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SOW Ref: 16.F.5.d

2018 ANNUAL NUNAVUT WATER BOARD

REPORT FOR BAF-3

FOR THE

North Warning System

Contract # W8485-100224/001/NX

SOW Ref: 16.F.5.d

Document Number
FM-EHS-13, Rev 2, 5-Feb-2019

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ENGLISH EXECUTIVE SUMMARY FOLLOWS

RCL-dc ბაკტერიები დისტანციული (O&M) ტექნიკა დაგვარული ცენტრები (NWS), აერდულ BAF-3, ტან დანერვაციები ახლო დანერვაციები (NWS და აერდულ ასახულის დანერვაციები) > როგორც არა აერდულ დისტანციულ ცენტრები ასერტი ცაბეჭულ ასახულ სასტაციები.



EXECUTIVE SUMMARY

This 2018 Annual Report for the Nunavut Water Board (NWB) has been prepared by Raytheon Canada Limited (RCL) for the Department of National Defence in order to meet the requirements of the licence issued 10 September 2009 3BC-BAF0919 – Type “B”, Part B “General Conditions”, paragraph 1. This report covers the period from 01 January to 31 December 2018.

RCL is the Operation and Maintenance Contractor for the North Warning System (NWS), including BAF-3, the unattended (unmanned) North Warning System radar site located on Brevoort Island, Nunavut. The site is visited quarterly by RCL staff based out of Iqaluit, Nunavut for preventive maintenance inspections and as required for other work.

A total of 345.5 cubic meters was drawn from the water supply lake. This is below the annual maximum of 1,750 cubic meters allowed by the current licence.

Fuel tanks within the berms were demolished in 2012 and 2013, and the berms were intentionally breached in 2012 and 2015. No effluent (berm water) samples were taken in 2018.

Hazardous waste and waste oil were sent to an approved hazardous waste disposal facility 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. The hazardous waste shipped from BAF-3 in 2018 consisted of 53 drums, 1 crate of waste of waste batteries, and 1 crate of unused battery acid.

Non-hazardous domestic solid waste was flown out to the Logistics Support Site in Iqaluit and disposed of at Iqaluit’s landfill. RCL has documented authorization from the community for receiving the waste.

No unauthorized discharges to the environment at BAF-3 in 2018.

The Spill Contingency Plan was updated on 29-Mar-2018.

Groundwater monitoring activities (BAF-5) of the 2015 Jet A1 spill continued in 2018.

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1.0 INTRODUCTION

This 2018 Annual Report for the Nunavut Water Board (NWB) has been prepared by Raytheon Canada Limited (RCL) for the Department of National Defence in order to meet the requirements of the licence issued 10 September 2009 3BC-BAF0919 – Type “B”, Part B “General Conditions”, paragraph 1. This report covers the period from 01 January to 31 December 2018.

RCL is the Operations and Maintenance Contractor for the North Warning System (NWS), including BAF-3, the unattended (unmanned) North Warning System radar site located on Brevoort Island, Nunavut. The site is visited quarterly by RCL staff based in Iqaluit for preventive maintenance inspections and as required for other work.

1.1 Report Details

Licensee: Department of National Defence, Government of Canada
Licence: 3BC-BAF0919 – Type “B”
Location: BAF-3 North Warning System Site, Brevoort Island, Qikiqtani Region, Nunavut
Report Prepared by: Raytheon Canada Limited, 05-Feb-2019
Time period covered: 01 January to 31 December 2018

2.0 WATER USE

A total of 863.1 cubic meters was drawn from the water supply lake. This is below the annual maximum of 1,750 cubic meters allowed by the current licence. See Table 2-1 for the volume of raw water drawn at BAF-3 in 2018.

Table 2-1: Monthly Raw Water Usage at BAF-3 in 2018

Month	Raw water usage (m ³)
January	0
February	0
March	0
April	0
May	0
June	0
July	345.5
August	0
September	0
October	0
November	0
December	0
TOTAL	345.5

3.0 HAZARDOUS WASTE AND WASTE OIL DISPOSAL

Hazardous waste and waste oil from BAF-3 were sent to an approved hazardous waste disposal facility outside of Nunavut as required by the licence. The hazardous waste was shipped to Qikiqtaaluk Environmental, through their subcontractor Veolia. See Table 3-1 for the list of items sent for disposal.

See Annex A for the shipping document including the completed movement documents for waste regulated under the Transportation of Dangerous Goods Regulations (TDGR) and NWS Manifests for

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non-regulated waste. The hazardous waste shipped from BAF-3 in 2018 consisted of 53 drums, 1 crate of waste of waste batteries, and 1 crate of unused battery acid.

Table 3-1: Hazardous Waste and Waste Oil Sent for Disposal from BAF-3 in 2018

Description, TDG shipping name	Quantity	Movement Document or Manifest #
Waste tank bottom water/ tank cleaning effluent	14 Drums	Movement Document 2539182-2
Waste fuel, aviation, turbine engine mixture		
Waste Jet A1 fuel	11 Drums	Movement Document 2539182-2
Waste fuel, aviation, turbine engine		
Waste batteries, wet, filled with acid	1 Crate	Movement Document 2539182-2
Waste Jet A1 fuel and water mixture	6 Drums	Movement Document 2539182-2
Waste fuel, aviation, turbine engine mixture		
Waste Jet A1 fuel soaked sorbent	2 Drums	Movement Document 2539183-0
Waste solids containing flammable liquids, n.o.s (fuel, aviation, turbine engine)		
Waste Sulfuric Acid	1 Crate	Movement Document 2539182-2
Waste Glycol soaked absorbent		
Not TDG Regulated	2 Drums	NWS Manifest TCN38802
Waste glycol (drum)		
Not TDG Regulated	8 Drums	NWS Manifest TCN38804, TCN38810, TCN38828
Waste oil		
Not TDG regulated	6 Drums	NWS Manifest TCN38829, TCN38807, TCN38808
Waste oil filters		
Not TDG regulated	4 Drums	NWS Manifest TCN38831, TCN38832

4.0 NON-HAZARDOUS SOLID WASTE DISPOSAL

Non-hazardous domestic solid waste was flown out to the Logistics Support Site in Iqaluit and disposed of at Iqaluit's landfill. RCL has documented authorization from the community for receiving the waste.

See **Table 4-1** for the quantity of waste generated.

