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SOW Ref: 16.F.5.d

2021 ANNUAL NUNAVUT WATER BOARD

REPORT FOR CAM-M

FOR THE North Warning System

Contract # W8485-100224/001/NX
SOW Ref: 16.F.5.d

Document Number
NWB-ML-2021, Rev 2, 22-Mar-2022

Prepared for
North Warning System & Assoc. Projects
Aerospace Equipment Program Directorate

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EXECUTIVE SUMMARY

This 2021 Annual Report for the Nunavut Water Board (NWB) has been prepared by Raytheon Canada (RC) for the Department of National Defence in order to meet the requirements of Part B "General Conditions", paragraph 1 of its licence 8BC-CAM1929. This report covers 01 January to 31 December 2021.

RC is the Operations and Maintenance (O&M) Contractor for the North Warning System (NWS), including CAM-M, the attended (manned) NWS radar site located at Cambridge Bay, Nunavut.

The water usage for CAM-M in 2021 was 1268.9 m³, below the annual limit of 3650 m³. The maximum water drawn per day was 12.31 m³, which is below the daily limit of 300 m³.

Sewage at CAM-M is processed by the tertiary wastewater treatment system. Some of the treated effluent is recycled as on-site urinal/toilet flush water. The discharged treated effluent is of potable water quality. A sample of the treated effluent was sent for laboratory analysis each month in 2021.

Hazardous waste and waste oil were sent to approved hazardous waste disposal sites outside of Nunavut as required by the licence. The hazardous waste consisted of two bags of waste silica material, one crate of waste batteries and 116 drums of assorted waste (waste fuel, waste oil, etc.).

Non-hazardous domestic solid waste was disposed of at the local landfill through a contract with the Hamlet of Cambridge Bay. RC has documented authorization from the community for receiving the waste.

Prior to discharge, water contained in the berms of the fuel storage facilities (CDL-3) was assessed using hydrocarbon test strips. The test strips confirmed the water was within the effluent quality limits listed in the water licence, Part D. The coordinates and the photo log of the test strips after analysis are shown in **Annex D**

Four spills to the environment occurred in 2021:

- 05-Jul-2021, NT-NU Spill #2021-284: A leaking union on the vehicle refueler caused a spill of 3 L of Jet-A1. The union was tightened and the area was excavated and backfilled with clean fill.
- 16-Jul-2021, NT-NU Spill #2021-303: A leaking camlock connection caused a spill of 100 mls of Jet-A1 during helicopter refuel. The camlock was repaired and the area excavated and backfilled with clean fill.
- 17-Jul-2021, NT-NU Spill #2021-306: During maintenance to a compressor 2 L of oil leaked from the oil reservoir due to human error. The area was excavated and backfilled with clean fill.
- 17-Dec-2021, NT-NU Spill #2021-496: During maintenance a coolant hose ruptured on a generator causing a spill of 5L of 50% glycol solution. The coolant hose was repaired and the area was excavated and backfilled with clean fill.

The Spill Contingency Plan was successfully implemented.

Confirmatory sampling was completed for the NT/NU Spill 20-051 (18 February 2020 spill) which concluded the area does not require further action.

See Annex F for information regarding the progressive reclamation work.



TABLE OF CONTENTS

Executive Summary.....	3
List of Tables.....	4
List of Figures	4
1.0 Introduction	5
1.1 Report Details.....	5
2.0 Water Use	5
3.0 Treated Sewage Discharge	5
4.0 Hazardous Waste and Waste Oil Disposal	6
5.0 Non-Hazardous Solid Waste Disposal	7
6.0 Monitoring Program.....	8
7.0 Spills (Unauthorized Discharges).....	8
8.0 Revisions to the Spill Contingency Plan	9
9.0 Progressive Reclamation Work Undertaken	9
10.0 Acronyms	9
Annex A. Hazardous Waste and Waste Oil Disposal in 2021	A-1
Annex B. Treated Sewage Effluent Outfall (CDL-2) Location with Coordinates	B-1
Annex C. Analysis of Treated Sewage Effluent	C-1
Annex D. Location of Bermed Fuel Storage Facilities	D-1
Annex E. Analysis of Berm Water	E-1
Annex F. Monitoring Activities.....	F-1

LIST OF TABLES

Table 2-1: Monthly Raw Water Usage at CAM-M in 2021	5
Table 3-1: Monthly and Annual Volume of Sewage and Grey Water Treated at CAM-M in 2021	6
Table 4-1: Hazardous Waste and Waste Oil Sent for Disposal from CAM-M in 2021	6
Table 5-1: Non-hazardous Domestic Solid Waste Sent for Disposal from CAM-M in 2021	7
Table 7-1: Unauthorized Discharges at CAM-M in 2021	8
Table 10-1: Acronyms.....	9
Table C-1: Summary of Analysis of Treated Sewage Effluent at CAM-M in 2021	C-1
Table D-2: Analysis of Berm Water at CAM-M in 2021	D-1
Table F-1: Fluid Analytical Results – Characterization for NT-NU Spill #20-051	F-2
Table F-2: Waterbody Analytical Results.....	F-2
Table F-3: Soil Confirmatory Sampling Analytical Results.....	F-3
Table F-4: Confirmatory Sampling Results for NT-NU Spill #19-467.....	F-4

LIST OF FIGURES

Figure 1: Coordinates of sewage treatment outfall: 69°07'03.2"N, 105°07'11.3"W	B-1
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1.0 INTRODUCTION

This 2021 Annual Report for the Nunavut Water Board (NWB) has been prepared by Raytheon Canada Limited (RCL) for the Department of National Defence (DND) in order to meet the requirements of Part B “General Conditions”, paragraph 1 of its licence 8BC-CAM1929 issued 01 September 2019. This report covers 01 January to 31 December 2021.

RCL is the Operations and Maintenance (O&M) Contractor for the North Warning System (NWS), including CAM-M. CAM-M is the attended (manned) NWS radar site located at Cambridge Bay, Nunavut.

1.1 Report Details

Licensee: Department of National Defence, Government of Canada
Licence: 8BC-CAM1929 – Type “B”
Location: CAM-M North Warning System Site, Cambridge Bay, Kitikmeot Region, Nunavut
Report Prepared by: Alaina Leslie and reviewed by Don Beattie
Raytheon Canada, 22-Mar-2022
Time period covered: 01 January to 31 December 2021

2.0 WATER USE

The water usage for CAM-M in 2021 was 1268.9 m³, below the annual limit of 3650 m³. The maximum water drawn per day was 12.31 m³, which is below the daily limit of 300 m³.

See Table 2-1 for the volume of water drawn at CAM-M each month in 2021.

Table 2-1: Monthly Raw Water Usage at CAM-M in 2021

Month	Raw water usage (m ³)
January	100.1
February	86.9
March	78.1
April	96.3
May	103.9
June	110.4
July	134.5
August	117.7
September	110
October	105.8
November	125.4
December	99.8
TOTAL	1268.9

3.0 TREATED SEWAGE DISCHARGE

At CAM-M, the sewage and grey water were both processed through a Cycle-let® advanced tertiary wastewater treatment system. Some of the treated water is recycled as urinal/toilet flush water; the remainder is discharged at the designated outfall and is of potable water quality. See Table 3-1 for the



volume of sewage and grey water treated by the Cycle-let® system. See **Section 6.0 – Monitoring Program** for details on sewage effluent monitoring.

The location and coordinates of treated sewage effluent outfall location (CDL-2) is contained in **Annex B**. Sewage sample analytical results and certificates of analysis are contained in **Annex C**.

Table 3-1: Monthly and Annual Volume of Sewage and Grey Water Treated at CAM-M in 2021

Month	Volume of sewage and greywater treated then discharged or recycled (m ³)
January	100.1
February	86.9
March	78.1
April	96.3
May	103.9
June	110.4
July	134.5
August	117.7
September	110
October	105.8
November	125.4
December	99.8
TOTAL	1268.9

4.0 HAZARDOUS WASTE AND WASTE OIL DISPOSAL

Hazardous waste and waste oil were sent to an approved hazardous waste disposal site outside of Nunavut as required by the licence. The hazardous waste was shipped to Qikiqtaaluk Environmental, through their subcontractor Veolia, 2630, boul. Industriel, Chambly, QC J3L 4V2.

Waste sent for disposal included two bags of waste silica material, one crate of waste batteries and 116 drums of assorted waste (waste fuel, waste oil, etc.).

See Table 4-1, below, for the list of items sent for disposal. See **Annex A** for shipping documents, including the completed movement documents for waste regulated under the Transportation of Dangerous Goods Regulations (TDGR) and non-regulated waste (indicated on the movement documents with “NR”).

Table 4-1: Hazardous Waste and Waste Oil Sent for Disposal from CAM-M in 2021

Description	TDG shipping name	Movement Document	Quantity
Waste oil filters	Not Regulated	Movement Document 2539522-9	3 Drums*
Waste glycol soaked rags	Not Regulated	Movement Document 2539522-9	1 Drums
Waste – Silica blast material with hydrocarbon odour	Not Regulated	Movement Document 2539522-9	10 Drums
Waste – Silica blast material with hydrocarbon odour	Not Regulated	Movement Document 2539522-9	2 Bags
Waste oil	Not Regulated	Movement Document 2539522-9	48 Drums**

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Description	TDG shipping name	Movement Document	Quantity
Waste oily rags	Waste Solids Containing Flammable Liquid, N.O.S. (Fuel, Aviation, Turbine Engine)	Movement Document 2539521-1	6 Drums***
Waste Jet A1 fuel filters	Waste Solids Containing Flammable Liquid, N.O.S. (Fuel, Aviation, Turbine Engine)	Movement Document 2539521-1	2 Drums
Waste batteries, wet, filled with acid	Waste Batteries, Wet, Filled With Acid	Movement Document 2539521-1	1 Crate
Waste Fuel, Aviation, Turbine Engine	Waste Fuel, Aviation, Turbine Engine	Movement Document 2539521-1	3 Drums
Waste Fuel, Aviation, Turbine Engine Mixture	Waste Fuel, Aviation, Turbine Engine Mixture	Movement Document 2539521-1	8 Drums
Waste tank bottom water/ tank cleaning effluent	Waste Fuel, Aviation, Turbine Engine Mixture	Movement Document 2539521-1	33 Drums
Waste empty fuel container, with Jet A1 fuel residue only	Waste Fuel, Aviation, Turbine Engine Mixture	Movement Document 2539521-1	2 Drums
Notes: * 1 drum of waste oil filters were included on a Maximo Manifest instead of a Movement Document. Refer to TCN 44015. ** 3 Drums of waste oil were included on a Maximo Manifest instead of a Movement Document. Refer to TCNs 44057 and 44141. *** 4 drums of oily rags were included on a Maximo Manifest instead of a Movement Document. Refer to TCN 44014.			

5.0 NON-HAZARDOUS SOLID WASTE DISPOSAL

Non-hazardous domestic solid waste was disposed of at the local landfill through a contract with the Municipality of Cambridge Bay. RCL has documented authorization from the community for receiving the waste. See Table 5-1, below, for the quantity of non-hazardous waste generated.

Table 5-1: Non-hazardous Domestic Solid Waste Sent for Disposal from CAM-M in 2021

Month	Waste Generated (kg)
January	1284*
February	1182
March	1007
April	1326*
May	1334*
June	1436*
July	2264
August	1479
September	1918
October	1895
November	1233
December	1298*
TOTAL	17,656
Notes: * Waste generation for January, April, May, June and December was estimated based on generation of 2 kg per person per day as tracking sheets were completed, but misplaced for these months. These estimates are generally consistent with the average waste generated for 2020.	



6.0 MONITORING PROGRAM

In 2021, a monitoring program was implemented at CAM-M as required by the water licence. The monitoring program included the following:

1. Volume of raw water drawn from the water Supply Lake (CDL-1). The information from this monitoring is shown in **Section 2.0 Water Use**.
2. Quality of sewage discharged from the final discharge point of the sewage treatment facility (CDL-2). The location of the sewage effluent outfall is shown in **Annex B**, including coordinates. The treated sewage was sampled monthly. The results of the analyses are shown in **Annex C**.
3. Prior to discharge, water contained in the berms of the fuel storage facilities (CDL-3) was assessed using hydrocarbon test strips. The test strips confirmed the water was within the effluent quality limits listed in the water licence, Part D. The coordinates and the photo log of the test strips after analysis are shown in **Annex D**.
4. No landfarm has been built on-site, therefore, no samples were required at the final discharge point from the landfarm (CDL-4).

7.0 SPILLS (UNAUTHORIZED DISCHARGES)

Four spills to the environment occurred at CAM-M in 2021.

