8	52.0	0.2	61.9	62.2	0.3	54.2	54.4	0.2	9.4	9.7	0.4	71.2	71.3	0.1
Fraser Mills BLDG 22B EG	51.6	51.8	0.2	44.2	44.3	0.1	58.9	59.1	0.2	51.9	52.2	0.3	6.3	6.6	0.3	67.9	67.9	0.0
Fraser Mills BLDG 22B 1.OG	52.2	52.6	0.4	44.7	44.9	0.2	59.7	60.0	0.3	52.8	53.0	0.2	7.1	7.3	0.2	68.3	68.6	0.3
Fraser Mills BLDG 22B 2.OG	53.4	53.7	0.3	45.8	45.9	0.1	60.5	60.8	0.3	53.5	53.7	0.2	7.8	8.0	0.2	68.5	68.8	0.3
Fraser Mills BLDG 22B 3.OG	54.4	54.7	0.3	47.0	47.1	0.1	61.5	61.7	0.2	54.5	54.7	0.2	8.7	9.0	0.2	68.5	68.7	0.2
Fraser Mills BLDG 22B 4.OG	54.5	54.7	0.2	47.1	47.2	0.1	61.6	61.8	0.2	54.6	54.8	0.2	8.9	9.1	0.2	68.5	68.7	0.2
Fraser Mills BLDG 22B 5.OG	53.8	54.1	0.3	46.6	46.8	0.2	61.2	61.5	0.3	54.2	54.5	0.3	8.5	8.8	0.3	65.8	66.3	0.5
Fraser Mills BLDG 22B 6.OG	54.3	54.6	0.3	47.0	47.1	0.1	61.2	61.5	0.3	54.2	54.4	0.2	8.5	8.8	0.2	65.4	65.8	0.4
Fraser Mills BLDG 22B 7.OG	54.9	55.2	0.3	47.5	47.7	0.2	61.5	61.8	0.3	54.4	54.7	0.3	8.8	9.1	0.3	65.3	65.7	0.4
Fraser Mills BLDG 22B 8.OG	55.2	55.5	0.3	47.7	47.9	0.2	61.6	61.8	0.2	54.5	54.7	0.2	8.9	9.2	0.3	65.5	65.9	0.4
Fraser Mills BLDG 22B 9.OG	55.3	55.6	0.3	47.8	48.1	0.3	61.5	61.8	0.3	54.3	54.6	0.3	8.8	9.1	0.3	65.9	66.3	0.4
Fraser Mills BLDG 22B 10.OG	55.3	55.6	0.3	47.9	48.1	0.2	61.5	61.8	0.3	54.3	54.5	0.2	8.8	9.0	0.3	66.5	66.8	0.3
Fraser Mills BLDG 22B 11.OG	55.3	55.6	0.3	47.9	48.1	0.2	61.5	61.7	0.2	54.3	54.5	0.2	8.8	9.1	0.3	67.2	67.5	0.3
Fraser Mills BLDG 22B 12.OG	55.3	55.6	0.3	47.8	48.1	0.3	61.3	61.6	0.3	54.1	54.3	0.2	8.7	8.9	0.2	67.7	67.9	0.2
Fraser Mills BLDG 22B 13.OG	55.3	55.6	0.3	47.8	48.1	0.3	60.9	61.2	0.3	53.6	53.9	0.3	8.2	8.5	0.3	68.4	68.6	0.2
