23 March 2021
Project Number: 200607-00

Mr. Michael Brownlee
Public Services and Procurement Canada
Western Region
10025 Jasper Region
Edmonton, AB T5J1S6

Re: Nunavut Water Board (NWB) 2020 Compliance Long Term Monitoring Report
Water License 1BR-MDR1721, Former Iqaluit Metal Dump, Iqaluit, NU

Dear Mr. Brownlee,

BluMetric Environmental Inc. (BluMetric™) was retained by Public Services and Procurement Canada (PSPC), Western Region on behalf of Transport Canada (TC) Canada to complete the 2020-2021 Compliance Long Term Monitoring (LTM) requirements at the Former Iqaluit Metal Dump, located in Iqaluit, NU. The Site location is indicated in Figure 1. Site work and the associated reporting completed in 2020 was conducted as per the requirements of the Nunavut Water Board (NWB) Water License 1BR-MDR1721, and the site specific Performance and Long Term Monitoring Plan (Arcadis, August 2018).

EXECUTIVE SUMMARY

The Iqaluit Former Metal Dump/Community Landfill is located 1.7 km southwest of the City of Iqaluit, Nunavut on the border of the Sylvia Grinnell Territorial Park and the Sylvia Grinnell River. The site covers an area of approximately 72,500 m^2. The United States Air Force used the site from 1955 to 1963 as a metal dump for vehicles, truck bodies, barrels and scrap metal. The majority of materials were deposited in 1963 when the US Military left Frobisher Bay. The debris was scattered over a large area and consisted of vehicles, equipment, barrels, scrap metal, shops and buildings.

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The 2020 LTM field program took place on September 19, 2020 and included visual monitoring, monitoring of the natural environment, and an environmental sampling program. All work was completed in accordance with the Nunavut Water Board (NWB) Water Licence 1BR-MDR1721 and the Performance and Long Term Monitoring Plan (Arcadis, August 2017). Based on the recommendations set out in the LTM Plan and the NWB Water Licence (1BR-MDR1721), monitoring at the Site is recommended to continue until 2022 to confirm that environmental and human health are being protected.

BACKGROUND

The Iqaluit Former Metal Dump is located 1.7 km southwest of the City of Iqaluit, Nunavut on the border of the Sylvia Grinnell Territorial Park and the Sylvia Grinnell River. The site covers an area of approximately 72,500 m^2. The United States Air Force (USAF) used the site from 1955 to 1963 as a metal dump for vehicles, truck bodies, barrels and scrap metal. The majority of materials were deposited in 1963 when the US Military left Frobisher Bay. The debris was scattered over a large area and consisted of vehicles, equipment, barrels, and scrap metal. Two main areas of waste are present at the site as a result of former land use activities; the main debris/ community landfill in the central portion of the site, and the vehicle dump located to the south.

The site was remediated during Fiscal Year 2017-2018. A Long term monitoring (LTM) plan was developed in February 2018 by Arcadis, outlining a sampling program to monitor natural attenuation at the site. As per the LTM, the initial Phase 1 of monitoring is required in years 1, 3, and 5 following remediation. Dillon Consulting LTD/ Outcome Consultants Inc (DOJV) completed the year 1 LTM requirements for the site in 2018, and in 2019 they conducted additional monitoring that was supplemental to the defined LTM program. The field program described herein was conducted in accordance with the year 3 LTM requirements.

ENVIRONMENTAL QUALITY GUIDELINES

The applicable environmental quality guidelines (EQG) for the Site were established as part of the Long Term Monitoring Plan (Arcadis, 2018). As per the Plan, results from the 2020 program were evaluated using the following criteria:

- Canadian Soil Quality Guidelines for the Protection of Environmental and Human Health (CSQGs) (CCME, 1999, with updates);
- Canada-Wide Standards (CWS) for Petroleum Hydrocarbons in Soil (CCME, 2008);
- Canadian Soil Quality Guidelines (CSQG) Polycyclic Aromatic Hydrocarbons factsheet (CCME, 2010);

- Canadian Environmental Quality Guidelines. Canadian Sediment Quality Guidelines (CSedQG) for the Protection of Aquatic Life (CCME, 2007, with updates), and;
- Canadian Environmental Quality Guidelines. Canadian Water Quality Guidelines (CWQG) for the Protection of Aquatic Life (CCME, 2007, with updates).

Additionally, for the 2018 and 2019 Annual Monitoring Programs, Dillon-Outcome Joint Ventures used the following criteria for Petroleum Hydrocarbons in surface water in absence of an applicable federal or territorial guideline, and the use of these criteria has been carried through in this report:

- Alberta Government, Alberta Tier 1 Soil and Groundwater Guidelines. Table 2. (AEP, 2019).

The LTM Plan divided the Site into three (3) sectors; the upper, lower eastern and lower western. Table 1 outlines each sector, the associated LTM stations and the EQG classification.

Table 1: EQG Classification for LTM Stations

Sector	LTM Station (s)	EQG
Upper	7, 8	Commercial, Freshwater, Coarse-grained soil
Lower – Eastern Portion	2, 5, 6	Wildland, Freshwater, Coarse-grained Soil
Lower – Western Portion	1, 3, 4	Wildland, Lowest of Marine or Freshwater, Coarse-grained soil

WATER USAGE

NWB water licence allows for the usage of up to 50 m³ per day, a maximum of 25 L (0.0025 m³) of water was collected on September 19, 2020 for surface water sampling purposes. No other water was used or diverted during the 2020 LTM activities.

LONG TERM MONITORING

The 2020 Long Term Monitoring requirements for the Iqaluit Former Metal Dump were completed on September 19, 2020. Results from the 2020 monitoring period are summarized within the NWB Annual Reporting Form included as Appendix A.

VISUAL MONITORING

Visual inspections of the isolation cover surface and the access roadway were conducted as part of the LTM activities on September 19, 2020. Photos were taken of points of interest at standard photo locations as specified within the LTM Plan. Locations were confirmed with a handheld GPS.

MONITORING OF THE NATURAL ENVIRONMENT

Monitoring of the natural environment was conducted as part of the LTM activities on September 19, 2020. Several observations were made indicating use of the Site by local residents; ATV tracks were noted on the top of the landfill and remnants of tents were found on the south side of the landfill. Dog prints were also seen in the vicinity of the landfill and people were seen fishing off-shore. Local residents assisting with the field activities indicated that the site is known to be commonly used as a fishing location. Bird excrement was the only evidence of wildlife observed in the vicinity of the site and vegetation was noted to be sparse.

SAMPLING

All sampling conducted throughout the 2020 LTM program was completed in compliance with the protocol outlined in CCME 2016 "Guidance Manual for Environmental Site Characterization in Support of Environmental and Human Health Risk Assessment", Volume 3 "Standard Operating Procedures". Furthermore, sample collection, preservation, and analysis was conducted in accordance with methodology prescribed in the current edition of "Standard Methods for the Examination of Water and Wastewater" in accordance with Part K, condition 2 of the Water Licence. All samples were submitted for analysis at Bureau Veritas Laboratories (Bureau Veritas), a Canadian Association of Laboratory Accreditation (CALA) certified Laboratory, in Ottawa, ON.

Surface Water

A total of nine surface water samples, including one duplicate sample, were collected during the LTM program conducted on September 19, 2020. Field parameters recorded at each sampling location are included in Table B-1 (Attachment B). The September 2020 surface water analytical results, along with historical surface water quality results for the Site, are provided in Tables B-2 through B-6 (Attachment B) in comparison to the applicable criteria.

Exceedances to the EQG for surface water samples in 2020 were limited to zinc at LTM-SW7 only. A summary of the parameters reported in exceedance of the applicable EQG within surface water throughout the complete LTM program to date is presented below in Table 2.

Table 2: Summary of LTM Surface Water Exceedances

LTM Year	2017	2018	2019	2020
LTM-SW1	--	--	--	--
LTM-SW2	Cadmium, Zinc	--	--	--
LTM-SW3	Zinc	--	--	--
LTM-SW4	--	--	--	--
LTM-SW5	Zinc	Cadmium, Lead, Zinc	--	--
LTM-SW6	Zinc	Cadmium, Lead, Zinc	--	--
LTM-SW7	Zinc	Zinc	Cadmium, Lead, Zinc	Zinc
LTM-SW8	NA	NA	Zinc	--

Notes:
NA – Not Analyzed

Sediments

A total of nine sediment samples, including one duplicate sample, were collected during the LTM program conducted on September 19, 2020. The September 2020 sediment analytical results, along with historical sediment quality results for the site, are provided in Tables B-7 through B-10 (Attachment B) in comparison to the applicable criteria, A summary of the parameters reported in exceedance of the applicable EQG within sediment throughout the complete LTM program to date is presented below in Table 3.