Table 7-1: Unauthorized Discharges at CAM-M in 2021

Date, NT-NU Spill #	Product	Quantity	Cause and follow-up action	On-site location
05-Jul-2021, Spill # 2021-284	Jet-A1	3 L	On 5-Jul-2021 staff started refueling a vehicle and noticed a leaking union in the refueler. Staff shutoff the refueler to stop the leak. Contaminated soil was removed and placed into a drum for off-site disposal. The excavated area was backfilled with clean fill. The union has been tightened.	Vehicle Refueler (Tank W21G) (69 06'58.71" N 105 07'19.55" W)
16-Jul-2021, Spill # 2021-303	Jet-A1	0.1 L	On 16-Jul-2021 staff were refueling a helicopter when 250 ml leaked from the camlock connection. 150 mls were caught in a drip tray and 100 mls reached the ground due to high wind. Impacted gravel was removed with shovels and placed in a drum for off-site disposal. The camlock has been repaired.	Aircraft Refueler (nozzle) (69° 6'11.80"N, 105° 7'31.56"W)
17-Jul-2021, Spill # 2021-306	Oil	2 L	On 17Jul2021, contractors on site were sandblasting at the beach tanks. The compressor was not functioning as expected and, while the contractors were performing maintenance, they accidentally removed the plug from the oil reservoir. Oil leaked from the tank resulting in a spill of 2 L, impacting an area of approximately 1 sq. m. The contaminated soil was shoveled and placed into a containment drum for off-site disposal.	Beach tanks (69°06'11.37"N 105°05'48.61"W)

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Date, NT-NU Spill #	Product	Quantity	Cause and follow-up action	On-site location
17-Dec-2021, Spill # 2021-496	50% Ethylene glycol solution	5 L	On 17Dec2021, technicians were doing maintenance on a Diesel Electric Generator (DEG). When replacing the coolant on the DEG, the coolant hose on the DEG ruptured, spilling 20L of a 50% ethylene glycol solution. It was determined that 15L spilled onto the floor and 5L leaked to the outside through the floor of the Power Generation System room. Upon discovery, technicians immediately stopped filling up the glycol and sealed off the leak. The spill impacted an area of 0.5m2 of snow/gravel. The mix of snow and gravel has been picked up with shovels and containerized for off-site disposal. Technicians used absorbent pads to soak up the spilled glycol on the floor which they also containerized for off-site disposal. The coolant hose was replaced.	Powerplant, B-Train (69°06'58"N 105°07'08"W)

The Spill Contingency Plan was successfully implemented.

8.0 REVISIONS TO THE SPILL CONTINGENCY PLAN

The Spill Contingency Plan was updated on 20-Jul-2021. An updated copy of the Spill Contingency Plan has been submitted to the NWB with this annual report.

9.0 PROGRESSIVE RECLAMATION WORK UNDERTAKEN

A closure report was drafted for the 21 November 2019 spill at the warehouse. On 27 March 2020 RC provided the sampling results and details of the remediation activities to Environment and Climate Change Canada (ECCC) and Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC) via email.

Remediation work was also completed for the 15 February 2020 spill, including confirmatory sampling of the soil under the building.

See Annex F for information regarding the progressive reclamation work.

10.0 ACRONYMS

Table 10-1: Acronyms

Acronym	Definition
CWS for PHC	Canada-Wide Standards for Petroleum Hydrocarbons (PHC) in Soil
CCME	Canadian Council of Ministers of the Environment
m ³	Cubic metre
n.o.s.	Not Otherwise Specified
NWB	Nunavut Water Board
NWS	North Warning System
O&M	Operations and Maintenance
PHC	Petroleum Hydrocarbons
PID	Photo Ionizing Detector

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POL	Petroleum, Oil & Lubricant
RCL	Raytheon Canada Limited
SQG	Soil Quality Guidelines
TDGR	Transportation of Dangerous Goods Regulations

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ANNEX A. HAZARDOUS WASTE AND WASTE OIL DISPOSAL IN 2021

The 2021 for Shipping Document for TDG-regulated waste and Movement Documents for all hazardous waste (as previously described in Table 4-1) are included in the following pages. Non-regulated items are indicated with "NR" in the Movement Document. Eight drums of non-regulated waste were included on Maximo Manifests (TCNs) instead of the Movement Document and are also included in this Annex.

The following documents are enclosed:

1. Shipping Document for TDG by Sea
2. Movement Document 2539522-9
3. Movement Document 2539521-1
4. TCN 44015.
5. TCN 44014
6. TCN 44057
7. TCN 44141



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SHIPPING DOCUMENT

Consignor (Shipper) Name: Department of National Defence c/o RCL Address: NWS LSS Cambridge Bay, PO Box 1239, Cambridge Bay, NU X0B 0C0	Consignee (Destination) Name: Qikiqtaaluk Environmental Address: 9935 de Chateauneuf, Entrance 1, Suite 200, Brossard QC, J4Z 3V4
DATE: 30-August-2021	Point of Origin: Cambridge Bay, NU
Name of Carrier: NEAS Marine Terminal Transport unit #:	Shipping Document #: TCN-42861, TCN-42862, TCN-44003, TCN-44004, TCN-44008, TCN-44013, TCN-44014, TCN-44016, TCN-44023, TCN-44050, TCN-44051, TCN-44052, TCN-44053, TCN-44105, TCN-44129, TCN-44170, TCN-44171

REGULATED DANGEROUS GOODS

24-HOUR NUMBER: 613-996-6666				(Only if applicable) ERAP reference #: ERAP telephone number:			
UN number	Shipping name (If applicable, Technical Name)	Primary Class	Subsidiary Class	Packing Group	Toxic by inhalation (SP 23)	Total Quantity (kg or L)	Number of packages requiring labels
UN3175	WASTE SOLIDS CONTAINING FLAMMABLE LIQUID, N.O.S. (FUEL, AVIATION, TURBINE ENGINE)	4		II		368 KG	8 DRUMS
UN1863	WASTE FUEL, AVIATION, TURBINE ENGINE	3		III		492 L	3 DRUMS
UN1863	WASTE FUEL, AVIATION, TURBINE ENGINE MIXTURE	3		III		6698 L	43 DRUMS
UN2794	WASTE BATTERIES, WET, FILLED WITH ACID, ELECTRIC STORAGE	8		III		636 KG	1 CRATE

I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, are properly classified and packaged, have dangerous goods safety marks properly affixed or displayed on them, and are in all respects in proper condition for transport according to the *Transportation of Dangerous Goods Regulations*.

Andrea Elliott
Shipper's name (please print)

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MOVEMENT DOCUMENT / MANIFEST DOCUMENT DE MOUVEMENT / MANIFESTE

This Movement Document/Manifest conforms to all federal and provincial transport and environmental legislation. Ce document de mouvement/manif est conforme aux législations fédérales et provinciales sur le transport et l'environnement.

A Generator / expéditeur Producteur / expéditeur		Registration No. / Provincial ID No. N° d'immatriculation - ID provincial NU6100003	
Company name / Nom de l'entreprise Dept. of National Defense / C/o RCL		City / Ville Ottawa	
Mailing address / Adresse postale 22 Wingfield Rd Hornell Heights ON P6H 1P0		Postal code / Code postal K1H 1P0	
Email / Courriel électronique (705) 494-8011 ext 3400		Tel. No. / N° de tél. Tel. No. / N° de tél.	
Shipping address / Adresse de livraison NWS LSS Cambridge Bay P.O. Box 1237		City / Ville Cambridge Bay	
Province NL		Postal code / Code postal X0B 0C0	
Intended Recipient / Destinataire Bikindlak Environmental 1710-16-01-05154 35 de Chateaufort Brossard QC J4Y 3V4		Registration No. / Provincial ID No. N° d'immatriculation - ID provincial Tel. No. / N° de tél. Tel. No. / N° de tél.	
Receiving site address / Adresse du lieu de réception Rt of Beauport, 355 boul. Alphons-Denis		City / Ville Beauport	
Province QC		Postal code / Code postal G7H 2Y2	
Name of authorized person (print) SEBASTIEN ROSE		Tel. No. / N° de tél. Tel. No. / N° de tél.	
B Carrier Transporteur		Registration No. / Provincial ID No. N° d'immatriculation - ID provincial	
Company name / Nom de l'entreprise NEAS Montreal		City / Ville Montreal	
Mailing address / Adresse postale 2100 Pave Dupuy		Postal code / Code postal H3C 3P5	
Email / Courriel électronique Sales@neas.ca		Tel. No. / N° de tél. 1 877 255 6327	
Shipping address / Adresse de livraison NWS LSS Cambridge Bay P.O. Box 1237		City / Ville Cambridge Bay	
Province NL		Postal code / Code postal X0B 0C0	
Port of entry CPM		Point of exit BEC	
Name of authorized person (print) SEBASTIEN ROSE		Tel. No. / N° de tél. Tel. No. / N° de tél.	
C Receiver / consignee Receptonnaire / destinataire		Registration No. / Provincial ID No. N° d'immatriculation - ID provincial 2539521-1	
Company name / Nom de l'entreprise		City / Ville	
Mailing address / Adresse postale		Postal code / Code postal	
Email / Courriel électronique		Tel. No. / N° de tél.	
Receiving site address / Adresse du lieu de destination		City / Ville	
Province		Postal code / Code postal	
Date received / Date de réception		Time / Heure	
Quantity received / Quantité reçue		Comments / Commentaires	
Signature / Signature		Signature / Signature	

Instructions for completion and distribution on reverse / Instructions pour compléter et distribuer au verso

Copy / Copie 1 (white / blanc)

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SHIPPING MANIFEST

Suite 3000, 400 Cooper Street, Ottawa, ON K2P 2H8

NON NEGOTIABLE

Filled By: MRICHARD	Date: Aug 13, 2021, 8:01 AM	Project ID:	Task ID: TCN-44014
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Ship To: QIKIQTAAALUK ENVIRONMENTAL INC. 9935, DE CHATEAUNEUF STREET, ENTREE 1, BUREAU 200 BROSSARD, QC, J4Z 3V4 514-940-3332	From: LSS-C/CAM-M CAMBRIDGE BAY, DND Storeroom Raytheon Canada Limited, LSS Cambridge Bay: P.O. Box 1239 Cambridge Bay, NU, X0B 0C0 867-983- 3001	Priority 0
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Attention:		Attention:	MRICHARD
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Carrier:	Routing:	Waybill #:	Total Pcs.	Total Weight:
NEAS	SHIP TO CONSIGNEE		1 PALLET	188 KG

QTY Order	Type	Line Weight	Item	Description	WO or PO	B/Code or S/N	Remarks
2	DRUM	188 KG	2003635	WASTE - FUEL FILTERS (DRUM)	1.23 M3		REGULATED WASTE, UN3175 / 2 DRUMS ON 1 PALLET: ASSETS: 354173, 357054 / NET QTY: 104 KG

NOTE: All claims related to this shipment have to be filled with Raytheon within 45 hours of receipt.

Received By:	Date
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Received By:	Date
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SHIPPING MANIFEST

Suite 3000, 400 Cooper Street, Ottawa, ON K2P 2H8

NON NEGOTIABLE

Filled By: MRICHARD	Date: Aug 13, 2021, 8:16 AM	Project ID:	Task ID: TCN-44015
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Ship To: QIKIQTAAALUK ENVIRONMENTAL INC. 9935, DE CHATEAUNEUF STREET, ENTREE 1, BUREAU 200 BROSSARD, QC, J4Z 3V4 514-940-3332	From: LSS-C/CAM-M CAMBRIDGE BAY, DND Storeroom Raytheon Canada Limited, LSS Cambridge Bay: P.O. Box 1239 Cambridge Bay, NU, X0B 0C0 867-983- 3001	Priority 0
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Attention:		Attention:	MRICHARD
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Carrier:	Routing:	Waybill #:	Total Pcs.	Total Weight:
NEAS	SHIP TO CONSIGNEE		1 PALLET	164 KG

QTY Order	Type	Line Weight	Item	Description	WO or PO	B/Code or S/N	Remarks
1			2009565	WASTE - GLYCOL CONTAMINATED RA			ASSET: 343586
1			2002356	WASTE - OIL FILTERS			ASSET: 355504
0	DRUM	164 KG			1.20 M3		NON-REGULATED WASTE / 2 DRUMS ON 1 PALLET

NOTE: All claims related to this shipment have to be filled with Raytheon within 45 hours of receipt.

Received By:	Date
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Received By:	Date
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SHIPPING MANIFEST

Suite 3000, 400 Cooper Street, Ottawa, ON K2P 2H8

NON NEGOTIABLE

Filled By: AELLIOTT	Date: Aug 17, 2021, 2:42 PM	Project ID:	Task ID: TCN-44057
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Ship To: QIKIQTAAALUK ENVIRONMENTAL INC. 9935, DE CHATEAUNEUF STREET, ENTREE 1, BUREAU 200 BROSSARD, QC, J4Z 3V4 514-940-3332	From: LSS-C/CAM-M CAMBRIDGE BAY, DND Storeroom Raytheon Canada Limited, LSS Cambridge Bay: P.O. Box 1239 Cambridge Bay, NU, X0B 0C0 867-983- 3001	Priority 0
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Attention:		Attention:	AELLIOTT
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Carrier:	Routing:	Waybill #:	Total Pcs.	Total Weight:
NEAS	SHIP TO CONSIGNEE		1 PALLET	737 KG

QTY Order	Type	Line Weight	Item	Description	WO or PO	B/Code or S/N	Remarks
4	DRUMS		2002406	WASTE - OIL, 45 GAL	1.63 M3		NON-REGULATED WASTE ASSETS: 356324, 356325, 356718, 359722

NOTE: All claims related to this shipment have to be filled with Raytheon within 45 hours of receipt.

Received By:	Date
Received By:	Date



SHIPPING MANIFEST

Suite 3000, 400 Cooper Street, Ottawa, ON K2P 2H8

NON NEGOTIABLE

Filled By: AELLIOTT	Date: Aug 23, 2021, 5:08 PM	Project ID:	Task ID: TCN-44141
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Ship To: QIKIQTAAALUK ENVIRONMENTAL INC. 9935, DE CHATEAUNEUF STREET, ENTREE 1, BUREAU 200 BROSSARD, QC, J4Z 3V4 514-940-3332	From: LSS-C/CAM-M CAMBRIDGE BAY, DND Storeroom Raytheon Canada Limited, LSS Cambridge Bay: P.O. Box 1239 Cambridge Bay, NU, X0B 0C0 867-983- 3001	Priority 0
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Attention:		Attention:	AELLIOTT
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Carrier:	Routing:	Waybill #:	Total Pcs.	Total Weight:
NEAS	SHIP TO CONSIGNEE		1-PALLET	703 KG

QTY Order	Type	Line Weight	Item	Description	WO or PO	B/Code or S/N	Remarks
4	DRUMS		2002406	WASTE - OIL, 45 GAL	1.63 M3		NON-REGULATED WASTE ASSET: 352006, 356456, 358715, 359896

NOTE: All claims related to this shipment have to be filled with Raytheon within 45 hours of receipt.

