

**SPRINGBANK OFF-STREAM RESERVOIR PROJECT
ENVIRONMENTAL IMPACT ASSESSMENT
VOLUME 3B: EFFECTS ASSESSMENT (FLOOD AND POST-FLOOD OPERATIONS)**

Assessment of Potential Effects on the Acoustic Environment
March 2018

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Abbreviations

MNL	mitigation noise level
US EPA	United States Environmental Protection Agency

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4.0 ASSESSMENT OF POTENTIAL EFFECTS ON THE ACOUSTIC ENVIRONMENT

The scope of the assessment and existing conditions for the acoustic environment are presented in Volume 3A, Section 4.

4.1 PROJECT INTERACTIONS WITH THE ACOUSTIC ENVIRONMENT

Table 4-1 identifies the interaction of the Project with the acoustic environment during flood and post-flood operations. These interactions are discussed in detail in Section 4.2 in the context of effects pathways, standard and project-specific mitigation and residual effects. A justification for no interaction is provided following the table.

Table 4-1 Project-Environment Interactions with the Acoustic Environment during Flood and Post-flood Operations

Project Components and Physical Activities	Environmental Effects
	Change in Acoustic Environment
Flood and Post-flood Operations	
Reservoir filling	-
Reservoir draining	-
Reservoir sediment partial clean up	✓
Drained Reservoir	-
Channel maintenance	✓
Road and bridge maintenance	✓
NOTES: ✓ = Potential interaction - = No interaction	

There are no anthropogenic noise generating activities associated with the reservoir filling, reservoir draining, and drained reservoir activities; therefore, there are no interactions with the acoustic environment.

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4.2 ASSESSMENT OF RESIDUAL ENVIRONMENTAL EFFECTS ON THE ACOUSTIC ENVIRONMENT

4.2.1 Analytical Assessment Techniques

The assessment techniques are the same as methods presented in Volume 3A, Section 4. Health Canada suggests that short-term noise exposure be assessed based on using the United States Environmental Protection Agency (US EPA) (1974) method. This method provides mitigation noise levels (MNLs) and associated adjustments for community types. The MNL is defined as the threshold for which Health Canada suggests that mitigation measures are implemented to avoid widespread complaints. The suggested basic MNL is 47 dB L_{dn} for quiet suburban or rural communities. Various adjustments to the basic MNL may be applied depending on receptor location, activity duration, and noise source characteristics. All noise related activities during flood and post-flood operations are expected to be less than 2 months. Therefore, a +10 dB adjustment is applicable to MNL, resulting in the noise target of 57 dB L_{dn} at all receptors.

4.2.2 Change in Acoustic Environment

The following activities may interact with the acoustic environment:

- reservoir sediment partial clean up
- channel maintenance
- road and bridge maintenance

During the post-flood phase, inspections would be conducted using light trucks, although some heavy equipment may be mobilized to site if it is needed for debris removal. The post-flood operational activities that could require heavy equipment are removal of sediment and debris; and facility maintenance and repair. Heavy equipment may be required for sediment and debris removal. The quantity of equipment required would depend on the severity of the flood. The maximum quantity of heavy equipment required during the post-flood operation will be substantially less than the equipment requirement in the construction scenario. Noise effect at all receptors (both Indigenous and non-Indigenous) are expected to be below the MNL threshold of 57 dBA L_{dn}, given the lower quantity and intensity of activities expected during post-flood events. Timing is not applicable because effects from Project activities would be similar regardless of season or other timing characteristics.

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4.2.3 Summary of Project Residual Effects

Table 4-2 summarizes the residual environmental effects on the acoustic environment during flood and post-flood operations.

Table 4-2 Project Residual Effects on the Acoustic Environment during Flood and Post-flood Operations

Residual Effect	Residual Effects Characterization								
	Project Phase	Timing	Direction	Magnitude	Geographic Extent	Duration	Frequency	Reversibility	Ecological and Socio-economic Context
Change in Acoustic Environment	PF	N/A	N	L	LAA	ST	IR	R	U
<p>KEY</p> <p>See Table 4-2 in Volume 3A for detailed definitions</p> <p>Project Phase F: flood PF: post-flood</p> <p>Timing Consideration S: Seasonality T: time of day R: Regulatory</p> <p>Direction: P: Positive A: Adverse N: Neutral</p> <p>Magnitude: N: Negligible L: Low M: Moderate H: High</p> <p>Geographic Extent: PDA: Project Development Area LAA: Local Assessment Area RAA: Regional Assessment Area</p> <p>Duration: ST: Short-term; MT: Medium-term LT: Long-term N/A: Not applicable</p> <p>Frequency: S: Single event IR: Irregular event R: Regular event C: Continuous</p> <p>Reversibility: R: Reversible I: Irreversible</p> <p>Ecological/Socio-Economic Context: D: Disturbed U: Undisturbed</p>									

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4.3 DETERMINATION OF SIGNIFICANCE

A significant environmental effect on the acoustic environment would result in an exceedance of applicable local, provincial, federal, or international guideline limits appropriate for the Project. The noise effects at all receptor locations during the flood and post-flood operations are not predicted to exceed Health Canada noise thresholds. The residual effect on the acoustic environment is not significant.

4.4 PREDICTION CONFIDENCE

The assessment of noise effects is based on equipment usage during the flood and post-flood operation phase. Therefore, the prediction confidence is high.

4.5 CONCLUSIONS

The noise effect at all receptors during the flood and post-flood operations will meet the Health Canada noise thresholds.

4.6 REFERENCES

United States Environmental Protection Agency (US EPA) Office of Noise Abatement and Control. 1974. (Michaud et al. 2008. Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety.