

# REHABILITATION OF ABANDONED MINERAL EXPLORATION SITES IN NUNAVIK

## 2015-2016 ACTIVITY REPORT



**Kativik Regional Government**

**Renewable Resources, Environment, Lands  
and Parks Department**

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The community of Kuujuaq contributed to the project again this year during the cleanup at the Gerido Lake site. The community of Kangisuk also participated in 2015 during the cleanup at site QC-3, located at Roberts Lake.

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## 1 INTRODUCTION

In 2001 and 2002, a verification of 193 possible abandoned mineral exploration sites was performed in the region of Nunavik. 90 of these sites were confirmed as such: 18 were classified as requiring major cleanup work, 27 needing intermediate cleanup work and 45 would require minor cleanup work.

In 2007, the mining industry recognized the need for action and created the Fonds Restor-Action Nunavik (FRAN) to assist in the rehabilitation of abandoned mineral exploration sites in Nunavik dating as far back as several decades. In October 2007, the KRG, Makivik Corporation, the MERN and the FRAN signed a formal contribution agreement that made it possible to proceed with the cleanup of the eighteen sites requiring major cleanup, using the expertise developed during previous pilot projects undertaken by the KRG. Furthermore, an amendment to this agreement signed in April 2012, has allowed for the rehabilitation work to continue and be extended to the group of sites requiring intermediate cleanup.

In January 2012, a report was published that provides, in greater detail, the history of this project and summarizes the rehabilitation work undertaken on a number of abandoned mineral exploration sites in Nunavik over a seven-year period, from 2005-2011 (KRG, 2012a). This report is available for download at <http://osiskogr.com/en/fonds-restor-action-nunavik-2/reports>.

In 2015-2016, cleanup work continued in the Nunavik region and the following report describes the rehabilitation activities carried out on the seven sites known as: WB-9, QC-3, SW-27, KV-1, Parent Lake, Gerido Lake and PJ-1 (Aupaluk). Appendix 1 includes five maps that indicate these and all the 90 confirmed abandoned mineral exploration sites in relation to nearby communities in Nunavik.



## 2 CONTRIBUTION AGREEMENT

In April 2012 an amendment to the agreement concerning the cleanup of abandoned mineral exploration sites in Nunavik was signed to allow for continued funding in order to extend rehabilitation activities until March 31, 2017. This funding has been and continues to be used to carry out the rehabilitation of sites requiring major and intermediate cleanup. The 2012-2017 General Response Plan (GPR) was prepared in consequence to the amendment, a summary of which will be presented in this report. The full version of the report was published by the KRG in May 2012 (KRG, 2012b) and is available for download at [www.krg.ca](http://www.krg.ca). The cost of the cleanup work in 2015-2016 was estimated at six hundred and ninety thousand, six hundred and twenty-six dollars (\$690,626).

As per the agreement, the KRG is responsible for the management of the cleanup work carried out on all sites covered under the contribution agreement. The KRG is also responsible for drafting a timetable and anticipated budget for each year of work and for ensuring that the concerned Inuit communities are adequately informed of the cleanup being performed.

Makivik Corporation contributes to the project by way of in-kind contribution in the form of marine and air transportation services for materials and labour to a maximum of two hundred thousand dollars (\$200,000).

In the first agreement (2007-2012), the FRAN participated through a financial and in-kind contribution of seven hundred and fifty thousand dollars (\$750,000). In the renewed agreement (2012-2017), the FRAN again contributed through a maximum financial and in-kind contribution of seven hundred and fifty thousand dollars (\$750,000).

The MERN provides a financial contribution towards the project of which the maximum is four million, one hundred thousand dollars (\$4.1 M).

### 3 SUMMARY OF PREVIOUS WORK

Since the launch of the rehabilitation project, 16 of the 18 sites requiring major cleanup have been completed. This work has been undertaken in collaboration with various Inuit communities in Nunavik, the Naskapi Nation of Kawawachikamach, the Innu Nation of Matimekush Lac-John, various active mining companies in the region and other Northern organizations. Table 1 provides a summary of the quantities of the waste removed from these sites from 2005-2015.

In 2011, the KRG Project Coordinator undertook inspections on a second group of sites classified as requiring intermediate cleanup. These 27 sites contain similar items found on the sites requiring major cleanup, only to a lesser extent. From 2006 to 2015 the KRG, various active mining companies and Cruise North Expeditions have initiated and completed cleanup on 25 of these sites. Table 2 provides a summary of the quantities of the waste removed from these sites from 2006-2015.

Table 3 indicates the current status for all the sites requiring major and intermediate cleanup to date.

**Table 1 Quantities of Waste Removed from the 18 Abandoned Mineral Exploration Sites Classified as Requiring Major Cleanup Work between 2005 and 2015**

Sector/ Site	Buildings burned or demolished (no.)	Equipment (no.)	Propane tanks (no.)	Reservoirs (no.)	Barrels (no.)	Diesel or other fuel (L)	Motor oil (L)	Grease	Other hazardous material	Transformers (T) or batteries (B) (no.)	Pipes, core trays, wood trunks (m <sup>3</sup> )	Debris (m <sup>3</sup> )
<b>Kawawachikamach</b>												
KAW-35	19	1 muskeg + various	0	5	1000	4000	0	0	Acid, solvents, paint, oil filters, extinguishers	15 B	500+	200+
KAW-45	5	0	0	0	12	30	0	0	Naptha	0	15+	5+
<b>Tasiujaq</b>												
PJ-1	3 + 5 platforms	30	80	10	403	5100	54	5 kg	Paint, antifreeze, extinguishers	2 T 20 B	150+	200+
TQ-1	0	1 snowmobile	6	0	30	500	0	0	0	1 B	20+	40+
TQ-4	2	1 drill	8	0	156	200	0	0	0	0	10+	10+
<b>Aupaluk</b>												
PJ-10	1 platform	0	15	1	74	1400	280	40 L	0	1 B	50+	25+
PJ-17	11	11	40	0	285	500	2000	1 pail	0	1 T; 6 B	75+	100+
<b>Kangirsuk</b>												
TW	2 platforms	1 pipe threader	11	0	83	1230	0	110 L 2 kg	0	0	30+	20+
<b>Kangisujuaq</b>												
K-28	1 tent	1 motor	15	2	70	2000	0	0	CaCl <sub>2</sub>	0	30+	25+
K-61	12	11	18	1	3600	5000	2	900 L	Acid, paint	5 B	150+	75+
WB-3	0	0	1	0	85	675	0	0	0	0	20+	5+
<b>Salluit</b>												
KV-1	0	0	0	0	50	0	0	0	0	0	30+	30+
SAL-1	6	0	15	0	336	1000	27	0	0	4 B	50+	10+
SW-27	TO BE COMPLETED											
SW-34	1 platform	0	42	0	1500	1000	0	0	Acid, powder, oil filters	20 B	50+	70+
SW-42	1	0	0	0	45	1000	12	0	0	0	10+	10+
WB-9	11	0	10	3	82	1300	10	0	ire extinguishers, cleaners, tar	1 B	100+	100+
<b>Umiujaq</b>												
WHA-1	9	0	0	0	28	280	0	0	Cleaners	0	50+	5+
<b>TOTAL</b>	<b>-</b>	<b>-</b>	<b>261</b>	<b>22</b>	<b>7 839</b>	<b>25 215</b>	<b>2 385</b>	<b>&gt;1 075 L</b>	<b>-</b>	<b>3 T; 73 B</b>	<b>1 340+</b>	<b>930+</b>

**Table 2 Quantities of Waste Removed from the 27 Abandoned Mineral Exploration Sites Classified as Requiring Intermediate Cleanup Work between 2006 and 2015**

Sector/ Site	Equipment (no.)	Propane tanks (no.)	Barrels (no.)	Diesel or other fuel (L)	Other hazardous material	Batteries (no.)	Debris
Kawawachikamach							
KAW-36			40	90			Wooden platform, plastic core trays, drilling pipes, old dumpsite, wood and metal debris
KAW-119			11				2 wooden platforms
KAW-59			3	20			4 wooden platforms 1 stove, 1 tarp, 1 canoe wood and metal debris
Kuujuaq							
Gerido Lake		4	300	43 drums			1 plastic reservoir 1 boat
P-24F		30 (small)	60	30			Wood and metal debris 2 stoves and pipes small dump site aluminium core trays
Tasiujaq							
TA-1		2	9				Wood debris Small dumpsite
TA-2			18				Aluminium core trays
TQ-6		2	10				3 stoves and pipes drilling pipes wood and metal debris small dumpsite cables and wires
TQ-10			1				3 large bladder 2 motors, tools metal debris
TQ-14		5	11			3	Drill rods, hoses
VP-11			20				Wooden debris from 3 collapsed buildings
Aupaluk							
G-2404-3		4	50				Bed frames, tent poles, dumpsite
PJ-17 A		5	64			3	
PJ-19			63				
Kangirsuk							
QC-3		0	22				Small debris, 20 drill rods
Kangiqsujaq							
I-32		1	30	820			1 dumpsite
K-27			20				Wood, wiring, piping
K-37	1 water heater		14				
K-49	1 plane	14	45				1 stove, piping, wood, wood and metal debris
KAN-1	1 helicopter		12	820		1	Helicopter debris (metal)
KAN-2	2 tripods, 1 drill, 1 motor, 1 winch				CaCl <sub>2</sub>		50 pipes
KAN-4			75				
KAN-6	INUIT CAMP						
KAN-7	muskeg	18	75				2 oxygen tanks, metal, wood
KAN-10		1	25				Metal and wood, core trays
Salluit							
Parent Lake			4				
SW-24	TO BE COMPLETED						
Umiujaq/Kuujuarapik							
GW-8	TO BE COMPLETED						
TOTAL	-	86	982	3 715	-	7	-