Received By:	Date
--------------	------

Received By:	Date
--------------	------

ANNEX B. TREATED SEWAGE EFFLUENT OUTFALL (CDL-2) LOCATION WITH COORDINATES



Figure 1: Coordinates of sewage treatment outfall: 69°07'03.2"N, 105°07'11.3"W

**ANNEX C. ANALYSIS OF TREATED SEWAGE EFFLUENT****Table C-1: Summary of Analysis of Treated Sewage Effluent at CAM-M in 2021**

Sample Date	Parameter				
	pH	Oil and Grease (Present - P / Absent - A)	Biological Oxygen Demand (mg/L)	Total Suspended Solids (mg/L)	Faecal Coliforms ¹
Maximum Concentration	6.0 to 9.0 (pH units)	No visible sheen	120 mg/L	180 mg/L	10,000 CFU/100 mL
4-Jan-21	6.88	A	3	<2	0.00
9-Feb-21	7.22	A	3	<2	1.00
2-Mar-21	7.03	A	<1	<2	0.33
5-Apr-21	7.25	A	<1	<2	13.33
10-May-21	8.00	A	4	<2	0.00
7-Jun-21	7.87	A	<1	4	0.33
5-Jul-21	7.85	A	<1	<2	1.67
20-Aug-21	6.61	A	<1	<2	0.67
6-Sep-21	6.60	A	2	<2	10.00
13-Oct-21	7.32	A	<1	6	0.33
7-Nov-21	6.75	A	<1	6	1.00
5-Dec-21	6.56	A	<1	4	0.33

The following documents are enclosed:

1. Eurofins Certificate of Analysis Jan-21
2. Eurofins Certificate of Analysis Feb-21
3. Eurofins Certificate of Analysis Mar-21
4. Eurofins Certificate of Analysis Apr-21
5. Eurofins Certificate of Analysis May-21
6. Eurofins Certificate of Analysis Jun-21
7. Eurofins Certificate of Analysis Jul-21
8. Eurofins Certificate of Analysis Aug-21
9. Eurofins Certificate of Analysis Sep-21
10. Eurofins Certificate of Analysis Oct-21
11. Eurofins Certificate of Analysis Nov-21
12. Eurofins Certificate of Analysis Dec-21

¹ This column contains the average of the Cyclet 1A, Cyclet 1B, and Cyclet 1C.



Environment Testing

Certificate of Analysis

Client: Raytheon Canada Limited Ottawa
400 Cooper St.
Ottawa, ON
K2P 2H8
Attention: Ms. Andrea Burrill
PO#: 007264-OT
Invoice to: Raytheon Canada Limited Ottawa

Report Number: 1945895
Date Submitted: 2021-01-07
Date Reported: 2021-01-08
Project:
COC #: 868782

Page 1 of 3

Dear Andrea Burrill:

Please find attached the analytical results for your samples. If you have any questions regarding this report, please do not hesitate to call (613-727-5692).

Report Comments:

Steven
Tosh
2021.01.08
16:38:20
-05'00'

APPROVAL:

Steven Tosh, Operations Manager

All analysis is completed at Eurofins Environment Testing Canada Inc. (Ottawa, Ontario) unless otherwise indicated.

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Environment Testing

Certificate of Analysis

Client: Raytheon Canada Limited Ottawa
400 Cooper St.
Ottawa, ON
K2P 2H8
Attention: Ms. Andrea Burrill
PO#: 007264-OT
Invoice to: Raytheon Canada Limited Ottawa

Report Number: 1945895
Date Submitted: 2021-01-07
Date Reported: 2021-01-08
Project:
COC #: 868782

Group	Analyte	MRL	Units	Guideline
Microbiology	Faecal Coliforms	0	ct/100mL	
				Lab I.D. Sample Matrix Sample Type Sampling Date Sample I.D.
				1537178 WW 2021-01-04 CAMM CYCLET 3
				1537179 WW 2021-01-04 CAMM CYCLET 4
				1537180 WW 2021-01-04 CAMM CYCLET 5

Guideline = * = **Guideline Exceedence**

Results relate only to the parameters tested on the samples submitted.

Analytical Method: AMBCOLM1

additional QA/QC information available on request.

MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range



Environment Testing

Certificate of Analysis

Client: Raytheon Canada Limited Ottawa
400 Cooper St.
Ottawa, ON
K2P 2H8
Attention: Ms. Andrea Burrill
PO#: 007264-OT
Invoice to: Raytheon Canada Limited Ottawa

Report Number: 1945895
Date Submitted: 2021-01-07
Date Reported: 2021-01-08
Project:
COC #: 868782

Sample Comment Summary

Sample ID: 1537178 CAMM CYCLET 3 Deviation from standard protocol. All bacteria samples on report are past hold time.

Guideline = * = **Guideline Exceedence**

Results relate only to the parameters tested on the samples submitted.

Analytical Method: AMBCOLM1

additional QA/QC information available on request.

MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range



Client: Raytheon Canada Limited Ottawa
400 Cooper St.
Ottawa, ON
K2P 2H8
Attention: Ms. Andrea Burrill
PO#: 007264-OT
Invoice to: Raytheon Canada Limited Ottawa

Report Number: 1945901
Date Submitted: 2021-01-07
Date Reported: 2021-01-14
Project:
COC #: 868782

Page 1 of 3

Dear Andrea Burrill:

Please find attached the analytical results for your samples. If you have any questions regarding this report, please do not hesitate to call (613-727-5692).

Report Comments:

Sarah
Horner
Sarah Horner 2021.01.1
4 14:01:31
-05'00'

APPROVAL:

Sarah Horner, Inorganics Technician

Charlie Long Qu
2021.01.14
16:30:14 -05'00'

APPROVAL:

Long Qu, Organics Supervisor

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Environment Testing

Certificate of Analysis

Client: Raytheon Canada Limited Ottawa
400 Cooper St.
Ottawa, ON
K2P 2H8
Attention: Ms. Andrea Burrill
PO#: 007264-OT
Invoice to: Raytheon Canada Limited Ottawa

Report Number: 1945901
Date Submitted: 2021-01-07
Date Reported: 2021-01-14
Project:
COC #: 868782

Group	Analyte	MRL	Units	Guideline	Lab I.D. Sample Matrix Sample Type Sampling Date Sample I.D.
General Chemistry	BOD5	1	mg/L		1537193 WW 2021-01-04 CAMM CYCLE1
	pH	1.00			
Oil and Grease	Total Suspended Solids	2	mg/L		
	Oil & Grease - Mineral	1	mg/L		
	Oil & Grease - Non-mineral	1	mg/L		
	Oil & Grease - Total	1	mg/L		
	Visible Sheen		P/A		

Guideline = * = **Guideline Exceedence**

Results relate only to the parameters tested on the samples submitted.
Methods references and/or additional QA/QC information available on request.

MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range

Client: Raytheon Canada Limited Ottawa
400 Cooper St.
Ottawa, ON
K2P 2H8
Attention: Ms. Andrea Burrill
PO#: 007264-OT
Invoice to: Raytheon Canada Limited Ottawa

Report Number: 1945901
Date Submitted: 2021-01-07
Date Reported: 2021-01-14
Project:
COC #: 868782

QC Summary

Analyte	Blank	QC % Rec	QC Limits
Run No 208523 Method SHEEN	Analysis/Extraction Date 2021-01-07	Analyst C M	
Visible Sheen			
Run No 394873 Method SM 5210B	Analysis/Extraction Date 2021-01-13	Analyst Z S	
BOD5	<1 mg/L	76	75-125
Run No 394900 Method SM2320.2510.4500H/F	Analysis/Extraction Date 2021-01-11	Analyst AET	
pH		102	90-110
Run No 394936 Method C SM2540	Analysis/Extraction Date 2021-01-14	Analyst SKH	
Total Suspended Solids	<2 mg/L	99	90-110
Run No 395027 Method MOE E3421	Analysis/Extraction Date 2021-01-13	Analyst N C	
Oil & Grease - Mineral	<1 mg/L	60	60-120
Oil & Grease - Non-mineral	<1 mg/L		60-120
Oil & Grease - Total	<1 mg/L	70	60-120

Guideline = * = **Guideline Exceedence**

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Methods references and/or additional QA/QC information available on request.

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Environment Testing

Certificate of Analysis

Client: Raytheon Canada Limited Ottawa
400 Cooper St.
Ottawa, ON
K2P 2H8
Attention: Ms. Andrea Burrill
PO#: 007264-OT
Invoice to: Raytheon Canada Limited Ottawa

Report Number: 1947798
Date Submitted: 2021-02-12
Date Reported: 2021-02-13
Project: 869939
COC #:

Page 1 of 3

Dear Andrea Burrill:

Please find attached the analytical results for your samples. If you have any questions regarding this report, please do not hesitate to call (613-727-5692).

Report Comments:

Dragana
Dzeletovic
2021.02.13
13:24:00
-05'00'

APPROVAL:

Dragana Dzeletovic-Andric, Microbiology Team Lead

All analysis is completed at Eurofins Environment Testing Canada Inc. (Ottawa, Ontario) unless otherwise indicated.

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Environment Testing

Certificate of Analysis

Client: Raytheon Canada Limited Ottawa
400 Cooper St.
Ottawa, ON
K2P 2H8
Attention: Ms. Andrea Burrill
PO#: 007264-OT
Invoice to: Raytheon Canada Limited Ottawa

Report Number: 1947798
Date Submitted: 2021-02-12
Date Reported: 2021-02-13
Project:
COC #: 869939

Group	Analyte	MRL	Units	Lab I.D. Sample Matrix Sample Type Sampling Date Sample I.D.	Guideline
Microbiology	Faecal Coliforms	0	ct/100mL	1542112 Sewage 2021-02-09 Cam-Main Cyclelet 1A	1542113 Sewage 2021-02-09 Cam-Main Cyclelet 1B
				1542114 Sewage 2021-02-09 Cam-Main Cyclelet 1C	

Guideline = * = **Guideline Exceedence**

Results relate only to the parameters tested on the samples submitted.

Analytical Method: AMBCOLM1

additional QA/QC information available on request.

MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range



Environment Testing

Certificate of Analysis

Client: Raytheon Canada Limited Ottawa
400 Cooper St.
Ottawa, ON
K2P 2H8
Attention: Ms. Andrea Burrill
PO#: 007264-OT
Invoice to: Raytheon Canada Limited Ottawa

Report Number: 1947798
Date Submitted: 2021-02-12
Date Reported: 2021-02-13
Project:
COC #: 869939

Sample Comment Summary

Sample ID: 1542112 Cam-Main Cyclet 1A Deviation from standard protocol. All samples on report are past hold time.

Guideline = * = **Guideline Exceedence**

Results relate only to the parameters tested on the samples submitted.

Analytical Method: AMBCOLM1

additional QA/QC information available on request.

MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range



Client: Raytheon Canada Limited Ottawa
400 Cooper St.
Ottawa, ON
K2P 2H8
Attention: Ms. Andrea Burrill
PO#: 007264-OT
Invoice to: Raytheon Canada Limited Ottawa

Report Number: 1947800
Date Submitted: 2021-02-12
Date Reported: 2021-02-22
Project:
COC #: 869939

Page 1 of 3

Dear Andrea Burrill:

Please find attached the analytical results for your samples. If you have any questions regarding this report, please do not hesitate to call (613-727-5692).

Report Comments:

Addrine
Thomas
2021.02.22
14:29:13 -05'00'

APPROVAL: _____
Addrine Thomas, Inorganics Supervisor

All analysis is completed at Eurofins Environment Testing Canada Inc. (Ottawa, Ontario) unless otherwise indicated.

Eurofins Environment Testing Canada Inc. (Ottawa, Ontario) is accredited by CALA, Canadian Association for Laboratory Accreditation to ISO/IEC 17025 for tests which appear on the scope of accreditation. The scope is available at: <http://www.cala.ca/scopes/2602.pdf>.

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Environment Testing

Certificate of Analysis

Client: Raytheon Canada Limited Ottawa
400 Cooper St.
Ottawa, ON
K2P 2H8
Attention: Ms. Andrea Burrill
PO#: 007264-OT
Invoice to: Raytheon Canada Limited Ottawa

Report Number: 1947800
Date Submitted: 2021-02-12
Date Reported: 2021-02-22
Project:
COC #: 869939

Group	Analyte	MRL	Units	Guideline	Lab I.D. Sample Matrix Sample Type Sampling Date Sample I.D.
General Chemistry	BOD5	1	mg/L		1542123 WW 2021-02-09 Cam-Main Cycle1 1
	pH	1.00			
Oil and Grease	Total Suspended Solids	2	mg/L		
	Oil & Grease - Mineral	1	mg/L		
	Oil & Grease - Non-mineral	1	mg/L		
	Oil & Grease - Total	1	mg/L		
	Visible Sheen		P/A		

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Client: Raytheon Canada Limited Ottawa
400 Cooper St.
Ottawa, ON
K2P 2H8
Attention: Ms. Andrea Burrill
PO#: 007264-OT
Invoice to: Raytheon Canada Limited Ottawa

Report Number: 1947800
Date Submitted: 2021-02-12
Date Reported: 2021-02-22
Project:
COC #: 869939

QC Summary

Analyte	Blank	QC % Rec	QC Limits
Run No 208523 Method SHEEN	Analysis/Extraction Date 2021-02-13	Analyst C M	
Visible Sheen			
Run No 396220 Method SM 5210B	Analysis/Extraction Date 2021-02-17	Analyst Z S	
BOD5	<1 mg/L	90	75-125
Run No 396303 Method MOE E3421	Analysis/Extraction Date 2021-02-16	Analyst R G	
Oil & Grease - Mineral	<1 mg/L	80	60-120
Oil & Grease - Non-mineral	<1 mg/L		60-120
Oil & Grease - Total	<1 mg/L	85	60-120
Run No 396372 Method C SM2540	Analysis/Extraction Date 2021-02-19	Analyst AET	
Total Suspended Solids	<2 mg/L	99	90-110
Run No 396397 Method SM2320,2510,4500H/F	Analysis/Extraction Date 2021-02-18	Analyst AET	
pH		103	90-110

Guideline = * = **Guideline Exceedence**

Results relate only to the parameters tested on the samples submitted.
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MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range



Environment Testing

Certificate of Analysis

Client: Raytheon Canada Limited Ottawa
400 Cooper St.
Ottawa, ON
K2P 2H8
Attention: Ms. Andrea Burrill
PO#: 007264-OT
Invoice to: Raytheon Canada Limited Ottawa

Report Number: 1950968
Date Submitted: 2021-04-09
Date Reported: 2021-04-16
Project: 002160-07
COC #: 206780

Page 1 of 3

Dear Andrea Burrill:

Please find attached the analytical results for your samples. If you have any questions regarding this report, please do not hesitate to call (613-727-5692).