Fraser Mills BLDG 22B 14.OG	55.3	55.6	0.3	47.8	48.1	0.3	60.8	61.1	0.3	53.4	53.7	0.3	8.1	8.4	0.3	68.5	68.7	0.2
Fraser Mills BLDG 22B 15.OG	55.3	55.6	0.3	47.8	48.0	0.2	61.0	61.3	0.3	53.6	53.9	0.3	8.3	8.6	0.3	68.5	68.7	0.2
Fraser Mills BLDG 22B 16.OG	55.3	55.6	0.3	47.8	48.0	0.2	61.0	61.3	0.3	53.6	53.9	0.3	8.4	8.7	0.3	68.6	68.8	0.2
Fraser Mills BLDG 22B 17.OG	55.3	55.6	0.3	47.8	48.0	0.2	61.0	61.3	0.3	53.6	53.8	0.2	8.4	8.6	0.2	68.6	68.8	0.2
Fraser Mills BLDG 22B 18.OG	55.3	55.6	0.3	47.8	48.0	0.2	61.0	61.3	0.3	53.6	53.8	0.2	8.4	8.7	0.3	68.6	68.8	0.2
Fraser Mills BLDG 22B 19.OG	55.3	55.6	0.3	47.8	48.0	0.2	61.0	61.3	0.3	53.6	53.8	0.2	8.4	8.7	0.3	68.6	68.8	0.2
Fraser Mills BLDG 22B 20.OG	55.3	55.6	0.3	47.8	48.0	0.2	61.0	61.3	0.3	53.6	53.8	0.2	8.4	8.7	0.3	68.6	68.7	0.1
Fraser Mills BLDG 22B 21.OG	55.3	55.6	0.3	47.8	48.0	0.2	61.1	61.3	0.2	53.6	53.9	0.3	8.4	8.7	0.3	68.5	68.7	0.2
Fraser Mills BLDG 22B 22.OG	55.3	55.6	0.3	47.8	48.0	0.2	61.1	61.3	0.2	53.6	53.9	0.3	8.4	8.7	0.3	68.5	68.7	0.2
Fraser Mills BLDG 22B 23.OG	55.3	55.6	0.3	47.8	48.0	0.2	61.1	61.4	0.3	53.7	53.9	0.2	8.5	8.8	0.3	68.5	68.7	0.2
Fraser Mills BLDG 22B 24.OG	55.3	55.6	0.3	47.8	48.0	0.2	61.1	61.4	0.3	53.7	54.0	0.3	8.5	8.8	0.3	68.5	68.7	0.2
Fraser Mills BLDG 22B 25.OG	55.2	55.6	0.4	47.8	48.0	0.2	61.2	61.4	0.2	53.7	54.0	0.3	8.5	8.8	0.3	68.5	68.7	0.2
Fraser Mills BLDG 22B 26.OG	55.2	55.6	0.4	47.8	48.0	0.2	61.2	61.5	0.3	53.7	54.0	0.3	8.5	8.8	0.3	68.5	68.7	0.2
Fraser Mills BLDG 22B 27.OG	55.2	55.6	0.4	47.8	48.0	0.2	61.2	61.5	0.3	53.8	54.0	0.2	8.6	8.8	0.2	68.5	68.7	0.2
Fraser Mills BLDG 22B 28.OG	55.2	55.6	0.4	47.8	48.0	0.2	61.2	61.5	0.3	53.7	54.0	0.3	8.5	8.8	0.3	68.5	68.7	0.2