Table 4-1: Non-hazardous Domestic Solid Waste Sent for Disposal from BAF-3 in 2018

Month	Waste Generated (kg)
January	0
February	0
March	45
April	231
May	227
June	354
July	689

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Month	Waste Generated (kg)
August	91
September	218
October	204
November	227
December	159
TOTAL	2,445

5.0 MONITORING PROGRAM

In 2018, a monitoring program was implemented at BAF-3 as required by the water licence, Part J. The monitoring program included the following:

1. Volume of raw water drawn from the water Supply Lake (BAF-1). The information gathered from this requirement is shown in **Section 2.0 Water Use**. The volume of water drawn was within the limit stated in the water licence.
2. Quality of sewage discharged from the final discharge point of the sewage disposal facility (BAF-2). The location of the sewage effluent outfall is shown in **Annex C**, including coordinates. A sump for the sewage outfall was constructed in 2010. The sewage outfall sump was sampled three times in 2018. The results are shown in **Annex D: Analysis of Discharged Sewage Effluent**.
3. Fuel tanks within the berms were demolished in 2012 and 2013, and the berms were intentionally breached in 2012 and 2015. As there are no intact berms, no effluent (berm water) samples (BAF-4) were taken in 2018, **Annex E: Analysis of Berm Water** has been left blank.
4. Groundwater monitoring activities (BAF-5) of the 2007 Jet A1 spill ended in 2015 as per the recommendation by Stantec Consulting Ltd. Groundwater monitoring of the 2015 Jet A1 spill continued in 2018. A summary of the work completed in 2018 is included in **Annex F: Monitoring Activities**.

6.0 SPILLS (UNAUTHORIZED DISCHARGES)

Date, NT-NU Spill #	Product	Quantity	Cause and follow-up action	On-site location
No unauthorized discharges to the environment at BAF-3 in 2018.				

7.0 REVISIONS TO THE SPILL CONTINGENCY PLAN

The Spill Contingency Plan was updated on 29-Mar-2018. An updated copy of the Spill Contingency Plan was submitted to the NWB with the application for water licence renewal.

8.0 PROGRESSIVE RECLAMATION WORK UNDERTAKEN

2018 was the Fourth year of clean-up following the 19-Mar-2015 fuel spill. Environmental staff mobilized to the site from 11-Jul-2018 to 14-Jul-2018 and from 05-Aug-2018 to 03-Sep-2018. A summary of the work completed in 2018 is included in **Annex F: Monitoring Activities**.

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9.0 ACRONYMS

Table 9-1: Acronyms

Acronym	Definition
NWB	Nunavut Water Board
NWS	North Warning System
NWSO	North Warning System Office
PCB	Polychlorinated Biphenyl
RCL	Raytheon Canada Limited
TDGR	Transportation of Dangerous Goods Regulations

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ANNEX A: HAZARDOUS WASTE AND WASTE OIL DISPOSAL IN 2018

The 2018 Movement Documents for TDG Regulated waste and NWS Manifests for non-TDG Regulated waste described in Table 3-1 are below.

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/manifeste est conforme aux législations fédérale et provinciale sur l'environnement et le transport.