Report Comments:

Addressine Thomas
2021.04.16
15:54:45 -04'00'

APPROVAL:

Addressine Thomas, Inorganics Supervisor

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Environment Testing

Certificate of Analysis

Client: Raytheon Canada Limited Ottawa
400 Cooper St.
Ottawa, ON
K2P 2H8
Attention: Ms. Andrea Burrill
PO#: 007264-OT
Invoice to: Raytheon Canada Limited Ottawa

Report Number: 1950968
Date Submitted: 2021-04-09
Date Reported: 2021-04-16
Project: 002160-07
COC #: 206780

Group	Analyte	MRL	Units	Guideline	Lab I.D. Sample Matrix Sample Type Sampling Date Sample I.D.
General Chemistry	BOD5	1	mg/L		1550894 Sewage 2021-04-05 CAM-Main Cycle-LET
	pH	1.00			
Oil and Grease	Total Suspended Solids	2	mg/L		
	Oil & Grease - Mineral	1	mg/L		
	Oil & Grease - Non-mineral	1	mg/L		
	Oil & Grease - Total	1	mg/L		
	Visible Sheen		P/A		

Guideline = * = **Guideline Exceedence**

Results relate only to the parameters tested on the samples submitted.
Methods references and/or additional QA/QC information available on request.

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Client: Raytheon Canada Limited Ottawa
400 Cooper St.
Ottawa, ON
K2P 2H8
Attention: Ms. Andrea Burrill
PO#: 007264-OT
Invoice to: Raytheon Canada Limited Ottawa

Report Number: 1950968
Date Submitted: 2021-04-09
Date Reported: 2021-04-16
Project: 002160-07
COC #: 206780

QC Summary

Analyte	Blank	QC % Rec	QC Limits
Run No 208523 Method SHEEN	Analysis/Extraction Date 2021-04-10 Analyst C M		
Visible Sheen			
Run No 398660 Method SM2320,2510,4500H/F	Analysis/Extraction Date 2021-04-13 Analyst AET		
pH		100	90-110
Run No 398738 Method SM 5210B	Analysis/Extraction Date 2021-04-14 Analyst AET		
BOD5	<1 mg/L	78	75-125
Run No 398795 Method MOE E3421	Analysis/Extraction Date 2021-04-14 Analyst R G		
Oil & Grease - Mineral	<1 mg/L	70	60-120
Oil & Grease - Non-mineral	<1 mg/L		60-120
Oil & Grease - Total	<1 mg/L	85	60-120
Run No 398884 Method C SM2540	Analysis/Extraction Date 2021-04-16 Analyst K B		
Total Suspended Solids	<2 mg/L	96	90-110

Guideline = * = **Guideline Exceedence**

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Environment Testing

Certificate of Analysis

Client: Raytheon Canada Limited Ottawa
400 Cooper St.
Ottawa, ON
K2P 2H8
Attention: Ms. Andrea Burrill
PO#: 007264-OT
Invoice to: Raytheon Canada Limited Ottawa

Report Number: 1948993
Date Submitted: 2021-03-09
Date Reported: 2021-03-10
Project: 002160-OT
COC #: 206790

Page 1 of 3

Dear Andrea Burrill:

Please find attached the analytical results for your samples. If you have any questions regarding this report, please do not hesitate to call (613-727-5692).

Report Comments:

Jason
Kennedy
2021.03.10
15:11:19
-05'00'

APPROVAL:

Jason Kennedy, Project Manager

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Certificate of Analysis

Client: Raytheon Canada Limited Ottawa
400 Cooper St.
Ottawa, ON
K2P 2H8
Attention: Ms. Andrea Burrill
PO#: 007264-OT
Invoice to: Raytheon Canada Limited Ottawa

Report Number: 1948993
Date Submitted: 2021-03-09
Date Reported: 2021-03-10
Project: 002160-OT
COC #: 206790

Group	Analyte	MRL	Units	Lab I.D. Sample Matrix Sample Type Sampling Date Sample I.D.	Guideline
Microbiology	Faecal Coliforms	0	ct/100mL	1545236 Sewage 2021-03-02 Cam-Main Cyclet-LET A	1545237 Sewage 2021-03-02 Cam-Main Cyclet-LET B
				1545238 Sewage 2021-03-02 Cam-Main Cyclet-LET C	

Guideline =

* = Guideline Exceedence

Results relate only to the parameters tested on the samples submitted.

Analytical Method: AMBCOLM1

additional QA/QC information available on request.

MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range



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K2P 2H8
Attention: Ms. Andrea Burrill
PO#: 007264-OT
Invoice to: Raytheon Canada Limited Ottawa

Report Number: 1948993
Date Submitted: 2021-03-09
Date Reported: 2021-03-10
Project: 002160-OT
COC #: 206790

Sample Comment Summary

Sample ID: 1545236 Cam-Main Cycle1-LET A Deviation from standard protocol. All bacteria samples on report are past hold time.

Guideline = * = **Guideline Exceedence**

Results relate only to the parameters tested on the samples submitted.

Analytical Method: AMBCOLM1

additional QA/QC information available on request.

MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range



Environment Testing

Certificate of Analysis

Client: Raytheon Canada Limited Ottawa
400 Cooper St.
Ottawa, ON
K2P 2H8
Attention: Ms. Andrea Burrill
PO#: 007264-OT
Invoice to: Raytheon Canada Limited Ottawa

Report Number: 1950973
Date Submitted: 2021-04-09
Date Reported: 2021-04-12
Project: 002160-07
COC #: 206780

Page 1 of 3

Dear Andrea Burrill:

Please find attached the analytical results for your samples. If you have any questions regarding this report, please do not hesitate to call (613-727-5692).

Report Comments:

Dragana
Dzeletovic
2021.04.12
14:00:43
-04'00'

APPROVAL: _____
Dragana Dzeletovic-Andric, Microbiology Team Lead

All analysis is completed at Eurofins Environment Testing Canada Inc. (Ottawa, Ontario) unless otherwise indicated.

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Environment Testing

Certificate of Analysis

Client: Raytheon Canada Limited Ottawa
400 Cooper St.
Ottawa, ON
K2P 2H8
Attention: Ms. Andrea Burrill
PO#: 007264-OT
Invoice to: Raytheon Canada Limited Ottawa

Report Number: 1950973
Date Submitted: 2021-04-09
Date Reported: 2021-04-12
Project: 002160-07
COC #: 206780

Group	Analyte	MRL	Units	Lab I.D. Sample Matrix Sample Type Sampling Date Sample I.D.	Guideline
Microbiology	Faecal Coliforms	0	ct/100mL	1550918 Sewage 2021-04-05 Cam-Main-Cycle-LET -1	1550919 Sewage 2021-04-05 Cam-Main-Cycle-LET -2
				1550920 Sewage 2021-04-05 Cam-Main-Cycle-LET -3	

Guideline = * = **Guideline Exceedence**

Results relate only to the parameters tested on the samples submitted.

Analytical Method: AMBCOLM1

additional QA/QC information available on request.

MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range



Environment Testing

Certificate of Analysis

Client: Raytheon Canada Limited Ottawa
400 Cooper St.
Ottawa, ON
K2P 2H8
Attention: Ms. Andrea Burrill
PO#: 007264-OT
Invoice to: Raytheon Canada Limited Ottawa

Report Number: 1950973
Date Submitted: 2021-04-09
Date Reported: 2021-04-12
Project: 002160-07
COC #: 206780

Sample Comment Summary

Sample ID: 1550918 Cam-Main-Cycle-LET-1 Deviation from standard protocol. All bacteria samples on report are past hold time.

Guideline = * = **Guideline Exceedence**

Results relate only to the parameters tested on the samples submitted.

Analytical Method: AMBCOLM1

additional QA/QC information available on request.

MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range



Certificate of Analysis

Client: Raytheon Canada Limited Ottawa
400 Cooper St.
Ottawa, ON
K2P 2H8
Attention: Ms. Andrea Burrill
PO#: 002160-OT
Invoice to: Raytheon Canada Limited Ottawa

Report Number: 1949018
Date Submitted: 2021-03-09
Date Reported: 2021-03-16
Project: 002160-OT
COC #: 206790

Page 1 of 3

Dear Andrea Burrill:

Please find attached the analytical results for your samples. If you have any questions regarding this report, please do not hesitate to call (613-727-5692).

Report Comments:

Charlie Long Qu
2021.03.16
17:24:08 -04'00'

APPROVAL:

Long Qu, Organics Supervisor

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Environment Testing

Certificate of Analysis

Client: Raytheon Canada Limited Ottawa
400 Cooper St.
Ottawa, ON
K2P 2H8
Attention: Ms. Andrea Burrill
PO#: 002160-OT
Invoice to: Raytheon Canada Limited Ottawa

Report Number: 1949018
Date Submitted: 2021-03-09
Date Reported: 2021-03-16
Project: 002160-OT
COC #: 206790

Group	Analyte	MRL	Units	Guideline	Lab I.D. Sample Matrix Sample Type Sampling Date Sample I.D.
General Chemistry	BOD5	1	mg/L		1545276 Sewage 2021-03-02 CAM-Main Cycle-LET
	pH	1.00			
Oil and Grease	Total Suspended Solids	2	mg/L		
	Oil & Grease - Mineral	1	mg/L		
	Oil & Grease - Non-mineral	1	mg/L		
	Oil & Grease - Total	1	mg/L		
	Visible Sheen	0	A/P		

Guideline = * = **Guideline Exceedence**

Results relate only to the parameters tested on the samples submitted.
Methods references and/or additional QA/QC information available on request.

MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range

Client: Raytheon Canada Limited Ottawa
400 Cooper St.
Ottawa, ON
K2P 2H8
Attention: Ms. Andrea Burrill
PO#: 002160-OT
Invoice to: Raytheon Canada Limited Ottawa

Report Number: 1949018
Date Submitted: 2021-03-09
Date Reported: 2021-03-16
Project: 002160-OT
COC #: 206790

QC Summary

Analyte	Blank	QC % Rec	QC Limits
Run No 397143 Method SM 5210B	Analysis/Extraction Date 2021-03-15 Analyst AET		
BOD5	<1 mg/L	90	75-125
Run No 397193 Method SM2320,2510,4500H/F	Analysis/Extraction Date 2021-03-11 Analyst AET		
pH		100	90-110
Run No 397215 Method C SM2540	Analysis/Extraction Date 2021-03-16 Analyst SKH		
Total Suspended Solids	<2 mg/L	96	90-110
Run No 397310 Method MOE E3421	Analysis/Extraction Date 2021-03-16 Analyst R G		
Oil & Grease - Mineral	<1 mg/L	80	60-120
Oil & Grease - Non-mineral	<1 mg/L		60-120
Oil & Grease - Total	<1 mg/L	80	60-120
Run No 397335 Method MOE E3421	Analysis/Extraction Date 2021-03-16 Analyst R G		
Visible Sheen			

Guideline = * = **Guideline Exceedence**

Results relate only to the parameters tested on the samples submitted.
Methods references and/or additional QA/QC information available on request.

MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range



Environment Testing

Certificate of Analysis

Client: Raytheon Canada Limited Ottawa
400 Cooper St.
Ottawa, ON

Attention: Ms. Alaina Leslie
PO#: 002160-OT

Invoice to: Raytheon Canada Limited Ottawa

Report Number: 1953294
Date Submitted: 2021-05-14
Date Reported: 2021-05-16
Project: NWS
COC #: 873665

Page 1 of 3

Dear Alaina Leslie:

Please find attached the analytical results for your samples. If you have any questions regarding this report, please do not hesitate to call (613-727-5692).

Report Comments:

Dragana
Dzeletovic
2021.05.16
08:56:39
-04'00'

APPROVAL: _____
Dragana Dzeletovic-Andric, Microbiology Team Lead

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Environment Testing

Certificate of Analysis

Client: Raytheon Canada Limited Ottawa
400 Cooper St.
Ottawa, ON
K2P 2H8
Attention: Ms. Alaina Leslie
PO#: 002160-OT
Invoice to: Raytheon Canada Limited Ottawa

Report Number: 1953294
Date Submitted: 2021-05-14
Date Reported: 2021-05-16
Project: NWS
COC #: 873665

Group	Analyte	MRL	Units	Lab I.D. Sample Matrix Sample Type Sampling Date Sample I.D.	Guideline
Microbiology	Faecal Coliforms	0	ct/100mL	1557150 Sewage 2021-05-10 CAM-M Cycle-Let 3	1557151 Sewage 2021-05-10 CAM-M Cycle-Let 4
				1557152 Sewage 2021-05-10 CAM-M Cycle-Let 5	

Guideline =

* = Guideline Exceedence

Results relate only to the parameters tested on the samples submitted.

