Stantec Consulting Ltd.
Suite 400, 10220 – 103 Avenue NW, Edmonton, Alberta T5J 0K4

November 10, 2020
File: 110220512

Attention: Ms. Natalie Robinson
Environmental Services
Public Works and Government Services Canada
Room 759, 222 – 4 Avenue SE
Calgary, Alberta T2G 4X3
Natalie.robinson@pwgsc-tpsgc.gc.ca

Dear Ms. Robinson,

Reference: 2020 De-Watering Activities, Fire Training Area Land Treatment Unit, Cambridge Bay Airport, Cambridge Bay, Nunavut (Water License No. 1BR-FTA-1828)

Introduction

Stantec Consulting Ltd. (Stantec) completed the 2020 de-watering activities at the Fire Training Area (FTA) Land Treatment Unit (LTU) located at the Cambridge Bay Airport in Cambridge Bay, Victoria Island, Nunavut. The dewatering activities were completed under the authorization of Public Services and Procurement Canada (PSPC) on behalf of Transport Canada (TC). The FTA LTU is operated under the Nunavut Water Board (NWB) License No. 1BR-FTA-1828.

The Site location is presented as Figure 1 and a Site Plan is presented as Figure 2 of **Attachment A.**

De-Watering Activities

De-watering activities were managed remotely by Stantec. Qillaq Innovations (Qillaq) of Cambridge Bay, NU conducted the de-watering activities in the field. Qillaq pumped accumulated water from the southeast and northwest LTU sumps and, using two-inch diameter hoses, dispersed the water over the soil contained within the FTA LTU. Qillaq visually monitored the depth of water in the sump during the de-watering process to monitor de-watering progress and water absorption. Qillaq provided regular updates to Stantec including photographs at regular intervals (beginning of day, middle of day, and end of day prior to leaving site). De-watering activities were completed on August 5 and 7, 2020. Stantec Daily Field Reports are included in **Attachment B.**

Based on field measurements provided by Qillaq, Stantec estimated that the FTA-NW sump contained approximately 115 m^3 of water and the FTA-SE sump contained approximately 44 m^3 of water. Both sumps were de-watered onto the FTA LTU between August 5 and 7, 2020. After de-watering, Qillaq personnel noted that the FTA-NW sump had begun to re-charge; therefore, the FTA-NW sump was de-watered onto the FTA LTU a second time on August 7, 2020, prior to Qillaq leaving the site. An additional approximately 5 m^3 of water was de-watered from the FTA-NW sump during the second event.

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Sump dewatering volumes to date (2016 to 2020) are summarized in Table 1, below:

Table 1 Summary of Sump De-watering Volumes to Date (2016-2019)

Year	NW Sump Volume De-watered (m^3)	SE Sump Volume De-watered (m^3)
2020	115 (originally) 5 (after re-charge)	44
2019	141 (originally) 40 (after re-charge)	56 (originally) 6 (after re-charge
2018	135	50
2017	Volume not available	
2016	102 (NE Sump and SW Sump combined)	
*Sump dewatering volumes prior to 2016 were not available.		

Maintenance Observations

Qillaq visually assessed the FTA LTU, sump areas, and surrounding area under the direction of Stantec. At the time of the August 2020 work, surface water was observed adjacent to the LTU in the northwest corner. This observation is consistent with observations in previous years. The extent of the surface water is shown on Figure 2, **Attachment A.** Qillaq also noted that the berm in the southeast corner of the FTA LTU appeared to be lower in elevation that the surrounding berm and noted signs of erosion, potentially due to water flow over the berm when water levels were high, in the FTA-SE sump. Approximately 25 cm and 4 cm of sediment had accumulated in the FTA-SE and FTA-NW sump areas, respectively.

Limitations

This report documents work that was performed in accordance with generally accepted professional standards at the time and location in which the services were provided. No other representations, warranties or guarantees are made concerning the accuracy or completeness of the data or conclusions contained within this report, including no assurance that this work has uncovered all potential liabilities associated with the identified property.

This report provides an evaluation of selected environmental conditions associated with the identified portion of the property that was assessed at the time the work was conducted and is based on information obtained by and/or provided to Stantec at that time. There are no assurances regarding the accuracy and completeness of this information. All information received from the client or third parties in the preparation of this report has been assumed by Stantec to be correct. Stantec assumes no responsibility for any deficiency or inaccuracy in information received from others.