2539182-2

A Generator / consignor Produiteur / expéditeur		Registration No. / Provincial ID No. N° d'immatriculation - d'id. provincial NUG 10003	B Carrier Transporteur		Registration No. / Provincial ID No. N° d'immatriculation - d'id. provincial	23 Reference Nos. of other movement document(s)/manifest(s) used / N° de référence des autres documents de mouvement/manifestes utilisés											
Company name / Nom de l'entreprise DEPARTMENT OF NATIONAL DEFENCE		C/o: RCL		Company name / Nom de l'entreprise		24 Receiver / consignee Réceptionnaire / destinataire											
Mailing address / Adresse postale 221 WING BLDG 109 HORNELL HEIGHTS ON P0H 1P0		City / Ville	Province	Postal code / Code postal	City / Ville	Province	Postal code / Code postal										
E-mail / Courrier électronique 705-494-2011 ext. 2861		Tel. No. / N° de tél. ext. 2861		E-mail / Courrier électronique		Tel. No. / N° de tél. ()											
Shipping site address / Adresse du lieu de l'expédition MUSLSS Padut (BREVODOT ISLAND BAF-3)		Registration No. / Provincial ID No. N° d'immatriculation - d'id. provincial		Registration No. / N° d'immatriculation		25 Receiver / consignee information same as in Part A Les renseignements du réceptionnaire / destinataire est la même qu'à la Partie A. <input type="checkbox"/> Yes / Oui <input type="checkbox"/> No, complete the box below / Non, remplir la case ci-dessous											
Mailing address / Adresse postale 4650, BOUL. INDUSTRIE		City / Ville	Province	Postal code / Code postal	City / Ville	Province	Postal code / Code postal										
E-mail / Courrier électronique ()		Tel. No. / N° de tél. ()		E-mail / Courrier électronique		Tel. No. / N° de tél. ()											
Receiving site address / Adresse du lieu de destination CHAMBLY QC		Year / Année		Month / Mois		Day / Jour											
City / Ville		Province		Postal code / Code postal		Signature :											
Prov. code Code prov.		3 Shipping name Appellation nomenclature	4 Class Sub. class Classe(s) sub.	5 UN No. N° UN	6 ⁷ Packing / mkt gr. Gr. mkt. / emballage de risque	7 ⁸ Quantify shipped Quantité expédiée	9 ⁹ Units Ltr / ou Kg Unités	10 ¹⁰ Packaging/Content Codes Int.-ext. Phys. state État phys.	11 ¹¹ Customs code(s) Code(s) de douanes	12 ¹² Quant. received Quantité reçue	13 ¹³ Units Ltr / ou Kg Unités	14 ¹⁴ Comments Commentaires	15 ¹⁵ Handling Code / Code de manutention	16 ¹⁶ Date received / Date de réception Year / Année Month / Mois Day / Jour	17 ¹⁷ Time / Heure A.M. <input type="checkbox"/> P.M. <input type="checkbox"/>	18 ¹⁸ Registration No./Provincial ID No. N° d'immatriculation/d'id provincial	19 ¹⁹ Discard Véhic. Veh.
(i) Waste batteries, wet filled with ACID		8	2794	III	1000	K 2 07	5										
(ii) waste battery fluid, ACID		8	2796	II	150	K 1 07	L										
(iii) waste fuel, aviation turbine engine		3	1863	III	1815	L 11 01	L										
(iv) Waste fuel, aviation turbine engine mixture		3	1863	III	3300	L 20 01	L										
F Flash Point 38°C.		15	16	17	National code in country / Code du pays		18	Customs code(s) Code(s) de douanes		19	If handling code "Other" (specify) Si code de manutention « autre » (spécifier)		20	31 Receiver / consignee certification : I certify that the information contained in Part A is correct and complete. Attestation du réceptionnaire / destinataire : J'atteste que tous les renseignements à la partie A sont exacts et complets.		32 Name of authorized person (print) Nom de l'agent autorisé (caractère d'imprimé)	
(i) 24-Hour EMERGENCY NUMBER ~ 613-996-6666 - CANUTEC		16	17	18	H code Code H		19	Export Exportation		20	Signature		21	Signature		33	
(ii) USE IN CASE OF DANGEROUS GOODS EMERGENCY		17	18	19	Y code Code Y		20	Import Importation		21	Signature		34	Signature		35	
(iii)		18	19	20	Export Exportation		21	Import Importation		22	Comments		36	Comments		37	
(iv)		19	20	21	Import Importation		22	Customs code(s) Code(s) de douanes		23	Handling Code / Code de manutention		38	Handling Code / Code de manutention		39	
Generator / consignor certification: I certify that the information contained in Part A is correct and complete. Attestation du producteur / expéditeur: J'atteste que tous les renseignements à la partie A sont exacts et complets.		20	21	22	Signature		23	Signature		24	Accepted / Accepté		40	Accepted / Accepté		41	
Name of authorized person (print) Nom de l'agent autorisé (caractère d'imprimé)		21	22	23	Signature		24	Signature		25	Refused / Refusé		42	Refused / Refusé		43	
Signature		22	23	24	Signature		25	Signature		26	Pack. / Veh.		44	Pack. / Veh.		45	
RODNEY IVES		23	24	25	Signature		26	Signature		27	Date shipped / Date d'expédition Year / Année Month / Mois Day / Jour		46	Time / Heure A.M. <input type="checkbox"/> P.M. <input type="checkbox"/>		47	
Signature		24	25	26	Signature		27	Signature		28	Scheduled arrival date / Date d'arrivée prévue Year / Année Month / Mois Day / Jour		48	Scheduled arrival date / Date d'arrivée prévue Year / Année Month / Mois Day / Jour		49	
Signature		25	26	27	Signature		28	Signature		29	Comments		50	Comments		51	
Signature		26	27	28	Signature		29	Signature		30	Accepted / Accepté		52	Accepted / Accepté		53	
Signature		27	28	29	Signature		30	Signature		31	Refused / Refusé		54	Refused / Refusé		55	
Signature		28	29	30	Signature		31	Signature		32	Pack. / Veh.		56	Pack. / Veh.		57	
Signature		29	30	31	Signature		32	Signature		33	Comments		58	Comments		59	
Signature		30	31	32	Signature		33	Signature		34	Accepted / Accepté		60	Accepted / Accepté		61	
Signature		31	32	33	Signature		34	Signature		35	Refused / Refusé		62	Refused / Refusé		63	
Signature		32	33	34	Signature		35	Signature		36	Pack. / Veh.		64	Pack. / Veh.		65	
Signature		33	34	35	Signature		36	Signature		37	Comments		66	Comments		67	
Signature		34	35	36	Signature		37	Signature		38	Accepted / Accepté		68	Accepted / Accepté		69	
Signature		35	36	37	Signature		38	Signature		39	Refused / Refusé		70	Refused / Refusé		71	
Signature		36	37	38	Signature		39	Signature		40	Pack. / Veh.		72	Pack. / Veh.		73	
Signature		37	38	39	Signature		40	Signature		41	Comments		74	Comments		75	
Signature		38	39	40	Signature		41	Signature		42	Accepted / Accepté		76	Accepted / Accepté		77	
Signature		39	40	41	Signature		42	Signature		43	Refused / Refusé		78	Refused / Refusé		79	
Signature		40	41	42	Signature		43	Signature		44	Pack. / Veh.		80	Pack. / Veh.		81	
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Signature		42	43	44	Signature		45	Signature		46	Accepted / Accepté		84	Accepted / Accepté		85	
Signature		43	44	45	Signature		46	Signature		47	Refused / Refusé		86	Refused / Refusé		87	
Signature		44	45	46	Signature		47	Signature		48	Pack. / Veh.		88	Pack. / Veh.		89	
Signature		45	46	47	Signature		48	Signature		49	Comments		90	Comments		91	
Signature		46	47	48	Signature		49	Signature		50	Accepted / Accepté		92	Accepted / Accepté		93	
Signature		47	48	49	Signature		50	Signature		51	Refused / Refusé		94	Refused / Refusé		95	
Signature		48	49	50	Signature		51	Signature		52	Pack. / Veh.		96	Pack. / Veh.		97	
Signature		49	50	51	Signature		52	Signature		53	Comments		98	Comments		99	
Signature		50	51	52	Signature		53	Signature		54	Accepted / Accepté		100	Accepted / Accepté		101	
Signature		51	52	53	Signature		54	Signature		55	Refused / Refusé		102	Refused / Refusé		103	
Signature		52	53	54	Signature		55	Signature		56	Pack. / Veh.		104	Pack. / Veh.		105	
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Signature		56	57	58	Signature		59	Signature		60	Pack. / Veh.		112	Pack. / Veh.		113	
Signature		57	58	59	Signature		60	Signature		61	Comments		114	Comments		115	
Signature		58	59	60	Signature		61	Signature		62	Accepted / Accepté		116	Accepted / Accepté		117	
Signature		59	60	61	Signature		62	Signature		63	Refused / Refusé		118	Refused / Refusé		119	
Signature		60	61	62	Signature		63	Signature		64	Pack. / Veh.		120	Pack. / Veh.		121	
Signature		61	62	63	Signature		64	Signature		65	Comments		122	Comments		123	
Signature		62	63	64	Signature		65	Signature		66	Accepted / Accepté		124	Accepted / Accepté		125	
Signature		63	64	65	Signature		66	Signature		67	Refused / Refusé		126	Refused / Refusé		127	
Signature		64	65	66	Signature		67	Signature		68	Pack. / Veh.		128	Pack. / Veh.		129	
Signature		65	66	67	Signature		68	Signature		69	Comments		130	Comments		131	
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Signature		76	77	78	Signature		79	Signature		80	Pack. / Veh.		152	Pack. / Veh.		153	
Signature		77	78	79	Signature		80	Signature		81	Comments		154	Comments		155	
Signature		78	79	80	Signature		81	Signature		82	Accepted / Accepté		156	Accepted / Accepté		157	
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Signature		80	81	82	Signature		83	Signature		84	Pack. / Veh.		160	Pack. / Veh.		161	
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Signature		82	83	84	Signature		85	Signature		86	Accepted / Accepté		164	Accepted / Accepté		165	
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Signature		85	86	87	Signature		88	Signature		89	Comments		170	Comments		171	
Signature		86	87	88	Signature		89	Signature		90	Accepted / Accepté		172	Accepted / Accepté		173	
Signature		87	88	89	Signature		90	Signature		91	Refused / Refusé		174	Refused / Refusé		175	
Signature		88	89	90	Signature		91	Signature		92	Pack. / Veh.		176	Pack. / Veh.		177	
Signature		89	90	91	Signature		92	Signature		93	Comments		178	Comments		179	
Signature		90	91	92	Signature		93	Signature		94	Accepted / Accepté		180	Accepted / Accepté		181	
Signature		91	92	93	Signature		94	Signature		95	Refused / Refusé		182	Refused / Refusé		183	
Signature		92	93	94	Signature		95	Signature		96	Pack. / Veh.		184	Pack. / Veh.		185	
Signature		93	94	95	Signature		96	Signature		97							



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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/manifeste est conforme aux législations fédérale et provinciale sur l'environnement et le transport.

