IQALUIT INTERNATIONAL AIRPORT IMPROVEMENT PROJECT
Iqaluit, NU - Canada

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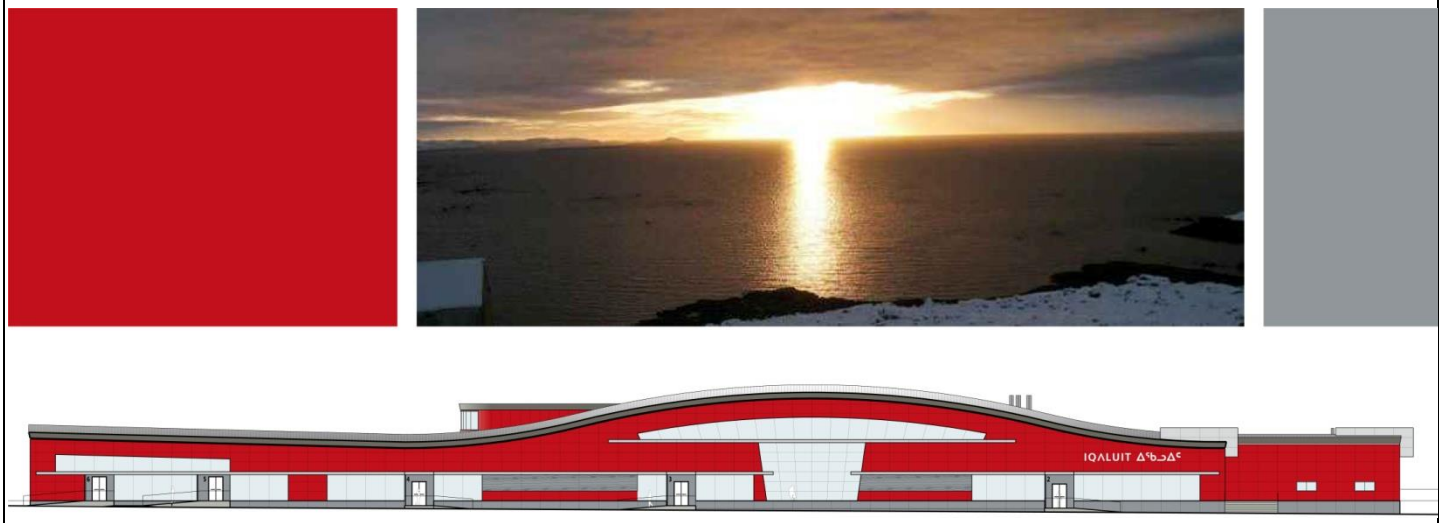

ORIGINATOR

ARCTIC INFRASTRUCTURE LIMITED PARTNERSHIP

TITLE

Iqaluit International Airport Improvement Project
Annual Environmental Report 2017
Water License No. 1BR-IIA1518

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REVISION STATUS

REV	DESCRIPTION OF CHANGES	PAGE/SECTION	DATE
0	First Issue	All	2018-03-19
1	Second Issue	Sections 2.5 and 2.11	2018-04-04
2	Final Issue to NWB	Title Page	2018-04-12

The following files are attached to the report as Appendices:

A. AILP_2017 Daily Water Consumption from IIA-2
B. QE17-160-2_Iqaluit Airport Sampling Campaign_F1_17-11-16_cm_kaf
C. Qikiqtaaluk Environmental_2017 Water Quality Monitoring
D. 2017 Holding Basin Soil Test Results
E. DFO_2017 IIAIP Fish Habitat Improvement Measures
F. City of Iqaluit_2017 Records of Confirmation of Proper Disposal of Backhauled Wastes
G. Qikiqtaaluk Environmental_2017 QA-QC Procedures for Sampling Program

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1. SUMMARY

On August 11th, 2015, Arctic Infrastructure Limited Partnership obtained a type B Nunavut Water Board water licence for the implementation of the Iqaluit International Airport Improvement Project (IIAIP). This annual report logs actions and procedures that followed the licence released to AILP for the reporting period of 2017.

Firstly, a reminder that a new cover of the impermeable containment cell enclosing petroleum hydrocarbons and arsenic impacted soils was installed in 2016. This geomembrane cover, which is made of a durable material, was placed over the previous temporary cover. This work was completed in July 2016.

Secondly, the 2017 water consumption to support construction activities, as described under the licence, secured from one source at the inner-field of the airport, amounted to a total volume of 2,435 m^3 through the period from June to August. The water was used on Site for spraying over aggregates to reach engineering specifications and for dust suppression.

Thirdly, water samplings performed on Site showed that the Project did not affect the quality of any water body with contaminants.