The opinions in this report can only be relied upon as they relate to the condition of the portion of the identified property that was assessed at the time the work was conducted. Activities at the property

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subsequent to Stantec's assessment may have significantly altered the property's condition. Stantec cannot comment on other areas of the property that were not assessed.

Conclusions made within this report consist of Stantec's professional opinion as of the time of the writing of this report and are based solely on the scope of work described in the report, the limited data available and the results of the work. They are not a certification of the property's environmental condition. This report should not be construed as legal advice.

This report has been prepared for the exclusive use of the client identified herein and any use by any third party is prohibited. Stantec assumes no responsibility for losses, damages, liabilities or claims, howsoever arising, from third party use of this report.

This report is limited by the following:

- The volume of water de-watered from the FTA LTU sumps is based on observations provided by a third party

The locations of any utilities, buildings and structures, and property boundaries illustrated in or described within this report, if any, including pole lines, conduits, water mains, sewers and other surface or sub-surface utilities and structures are not guaranteed. Before starting work, the exact location of all such utilities and structures should be confirmed and Stantec assumes no liability for damage to them.

The conclusions are based on the site conditions encountered by Stantec at the time the work was performed at the specific testing and/or sampling locations, and conditions may vary among sampling locations. Factors such as areas of potential concern identified in previous studies, site conditions (e.g., utilities) and cost may have constrained the sampling locations used in this assessment. In addition, analysis has been carried out for only a limited number of chemical parameters, and it should not be inferred that other chemical species are not present. Due to the nature of the investigation and the limited data available, Stantec does not warrant against undiscovered environmental liabilities nor that the sampling results are indicative of the condition of the entire site. As the purpose of this report is to identify site conditions which may pose an environmental risk; the identification of non-environmental risks to structures or people on the site is beyond the scope of this assessment.

Should additional information become available which differs significantly from our understanding of conditions presented in this report, Stantec specifically disclaims any responsibility to update the conclusions in this report

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Closure

We trust this report meets your requirements. If you have any questions or concerns, please contact the undersigned using the contact information below.

Regards,

Stantec Consulting Ltd.

REGISTERED PROFESSIONAL GEOSCIENTIST
L.S. VAN NOORTWYK
LICENSEE
NT/NU

10NOV2020

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Attachment: Attachment A - Figures
Attachment B – Daily Field Reports with Photographs

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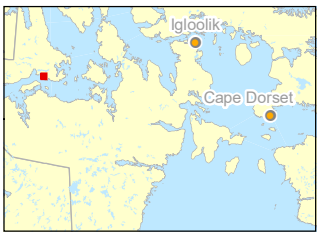
ATTACHMENT A

Figures



Site Feature

Land Parcel

PSPC – Public Services and Procurement Canada
TC – Transport Canada

0 250 500 metres
(At original document size of 8.5x11)
1:30,000

N

Notes

1. Coordinate System: NAD 1983 UTM Zone 13N
2. Data Sources: Geogratis, ©Department of Natural Resources Canada, All rights reserved.
3. Background: © 2020 Microsoft Corporation © 2020 Maxar ©CNES (2020) Distribution Airbus DS