Analytical Method: AMBCOLM1

additional QA/QC information available on request.

MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range



Environment Testing

Certificate of Analysis

Client: Raytheon Canada Limited Ottawa
400 Cooper St.
Ottawa, ON
K2P 2H8
Attention: Ms. Alaina Leslie
PO#: 002160-OT
Invoice to: Raytheon Canada Limited Ottawa

Report Number: 1953294
Date Submitted: 2021-05-14
Date Reported: 2021-05-16
Project: NWS
COC #: 873665

Sample Comment Summary

Sample ID: 1557150 CAM-M Cycle-Let 3 Deviation from standard protocol. All samples on report are past hold time.

Guideline =

* = Guideline Exceedence

Results relate only to the parameters tested on the samples submitted.

Analytical Method: AMBCOLM1

additional QA/QC information available on request.

MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, IMAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range



Environment Testing

Certificate of Analysis

Client: Raytheon Canada Limited Ottawa
400 Cooper St.
Ottawa, ON
K2P 2H8
Attention: Ms. Andrea Burrill
PO#: 00887-OT
Invoice to: Raytheon Canada Limited Ottawa

Report Number: 1953306
Date Submitted: 2021-05-14
Date Reported: 2021-05-25
Project: NWS
COC #: 873665

Page 1 of 3

Dear Andrea Burrill:

Please find attached the analytical results for your samples. If you have any questions regarding this report, please do not hesitate to call (613-727-5692).

Report Comments:

Addrine
Thomas
2021.05.25
12:20:18 -04'00'

APPROVAL:

Addrine Thomas, Inorganics Supervisor

All analysis is completed at Eurofins Environment Testing Canada Inc. (Ottawa, Ontario) unless otherwise indicated.

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Environment Testing

Certificate of Analysis

Client: Raytheon Canada Limited Ottawa
400 Cooper St.
Ottawa, ON

Attention: Ms. Andrea Burrill
PO#: 00887-OT

Invoice to: Raytheon Canada Limited Ottawa

Report Number: 1953306
Date Submitted: 2021-05-14
Date Reported: 2021-05-25
Project: NWS
COC #: 873665

Group	Analyte	MRL	Units	Guideline	Lab I.D. Sample Matrix Sample Type Sampling Date Sample I.D.
General Chemistry	BOD5	1	mg/L	4	1557202 Sewage 2021-05-10 CAM-M-Cycle-Let 1
	pH	1.00		8.00	
Oil and Grease	Total Suspended Solids	2	mg/L	<2	
	Oil & Grease - Mineral	1	mg/L	<1	
	Oil & Grease - Non-mineral	1	mg/L	1	
	Oil & Grease - Total	1	mg/L	2	
	Visible Sheen		P/A	A	

Guideline = * = Guideline Exceedence

Results relate only to the parameters tested on the samples submitted.
Methods references and/or additional QA/QC information available on request.

MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range



Environment Testing

Certificate of Analysis

Client: Raytheon Canada Limited Ottawa
400 Cooper St.
Ottawa, ON

Attention: Ms. Andrea Burrill
PO#: 00887-OT

Invoice to: Raytheon Canada Limited Ottawa

Report Number: 1953306
Date Submitted: 2021-05-14
Date Reported: 2021-05-25
Project: NWS
COC #: 873665

QC Summary

Analyte	Blank	QC % Rec	QC Limits
Run No 208523 Method SHEEN	Analysis/Extraction Date 2021-05-18	Analyst C M	
Visible Sheen			
Run No 400642 Method C SM2540	Analysis/Extraction Date 2021-05-18	Analyst SKH	
Total Suspended Solids	<2 mg/L	100	90-110
Run No 400908 Method SM2320,2510,4500H/F	Analysis/Extraction Date 2021-05-20	Analyst SWS	
pH		99	90-110
Run No 400910 Method SM 5210B	Analysis/Extraction Date 2021-05-24	Analyst AET	
BOD5	<1 mg/L	95	75-125
Run No 401026 Method MOE E3421	Analysis/Extraction Date 2021-05-20	Analyst A X	
Oil & Grease - Mineral	<1 mg/L	80	60-120
Oil & Grease - Non-mineral	<1 mg/L		60-120
Oil & Grease - Total	<1 mg/L	100	60-120

Guideline = * = Guideline Exceedence

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Methods references and/or additional QA/QC information available on request.

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Environment Testing

Certificate of Analysis

Client: Raytheon Canada Limited Ottawa
400 Cooper St.
Ottawa, ON
K2P 2H8
Attention: Ms. Andrea Burrill
PO#: 00887-OT
Invoice to: Raytheon Canada Limited Ottawa

Report Number: 1955081
Date Submitted: 2021-06-09
Date Reported: 2021-06-10
Project:
COC #: 874796

Page 1 of 3

Dear Andrea Burrill:

Please find attached the analytical results for your samples. If you have any questions regarding this report, please do not hesitate to call (613-727-5692).

Report Comments:

Steven
Tosh
2021.06.1
0 13:55:01
-04'00'

APPROVAL:

Steven Tosh, Operations Manager

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Environment Testing

Certificate of Analysis

Client: Raytheon Canada Limited Ottawa
400 Cooper St.
Ottawa, ON
K2P 2H8
Attention: Ms. Andrea Burrill
PO#: 00887-OT
Invoice to: Raytheon Canada Limited Ottawa

Report Number: 1955081
Date Submitted: 2021-06-09
Date Reported: 2021-06-10
Project:
COC #: 874796

Group	Analyte	MRL	Units	Lab I.D. Sample Matrix Sample Type Sampling Date Sample I.D.	Guideline
Microbiology	Faecal Coliforms	0	ct/100mL	1562104 Sewage 2021-06-07 Cam-M Cyclet 1	1562105 Sewage 2021-06-07 Cam-M Cyclet 2
				1562106 Sewage 2021-06-07 Cam-M Cyclet 3	0

Guideline =

* = Guideline Exceedence

Results relate only to the parameters tested on the samples submitted.

Analytical Method: AMBCOLM1

additional QA/QC information available on request.

MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range



Environment Testing

Certificate of Analysis

Client: Raytheon Canada Limited Ottawa
400 Cooper St.
Ottawa, ON
K2P 2H8
Attention: Ms. Andrea Burrill
PO#: 00887-OT
Invoice to: Raytheon Canada Limited Ottawa

Report Number: 1955081
Date Submitted: 2021-06-09
Date Reported: 2021-06-10
Project:
COC #: 874796

Sample Comment Summary

Sample ID: 1562104 Cam-M Cyclot 1 Deviation from standard protocol. All bacteria samples on report are past hold time.

Guideline =

* = Guideline Exceedence

Results relate only to the parameters tested on the samples submitted.

Analytical Method: AMBCOLM1

additional QA/QC information available on request.

MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range



Environment Testing

Certificate of Analysis

Client: Raytheon Canada Limited Ottawa
400 Cooper St.
Ottawa, ON
K2P 2H8
Attention: Ms. Andrea Burrill
PO#: 002160-OT
Invoice to: Raytheon Canada Limited Ottawa

Report Number: 1955048
Date Submitted: 2021-06-09
Date Reported: 2021-06-16
Project:
COC #: 874796

Page 1 of 3

Dear Andrea Burrill:

Please find attached the analytical results for your samples. If you have any questions regarding this report, please do not hesitate to call (613-727-5692).

Report Comments:

Addressine
Thomas
2021.06.16
14:36:57 -04'00'

APPROVAL:  Addressine Thomas, Inorganics Supervisor

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Environment Testing

Certificate of Analysis

Client: Raytheon Canada Limited Ottawa
400 Cooper St.
Ottawa, ON

Attention: Ms. Andrea Burrill
PO#: 002160-OT
Invoice to: Raytheon Canada Limited Ottawa

Report Number: 1955048
Date Submitted: 2021-06-09
Date Reported: 2021-06-16
Project:
COC #: 874796

Group	Analyte	MRL	Units	Guideline	Lab I.D. Sample Matrix Sample Type Sampling Date Sample I.D.
General Chemistry	BOD5	1	mg/L		1561983 Sewage
	pH	1.00			2021-06-07 CAM-M-CYCLET
Oil and Grease	Total Suspended Solids	2	mg/L		
	Oil & Grease - Mineral	1	mg/L		
	Oil & Grease - Non-mineral	1	mg/L		
	Oil & Grease - Total	1	mg/L		
	Visible Sheen		P/A		

Guideline =

* = Guideline Exceedence

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Methods references and/or additional QA/QC information available on request.

MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range



Environment Testing

Certificate of Analysis

Client: Raytheon Canada Limited Ottawa
400 Cooper St.
Ottawa, ON
K2P 2H8
Attention: Ms. Andrea Burrill
PO#: 002160-OT
Invoice to: Raytheon Canada Limited Ottawa

Report Number: 1955048
Date Submitted: 2021-06-09
Date Reported: 2021-06-16
Project:
COC #: 874796

QC Summary

Analyte	Blank	QC % Rec	QC Limits
Run No 402363 Method SM2320,2510,4500H/F	Analysis/Extraction Date 2021-06-10	Analyst SWS	
pH		99	90-110
Run No 402364 Method SM 5210B	Analysis/Extraction Date 2021-06-15	Analyst AET	
BOD5	1 mg/L	88	75-125
Run No 402381 Method C SM2540	Analysis/Extraction Date 2021-06-11	Analyst SWS	
Total Suspended Solids	<2 mg/L	98	90-110
Run No 402551 Method MOE E3421	Analysis/Extraction Date 2021-06-14	Analyst AX	
Oil & Grease - Mineral	<1 mg/L	80	60-120
Oil & Grease - Non-mineral	<1 mg/L		60-120
Oil & Grease - Total	<1 mg/L	110	60-120
Run No 402708 Method SHEEN	Analysis/Extraction Date 2021-06-16	Analyst AX	
Visible Sheen			

Guideline = * = Guideline Exceedence

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Environment Testing

Certificate of Analysis

Client: Raytheon Canada Limited Ottawa
400 Cooper St.
Ottawa, ON
K2P 2H8
Attention: Ms. Andrea Burrill
PO#: 00887-OT
Invoice to: Raytheon Canada Limited Ottawa

Report Number: 1957313
Date Submitted: 2021-07-09
Date Reported: 2021-07-11
Project: NWS
COC #: 876511

Page 1 of 3

Dear Andrea Burrill:

Please find attached the analytical results for your samples. If you have any questions regarding this report, please do not hesitate to call (613-727-5692).

Report Comments:

Dragana
Dzeletovic
2021.07.11
Dragana Dzeletovic

21:38:18 -04'00'

APPROVAL: _____

Dragana Dzeletovic-Andric, Microbiology Team Lead

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Environment Testing

Certificate of Analysis

Client: Raytheon Canada Limited Ottawa
400 Cooper St.
Ottawa, ON
K2P 2H8
Attention: Ms. Andrea Burrill
PO#: 00887-OT
Invoice to: Raytheon Canada Limited Ottawa

Report Number: 1957313
Date Submitted: 2021-07-09
Date Reported: 2021-07-11
Project: NWS
COC #: 876511

Group	Analyte	MRL	Units	Lab I.D. Sample Matrix Sample Type Sampling Date Sample I.D.	Guideline
Microbiology	Faecal Coliforms	0	ct/100mL	1567635 WW 2021-07-05 Cam-M Cycle-Let 1A	1567636 WW 2021-07-05 Cam-M Cycle-Let 1B
				1567637 WW 2021-07-05 Cam-M Cycle-Let 1C	

Guideline =

* = Guideline Exceedence

Results relate only to the parameters tested on the samples submitted.

Analytical Method: AMBCOLM1

additional QA/QC information available on request.

MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range



Environment Testing

Certificate of Analysis

Client: Raytheon Canada Limited Ottawa
400 Cooper St.
Ottawa, ON
K2P 2H8
Attention: Ms. Andrea Burrill
PO#: 00887-OT
Invoice to: Raytheon Canada Limited Ottawa

Report Number: 1957313
Date Submitted: 2021-07-09
Date Reported: 2021-07-11
Project: NWS
COC #: 876511

Sample Comment Summary

Sample ID: 1567635 Cam-M Cycle-Let 1A Deviation from standard protocol. All bacteria samples on report are past hold time.

Guideline =

* = Guideline Exceedence

Results relate only to the parameters tested on the samples submitted.

Analytical Method: AMBCOLM1

additional QA/QC information available on request.

MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, IMAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range



Environment Testing

Certificate of Analysis

Client: Raytheon Canada Limited Ottawa
400 Cooper St.
Ottawa, ON
K2P 2H8
Attention: Ms. Andrea Burrill
PO#: 002160-OT
Invoice to: Raytheon Canada Limited Ottawa

Report Number: 1957339
Date Submitted: 2021-07-09
Date Reported: 2021-07-16
Project: NWS
COC #: 876511

Page 1 of 3

Dear Andrea Burrill:

Please find attached the analytical results for your samples. If you have any questions regarding this report, please do not hesitate to call (613-727-5692).

