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Administration régionale KATIVIK Regional Government
P.O. Box 9 KUUJJUAQ (QUÉBEC) CANADA J0M 1C0

MID-CANADA LINE CLEAN-UP PROJECT - PHASE 2

1999-2000

Report on Completed Clean-up Work

Submitted to

Ministère de l'Environnement du Québec

by

Kativik Regional Government
Kuujjuaq, Québec

December, 2000

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WORK TEAM

Kativik Regional Government

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Josée Brunelle, environmental specialist for the Kativik Regional Government and representative for the Naskapi Nation of Kawawachikamach in the Kawawachikamach area;

Naskapi Nation of Kawawachikamach

1999	*2000*
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Cree of Whapmagoostui *(2000)*

Matthew Petagumskum, foreman;
Isaac Kawapit, Larry Masty and Eric Sheshamush, workers;
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CONTRIBUTORS

Clean-up work on the Mid-Canada Line would not be possible without the co-operation of the communities and band councils of Kawawachikamach, Chisasibi, Whapmagoostui and Kuujjuaraapik.

The representative of the Cree Regional Authority under the project in 2000 was Alan Penn.

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1. INTRODUCTION

The Mid-Canada Line Clean-up Project – Phase 2 is covered by the Contribution Agreement signed on April 30, 1998, by Environment Canada (EC), the Department of National Defence (DND), the Ministère de l'Environnement et de la Faune du Québec (environment and wildlife, MEF), the Secrétariat aux affaires intergouvernementales canadiennes (intergovernmental affairs) and the Kativik Regional Government (KRG). The KRG is the project proponent, while the DND provides most of the funding for the project. It should be noted that the MEF is now represented by the Ministère de l'Environnement du Québec (environment, MENV).

This report deals with Phase 2 of the clean-up project. The clean-up project involves 42 Mid-Canada Line sites in Québec. Thirty-seven of these sites are located north of the 55th parallel and five are located south of the 55th parallel (Appendix 1). Under the Contribution Agreement, the 42 sites are classed into three categories of priority. The clean-up work is to be carried out over a three-year period. In total, there are 16 priority A sites, 18 priority B sites and 8 priority C sites. The order of priority decreases from A to C.

The Contribution Agreement provided for a work plan to be drafted by the partners and signatories of the agreement. Based on this work plan, dated June 10, 1999, acceptance criteria for the Mid-Canada Line clean-up work were developed (Appendix 2). Clean-up work objectives were intended to respond to the following concerns:

- sites must not pose any threat to public health or safety;
- clean-up work must not have any unacceptable environmental impact;
- clean-up work must comply with applicable laws and regulations;
- the environmental appearance of the sites must be satisfactory;
- clean-up work must make re-use of the sites a priority;
- the quality of the clean-up work must comply with the requirements of the Québec government, represented by the MENV.

The Contribution Agreement provides for certificates of completion to be issued by the MENV to the DND for sites at which clean-up work is judged satisfactory by the parties.

This report requests that nine sites be issued certificates for completion of clean-up work. The sites in question are 218, 218A, 221, 224, 330, 330A and 403A (priority A), 306 (priority B), and 227 (priority C).

Furthermore as provided for under the Contribution Agreement, this report requests payment from the DND for clean-up work carried out but not yet completed. The seven sites in question are 215, 221A, 224A, 321 and 321A (priority A), 306A (priority B) and 227A (priority C). Clean-up work has also been begun at five other sites: 333, 333A, 336, 336A and 339. As of this date, inventories of most of the Mid-Canada Line sites have been made.

It should be noted that certificates of completion are being requested for priority B and C sites, even though clean-up work at all priority A sites has not been completed, in accordance with the Contribution Agreement. The KRG did try to begin and complete clean-up work at all priority A sites first, before the lower priority sites. However, due to the remoteness of the sites, the significant distances between them as well as logistical and weather constraints, the obligation to prioritize category A sites was very difficult to meet. Furthermore, based on preliminary inspections of a few priority B and C sites and in response to requests made by the Native communities concerned, the KRG further prioritized clean-up work based on threats posed to the environment and public safety.

2. BACKGROUND

Phase 2 of the Mid-Canada Line Clean-up Project began in January 1999 with consultation meetings in the communities of Kawawachikamach, Chisasibi, Whapmagoostui and Kuujjuaraapik. Subsequently, environmental approval permitting clean-up work to be carried out at the 37 Mid-Canada Line sites located north of the 55th parallel was issued. In fact, these sites were exempted from the environmental review process since it was felt that clean-up work could only have a positive impact on the environment. The KRG requested approval for work on Cree category II lands south of the 55th parallel. Further to a meeting and subsequent discussions with the representative of the Cree Regional Authority (CRA), the KRG received a letter of support from the representative in September 2000. Next, the KRG sent a letter to the MENV deputy minister requesting clarification of the project's status. The KRG is currently awaiting a positive response from the Evaluating Committee (COMEV).

It is important to note that during Phase 1 of the Mid-Canada Line Clean-up Project, hydrocarbons were drained from barrels and tanks and, then, eliminated through controlled burning in 1987.

For practical purposes, the Mid-Canada Line was divided in two: the Kawawachikamach area in the east covers sites 215 to 312; the Whapmagoostui–Kuujjuaraapik area in the west covers sites 315 to 410. Site 215 is the most easterly site and it is located near the Québec–Labrador border. Site 410, commonly referred to as 'Point Louis XIV' is the most westerly site and it is located on the shores of Hudson Bay.

A video produced by the KRG in July 1998 in the Whapmagoostui–Kuujjuaraapik area describes the condition of Mid-Canada Line sites 410, 336, 336A, 339, 339A, 403 and 403A. The video also shows some of the work performed for the environmental review, including the collection of soil, surface water and construction material samples for analysis. The video is a record of the condition of the sites, the potential impacts on possible visitors and the environment, the scope of the work to be carried out, and the urgency behind the execution of restoration work as soon as possible.

Analysis results of soil samples taken during the production of the video revealed high concentrations of hydrocarbons in burning areas. Analysis results of surface water samples indicated no trace of toxic or chemical contaminants including hydrocarbons (KRG, 1999). Analysis results of paint and floor tiles using the standard analysis methods approved by the MENV showed no trace of polychlorinated biphenyl (PCB). Wipe samples indicated concentrations below the level accepted by the MENV. Mid-Canada Line sites in Québec have no transformers, except for Site 410. This site, which is located on the shores of Hudson Bay, is very different from the other sites due to its situation, size and infrastructures. The production numbers of the five transformers located at Site 410 were checked with the manufacturer. It was confirmed that PCBs were not used in their construction. As well, soil samples taken near the transformers showed no trace of PCB. Reviews were carried out to identify possible sources of contamination on the sites. Some soil at Site 410 showed a certain concentration of

dichlorodiphenyl trichloroethane (DDT), while no traces of DDT were found at other sites. Further work may be needed to record DDT at Site 410 and determine its potential impact on the performance of the biological degradation process for hydrocarbons.

In June 1999, clean-up work was carried out at five sites in the Kawawachikamach area. In September 1999, inventories of seven sites in the Whapmagoostui–Kuujjuaraapik area were made. A work plan for both regions was prepared for 2000. Clean-up work was continued at the seven sites in the Whapmagoostui–Kuujjuaraapik area in March 2000, at 13 sites in the Kawawachikamach area in June 2000, and at nine sites in the Whapmagoostui–Kuujjuaraapik area in September 2000. In total, clean-up work was carried out at 23 sites, with the work at nine sites being completed. The clean-up work at seven other sites is almost complete.

Clean-up work is co-ordinated by the KRG using local labour in consultation with Naskapi and Inuit communities in the Kawawachikamach area and Cree and Inuit communities in the Whapmagoostui–Kuujjuaraapik area.

Sites where clean-up work must be approved are inspected by representatives of the four parties to the Contribution Agreement. Theses parties are EC, the DND, the MENV and the KRG. On-site reviews were performed on June 20–21, 2000, in the Kawawachikamach area and on October 10–13, 2000, in the Whapmagoostui–Kuujjuaraapik area. Further to an invitation made by the KRG representative, the CRA representative participated in the October review.

First, this report sets out the methodology followed to clean-up the Mid-Canada Line sites. Secondly, it describes the clean-up work carried out at each site for which a certificate of completion is being requested. Descriptions of the work are organized as follows, in accordance with the acceptance criteria:

- safety;
- waste (buildings, hydrocarbons, barrels, metal, etc.);
- hazardous material;
- contaminated soil;
- environmental appearance.

Lastly, the report describes the clean-up work carried out at each site for which payment for the work performed is being requested.

3. METHODOLOGY

Generally, clean-up work is supervised by the KRG project leader and technician. However, in September 2000 in the area of Whapmagoostui–Kuujjuaraapik, work was supervised by the KRG project leader and the environmental specialist. Exact instructions concerning the work were given to the Naskapi or Cree foreman (depending on the area). Work involved cleaning up the site outdoors and inside buildings, repairing doors and windows and demolition, when necessary. The work was carried out by teams of Native workers with regular supervision being provided by the KRG project leader, technician or environmental representative. Restoration of contaminated soil was supervised by the environmental specialist. Management and transportation of hazardous material was the responsibility of a member of the KRG team.

Once work was complete, the KRG team inspected the site and buildings and information concerning the site was noted on the data records provided by the MENV. Furthermore, diagrams of the site including various information were prepared by the environmental representative. However in June 2000, the diagrams of sites 224, 224A, 227 and 227A were prepared in the field by a trainee or employee of the DND.

3.1 Safety

Buildings were inspected by KRG team members to ensure structural soundness and that they pose no danger to public safety or health. Unstable or dangerous components were repaired. Unstable buildings when possible were stablized or demolished. When dangerous, raised wood culverts coming from the main building were placed on the ground. An inspection of the site determined if any cables or metal rods pose a threat to snowmobilers. Identified dangers were cut in order to eliminate the threat and the scrap was placed with the other waste.

3.2 Waste

Buildings: Paint scraped from the walls and other debris were placed in strong bags or barrels and stored out of the way in the equipment room. This room is situated between the generator room and the residential quarters (kitchen, bedrooms and shower). In the equipment room are fire extinguisher canisters and electronic equipment. Broken windows were fixed with Lexan, while doors were fixed or replaced with sheets of plywood. Whenever possible, doorways were not permanently blocked in order to preclude vandalism. Waste from any demolition work was piled neatly on the site.

Antennas: Antennas are not covered under the clean-up project, as mentioned in the acceptance criteria. Antennas are generally tall and can be seen by snowmobilers in winter (Photo 1, Appendix 5).

Pipes and metal frames: Pipes were inspected along their entire length to ensure they contained no hydrocarbons and no leaks. Metal frames, such as refrigerators, stoves, heaters and so forth, were placed in a waste area. Heavier frames, such as machinery, were left where they were found.

Generating units: The main buildings on the detection sites have three generators, except in cases where generators have been taken by outfitters or other potential users. Each generator is topped by an approximately 60 L (15 gal.) oil tank. Each generator is also equipped with a 20 L (5 gal.) pan to receive spent oil. The oil tank was emptied by cutting or disconnecting the metal line leading to the motor. The pan was emptied by unscrewing the drain plug (Photo 2, Appendix 5). The oil was drained directly into easily transportable plastic containers or into barrels. Two diesel tanks for the generators are situated at one end of the room. A rod was used to check if any diesel remained in the tanks and, if so, the fuel was completely transferred into barrels.

The oil and diesel recovered from generators in June and September 2000 were transported in the manner described directly below.

Barrels and tanks: Empty barrels scattered around the site were collected into one area, or if necessary more than one area, and stacked. Any barrels situated too close to a body of water were moved at least 30 m from the water, if it was possible. Barrels which were not empty were opened and their contents examined. A special paste was used to determine the approximate proportion of water to hydrocarbons.

In instances where the barrels contained hydrocarbons, they were removed from the sites by helicopter and sling (Photo 3, Appendix 5), by floatplane or a combination of the two. In the area of Kawawachikamach, barrels containing hydrocarbons were picked up by floatplane and taken to Schefferville on July 12, 2000. The airline company kept the barrels containing motor oil and diesel for reuse. Fluid drained from the 60 L (15 gal.) generator tanks was delivered by helicopter or floatplane to Schefferville and forwarded on to Onyx Industries Inc. an authorized recycling centre in Sept-Îles. In the area of Whapmagoostui–Kuujjuaraapik, 12 barrels (six containing motor oil, one with transmission oil, three with diesel and two with orange, rust contaminated oil and water) were delivered by helicopter and sling to an outfitter camp on Lake Mollet. The camp manager and an employee verified the contents of the barrels and kept five with good grade hydrocarbons. The remaining seven barrels were taken on to Kuujjuaraapik by plane and are currently stored there, awaiting shipment by ship and truck to an authorized recycling centre.

Hydrocarbons (barrels and oil from the generators) were recovered in March 2000 from seven sites in the Whapmagoostui–Kuujjuaraapik area. In this instance, the barrels were delivered by helicopter to the outfitter camp on Lake Mollet and, then, by Single Otter equipped with skis to Whapmagoostui–Kuujjuaraapik. Subsequently, they were flown to La Grande and trucked to Heist, an authorized recycling centre, in Rouyn.

Tanks at all the sites which were cleaned up were verified. Most tanks were empty, although some contained several centimetres of waste liquid. The amount of water and hydrocarbons in the liquid were verified with a special paste. Water constituted 90% of the liquid. As a result, the separation of water and hydrocarbons by decantation, in accordance with the planning stage, was very difficult, not to say impossible. The tanks

were drained and the liquid discharged in already contaminated areas, generally close to the tanks.

In 1985 during phase 1 of the clean-up project, tanks at all the sites were inspected by representatives of the MENV and EC to determine the contents and identify at which sites hydrocarbons needed to be eliminated. In 1987, tanks and barrels at 27 sites were emptied and the contents were eliminated by controlled burning. This work was carried out in accordance with an agreement signed by the MENV and the KRG with the assistance of the DND, EC and the 1985 inventory. After completion of the project in 1987, the tanks were again inspected by an MENV representative to verify that all were empty. This explains why, in 2000, the tanks contained only a little hydrocarbon mixed with rain water and water produced through condensation. In 2000, drain plugs were left open which will allow the tanks to dry and not accumulate water.

Debris:

a) ***debris not mixed with hazardous material*:** Debris collected while cleaning inside the main building was placed in strong plastic bags or barrels and stored out of the way in the equipment room. In some cases, survival shelters contain beds, mattresses, furnaces and other trash. When necessary, debris was placed outside in a pile near the shelter; paint scraped from the walls and other relatively small debris were placed in strong bags and stored out of the way in the equipment room. Debris collected outside were piled neatly on the site and efforts were made to keep these piles to a minimum.

b) ***debris mixed with hazardous material*:** In the main buildings on the detection sites, batteries and mercury switches were recovered and removed from the building, as were other hazardous materials (anti-freeze, solvents, etc.). A check was also made to ascertain that no containers with hazardous materials, such as paint, solvents, anti-freeze, etc., were stored underneath the main building.

A person was assigned to systematically search for mercury switches in the following locations: panels located in the generator and control rooms; above the generator diesel tanks (Photo 2, Appendix 5); above the canisters in the equipment rooms; and on the warm-air ducts in the generator rooms (Photo 4, Appendix 5). In 2000, a few mercury switches were found in places inspected in 1999. The mercury switches were carefully removed, placed in heavy-duty containers and transported by helicopter or airplane to Schefferville or Whapmagoostui–Kuujjuaraapik. The switches from both communities were then transported to Kuujjuaq where they are safely stored before being sent to an authorized recycling centre.

Generally, 18 batteries comprising three units each, or a total of 54 units, can be found in the generator rooms. In other words, each generator has six batteries (18 units). Each battery weighs approximately 30 kg. Other emergency batteries, smaller and lighter, were also sometimes found in the buildings. Placed in heavy-duty containers the batteries and other hazardous materials were transported by helicopter to Schefferville (in the Kawawachikamach area), the outfitter camp on Lake Mollet (in the Whapmagoostui–Kuujjuaraapik area) or to supply sites to be recovered at a later date by floatplane and

transported to either community. In the Kawawachikamach area, the batteries left at the supply sites were transported to Schefferville on July 12, 2000. All the batteries transported to Schefferville were sent in November 2000 to Onyx Industries Inc. an authorized recycling centre in Sept-Îles. In the area of Whapmagoostui–Kuujjuaraapik, the batteries were transported to Kuujjuaraapik and are currently stored there, awaiting shipment by ship and truck to the Heist recycling centre in Rouyn. The considerable size and weight of the batteries raises transportation costs significantly.

The batteries and other hazardous materials recovered in March 2000 from a few sites in the Whapmagoostui–Kuujjuaraapik were transported by helicopter to the outfitter camp on Lake Mollet and by Single Otter equipped with skis to Whapmagoostui–Kuujjuaraapik. These batteries and other hazardous material were sent in June 2000 by airplane to La Grande and by truck to Heist, an authorized recycling centre, in Rouyn.

3.3 Contaminated soil

Searches for contaminated soil were carried out systematically on each site. Areas bare of vegetation and strategic points (near tanks, barrels, buildings, equipment, etc.) were examined by digging holes with a shovel. The appearance and smell of the soil were verified. If a smell of hydrocarbons was detected, the area was surveyed at several points, from its centre outwards, in order to determine the extent of the contamination and evaluate its size.

For each contaminated area greater than 1 m^2, a biological degradation process was applied, except where there was new growth, steep slopes, saturated soil, less than 10 cm of soil over rock, substratum comprising large stones. The biological degradation process involves turning the contaminated soil with a shovel (Photo 5, Appendix 5) and, then, adding and mixing soil amendment substances which accelerate the breakdown of hydrocarbons. The substances employed are fertilizer (Bio-Gazon 8-3-3), dolomitic lime and organic material consisting of sphagnum (*Sphagnum* spp.) or moss (*Pleurozium schreberi*). The quantities employed were 0.1 kg/m^2 of fertilizer, 0.5 kg/m^2 of dolomitic lime and close to 1 kg/m^2 of sphagnum or moss. With respect to saturated soil, each instance was assessed and a decision was made either to apply the biological degradation process or not. In certain instances, a PetroFlag kit was used to assess the concentration of hydrocarbons. In other instances, samples were taken to be analyzed in a laboratory.

3.3.1 Sampling and analysis of contaminated soil

In 1999, biological treatability tests were carried out on contaminated soil samples taken from sites 218, 339 and 410 by the Biotechnology Research Institute at the National Research Council of Canada (Rocheleau et al., 1999). On June 20, 2000, an EC representative took water samples at Site 218A and soil samples at depths ranging from 0–15 cm at sites 218, 218A and 309A for laboratory analysis which would determine the concentration of hydrocarbons. In September 2000, soil samples were taken from sites 330 and 330A.

The soil and water samples were analyzed by Groupe Bodycote Technitrol Inc. in 1999 and by Envirolab in 2000 for petroleum-derived hydrocarbons C10-C50. The hexane

extraction and CG-DIF quantification methods were used. The results shown on the analysis certificates are expressed as mg/kg or mg/L, which is to say part per million.

3.4 Environmental appearance

With respect to appearance, clean-up of the sites involved collecting garbage scattered around on the ground and containing it. If any waste areas were already present, the garbage was placed there. Garbage generally consisted of cans, scrap metal, pipes, cables, containers and pieces of paper. Empty barrels were also collected and stacked.

4. RESULTS

This section is a description of the work carried out at Mid-Canada Line sites through 1999–2000 in the areas of Kawawachikamach and Whapmagoostui–Kuujjuaraapik. The work is presented by area in order of priority for the nine sites where clean-up work has been completed and which will likely be issued a certificate of completion, and for the seven sites where clean-up work was not entirely completed but for which payment for the expenses incurred is required. For each site, the debriefing is general, followed by a breakdown according to the acceptance criteria.

First, Section 4.1 explains the steps taken with respect to the problem of waste liquid found in barrels and tanks.

4.1 With regards to waste liquid found in barrels and tanks

Inventories of certain sites completed in 1999 mention that several barrels contained waste liquid that was a mix of water and hydrocarbons. At the time of planning the work for June 2000, it was decided that when the waste liquid in a barrel was more than 90% water, the barrels would not be removed from the site. However, if the water and hydrocarbons could be separated, the barrels would be removed from the site. For this purpose, the EC representative suggested that the KRG team prepare a device comprising a hose and a valve that could be easily carried and used in the field to separate the water from the hydrocarbons by decantation. This device was fabricated during preparations and taken into the field.

The barrels which the 1999 inventory showed to have a mix of water and hydrocarbons were rechecked in 2000. It was noted that these barrels contained a large proportion of water and that these same barrels had remained standing. Due to changes in temperature between hot and cold seasons, the barrels would expand and contract. When expanding, hydrocarbons would leak from the barrels through cracks and from caps with dried and worn-out seals. When contracting, water which had accumulated on the tops of the barrels would be sucked in. After several years, the contents of the barrels might have changed considerably with water making up a large part.

At Site 224A for example, when the waste liquid from 12 barrels was transferred into five, it was noted that the liquid was more than 90% water (Photo 6, Appendix 5). These five barrels were carried by sling to the top of a nearby hill where they were emptied into a hollow in a rocky area without vegetation. This water carried only a faint smell of hydrocarbons and no iridescent film was visible.

The challenge posed by waste liquid in the 4400 L (1000 Imp. gal.) and 3400 L tanks was similar to the barrels. Inspections carried out in 2000 showed that waste liquid in the tanks was more than 90% water, and therefore did not need to be removed from the site. Water in the tanks had come from rain and condensation.

4.2 Sites at which clean-up work has been completed satisfactorily

In the area of Kawawachikamach, inventory and clean-up work on the Mid-Canada Line were carried out in June 1999 and 2000. In June 1999, clean-up work was carried out at sites 215, 218, 218A, 221 221A, while inventories were made for sites 224, 224A, 227, 227A, 303 and 303A in preparation for work in 2000. In June 2000, clean-up work was carried out and inventories made at sites 215, 218, 218A, 221, 221A, 224, 224A, 227, 227A, and 306 while exploratory inventories were made at sites 306A, 309, 309A, 312, 312A in preparation for work in 2001.

To date (in 1999 and 2000), all sites in the Kawawachikamach area, which is to 17 in all, have been visited for clean-up or inventory purposes. Of these, six sites will likely be issued a completion certificate by the MENV, while payment for work carried out at seven other sites has been requested by the KRG from the DND.

In the Whapmagoostui–Kuujjuaraapik area, inventories were made at ten sites (330, 330A, 333, 333A, 336, 336A, 339, 339A, 406 and 410) in September 1999. In March 2000, hydrocarbons and hazardous materials (batteries, mercury switches, anti-freeze and tar) were recovered from sites 330, 330A, 333, 333A, 336, 336A and 339. In September 2000, clean-up work was carried out at seven sites (321, 321A, 330, 330A, 342, 403 and 403A), while exploratory inventories were made at five other sites (315, 315A, 318, 324 and 327). In 1999 and 2000, 22 sites in the Whapmagoostui–Kuujjuaraapik area have been visited for clean-up or inventory work. From October 10–13, 2000, sites 321, 321A, 330, 330A and 403A were inspected by representatives from EC, the MENV, the KRG and the environmental specialist with the CRA representative. Sites 336 and 342 were also visited. An information meeting concerning the progress of work was held with a few members of the Whapmagoostui band council on October 13, 2000.

This section describes, for the Kawawachikamach area and then the Whapmagoostui–Kuujjuaraapik area, the work completed at nine sites for which a certificate of completion is being requested. These are sites 218, 218A, 221, 224 (priority A), 306 (priority B) and 227 (priority C), as well as sites 330, 330A and 403A (priority A). Diagrams showing the state of the sites in June 2000, generally following clean-up, are included in Appendix 3. In so far as possible, infrastructure, debris, barrel disposal areas, tanks as well as contaminated and restored soil areas are indicated. Site data records are included in Appendix 4. Photographs of the clean-up work and the sites are included in Appendix 5.

4.2.1 Site 218

Clean-up work at this site, classed priority A, was partially carried out in June 1999 and completed in June 2000. In 1999, the main building was inspected and cleaned, paint was scraped from the walls and ceilings and stored away, and the porch was stabilized. Around 100 barrels found at the site were stacked near the tanks. As well, the biological degradation process was applied (KRG, 1999).

Site 218 was visited on June 20, 2000, by representatives of the concerned parties prior to the completion of the clean-up work. Subsequently, it was agreed that the certificate of completion would be issued if:

- all hydrocarbons were removed from the site;
- the generators were drained and those liquids removed from the site;
- batteries and mercury switches were removed from the site.

The following sections describe the condition of the site following the completion of clean-up work on June 24, 2000, in accordance with the acceptance criteria.

4.2.1.1 Safety

The main building is in good condition and stable. There is no survival shelter. The site poses no threat to public safety.

4.2.1.2 Waste

Buildings: The interior of the building was well cleaned. The floor was swept and garbage was collected and stored out of the way in the equipment room. Windows and doors were in good condition.

Antennas: The site possesses two large detection antennas and two smaller ones. The antennas are laying on the ground and do not need to be dismantled as they pose no threat to public safety.

Pipes, pumping station and metal frames: The pipes showed no signs of hydrocarbon leaks. There is a bulldozer.

Generating units: Two of three generators were still in the main building. Approximately 90 L of oil and spent oil were drained from the generator tanks and pan, respectively. As well, outside, approximately 50 L of oil was drained from the tank of the missing third generator. The drained oil was transferred to 20 L (5 gal.) plastic containers and these were transported by helicopter to Schefferville. As explained in the section on methodology, the oil was sent to an authorized recycling centre in Sept-Îles.

Barrels and tanks: In June 1999, approximately 170 empty barrels situated close to a nearby lake (not shown on the diagram included in Appendix 3) were moved more than 55 m from the lake and stacked (KRG, 1999). In June 2000, a few barrels scattered around the detection site were stacked with the barrels near the tanks, bringing the total to 102. Valves for the six tanks on the site were opened to check for liquid; all the tanks were empty. The five barrels with liquid waste were tested and it was determined that water constituted more than 90% of the liquid. As a result, separation of the water and hydrocarbons by decantation, as planned, was near impossible. The contents of the barrels were emptied in a contaminated area near the tanks following application of the biological degradation process. Approximately 300 L (70 gal.) were emptied in that area.

Debris: Debris which was not mixed with hazardous material was stored at the site in the manner described in the section on methodology. Eight batteries comprising three units each and three mercury switches were removed from the site and sent to an authorized recycling centre, as described in the section on methodology. The switches are currently stored in Kuujjuaq.

4.2.1.3 Contaminated soil

In June 1999, the biological degradation process was applied in an approximately 25 m^2 area behind the main building. As well, due to a noticeable smell of hydrocarbons, the soil was turned, but no soil amendment substances were added, in a 25 m x 8 m area where burning had been carried out near the tanks. Fertilizers and lime were applied near the lake in a former barrel site where iridescent film was visible (KRG, 1999). Restoration was also carried out near the bulldozer in June 1999 (G. Leclair, staff).

During the on-site review on June 20, 2000, it was decided to apply the biological degradation process in three areas: 1) near the main building (approximately 6.25 m^2); 2) near the bulldozer (approximately 9 m^2); and 3) on the slope next to the tanks (approximately 20 m^2), the soil is to be turned lightly.

The area near the bulldozer which had been restored in 1999 was difficult to discern in June 2000 as new vegetation had taken root and the smell of hydrocarbons was only barely noticeable. In these circumstances, the soil was not turned, although fertilizers and lime were applied. In June 2000, the biological degradation process was applied, turning soil and adding amendment substances as described in the section on methodology, in the area near the main building and on the slope next to the tanks (Appendix 3).

Contaminated soil analysis results

Laboratory analysis of contaminated soil samples taken from Site 218 in 1999 showed the concentration of petroleum-based C10-C50 hydrocarbons to be between 28,000 and 30,500 ppm (Rocheleau et al., 1999). Behind the main building, a test using the PetroFlag kit showed the concentration of hydrocarbons to be 17,790 ppm prior to the restoration work in 1999 (KRG, 1999). The concentration of hydrocarbons in a sample taken in 1999 by the EC representative, for comparison with the laboratory analysis, was 30,500 ppm. Biological treatment tests applied to the sample reduced the concentration of hydrocarbons by 54% in 12 weeks (Rocheleau et al., 1999).

On June 20, 2000, soil samples were taken at Site 218 from three areas which had been restored in 1999. These areas were behind the main building, near the bulldozer and the spot where the soil had been turned near the main building.

Analysis results of soil samples taken in 2000 show the concentration of hydrocarbons to be below 300 ppm near the bulldozer and 4100 ppm behind the main building.

From these results, one might reasonably conclude that the 1999 restoration work had a positive impact, unless the significant drop in the concentration of hydrocarbons depends on the sample. The concentration of hydrocarbons is not necessarily spread equally

throughout the contaminated area. As a result, the concentration of hydrocarbons may differ according to where a sample is taken. Nonetheless, as 1999 laboratory analyses showed a 54% reduction in the concentration of hydrocarbons in restored soil samples taken from Site 218 (Rocheleau et al., 1999), it is very likely that the on-site restoration work had a positive impact. Furthermore, as restoration was again performed in June 2000 in the areas where burning had been carried out and where the soil had already been turned, the concentration of hydrocarbons should be even lower.

4.2.1.4 Environmental appearance

The overall appearance of Site 218 is good. Barrels have been stacked and garbage has been collected together.

4.2.1.5 Certificate of completion

Following inspection of the site on June 24, 2000, representatives of the KRG and the Naskapi Nation of Kawawachikamach (NNK) were of the opinion that the work completed complies with the acceptance criteria.

4.2.2 Site 218A

Site 218A is classed priority A. It is located in a bog, that is pockmarked with pools of water. An iridescent film was visible on a few pools. However, it was noted during the on-site review on June 20, 2000, that drainage of the film into the lake seemed to be impeded by a mound of sphagnum along the shore, a natural barrier between the lake and the bog (Photo 7). No ecological impact was noted in the places where the film was visible. The iridescent film may, in fact, be caused by a natural phenomenon and not by the spilling of any hydrocarbons.

No clean-up work was carried out at Site 218A in June 2000 since all work had been completed in 1999. In June 1999, barrels and debris had been collected together, the pumping station and pipes dismantled, and contaminated areas restored.

Following the on-site review on June 20, 2000, it was agreed that the site would be issued a certificate of completion if analysis of water and soil samples taken that same day showed satisfactory concentrations of C10-C50 hydrocarbons.

4.2.2.1 Safety

No structure, debris or hazardous goods threaten public safety.

4.2.2.2 Waste

Buildings: The debris from a wood shed, which had been dismantled in June 1999, was stacked neatly on the site.

Antennas: Not applicable.

Pipes, pumping station and metal frames: The pumping station was dismantled in June 1999, including the pump and pipes between the tanks and the shore. The pipes

contained no hydrocarbons. The pump, which was located near the lake, was placed near the spot where most of the barrels are stacked. As well, around 30 flexible pipes were pulled from the lake and laid along side the same barrels (KRG 1999).

Generating units: Not applicable.

Barrels and tanks: In June 1999, more than 450 barrels were collected and stacked together. About 240 barrels were moved 40 m from the lake and stacked together in a second area. About 15 barrels were pulled from the lake and stacked with the others (KRG 1999). The ten tanks at the site contained no waste hydrocarbons.

Debris: As mentioned above, debris was collected together. Most of the garbage was rusted cans which were collected and placed near the spot where most of the barrels are stacked (KRG, 1999). No hazardous material was found at Site 218A.

4.2.2.3 Contaminated soil

A 5 m x 12 m contaminated area was discovered on a slope next to the former burning site (KRG, 1999). The KRG report (1999) does not state whether the biological degradation process was applied in this area. According to the EC representative, the contaminated areas at these sites were restored. As well, soil samples were taken in 2000 from areas which were restored in 1999.

Contaminated soil analysis results

Laboratory analysis of water samples taken from the slope next to the former burning site on June 20, 2000, shows that the concentration of hydrocarbons C10-C50 is less than 0.1 ppm. This confirms the hypothesis that the iridescent film noticed on the surface of the pools of water is a natural phenomenon.

A soil sample taken from the former burning area in June 2000 showed the concentration of hydrocarbons to be 470 ppm. It should be noted that the concentration recorded with the PetroFlag kit at this location in 1999 was 11,000 ppm (KRG, 1999). As the desired drop in the concentration of hydrocarbons is 40% (G. Leclair, staff), the result obtained is satisfactory. It needs to be recalled that sampling is random; the concentration of hydrocarbons depends on where the sample is taken. A composite sample taken in June 2000 from an area restored in 1999 showed the concentration of hydrocarbons to be 5800 ppm. However, as no analysis of this area had been carried out in previous years, the performance of the restoration work can not be evaluated.

4.2.2.4 Environmental appearance

At the time of the on-site review on June 20, 2000, the general appearance of the site was very satisfactory as barrels and garbage had been collected together.

4.2.2.5 Certificate of completion

As agreed following the June 20, 2000 visit, Site 218A could be issued a certificate of completion if analysis of contaminated water and soil samples was satisfactory. Analysis

results support the hypothesis that the iridescent film noticed on the surface of the pools of water is a natural phenomenon. Analysis results of soil samples also show that the biological degradation process has significantly lowered the concentration of hydrocarbons in contaminated areas.

Clean-up work at Site 218A is complete and it complies with the acceptance criteria.

4.2.3 Site 221

Clean-up work at this site, classed priority A, was carried out in 1999 and in 2000. In June 1999, the main building was inspected and cleaned up, windows and doors were repaired. Over 100 barrels were stacked, of which 30 or so are located at the bottom of the hill and about 100 are near the tanks. At that time, 26 barrels containing hydrocarbon waste were set aside. The wood bases supporting the pipe connecting the tanks to the main building were demolished so the pipe could be closer to the ground. Debris around the site was collected together in a few areas. Debris from the survival shelter was also collected together. A 25 m^2 area of rock contaminated with heavy oil was noted approximately 10 m from the main building (KRG, 1999).

At the time of the on-site review on June 20, 2000, Site 221 appeared clean with barrels stacked and garbage collected. Among the barrels near the seventeen 4400 L tanks, 26 were completely or partially full and five tanks contained a few centimetres of waste liquid. A little debris around the site needed to be collected.

The inside of the main building had been cleaned, with garbage placed in bags or barrels and stored out of the way in the equipment room. The floor had been swept. A door needed repairing and all the windows were in good condition. One generator remains in the building, but contains no oil. There are mercury switches and batteries present.

During the June 20, 2000 meeting, it was agreed that Site 221 could be issued a certificate of completion if the following work was completed:

- repair the door of the main building;
- collect the scattered garbage;
- remove batteries, mercury switches and hydrocarbons;
- apply the biological degradation process under the barrels containing waste liquid (20 m^2 area) and under the pipe where it had collapsed.

As well, on June 24, 2000, the KRG technician confirmed that the generator tanks contained close to 500 L of diesel.

4.2.3.1 Safety

No structure, debris or anything else threatens public safety.

4.2.3.2 Waste

Buildings: The main building is in good condition. The building has been cleaned and debris placed in the equipment room. The door of the main building was repaired in June 2000.

Antennas: The antennas are laying on the ground and do not need to be dismantled.

Pipes, pumping station and metal frames: The pipe connecting the tanks to the main building had collapsed in a few places and waste liquid had contaminated the soil. The wood bases supporting the pipe were demolished in 1999 for safety (KRG, 1999). In June 2000, the pipe appeared to be empty.

Generating units: The only generator remaining at the site contained no oil. The generator tanks, however, contained almost 500 L of diesel. This fuel was transferred into three 200 L barrels which were flown by helicopter and sling to Site 221A and later removed from that site by floatplane. The barrels were transported by floatplane to Schefferville on July 12, 2000. The barrels were kept by the airline company for reuse.

Barrels and tanks: Twice in June 2000 it was determined that water constituted more than 90% of the waste liquid contained in the 26 barrels (refer to section 4.1). After emptying the liquid (approximately 1000 L) over the contaminated area underneath the barrels, the empty barrels were placed with the others already stacked nearby. The waste liquid in the tanks (approximately 100 L), which was also made up of more than 90% water, was emptied in the contaminated area near the stacked barrels.

Debris: Debris not mixed with hazardous material was stored in the main building, in heavy-duty bags or barrels. Cans, wood, metal and so on were collected together outside. In June 2000, six 20 L (5 gal.) containers of oil stored on the site in 1999 were transported by helicopter to Schefferville. As well, 15 mercury switches and 18 batteries (54 units) were transported to Schefferville and then an authorized recycling centre in November 2000.

4.2.3.3 Contaminated soil

In June 2000, the biological degradation process was applied in two areas. The first was the area (approximately 20 m^2) in which the barrels containing waste liquid had stood. After two hours of turning the shallow soil, which was impossible to mix well and did not allow for an apparently proper mixture of the soil amendment substances, it was decided to discontinue the process. The amendment substances added, however, should allow the hydrocarbons in the area where the soil was left unturned to be broken down to a certain extent. The soil was wet, which is to say saturated in water. The second spot at which the process was applied was approximately 3 m x 1 m, the place where the pipe had collapsed.

4.2.3.4 Environmental appearance

The site and main building were clean. Debris had been collected together.

4.2.3.5 Certificate of completion

The clean-up work carried out at Site 221 is complete. Following inspection by representatives of the KRG and the NNK, it was agreed that the clean-up work complied with the acceptance criteria.

4.2.4 Site 224

Under the Contribution Agreement, Site 224 is classed priority A. The site comprises a main building, a detection antenna, two smaller antennas, eight tanks and around 100 empty barrels. No contaminated soil was noted. Prior to clean-up work in June 2000, two 20 L (5 gal.) containers of oil, three mercury switches and one emergency battery were found in the main building. One door and two large windows in the lounge of the main building were in poor condition.

Clean-up work at Site 224 was carried out on June 21, 22, 26 and 29, 2000. To clean up outdoor areas, garbage was collected and barrels were stacked. The main building was inspected and judged to be in good condition. It was cleaned and swept. For safety reasons, three unstable poles of a section of the culvert containing cables were cut by the KRG technician so the culvert could be laid on the ground.

The two containers of oil were transported to Schefferville. The two windows and door in the main building were repaired. The two containers of oil, the three mercury switches and the emergency battery were transported to Schefferville and then to an authorized recycling centre.

4.2.4.1 Safety

Dangerous objects, such as the culvert containing cables, were laid on the ground. The antennas pose no threat to the safety of possible visitors.

4.2.4.2 Waste

Buildings: The building was cleaned and debris was stored in the equipment room.

Antennas: The antennas are laying on the ground and do not need to be dismantled as they pose no threat to public safety.

Pipes, pumping station and metal frames: The pipes appear to be empty. They do not need to be dismantled.

Generating units: On June 29, 2000, approximately 500 L of oil was transferred from the generators into three barrels. The barrels were transported by helicopter and sling to Site 224A. They were picked up from this site by floatplane on July 12, 2000.

Barrels and tanks: Inspection of the tanks showed they contained no waste liquid. The barrels were also empty.

Debris: Debris not mixed with hazardous material were stored in the main building, in heavy-duty bags or barrels. Cans, wood, metal and so on were collected together outside. In June 2000, two 20 L (5 gal.) containers of oil stored on the site in 1999, three mercury switches and an emergency battery were removed from the site. They were sent to an authorized recycling centre in November 2000 in the manner described in the section on methodology.

4.2.4.3 Contaminated soil

No contaminated soil was noted at this site.

4.2.4.4 Environmental appearance

The site and main building were clean. Scattered debris and barrels were collected together.

4.2.4.5 Certificate of completion

The clean-up work required at Site 224 is complete. Following inspection by the KRG representative and technician, it was agreed that the clean-up work complied with the acceptance criteria.

4.2.5 Site 306

Under the Contribution Agreement, Site 306 is classed priority B. The site was visited on June 20, 2000, prior to clean-up work by representatives of the parties involved and the representative of the NNK. It was noted that several cans and a few barrels were scattered at the bottom of the hill. Of the nine tanks present, three seemed to contain approximately 200 L of waste liquid. An approximately 120 m^2 contaminated area was also identified near the tanks.

The main building contained a large quantity of debris, the two diesel tanks for the generators were empty, although one generator contained about 100 L (25 gal.) of oil. The paint was in good condition. The 18 generator batteries and 16 mercury switches were still present. Two windows and one door were broken. The survival shelter was full of debris, in large part from the mattresses. A few window panes needed to be replaced. A portable Herman Nelson heater in good condition was found in the shelter. The clean-up work at this site were carried out on June 28, 2000.

4.2.5.1 Safety

The two antennas are laying on the ground and they pose no threat to public security.

4.2.5.2 Waste

Buildings: The doors of the generator room were installed and the windows of the survival shelter were repaired.

Antennas: The antennas were neither dismantled nor moved.

Pipes, pumping station and metal frames: A portable Herman Nelson heater in good condition was left in the survival shelter. A Bombardier snowmobile and cement mixer were found behind the survival shelter. A fire extinguisher (canister on wheels) was found near the tanks.

Generating units: Approximately 100 L of oil were drained from the tank and a generator pan. The two other generators contained no oil.

Barrels and tanks: Sixty-two empty barrels found at the bottom of the hill relatively far from the site were stacked as were 26 other barrels on the opposite side of the hill. In total, 332 barrels are stacked at the site. The barrels were checked and all were empty. It was determined that water constituted over 90% of the approximately 100 L of waste liquid in the tanks. The waste liquid was emptied over the contaminated area near the tanks.

Debris: Debris not mixed with hazardous material were removed from the survival shelter and piled together nearby. Debris in the main building was stored out of the way in the equipment room as described in the section on methodology. Outside, debris such as cans, cables and wood were collected together in several areas. The floors of both buildings were swept. The 18 generator batteries and a container with approximately 100 L of oil from a generator were transported to Site 306A. The batteries and oil were flown by floatplane to Schefferville on July 12, 2000 and sent to an authorized recycling centre in November 2000. In total, 16 mercury switches were removed from the site.

4.2.5.3 Contaminated soil

The biological degradation process was applied in an approximately 10 m x 12 m contaminated area near the tanks (Photo 5). Three smaller contaminated areas, less than 1 m^2 were identified beside the main building. These smaller areas were restored with fertilizer and lime, but the soil was not turned since there was new growth.

4.2.5.4 Environmental appearance

After clean-up work was completed, the site was tidy and its appearance was acceptable. As well, the buildings were swept and debris picked up.

4.2.5.5 Certificate of completion

Following inspection by the KRG representative and technician, it was agreed that the clean-up work had been completed according to the work plan and it complied with the acceptance criteria.

4.2.6 Site 227

Clean-up work at this site, classed priority C, was carried out on June 23, 2000. The site comprises a main building, approximately 70 barrels, two tanks, a detection antenna and a smaller antenna.

4.2.6.1 Safety

The main building is in good condition. The antennas are laying on the ground and they pose no threat to public security.

4.2.6.2 Waste

Buildings: The main building was cleaned and debris was stored out of the way in the equipment room. Doors and windows were in good condition.

Antennas: The antennas were neither dismantled nor moved.

Pipes, pumping station and metal frames: The pipes showed no signs of hydrocarbon leaks.

Generating units: There were no generators in the main building.

Barrels and tanks: The barrels and tanks were empty. The barrels were stacked in three areas.

Debris: Debris scattered on the ground was collected together. No batteries nor mercury switches were found in the main building.

4.2.6.3 Contaminated soil

No contaminated soil was noted at the site.

4.2.6.4 Environmental appearance

The site was tidy. Barrels had been stacked and debris collected. There is no debris in the building and the floor had been swept.

4.2.6.5 Certificate of completion

The site was inspected on June 23, 2000, by the KRG project leader and technician. It was agreed that the clean-up work complied with the work plan and the acceptance criteria.

4.2.7 Site 330

Hazardous materials and hydrocarbons were removed from this site, classed priority A, on March 9, 2000. On September 5–6, 2000, clean-up work was carried out and an inventory of the site was made. The main building and survival shelter are in good condition. Doors were in good condition, but one window on the survival shelter and another on the main building were repaired. Paint was scraped from the walls and ceilings, a large amount of debris was picked up and the floor was swept (Photo 8).

Barrels were inspected and stacked near the tanks. One barrel containing approximately 150 L of diesel was found at the site. About 10 barrels at the bottom of a hill beside the main building were stacked and nearby garbage was placed inside of open barrels.

Even though batteries and mercury switches had been removed from the main building in March 2000, four additional mercury switches were removed in September 2000: one from above a canister in the equipment room and three from the warm-air ducts in the generator room (Photo 4). Approximately 300 L of oil from the generators was transferred to two barrels. The two diesel tanks for the generators were empty. There were no leaks in the pipes.

The biological degradation process was applied in contaminated areas near the tanks, near the barrels, at two former burning sites and behind the survival shelter (Photo 5). Most of the contaminated areas smelled strongly of hydrocarbons. A contaminated soil sample was taken on October 11, 2000, by the MENV and EC representatives as part of their inspection.

An inspection was carried out on October 11, 2000, by representatives of the parties and the CRA as well as the environmental specialist.

4.2.7.1 Safety

The buildings are sound and in good condition. No cables, metal rods or other objects threaten public safety on the site.

4.2.7.2 Waste

Buildings: The two buildings were cleaned. One door was installed in the porch of the main building and a window was repaired on each building.

Antennas: The two large detection antennas are laying on the ground and they do not threaten public safety.

Pipes, pumping station and metal frames: The pipes were inspected and showed no sign of leaks.

Generating units: The generator tanks and oil pans were emptied. Approximately 300 L were transferred to two barrels.

Barrels and tanks: In March 2000, two 40 L (10 gal.) containers with approximately 30 L and 20 L of oil, respectively, were removed from the site in the manner described in the section on methodology. The hydrocarbons removed in March 2000 were sent to Heist, an authorized recycling centre in Rouyn. The hydrocarbons removed from the site in September 2000, including one barrel with approximately 150 L of diesel and two others with oil from the generators, should soon be sent to Heist as described in the section on methodology. The nine tanks were checked in September 2000 and all were found to be empty. In the main building, three or four litres of oil, in a container which could not be transported, will be transferred to a leak-proof container and removed from the site in 2001 when visits are scheduled to install information posters and signs as well as first aid kits.

Debris: Debris not mixed with hazardous materials was collected together in a few places. Debris collected from inside was stored out of the way in the equipment room in the main building, as described in the section on methodology. In March 2000, 18 batteries and mercury switches located above the diesel tanks for the generators were removed. The batteries were sent to Heist in Rouyn. Four mercury switches were removed in September 2000 and are currently stored in Kuujjuaq before being sent to a recycling centre.

4.2.7.3 Contaminated soil

There are several contaminated areas at this site. The biological degradation process was applied to these areas in the manner described in the section on methodology. The restored areas are: a former burning site (4 m x 2 m) at the end of an overhead culvert; a 5 m x 1.5 m area and a 10 m x 2 m area near the tanks; a 4 m^2 area, a 10 m^2 area and a 100 m^2 area near the place were 520 barrels are stored; a 2 m x 1.5 m area beside the helicopter pad; another 4 m^2 former burning area; and a 2 m x 0.5 m area and 2 m x 1 m area behind the survival shelter (Appendix 3 and Photo 5, Appendix 5).

Contaminated soil samples were taken from near the barrels and the tanks on October 11, 2000. The concentration of C10-C50 hydrocarbons contained in the samples was 15,000 ppm. The total concentration of oil and grease in these areas is 14,500 ppm and 17,000 ppm, respectively. Although restoration work was carried out in these areas on September 6, 2000, the estimated concentration of hydrocarbons represents the condition of the soil before restoration since there was only a short period between application of the process and sampling, and the temperature was relatively cold. Samples should be taken again in 2001 from the same locations in order to verify the efficiency of the restoration work.

4.2.7.4 Environmental appearance

After clean-up work, this site was tidy. Barrels had been stacked and garbage collected.

4.2.7.5 Certificate of completion

Following inspection of Site 330 on September 6, 2000, the KRG representative and the environmental specialist agreed that the clean-up work complied with the acceptance criteria and that Site 330 should be issued a certificate of completion.

4.2.8 Site 330A

Site 330A is classed priority A. Clean-up work was carried out on the site on September 4, 6–7 and 10, 2000. The site is spread out since it consists of two separate parts: the main building area which is approximately 1 m from the lake, and the tanks, barrels, pipes and pumping station area which is approximately 300 m away (Photo 9).

The building is used by the Cree as a fishing, hunting and trapping camp. As a matter of fact, a trap, coats and tools are proof that the site is used regularly. Snowmobile parts and paint cans had been left in front of the building. The porch was an unstable pile of

various materials. The building is stable. One window was broken. Near the building, a metal marker reading "G. Guay Site 330 P.2" was found.

Beside the building was a variety of debris including cables, metal and wood scrap, and mattress springs; an antenna was leaning against the building (Photo 10). Beside the building, there was also burnt debris in a 7 m x 3 m area, probably a garbage disposal site. Behind the building, towards the forest, a furnace and two barrels were found. In total, these contained approximately 200 L of oil. These were moved to the other part of the site, near the helicopter pad. Subsequently, they were removed from the site.

In this other part of the site, 907 barrels were stacked in four areas. Several barrels were moved so that they would be at least 30 m from the lake (Photo 9). There are seven tanks at the site with pipes running to the lake. On the ends of the pipes are valves. The pipes and tanks were checked and contained no waste liquid. Three barrels containing a total of 400 L of impure hydrocarbons were found.

A snowmobile, abandoned after the Mid-Canada Line period, was found halfway between the two parts of the site. A compressor was also found in the second part of the site.

One contaminated area, approximately 2 m x 1.5 m, was found near the helicopter pad. The biological degradation process was applied on September 10, 2000. During an inspection made by MENV, KRG, EC and CRA representatives and the environmental specialist on October 11, 2000, a soil sample was taken by the EC representative for laboratory analysis.

4.2.8.1 Safety

Less than 100 m from the main building, there were cables projecting up to 50 cm out of the ground. Some cables were wrapped around spruce. The cables were cut and placed in the disposal area. The cables were a danger to public safety. Other cables located closer to the main building were also cut and placed in the disposal area. The pile of material which had been the porch was removed as it posed a danger to public safety (Photo 10). Plywood was added to the porch floor to make it stable. The building is stable.

4.2.8.2 Waste

Buildings: One window was repaired with Lexan.

Antennas: Two sections of a small antenna were placed in the disposal area beside the main building (Photo 10).

Pipes, pumping station and metal frames: A pumping station, compressor and two small generators were found at the site. Among the objects found that are unrelated to the Mid-Canada Line was a snowmobile. The pipes contained no waste hydrocarbons.

Generating units: Not applicable.

Barrels and tanks: Five barrels, including two which were found at the bottom of the hill approximately 100 m behind the main building, were transported by helicopter and sling to the outfitter camp at Lake Mollet on September 10, 2000 (Photo 3). As described in the section on methodology, some of these barrels were kept by the outfitting manager while the rest were transported to Whapmagoostui–Kuujjuaraapik so they may be sent by ship to an authorized recycling centre. Two barrels of diesel were removed from the site on March 9, 2000 and sent to Heist in Rouyn.

Debris: A dock made of wood and barrels was removed from the lake. The barrels which were rusty and had begun to disintegrate were stacked with the other barrels at least 30 m from the lake. The wood was piled approximately 10 m from the lake (Photo 9). The water-logged wood was heavy and difficult to carry. Several flexible pipes were also moved approximately 30 m from the lake and placed beside stacked barrels. Two paint cans were also found and they will be forwarded shortly, along with the barrels of hydrocarbons, to an authorized recycling centre. No other hazardous material was found on the site. Debris from around the main building was placed in a disposal area several metres away from the building (Photo 10).

4.2.8.3 Contaminated soil

One contaminated area was found near the helicopter pad. The biological degradation process was applied in this area on September 10, 2000. Analysis of the soil sample taken from this area showed the concentration of hydrocarbons C10-C50 to be 29,000 ppm. This result represents the condition of the soil before restoration since more time is required for the biological degradation process to have an impact.

4.2.8.4 Environmental appearance

After clean-up work, the site was tidy. Barrels had been stacked and debris collected. The main building is now cleaner inside and outside (Photos 9–10).

4.2.8.5 Certificate of completion

Following inspection, the KRG project leader and the environmental specialist agreed that the clean-up work complied with the acceptance criteria.

4.2.9 Site 403A

This site is classed priority A. It is located on the shoreline of Hudson Bay and close to 400 barrels were scattered around the site, including over 40 on the beach. The site appeared very messy (Photo 11). At the site, 11 tanks are grouped together. Another two tanks are located 40 m away from this group, which is to say 70 m from the shoreline. The tanks and barrels were very rusty. Several barrels were also disintegrating. A small lake is located about 50 m from the group of 11 tanks, which is to say 200 m from the shoreline. The pump was not at the site but three valves were still present.

This site was cleaned up on September 13, 2000. Clean-up work involved stacking the barrels together behind the two tanks. The valves on the bottom of the tanks were opened

to check for hydrocarbons. All the tanks were empty. The lids of several tanks were closed. Various debris, in particular metal, were collected together while other debris was placed near the stacked barrels. Metal wire near the lake was placed in heavy-duty bags and placed in the disposal site at Whapmagoostui–Kuujjuaraapik. Several long cables running to the beach along the pipes were pulled from the sand and moss and placed beside the stacked barrels. One barrel in bad condition and filled with vitrified tar was found approximately 25 m from the shoreline.

Representatives of the parties and the CRA as well as the environmental specialist inspected this site on October 12, 2000.

4.2.9.1 Safety

Several cables and wires which posed a threat to public and animal safety were collected. The site does not threaten public safety or the environment.

4.2.9.2 Waste

Buildings: Not applicable.

Antennas: Not applicable.

Pipes, pumping station and metal frames: The pipes contained no waste hydrocarbons. The concrete base for the pump, but not the pump itself, was located. A fire extinguisher was found beside the concrete base. An abandoned snowmobile found approximately 25 m from the shoreline and a rusting and disintegrating furnace were placed with the debris.

Generating units: Not applicable.

Barrels and tanks: The barrels were inspected and contained no waste liquid. The tanks were also empty. The barrels and tanks at this site have rusted more quickly than at sites further from Hudson Bay by the sea-air. A barrel of vitrified tar which was stuck to the ground was left where it was found. This barrel does not pose any threat to public safety nor the environment, since the vitrified tar can no longer contaminate the environment.

Debris: Debris not mixed with hazardous material, such as metal, cables and wood, was collected together. No hazardous material was found at the site.

4.2.9.3 Contaminated soil

Two small contaminated areas (2 m x 1 m) were identified at the site. Both areas smelled strongly of hydrocarbons. The biological degradation process was not applied as contamination was caused by a thick substance which had coated the substratum of stones and rock. There were a few contaminated areas, smaller than 1 m^2, scattered around the site. These areas were often where barrels had been located. The smell of hydrocarbons was sometimes barely noticeable and the rocky soil made it impossible to properly apply the biological degradation process. In a few other areas where there was a suitable substratum, there was new growth.

4.2.9.4 Environmental appearance

The site is tidier now than before the clean-up work was carried out. The 388 barrels were stacked together (Appendix 3).

4.2.9.5 Certificate of completion

Following inspection, the KRG project leader and environmental representative agreed that the clean-up work complied with the acceptance criteria and that the site should be issued a completion certificate.

Furthermore, the site was inspected on October 12, 2000, by representatives of EC, the MENV, the KRG, and a CRA representative and environmental specialist. All agreed that the site should be issued a certificate of completion.

4.3 Information posters and first aid kits

Under the acceptance criteria, no additional clean-up work will be required at sites for which a certificate of completion has been requested. Notwithstanding, the Contribution Agreement stipulates that an information poster shall be installed at each site. The poster is intended to provide a description of the project and the contribution of the different parties. For its part, the work plan calls for the installation of information signs, in five languages (Cree, Inuktitut, Naskapi, English and French), which state that the Québec government allows buildings on Mid-Canada Line sites to be used as survival shelters. The work plan also calls for an emergency kit, including first aid items, to be installed on each site with a building in good condition. The information posters and signs as well as first aid kits shall be prepared when planning work for 2001. The posters, signs and kits shall be installed throughout as part of the 2001 field work on sites where the clean-up work is judged to have been completed.

4.4 Sites for which payments are required

This section describes clean-up work which was begun, but not completed, at five sites in the Kawawachikamach area. These are 215, 221A and 224A (priority A), 306A (priority B) as well as 227A (priority C). This section also describes clean-up work which was begun, but not completed, at two sites in the Whapmagoostui–Kuujjuaraapik area. These sites are 321 and 321A (priority A). The results of contaminated soil analyses are presented, when applicable.

Diagrams of the sites in the Kawawachikamach area, following clean-up work, are contained in Appendix 3. Diagrams of the sites in the Whapmagoostui–Kuujjuaraapik area have not been produced in electronic format. A few photographs are contained in Appendix 5.

4.4.1 Site 215

Under the Contribution Agreement, Site 215 is classed priority A. Clean-up work was carried out at this site in 1999 and 2000.

In June 1999, the main building was inspected and cleaned, including scraping paint from the walls and ceiling. Kitchen and generating room windows were repaired. The porch door was also repaired with plywood found on the site. Poles supporting the culvert containing cables between the main building and one of the antennas were in poor condition and posed a threat to safety thus, the culvert was laid on the ground. Most of the barrels on the site were already located near the tanks. Several barrels scattered around were collected and stacked with the others to bring the total number of barrels to around 90. In 1999, two barrels filled with tar and another with diesel, none of which appeared to be leaking, were found approximately 150 m from the main building. Quite a bit of debris not mixed with hazardous material (approximately 3000 cans, glass from broken bottles and numerous metal objects) were moved within 200 m of the main building. As several cables could not be removed from the ground, they were partially buried or cut in order to prevent accidents. A contaminated area (8 m x 12 m) was found on rock approximately 15 m from the door to the generating room of the main building. Three areas which were contaminated with tar were found approximately 125 m from the main building (KRG, 1999).

4.4.1.1 On-site review on June 20, 2000

At the time of the on-site review carried out by representatives of the parties involved and the environmental specialist on June 20, 2000, the site appeared to have been well cleaned. Barrels had been stacked and previously scattered debris had been collected together.

The main building was stable and in good condition. Inside, it was tidy and well cleaned: debris had been collected and stored out of the way in the control room and the floor had been swept. The windows were in good condition, but a door needed to be repaired. During the review, mercury switches were found, but there were no batteries or generators in the building. Two containers with 65 L (15 gal.) of oil were stored in the generator room in 1999 to be removed from the site at a later date.

Inspection of the two 4400 L tanks revealed that they contained a few centimetres of liquid waste. The quantity was estimated at between 200 and 400 L. None of the remaining barrels contained any hydrocarbons.

The KRG report (1999) indicates that one barrel full of diesel and two others with tar are located on the site approximately 125 m to the north of the building. However, a search of the site on June 20, 2000, did not turn up the two barrels of tar.

During the June 20, 2000, on-site review, no contaminated area was found even though the KRG report (1999) mentioned a contaminated area (8 m x 12 m) near the main building.

During the meeting held in Schefferville on June 20, 2000, attended by representatives of the three government departments, the KRG representative, and the NNK representative, it was agreed that if the following clean-up work were carried out at Site 215, the site would be issued a certificate of completion:

- transfer the liquid waste from the tanks into barrels;
- remove the hydrocarbons from the site;
- remove the mercury switches from the site;
- repair the door into the main building.

It was agreed that the biological degradation process did not need to be applied at this site.

4.4.1.2 Clean-up work carried in June 2000

On June 28, 2000, the following work was carried out at Site 215 by the KRG representative and technician as well as the NNK representative:

- the 1999 inventory was verified and updated;
- eight mercury switches were removed;
- two 65 L containers of oil and one barrel with diesel were removed;
- the door to the main building was repaired;
- the hydrocarbons and mercury switches were transported to Schefferville;
- the liquid waste in the tanks was checked and drained by opening the drain valve (refer to section 4.1);
- the site was inspected after the clean-up work had been carried out and a site diagram was made.

During the final verification of Site 215 on June 28, 2000, a contaminated area of approximately 80 m^2 was identified on the slope next to the tanks. The area smells strongly of hydrocarbons and the soil is a dark colour to a depth of about 10 cm. Due to weather conditions and transportation constraints, the biological degradation process could not be applied to the contaminated area. This process will have to be applied during field work in 2001.

As described in the section on the methodology, the hydrocarbons and mercury switches were removed from the site and forwarded to an authorized recycling centre.

4.4.1.3 Payment required

Clean-up work which needed to be carried out at Site 215 before a certificate of completion could be issued, as set out at the June 20, 2000 meeting, was completed. In 2001, only the biological degradation process needs to be applied in the contaminated area near the tanks.

4.4.2 Site 221A

Site 221A is classed priority A. Clean-up work was carried out on the site in June 1999. No work was carried out on the site in 2000, except for an on-site review performed by representatives of the parties involved.

The KRG report (KRG, 1999) states that this site, which is located in a bog pockmarked with pools of water, may be divided into two zones. The first zone includes the helicopter pad, the pumping station, almost 400 barrels (aviation gasoline and diesel) and seven 4400 L tanks (of which two are located near the lake and the other five are about 80 m from the lake). The second zone is approximately 200 m from the first along the lake. This zone includes 103 barrels, a shelter for meat made of wood, an outhouse, four small aluminum antennas, metal objects and construction material. A contaminated area (approximately 12 m x 15 m) was found near a platform where valves were installed.

In June 1999, a small shelter for meat and an outhouse were demolished. The debris was stacked approximately 45 m from the lake in the main disposal area for various debris. Four small aluminum antennas were also placed there.

The pumping station was dismantled, as were the pipes and valves connecting the two groups of tanks. The debris from this work was placed in the first zone beside the helicopter pad. No hydrocarbons were found in the pipes or valves. Eighty-three barrels were moved away from the lake and several were pulled from the lake to be stacked in the first zone behind the helicopter pad where there were 542 barrels. This barrel disposal area is located more than 25 m from the lake. The biological degradation process could not be applied in the contaminated area due to poor drainage conditions. The valves located at the contaminated area were dismantled and placed in a drier area (KRG, 1999).

Debris, which included rusty cans, shingles and construction waste, was mainly placed in the second zone. In this zone, there are 103 barrels located approximately 30 m from the lake (KRG, 1999).

4.4.2.1 On-site review on June 20, 2000

At the time of the on-site review, Site 221A appeared to have been well cleaned with 400 stacked barrels and debris collected together.

With respect to contaminated soil, Site 221A is similar to Site 218A: the site is located in a bog pockmarked with pools of water (Photo 7). An iridescent film was visible on a few pools, but no ecological impact was noted. It does not appear that any of the film from the pools is draining into the lake. There is no iridescent film visible on the lake. It is very difficult to apply the biological degradation process in anaerobic conditions such as found here.

During the meeting held on June 20, 2000, it was agreed that no further work was required at this site. The decision concerning the iridescent film on the pools was to be made by the MENV.

4.4.2.2 Payment required

Analysis of the water at Site 218A (similar to Site 221A) in 2000 showed that the iridescent film noticed on the surface of the pools is a natural phenomenon. As a result, the biological degradation process does not need to be applied at Site 221A.

Although clean-up work at Site 221A appeared complete and complied with the acceptance criteria at the time of the inspection carried out by the parties involved on June 20, 2000, this site needs to be checked again. Ten barrels containing hydrocarbons which had been left on a plywood base, according to the KRG report (KRG, 1999), were not noticed in 2000. Following recent verification of the file for Site 221A by the KRG representative, it would appear an error was made regarding the number of barrels. In fact, a single barrel containing hydrocarbons may have been left on the site.

This site should be revisited in 2001. If any hydrocarbons are at the site, they will be sent to an authorized recycling centre.

4.4.3 Site 224A

Under the Contribution Agreement, Site 224A is classed priority A. Clean-up work was carried out from June 23–26, 2000. Site 224A is covered by grass growing in a humid substratum, with poor drainage. The site has nearly 600 barrels of which nearly 200 were very close to the lake and around 100 were less than 15 m from the lake. The pumping station is still present, as are the pipes. Two contaminated areas were found near the pumping station. The building was in very poor condition. Pieces of the building had fallen into the lake. Inside the building, there was a stove, a small refrigerator, mattress springs and a lot of other garbage.

Several barrels were moved more than 20 m from the lake and stacked in six areas. Metal and flexible pipes were removed from the lake and taken from the shoreline, and placed an acceptable distance from the lake.

Precise instructions were given to the Naskapi team for the demolition of the building and the disposal of garbage from inside the building and debris from the demolition. The building was demolished by Naskapi teams and an Inuit technician on June 24, 2000. On June 26, 2000, the KRG representative and technician as well as the environmental specialist returned to the site in order to complete the clean-up work and inspect the site. It was noted that some of the stacked barrels were too close to the lake. Instructions were given to the Naskapi foreman to correct the situation. The building had been demolished, but the garbage from inside the building and debris from the demolition had been left where they were, near the lake. Given the logistics and constraints posed by clean-up work at other sites, the KRG representative decided to again contract a few members of the Naskapi team to dispose of the debris. The Naskapi team carried out the required work on July 12, 2000.

The biological degradation process was applied on June 26, 2000, in a 10 m x 2 m area and a smaller approximately 3 m x 1.5 m area. The biological degradation process could be negatively affected by the wetness of the soil. An iridescent film was noted on the surface of water in the restored areas.

The 12 barrels containing liquid waste were made ready for removal by floatplane at a later date. However, after noting that liquid waste in barrels at other sites was sometimes

more than 90% water, a team supervised by the KRG representative and technician returned to Site 224A to check the liquid in the 12 barrels using a pump (Photo 6). The liquid was almost completely water. This liquid was transferred into five barrels. These barrels were carried by helicopter and sling to the top of a nearby hill where they were emptied into a hollow in a rocky area without vegetation, as explained in section 4.2.

4.4.3.1 Payment required

A great deal of effort was put into cleaning up Site 224A. The site must be inspected in 2001 by representatives of the KRG and NNK. The site diagram will be updated during this visit.

4.4.4 Site 306A

This site, which is classed priority B, is spread along the shoreline. The substratum is a wet bog. On the site were two tanks, a pipe, a wood helicopter pad in poor condition and over 500 barrels which were stacked well apart. An old dock was also located on the shoreline. No hazardous material was found on the site.

On June 28–29, 2000, the scattered barrels were stacked at least 30 m from the lake. The tanks were checked and contained no liquid waste. No contaminated areas were found, but a faint iridescent film was visible in the bog behind the outhouse. This film may be a natural phenomenon as was the case for sites 218A and 221A.

When the representatives of the KRG and the NNK inspected the site on June 28, 2000, the Naskapi team was directed to move barrels and debris lying within 10 m of the shoreline at least 20 m from the shoreline. The barrels and debris are no longer easily seen from the shoreline nor the area near the tanks, since they are located in a forested area at the far end of the site, beyond the boardwalk. A few barrels were covered in moss and had been integrated into the environment.

4.4.4.1 Payment required

Most of the clean-up work required at this site involved moving and stacking the barrels, as well as inspecting the barrels and tanks for liquid waste. This site will again be inspected in 2001 in order to ascertain that the clean-up work was completed as requested. The site diagram will also be updated during this visit.

4.4.5 Site 227A

This site is classed priority C. Clean-up work was carried out on June 23, 2000. On the site were 281 barrels and three tanks, one of which contained a considerable quantity of liquid waste. This site is not one of those where hydrocarbons were eliminated as part of Phase 1 of the clean-up work in 1987. A wood cabin and helicopter pad were present.

Clean-up work at this site involved moving barrels away from the lake and stacking them at the top of the rise (Photo 12). The cabin poses no threat to public safety. While barrels were being moved, it was discovered that four near the shoreline contained oil. These were moved away from the lake and up the rise. Barrels on the opposite shoreline

could not be recovered. It was not possible to drain the tank during this visit. Valves which connect the tanks together are located under the tanks and this complicates drainage work. Furthermore, the tanks are located relatively close to the lake. This situation requires special attention. Recovery of the barrels on the other side of the lake should be discussed during preparation work for 2001. A boat may be needed.

4.4.5.1 Payment required

Clean-up work at this site involved three men for a few hours. The tank still needs to be emptied and the four barrels of oil need to be removed from the site. The site diagram should be updated.

4.4.6 Site 321

21 is classed priority A. Present on the site were a main building, a survival shelter in good condition, two detection antennas, two smaller antennas laying on the ground, three tanks, about 50 rolls of fencing and scattered metal debris. A barrel containing 200 L of transmission oil was found beside a small shed near the helicopter pad. A smaller 45 L (10 gal.) barrel containing grease was found in a pile of debris. The generators contained oil. In the main building, batteries and mercury switches were found. Two of the main building doors needed to be repaired. On the site, there were also a tractor and two caterpillar treads. An aviation gasoline pumping station was present, but contained no hydrocarbons. The pipes were not leaking. Several contaminated areas were found on the site, but over these some vegetation had begun to grow. The substratum is largely gravel and small rocks. The small rocks are often covered with lichen.

Clean-up work at the site was carried out on September 7–9, 2000. The buildings were cleaned. The paint was scraped from walls and ceilings and stored. Barrels were stacked together. Some barrels were taken from a wet area located about 100 m from the main building. One main building window was doubled with Lexan to make it airtight, since a space between the inside and outside panes of glass allowed air, and probably rain and snow, to enter. Three of the survival shelter windows were repaired with plywood and another with Lexan. A small 45 L barrel of grease and two barrels containing approximately 300 L of oil from the generators were transported to the outfitter camp at Lake Mollet. The barrel of transmission oil was also transported to the outfitter camp. Eighteen batteries and five mercury switches were removed from the site.

Five barrels were discovered in a bog approximately 500 m from the site. The Cree team tried to move the barrels to dry ground, but were unsuccessful because there was too much water. It also proved impossible to move the barrels by helicopter.

The biological degradation process was not applied in contaminated areas where there was new growth or lichen, including an approximately 8 m x 20 m area near some stacked barrels. In general, the soil was not very deep, which is to say less than 10 cm of gravel and small rocks on rock. The biological degradation process was only applied in the contaminated area near the shed. In another area, the soil was turned but no amendment substances were added since the soil was only about 5 cm deep.

4.4.6.1 Payment required

Almost all the clean-up work has been completed at this site. Only hinges remain to be installed on the doors. This site was inspected on October 11, 2000, by MENV, KRG, EC and CRA representatives as well as the environmental specialist.

4.4.7 Site 321A

This site, which is classed priority A, is located on the shore of a lake. Unlike most of the other sites, there is abundant vegetation (Photo 13). The site has a boggy substratum covered by grass and bushes. In places, this vegetation is dense. Gale and Labrador tea are abundant. Larch and spruce have begun to regenerate. Willows and alder grow densely in places. This vegetation forms a wide transition zone (10–15 m wide) between the bog and the beach of the lake.

The building is in poor condition due to a corner of the foundation which had collapsed. As a result, the wall panels had begun to break apart. The wood was nonetheless in good condition and the building can be restored with correction of the foundation (Photo 13). In a corner of the back wall, a bear had made a 40 cm hole. The roof must be checked and repaired since it seems to leak. There is a bog approximately 20 m behind the survival shelter. At least half of the 600 barrels on the site are located within 20 m of the lake. Six aviation gasoline tanks are located approximately 10 m from the lake. Four others are located at least 30 m from the lake. The two groups of tanks are surrounded by willow and alder.

Clean-up work at Site 321A was carried out on September 8–11, 2000. Stacking the barrels required considerable work as approximately 500 barrels had to be moved. New areas for the barrels were difficult to find due to the amount of vegetation on the site. Care was taken not to trample the new growth and dry areas were preferred. The wood helicopter pad was, in fact, used as a disposal site. There are now four disposal areas at the site. All are more than 30 m from the lake. The barrels were empty. The tanks were checked and found empty. A log cabin stands ten or so metres from the survival shelter.

Contaminated areas were searched for carefully. The four areas from which barrels were moved were examined closely. Of these four areas only one (8 m x 5 m) showed signs of contamination. The soil in this area was very wet. The biological degradation process was nonetheless applied where possible, on mounds and in drier places. The biological degradation process was also applied in another area (2 m x 1.5 m) near the log cabin. The site was inspected by representatives of the MENV, EC and the CRA. Debris from inside the building was piled outside and the building was swept. For safety purposes, the Cree team wrote a note (in Cree, English and French) warning people not to enter the building due to the risk. A special message was also left for the bear…

4.4.7.1 Payment required

Considerable work was carried out at this site making it less of a threat for the environment. As discussed on site by representatives of the MENV, EC, the CRA and

the KRG on October 11, 2000, the building does not need to be demolished. Rather it needs to be stabilized and the roof repaired. This work should be carried out in 2001.

5. CONCLUSION

To date, the clean-up of nine sites under Phase 2 of the Mid-Canada Line Clean-up Project has been completed. The work at seven other sites is almost complete.

The next step involves planning work for the 2001 season at sites where clean-up has almost been completed and at other priority sites. The selection of priority sites depends on the decision to be delivered by the Evaluating Committee (COMEV) concerning the status of the project.

6. LITERATURE CITED

KRG. 1999. *Mid-Canada Line Project : Phase 2, 1999. Interim Report*. Kativik Regional Government, Kuujjuaq, Québec.

Rocheleau, S., M. Sarrazin, G. Sunahara, C. Beaulieu, and J. Hawari. 1999. *Soil Biotreatability Study of the Mid-Canada Line Project. Sites 218, 339 and 410.* Preliminary report submitted to Environment Canada and the Kativik Regional Government. Biothechnology Research Institute, National Research Council Canada, Montréal, Québec.

APPENDIX 1

Geographical co-ordinates of the Mid-Canada Line sites

Kawawachikamach Region

Site	Latitude (N)	Longitude (W)	Source	Priority
215	55° 21.650' N	64° 01.490' W	GPS	A
218	55° 16.273' N	64° 49.187' W	GPS	A
218A	55° 15.865' N	64° 17.607' W	GPS	A
221	55° 18.020' N	65° 24.090' W	GPS	A
221A	55° 17.900' N	65° 20.315' W	GPS	A
224	55° 15.500' N	66° 04.00' W	GPS	A
224A	55° 16.38' N	66° 13.24' W	GPS	A
227	55° 18.79' N	66° 42.32' W	GPS	C
227A	55° 19.00' N	66° 41.64' W	GPS	C
303	55° 10.89' N	67° 35.31' W	GPS	C
303A	55° 11.29' N	67° 24.37' W	GPS	C
306	55° 15.96' N	68° 20.70' W	GPS	B
306A	55° 11.41' N	68° 06.36' W	GPS	B
309	55° 11.55' N	69° 01.32' W	GPS	B
309A	55° 09.18' N	68° 47.53' W	GPS	B
312	55° 14.13' N	69° 44.55' W	GPS	B
312A	55° 12.18' N	69° 31.49' W	GPS	B

Whapmagoostui/Kuujjuaraapik Region

Site	Latitude (N)	Longitude (W)	Source	Priority
315	55° 10.80' N	70° 34.70' W	GPS	B
315A	55° 09.97' N	70° 40.20' W	GPS	B
318	55° 14.87' N	71° 20.47' W	GPS	B
318A	55° 16' N	71° 19' W	Archive	B
321	55° 14.80' N	72° 11.96' W	GPS	A
321A	55° 15.55' N	72° 12.22' W	GPS	A
324	55° 20.35' N	73° 00.99' W	GPS	B
324A	55° 20.00' N	73° 01.45' W	GPS	B
327	55° 15.03' N	73° 44.60' W	GPS	B
327A	55° 17.87' N	73° 44.83' W	GPS	B
330	55° 19.25' N	74° 34.26' W	GPS	A
330A	55° 17.68' N	74° 33.44' W	GPS	A
333	55° 17' N	75° 16' W	Archive	C
333A	55° 20' N	75° 25' W	Archive	C
336	55° 21.67' N	76° 05.83' W	GPS	B
336A	55° 16' N	75° 59' W	Archive	B
339	55° 16.029' N	76° 47.768' W	GPS	B
339A	55° 15' N	76° 50' W	Archive	B
342	55° 14.71' N	77° 38.13' W	GPS	A
403	54° 59.54' N	78° 17.23' W	GPS	A
403A	55° 06.48' N	78° 12.20' W	GPS	A
406	54° 49.79' N	79° 01.47' W	GPS	A
406A	54° 48' N	79° 03' W	GPS*	A
409A	54° 38.31' N	79° 41.39' W	GPS*	C
410	54° 38.05' N	79° 44.47' W	GPS*	C

* to be verified

APPENDIX 2

Acceptance criteria for work under the
Mid-Canada Line Clean-up Project – Phase 2

CRITERIA FOR THE ACCEPTANCE OF WORK

Mid-Canada Project

Final Document

The criteria for the acceptance of clean-up on the Mid-Canada radar line were developed on the basis of work plan prepared and approved by the intervenors and signatories of the contribution agreement.

In the work plan, the objectives of the clean-up were established in order to meet the following objectives :

- The sites should not represent a danger to health and public safety;
- The work should not generate unacceptable environmental impacts;
- The work should be in compliance with all applicable laws and regulations
- The sites should be acceptable from an aesthetic point of view;
- The work should have as an objective the re-use of the sites;
- The quality of the work carried out should be in conformity with the requirements of the Government of Québec, represented by Environment Québec;

The criteria are therefore based on the following elements :

- Aesthetics, site appearance
- Safety
- Waste materials (buildings, hydrocarbons, barrels, metal)
- Hazardous waste
- Contaminated soil

1. Aesthetics, site appearance

A general site assessment should be provided. The site should be free from débris scattered over the ground.

Piles of existing débris should be used to minimise the number of waste heaps.

2. Safety

The site and buildings should be left in a state which does not comprise public safety. Unstable buildings will be dismantled. Where necessary, steps at the entrance to buildings should be stabilised.

For example, metallic débris which has been left in a manner which is hazardous for skidoos should be removed.

3. Waste materials

a) Buildings

- If there is to be dismantling, materials (whether contaminated or not) should be stored in accordance with current regulations;
- If the site is to be re-used, walls should be scraped and painted with a sealant. Floor tiles should be covered with a sealant and an abrasive;
- Windows should be repaired

b) Antennae

- Dismantling and safe storage where possible of antennae lying on the ground. If dismantling is not possible, ensure that the antennae are visible, even in winter, in order to avoid skidoo accidents;

c) Pipelines, pumping stations and metallic bodies

- Dismantle and recover the contents;
- Recovered hydrocarbons should be sent to an approved centre (and the bill should be provided as evidence);
- Metallic bodies which should be considered as hazardous waste should be cleaned and safely stored;

- No particular requirements are included here for storage of metallic bodies which are not considered hazardous waste

d) Generators

- Empty them;
- Antifreeze and recovered oil should be sent to an approved centre (the bill should be provided as evidence);

e) Barrels and fuel reservoirs

- Recovered hydrocarbons should be sent to an approved centre (the bill should be provided as evidence);
- Emptied barrels should be stacked

f) Débris

- When not considered hazardous waste : When the interiors of buildings are cleaned, small items of débris should be piled in robust plastic bags or in empty barrels and stored inside the building. For cleaning operations outside the buildings, both large and small items should be stored at the site itself.
- When considered hazardous waste : Batteries and other hazardous materials (such as chemical products) should be sent to an approved centre (the bill should be provided as evidence).

4. **Contaminated soils**

- All of the contaminated areas should be identified : area, volume and extent of contamination. The contamination is to be assessed on-site with the aid of portable equipment (Petroflag);
- For each contaminated area greater than 5 m in diameter, characterisation should be carried out in accordance with the protocol for rapid intervention for contaminated soil;
- For on site biotreatment – if no treatment is carried out, give the reason;
- Situations where the contaminated soil can be left as is : steeply sloping ground (risk of soil erosion) and soil where vegetation is already well established;

- If the soil is water saturated and biotreatment is not applicable or inefficient, specify whether the contamination is contained or whether flow is taking place towards a water body. Check the possibility of taking steps to contain the contaminating material where possible and necessary, e.g. by means of an impermeable or hydrophobic barrier.

Criteria for soils left in place (where possible and applicable) :

Criteria A : sensitive sites

Criteria B : sites where further use is expected

Criteria C : all other sites

Sensitive sites – this refers to critical sites for biodiversity (peat bogs, wetlands, marshes, mature forest), protected areas (parks, ecological reserves, wildlife habitat and refuges) and sites where species are present which are endangered, vulnerable, or considered likely to be so designated), and their habitat.

If certain sites are left with a level of contamination which exceeds the C criterion, provide an assessment of the reasons for this determination, taking into account environmental constraints. Sites which do not present any obvious problems may be left as they area.

Prepared by: Ms Josée Brazeau, Ministère de l'Environnement du Québec

Translation provided by Alan Penn
Cree Regional Authority
August 28, 2000

APPENDIX 3

Diagrams of the Mid-Canada Line sites

TRANSLATION OF SELECTED TERMS FROM FRENCH TO ENGLISH

From legends:

▭ 20 Baril de 200 litres et quantité	▭ 20 200-litre barrel and number of barrels
Citerne de 4400 litres	4400-litre tank
Emplacement d'un citerne manquant	Location of missing tank
Antenne	Antenna
Ponceau de bois surélevé, avec poteaux	Raised wood culvert
Plate-forme d'hélicoptère	Helicopter pad
Débris de métal (cannettes et autres)	Metal debris (cans and other)
Débris de bois	Wood debris
X Extincteur(s) sur charriot	X Wheeled fire extinguisher(s)
Base de béton avec ancrages métalliques	Anchor with metal cables
Ancrages avec câbles métalliques	Concrete base with metal anchors

From diagrams:

Bâtiment principal	Main building
Abri de survie	Survival shelter
Sol contaminé	Contaminated soil
Aire contaminée	Contaminated area
Biotraitement	Biological degradation process (biotreatment)
Tuyau	Pipe
Grillage à clôture	Fencing
Carcasses de métal	Metal frames

Représentation schématique du site 215 en date du 28 juin 2000, après nettoyage

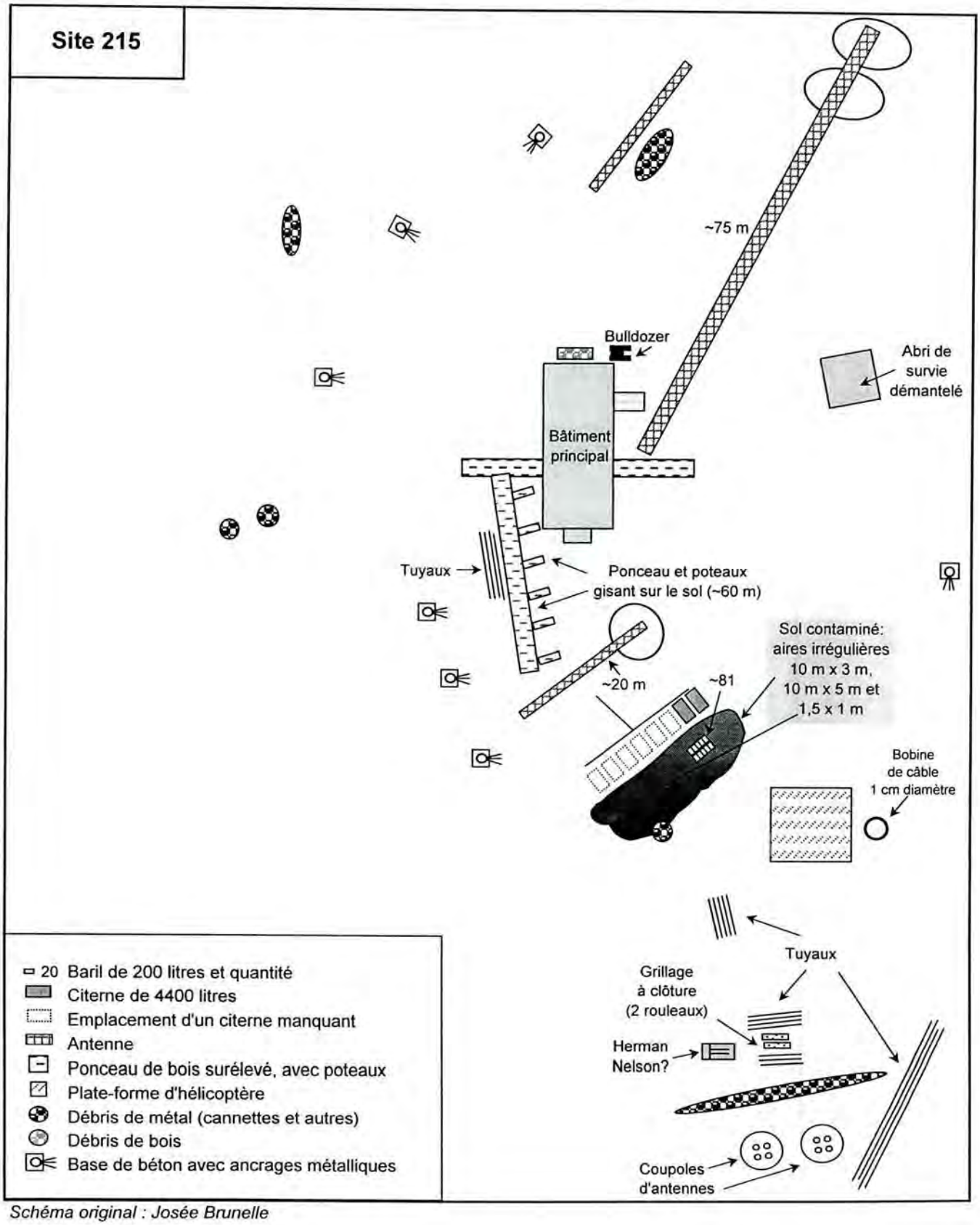


Schéma original : Josée Brunelle

Représentation schématique du site 218 en date du 24 juin 2000, après nettoyage

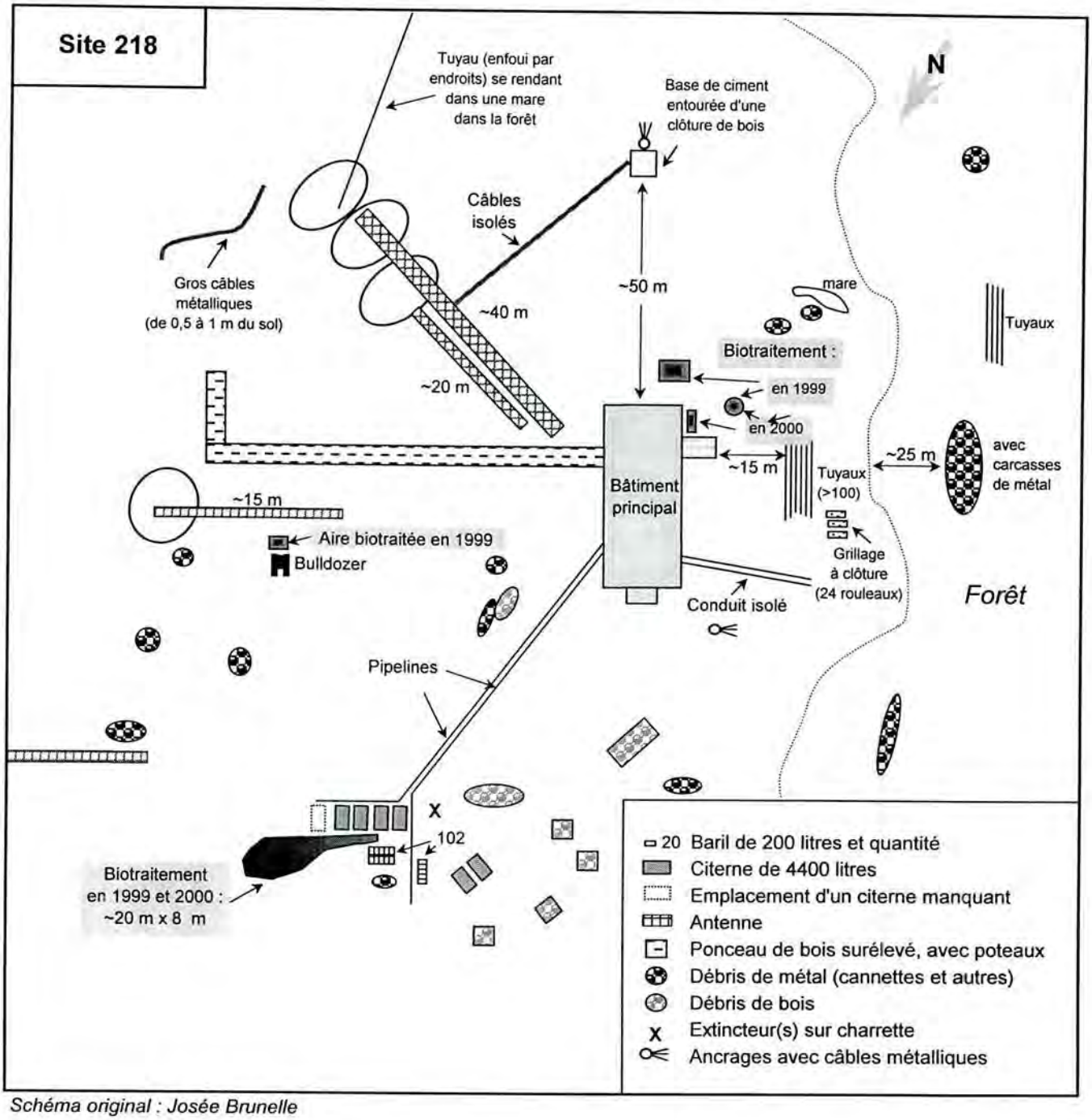
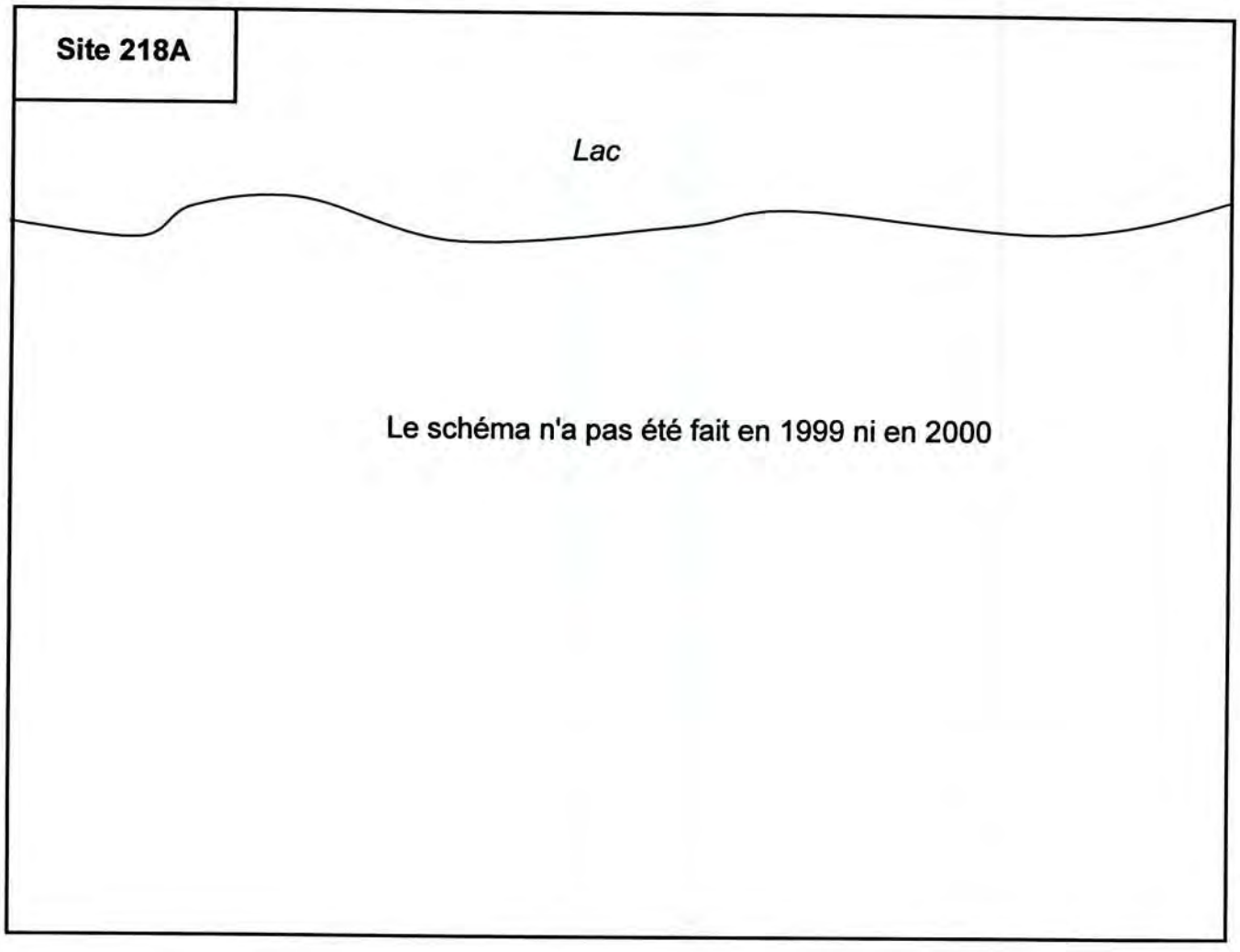


Schéma original : Josée Brunelle

Représentation schématique du site 218A ...



Représentation schématique du site 221 en date du 26 juin 2000, après nettoyage

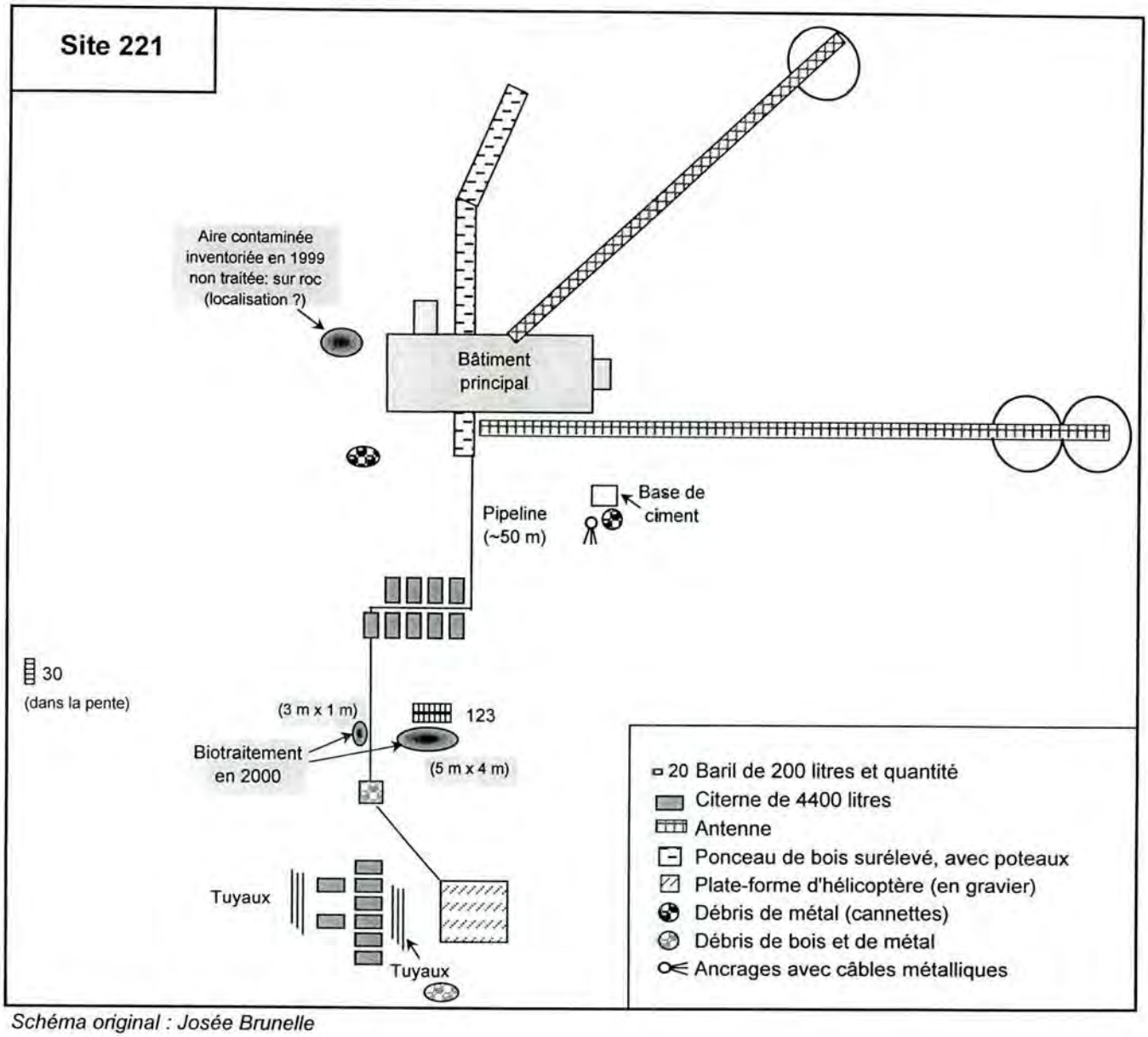
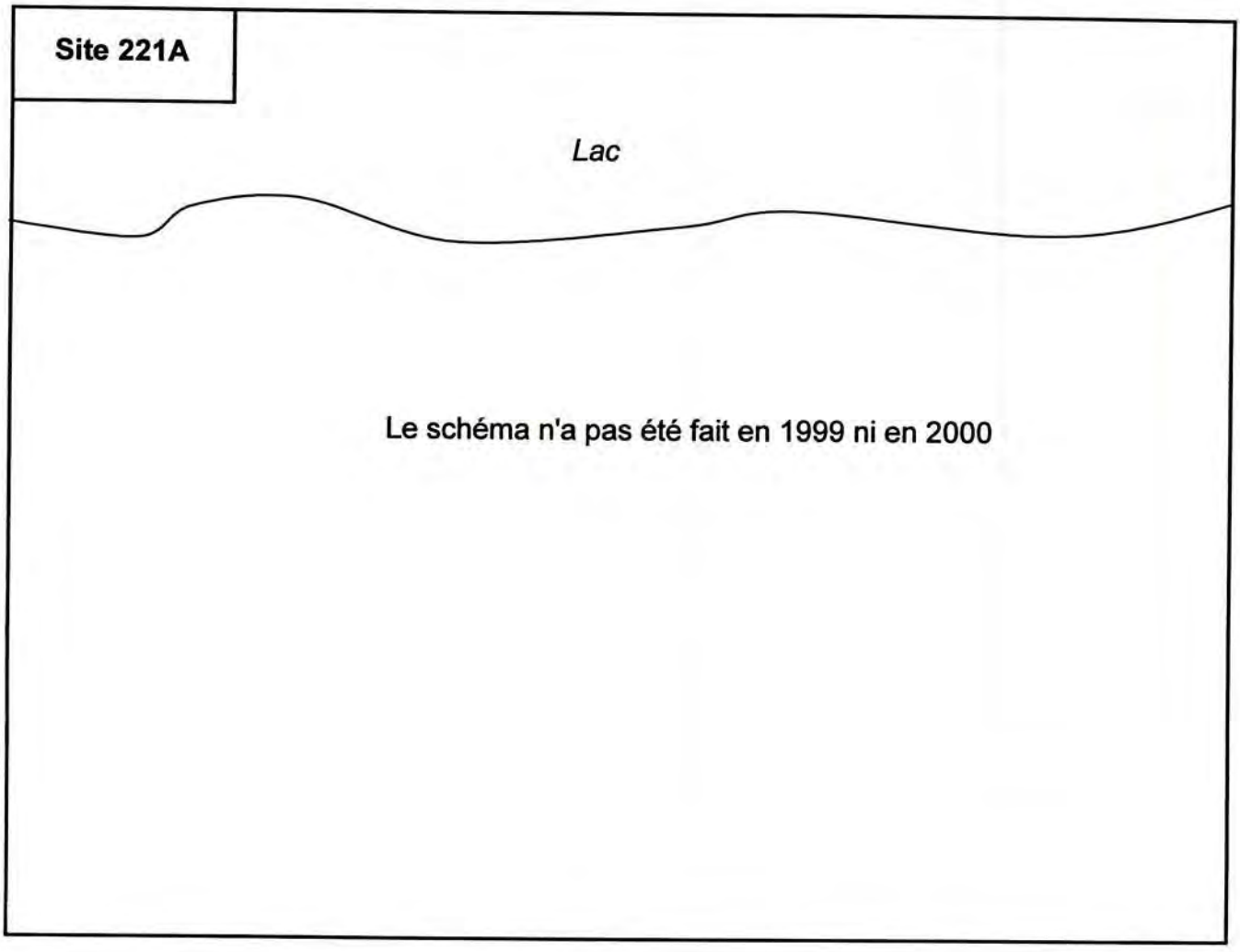


Schéma original : Josée Brunelle

Représentation schématique du site 221A ...



Représentation schématique du site 224 en date du 21 juin 2000, après nettoyage

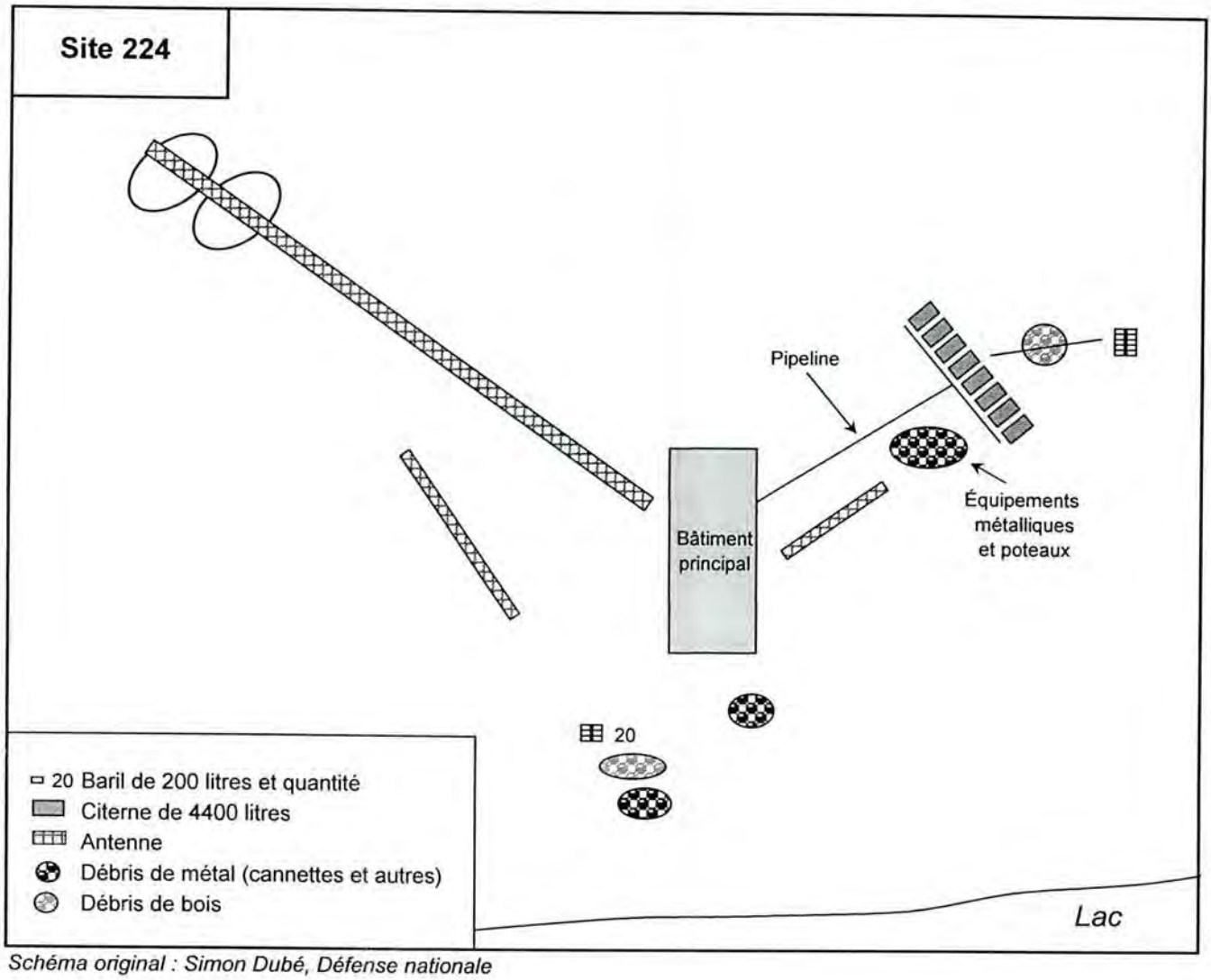


Schéma original : Simon Dubé, Défense nationale

Représentation schématique du site 224A en date du 23 juin 2000, avant nettoyage

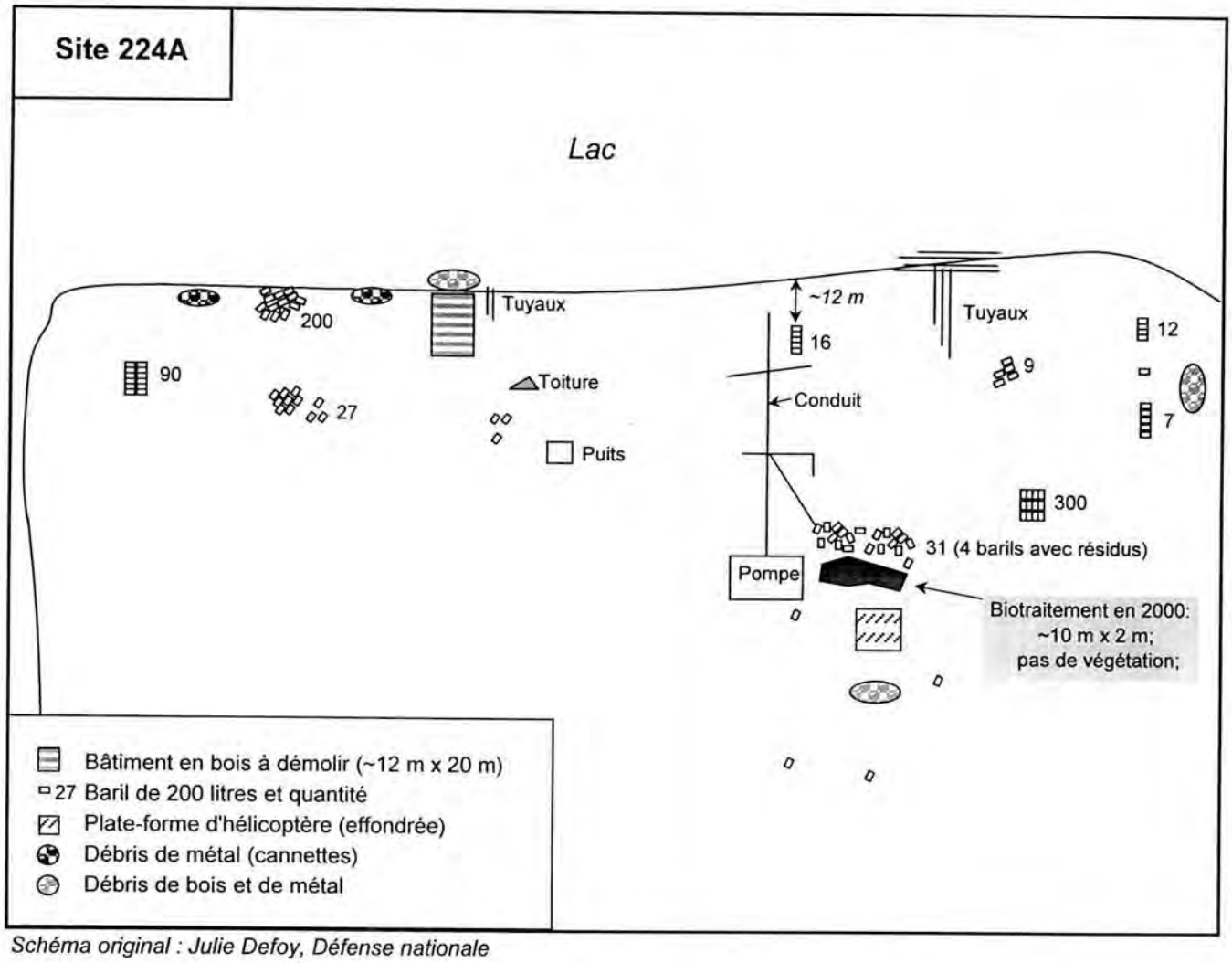


Schéma original : Julie Defoy, Défense nationale

Représentation schématique du site 227 en date du 23 juin 2000, après nettoyage

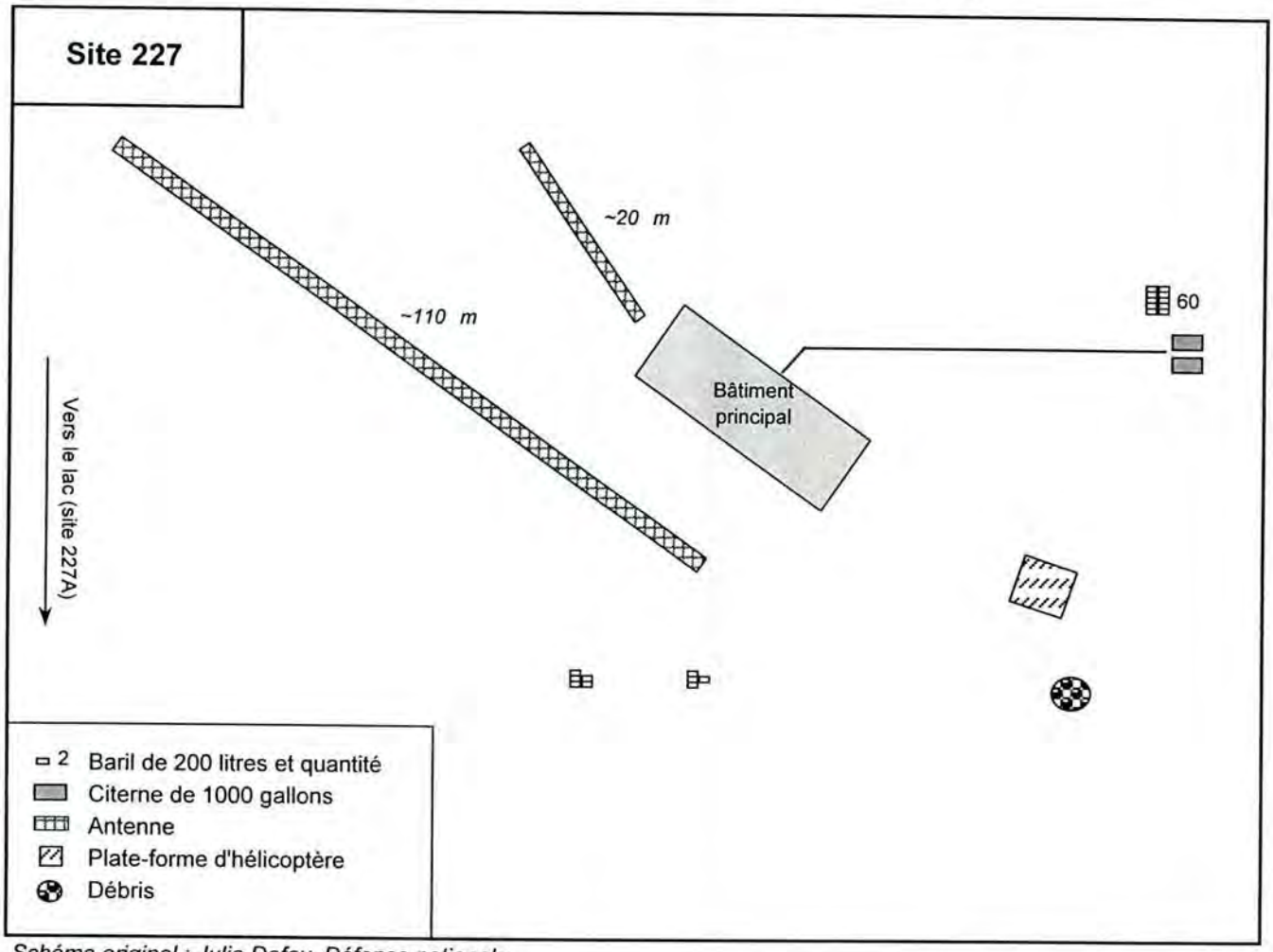


Schéma original : Julie Defoy, Défense nationale

Représentation schématique du site 227A en date du 23 juin 2000, après nettoyage

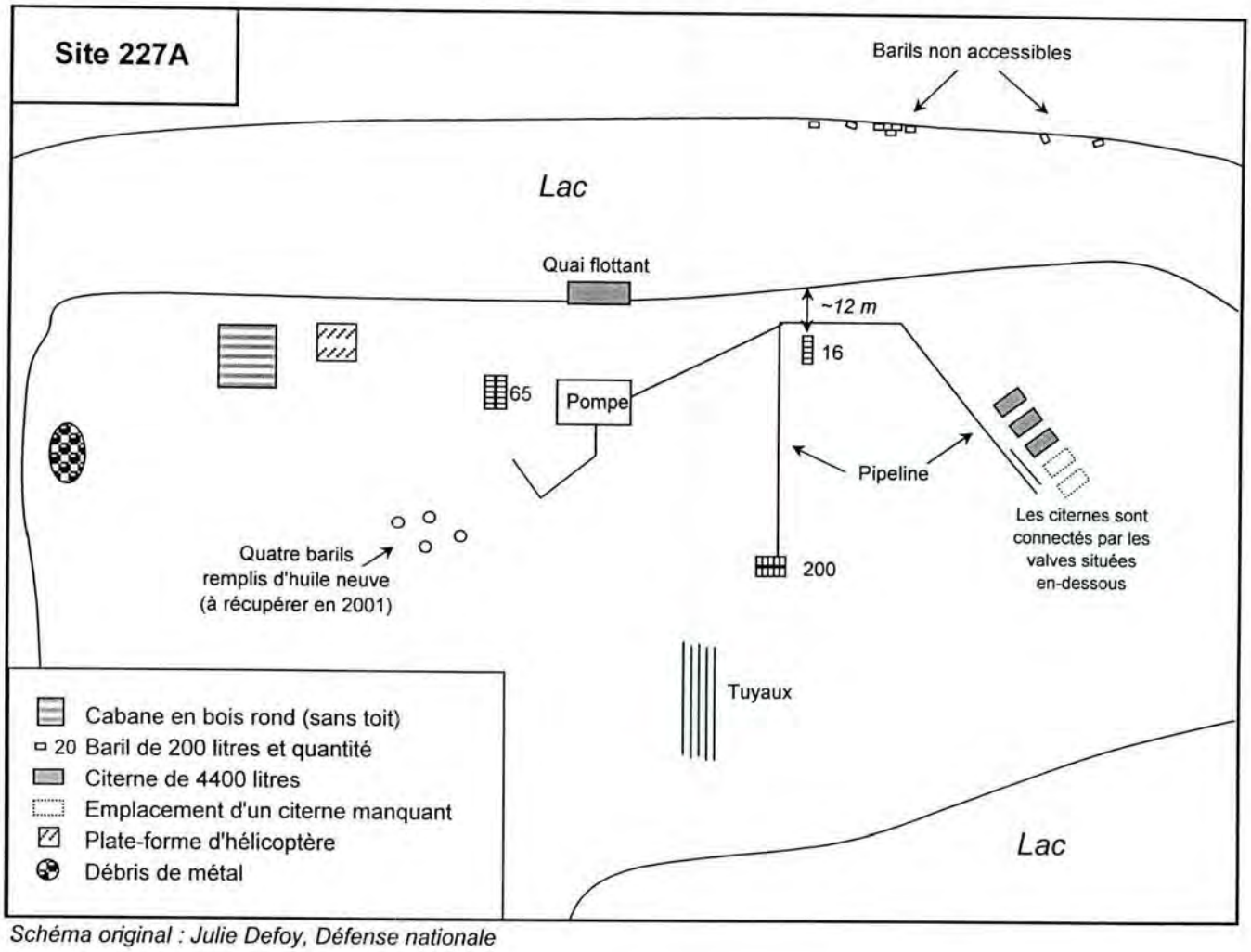


Schéma original : Julie Defoy, Défense nationale

Représentation schématique du site 306 en date du 28 juin 2000, après nettoyage

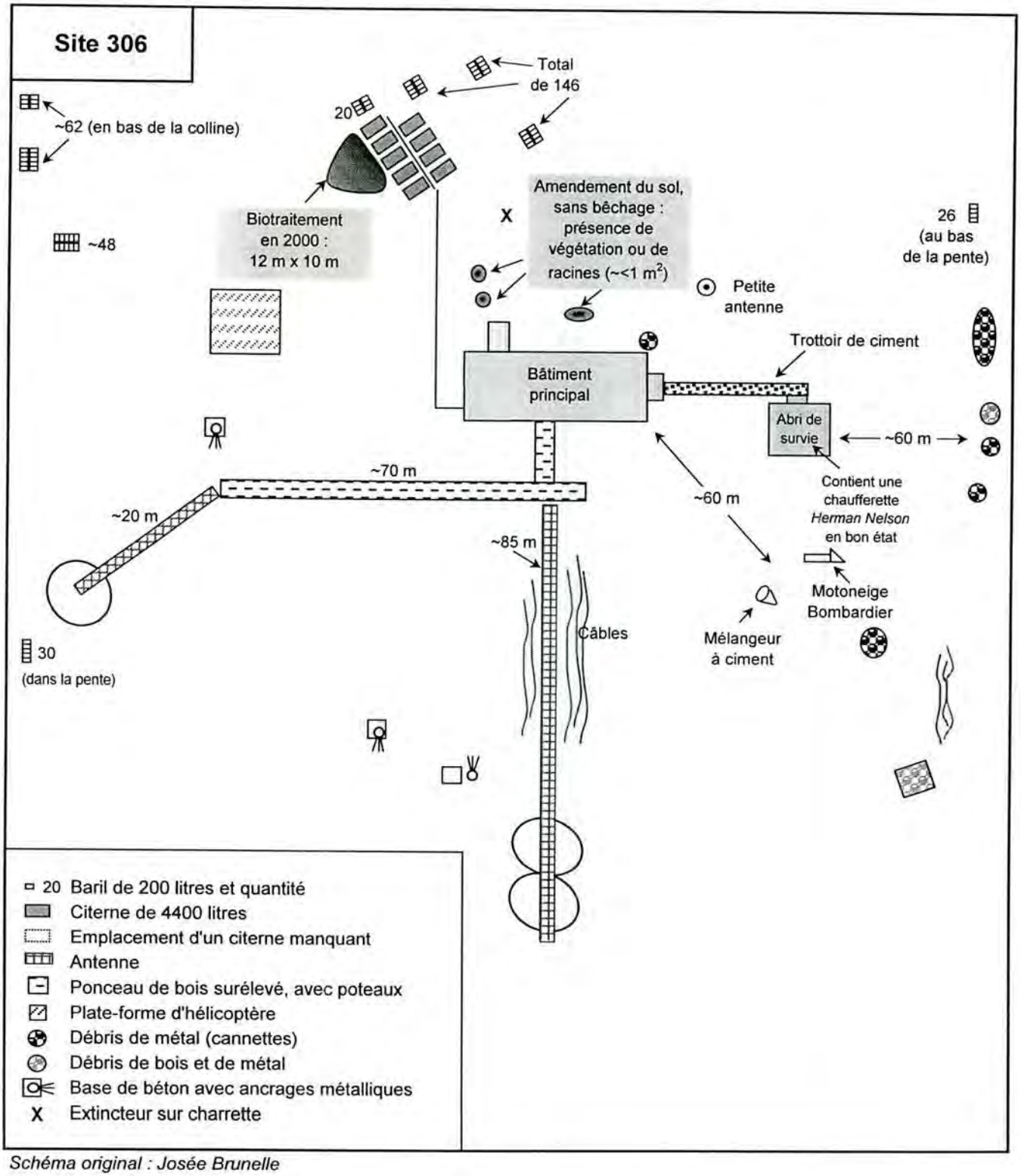


Schéma original : Josée Brunelle