Lastly, internal audits were performed to improve the application of the licence's requirements and all petroleum-contaminated materials, other than aggregates, were shipped down South to licensed disposal facilities.

AILP believes that the water use and wastes management performed in 2017 were well under control and compliant with the licence conditions which are further described in this report and supported by the related appendices.

2. 1BR-IIA1518 ANNUAL REPORT LICENCE CONDITIONS

2.1. Timetable Update - NWB Water Licence Type B #1BR-IIA1518

An official 2017 timetable with the actual dates of completion:

	Start	Finish
Water Samplings at water extraction points	17-06-17	30-09-17
Quality monitoring from well water samplings	21-09-17	21-09-17
Water samplings upstream and downstream of Civil works	17-06-17	30-09-17
IIAIP Fish Habitat Improvement Measures	05-07-17	23-07-17

Table 1: 2017 Timetable Update – NWB Water Licence Type B #1BR-IIA1518

2.2. Soil and Groundwater Management Plan (SGMP) Updates

No updates were brought to the SGMP and its associated plans as the construction activities remained the same essentially as in 2015.

2.3. Water Use

2.3.1. Daily, Monthly and Annual Quantities of Water Obtained from All Sources

Water used during the 2017 construction season for the Civil component of the International Iqaluit Airport Improvement Project was in majority consumed from the Iqaluit airport extraction location IIA-2.

Table 2 summarizes the water use throughout the 2017 construction season for the IIAIP. The total consumption of water from the identified source is equal to 2,435 m^3 over a period of 57 days. Details of the daily consumption are found in the report enclosed in Appendix A.

Month	Quantity (m^3)	Source
June	980	IIA-2
July	1,215	IIA-2
August	240	IIA-2
TOTAL	2,435	IIA-2

Table 2: Volume of extracted water from a source under the licence

2.4. Water Flow

2.4.1. Daily Water Flow

Daily water flow was not calculated for 2017 since no construction activities were performed in a watercourse during the reporting period.

2.5. Monitoring Program

2.5.1. Soil Sampling

2.5.1.1. Containment Cell

Soil samplings were conducted on the containment cell in 2017 as per attached document titled "*QE17-160-2_Iqaluit Airport Sampling Campaign_F1_17-11-16_cm_kaf.pdf*" (Appendix B). This environmental work was conducted by Qikiqtaaluk Environmental in 2017 in preparation for planned containment cell remediation and restoration activity in the summer of 2018.

2.5.2. Water Sampling

In 2017, sampling of the Project's locations for water extraction, water courses monitoring program, and groundwater monitoring program was performed by the environmental consultant Qikiqtaaluk Environmental. Results from the water quality monitoring programs showed that the construction activities did not bring an adverse effect to the waters' quality (please see the summary of the results in the Table below and the report enclosed in Appendix C).

All four (4) monitoring well samplings respected all guideline values provided in the Project's water licence at the exception of MW-2 where there was an exceedance (please see the summary of the results in the Table below and the report enclosed in Appendix C).

Monitoring Station	Description	Frequency (date)	Exceedances	
IIA-1a; IIA-1b; IIA-1c; IIA-1d; IIA-1e; IIA-1f	Discharge Points for Holding Basins	No discharge under the licence.	Not applicable	
IIA-2	Inner Field Ditch Point 1 Water Source	2017-06-21	Iron	Volume of water use: 2,435 m^3
		2017-07-22	None*	
		2017-08-21	None*	
IIA-3	Inner Field Ditch Point 2 Water Source	Water source was not used.	No sampling.	
IIA-4	Backup Water Extraction Point	Water source was not used.	No sampling.	
IIA-4.1	Backup Water Extraction Point	Water source was not used.	No sampling.	
IIA-4.2	Backup Water Extraction Point	Water source was not used.	Aluminum, Iron and Zinc	
IIA-5	Carney Creek Upstream Project Area	2017-06-17	Aluminum, Copper, Iron and Zinc	
		2017-09-30	None*	

Monitoring Station	Description	Frequency (date)	Contaminants
IIA-6	Start of Inner Field Drainage Ditch	2017-06-17	None*
		2017-09-30	None*
IIA-7 (*ARCH BL)*	Carney Creek Downstream Project Area	2017-06-17	Zinc
		2017-09-30	Zinc
IIA-8	Inner Field Ditch Downstream Project Area	2017-06-17	Zinc
		2017-09-30	Iron and Zinc
IIA-9	Southern Inner Field Downstream Project Area	2017-06-17	Aluminium, Copper, Iron and Lead
		2017-09-30	Iron and Zinc
IIA-10	Groundwater monitoring station located beside and northwest of Containment Cell (MW1)	2017-09-21	Toluene
IIA-11	Groundwater monitoring station located beside and northeast of Containment Cell (MW2)	2017-09-21	None*
IIA-12	Groundwater monitoring station located beside and southeast of Containment Cell (MW3)	2017-09-21	None*
IIA-13	Groundwater monitoring station located beside and southwest of Containment Cell (MW4)	2017-09-21	None*

Table 3: Water Quality Monitoring Program Results

*Note: Respected all guideline values provided for the IIAIP water licence 1BR-IIA1518.