**Table 3      Status of Abandoned Mineral Exploration Sites Requiring Major and Intermediate Cleanup Work**

Site Name	Latitude	Longitude	Status
<b>SITES REQUIRING MAJOR CLEANUP</b>			
KAW-45	55° 33.68' N	67° 21.20' W	Cleaned
KAW-35	55° 13.94' N	66° 07.27' W	Cleaned
PJ-1	58° 57.71' N	69° 35.85' W	Cleaned
TQ-1	57° 57.68' N	69° 40.16' W	Cleaned
TQ-4	58° 15.23' N	70° 07.20' W	Cleaned
PJ-17	59° 20.29' N	69° 45.93' W	Cleaned
PJ-10	59° 15.07' N	70° 06.52' W	Cleaned
TW	60° 05.45' N	69° 55.48' W	Cleaned
K-28	61° 34.65' N	73° 14.75' W	Cleaned
K-61	61° 33.25' N	73° 27.25' W	Cleaned
WB-3	61° 29.41' N	72° 18.09' W	Cleaned
KV-1	61° 25.64' N	76° 45.46' W	Cleaned
SAL-1	61° 31.14' N	74° 53.01' W	Cleaned
SW-34	61° 34.90' N	74° 28.12' W	Cleaned
SW-27	61° 28.76' N	76° 22.93' W	Partially Cleaned
SW-42	61° 23.92' N	74° 34.40' W	Cleaned
WB-9	61° 27.35' N	74° 33.22' W	Partially cleaned
WHA-1	56° 24.06' N	75° 59.40' W	Cleaned
<b>SITES REQUIRING INTERMEDIATE CLEANUP</b>			
KAW-36	55° 15.02'	66° 09.46'	Cleaned
KAW-59	56° 17.80'	67° 49.00'	Cleaned
KAW-119	57° 37.48'	66° 45.77'	Cleaned
P-24F	57° 01.54'	68° 53.20'	Cleaned
TA-1	58° 16.80'	69° 50.19'	Cleaned
TA-2	58° 17.48'	69° 56.34'	Cleaned
TQ-6	58° 17.92'	69° 57.37'	Cleaned
TQ-10	58° 06.36'	70° 09.10'	Cleaned
TQ-14	58° 19.36'	70° 14.30'	Cleaned
VP-11	57° 48.59'	69° 31.75'	Cleaned
G-24N04-3	59° 11.57'	69° 49.86'	Cleaned
PJ-17A	59° 20.54'	69° 43.81'	Cleaned
PJ-19	59° 18.91'	69° 46.06'	Cleaned
QC-3	60° 21.55'	70° 09.33'	Cleaned
I-32	61° 43.12'	72° 54.94'	Cleaned
K-27	61° 36.24'	73° 19.89'	Cleaned
K-37	61° 31.07'	73° 37.44'	Cleaned
K-49	61° 28.70'	73° 49.70'	Cleaned
KAN-1	61° 32.19'	72° 57.90'	Cleaned
KAN-2	61° 32.51'	73° 31.11'	Cleaned
KAN-4	61° 30.92'	73° 40.18'	Cleaned
KAN-6	61° 28.94'	73° 49.50'	Cleaned
KAN-7	61° 28.48'	73° 49.93'	Cleaned
KAN-10	61° 31.58'	72° 49.30'	Cleaned
Parent Lake	61° 33.43'	75° 10.36'	Cleaned
SW-24	61° 18.75'	75° 44.00'	Untouched
GW-8	55° 05.09'	78° 15.51'	Untouched

## 4 GENERAL RESPONSE PLAN, 2012-2017

The *Agreement Concerning the Cleanup in Nunavik of Abandoned Mineral Exploration Sites Classified as "Major"*, originally signed in 2007 was amended in April 2012 to allow for continued funding for the rehabilitation activities being carried out on abandoned mineral exploration sites in Nunavik. This funding will not only be used to complete the cleanup work on the remaining sites requiring major cleanup but will also allow for the cleanup of sites classified as requiring intermediate work. The 2012-2017 General Response Plan was prepared as a result to the amendment and contains the following sections: a description of the cleanup work to be carried out before March 2017; the proposed work schedule; the proposed budget for the work; a description of human resources; and a few details concerning the communication of results.

A summary of the GRP is provided below. It is important to note that at the end of each year, the GRP is adjusted to better reflect the reality of the cleanup situation. The work schedule and budget presented in this activity report have therefore been adjusted from the original GRP since the end of the 2015-2016 season.

In 2015-2016, priority was given to completing work on the sites requiring major cleanup known as WB-9, KV-1 and SW-27, preparing material in Aupaluk for transportation by ship to a recycling facility in the south as well as rehabilitating sites requiring intermediate cleanup in the Kuujuaq, Kangirsuk and Salluit sectors.

In 2016-2017, the final year of the cleanup project, work will consist of completing efforts on any remaining sites requiring major or intermediate cleanup that were not rehabilitated in the previous years. This work will also include the production of a second 5-year summary report (2012-2017) and a presentation of the final results of the project to be made in Nunavik.

### 4.1 WORK TO BE COMPLETED UNDER THE GRP

In drafting the GRP, the work to be completed at sites requiring major or intermediate cleanup was broken down into the following categories: 1) field logistics, 2) the transportation and disposal of hazardous material, 3) the management of combustible non-toxic material, and 4) the management of non-combustible non-toxic material. Below is a brief summary of those categories.

#### 4.1.1 *Field Logistics*

Summer is the busiest and most productive cleanup season. It allows workers easier access to the material on the sites and a greater number of daylight hours to operate. Summer fieldwork involves the cutting up and crushing of barrels, the transfer of residues to undamaged barrels, the gathering of hazardous material and

waste, gathering of general debris, gathering and burning of combustible material, and facilitating, if necessary, the transportation of these materials during the winter.

Access by land, via all-terrain vehicles, may be possible after taking into account the distance between each site and the nearest villages as well as topographical conditions. However, generally speaking, most sites are accessed by helicopter or float plane. Winter work involves the transportation of materials if the sites are within proximity to a village and accessible by snowmobile.

#### *4.1.2 Transportation and Disposal of Hazardous Waste*

All recoverable hazardous materials are sent to an appropriate recovery facility south of the province via marine transportation. The transfer of residues to undamaged marine containers, labeling and preparing of the material for transportation is carried out during summer fieldwork.

#### *4.1.3 Management of Combustible Non-Toxic Material*

Combustible non-toxic material is burned or left to decompose at each site. This material includes wood as well as buildings constructed from wood, aluminum and mineral wool insulation. Pursuant to Section 22 of the *Regulation Respecting the Quality of the Atmosphere*, a certificate of authorization is required to burn wood, shacks and buildings. Prior to burning any building, all hazardous materials are removed including emergency lights (lead and Ni-Cd battery cells), smoke detectors, fluorescent ballasts and fire system accumulators (Ni-Cd battery cells). Non-combustible material is removed including asphalt shingles, heating stoves, refrigerators, stove-ovens, bed frames, etc. Material remaining after burning (tin, glass wool, iron and wire) is managed with the other waste at the site. It is also possible that petroleum hydrocarbons at the sites will be used to ignite combustible material. In such cases, a certificate of authorization will be required pursuant to Section 23 of the *Regulation Respecting the Quality of the Atmosphere* for the open-air burning of petroleum hydrocarbons, which the KRG obtained in 2008.

#### *4.1.4 Management of Non-Combustible Non-Toxic Material*

At most of the sites, non-combustible non-toxic material represents the greatest quantity of debris (empty barrels, equipment parts, domestic appliances, wire meshing, etc.) and is the least likely to be harmful to the environment or to jeopardize the health of animals and humans. Notwithstanding, such material adversely affects the appearance of the landscape. For this reason, wherever possible all waste is removed from the sites. Batteries, oil, antifreeze and tires will be removed from equipment, transported from the sites and treated as hazardous material.

## **4.2 WORK SCHEDULE**

Table 4 outlines the proposed work schedule for rehabilitation activities at the remaining sites requiring major and intermediate work, between April 1, 2012 and March 31, 2017. In order to facilitate the work, cleanup activities will be carried out, when possible, on sites located in the same sector. The table has been adjusted since the end of the 2015-2016 work season.



**Table 4 Tentative Work Schedule for 2012-2017 Cleanup Activities**

Site	Summer 2012	Winter 2012-2013	Summer 2013	Winter 2013-2014	Summer 2014	Winter 2014-2015	Summer 2015	Winter 2015-2016	Summer 2016	Winter 2016-2017
SW-34*										COMMUNITY TOUR
SW-27*										
WB-9*										
KV-1*										
KAW-35*										
PJ-1 (Aupaluk)*										
KAW-36										
KAW-59										
KAW-119										
P-24F										
TA-1										
TA-2										
TQ-6										
TQ-10										
TQ-14										
VP-11										
G-24N04-3										
PJ-19										
QC-3										
KAN-10	CR									
KAN-2	CR									
KAN-7	CR									
Parent Lake										
SW-24										
GW-8										

\*Major Site

### 4.3 ESTIMATED BUDGET, 2012-2017

Table 5 indicates the overall estimated yearly budget, as set out on the 2012-2017 GRP, for carrying out rehabilitation work on the remaining abandoned mineral exploration sites requiring major and intermediate work, as identified in the 2001-2002 inventory. It should be noted that adjustments to the budget are made at the end of each cleanup season to better reflect the work remaining on sites and in communities.

