

Appendix H: Air Quality and Noise Assessment

May 2014

Note concerning Air Quality and Noise Assessment

This Air Quality and Noise Assessment was conducted in January 2014 (memorandum date, March 13, 2014, indicates finalization of documentation). Subsequent to the completion of this assessment, on February 26, 2014, the proposed location of the new Water Street Wastewater Pumping Station was moved fully into Hillmer Park (refer to Communications Tracking Log, Appendix E-2). The location shown in this Assessment is now outdated. However, the findings of the Assessment apply to the new Hillmer Park location as:

- The requirements for registering the generator under the EASR program (noise less than 75 dB at 7 m from the equipment) would still be met with a Level 2 enclosure. A Level 3 enclosure, as recommended in the Assessment, would ensure noise emissions were significantly mitigated.
- The conclusion of the air quality assessment led to a recommendation that a minimum separation distance of 6.5 m between the point of emission and potential receptors be provided for in designing the generator. This minimum separation distance will be maintained at the new Hillmer Park location as it a vertical stack has been proposed in the Preferred Solution that will ensure this condition is met.

Date: March 13, 2014

RWDI Reference #: 1400772

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From: Alain Carrière

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Re: Navy-Water St Pumping Station – FINAL REPORT
Air Quality and Noise Assessments
Burlington, ON

Dear Susan,

This memorandum describes work completed by RWDI to conduct noise and air quality assessments in support of the Class Environmental Assessment (EA) process for the Navy and Water Street Waste Water Pumping Station (WWPS). The assessment addressed predicted air quality and noise impacts from equipment associated with the proposed new Water Street WWPS, and in particular the proposed new 250 kW back-up generator.

The original proposal described quantitative air quality and noise modelling activities based on a single scenario, with no field work or mitigation analysis proposed, and the delivery of a report on predicted impacts that would be suitable for inclusion in an EA report.

The actual work deviated significantly from the work proposed:

- a) the proposed location of the pumping station was changed several (three) times, and a screening-level analysis was conducted to estimate impacts for each scenario;
- b) due diligence and mitigation analysis for both noise and air quality impacts was conducted for each scenario
- c) RWDI felt it necessary to conduct a site visit to clearly understand the potential for impacts related to the air and noise emissions from the proposed facility, and therefore a brief site visit was conducted; and,
- d) for the generator, the approach that was explored in some detail – and eventually agreed upon – was to register the equipment under the Ontario Ministry of the Environment (MOE) “Environmental Activity and Sector Registry” (EASR).

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It was determined that the generator met the specifications for and could be registered under the EASR program and therefore, that an Environmental Compliance Approval (ECA) application would not be needed. The EASR is a simpler process that does not require quantitative modelling of air quality or noise impacts (which are required for an ECA) as long as certain criteria are met, which confirm the facility belongs to the low-risk categories the EASR was developed for. The proposed generator met the following specific EASR eligibility criteria:

- The generator is used only for backup in case of blackouts/brownouts.
- The generator uses only biodiesel/diesel/natural gas/propane or a combination.
- The generator capacity does not exceed 700 kW.
- The unit must be at least Tier 1 compliant in terms of air emissions
- The sound power level of the unit must not exceed 75 dB at 7 m from the unit.

Although not required for EASR, given the proximity of receptors (especially at the fire hall and the adjacent park), screening-level impact assessments were completed as a due diligence exercise to support the conclusion that there will be no significant adverse impacts from air or noise emissions from the proposed facility. A summary of the analysis of potential air quality and noise impacts is provided below for the final proposed location for the facility (see Figure 1).

Noise Assessment

Predicted noise impacts from the stand-by generator and from the pumps themselves were calculated using standard algorithms for noise propagation. It was found that the requirements for registering the generator under the EASR program (noise less than 75 dB at 7 m from the equipment) would be met with a Level 2 enclosure. RWDI recommended a Level 3 enclosure to ensure noise emissions were significantly mitigated, because of the proximity of noise-sensitive receptors and the possibility of noise complaints. Specifications provided by Black & Veatch regarding the equipment intended for the proposed facility confirmed the intention to recommend a Level 3 acoustic enclosure around the gen-set.

Noise impacts from the pumps were assessed and predicted to be insignificant at the nearest noise-sensitive receptors (boats in the marina, and residential and outdoor amenities at the fire hall). The calculated levels for the pumps based on information received from Black & Veatch were approximately 25 dBA at each receptor, well below the most stringent applicable noise criteria (45 dBA at night).

Air Quality Assessment

RWDI completed air quality modelling of emissions from the stand-by generator using both Scorer-Barrett and Screen 3 dispersion models for the location of the generator near the yacht club parking lot. Potential receptors considered were the boats in the Oakville Power Boat Club, the Burloak Canoe Club (both the club building and the property line), and also persons using the adjacent park. The assessments were done assuming Tier 3 emission standards for the emission rates, based on specifications provided by Black & Veatch regarding the equipment intended for the proposed facility.

These assessments essentially determine the “stretch-string distance” between the point of emission of air contaminants (*i.e.*, the tip of the generator stack) and the potential receptor (*e.g.*, a person standing in

the adjacent park – in this case the point of reception was considered to be 2 metres above the ground). Compliance for generator emissions was determined by the analysis of predicted concentrations of the air contaminant of greatest concern for this type of source, nitrogen oxides (NO_x) relative to the applicable MOE standard for stand-by generators: the 30-min average $1,880 \mu\text{g}/\text{m}^3$ Point-of-Impingement (POI) Limit for NO_x .

The results of the Scorer-Barrett analysis show that if the generator is placed at a distance greater than 6.5m from the nearest receptor, the generator will be in compliance with the $1,880 \mu\text{g}/\text{m}^3$ NO_x standard (85% of the limit). The results of the Screen 3 analysis show that if the generator is placed at a distance greater than 6.5m from the nearest receptor, the generator will be in compliance with the $1,880 \mu\text{g}/\text{m}^3$ NO_x standard (85% of the limit).

The conclusion of the air quality assessment led to a recommendation that a minimum separation distance of 6.5 m between the point of emission and potential receptors be provided for in designing the generator. This could be accommodated by either a horizontal separation, a vertical separation (by exhausting via a stack), or a combination of both.



Figure 1 Final proposed location for the pumping station facility



Susan Liver
Black & Veatch
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March 3, 2014

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Thank you for the opportunity to conduct this work, Susan, and I trust this memo provides sufficient documentation of our analyses and conclusions. Please do not hesitate to contact us if you have any further questions.

Kind regards,

Alain Carrière
Senior Project Manager / Associate