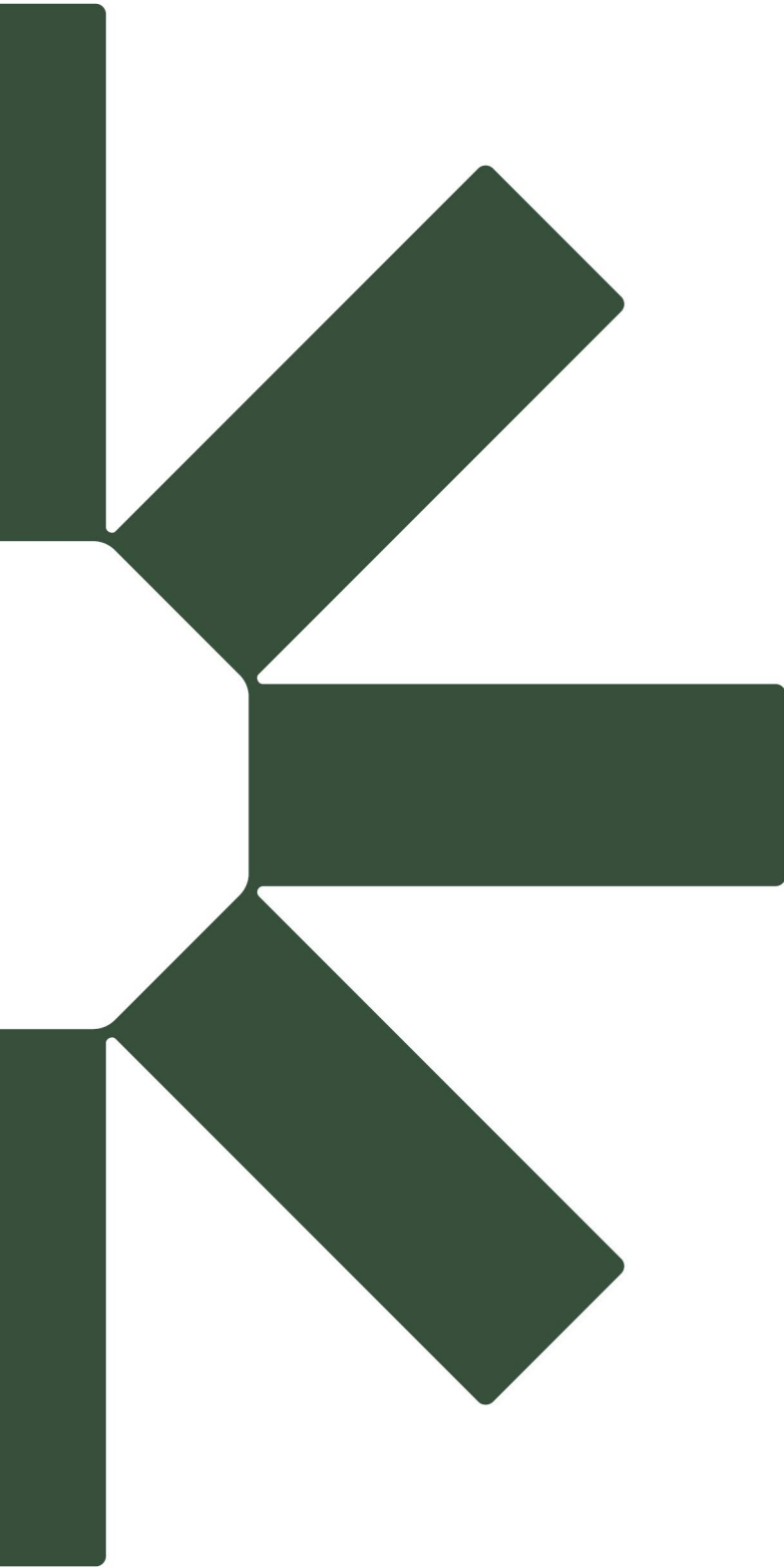
Closest Receivers	Project Only Scenario						Total (Project + Non-Project)									Worst-Case ⁴ LLF ³		
	Base Case L _{den} ¹ (dBA)	Future Project L _{den} ¹ (dBA)	Change in L _{den} ¹ (dBA)	Base Case L _n ² (dBA)	Future Project L _n ² (dBA)	Change in L _n ² (dBA)	Base Case L _{den} ¹ (dBA)	Future Project L _{den} ¹ (dBA)	Change in L _{den} ¹ (dBA)	Base Case L _n ² (dBA)	Future Project L _n ² (dBA)	Change in L _n ² (dBA)	%HA Base Case	%HA Future Project Case	Change in %HA	Base Case LLF ³ (dB)	Future Case LLF ³ (dB)	Change in LLF ³ (dB)
Fraser Mills BLDG 22B 29.OG	55.2	55.6	0.4	47.8	48.0	0.2	61.2	61.5	0.3	53.7	54.0	0.3	8.5	8.8	0.3	68.5	68.7	0.2
Fraser Mills BLDG 22B 30.OG	55.2	55.5	0.3	47.8	48.0	0.2	61.2	61.5	0.3	53.7	54.0	0.3	8.5	8.8	0.3	68.5	68.6	0.1
Fraser Mills BLDG 22B 31.OG	55.2	55.5	0.3	47.8	48.0	0.2	61.2	61.5	0.3	53.7	54.0	0.3	8.5	8.8	0.3	68.4	68.6	0.2
Fraser Mills BLDG 22B 32.OG	55.2	55.5	0.3	47.8	48.0	0.2	61.2	61.5	0.3	53.8	54.0	0.2	8.6	8.8	0.2	68.4	68.6	0.2
Fraser Mills BLDG 22B 33.OG	55.2	55.5	0.3	47.8	48.0	0.2	61.2	61.5	0.3	53.8	54.0	0.2	8.6	8.8	0.2	68.4	68.6	0.2
Fraser Mills BLDG 22B 34.OG	55.2	55.5	0.3	47.8	48.0	0.2	61.2	61.5	0.3	53.8	54.0	0.2	8.6	8.8	0.2	68.4	68.6	0.2
Fraser Mills BLDG 22B 35.OG	55.2	55.5	0.3	47.8	48.0	0.2	61.2	61.5	0.3	53.8	54.1	0.3	8.6	8.9	0.3	68.4	68.6	0.2
Fraser Mills BLDG 22B 36.OG	55.2	55.5	0.3	47.8	48.0	0.2	61.3	61.6	0.3	53.9	54.1	0.2	8.6	8.9	0.3	68.5	68.7	0.2
Fraser Mills BLDG 21B EG	44.7	44.8	0.1	37.4	37.5	0.1	51.1	51.4	0.3	44.0	44.2	0.2	2.4	2.5	0.1	64.6	64.7	0.1