Stantec

Project Location
Cambridge Bay
Nunavut

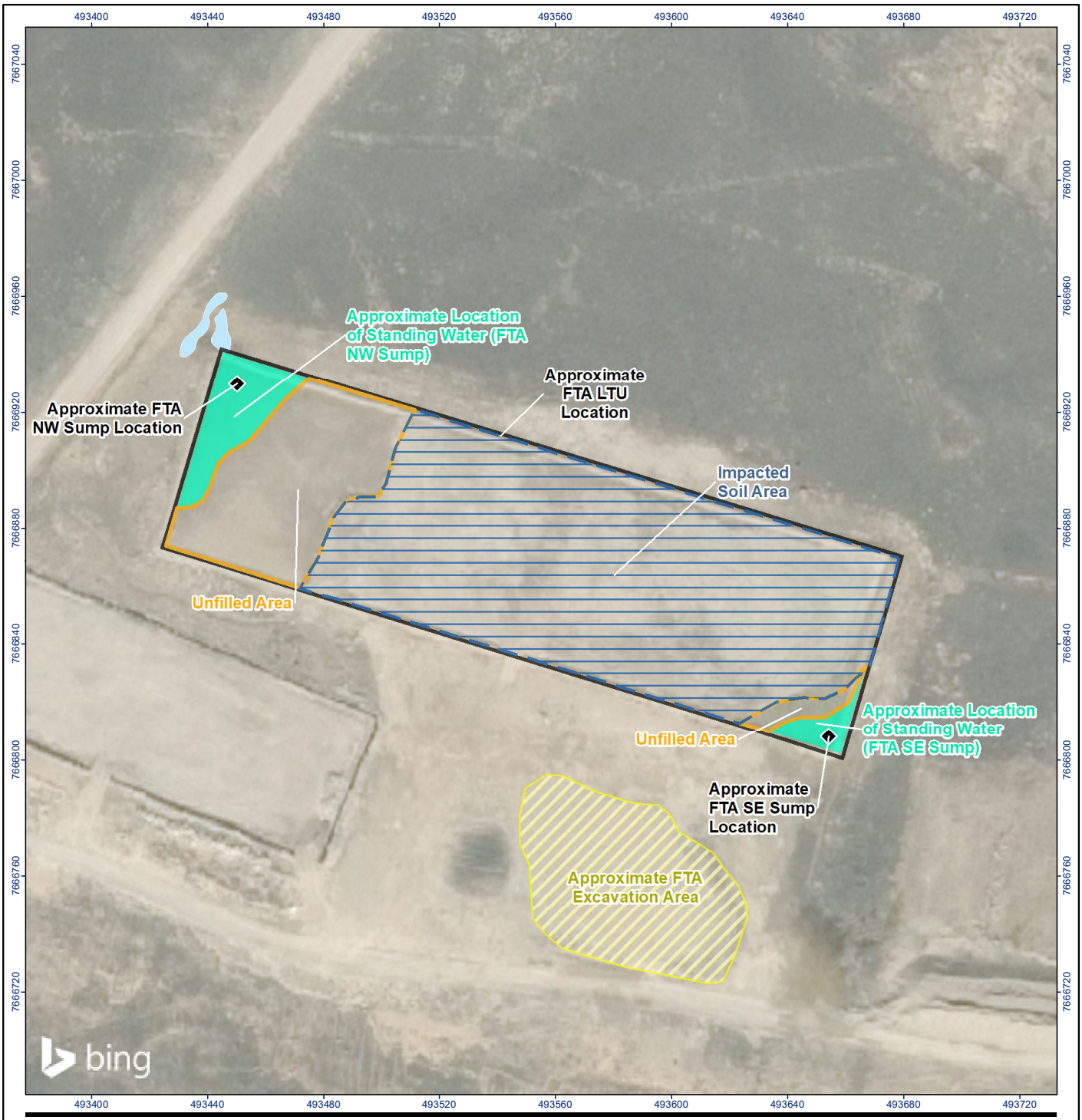
Prepared by DJ on 2020-09-01
QR by LVN on 2020-09-04
IR Review by MR on 2020-09-08

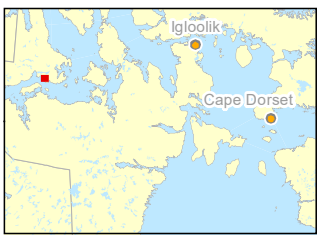
Client/Project 110220512
PSPC for TC
2020 De-Watering Activities, Fire Training Area Land Treatment Unit, Cambridge Bay Airport, Cambridge Bay, NU

Figure No.
1

Title
Site Location Plan

V:\1102\active\110220512\gis\figures\fta_fractual_report_2020\fig_1_site_location_plan.mxd Revised: 2020-09-11 By: sjwani





- Approximate LTU Boundary
- Approximate Location of Standing Water (FTA Sump)
- Impacted Soil Area
- Unfilled Area
- Approximate FTA Excavation Area
- Approximate Location of Standing Water (Outside of LTU Boundary)

0 25 50 metres

(At original document size of 8.5x11)
1:2,000

N

Notes

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PSPC – Public Services and Procurement Canada
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PSPC for TC
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2020 De-Watering Activities, Fire Training Area Land Treatment Unit, Cambridge Bay Airport, Cambridge Bay, NU