**Table 5 Estimated Yearly Budget for 2012-2017 Rehabilitation Activities**

YEAR	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017	TOTAL
<b>EXPENSES</b>						
Coordinator salary (General Contract)	\$44,000	\$35,000	\$30,000	\$10,000	\$11,000	\$150,000
Technician salary and benefits	\$36,000	\$35,000	\$30,000	\$8,000	\$5,000	\$125,000
Workers salaries	\$135,000	\$125,000	\$95,000	\$30,000	\$0	\$225,000
Professional/Technical salaries (General Contract)	\$20,000	\$0	\$0	\$0	\$0	\$30,000
Transportation of waste (via south)	\$110,000	\$15,000	\$0	\$0	\$0	\$126,000
Transportation of material/employees	\$115,000	\$140,000	\$140,000	\$60,000	\$0	\$436,000
Disposal of waste (General Contract)	\$25,000	\$50,000	60,000	\$10,000	\$0	\$125,000
Travel Airfare	\$45,000	\$65,000	\$70,000	\$10,000	\$70,000	\$99,000
Travel Expenses	\$50,000	\$115,000	\$130,000	\$20,000	\$70,000	\$57,000
Material/Equipment	\$55,000	\$65,000	\$65,000	\$10,000	\$10,000	\$63,000
Communication and translation	\$1,200	\$1,200	\$1,200	\$400	\$2,00	\$5,000
KRG training costs (Human Resources)	\$6,000	\$6,000	\$6,000	\$2,000	\$2,000	\$5,000
<b>Sub-total</b>	<b>\$642,200</b>	<b>\$652,200</b>	<b>\$627,200</b>	<b>\$160,400</b>	<b>\$170,000</b>	<b>\$2,252,000</b>
Administration (12%)	\$77,064	\$78,264	\$75,264	\$19,248	\$20,400	\$270,240
Weather Condition Provision (15%)	\$96,330	\$97,830	\$94,080	\$24,060	\$25,500	\$337,800
<b>TOTAL</b>	<b>\$815,594</b>	<b>\$828,294</b>	<b>\$796,544</b>	<b>\$203,708</b>	<b>\$215,900</b>	<b>\$2,860,040</b>

#### **4.4 HUMAN RESOURCES**

Human resources for the project fall into two categories: 1) KRG employees, which is to say the project coordinator and environmental or field technicians, and 2) local workers.

The project coordinator works full-time on the project while the environmental technician or field supervisor works part-time during the summer season and winter season if necessary. Experience acquired in the previous work terms suggests that it is absolutely necessary to have one and in some case two technicians on site to complete the cleanup according to the schedule and to allow for more consistent logistical planning by the coordinator.

Local workers are hired to work on the project from the communities located closest to each site. This not only creates jobs, but it also contributes to increasing local know-how regarding contaminated site restoration and environmental project management. The Northern Villages are central to providing local workers for the rehabilitation work, including the payment of the workers' wages. The amounts paid for these workers are subsequently invoiced to the KRG who reimburses all related costs. This cooperation is extremely effective and permits the hiring of individuals who are recognized in their communities. This kind of experience is also highly sought-after by mineral exploration companies for the cleanup of their sites and could therefore lead to future work.

Worker safety is also an important issue for those involved in rehabilitating the abandoned mineral exploration sites in Nunavik. All of the sites to be rehabilitated are in isolated locations that cannot easily be reached from nearby villages. In summer, workers are most often transported by helicopter or floatplane. Since the transporter does not remain at the site, emergency planning is important. It is essential that each work team have an emergency plan and adequate communication systems to contact help, if necessary.

#### **4.5 COMMUNICATIONS**

At the beginning of each year, a letter is sent to each of the Northern Villages asking for their participation in the project and providing information on the sites near their community. At the end of each year, an activity report is sent to each of the partners involved in the cleanup work. In 2017, a final report will be prepared to summarize the overall outcome of the 2012-2017 rehabilitation efforts.

Also in 2017, at the end of the project, a tour in the communities involved in the cleanup project could be organized to present the results of the rehabilitation work. Also, as was the case in 2011 and 2015, a presentation could be made during a KRG

Regional Council meeting, at which a representative from each village is present.

## **5 DESCRIPTION OF 2015-2016 REHABILITATION WORK**

This section provides an updated description of the sites where cleanup work was carried out during the 2015-2016 season. These sites were inspected in 2011 in order to have a clearer picture of the type of work, manpower and equipment required and to estimate a timeframe for rehabilitation.

This year, the rehabilitation of sites QC-3, KV-1, Parent Lake and Gerido Lake was completed. Work was undertaken in the community of Aupaluk to prepare material, previously removed from various sites, for transportation by ship. In collaboration with Glencore, work was continued out the site requiring major cleanup known as WB-9. Finally, work was also carried out on the site requiring major cleanup known as SW-27. The work undertaken on each site is described in Section 5.1 with supporting photographs available in Appendix 2.

It should be noted that in 2015 a field technician was hired to supervise the work on most of the sites and in some communities when necessary. Richard Knoxleet, who has many years of experience in the Nunavik region, was asked to fulfil the role as field technician for the third year. Nancy Dea remained as project coordinator in 2015-2016.

### **5.1 DESCRIPTION OF WORK**

#### **Tasiujaq Sector**

##### **PJ-1**

The abandoned mineral exploration site PJ-1 (58° 57.71' N, 69° 35.85' W) is located between the communities of Aupaluk and Tasiujaq (Map 4). The site covers more than 3 km<sup>2</sup> and is comprised of nine sectors. The 2001-2002 inventory ranked this site number one in importance for major rehabilitation. Extensive work has been completed on this site since 2006, including several winter terms. The final material was removed from PJ-1 in the summer of 2011 and was stored in the community of Aupaluk. In 2011 and 2012 approximately 36 pieces of equipment and machinery, totalling 117 tonnes, as well as 30 tonnes of scrap metal, were transported by ship to a metal recovery facility in the south. In 2013, due to logistical issues with the shipping company, only 2 marine containers were removed from Aupaluk. However, in 2014 all but three large pieces of equipment were removed from the community. A total volume of 82 tonnes was transported to a recovery facility in 2014.

In October 2015 the field technician travelled to Aupaluk to assist the community with the preparation of the remaining material for transportation. The large pieces of equipment had to be stored in open-top containers, one of which was damaged

during the loading process. Due to this unfortunate circumstance, this container will remain in Aupaluk until next sealift season, at which point the container will need to be replaced. In 2015, 15 tonnes of material was removed from the community of Aupaluk. Pictures of this work and remaining material can be found in Appendix 2.

### **Gerido Lake**

Gerido Lake refers to an area adjacent to the abandoned mineral exploration site requiring major cleanup known as TQ-1 (57° 57.68' N, 69° 40.16' W, Map 4) previously rehabilitated by the KRG in 2010. An abandoned outfitter camp and airstrip are also located in this area.

In 2011, Canadian Royalties undertook cleanup projects on several smaller abandoned mineral exploration sites in the area, storing the debris they collected at the Gerido Lake airstrip. During the 2014-2015 cleanup season the KRG decided to also store debris from several nearby sites at the airstrip due to its proximity.

In June, September and October 2015, the Project Coordinator and Field Technician, in collaboration with the NV of Kuujuaq, and 2-4 workers undertook several work campaigns to remove all remaining material from the Gerido Lake airstrip. This material was transported by helicopter to Kuujuaq and stored in marine containers. Hazardous material from this site, which included drums with residue, propane tanks and batteries were packaged separately from the non-hazardous material, as requested by the marine transportation company. The hazardous material and 5 marine containers were then transported by ship in both July and October 2015 to appropriate recycling facilities in Montreal. Approximately 35 tons of material were removed from this site, which is now complete. Pictures of this can be found in Appendix 2.

### **Kangirsuk Sector**

#### **QC-3**

Site QC-3 is located on the shores of Roberts Lake between the communities of Quaqtaq and Kangirsuk (60° 21.55' N, 70° 09.33' W) and falls under the category of requiring intermediate cleanup (Map 4).

During the 2011 inspection it was noted that an active Inuit camp occupied the site. Approximately 25 drums were found on or near the site as well as other debris.

In 2015 the Field technician, with assistance from the community of Kangirsuk and 4 workers, removed all debris from the site, which was transported by helicopter to the community of Kangirsuk and stored in a marine container. The container was then shipped, in October 2015, to a recycling facility in Montreal. Approximately 14 tons of material was removed from site QC-3 and is now considered as complete. Pictures of this work can be found in Appendix 2.

## **Salluit Sector**

### **WB-9**

The abandoned mineral exploration site WB-9 (61°27.35' N, 74°33.22" W) is located next to Kenty Lake, roughly 100 km south-southeast of Salluit (Map 6). The site comprises only one sector. The 2001-2002 inventory ranks this site fifth in importance for major rehabilitation work. An inspection in 2012 confirmed the abandoned material and buildings previously recorded. A sketch of the buildings on site WB-9 can be found in Appendix 3.

The objective for 2015 at site WB-9 was to demolish and burn all empty buildings, with the exception of the building that held a large volume of core samples and to remove any remaining non-combustible material. In collaboration with the Northern Village of Salluit, the Project Coordinator and 4 workers undertook a first work session at the site in July 2015. During this time, several buildings were successfully burned. Unfortunately due to wind direction, the building containing the core samples caught fire and was also burned. The core remains intact. Also during this time and with assistance from Glencore, material such as full and empty drums and small metal debris was transported from the site by helicopter to their property at East Lake and stored in marine containers.

In August 2015, the field technician, in collaboration with the Northern Village of Salluit, returned to WB-9 with 4 workers for a second work campaign. During this time the remainder of the buildings were burned and, with assistance from Glencore, material was transported by helicopter to their East Lake property. It should also be noted that while flying in the area, the field technician spotted approximately 100 empty drums near site WB-9, almost 80 of which were transported to East Lake. In total, 3 marine containers were filled and shipped to south of the province by Glencore. Pictures of this work can be found in Appendix 2.

Due to the amount of buildings burned on site it recommended that a final cleanup be undertaken at the site to ensure all smaller pieces of metal and debris have been removed. Consequently, work will continue of this site in 2016 and is described in Section 6 of this report.

### **KV-1**

The abandoned mineral exploration site KV-1 (61°25.64' N, 76°45.46' W) is located on the shore of a lake, roughly 100 km southwest of Salluit (Map 6). The site comprises two sectors. The 2001-2002 inventory ranks this site 14th in importance for major rehabilitation work.

In September 2015 the Project Coordinator with assistance from the Northern Village of Salluit and 4 workers, undertook a 5-day cleanup campaign at sites KV-1

and SW-27. Due to the fact that these 2 sites were fairly close, cleanup at both sites were done in parallel.

At site KV-1 work consisted of gathering scattered barrels and other smaller debris and preparing them for transportation by helicopter. This site is approximately 60 miles from the nearest community and so until a nearer long-term storage location could be determined, it was decided to move all material to site SW-27. Approximately 28 crushed drums, 12 empty uncrushed drums, 13 drums filled with small debris, steel poles, and a water heater were removed from the site. The combustible material was burned on location. The site is now considered as complete. Pictures of this work can be found in Appendix 2.

### **SW-27**

The abandoned mineral exploration site SW-27 (61°28.76' N, 76°22.93' W) is located roughly 90 km south-southwest of Salluit, far from any body of water (Map 6). The 2001-2002 inventory ranks this site 12th in importance for major rehabilitation work. The site covers 0.2 km<sup>2</sup> and although originally thought to comprise four sectors, five sectors were actually found on site. SW-27 contains a significant quantity of residual material and hydrocarbons residue: roughly 1650 L of diesel, 260 L of grease and 26 L of oil. Although covering only 2.5 m<sup>2</sup>, hydrocarbon soil contamination is still very evident. Open or damaged barrels of grease were also observed. A sketch of the site SW2-27 by sector can be found in Appendix 3.

In September 2015, the Project Coordinator and 4 workers from the community of Salluit undertook an intense cleanup campaign at all 5 sectors on this site. All material from each sector was transported by helicopter to Sector 5, located on a hilltop next to an old airstrip. This material will remain at this location until a final destination in which it can be prepared for transportation by ship is determined. The helicopter pilot estimated approximately 25 loads weighing 1,500 pounds each remained on site. Table 6 illustrates the volume and type of material located in sector 5 of SW-27.

All combustible material was burned in each sector. Due to its weight, a small tractor was left in Sector 4 and will need to be cut up into smaller pieces in order for it to be transportable by helicopter. Sectors 1, 2 and 3 are complete. Pictures of this work can be found in Appendix 2. Work will continue of this site in 2016 and is described in Section 6 of this report.

**Table 6      Material remaining at Site SW-27**

<b>Type of Material</b>	<b>Quantity</b>
Empty drums	60
Full drums	4
Crushed drums	28
Drums filled with small debris	22
Small white bags filled with debris	3
Wooden box filled with debris	3
Drill rods	5,000 pounds
Aluminium towers	2,000 pounds
Pails of grease	11
Pails of oil	2
Aluminium core trays	40
Machinery parts (ie, blades, engines, generators, small trailer	9
Steel bed frames	10
Stoves	2
Water heater	1

### **Parent Lake**

The site known as Parent Lake is located south of Salluit (61° 33.43' N, 75 10.36' W) and falls under the category of requiring intermediate cleanup (Map 4).

In August 2015 the field technician along with 4 workers from the community of Salluit undertook one day of work at this site. They removed 4 drums, 2 of which contained diesel residue, and a small amount of metal debris from the site. In collaboration with Glencore, the material was flown, by helicopter, to East Lake and stored in a marine container. The site is now complete and photos of this work can be found in Appendix 2.

## **5.2 2015-2016 EXPENDITURES**

Table 7 indicates the estimated expenditures during the fieldwork undertaken in the 2015-2016 season. Some expenses were under or over-estimated from previous cost assessments due to weather conditions and less days spent on some sites.



**Table 7**                      **Estimated 2015-2016 Expenditures**

<b>INCOME</b>	
KRG surplus	\$451 898
MERN income	\$0
FRAN income	\$0
Other	\$5 330
<b>TOTAL</b>	<b>\$457 228</b>

<b>IN-KIND CONTRIBUTION</b>		
<b>Site</b>	<b>WB-9</b>	<b>Total</b>
Glencore	\$11 394	\$11 394
<b>TOTAL</b>	<b>\$11 394</b>	<b>\$11 394</b>

<b>EXPENDITURES*</b>	<b>2015</b>
Travel & Accommodations	\$87 932
General Contracts	\$238 095
Salaries & Fringe Benefits	\$0
Purchase of Materials	\$1 502
Translation Costs	\$26 694
<b>TOTAL:</b>	<b>\$354 223</b>

\*Source: 2015 KRG Financial Statement

## **6 DESCRIPTION OF 2016-2017 REHABILITATION WORK**

The following section describes the work required on the abandoned mineral exploration sites scheduled for rehabilitation in 2016-2017, according to the work schedule presented in Section 4.2. Photographs of these sites can be found in Appendix 4.

### **Tasiujaq Sector**

#### **PJ-1**

In 2015 nearly all of the material being stored in the community of Aupaluk was removed by ship. However, one final container of metal will need to be properly packaged and ready to be transported by ship. Due to the damage incurred during the loading of this container, a replacement will be needed.

In 2016, the KRG will need to find a replacement container in Aupaluk or have one ordered and delivered by ship at the beginning of the sealift season. The material will need to be removed from the damaged container and stored in the replacement

one. KRG will need to organize its removal with the appropriate shipping company and have a representative present for the loading.

## **Salluit Sector**

### **WB-9**

After having burned all combustible material on site in 2015, a final sweep of the site will be necessary in 2016 to remove any smaller debris that may have been difficult to see while buildings burned or smoldered. In collaboration with the Northern Village of Salluit, a team of workers, accompanied by a field supervisor, will need to spend 1-2 days on site collecting the debris and preparing it for transportation by helicopter. It is suggested that a magnet be purchased and used in order to collect smaller debris such as nails and screws. Conditional to a repeat partnership with Glencore, this material will need to be transported, by helicopter, to East Lake and stored in marine containers where it will be shipped to a recycling facility in Montréal. The KRG will need to communicate with Glencore regarding this work and organize any necessary logistics.

### **SW-27**

All material remaining at site SW-27 is now located in Sector 5. In 2016, this material will need to be removed, by helicopter, to a suitable, nearby location where it can be prepared for transportation by ship to an appropriate recycling facility.

SW-27 is located approximately 60 miles from Salluit and Akulivik, the 2 nearest communities, and 70 miles from Glencore's East Lake property. This is rather far for a helicopter to sling material and would require a large volume of fuel. Other options would be moving the material to a nearby road or airstrip to facilitate a more feasible mode of transportation to shipping dock. KRG will need to study the area more closely to better understand the options as well as discuss possible partnerships with mining companies active in the area.

### **SW-24**

Site SW-24 falls under the category of sites requiring intermediate cleanup (Map 4), however it is not specifically one single site. Several hundred drums and propane tanks have been spotted along the *Petite rivière de Puvirnituq* during previous inspections and by various Inuit informants in the past. Most barrels are located in the downstream portion of the river on the south shore.

This site will prove a challenge, as it will require a team to navigate the river's shoreline over a long distance to collect the drums. In 2016, the KRG will need to work closely with the partners involved to ensure this is done effectively and efficiently. A thorough inspection of this site should be done at the beginning of the 2016 cleanup season. It may be possible to transport the drums and other material

to SW-27 and WB-9 due to their proximity and can then be packaged for transportation by helicopter to an appropriate location. It is suggested this site be the priority for 2016.

### **Kuujjuaraapik Sector**

#### **GW-8**

The site GW-8 is located south-west of the community of Kuujjuaraapik (55° 05.09' N, 78° 15.51' W) and falls under the category of requiring intermediate cleanup (Map 4).

The 2001-2002 inventory noted that 25 drums and a snowmobile are located at this site, however, no follow-up inspections have ever been done.

In 2015, arrangements were made with the Sakkuq Landholding Corporation to have an inspection of the site completed in 2016. Further to this, a team from the village of Kuujjuaraapik will need to be organized to remove the debris and have it brought to the community by helicopter or boat if accessible. The material will be stored in a marine container, already available, and shipped to an appropriate recycling facility. KRG will need to undertake the necessary logistics to ensure the site is completed in 2016.

## 6.2 ESTIMATED BUDGET FOR 2016-2017

Table 8 indicates the estimated budget for carrying out the final rehabilitation work on sites WB-9 and SW-27, the cleanup activities at site GW-8, as well as finalizing the work in Aupaluk regarding the transportation of material being stored there. The budget will also include the preparation of the 5-year summary report (2012-2017).

**Table 8 Estimated 2016-2017 Budget**

INCOME							
KRG surplus 2015		\$103 005					
MERN income		\$307 840					
FRAN income		\$0					
Other		\$0					
<b>TOTAL</b>		<b>\$410,845</b>					

IN-KIND CONTRIBUTION							
Site	WB-9	PJ-1 (Aupaluk)	SW-24	GW-8	SW-27	Summary Report	Total
Glencore	assistance						\$10,000
Canadian Royalties					assistance		\$10,000
Makivik (NEAS)							\$0
<b>TOTAL</b>	<b>\$10,000</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$10,000</b>	<b>\$0</b>	<b>\$20,000</b>

EXPENSES							
Site	WB-9	PJ-1 (Aupaluk)	SW-24	GW-8	SW-27	Summary Report	Total
Coordinator salary (General Contract)	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	\$30,000
Technician salary and benefits	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	\$30,000
Workers salaries	\$5,000	\$5,000	\$15,000	\$10,000	\$15,000	\$0	\$50,000
Professional/Technical salaries (General Contract)	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Transportation of waste (via south)	\$0	\$5,000	\$10,000	\$5,000	\$0	\$0	\$20,000
Transportation of material/workers	\$10,000	\$0	\$20,000	\$10,000	\$20,000	\$30,000	\$90,000
Disposal of waste (General Contract)	\$0	\$0	\$5,000	\$5,000	\$0	\$0	\$10,000
Travel Airfare	\$5,000	\$5,000	\$10,000	\$5,000	\$5,000	\$10,000	\$40,000
Travel Expenses	\$2,000	\$2,000	\$3,000	\$2,000	\$3,000	\$3,000	\$15,000
Material/Equipment	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	\$0	\$25,000
Communication and translation	\$500	\$500	\$500	\$500	\$500	\$5,000	\$7,500
KRG training costs (Human Resources)	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$1,000	\$6,000
<b>Sub-total</b>	<b>\$38,500</b>	<b>\$33,500</b>	<b>\$79,500</b>	<b>\$53,500</b>	<b>\$59,500</b>	<b>\$59,000</b>	<b>\$323,500</b>
Administration (12%)	\$4,620	\$4,020	\$9,540	\$6,420	\$7,140	\$7,080	\$38,820
Weather condition provision (15%)	\$5,775	\$5,025	\$11,925	\$8,025	\$8,925	\$8,850	\$48,525
<b>TOTAL</b>	<b>\$48,895</b>	<b>\$42,545</b>	<b>\$100,965</b>	<b>\$67,945</b>	<b>\$75,565</b>	<b>\$74,930</b>	<b>\$410,845</b>

## 7 REFERENCES

Kativik Regional Government. 2012a. *Abandoned Mineral Exploration Sites in Nunavik Rehabilitation Project. 2005-2012 Summary Report and Update of the General Response Plan*. Renewable Resources, Environment, Lands and Parks Department of the Kativik Regional Government, Kuujuaq. 322 p. and appendices.

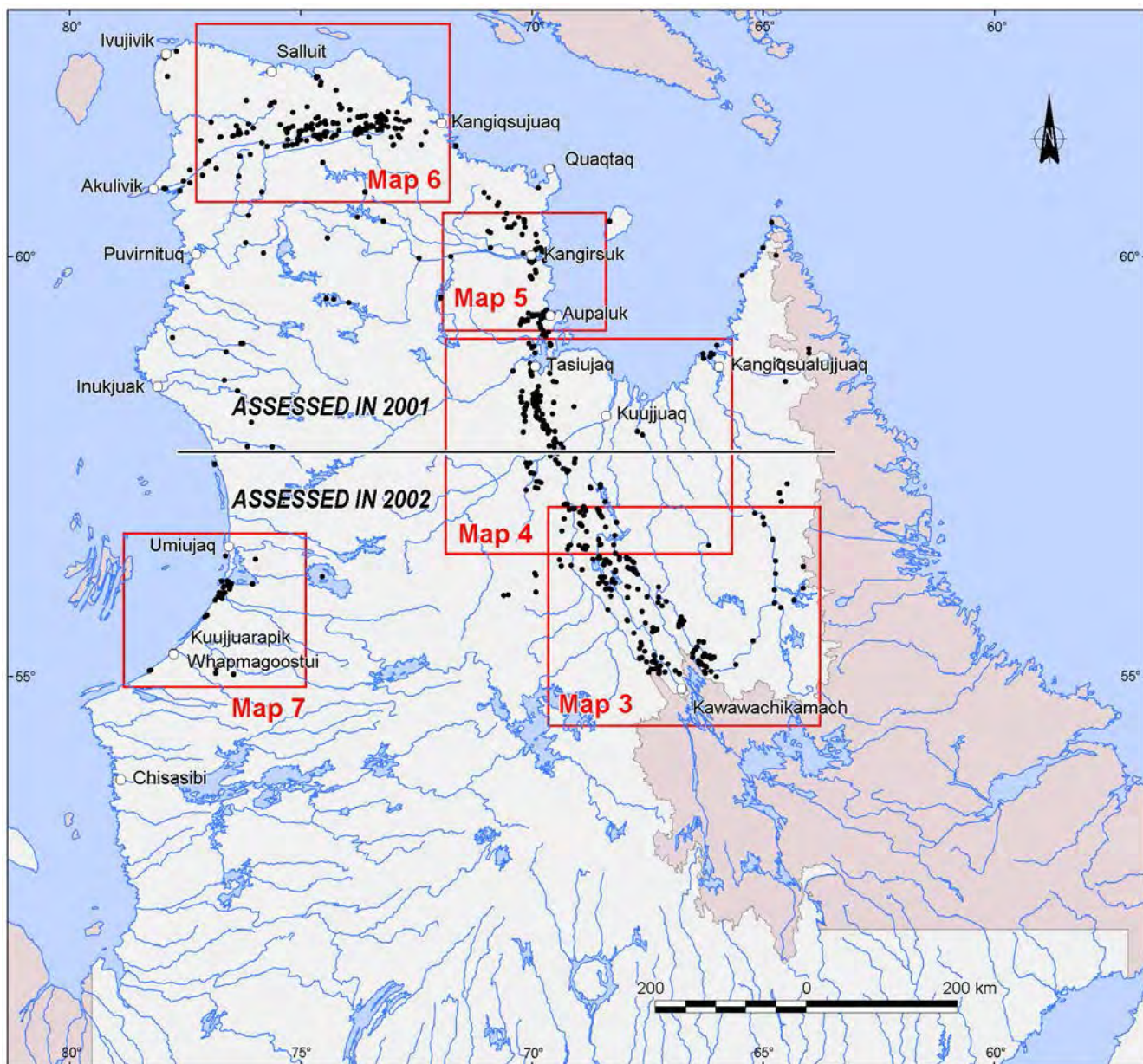
Kativik Regional Government. 2012b. *General Response Plan, 2012-2017: For the Rehabilitation of Abandoned Mineral Exploration Sites in Nunavik*. Renewable Resources, Environment, Lands and Parks Department of the Kativik Regional Government, Kuujuaq. 12 p.

## APPENDIX 1

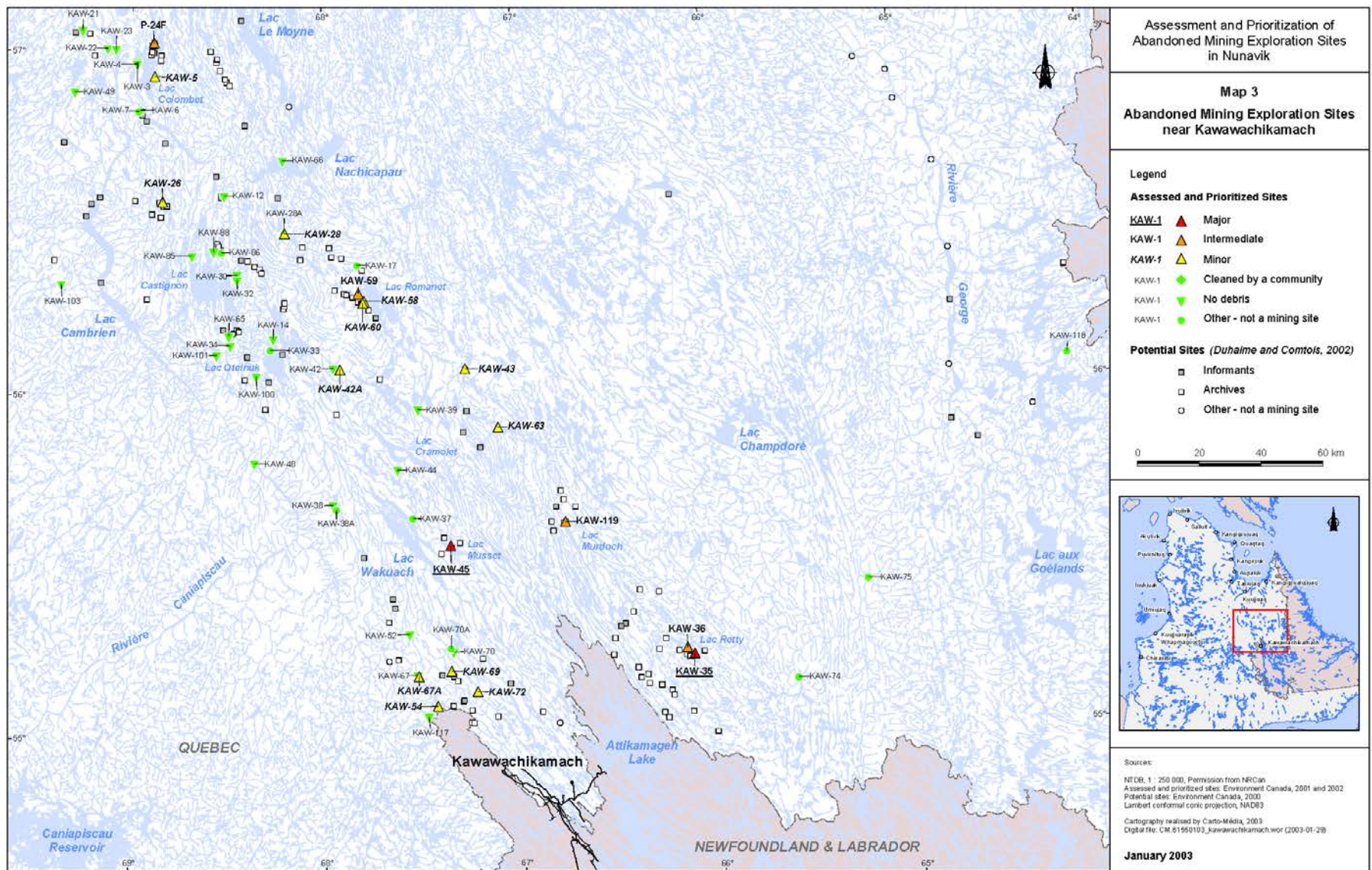
### **Maps Showing the Locations of Abandoned Mineral Exploration Sites in Nunavik**

## **LIST OF MAPS**

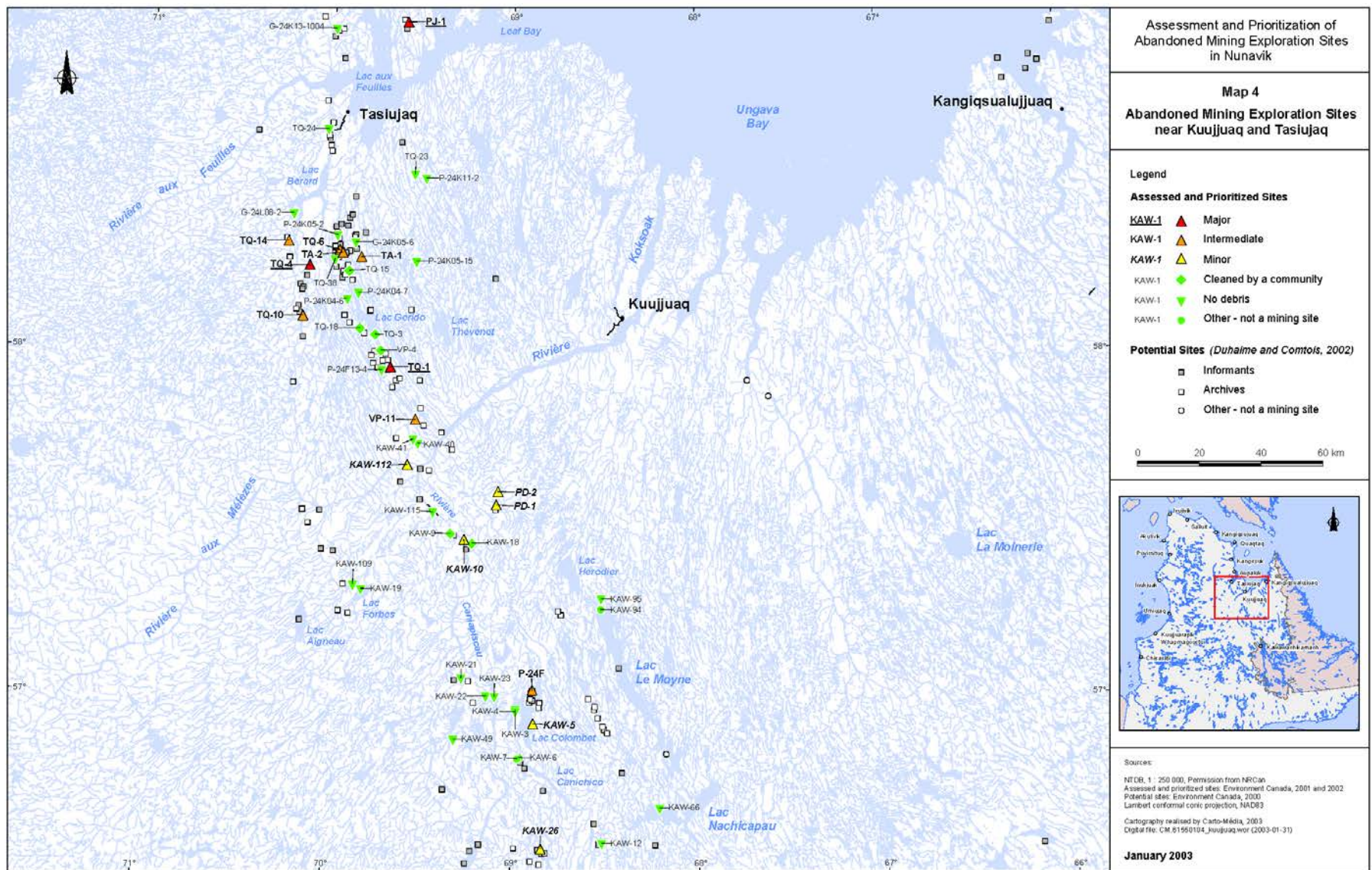
<b>Map 2</b>	<b>Map Index .....</b>	<b>3</b>
<b>Map 3</b>	<b>Abandoned Mining Exploration Sites near Kawawachikamach .....</b>	<b>4</b>
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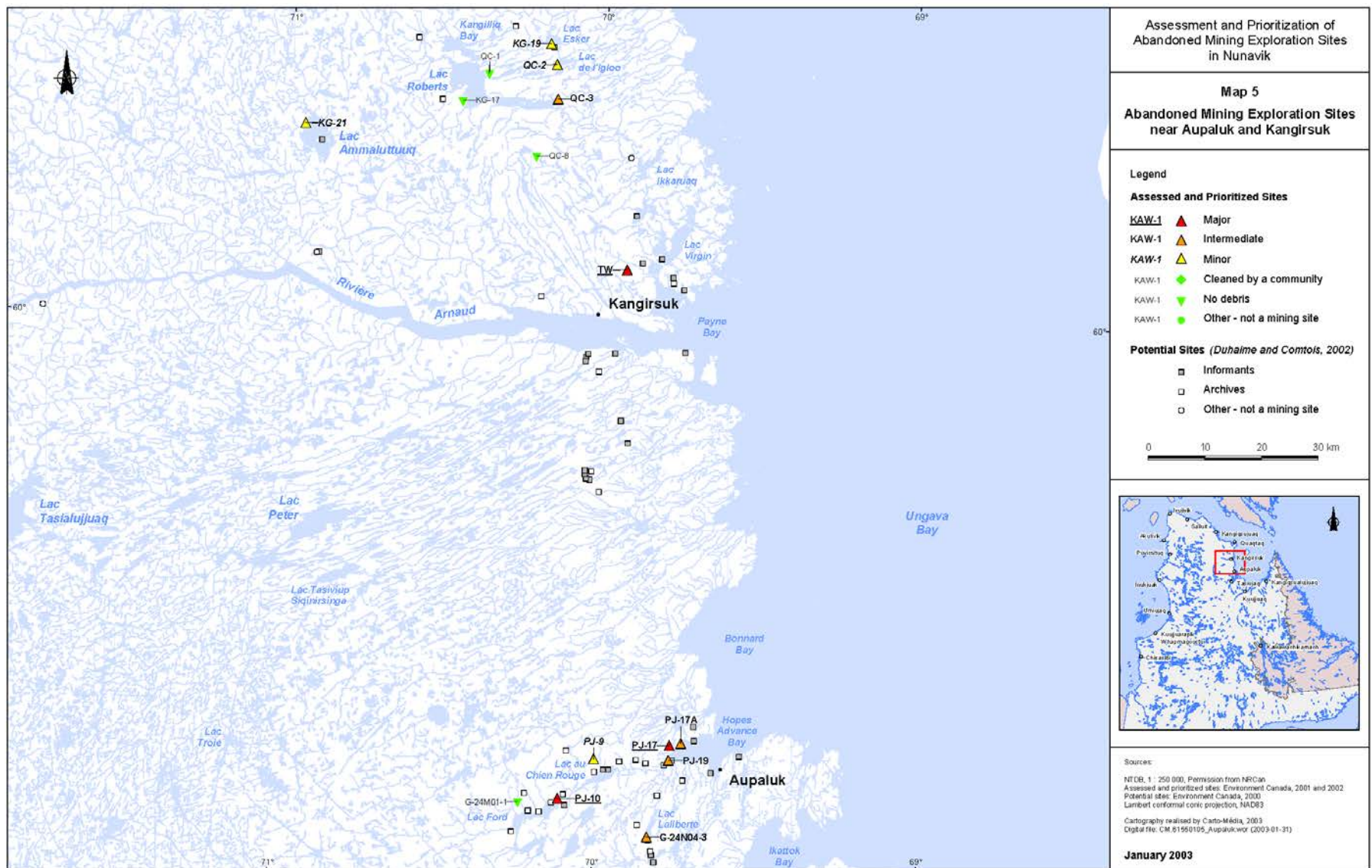




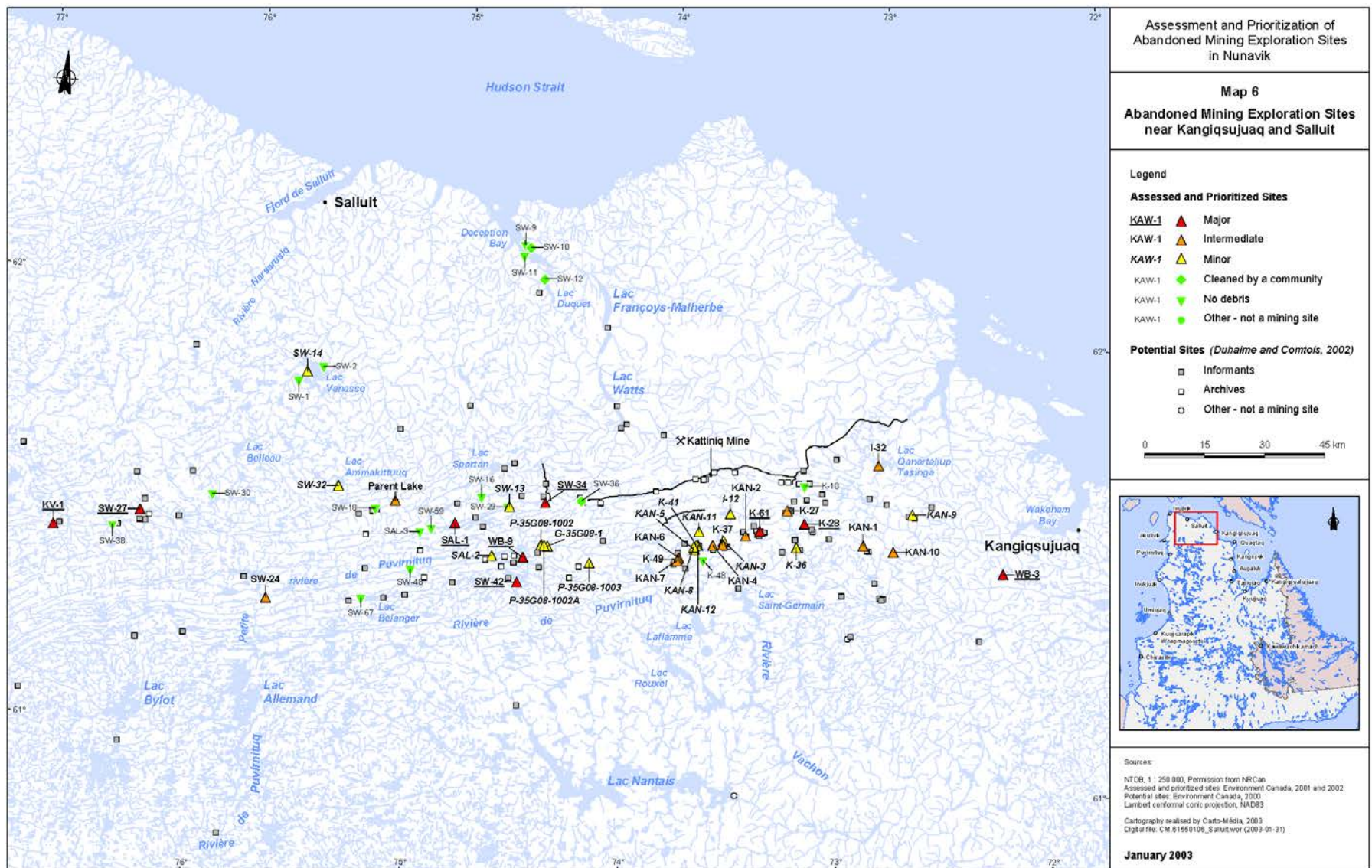




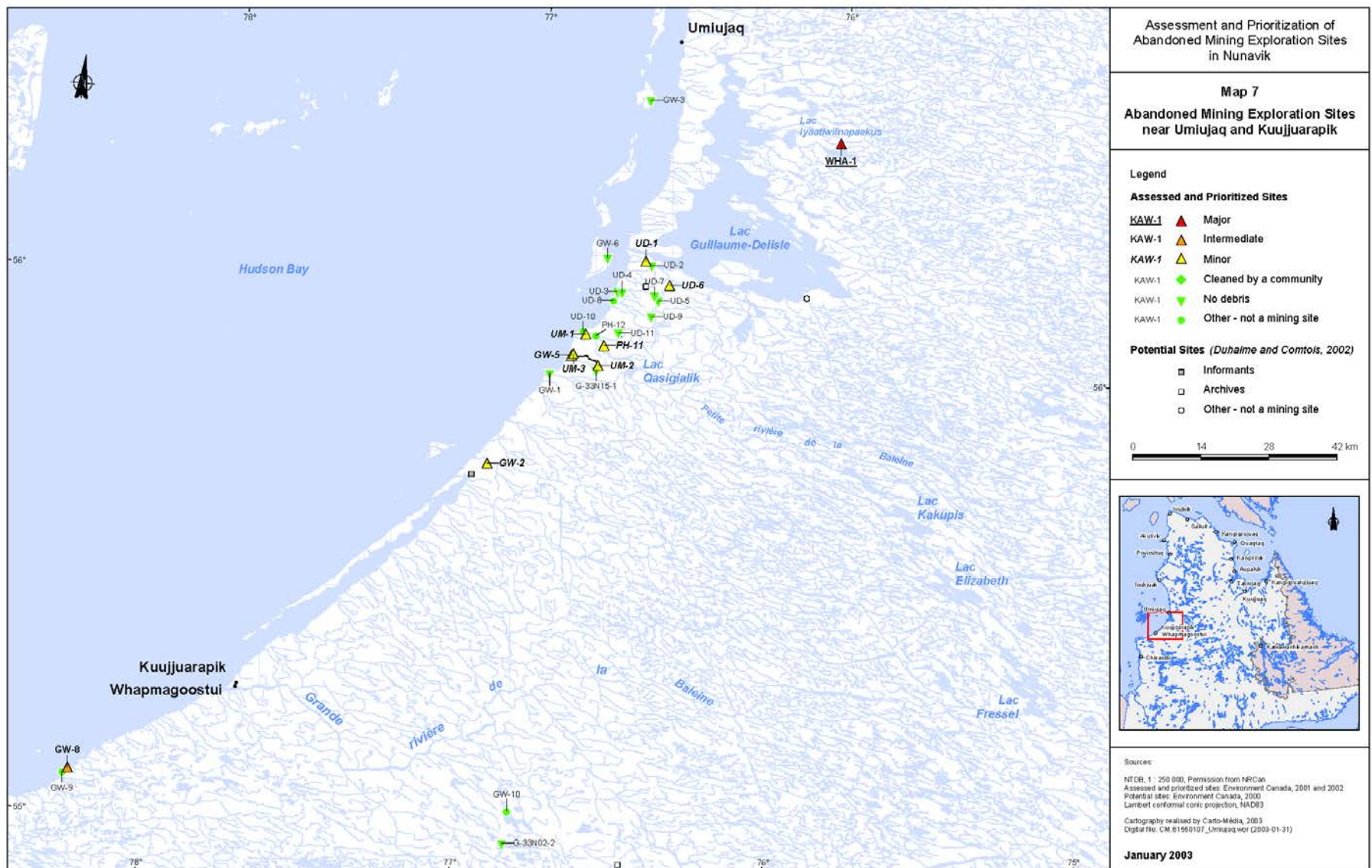












## APPENDIX 2

### **Photographs of Sites on Which Rehabilitation Work was Undertaken in 2015-2016**

## Tasiujaq Sector

PJ-1

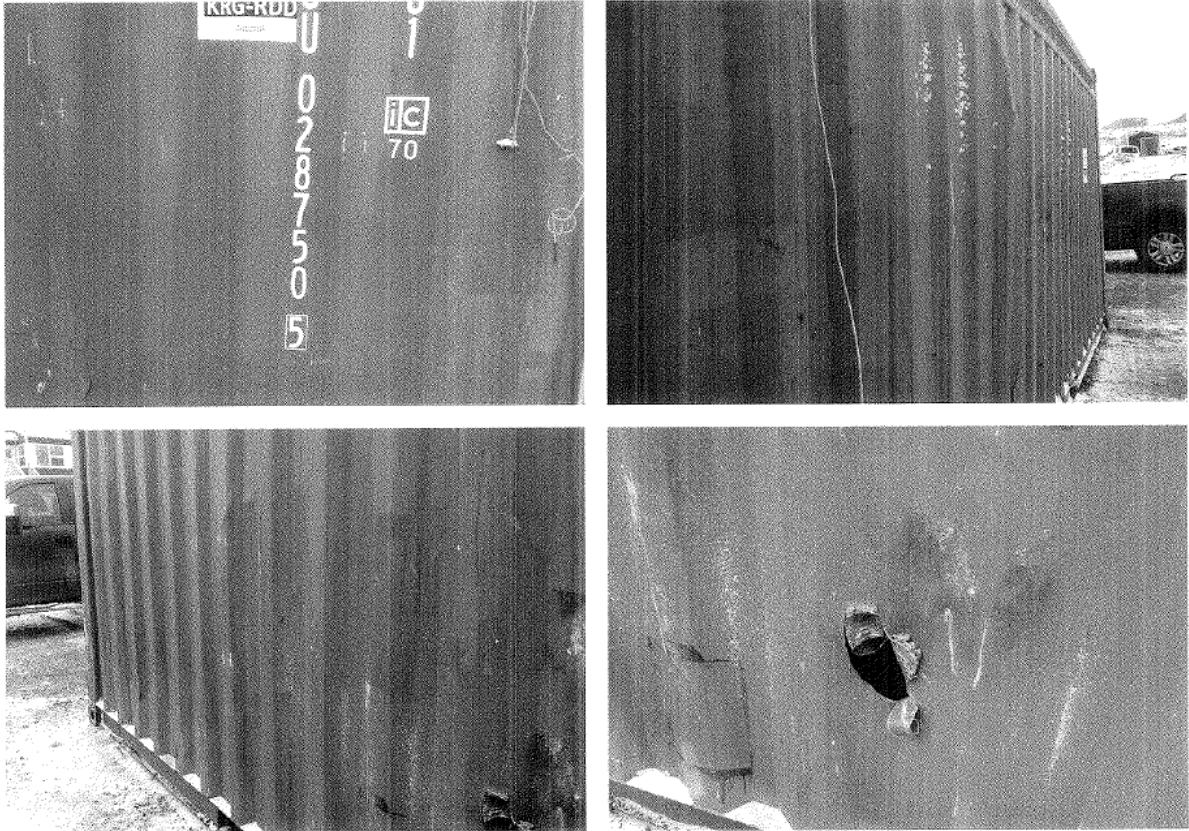


Figure 1: Photo of damaged container that will remain in Aupaluk, October 2015





Figure 2: Example of debris that was transported from Aupaluk, October 2014



## Gerido Lake



Figure 3: Hazardous material from Gerido Lake packaged and ready for transportation, September 2015.