2539183-0

A Generator / consignor Producteur / expéditeur		Registration No. / Provincial ID No. N° d'immatriculation - d'id. provincial	B Carrier / Transporteur		Registration No. / Provincial ID No. N° d'immatriculation - d'id. provincial	23 Reference No. of other movement document(s)/manifest(s) used / N° d'férence des autres documents de mouvement/manifestes utilisés												
Company name / Nom de l'entreprise DEPARTMENT OF NATIONAL DEFENCE 46 RCL		Company name / Nom de l'entreprise				24 Movement Document / Manifest Reference No. N° de référence du document de mouvement/manifeste												
Mailing address / Adresse postale 22 WING BLDG 109 HOLWELL HEIGHTS ON DOD E-mail / Courrier électronique		City / Ville	Province	Postal code / Code postal	City / Ville	Province	Postal code / Code postal											
Tel. No. / N° de tél. 705-494-2011		E-mail / Courrier électronique		Tel. No. / N° de tél. ()		25 Receiver / consignee Récepteur/destinataire												
Shipping site address / Adresse du lieu de l'expédition MWS LSS ISOLAIT (BREVARD ISLAND) BAC-3		Mailing address / Adresse postale 220 BURL INDUSTRIAL		Registration No. / N° d'immatriculation Postal code / Code postal J3L 4V2		Registration No. / N° d'immatriculation Postal code / Code postal												
City / Ville J3L 4V2		Province Ontario		City / Ville Postal code / Code postal		26 Receiver / consignee information same as in Part A Les renseignements du récepteur/destinataire est le même qu'à la Partie A <input type="checkbox"/> Yes / Oui <input type="checkbox"/> No, complete the box below / Non, remplir la case ci-dessous												
Intended Receiver / consignee Récepteur/destinataire prévu WILGITAHLUK ENVIRONMENTAL		Registration No. / Provincial ID No. N° d'immatriculation - d'id. provincial		Port of entry Point d'entrée International use only		Port of exit Point de sortie International use only												
Mailing address / Adresse postale 220 BURL INDUSTRIAL		City / Ville Postal code / Code postal J3L 4V2		Tel. No. / N° de tél. ()		27 Company name / Nom de l'entreprise												
Receiving site address / Adresse du lieu de l'expédition City / Ville CHAMBLY QC		Postal code / Code postal		Year / Année Month / Mois		Date received / Date de réception Year / Année Month / Mois Day / Jour												
Prox. code Code prov.		3 Shipping name Appellation réglementaire	4 Class / Classe Sub. class(es) Code(s) C	5 UN No. N°HU	6 Packing / risk gr. N° d'emballage/ risque	7 Quantity shipped Quantité expédiée	8 Units Lor / ou Unité	9 Packaging/Container Code(s) Int.-ext. Phys. state Etat phys.	10 Quantity received Quantité reçue	11 Units Lor / ou Unité	12 Comments Commentaires	13 Handling Code / Code de manutention	14 Shipment / Envoy Accepted / Accepté Refused / Refusé	15 National code in country of / Code du pays Export Exportation	16 Import Importation	17 Customs code(s) Code(s) de douanes	18 Time / Heure Day / Jour	19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100 101 102 103 104 105 106 107 108 109 110 111 112 113 114 115 116 117 118 119 120 121 122 123 124 125 126 127 128 129 130 131 132 133 134 135 136 137 138 139 140 141 142 143 144 145 146 147 148 149 150 151 152 153 154 155 156 157 158 159 160 161 162 163 164 165 166 167 168 169 170 171 172 173 174 175 176 177 178 179 180 181 182 183 184 185 186 187 188 189 190 191 192 193 194 195 196 197 198 199 200 201 202 203 204 205 206 207 208 209 210 211 212 213 214 215 216 217 218 219 220 221 222 223 224 225 226 227 228 229 230 231 232 233 234 235 236 237 238 239 240 241 242 243 244 245 246 247 248 249 250 251 252 253 254 255 256 257 258 259 260 261 262 263 264 265 266 267 268 269 270 271 272 273 274 275 276 277 278 279 280 281 282 283 284 285 286 287 288 289 290 291 292 293 294 295 296 297 298 299 300 301 302 303 304 305 306 307 308 309 310 311 312 313 314 315 316 317 318 319 319 320 321 322 323 324 325 326 327 328 329 330 331 332 333 334 335 336 337 338 339 339 340 341 342 343 344 345 346 347 348 349 349 350 351 352 353 354 355 356 357 358 359 359 360 361 362 363 364 365 366 367 368 369 369 370 371 372 373 374 375 376 377 378 379 379 380 381 382 383 384 385 386 387 388 389 389 390 391 392 393 394 395 396 397 398 399 399 400 401 402 403 404 405 406 407 408 409 409 410 411 412 413 414 415 416 417 418 419 419 420 421 422 423 424 425 426 427 428 429 429 430 431 432 433 434 435 436 437 438 439 439 440 441 442 443 444 445 446 447 448 449 449 450 451 452 453 454 455 456 457 458 459 459 460 461 462 463 464 465 466 467 468 469 469 470 471 472 473 474 475 476 477 478 479 479 480 481 482 483 484 485 486 487 488 489 489 490 491 492 493 494 495 496 497 498 499 499 500 501 502 503 504 505 506 507 508 509 509 510 511 512 513 514 515 516 517 518 519 519 520 521 522 523 524 525 526 527 528 529 529 530 531 532 533 534 535 536 537 538 539 539 540 541 542 543 544 545 546 547 548 549 549 550 551 552 553 554 555 556 557 558 559 559 560 561 562 563 564 565 566 567 568 569 569 570 571 572 573 574 575 576 577 578 579 579 580 581 582 583 584 585 586 587 588 589 589 590 591 592 593 594 595 596 597 598 599 599 600 601 602 603 604 605 606 607 608 609 609 610 611 612 613 614 615 616 617 618 619 619 620 621 622 623 624 625 626 627 628 629 629 630 631 632 633 634 635 636 637 638 639 639 640 641 642 643 644 