Report Comments:

Addrine
Thomas
2021.07.16
08:34:02 -04'00'

APPROVAL: _____
Addrine Thomas, Inorganics Supervisor

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Environment Testing

Certificate of Analysis

Client: Raytheon Canada Limited Ottawa
400 Cooper St.
Ottawa, ON
K2P 2H8
Attention: Ms. Andrea Burrill
PO#: 002160-OT
Invoice to: Raytheon Canada Limited Ottawa

Report Number: 1957339
Date Submitted: 2021-07-09
Date Reported: 2021-07-16
Project: NWS
COC #: 876511

Group	Analyte	MRL	Units	Guideline	Lab I.D. Sample Matrix Sample Type Sampling Date Sample I.D.
General Chemistry	BOD5	1	mg/L		1567716 WW
	pH	1.00			2021-07-05 CAM-M Cycle-Let 1
Oil and Grease	Total Suspended Solids	2	mg/L		
	Oil & Grease - Mineral	1	mg/L		
	Oil & Grease - Non-mineral	1	mg/L		
	Oil & Grease - Total	1	mg/L		
	Visible Sheen		P/A		

Guideline =

* = Guideline Exceedence

Results relate only to the parameters tested on the samples submitted.
Methods references and/or additional QA/QC information available on request.

MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range



Environment Testing

Certificate of Analysis

Client: Raytheon Canada Limited Ottawa
400 Cooper St.
Ottawa, ON

Attention: Ms. Andrea Burrill
PO#: 002160-OT
Invoice to: Raytheon Canada Limited Ottawa

Report Number: 1957339
Date Submitted: 2021-07-09
Date Reported: 2021-07-16
Project: NWS
COC #: 876511

QC Summary

Analyte	Blank	QC % Rec	QC Limits
Run No 404089 Method SM 5210B	Analysis/Extraction Date 2021-07-14 Analyst AK		
BOD5	<1 mg/L	76	75-125
Run No 404204 Method SM2320,2510,4500H/F	Analysis/Extraction Date 2021-07-12 Analyst SWS		
pH		99	90-110
Run No 404270 Method MOE E3421	Analysis/Extraction Date 2021-07-13 Analyst R G		
Oil & Grease - Mineral	<1 mg/L	70	60-120
Oil & Grease - Non-mineral	<1 mg/L		60-120
Oil & Grease - Total	<1 mg/L	85	60-120
Run No 404277 Method SHEEN	Analysis/Extraction Date 2021-07-13 Analyst R G		
Visible Sheen			
Run No 404323 Method C SM2540	Analysis/Extraction Date 2021-07-15 Analyst SWS		
Total Suspended Solids	<2 mg/L	96	90-110

Guideline = * = Guideline Exceedence

Results relate only to the parameters tested on the samples submitted.
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Environment Testing

Certificate of Analysis

Client: Raytheon Canada Limited Ottawa
400 Cooper St.
Ottawa, ON
K2P 2H8
Attention: Ms. Andrea Burrill
PO#: 00887-OT
Invoice to: Raytheon Canada Limited Ottawa

Report Number: 1960745
Date Submitted: 2021-08-24
Date Reported: 2021-08-25
Project:
COC #: 878799

Page 1 of 3

Dear Andrea Burrill:

Please find attached the analytical results for your samples. If you have any questions regarding this report, please do not hesitate to call (613-727-5692).

Report Comments:

Steven
Tosh
2021.08.25
15:19:22
-04'00'

APPROVAL:

Steven Tosh, Operations Manager

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Environment Testing

Certificate of Analysis

Client: Raytheon Canada Limited Ottawa
400 Cooper St.
Ottawa, ON
K2P 2H8
Attention: Ms. Andrea Burrill
PO#: 00887-OT
Invoice to: Raytheon Canada Limited Ottawa

Report Number: 1960745
Date Submitted: 2021-08-24
Date Reported: 2021-08-25
Project:
COC #: 878799

Group	Analyte	MRL	Units	Lab I.D. Sample Matrix Sample Type Sampling Date Sample I.D.	Guideline
Microbiology	Faecal Coliforms	0	ct/100mL	1577959 WW 2021-08-20 CAM-M Cyclet 3	1577960 WW 2021-08-20 CAM-M Cyclet 4
				1577961 WW 2021-08-20 CAM-M Cyclet 5	

Guideline =

* = Guideline Exceedence

Results relate only to the parameters tested on the samples submitted.

Analytical Method: AMBCOLM1

additional QA/QC information available on request.

MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range



Environment Testing

Certificate of Analysis

Client: Raytheon Canada Limited Ottawa
400 Cooper St.
Ottawa, ON
K2P 2H8
Attention: Ms. Andrea Burrill
PO#: 00887-OT
Invoice to: Raytheon Canada Limited Ottawa

Report Number: 1960745
Date Submitted: 2021-08-24
Date Reported: 2021-08-25
Project:
COC #: 878799

Sample Comment Summary

Sample ID: 1577959 CAM-M Cyclot 3 Deviation from standard protocol. All bacteria samples on report are past hold time.

Guideline =

* = Guideline Exceedence

Results relate only to the parameters tested on the samples submitted.

Analytical Method: AMBCOLM1

additional QA/QC information available on request.

MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, IMAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range



Environment Testing

Certificate of Analysis

Client: Raytheon Canada Limited Ottawa
400 Cooper St.
Ottawa, ON
K2P 2H8
Attention: Ms. Andrea Burrill
PO#: 002160-OT
Invoice to: Raytheon Canada Limited Ottawa

Report Number: 1960788
Date Submitted: 2021-08-24
Date Reported: 2021-08-31
Project:
COC #: 878799

Page 1 of 3

Dear Andrea Burrill:

Please find attached the analytical results for your samples. If you have any questions regarding this report, please do not hesitate to call (613-727-5692).

Report Comments:

Sarah
Horner
Sarah Horner 2021.08.3
1 16:32:25
-04'00'

APPROVAL:

Sarah Horner, Inorganics Technician

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Environment Testing

Certificate of Analysis

Client: Raytheon Canada Limited Ottawa
400 Cooper St.
Ottawa, ON

Attention: K2P 2H8
Ms. Andrea Burrill
PO#: 002160-OT
Invoice to: Raytheon Canada Limited Ottawa

Report Number: 1960788
Date Submitted: 2021-08-24
Date Reported: 2021-08-31
Project:
COC #: 878799

Group	Analyte	MRL	Units	Guideline	Lab I.D. Sample Matrix Sample Type Sampling Date Sample I.D.
General Chemistry	BOD5	1	mg/L		1578095 Water 2021-08-20 CAM-M-Cyclet 1
	pH	1.00			
Oil and Grease	Total Suspended Solids	2	mg/L		
	Oil & Grease - Mineral	1	mg/L		
	Oil & Grease - Non-mineral	1	mg/L		
	Oil & Grease - Total	1	mg/L		
	Visible Sheen		P/A		
					A

Guideline = * = Guideline Exceedence

Results relate only to the parameters tested on the samples submitted.
Methods references and/or additional QA/QC information available on request.

MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range



Environment Testing

Certificate of Analysis

Client: Raytheon Canada Limited Ottawa
400 Cooper St.
Ottawa, ON

Attention: Ms. Andrea Burrill
PO#: 002160-OT
Invoice to: Raytheon Canada Limited Ottawa

Report Number: 1960788
Date Submitted: 2021-08-24
Date Reported: 2021-08-31
Project:
COC #: 878799

QC Summary

Analyte	Blank	QC % Rec	QC Limits
Run No 208523 Method SHEEN	Analysis/Extraction Date 2021-08-31	Analyst C M	
Visible Sheen			
Run No 407307 Method SM 5210B	Analysis/Extraction Date 2021-08-30	Analyst AK	
BOD5	<1 mg/L	87	75-125
Run No 407348 Method SM2320,2510,4500H/F	Analysis/Extraction Date 2021-08-25	Analyst SWS	
pH		99	90-110
Run No 407593 Method C SM2540	Analysis/Extraction Date 2021-08-31	Analyst AK	
Total Suspended Solids	<2 mg/L	94	90-110
Run No 407650 Method MOE E3421	Analysis/Extraction Date 2021-08-31	Analyst RHH	
Oil & Grease - Mineral	<1 mg/L	110	60-120
Oil & Grease - Non-mineral	<1 mg/L		60-120
Oil & Grease - Total	<1 mg/L	105	60-120

Guideline = * = Guideline Exceedence

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Environment Testing

Certificate of Analysis

Client: Raytheon Canada Limited Ottawa
400 Cooper St.
Ottawa, ON
K2P 2H8
Attention: Ms. Andrea Burrill
PO#: 00887-OT
Invoice to: Raytheon Canada Limited Ottawa

Report Number: 1962158
Date Submitted: 2021-09-10
Date Reported: 2021-09-11
Project:
COC #: 879843

Page 1 of 3

Dear Andrea Burrill:

Please find attached the analytical results for your samples. If you have any questions regarding this report, please do not hesitate to call (613-727-5692).

Report Comments:

Dragana
Dzeletovic
2021.09.11
18:36:52
-04'00'
APPROVAL: _____
Dragana Dzeletovic-Andric, Microbiology Team Lead

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Environment Testing

Certificate of Analysis

Client: Raytheon Canada Limited Ottawa
400 Cooper St.
Ottawa, ON
K2P 2H8
Attention: Ms. Andrea Burrill
PO#: 00887-OT
Invoice to: Raytheon Canada Limited Ottawa

Report Number: 1962158
Date Submitted: 2021-09-10
Date Reported: 2021-09-11
Project:
COC #: 879843

Group	Analyte	MRL	Units	Lab I.D. Sample Matrix Sample Type Sampling Date Sample I.D.	Guideline
Microbiology	Faecal Coliforms	0	ct/100mL	1581996 WW 2021-09-06 CMM Cyclelet 3	1581997 WW 2021-09-06 CMM Cyclelet 4
		10	ct/100mL		
					1581998 WW 2021-09-06 CMM Cyclelet 5

Guideline =

* = Guideline Exceedence

Results relate only to the parameters tested on the samples submitted.

Analytical Method: AMBCOLM1

additional QA/QC information available on request.

MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range



Environment Testing

Certificate of Analysis

Client: Raytheon Canada Limited Ottawa
400 Cooper St.
Ottawa, ON
K2P 2H8
Attention: Ms. Andrea Burrill
PO#: 00887-OT
Invoice to: Raytheon Canada Limited Ottawa

Report Number: 1962158
Date Submitted: 2021-09-10
Date Reported: 2021-09-11
Project:
COC #: 879843

Sample Comment Summary

Sample ID: 1581996 CAMM Cyclelet 3 Deviation from standard protocol. All bacteria samples on report are past hold time.

Guideline =

* = Guideline Exceedence

Results relate only to the parameters tested on the samples submitted.

Analytical Method: AMBCOLM1

additional QA/QC information available on request.

MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, IMAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range



Environment Testing

Certificate of Analysis

Client: Raytheon Canada Limited Ottawa
400 Cooper St.
Ottawa, ON
K2P 2H8
Attention: Ms. Andrea Burrill
PO#: 002160-OT
Invoice to: Raytheon Canada Limited Ottawa

Report Number: 1962161
Date Submitted: 2021-09-10
Date Reported: 2021-09-17
Project:
COC #: 879843

Page 1 of 3

Dear Andrea Burrill:

Please find attached the analytical results for your samples. If you have any questions regarding this report, please do not hesitate to call (613-727-5692).

Report Comments:

Charlie
Long Qu
2021.09.1
7 17:08:48
-04'00'

APPROVAL:

Long Qu, Organics Supervisor

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Environment Testing

Certificate of Analysis

Client: Raytheon Canada Limited Ottawa
400 Cooper St.
Ottawa, ON
K2P 2H8
Attention: Ms. Andrea Burrill
PO#: 002160-OT
Invoice to: Raytheon Canada Limited Ottawa

Report Number: 1962161
Date Submitted: 2021-09-10
Date Reported: 2021-09-17
Project:
COC #: 879843

Group	Analyte	MRL	Units	Guideline	Lab I.D. Sample Matrix Sample Type Sampling Date Sample I.D.
General Chemistry	BOD5	1	mg/L	2	1582003 Water 2021-09-06 CAMM Cyclelet 1
	pH	1.00		6.60	
Oil and Grease	Total Suspended Solids	2	mg/L	<2	
	Oil & Grease - Mineral	1	mg/L	<1	
	Oil & Grease - Non-mineral	1	mg/L	<1	
	Oil & Grease - Total	1	mg/L	<1	
	Visible Sheen		P/A	A	

Guideline = * = Guideline Exceedence

Results relate only to the parameters tested on the samples submitted.
Methods references and/or additional QA/QC information available on request.

MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range



Environment Testing

Certificate of Analysis

Client: Raytheon Canada Limited Ottawa
400 Cooper St.
Ottawa, ON

Attention: Ms. Andrea Burrill
PO#: 002160-OT
Invoice to: Raytheon Canada Limited Ottawa

Report Number: 1962161
Date Submitted: 2021-09-10
Date Reported: 2021-09-17
Project:
COC #: 879843

QC Summary

Analyte	Blank	QC % Rec	QC Limits
Run No 208523 Method SHEEN	Analysis/Extraction Date 2021-09-17	Analyst C M	
Visible Sheen			
Run No 408314 Method SM 5210B	Analysis/Extraction Date 2021-09-15	Analyst AK	
BOD5	<1 mg/L	72	75-125
Run No 408422 Method SM2320,2510,4500H/F	Analysis/Extraction Date 2021-09-13	Analyst AsA	
pH		99	90-110
Run No 408582 Method C SM2540	Analysis/Extraction Date 2021-09-16	Analyst AK	
Total Suspended Solids	<2 mg/L	97	90-110
Run No 408613 Method MOE E3421	Analysis/Extraction Date 2021-09-15	Analyst RHH	
Oil & Grease - Mineral	<1 mg/L	90	60-120
Oil & Grease - Non-mineral	<1 mg/L		60-120
Oil & Grease - Total	<1 mg/L	90	60-120

Guideline = * = Guideline Exceedence

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Methods references and/or additional QA/QC information available on request.

MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range



Environment Testing

Certificate of Analysis

Client: Raytheon Canada Limited Ottawa
400 Cooper St.
Ottawa, ON
K2P 2H8
Attention: Ms. Alaina Leslie
PO#: 002160-OT
Invoice to: Raytheon Canada Limited Ottawa

Report Number: 1965188
Date Submitted: 2021-10-20
Date Reported: 2021-10-21
Project: Sewage (Site - CAM-M WO 979913)
COC #: 881582

Page 1 of 3

Dear Alaina Leslie:

Please find attached the analytical results for your samples. If you have any questions regarding this report, please do not hesitate to call (613-727-5692).

Report Comments:

Dragana
Dzeletovic
2021.10.21
17:22:04
-04'00'

APPROVAL: _____
Dragana Dzeletovic-Andric, Microbiology Team Lead

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Environment Testing

Certificate of Analysis

Client: Raytheon Canada Limited Ottawa
400 Cooper St.
Ottawa, ON
K2P 2H8
Attention: Ms. Alaina Leslie
PO#: 002160-OT
Invoice to: Raytheon Canada Limited Ottawa

Report Number: 1965188
Date Submitted: 2021-10-20
Date Reported: 2021-10-21
Project: Sewage (Site - CAM-M WO 979913)
COC #: 881582

Group	Analyte	MRL	Units	Lab I.D. Sample Matrix Sample Type Sampling Date Sample I.D.	Guideline
Microbiology	Faecal Coliforms	0	ct/100mL	1590524 Sewage 2021-10-13 CAM-M Cyclelet -A	1590525 Sewage 2021-10-13 CAM-M Cyclelet -B
				1590526 Sewage 2021-10-13 CAM-M Cyclelet -C	

Guideline =

* = Guideline Exceedence

Results relate only to the parameters tested on the samples submitted.

Analytical Method: AMBCOLM1

additional QA/QC information available on request.

MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range



Environment Testing

Certificate of Analysis

Client: Raytheon Canada Limited Ottawa
400 Cooper St.
Ottawa, ON
K2P 2H8
Attention: Ms. Alaina Leslie
PO#: 002160-OT
Invoice to: Raytheon Canada Limited Ottawa

Report Number: 1965188
Date Submitted: 2021-10-20
Date Reported: 2021-10-21
Project: Sewage (Site - CAM-M WO 979913)
COC #: 881582

Sample Comment Summary

Sample ID: 1590524 CAM-M Cyclelet -A Deviation from standard protocol. All bacteria samples on report are past hold time.

Guideline =

* = Guideline Exceedence

Results relate only to the parameters tested on the samples submitted.

Analytical Method: AMBCOLM1

additional QA/QC information available on request.

MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, IMAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range



Environment Testing

Certificate of Analysis

Client: Raytheon Canada Limited Ottawa
400 Cooper St.
Ottawa, ON
K2P 2H8
Attention: Ms. Alaina Leslie
PO#: 008887-OT
Invoice to: Raytheon Canada Limited Ottawa

Report Number: 1965102
Date Submitted: 2021-10-20
Date Reported: 2021-10-27
Project: Sewage (Site - CAM-M WO 979913)
COC #: 881582

Page 1 of 3

Dear Alaina Leslie:

Please find attached the analytical results for your samples. If you have any questions regarding this report, please do not hesitate to call (613-727-5692).

Report Comments:

Revision 1. This is an amendment and supersedes the version of this report issued on 2021-10-27. TSS result revised.

Sarah
Horner
Sarah Horner 2021.10.27
16:16:44
-04'00'

APPROVAL:

Sarah Horner, Inorganics Technician

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Environment Testing

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400 Cooper St.
Ottawa, ON
K2P 2H8
Attention: Ms. Alaina Leslie
PO#: 008887-OT
Invoice to: Raytheon Canada Limited Ottawa

Report Number: 1965102
Date Submitted: 2021-10-20
Date Reported: 2021-10-27
Project: Sewage (Site - CAM-M WO 979913)
COC #: 881582

Group	Analyte	MRL	Units	Guideline	Lab I.D. Sample Matrix Sample Type Sampling Date Sample I.D.
General Chemistry	BOD5	1	mg/L	<1	1590247 WW 2021-10-13 CAM-M Cyclelet
	pH	1.00		7.32	
Oil and Grease	Total Suspended Solids	2	mg/L	6	
	Oil & Grease - Mineral	1	mg/L	<1	
	Oil & Grease - Non-mineral	1	mg/L	<1	
	Oil & Grease - Total	1	mg/L	<1	
	Visible Sheen		P/A	A	

Guideline = * = Guideline Exceedence

Results relate only to the parameters tested on the samples submitted.
Methods references and/or additional QA/QC information available on request.

MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range



Environment Testing

Certificate of Analysis

Client: Raytheon Canada Limited Ottawa
400 Cooper St.
Ottawa, ON
K2P 2H8
Attention: Ms. Alaina Leslie
PO#: 008887-OT
Invoice to: Raytheon Canada Limited Ottawa

Report Number: 1965102
Date Submitted: 2021-10-20
Date Reported: 2021-10-27
Project: Sewage (Site - CAM-M WO 979913)
COC #: 881582

QC Summary

Analyte	Blank	QC % Rec	QC Limits
Run No 410813 Method MOE E3421	Analysis/Extraction Date 2021-10-21	Analyst RHH	
Oil & Grease - Mineral	<1 mg/L	80	60-120
Oil & Grease - Non-mineral	<1 mg/L		60-120
Oil & Grease - Total	<1 mg/L	85	60-120
Visible Sheen			
Run No 410867 Method SM 5210B	Analysis/Extraction Date 2021-10-27	Analyst AK	
BOD5	<1 mg/L	77	75-125
Run No 410891 Method C SM2540	Analysis/Extraction Date 2021-10-27	Analyst SWS	
Total Suspended Solids	<2 mg/L	100	90-110
Run No 410903 Method SM2320,2510,4500H/F	Analysis/Extraction Date 2021-10-22	Analyst AsA	
pH		99	90-110

Guideline =

* = Guideline Exceedence

Results relate only to the parameters tested on the samples submitted.
Methods references and/or additional QA/QC information available on request.

MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range



Environment Testing

Certificate of Analysis

Client: Raytheon Canada Limited Ottawa
400 Cooper St.
Ottawa, ON
K2P 2H8
Attention: Ms. Alaina Leslie
PO#: 00887-OT
Invoice to: Raytheon Canada Limited Ottawa

Report Number: 1967006
Date Submitted: 2021-11-17
Date Reported: 2021-11-18
Project: Sewage (Site: CAM-M WO:982282)
COC #: 206787

Page 1 of 3

Dear Alaina Leslie:

Please find attached the analytical results for your samples. If you have any questions regarding this report, please do not hesitate to call (613-727-5692).

Report Comments:

Jason
Kennedy
2021.11.18
15:10:59
-05'00'

APPROVAL:

Jason Kennedy, Project Manager

All analysis is completed at Eurofins Environment Testing Canada Inc. (Ottawa, Ontario) unless otherwise indicated.

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Environment Testing

Certificate of Analysis

Client: Raytheon Canada Limited Ottawa
400 Cooper St.
Ottawa, ON
K2P 2H8
Attention: Ms. Alaina Leslie
PO#: 008887-OT
Invoice to: Raytheon Canada Limited Ottawa

Report Number: 1967006
Date Submitted: 2021-11-17
Date Reported: 2021-11-18
Project: Sewage (Site: CAM-M WO:982282)
COC #: 206787

Group	Analyte	MRL	Units	Lab I.D. Sample Matrix Sample Type Sampling Date Sample I.D.	Guideline
Microbiology	Faecal Coliforms	0	ct/100mL	1596380 WW 2021-11-07 CAM-M Cyclelet A	1596381 WW 2021-11-07 CAM-M Cyclelet B
				1596382 WW 2021-11-07 CAM-M Cyclelet C	

Guideline =

* = Guideline Exceedence

Results relate only to the parameters tested on the samples submitted.

Analytical Method: AMBCOLM1

additional QA/QC information available on request.

MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range



Environment Testing

Certificate of Analysis

Client: Raytheon Canada Limited Ottawa
400 Cooper St.
Ottawa, ON
K2P 2H8
Attention: Ms. Alaina Leslie
PO#: 008887-OT
Invoice to: Raytheon Canada Limited Ottawa

Report Number: 1967006
Date Submitted: 2021-11-17
Date Reported: 2021-11-18
Project: Sewage (Site: CAM-M WO:982282)
COC #: 206787

Sample Comment Summary

Sample ID: 1596380 CAM-M Cyclelet A Deviation from standard protocol. All bacteria samples on report are past hold time.

Guideline =

* = Guideline Exceedence

Results relate only to the parameters tested on the samples submitted.

Analytical Method: AMBCOLM1

additional QA/QC information available on request.

MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, IMAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range



Environment Testing

Certificate of Analysis

Client: Raytheon Canada Limited Ottawa
400 Cooper St.
Ottawa, ON
K2P 2H8
Attention: Ms. Alaina Leslie
PO#: 008887-OT
Invoice to: Raytheon Canada Limited Ottawa

Report Number: 1966980
Date Submitted: 2021-11-17
Date Reported: 2021-11-23
Project: Sewafe (Site: CAM-M WO:982282)
COC #: 206787

Page 1 of 4

Dear Alaina Leslie:

Please find attached the analytical results for your samples. If you have any questions regarding this report, please do not hesitate to call (613-727-5692).

Report Comments:

Sarah
Horner
Sarah Horner 2021.11.2
3 15:18:30
-05'00'

APPROVAL:

Sarah Horner, Inorganics Technician

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Environment Testing

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Client: Raytheon Canada Limited Ottawa
400 Cooper St.
Ottawa, ON
K2P 2H8
Attention: Ms. Alaina Leslie
PO#: 008887-OT
Invoice to: Raytheon Canada Limited Ottawa

Report Number: 1966980
Date Submitted: 2021-11-17
Date Reported: 2021-11-23
Project: Sewafe (Site: CAM-M WO:982282)
COC #: 206787

Group	Analyte	MRL	Units	Guideline	Lab I.D. Sample Matrix Sample Type Sampling Date Sample I.D.
General Chemistry	BOD5	1	mg/L		1596256 Sewage
	pH	1.00			2021-11-07 CAM-M Cyclelet
Oil and Grease	Total Suspended Solids	2	mg/L		
	Oil & Grease - Mineral	1	mg/L		
	Oil & Grease - Non-mineral	1	mg/L		
	Oil & Grease - Total	1	mg/L		
	Visible Sheen		P/A		

Guideline = * = Guideline Exceedence

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Methods references and/or additional QA/QC information available on request.

MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range



Environment Testing

Certificate of Analysis

Client: Raytheon Canada Limited Ottawa
400 Cooper St.
Ottawa, ON
K2P 2H8
Attention: Ms. Alaina Leslie
PO#: 008887-OT
Invoice to: Raytheon Canada Limited Ottawa

Report Number: 1966980
Date Submitted: 2021-11-17
Date Reported: 2021-11-23
Project: Sewafe (Site: CAM-M WO:982282)
COC #: 206787

QC Summary

Analyte	Blank	QC % Rec	QC Limits
Run No 208523 Method SHEEN	Analysis/Extraction Date 2021-11-18	Analyst C M	
Visible Sheen			
Run No 412578 Method SM 5210B	Analysis/Extraction Date 2021-11-23	Analyst AK	
BOD5	<1 mg/L	92	75-125
Run No 412694 Method SM2320,2510,4500H/F	Analysis/Extraction Date 2021-11-19	Analyst AsA	
pH		99	90-110
Run No 412744 Method SM 5520B/F	Analysis/Extraction Date 2021-11-19	Analyst RHH	
Oil & Grease - Mineral	<1 mg/L	80	60-120
Oil & Grease - Non-mineral	<1 mg/L		60-120
Oil & Grease - Total	<1 mg/L	95	60-120
Run No 412779 Method C SM2540	Analysis/Extraction Date 2021-11-23	Analyst AK	
Total Suspended Solids	<2 mg/L	98	90-110

Guideline = * = Guideline Exceedence

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Methods references and/or additional QA/QC information available on request.

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Environment Testing

Certificate of Analysis

Client: Raytheon Canada Limited Ottawa
400 Cooper St.
Ottawa, ON
K2P 2H8
Attention: Ms. Alaina Leslie
PO#: 008887-OT
Invoice to: Raytheon Canada Limited Ottawa

Report Number: 1966980
Date Submitted: 2021-11-17
Date Reported: 2021-11-23
Project: Sewafe (Site: CAM-M WO:982282)
COC #: 206787

Sample Comment Summary

Sample ID: 1596256 CAM-M Cyclelet O&G: Sulphuric acid was added in lab.

Guideline =

* = Guideline Exceedence

Results relate only to the parameters tested on the samples submitted.
Methods references and/or additional QA/QC information available on request.

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Environment Testing

Certificate of Analysis

Client: Raytheon Canada Limited Ottawa
400 Cooper St.
Ottawa, ON
K2P 2H8
Attention: Ms. Alaina Leslie
PO#: 00887-OT
Invoice to: Raytheon Canada Limited Ottawa

Report Number: 1969159
Date Submitted: 2021-12-22
Date Reported: 2021-12-23
Project: Sewage (Site: CAM-M WO:982282)
COC #: 206786

Page 1 of 3

Dear Alaina Leslie:

Please find attached the analytical results for your samples. If you have any questions regarding this report, please do not hesitate to call (613-727-5692).