Figure No.
2

Title
Site Plan Showing Surface Water Extents

ATTACHMENT B

Daily Field Reports with Photographs

Daily Update Report	Date: 5 August 2020 Consultant Name: Stantec
Author | Luke Anderson	Project Site/ Name: Cambridge Bay FTA
Distribution	Natalie Robinson
Objective	Daily Field Report
Reporting Items	
TOPIC	**WORK ACTIVITY AND PROGRESS**
Start and End Time	7:00 to 17:00 on site, additional time in the office for sending photos and preparation of field report.
Field Personnel on site	Keith Howsam (Qillaq Innovations)
Daily Progress	Set-up pump at northwest sump at FTA LTU, completed pumping of sump water for NW sump (approximately 115 m^3 of water), reported activities, and sent photos to Stantec for documentation.
Planned Activities (next day)	None for FTA LTU (work occurring at Apron LTU)
Schedule field update	50 percent completed
Health/Safety Comments	Check in prior to starting work with Luke Anderson (Stantec) and Qillaq foreman, as well as mid day and prior to leaving site for safety.
Deviations from workplan	None
Notes Include visitors, Any equipment issues etc	Pump operated all day besides periods of refueling or adding hoses. Some surface water observed outside NW corner of LTU (similar to previous years observation)
Weather & ground cover conditions	14 degrees C, Sunny, 35 km/h wind

Photo 1 – Northwest FTA LTU Sump facing south prior to dewatering

Photo 2 – Water discharging onto FTA LTU

Photo 3 – Surface water observed adjacent to NW corner of FTA LTU

Photo 4 – Northwest FTA LTU sump upon completion of dewatering

2020AUG06 Cambridge Bay FTA LTU Daily Field Report

Daily Update Report	Date: 6 August 2020 Consultant Name: Stantec
Author | Luke Anderson	Project Site/ Name: Cambridge Bay FTA
Distribution	Natalie Robinson
Objective	Daily Field Report
Reporting Items	
TOPIC	**WORK ACTIVITY AND PROGRESS**
Start and End Time	15:30 to 17:00
Field Personnel on site	Keith Howsam (Qillaq Innovations)
Daily Progress	Set-up pump at southeast FTA LTU sump, documented recharge and absorption 24 hours after dewatering of NW FTA LTU sump completed
Planned Activities (next day)	Dewater SE FTA LTU sump, document recharge and absorption conditions
Schedule field update	55 percent completed
Health/Safety Comments	Ensure safe lifting techniques used when carrying pump and semi-rigid hose
Deviations from workplan	None
Notes Include visitors, Any equipment issues etc	Pump and hoses left on site in an out of site location overnight
Weather & ground cover conditions	13 degrees C, Sunny

Photo 1 – Northwest FTA LTU Sump facing north at 12:00 noon, showing limited recharge

Photo 2 – FTA LTU facing northwest at 12:00 noon showing slight pooling of water and good absorption following dewatering the previous day

Daily Update Report	Date: 7 August 2020 Consultant Name: Stantec
Author | Luke Anderson	Project Site/ Name: Cambridge Bay FTA
Distribution	Natalie Robinson
Objective	Daily Field Report
Reporting Items	
TOPIC	**WORK ACTIVITY AND PROGRESS**
Start and End Time	7:00 to 12:30 and 15:00 to 17:00
Field Personnel on site	Keith Howsam (Qillaq Innovations)
Daily Progress	Pumped approximately 44 m^3 of water at SE FTA LTU sump until dry, documented absorption, returned and pumped approximately 5 m^3 of water that had recharged at NW LTU sump, packed up equipment, documented approximately 25 cm of sediment in SE sump (similar to conditions observed in 2019)
Planned Activities (next day)	None
Schedule field update	100 percent completed
Health/Safety Comments	Discussed importance of not leaving any equipment onsite once work complete
Deviations from workplan	Pumped NW LTU sump a second time while equipment was still on site
Notes Include visitors, Any equipment issues etc	Approximately 25 cm of sediment is estimated to be in the SE sump (consistent with previous year). Berm in the south east corner of the FTA SE Sump appears lower than adjacent berm. It appears that water potentially flowed over the berm at some time in the last year. No surface water observed outside the LTU adjacent to the berm in the southeast corner.
Weather & ground cover conditions	14 degrees C, Partly Cloudy

Photo 1 – Southeast FTA LTU Sump prior to dewatering (facing east)

Photo 2 – SE FTA LTU sump showing decreasing berm height in corner of LTU (facing northeast)

Photo 3 – SE FTA LTU sump upon completion of dewatering (facing north)

Photo 4: NW FTA LTU sump recharge two days after dewatering (facing south)

Photo 5: NW FTA LTU following second dewatering (facing north)

Photo 6: FTA LTU facing northeast showing sufficient water absorption and evaporation

Photo 7: Area adjacent to southeast corner extent of FTA LTU facing east from top of berm, showing no observed surface water

Photo 8: Southeast corner of FTA LTU facing west from area east of FTA LTU