Fraser Mills BLDG 21B 1.OG	47.2	47.7	0.5	40.2	40.6	0.4	53.0	53.3	0.3	46.0	46.3	0.3	3.0	3.2	0.1	64.2	64.7	0.5
Fraser Mills BLDG 21B 2.OG	49.5	49.7	0.2	42.6	42.8	0.2	53.6	53.9	0.3	46.7	46.9	0.2	3.3	3.4	0.1	63.9	64.3	0.4
Fraser Mills BLDG 21B 3.OG	49.5	49.7	0.2	42.6	42.8	0.2	53.5	53.7	0.2	46.5	46.7	0.2	3.2	3.3	0.1	63.3	63.8	0.5
Fraser Mills BLDG 21B 4.OG	49.7	49.9	0.2	42.8	43.0	0.2	54.9	55.2	0.3	48.0	48.2	0.2	3.8	4.0	0.1	63.1	63.6	0.5
Fraser Mills BLDG 21B 5.OG	49.6	49.8	0.2	42.8	42.9	0.1	55.3	55.5	0.2	48.4	48.6	0.2	4.0	4.2	0.1	63.2	63.7	0.5
Fraser Mills BLDG 22A EG	49.2	49.5	0.3	41.9	42.1	0.2	54.7	55.0	0.3	47.7	48.0	0.3	3.8	3.9	0.2	62.3	62.4	0.1
Fraser Mills BLDG 22A 1.OG	52.6	52.9	0.3	45.1	45.3	0.2	58.4	58.6	0.2	51.4	51.6	0.2	6.0	6.2	0.2	65.3	65.7	0.4
Fraser Mills BLDG 22A 2.OG	53.1	53.4	0.3	45.6	45.8	0.2	58.8	59.1	0.3	51.8	52.1	0.3	6.3	6.6	0.3	65.7	66.0	0.3
Fraser Mills BLDG 22A 3.OG	54.2	54.4	0.2	46.8	47.0	0.2	59.5	59.8	0.3	52.5	52.7	0.2	6.9	7.1	0.2	65.8	66.1	0.3
Fraser Mills BLDG 22A 4.OG	54.3	54.5	0.2	46.9	47.1	0.2	59.5	59.7	0.2	52.5	52.7	0.2	6.9	7.1	0.2	66.1	66.3	0.2
Fraser Mills BLDG 22A 5.OG	54.7	55.0	0.3	47.3	47.5	0.2	60.9	61.1	0.2	53.9	54.1	0.2	8.1	8.4	0.2	68.4	68.6	0.2
Fraser Mills BLDG 22A 6.OG	54.7	55.0	0.3	47.3	47.5	0.2	61.3	61.6	0.3	54.3	54.6	0.3	8.5	8.9	0.3	68.4	68.6	0.2
Fraser Mills BLDG 22A 7.OG	54.8	55.1	0.3	47.4	47.6	0.2	61.5	61.7	0.2	54.4	54.7	0.3	8.7	9.0	0.3	68.4	68.5	0.1
Fraser Mills BLDG 22A 8.OG	54.8	55.1	0.3	47.4	47.6	0.2	61.6	61.9	0.3	54.6	54.8	0.2	8.9	9.2	0.3	68.4	68.5	0.1
Fraser Mills BLDG 22A 9.OG	54.8	55.1	0.3	47.4	47.6	0.2	61.6	61.9	0.3	54.6	54.8	0.2	8.9	9.2	0.3	68.4	68.5	0.1