645 646 647 648 649 649 650 651 652 653 654 655 656 657 658 659 659 660 661 662 663 664 665 666 667 668 669 669 670 671 672 673 674 675 676 677 678 679 679 680 681 682 683 684 685 686 687 688 689 689 690 691 692 693 694 695 696 697 698 698 699 699 700 701 702 703 704 705 706 707 708 709 709 710 711 712 713 714 715 716 717 718 719 719 720 721 722 723 724 725 726 727 728 729 729 730 731 732 733 734 735 736 737 738 739 739 740 741 742 743 744 745 746 747 748 749 749 750 751 752 753 754 755 756 757 758 759 759 760 761 762 763 764 765 766 767 768 769 769 770 771 772 773 774 775 776 777 778 779 779 780 781 782 783 784 785 786 787 788 789 789 790 791 792 793 794 795 796 797 797 798 799 799 800 801 802 803 804 805 806 807 808 809 809 810 811 812 813 814 815 816 817 818 819 819 820 821 822 823 824 825 826 827 828 829 829 830 831 832 833 834 835 836 837 838 839 839 840 841 842 843 844 845 846 847 848 849 849 850 851 852 853 854 855 856 857 858 859 859 860 861 862 863 864 865 866 867 868 869 869 870 871 872 873 874 875 876 877 878 879 879 880 881 882 883 884 885 886 887 888 889 889 890 891 892 893 894 895 896 897 897 898 899 899 900 901 902 903 904 905 906 907 908 909 909 910 911 912 913 914 915 916 917 918 919 919 920 921 922 923 924 925 926 927 928 929 929 930 931 932 933 934 935 936 937 938 939 939 940 941 942 943 944 945 946 947 948 949 949 950 951 952 953 954 955 956 957 958 959 959 960 961 962 963 964 965 966 967 968 969 969 970 971 972 973 974 975 976 977 978 979 979 980 981 982 983 984 985 986 987 988 989 989 990 991 992 993 994 995 996 997 997 998 999 999 1000 1001 1002 1003 1004 1005 1006 1007 1008 1009 1009 1010 1011 1012 1013 1014 1015 1016 1017 1018 1019 1019 1020 1021 1022 1023 1024 1025 1026 1027 1028 1029 1029 1030 1031 1032 1033 1034 1035 1036 1037 1038 1039 1039 1040 1041 1042 1043 1044 1045 1046 1047 1048 1049 1049 1050 1051 1052 1053 1054 1055 1056 1057 1058 1059 1059 1060 1061 1062 1063 1064 1065 1066 1067 1068 1069 1069 1070 1071 1072 1073 1074 1075 1076 1077 1078 1079 1079 1080 1081 1082 1083 1084 1085 1086 1087 1088 1089 1089 1090 1091 1092 1093 1094 1095 1096 1097 1097 1098 1099 1099 1100 1101 1102 1103 1104 1105 1106 1107 1108 1109 1109 1110 1111 1112 1113 1114 1115 1116 1117 1118 1119 1119 1120 1121 1122 1123 1124 1125 1126 1127 1128 1129 1129 1130 1131 1132 1133 1134 1135 1136 1137 1138 1139 1139 1140 1141 1142 1143 1144 1145 1146 1147 1148 1149 1149 1150 1151 1152 1153 1154 1155 1156 1157 1158 1159 1159 1160 1161 1162 1163 1164 1165 1166 1167 1168 1169 1169 1170 1171 1172 1173 1174 1175 1176 1177 1178 1179 1179 1180 1181 1182 1183 1184 1185 1186 1187 1188 1189 1189 1190 1191 1192 1193 1194 1195 1196 1197 1197 1198 1199 1199 1200 1201 1202 1203 1204 1205 1206 1207 1208 1209 1209 1210 1211 1212 1213 1214 1215 1216 1217 1218 1219 1219 1220 1221 1222 1223 1224 1225 1226 1227 1228 1229 1229 1230 1231 1232 1233 1234 1235 1236 1237 1238 1239 1239 1240 1241 1242 1243 1244 1245 1246 1247 1248 1249 1249 1250 1251 1252 1253 1254 1255 1256 1257 1258 1259 1259 1260 1261 1262 1263 1264 1265 1266 1267 1268 1269 1269 1270 1271 1272 1273 1274 1275 1276 1277 1278 1279 1279 1280 1281 1282 1283 1284 1285 1286 1287 1288 1289 1289 1290 1291 1292 1293 1294 1295 1296 1297 1297 1298 1299 1299 1300 1301 1302 1303 1304 1305 1306 1307 1308 1309 1309 1310 1311 1312 1313 1314 1315 1316 1317 1318 1319 1319 1320 1321 1322 1323 1324 1325 1326 1327 1328 1329 1329 1330 1331 1332 1333 1334 1335 1336 1337 1338 1339 1339 1340 1341 1342 1343 1344 1345 1346 1347 1348 1349 1349 1350 1351 1352 1353 1354 1355 1356 1357 1358 1359 1359 1360 1361 1362 1363 1364 1365 1366 1367 1368 1369 1369 1370 1371 1372 1373 1374 1375 1376 1377 1378 1379 1379 1380 1381 1382 1383 1384 1385 1386 1387 1388 1389 1389 1390 1391 1392 1393 1394 1395 1396 1397 1398 1398 1399 1399 1400 1401 1402 1403 1404 1405 1406 1407 1408 1409 1409 1410 1411 1412 1413 1414 1415 1416 1417 1418 1419 1419 1420 1421 1422 1423 1424 1425 1426 1427 1428 1429 1429 1430 1431 1432 1433 1434 1435 1436 1437 1438 1439 1439 1440 1441 1442 1443 1444 1445 1446 1447 1448 1449 1449 1450 1451 1452 1453 1454 1455 1456 1457 1458 1459 1459 1460 1461 1462 1463 1464 1465 1466 1467 1468 1469 1469 1470 1471 1472 1473 1474 1475 1476 1477 1478 1479 1479 1480 1481 1482 1483 1484 1485 1486 1487 1488 1489 1489 1490 1491 1492 1493 1494 1495 1496 1497 1498 1498 1499 1499 1500 1501 1502 1503 1504 1505 1506 1507 1508 1509 1509 1510 1511 1512 1513 1514 1515 1516 1517 1518 1519 1519 1520 1521 1522 1523 1524 1525 1526 1527 1528 1529 1529 1530 1531 1532 1533 1534 1535 1536 1537 1538 1539 1539 1540 1541 1542 1543 1544 1545 1546 1547 1548 1549 1549 1550 1551 1552 1553 1554 1555 1556 1557 1558 1559 1559 1560 1561 1562 1563 1564 1565 1566 1567 1568 1569 1569 1570 1571 1572 1573 1574 1575 1576 1577 1578 1579 1579 1580 1581 1582 1583 1584 1585 1586 1587 1588 1589 1589 1590 1591 1592 1593 1594 1595 1596 1597 1598 1598 1599 1599 1600 1601 1602 1603 1604 1605 1606 1607 1608 1609 1609 1610 1611 1612 1613 1614 1615 1616 1617 1618 1619 1619 1620 1621 1622 1623 1624 1625 1626 1627 1628 1629 1629 1630 1631 1632 1633 1634 1635 1636 1637 1638 1639 1639 1640 1641 1642 1643 1644 1645 1646 1647 1648 1649 1649 1650 1651 1652 1653 1654 1655 1656 1657 1658 1659 1659 1660 1661 1662 1663 1664 1665 1666 16