2.5.3. Water Holding Basins Sampling

Two holding basins, built on the inner-field premises, were utilised for impacted soils containment that pertained to the Drum Cache no. 2 (reference: 1BR-IIA1518 *SGMP*). Holding Basins were constructed in 2015 to contain water suspected of contamination but were never required for that purpose, and were rather utilized for containment of soils suspected of contamination.

Soils placed in water holding basins from 2015 and 2016 were retested for any remaining contamination by Qikiqtaaluk Environmental in 2017 with all soils testing below CCME thresholds, with no remedial action required for disposal. A sketch of soil locations and soil test results are included in Appendix D *"Holding Basin Soil Test Results"*. As noted in the 2015 Annual Report, soils in pile labeled "Pile 1A" on sketch were excavated in 2015, and at time of initial testing in 2015 showed an exceedance for Nickel using the 1999 guideline, but were later determined to be below threshold under the 2015 CCME revision for Nickel which superseded the 1999 guideline, and therefore required no further remedial action.

2.5.4. Review and Analysis of data generated under the Monitoring Program

Data from the monitoring program found and referred in this report was reviewed by all IIAIP parties including the Government of Nunavut.

2.5.5. Summary of any Abandonment and Restoration Work

2.5.5.1. The only abandonment work in 2017 was the removal of the water holding basins by Qikiqtaaluk Environmental which had never been required for that purpose, and all construction activity with potential to generate impacted water was completed in 2017.

2.5.5.2. Restoration was done in 2017 to abide with the Department of Fisheries and Oceans Canada (DFO) regulations and guidelines. The final report of the rehabilitation works and a letter of correspondence are available in Appendix E.

2.5.6. Updates or Revisions to Plans

As previously commented in section 2.2, no updates nor revisions were required to SGMP and its associated plans.

2.5.7. List of Unauthorized Discharges and Summary of Follow-up Actions Taken

To our knowledge, no unauthorized discharges occurred in 2017 within the IIAIP boundary.

2.5.8. Description of any Trenches and Sumps Excavated

No trenches, other than to install culverts as part of the Project, nor sumps to divert surface waters, were excavated in 2017 within the IIAIP boundary.

2.5.9. Public Consultation and Participation Report

No public consultation and participation report in 2017.

2.5.10. Brief summary of Work Done to Address Concerns or Deficiencies

An internal audit concerning AILP's NWB type B water licence was performed in September 2017. Results were reported to the Government of Nunavut. The audit report concluded that compliance with the license requirements was well managed.

2.5.11. Any other Details on Water Use or Waste Disposal

No additional details on water use or waste disposal other than previously mentioned.

2.6. Plans review

To our knowledge, no changes in operation and technology ensued in 2017 that would require review of any plans.

2.7. Records of all Waste Backhauled and Records of Confirmation of Proper Disposal of Backhauled Waste

The disposal records for backhauled wastes to the City of Iqaluit waste disposal site are enclosed in Appendix F. Also, the following Table describes the types of waste that were hauled to the landfill. Any contaminated soil or material have been shipped down south.

Waste Type	Volume (m^3)	Date
Wood	6	October 19, 2016
Non-contaminated construction fill	1	September 26, 2017
Cardboard	4	September 1, 2017
General Garbage	2	May 30, 2017
Non-contaminated construction fill	10	August 9, 2017

2.8. Fill Material Laboratory Analysis

No laboratory analysis was required for the use of fill material before or during the Project. The construction material is extracted from a neighbouring foothill which does not contain any clay.

2.9. Changes or Updates to the Plans Referred to in Part J of the c*onditions applying to the licence monitoring program*

No changes or updates to the plans referred to in part J of the *1BR-IIA1518* NWB type B Water Licence.

2.10. QA/QC Plan

Qikiqtaaluk Environmental plan for quality assurance and control (QA/QC) is presented in the Appendix G.

2.11. Report of the Engineer's Inspection Carried Out Under Part J, Item 18

Inspection of the containment cell that was done by Qikiqtaaluk Environmental as they performed the additional soil sampling. Containment cell cover was repaired with welded patches following soil sample extractions as noted in the attached QE report with sample results (Appendix B).