Fraser Mills BLDG 22A 10.OG	54.8	55.1	0.3	47.4	47.5	0.1	61.7	61.9	0.2	54.6	54.8	0.2	8.9	9.2	0.2	68.4	68.5	0.1
Fraser Mills BLDG 22A 11.OG	54.8	55.1	0.3	47.3	47.5	0.2	61.7	62.0	0.3	54.6	54.9	0.3	9.0	9.3	0.4	68.4	68.5	0.1
Fraser Mills BLDG 22A 12.OG	54.7	55.0	0.3	47.3	47.5	0.2	61.3	61.6	0.3	54.2	54.5	0.3	8.6	9.0	0.3	68.4	68.5	0.1
Fraser Mills BLDG 22A 13.OG	55.0	55.3	0.3	47.5	47.8	0.3	61.5	61.8	0.3	54.3	54.6	0.3	8.7	9.1	0.4	68.8	69.0	0.2
Fraser Mills BLDG 22A 14.OG	54.9	55.3	0.4	47.5	47.8	0.3	61.6	61.9	0.3	54.5	54.7	0.2	9.0	9.2	0.3	68.8	69.0	0.2
Fraser Mills BLDG 22A 15.OG	54.9	55.3	0.4	47.5	47.7	0.2	61.3	61.5	0.2	54.0	54.2	0.2	8.6	8.9	0.3	68.8	69.0	0.2
Fraser Mills BLDG 22A 16.OG	54.9	55.3	0.4	47.5	47.7	0.2	61.5	61.8	0.3	54.2	54.5	0.3	8.8	9.2	0.3	68.8	68.9	0.1



Closest Receivers	Project Only Scenario						Total (Project + Non-Project)									Worst-Case ⁴ LLF ³		
	Base Case L _{den} ¹ (dBA)	Future Project L _{den} ¹ (dBA)	Change in L _{den} ¹ (dBA)	Base Case L _n ² (dBA)	Future Project L _n ² (dBA)	Change in L _n ² (dBA)	Base Case L _{den} ¹ (dBA)	Future Project L _{den} ¹ (dBA)	Change in L _{den} ¹ (dBA)	Base Case L _n ² (dBA)	Future Project L _n ² (dBA)	Change in L _n ² (dBA)	%HA Base Case	%HA Future Project Case	Change in %HA	Base Case LLF ³ (dB)	Future Case LLF ³ (dB)	Change in LLF ³ (dB)
Fraser Mills BLDG 22A 17.OG	54.9	55.3	0.4	47.5	47.7	0.2	61.6	61.8	0.2	54.3	54.5	0.2	8.9	9.2	0.3	68.8	68.9	0.1
Fraser Mills BLDG 22A 18.OG	54.9	55.3	0.4	47.5	47.7	0.2	61.1	61.4	0.3	53.8	54.0	0.2	8.5	8.8	0.2	68.8	68.9	0.1