UNCLASSIFIED

SOW Ref: 16.F.5.d



SHIPPING MANIFEST

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

NON NEGOTIABLE

Filled By: PSHEPPARD	Date: Sep 27, 2018, 1:19 PM	TCN-38802		
Ship To: QIKIQTAALUK ENVIRONMENTAL (QE) C/O VEOLIA 2630, BOUL. INDUSTRIEL CHAMBLY, QC, J3L 4V2 1-866-634-6367	From: BAF-3, BREVOORT ISLAND, DND Storeroom Raytheon Canada Limited, NWS LSS Iqaluit, P.O. Box 1089 Iqaluit, NU, X0A 0H0 867-979-4818	Priority 0		
Attention:	Attention:			
Carrier: NEAS	Routing:	Waybill #: 1	Total Pcs. 1	Total Weight: 600 LBS
QTY Order	Type Line Weight	Item Item Description	WO or PO B/Code or S/N	Remarks
0				*Original Asset 349538 was duplicated on TCN 38600. Created new Asset 350464.
2	3005411	WASTE - GLYCOL SOAKED ABSORBENT		ASSET 349538 / 349550
NOTE: All claims related to this shipment have to be filled with Raytheon within 45 hours of receipt.			Received By:	Date
			Received By:	Date

Figure 3: NWS Shipping Manifest TCN-38802



SHIPPING MANIFEST

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

NON NEGOTIABLE

Filled By: PSHEPPARD	Date: Sep 27, 2018, 1:22 PM	TCN-38804		
Ship To: QIKIQTAALUK ENVIRONMENTAL (QE) C/O VEOLIA 2630, BOUL. INDUSTRIEL CHAMBLY, QC, J3L 4V2 1-866-634-6367	From: BAF-3, BREVOORT ISLAND, DND Storeroom Raytheon Canada Limited, NWS LSS Iqaluit, P.O. Box 1089 Iqaluit, NU, X0A 0H0 867-979-4818	Priority 0		
Attention:	Attention:			
Carrier: NEAS	Routing:	Waybill #: 1	Total Pcs. 1	Total Weight: 1700 LBS
QTY Order	Type Line Weight	Item Item Description	WO or PO B/Code or S/N	Remarks
4	2002344	WASTE - GLYCOL (DRUM)		ASSET 345335 / 348998 / 348999 / 348149
NOTE: All claims related to this shipment have to be filled with Raytheon within 45 hours of receipt.			Received By:	Date
			Received By:	Date

Figure 4: NWS Shipping Manifest TCN-38804

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SOW Ref: 16.F.5.d



SHIPPING MANIFEST

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

NON NEGOTIABLE

Filled By: PSHEPPARD	Date: Sep 27, 2018, 1:27 PM	TCN-38807			
Ship To: QIKIQTAALUK ENVIRONMENTAL (QE) C/O VEOLIA 2630, BOUL. INDUSTRIEL CHAMBLY, QC, J3L 4V2 1-866-634-6367		From: BAF-3, BREVOORT ISLAND, DND Storeroom Raytheon Canada Limited, NWS LSS Iqaluit, P.O. Box 1089 Iqaluit, NU, X0A 0H0 867-979-4818	Priority 0		
Attention:	Attention:				
Carrier: NEAS	Routing:	Waybill #:	Total Pcs. 1	Total Weight: 800 LBS	
QTY Order	Type Line Weight	Item Item	Description	WO or PO B/Code or S/N	Remarks
0					*Original Asset 341703 was listed as a Communications Cable (item 4001333) on TCN 38807. Created new Asset 350460.
2		2002406	WASTE - OIL, 45 GAL	ASSET 350460 / 345333	
NOTE: All claims related to this shipment have to be filled with Raytheon within 45 hours of receipt.				Received By:	Date
				Received By:	Date

Figure 5: NWS Shipping Manifest TCN-38807



SHIPPING MANIFEST

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

NON NEGOTIABLE

Filled By: PSHEPPARD	Date: Sep 27, 2018, 1:29 PM	TCN-38808			
Ship To: QIKIQTAALUK ENVIRONMENTAL (QE) C/O VEOLIA 2630, BOUL. INDUSTRIEL CHAMBLY, QC, J3L 4V2 1-866-634-6367		From: BAF-3, BREVOORT ISLAND, DND Storeroom Raytheon Canada Limited, NWS LSS Iqaluit, P.O. Box 1089 Iqaluit, NU, X0A 0H0 867-979-4818	Priority 0		
Attention:	Attention:				
Carrier: NEAS	Routing:	Waybill #:	Total Pcs. 1	Total Weight: 800 LBS	
QTY Order	Type Line Weight	Item Item	Description	WO or PO B/Code or S/N	Remarks
2		2002406	WASTE - OIL, 45 GAL	ASSET 346588 / 346587	
NOTE: All claims related to this shipment have to be filled with Raytheon within 45 hours of receipt.				Received By:	Date
				Received By:	Date

Figure 6: NWS Shipping Manifest TCN-38808

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SOW Ref: 16.F.5.d

SHIPPING MANIFEST						
Suite 3000, 400 Cooper Street, Ottawa, ON K2P 2H8						
NON NEGOTIABLE						
Filled By: PSHEPPARD Date: Sep 27, 2018, 1:32 PM						
TCN-38810						
Ship To: QIKIQTAALUK ENVIRONMENTAL (QE) C/O VEOLIA 2630, BOUL. INDUSTRIEL CHAMBLY, QC, J3L 4V2 1-866-634-6367	From: BAF-3, BREVOORT ISLAND, DND Storeroom Raytheon Canada Limited, NWS LSS Iqaluit, P.O. Box 1089 Iqaluit, NU, X0A 0H0 867-979-4818					
Priority 0						
Attention:	Attention:					
Carrier: NEAS	Routing:					
Waybill #:	Total Pcs.	Total Weight:				
	1	850 LBS				
QTY Order	Type Line Weight	Item Item	Description	WO or PO	B/Code or S/N	Remarks
2		2002344	WASTE - GLYCOL (DRUM)	ASSET 349000 / 349001		
NOTE: All claims related to this shipment have to be filled with Raytheon within 45 hours of receipt.				Received By:	Date	
				Received By:	Date	

Figure 7: NWS Shipping Manifest TCN-38810

SHIPPING MANIFEST						
Suite 3000, 400 Cooper Street, Ottawa, ON K2P 2H8						
NON NEGOTIABLE						
Filled By: PSHEPPARD Date: Sep 28, 2018, 2:19 PM						
TCN-38828						
Ship To: QIKIQTAALUK ENVIRONMENTAL (QE) C/O VEOLIA 2630, BOUL. INDUSTRIEL CHAMBLY, QC, J3L 4V2 1-866-634-6367	From: BAF-3, BREVOORT ISLAND, DND Storeroom Raytheon Canada Limited, NWS LSS Iqaluit, P.O. Box 1089 Iqaluit, NU, X0A 0H0 867-979-4818					
Priority 0						
Attention:	Attention:					
Carrier: NEAS	Routing:					
Waybill #:	Total Pcs.	Total Weight:				
	1	850 LBS				
QTY Order	Type Line Weight	Item Item	Description	WO or PO	B/Code or S/N	Remarks
2		2002344	WASTE - GLYCOL (DRUM)	ASSET 346932 / 346931		
NOTE: All claims related to this shipment have to be filled with Raytheon within 45 hours of receipt.				Received By:	Date	
				Received By:	Date	

Figure 8: NWS Shipping Manifest TCN-38828

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SHIPPING MANIFEST

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

NON NEGOTIABLE

Filled By: PSHEPPARD	Date: Sep 28, 2018, 2:20 PM	TCN-38829			
Ship To: QIKIQTAAULK ENVIRONMENTAL (QE) C/O VEOLIA 2630, BOUL. INDUSTRIEL CHAMBLY, QC, J3L 4V2 1-866-634-6367	From: BAF-3, BREVOORT ISLAND, DND Storeroom Raytheon Canada Limited, NWS LSS Iqaluit, P.O. Box 1089 Iqaluit, NU, X0A 0H0 867-979-4818	Priority 0			
Attention:	Attention:				
Carrier: NEAS	Routing:	Waybill #:	Total Pcs. 1	Total Weight: 800 LBS	
QTY Order	Type Line Weight	Item Item	Description	WO or PO B/Code or S/N	Remarks
2		2002406	WASTE - OIL, 45 GAL	ASSET 348126 / 345333	
0				*Original Asset 345333 was duplicated on TCN 38807, Created new Asset 350461.	
NOTE: All claims related to this shipment have to be filled with Raytheon within 45 hours of receipt.			Received By:	Date	
			Received By:	Date	

Figure 9: NWS Shipping Manifest TCN-38829



SHIPPING MANIFEST

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

NON NEGOTIABLE

Filled By: PSHEPPARD	Date: Sep 28, 2018, 2:23 PM	TCN-38831			
Ship To: QIKIQTAAULK ENVIRONMENTAL (QE) C/O VEOLIA 2630, BOUL. INDUSTRIEL CHAMBLY, QC, J3L 4V2 1-866-634-6367	From: BAF-3, BREVOORT ISLAND, DND Storeroom Raytheon Canada Limited, NWS LSS Iqaluit, P.O. Box 1089 Iqaluit, NU, X0A 0H0 867-979-4818	Priority 0			
Attention:	Attention:				
Carrier: NEAS	Routing:	Waybill #:	Total Pcs. 1	Total Weight: 550 LBS	
QTY Order	Type Line Weight	Item Item	Description	WO or PO B/Code or S/N	Remarks
2		2002356	WASTE - OIL FILTERS	ASSET 345334 / 340466	
NOTE: All claims related to this shipment have to be filled with Raytheon within 45 hours of receipt.			Received By:	Date	
			Received By:	Date	

Figure 10: NWS Shipping Manifest TCN-38831

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SOW Ref: 16.F.5.d

SHIPPING MANIFEST				
Suite 3000, 400 Cooper Street, Ottawa, ON K2P 2H8				
NON NEGOTIABLE				
Filled By: PSHEPPARD	Date: Sep 28, 2018, 2:27 PM			
TCN-38832				
Ship To: QIKIQTAAULK ENVIRONMENTAL (QE) C/O VEOLIA 2630, BOUL. INDUSTRIEL CHAMBLAY, QC, J3L 4V2 1-866-634-6367	From: BAF-3, BREVOORT ISLAND, DND Storeroom Raytheon Canada Limited, NWS LSS Iqaluit, P.O. Box 1089 Iqaluit, NU, X0A 0H0 867-979-4818			
Priority 0				
Attention:	Attention:			
Carrier: NEAS	Routing:			
Waybill #:	Total Pcs.	Total Weight:		
	1	550 LBS		
QTY Order	Type Line Weight	Item Description	WO or PO B/Code or S/N	Remarks
0				*Original Asset 340363 was listed as an RF Amplifier in NC-USAF (item 1070692) on TCN 38832. Created new Asset 350459.
2	2002356	WASTE - OIL FILTERS		ASSET 350459 / 349350
NOTE: All claims related to this shipment have to be filled with Raytheon within 45 hours of receipt.			Received By:	Date
			Received By:	Date

Figure 11: NWS Shipping Manifest TCN-38832

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SOW Ref: 16.F.5.d

ANNEX B: LOCATION OF LANDFILL WITH COORDINATES



Coordinates of Landfill Location: 63° 20' 30.00"N, 64° 10' 02.00"W

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SOW Ref: 16.F.5.d

ANNEX C: SEWAGE EFFLUENT OUTFALL (BAF-2) LOCATION WITH COORDINATES



Coordinates of Sewage Outfall
Location (BAF-2):
63° 20' 21.40"N,
64° 09' 26.63"W

Coordinates of Sewage Outfall Location (BAF-2): 63° 20' 21.40"N, 64° 09' 26.63"W

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ANNEX D: ANALYSIS OF DISCHARGED SEWAGE EFFLUENT

The sewage outfall sump was sampled three times in 2018. The samples were analysed for the parameters listed in the water licence Part J, Item 3.

Table D-1: Summary of Analysis of Discharged Sewage Effluent at BAF-3 in 2018

Sample Date	Parameter				
	pH	Oil and Grease (Present - P / Absent - A)	Biological Oxygen Demand (mg/L)	Total Suspended Solids (mg/L)	Faecal Coliforms
24-Jul-18	7.86	A	334	70	422,333,333
26-Aug-18	7.28	A	402	249	192,000
25-Oct-18	7.33	A	534	965	3,990,000

eurofins | Environment Testing

Certificate of Analysis

Client: Raytheon Canada Limited Ottawa
400 Cooper St.
Ottawa, ON
K2P 2H8
Attention: Mr. Will Wyman
PO#: 002160-OT
Invoice to: Raytheon Canada Limited Ottawa

Report Number: 1813439
Date Submitted: 2018-07-31
Date Reported: 2018-08-08
Project:
COC #: 182255

					Lab I.D.	1377652
					Sample Matrix	Sewage
					Sample Type	2018-07-24
					Sampling Date	Sewage Lagoon
					Sample I.D.	BAF3 (1)
Group	Analyte	MRL	Units	Guideline		
General Chemistry	BOD5	1	mg/L			
	pH	1.00				
	Total Suspended Solids	2	mg/L			
Oil and Grease	Oil & Grease - Mineral	1	mg/L			
	Oil & Grease - Non-mineral	1	mg/L			
	Oil & Grease - Total	1	mg/L			
	Visible Sheen		P/A			

* = 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

Figure 12: 24-Jul-2018 sewage effluent results, Page 1 of 2

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Environment Testing

Certificate of Analysis

Client: Raytheon Canada Limited Ottawa
400 Cooper St.
Ottawa, ON
K2P 2H8
Attention: Mr. Will Wyman
PO#: 002160-OT
Invoice to: Raytheon Canada Limited Ottawa

Report Number: 1813436
Date Submitted: 2018-07-31
Date Reported: 2018-08-02
Project:
COC #: 183355

Group	Analyte	MRL	Units	Guideline	Lab I.D. Sample Matrix Sample Type Sampling Date Sample I.D.	1377636 Sewage	1377637 Sewage	1377638 Sewage
Others	Faecal Coliforms	0	ct/100mL		2018-07-24 Sewage Lagoon BAF-3 A	463000000	398000000	406000000

Figure 13: 24-Jul-2018 sewage effluent results, Page 2 of 2

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Environment Testing

Certificate of Analysis

Client: Raytheon Canada Limited Ottawa
400 Cooper St.
Ottawa, ON
K2P 2H8
Attention: Mr. Will Wyman
PO#: 002160-OT
Invoice to: Raytheon Canada Limited Ottawa

Report Number: 1815572
Date Submitted: 2018-08-29
Date Reported: 2018-09-07
Project: BAF-3
COC #: 162787

Group	Analyte	MRL	Units	Guideline	Lab I.D. Sample Matrix Sample Type Sampling Date Sample I.D.	1384074 Sewage 2018-08-26 B3 Sewage
General Chemistry	BOD5	1	mg/L	402		
	pH	1.00		7.28		
Oil and Grease	Total Suspended Solids	2	mg/L	249		
	Oil & Grease - Mineral	1	mg/L	25		
	Oil & Grease - Non-mineral	1	mg/L	155		
	Oil & Grease - Total	1	mg/L	180		
	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

146 Colonnade Rd. Unit 8, Ottawa, ON K2E 7Y1

Page 2 of 3

Figure 14: 26-Aug-2018 sewage effluent results, Page 1 of 2



Environment Testing

Certificate of Analysis

Client: Raytheon Canada Limited Ottawa
400 Cooper St.
Ottawa, ON
K2P 2H8
Attention: Mr. Will Wyman
PO#: 002160-OT
Invoice to: Raytheon Canada Limited Ottawa

Report Number: 1815525
Date Submitted: 2018-08-29
Date Reported: 2018-08-30
Project: BAF-3
COC #: 162787

Group	Analyte	MRL	Units	Guideline	Lab I.D. Sample Matrix Sample Type Sampling Date Sample I.D.	1383887 Sewage 2018-08-26 B3 Sewage 4
Others	Faecal Coliforms	0	cf/100mL	192000		

Figure 15: 26-Aug-2018 sewage effluent results, Page 2 of 2

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SOW Ref: 16.F.5.d



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Client: Raytheon Canada Limited Ottawa
400 Cooper St.
Ottawa, ON
K2P 2H8
Attention: Mr. Will Wyman
PO#: 002160-OT
Invoice to: Raytheon Canada Limited Ottawa

Report Number: 1819861
Date Submitted: 2018-10-31
Date Reported: 2018-11-07
Project: COC #: 837383

Group	Analyte	MRL	Units	Guideline	Lab I.D. Sample Matrix Sample Type Sampling Date Sample I.D.
General Chemistry	BOD5	1	mg/L	534	1396340 Sewage
	pH	1.00		7.33	2018-10-25 BAF 3
	Total Suspended Solids	2	mg/L	965	
Oil and Grease	Oil & Grease - Mineral	1	mg/L	33	
	Oil & Grease - Non-mineral	1	mg/L	49	
	Oil & Grease - Total	1	mg/L	82	
	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

146 Colonnade Rd. Unit 8, Ottawa, ON K2E 7Y1

Page 2 of 3

Figure 16: 25-Oct-2018 sewage effluent results, Page 1 of 2

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SOW Ref: 16.F.5.d



Environment Testing

Certificate of Analysis

Client: Raytheon Canada Limited Ottawa
400 Cooper St.
Ottawa, ON
K2P 2H8
Attention: Mr. Will Wyman
PO#: 002160-OT
Invoice to: Raytheon Canada Limited Ottawa

Report Number: 1819854
Date Submitted: 2018-10-31
Date Reported: 2018-11-01
Project:
COC #: 837383

Lab I.D.	1396323	1396324
Sample Matrix	Sewage	Sewage
Sample Type		
Sampling Date	2018-10-25	2018-10-25
Sample I.D.	BAF3 #2	BAF3 #3

Group	Analyte	MRL	Units	Guideline		
Others	Faecal Coliforms	0	ct/100mL		3910000	4070000

Figure 17: 25-Oct-2018 sewage effluent results, Page 2 of 2

ANNEX E: ANALYSIS OF BERM WATER¹

Fuel tanks within the berms were demolished in 2012 and 2013, and the berms were intentionally breached in 2012 and 2015. As there are no intact berms, no effluent (berm water) samples (BAF-4) were taken in 2018 and this section has been left blank.

¹ Effluent from bermed fuel storage facilities.

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ANNEX F: MONITORING ACTIVITIES

A Jet A1 fuel release was discovered at the North Warning System BAF-3 radar station (Site) located on Brevoort Island, Nunavut, Canada on March 19, 2015. The tank involved in the release was immediately isolated by closing valves, an investigation was conducted to determine the extent of the release, and plans to address the release were prepared. Over the subsequent four summer field seasons of 2015 through 2018, extensive actions were taken to recover the released fuel, define the nature and extent of the release and remediate subsurface impacts.

Progress made to date has achieved several goals, including but not limited to:

1. completing an extensive additional soil, soil vapor, and water investigation to define the nature and extent of petroleum hydrocarbon impacts; this includes establishing and completing on-site laboratory testing and analyses;
2. ensuring minimal migration of non-aqueous phase liquid (NAPL) using engineering controls and booms in drainages;
3. construction and operation of soil vapor extraction (SVE) systems in two distinct areas of the release;
4. maximizing NAPL/fuel recovery, treatment, and analysis of recovered NAPL for reuse on-Site;
5. conducting soil treatment pilot testing, treatment evaluations, and construction of the soil treatment pile; and
6. construction, operation, and maintenance of a water treatment system to enable extracting subsurface water to mitigate migration of fuel and enhance recovery while maintaining compliance of discharge limits in the Site Water License. To date, over 11,200 liters (L) (2958 gallons [gal]) of NAPL has been recovered and collection and over 2,410,678 L (636,834 gal) of petroleum hydrocarbon contaminated water has been collected and treated.

Progress made during the 2018 field season achieved several goals and bolstered the pathway to Site closure, including but not limited to:

- Completing additional soil and water investigation to confirm continued attenuation of residual impacts and confirm the effectiveness of remediation programs implemented since the release in 2015;
- The deployment and application of additional hydrogen peroxide solutions in the RW-1 area, southern drainage, and northern drainage to remediate PHCs in place. A total of 6,050 L of hydrogen peroxide solution were injected and applied during the 2018 field season;
- Continued use of on-Site laboratory testing and analyses of soil allowing for real-time delineation and monitoring of remediation programs;
- Preparation of recovered mixed fuel/water waste for transport and off-Site disposal; and
- Continued mitigation of potential NAPL migration using engineering controls and booms in drainages.

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