Figure 4: Container of material from Gerido Lake, ready for transportation, September 2015



Figure 5: Gerido Lake airstrip, before cleanup, September 2015



Figure 6: Gerido Lake airstrip, after cleanup, September 2015



## Kangirsuk Sector

QC-3



Figure 7: Debris and Inuit camp located at site QC-3, September 2011



Figure 8: Debris at site QC-3, September 2011

## Salluit Sector

WB-9



Figure 9: Burning building #10 at site WB-9, July 2015



Figure 10: Burning building #10 at site WB-9 (Core shack in forefront), July 2015





Figure 11: Material from WB-9 stored in containers at East Lake, July 2015



Figure 12: Material from WB-9 stored in containers at East Lake, July 2015



Figure 13: Site WB-9, aerial view of buildings #7-11, September 2015.



Figure 14: Site WB-9, aerial view of buildings #5, 6, 7, 10 and 11, September 2015.





Figure 15: View of WB-9, before cleanup, July 2015



Figure 16: Site WB-9 after cleanup, September 2015

**KV-1**



Figure 17: Sector 2 of site KV-1 containing crushed drum and wood, September 2012



Figure 18: Sector 2 of site KV-1 after metal debris removed, September 2015





Figure 19: Sector 1 of site KV-1 containing drums, metal debris and wood, September 2015



Figure 20: Sector 1 of site KV-1 after material was removed, September 2015



Figure 21: Workers preparing nets for helicopter in Sector 2 of site KV-1, September 2015



Figure 22: Helicopter transporting material from site KV-1 to site SW-27, September 2015



## SW-27



Figure 23: Sector 1 of site SW-27, before cleanup, September 2015



Figure 24: Sector 1 of site SW-27, after cleanup, September 2015





Figure 25: Sector 2 of site SW-27, before cleanup, September 2015



Figure 26: Sector 2 of site SW-27, after cleanup, September 2015





Figure 27: Sector 3 of site SW-27, before cleanup, September 2015



Figure 28: Sector 3 of site SW-27, after cleanup, September 2015





Figure 29: Workers collecting debris on Sector 4 of site SW-27, September 2015



Figure 30: Pails of grease found in Sector 4 of site SW-27, September 2015





Figure 31: Tractor remaining in Sector 4 of site SW-27, September 2015



Figure 32: Sector 4 of site SW-27, after cleanup, September 2015





Figure 33: Empty crushed and uncrushed drums at Sector 5 of site SW-27, September 2015



Figure 34: Drums filled with small debris at Sector 5 of site SW-27, September 2015





Figure 35: Pieces of machinery at Sector 5 of site SW-27, September 2015



Figure 36: Pieces of aluminum towers at Sector 5 of site SW-27, September 2015





Figure 37: Aluminum core trays at Sector 5 of site SW-27, September 2015



Figure 38: Drill rods at Sector 5 of site SW-27, September 2015





Figure 39: All material remaining at Sector 5 of site SW-27, September 2015



Figure 40: Aerial view of Sector 5 of site SW-27, September 2015



## Parent Lake

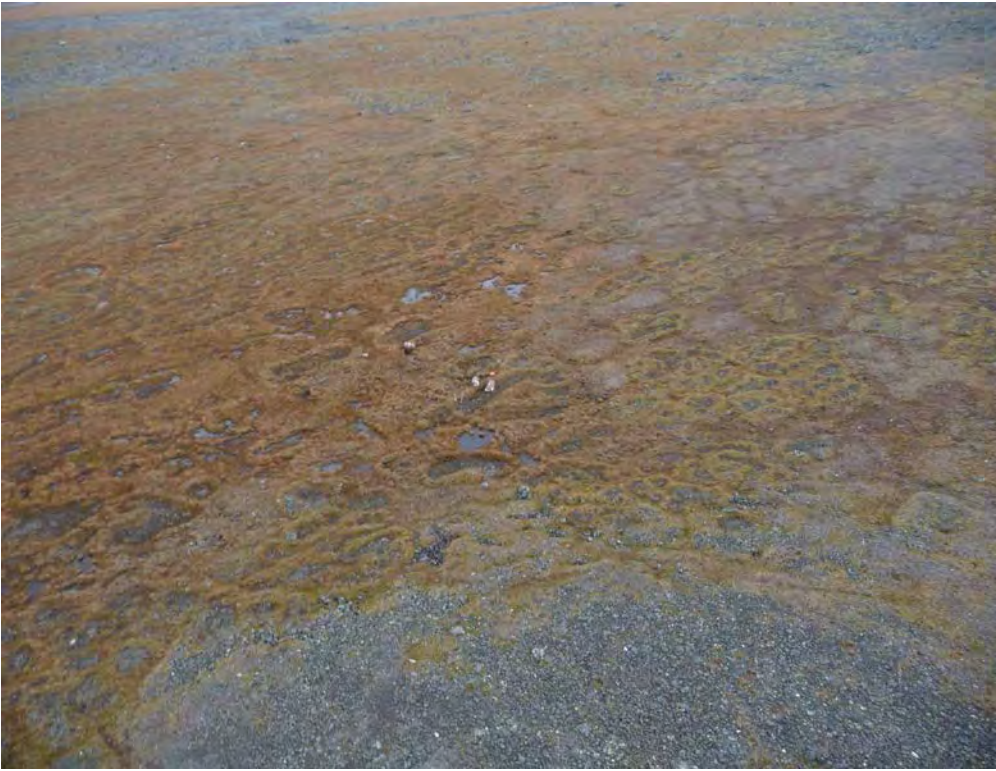


Figure 38: Debris found at site known as Parent Lake, September 2011



Figure 39: Debris found at site known as Parent Lake, September 2011

## APPENDIX 3

**SKETCH OF SITES:  
WB-9 (JULY 2014)  
SW-27 (SEPTEMBER 2015)**

SITE WB-9

Hill



Tower

#2

#3

#4

#5

#6

#1

core

#11: CORE SHACK

core

#8

7

core

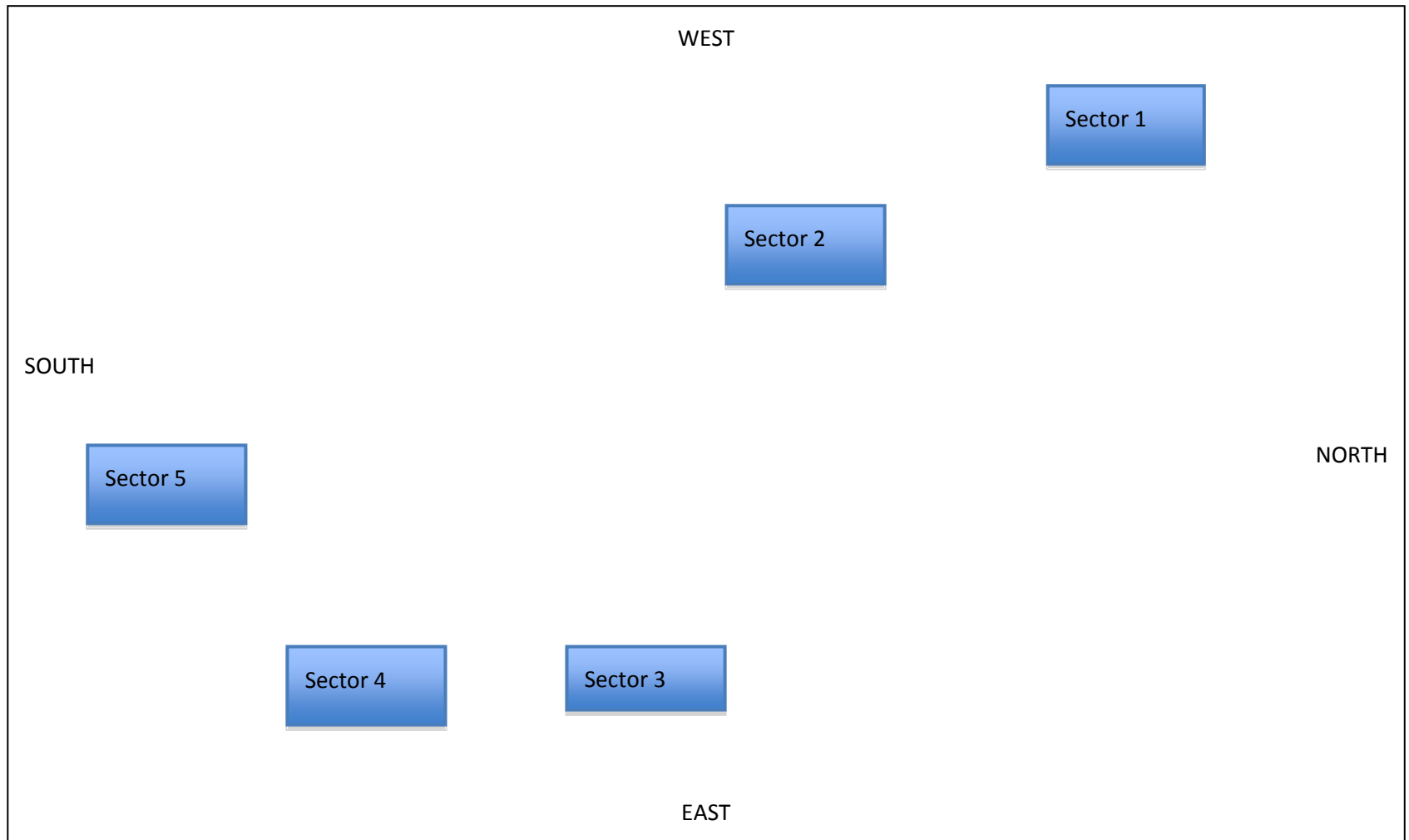
#10

#9

55

Kenty Lake

## Site SW-27



## APPENDIX 4

### **Photographs of Sites on Which Rehabilitation Work Will be Undertaken in 2015-2016**



## **Salluit Sector**

**SW-24:** There are currently no photographs of this site

## **Kuujjuaraapik Sector**

**GW-8**



Figure 42: Site GW-8, located on the Hudson Coast, September 2002



## Fonds Restor-Action Nunavik