Fraser Mills BLDG 22A 19.OG	54.9	55.3	0.4	47.5	47.7	0.2	61.2	61.5	0.3	53.9	54.1	0.2	8.6	8.9	0.2	68.8	68.9	0.1
Fraser Mills BLDG 22A 20.OG	54.9	55.3	0.4	47.5	47.7	0.2	61.5	61.7	0.2	54.1	54.3	0.2	8.8	9.1	0.3	68.8	68.9	0.1
Fraser Mills BLDG 22A 21.OG	54.9	55.3	0.4	47.5	47.7	0.2	61.3	61.6	0.3	53.9	54.1	0.2	8.6	8.9	0.3	68.8	68.9	0.1
Fraser Mills BLDG 22A 22.OG	54.9	55.3	0.4	47.5	47.7	0.2	61.3	61.6	0.3	53.9	54.2	0.3	8.6	9.0	0.4	68.8	68.9	0.1
Fraser Mills BLDG 22A 23.OG	54.9	55.3	0.4	47.5	47.7	0.2	61.4	61.6	0.2	53.9	54.2	0.3	8.7	9.0	0.3	68.8	68.9	0.1
Fraser Mills BLDG 22A 24.OG	54.9	55.2	0.3	47.5	47.7	0.2	61.4	61.7	0.3	54.0	54.2	0.2	8.8	9.0	0.3	68.8	68.9	0.1
Fraser Mills BLDG 22A 25.OG	54.9	55.2	0.3	47.5	47.7	0.2	61.4	61.7	0.3	54.0	54.2	0.2	8.8	9.0	0.3	68.8	68.9	0.1
Fraser Mills BLDG 22A 26.OG	54.9	55.2	0.3	47.5	47.7	0.2	61.5	61.7	0.2	54.0	54.3	0.3	8.8	9.1	0.4	68.8	68.9	0.1
Fraser Mills BLDG 22A 27.OG	54.9	55.2	0.3	47.5	47.7	0.2	61.5	61.8	0.3	54.1	54.3	0.2	8.9	9.1	0.3	68.8	68.9	0.1
Fraser Mills BLDG 22A 28.OG	54.9	55.2	0.3	47.5	47.7	0.2	61.5	61.8	0.3	54.1	54.4	0.3	8.9	9.2	0.3	68.8	68.9	0.1
Fraser Mills BLDG 22A 29.OG	54.9	55.2	0.3	47.5	47.7	0.2	61.6	61.8	0.2	54.2	54.4	0.2	8.9	9.2	0.3	68.8	68.9	0.1
Fraser Mills BLDG 22A 30.OG	54.9	55.2	0.3	47.5	47.7	0.2	61.6	61.8	0.2	54.2	54.4	0.2	8.9	9.2	0.3	68.8	68.9	0.1
Fraser Mills BLDG 22A 31.OG	54.9	55.2	0.3	47.5	47.7	0.2	61.6	61.9	0.3	54.2	54.5	0.3	8.9	9.3	0.4	68.8	69.0	0.2

¹ L_{den} is Day Evening Night Sound Level
² L_n is Night Sound Level
³ LLF is Low-Frequency Noise Level
⁴ All Equipment Running Simultaneously





Making Sustainability Happen