Table 3: Summary of LTM Sediment Exceedances

LTM Year	2018	2019	2020
LTM-SD1	--	--	--
LTM-SD2	--	--	--
LTM-SD3	--	--	Chromium
LTM-SD4	--	--	Lead
LTM-SD5	F3, Cadmium, Lead, Zinc, Total PCBs	F3, Cadmium, Zinc, Total PCBs	F2, F3, Cadmium, Lead, Zinc, Total PCBs
LTM-SD6	Toluene, F2, F3, Cadmium, Lead, Zinc, Total PCBs	F2, F3, Cadmium, Lead, Zinc, Total PCBs	F2, F3, Cadmium, Lead, Zinc, Total PCBs
LTM-SD7	Zinc, Total PCBs	Zinc	Zinc, Total PCBs
LTM-SD8	--	Zinc	--

Notes:
NA – Not Analyzed

CONCLUSIONS

The 2020 Long Term Monitoring requirements for the Iqaluit Former Metal Dump were completed on September 19, 2020. Exceedances to the EQGs for surface water samples in 2020 were limited to zinc at LTM-SW7 only. EQG exceedances for sediment samples in 2020 were noted at LTM-SD3, SD4, SD5, SD6, and SD7 for various parameters. It is recommended that long term monitoring continue to be implemented at the site as per the site specific LTM Plan (Arcadis, 2018).

CLOSURE

The conclusions presented in this report represent our professional opinion and are based upon the work described in this report and any limiting conditions in the terms of reference, scope of work, or conditions noted herein. The findings presented in this report are based on conditions observed at the specified dates and locations, and on the analysis of samples for the specified parameters. Unless otherwise stated, the findings cannot be extended to previous or future site conditions, portions of the site that were not investigated directly, or types of analysis not performed.

BluMetric Environmental Inc. makes no warranty as to the accuracy or completeness of the information provided by others, or of conclusions and recommendations predicated on the accuracy of that information. Nothing in this report is intended to constitute or provide a legal opinion. BluMetric Environmental Inc. makes no representation as to compliance with environmental laws, rules, regulations, or policies established by regulatory agencies.

This report has been prepared for the Nunavut Water Board on behalf of Public Services and Procurement Canada and Transport Canada. Any use a third party makes of this report, any reliance on the report, or decisions based upon the report, are the responsibility of those third parties unless authorization is received from BluMetric environmental Inc., in writing.

Regards,
BluMetric Environmental Inc.

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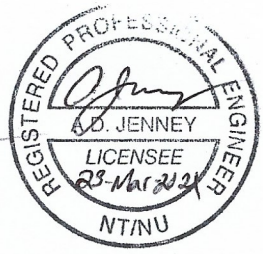

