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Mr. Mohammad Khayer, M.Eng., P.Eng.
Senior Engineer
Water Rights, Investigations, and Modelling Section

4th Floor, West Block, Confederation Building
PO Box 8700
St. John's, NL A1B 4J6

Re: *Water Management Plan – Proposed Subdivision, Deer Lake, NL*

Dear Mr. Khayer,

Please find enclosed the Water Management Plan (WMP) for the proposed subdivision located between the Trans-Canada Highway and the Humber River in Deer Lake, Newfoundland and Labrador.

This Water Management Plan has been prepared in accordance with the Guidelines to Prepare Water Management Plans provided by your office and addresses all eight (8) guideline items, including identification of nearby water bodies, stormwater runoff assessment for the 1:100-year, 24-hour climate-change rainfall event, drainage infrastructure description, and erosion and sediment control measures.

The development is fully serviced by an underground storm sewer system, with all runoff conveyed to a single 900 mm HDPE outlet discharging to the Humber River through a concrete headwall with rockfill erosion protection. No streams or water bodies are located within 30 m of the project footprint, and no watercourse alteration is proposed within the development area.

Should you require any additional clarification or revisions to this submission, please do not hesitate to contact me.

Sincerely,



Eugene Savard
Marine Contractors Inc

WATER MANAGEMENT PLAN

Proposed Subdivision – Deer Lake, Newfoundland and Labrador

1.0 Introduction and Purpose

This Water Management Plan (WMP) has been prepared to address stormwater management, erosion control, and protection of surface water resources for a proposed subdivision located between the Trans-Canada Highway and the Humber River in Deer Lake, Newfoundland and Labrador.

The purpose of this plan is to demonstrate that stormwater runoff generated by the development will be managed in a controlled manner that protects downstream water quality and quantity, in accordance with the requirements of the Department of Environment, Conservation and Climate Change (DECC).

2.0 Site Location and Waterbody Identification (Within 30 m)

A location map is provided identifying the project footprint, surrounding lands, and nearby water bodies.

Based on a review of mapping and site conditions:

- There are no streams, ponds, wetlands, or water bodies located within 30 metres of the project footprint.
- The nearest receiving environment is the Humber River, located downslope of the development and beyond the 30 m setback.

3.0 Waterbodies Within the Project Footprint

There are no natural watercourses or water bodies located within the project footprint. Accordingly, no elimination, diversion, or alteration of natural water bodies is required.

4.0 Stormwater Runoff – 1:100-Year, 24-Hour Climate Change Event

4.1 Rainfall Depth

Based on the Deer Lake (A) updated Intensity–Duration–Frequency (IDF) data, the 1:100-year, 24-hour historical rainfall depth is: 86.8 mm

To account for projected climate change impacts, an exact climate change factor of 1.15 has been applied.

Climate-adjusted rainfall depth:

$$P_{cc} = 86.8 \text{ mm} \times 1.15 = 99.82 \text{ mm}$$

4.2 Drainage Area

The total drainage area contributing runoff from the development is:

- 192,100 m² (19.21 ha)

All stormwater runoff from the development is conveyed through the underground storm sewer system to a single outlet discharging to the Humber River.

WATER MANAGEMENT PLAN

Proposed Subdivision – Deer Lake, Newfoundland and Labrador

4.3 Impervious and Pervious Area Assessment

Roadways (impervious):

- 15,750 m²

Residential Lots (98 lots):

- House footprint per lot: 1,500 ft² (139.35 m²)
- Driveway per lot: 800 ft² (74.32 m²)
- Impervious per lot: 213.68 m²
- Total residential impervious area: 20,940 m²

Commercial Lots (80% impervious):

- Total commercial lot area: 41,304 m²
- Impervious area: 33,043 m²

Total Impervious Area:

- 69,734 m²

Total Pervious Area:

- 122,366 m²

Overall Site Imperviousness:

- 36.3%

4.4 Runoff Coefficients

The following runoff coefficients were used:

- Impervious areas: C = 0.90
- Pervious areas: C = 0.30

Weighted runoff coefficient:

$$C_w = \frac{(0.90 \times 69,734) + (0.30 \times 122,366)}{192,100} = 0.518$$

4.5 Runoff Volume Calculation

Runoff volume for the 1:100-year, 24-hour climate-adjusted storm event is calculated as:

$$V = C_w \times P_{cc} \times A_{total}$$

Where:

- $C_w = 0.518$
- $P_{cc} = 0.09982 \text{ m}$
- $A_{total} = 192,100 \text{ m}^2$

$$V = 0.518 \times 0.09982 \times 192,100 = 9,929 \text{ m}^3$$

Estimated runoff volume: 9,930 m³

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Proposed Subdivision – Deer Lake, Newfoundland and Labrador

5.0 Stormwater Runoff Management

Stormwater runoff is collected and conveyed through a closed underground storm sewer system consisting of:

- 300 mm HDPE catch basin leads
- 450 mm HDPE collection piping
- 900 mm HDPE main trunk line

Stormwater is discharged to the Humber River via a concrete headwall outlet. No stormwater detention pond is proposed.

6.0 On-Site Drainage Plan (Schematic)

A schematic drainage plan is provided showing:

- Catch basins and manholes
- Pipe sizes and flow directions
- Main storm trunk alignment
- Outlet headwall location
- Receiving environment

All stormwater runoff converges to a single controlled outlet.

7.0 Dewatering Management

There is no mine, quarry, or pit dewatering associated with this development.

Temporary construction dewatering, if encountered, will be managed by pumping to a stable area or sediment control measure prior to release. Direct discharge of turbid water to the Humber River will not occur.

8.0 Erosion and Sediment Control Measures

Preventive measures implemented include:

- Concrete headwall outlet with rockfill erosion protection beyond the outlet
- Temporary erosion and sediment controls during construction (e.g., silt fencing)
- Stabilized construction entrances
- Prompt stabilization of exposed soils
- Spill prevention and response measures
- Routine inspection and maintenance of controls

9.0 Conclusion

The proposed stormwater management system has been designed to safely convey runoff from the development while minimizing erosion, sediment transport, and impacts to downstream water resources.

Deer Lake Subdivision Stormwater Management Plan