Report Comments:

Dragana
Dzeletovic
2021.12.23
16:17:46
-05'00'

APPROVAL: _____

Dragana Dzeletovic-Andric, Microbiology Team Lead

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Environment Testing

Certificate of Analysis

Client: Raytheon Canada Limited Ottawa
400 Cooper St.
Ottawa, ON
K2P 2H8
Attention: Ms. Alaina Leslie
PO#: 00887-OT
Invoice to: Raytheon Canada Limited Ottawa

Report Number: 1969159
Date Submitted: 2021-12-22
Date Reported: 2021-12-23
Project: Sewage (Site: CAM-M WO:982282)
COC #: 206786

Group	Analyte	MRL	Units	Guideline	1603388 Sewage 2021-12-05 CAM-M Cyclelet - A	1603389 Sewage 2021-12-05 CAM-M Cyclelet - B	1603390 Sewage 2021-12-05 CAM-M Cyclelet - C
Microbiology	Faecal Coliforms	0	ct/100mL	MAC 10000	1	0	0

Guideline = Nunavut Water Board -Sewage

Results relate only to the parameters tested on the samples submitted.

Analytical Method: AMBCOLM1

additional QA/QC information available on request.

*** = Guideline Exceedence**

MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range



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Attention: Ms. Alaina Leslie
PO#: 00887-OT
Invoice to: Raytheon Canada Limited Ottawa

Report Number: 1969159
Date Submitted: 2021-12-22
Date Reported: 2021-12-23
Project: Sewage (Site: CAM-M WO:982282)
COC #: 206786

Sample Comment Summary

Sample ID: 1603388 CAM-M Cyclelet - A Deviation from standard protocol. All bacteria samples on report are past hold time.

Guideline = Nunavut Water Board -Sewage

Results relate only to the parameters tested on the samples submitted.

Analytical Method: AMBCOLM1

additional QA/QC information available on request.

* = Guideline Exceedence

MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, IMAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range



Environment Testing

Certificate of Analysis

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400 Cooper St.
Ottawa, ON
K2P 2H8
Attention: Ms. Alaina Leslie
PO#: 008887-OT
Invoice to: Raytheon Canada Limited Ottawa

Report Number: 1969174
Date Submitted: 2021-12-22
Date Reported: 2021-12-30
Project: Sewage (Site: CAM-M WO:982282)
COC #: 206786

Page 1 of 3

Dear Alaina Leslie:

Please find attached the analytical results for your samples. If you have any questions regarding this report, please do not hesitate to call (613-727-5692).

Report Comments:

Sarah
Horner
Sarah Horner 2021.12.3
0 16:03:01
-05'00'

APPROVAL:

Sarah Horner, Inorganics Technician

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Environment Testing

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400 Cooper St.
Ottawa, ON
K2P 2H8
Attention: Ms. Alaina Leslie
PO#: 008887-OT
Invoice to: Raytheon Canada Limited Ottawa

Report Number: 1969174
Date Submitted: 2021-12-22
Date Reported: 2021-12-30
Project: Sewage (Site: CAM-M WO:982282)
COC #: 206786

Group	Analyte	MRL	Units	Guideline	Lab I.D. Sample Matrix Sample Type Sampling Date Sample I.D.
General Chemistry	BOD5	1	mg/L	MAC 120	1603437 Sewage
	pH	1.00		6-9	2021-12-05 CAM-M Cyclelet
Oil and Grease	Total Suspended Solids	2	mg/L	MAC 180	
	Oil & Grease - Mineral	1	mg/L		
	Oil & Grease - Non-mineral	1	mg/L		
	Oil & Grease - Total	1	mg/L		
	Visible Sheen		P/A	Absent	

Guideline = Nunavut Water Board -Sewage

*** = Guideline Exceedence**

Results relate only to the parameters tested on the samples submitted.
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Environment Testing

Certificate of Analysis

Client: Raytheon Canada Limited Ottawa
400 Cooper St.
Ottawa, ON
K2P 2H8

Attention: Ms. Alaina Leslie
PO#: 008887-OT

Invoice to: Raytheon Canada Limited Ottawa

Report Number: 1969174
Date Submitted: 2021-12-22
Date Reported: 2021-12-30
Project: Sewage (Site: CAM-M WO:982282)
COC #: 206786

QC Summary

Analyte	Blank	QC % Rec	QC Limits
Run No 208523 Method SHEEN	Analysis/Extraction Date 2021-12-23	Analyst C M	
Visible Sheen			
Run No 414775 Method SM2320,2510,4500H/F	Analysis/Extraction Date 2021-12-23	Analyst AsA	
pH		101	90-110
Run No 414816 Method SM 5210B	Analysis/Extraction Date 2021-12-29	Analyst Z S	
BOD5	<1 mg/L	86	75-125
Run No 414838 Method C SM2540	Analysis/Extraction Date 2021-12-29	Analyst AsA	
Total Suspended Solids	<2 mg/L	99	90-110
Run No 414974 Method SM 5520B/F	Analysis/Extraction Date 2021-12-30	Analyst RHH	
Oil & Grease - Mineral	<1 mg/L	70	60-120
Oil & Grease - Non-mineral	<1 mg/L		60-120
Oil & Grease - Total	<1 mg/L	95	60-120

Guideline = Nunavut Water Board -Sewage

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Methods references and/or additional QA/QC information available on request.

* = Guideline Exceedence

MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range

**ANNEX D. LOCATION OF BERMED FUEL STORAGE FACILITIES**

Table D-2 contains the locations and sampling dates for the wastewater discharged from the bermed fuel storage facilities.

Table D-2: Analysis of Berm Water at CAM-M in 2021

Berm	Location on-site	Discharge Latitude ²	Discharge Longitude	Date
CAM W22A	Summit	69° 07'02.76"N	105° 07'02.69"W	18-June-2021
CAM W20B & W20C	Airstrip	69° 06'12.01"N	105° 07'36.60"W	18-June-2021
CAM W22C & W20D	Beach	69° 06'11.41"N	105° 05'50.26"W	18-June-2021

² Final discharge point of bermed fuel storage facility

**ANNEX E. ANALYSIS OF BERM WATER³**

The berm water at CAM-M was tested using hydrocarbon test strips as per the approved QA/QC Plan for Berm Water Sampling as stated in the water licence 8BC-CAM1929, PART D, Item 11. The photo log of the hydrocarbon test strips is included in pages which follow.

The following documents are enclosed:

1. Hydrocarbon Test Strip Photo Log

³ Effluent from bermed fuel storage facilities.

Hydrocarbon Test Strips Photo Log



Photo E 1: Hydrocarbon test strips used in berm of tank W22A (18-Jun-2021)



Photo E 2: Hydrocarbon test strips used in berm of tank W20B & W20C (18-Jun-2021)

UNCONTROLLED WHEN PRINTED



SOW Ref: 16.F.5.d



Photo E 3: Hydrocarbon test strips used in berm of tank W22C & W20D (18-Jun-2021)

UNCONTROLLED WHEN PRINTED



ANNEX F. MONITORING ACTIVITIES

The following documents are enclosed:

1. Summary of Monitoring Activities



Summary of Monitoring Activities

15 February 2020 NT-NU Spill #20-051 Hydronic Heating Water

Follow up work to the 15 February 2020 (NT-NU Spill #20-051) spill of water and hydronic heating fluid was conducted at CAM-M in 2021.

In March 2020 the spilled fluid was sampled in three locations and sent to a laboratory for analysis. The remaining ice was containerized in drums for off site disposal. The samples were analyzed for parameters known to be elevated in the hydronic heating fluid (chloride, copper, lead, ammonia and nitrite). The results were compared to the CCME Water Quality Guidelines for the Protection of Aquatic Life (CWQGs-PAL)⁴. These guidelines were selected as screening values in order to determine if the fluid would have any deleterious effects on aquatic life if it reached a waterbody, and if soil sampling would be required. The long-term criteria was selected as the most conservative approach. The analytical results were above the CWQGs-PAL for each parameter (in at least one sample) and are shown in Table F-1, below.

Table F-1: Fluid Analytical Results – Characterization for NT-NU Spill #20-051

Parameter	Units	CWQGs-PAL*	M-37 6-Mar-20	M-38 6-Mar-20	M-39 6-Mar-20
Chloride	mg/L	120	110	104	154
Nitrate	mg/L	13	5.11	5.22	18.8
Copper	mg/L	0.002	0.125	0.134	0.161
Lead	mg/L	0.001	0.008	<0.001	0.012
Ammonia	mg/L	0.019	0.529	0.264	0.469

*Canadian Water Quality Guidelines – Protection of Aquatic Life (Long-Term) (mg/L)

Red/Bold indicates result above the CWQGs-PAL

Because results of the spilled fluid were in exceedance of the CWQGs-PAL water quality results of the closest waterbody were also examined. The nearest waterbody is located 180 metres southwest (down-gradient) of the spill. The waterbody is used as the drinking water supply lake for CAM-M and is tested annually. The analytical results were also compared to the CWQGs-PAL (long-term) and are presented in Table F-2, below. The freshwater long-term criteria was selected as the most conservative approach. The result for chloride in the waterbody sample was above the guideline.

Table F-2: Waterbody Analytical Results

Parameter	Units	CWQGs-PAL*	CAM-MAIN Water Lake 18-Aug-2020	CAM-M Water Lake 17-Aug-2021
Chloride	mg/L	120	124	109
Nitrate	mg/L	13	<0.1	<0.1
Copper	mg/L	0.002	<0.001	<0.001
Lead	mg/L	0.001	<0.001	<0.001
Ammonia	mg/L	0.019	<0.1	<0.1

*Canadian Water Quality Guidelines – Protection of Aquatic Life (Long-Term), 2011 (mg/L)

Red/Bold indicates result above the CWQGs-PAL

⁴ Canadian Council of Ministers of the Environment. 1999 (r. 2018). Canadian water quality guidelines for the protection of aquatic life: Summary Table



Chloride is a naturally occurring substance and natural sources include sea spray and seawater intrusion⁵. As the waterbody is in close proximity to the ocean it is possible that the elevated chloride level is naturally occurring. Analytical results for chloride from samples collected from the same waterbody from the four years prior to 2020 were between 115 mg/L and 124 mg/L. Because chloride has been historically elevated in the waterbody it is likely that the exceedance in 2020 is due to naturally occurring sources. The results in 2021 were below criteria.

Confirmatory soil samples were collected in the spill area and analyzed for copper and lead. Nitrate, ammonia and chloride were not analyzed as CCME guidelines do not exist for these parameters in soil. Results were below guidelines and are presented in table F-3, below.

Table F-3: Soil Confirmatory Sampling Analytical Results

Parameter	Units	CCME-SQG	21-ML-TP1 7-Jul-2021	21-ML-TP2 7-Jul-2021	21-ML-TP3 7-Jul-2021	21-ML-TP4 7-Jul-2021	21-ML-TP5 7-Jul-2021	21-ML-TP6 7-Jul-2021
Copper	mg/kg	91	33.9	20.3	18.2	6.31	5.61	7.01
Lead	mg/kg	260	64	31.3	11.1	18	6.27	44.9

*Canadian Council of the Ministers of the Environment – Environmental Quality Guidelines⁶

Red/Bold indicates result above the CCME-CWS

21 November 2019 NT-NU Spill #19-467 Warehouse

After the initial spill response the area impacted by NT-NU Spill 19-467 three rounds of excavation were conducted. In the first round soil was excavated to a maximum depth of 60 cm and assessed on 29 November 2019 resulting in the removal of nine cubic metres of soil. Soil from the base of the excavation was screened using a photo ionizing detector (PID) which indicated further excavation was required. A second round of excavation was completed on 1 December 2019 to a maximum depth of 1.3 m for a volume of 15 cubic metres of soil. A third round of excavation was completed on 8 March 2020 and confirmatory sampling results were below the CCME Canada-Wide Standards for PHCs⁷ in soil. On 27 March 2020 RC provided the sampling results and details of the remediation activities to Environment Canada and Climate Change (ECCC) and Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC) via email.

See Table F-4, below, for analytical results. A total of 33 cubic metres of soil was containerized into Quatrex bags for off-site treatment in Cambridge Bay. The excavation was backfilled with clean fill. RC is in the process of drafting a closure report which will be delivered to CIRNAC and ECCC representatives in 2022.

⁵ Canadian Council of Ministers of the Environment. 2011. Canadian water quality guidelines for the protection of aquatic life: Chloride

⁶ Canadian Council of Ministers of the Environment, 1999 r. 2018. Canadian Environmental Quality Guidelines.

⁷ Canadian Council of Ministers of the Environment. 2001 r. 2008. Canada-Wide Standards for Petroleum Hydrocarbons (PHC) in Soil.



SOW Ref: 16.F.5.d

Table F-4: Confirmatory Sampling Results for NT-NU Spill #19-467

Parameter	Units	CCME-CWS*	AP 6-Dec-2019	UE 6-Dec-2019	AA 8-Mar-2020	UW 8-Mar-2020
PHC F1	ug/g	320	<10	<10	<10	<10
PHC F2	ug/g	260	<10	<10	<10	<10
PHC F3	ug/g	1700	80	40	120	<20
PHC F4	ug/g	3300	50	40	<20	<20
Benzene	ug/g	0.03	<0.0068	<0.0068	<0.02	<0.02
Toluene	ug/g	0.37	<0.08	<0.08	<0.20	<0.20
Ethylbenzene	ug/g	0.082	<0.018	<0.018	<0.05	<0.05
Xylene	ug/g	11	<0.1	<0.1	<0.1	<0.1

*Canadian Council of the Ministers of the Environment –Canada-Wide Standards for Petroleum Hydrocarbons (PHC) in Soil
Red/Bold indicates result above the CCME-CWS

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