Andrea Jenney P.Eng. (NU/NT)
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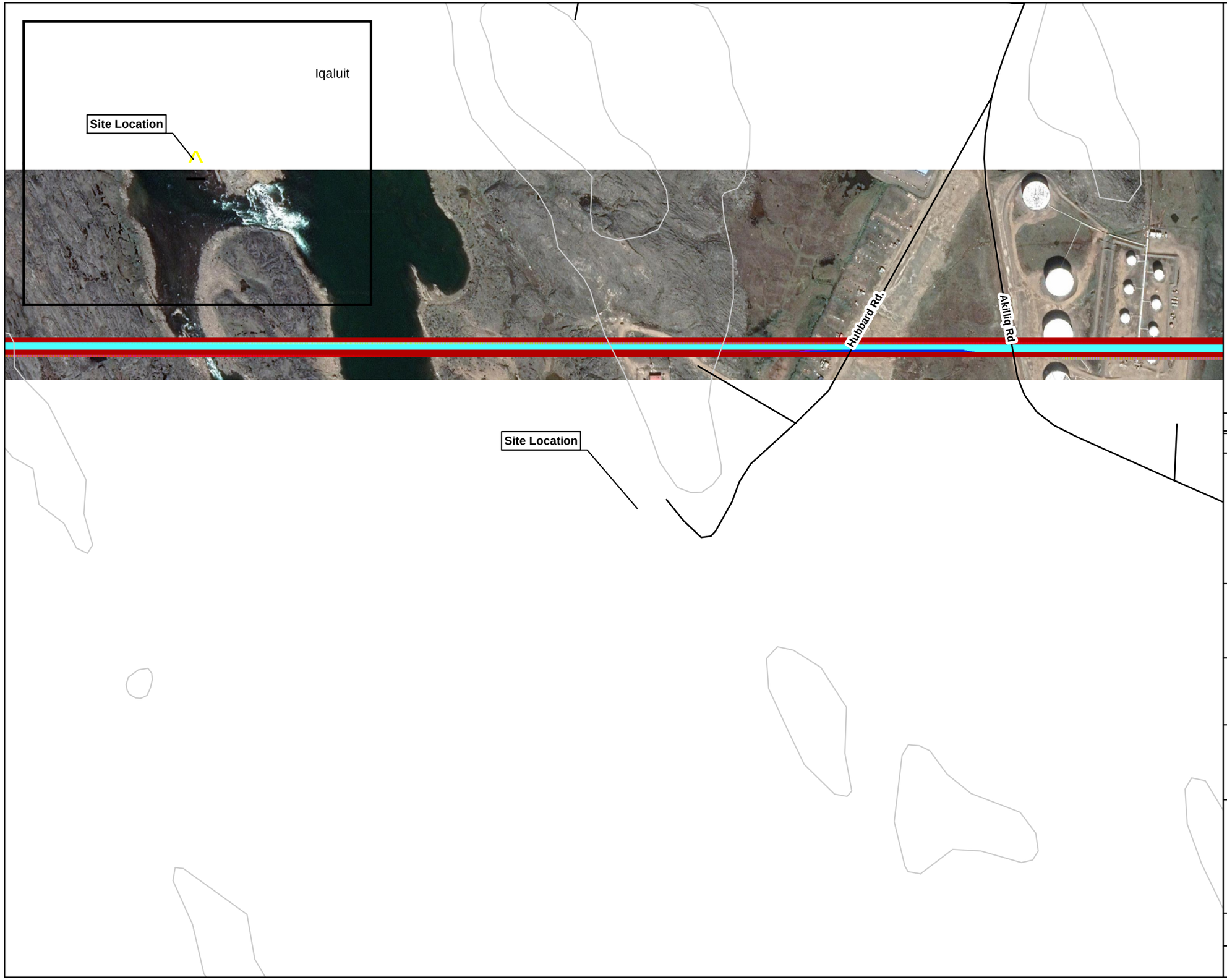
Encl:
Attachment A: Figures
Figure 1: Site Location
Figure 2: Site Plan
Attachment B: Chemistry Results
Table B-1: Surface Water Field Parameters and Purge Water Observations
Table B-2 to B-6: Surface Water Analytical Results
Tables B-7 to B-10: Sediment Analytical Results
Attachment C: NWB Annual Reporting Form

ATTACHMENT A

Figures



LEGEND

Road

Elevation Contour (10 m)

REV.	DESCRIPTION	YY/MM/DD	BY	CHK
1				

REFERENCES

PROPRIETARY INFORMATION MAY NOT BE REPRODUCED OR DIVULGED WITHOUT PRIOR WRITTEN CONSENT OF BLUMETRIC ENVIRONMENTAL INC.
DO NOT SCALE DRAWING.
THIS DRAWING MAY HAVE BEEN REDUCED. ALL SCALE NOTATIONS INDICATED ARE BASED ON 11"x17" FORMAT DRAWINGS.

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CLIENT

Public Service and Procurement Canada

PROJECT

Compliance Long Term Monitoring for Transport Canada at the Former Iqaluit Dump

TITLE

Site Location

BluMetric™ Environmental

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PROJECT #	DATE
200607-00	October 27, 2020

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