Représentation schématique du site 306A en date du 28 juin 2000, après nettoyage

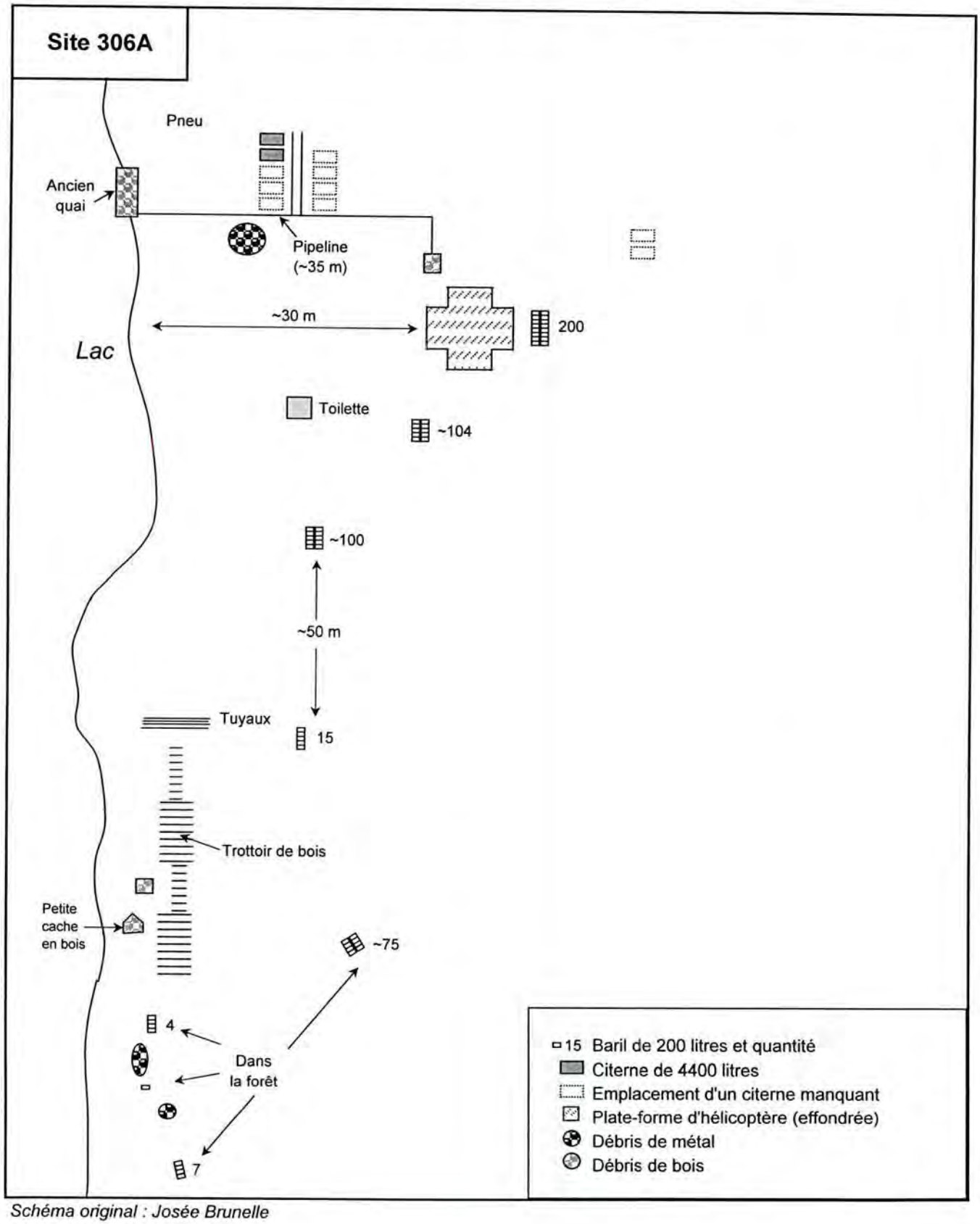


Schéma original : Josée Brunelle

Représentation schématique du site 309 en date du 28 juin 2000, après nettoyage

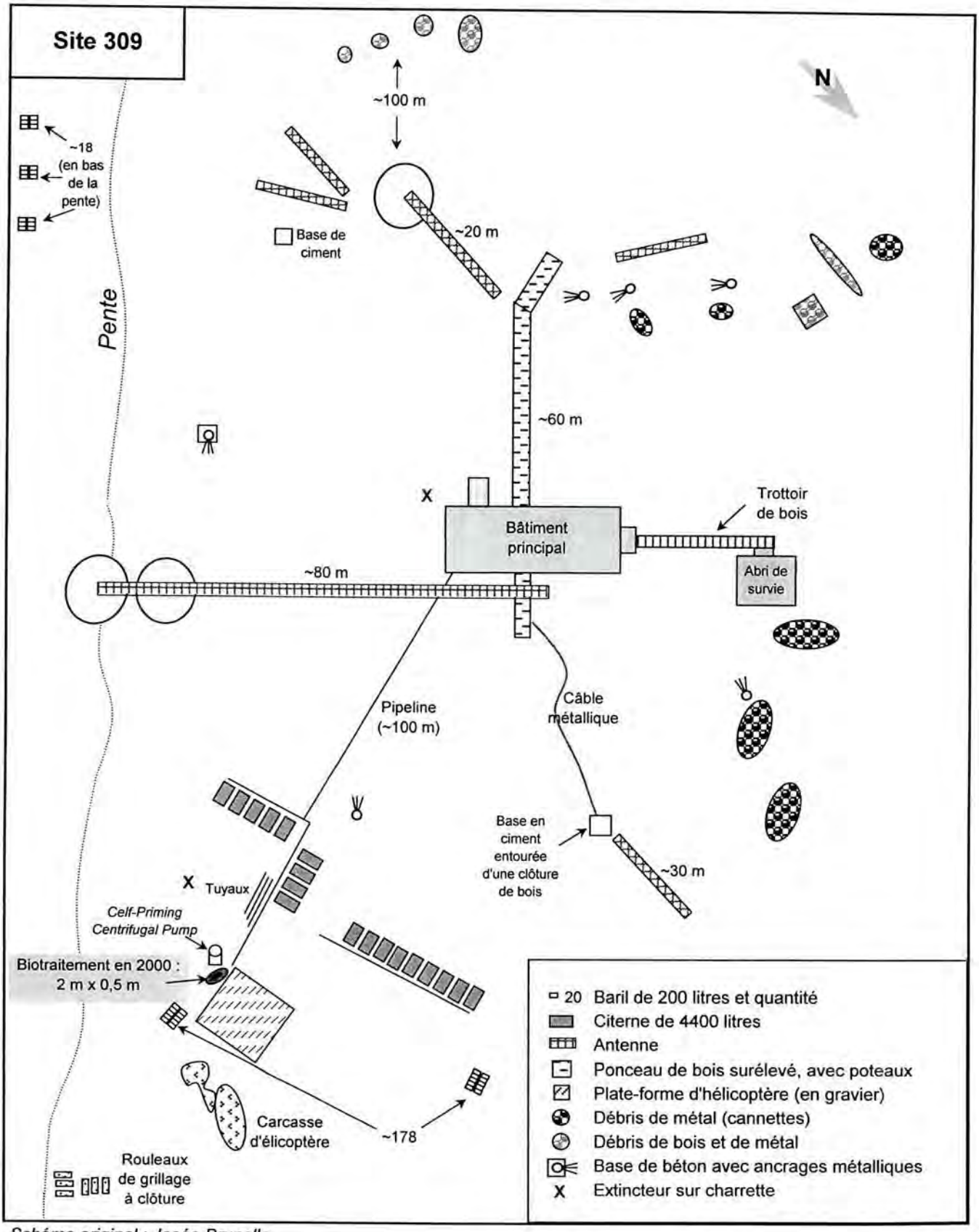


Schéma original : Josée Brunelle

Représentation schématique du site 309A en date du 28 juin 2000, après nettoyage

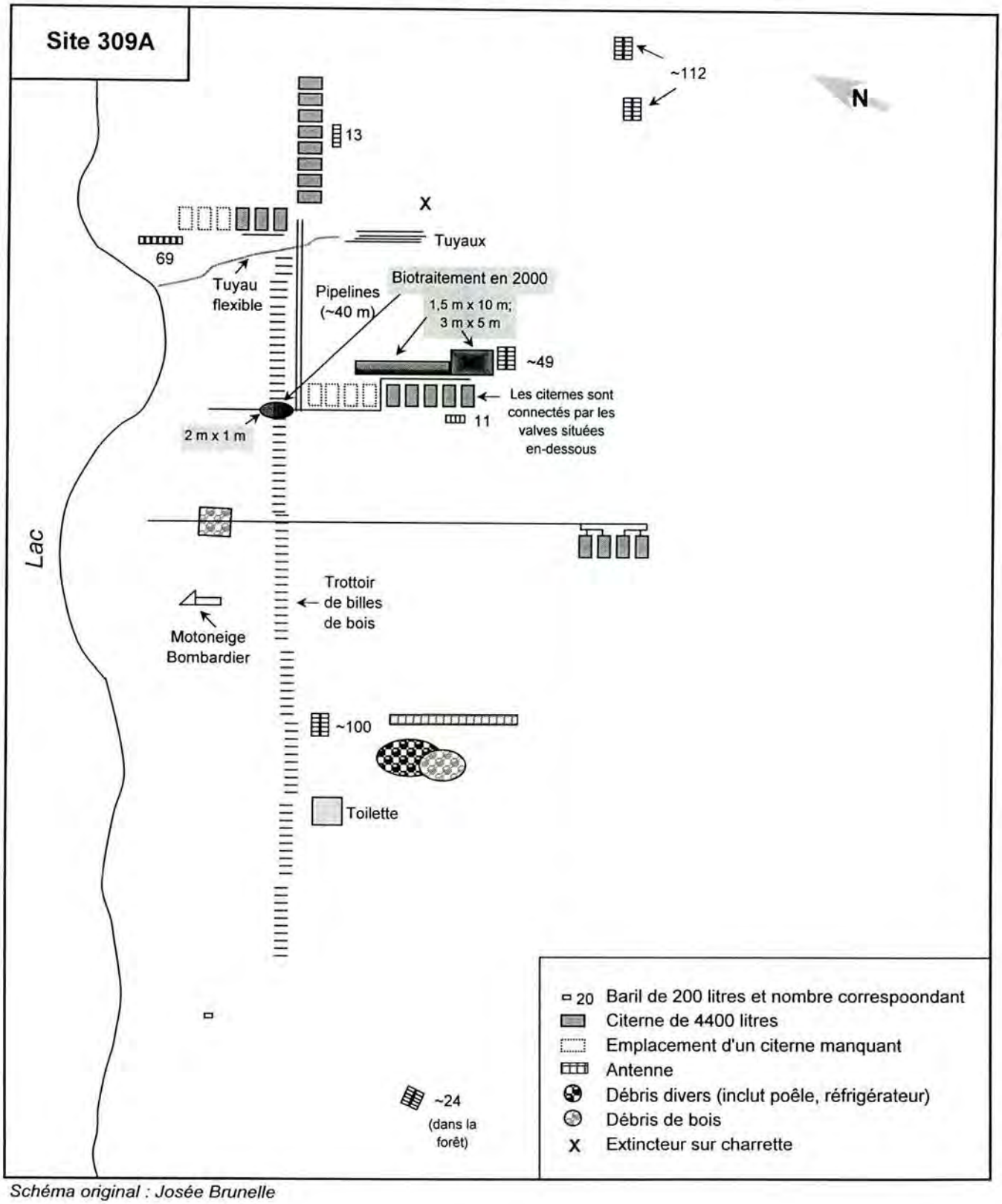


Schéma original : Josée Brunelle

Représentation schématique du site 330 en date du 6 septembre 2000, après nettoyage

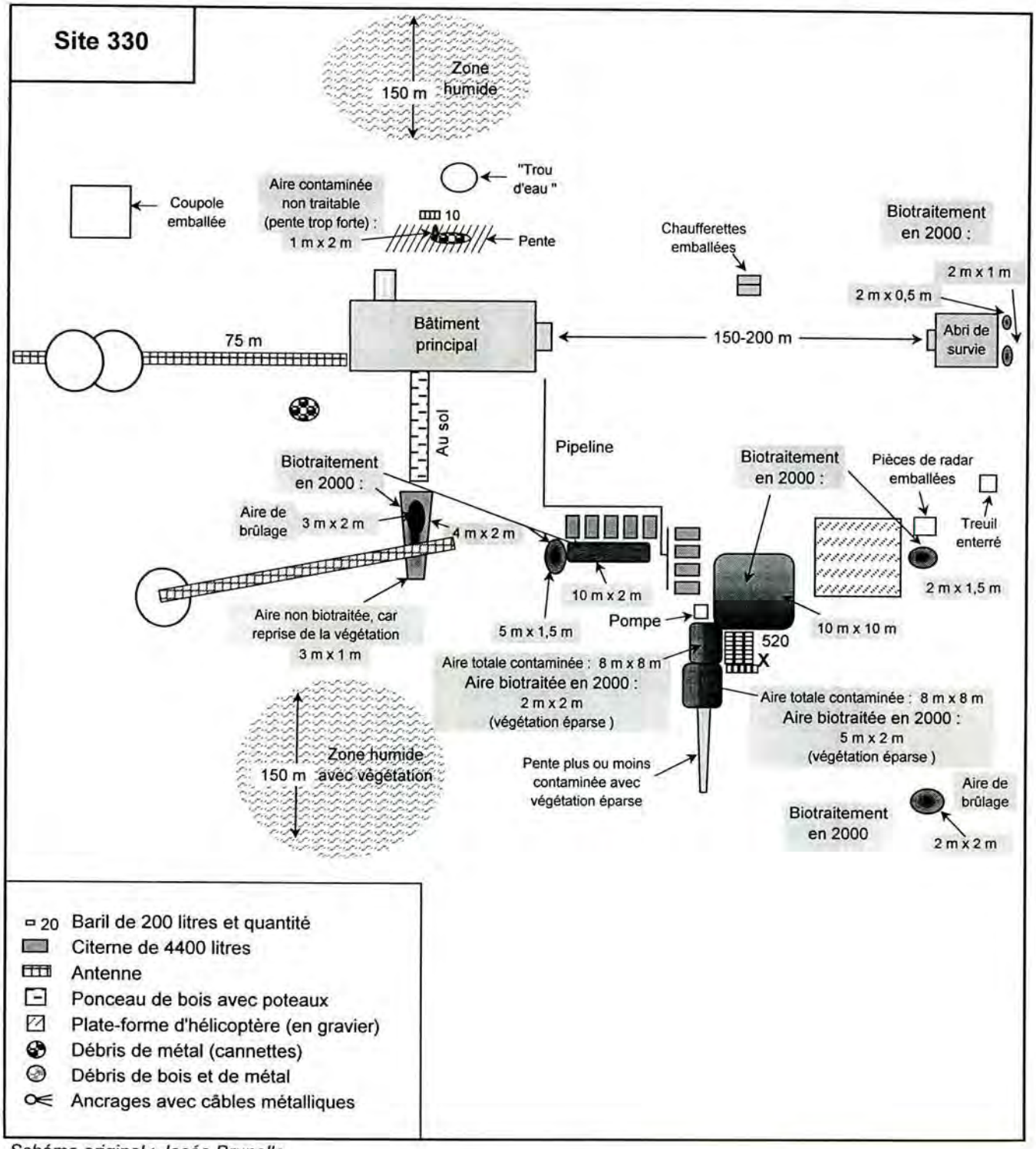


Schéma original : Josée Brunelle

Représentation schématique du site 330A en date du 10 septembre 2000, après nettoyage

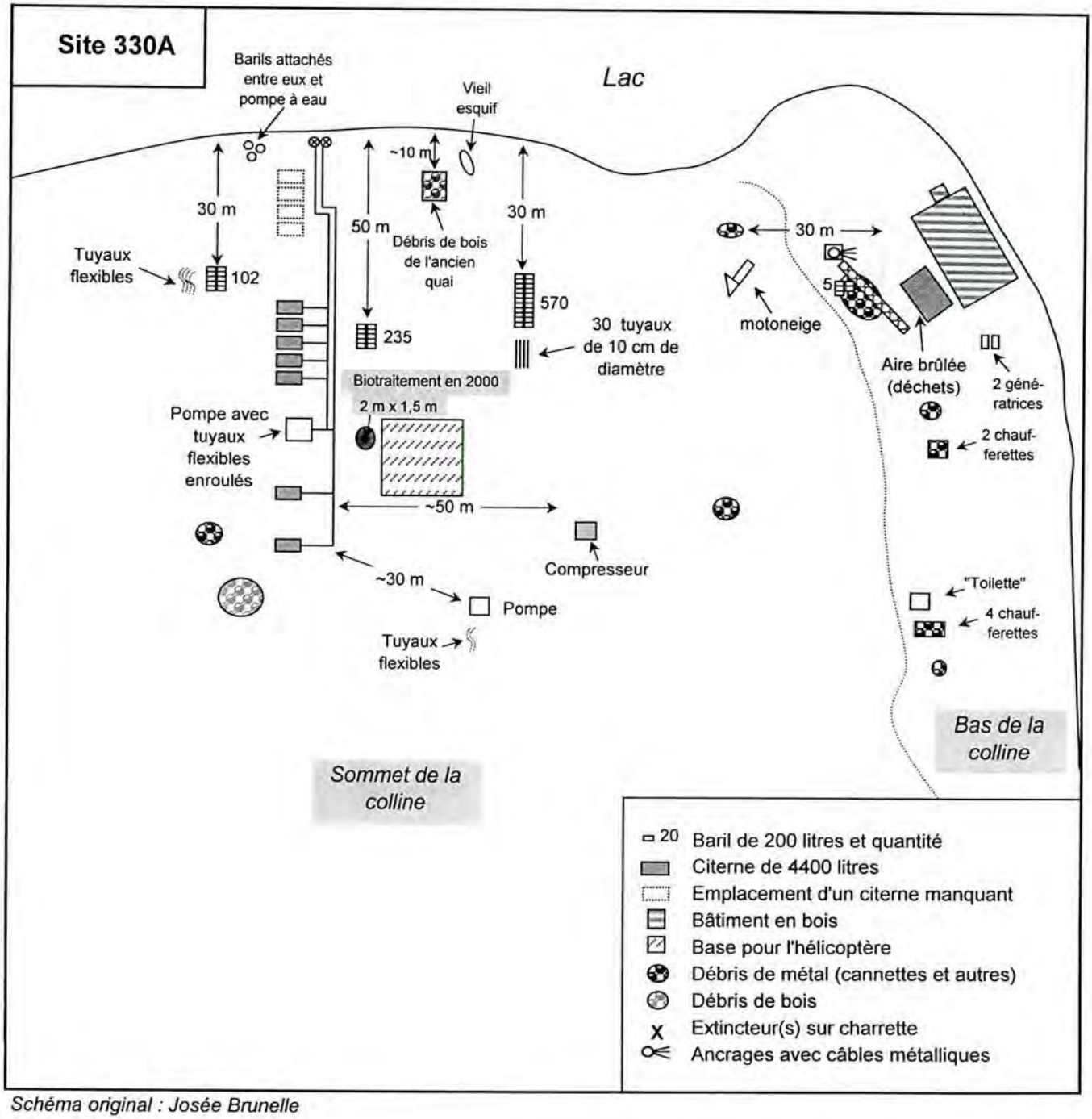


Schéma original : Josée Brunelle

Représentation schématique du site 403A en date du 13 septembre 2000, après nettoyage

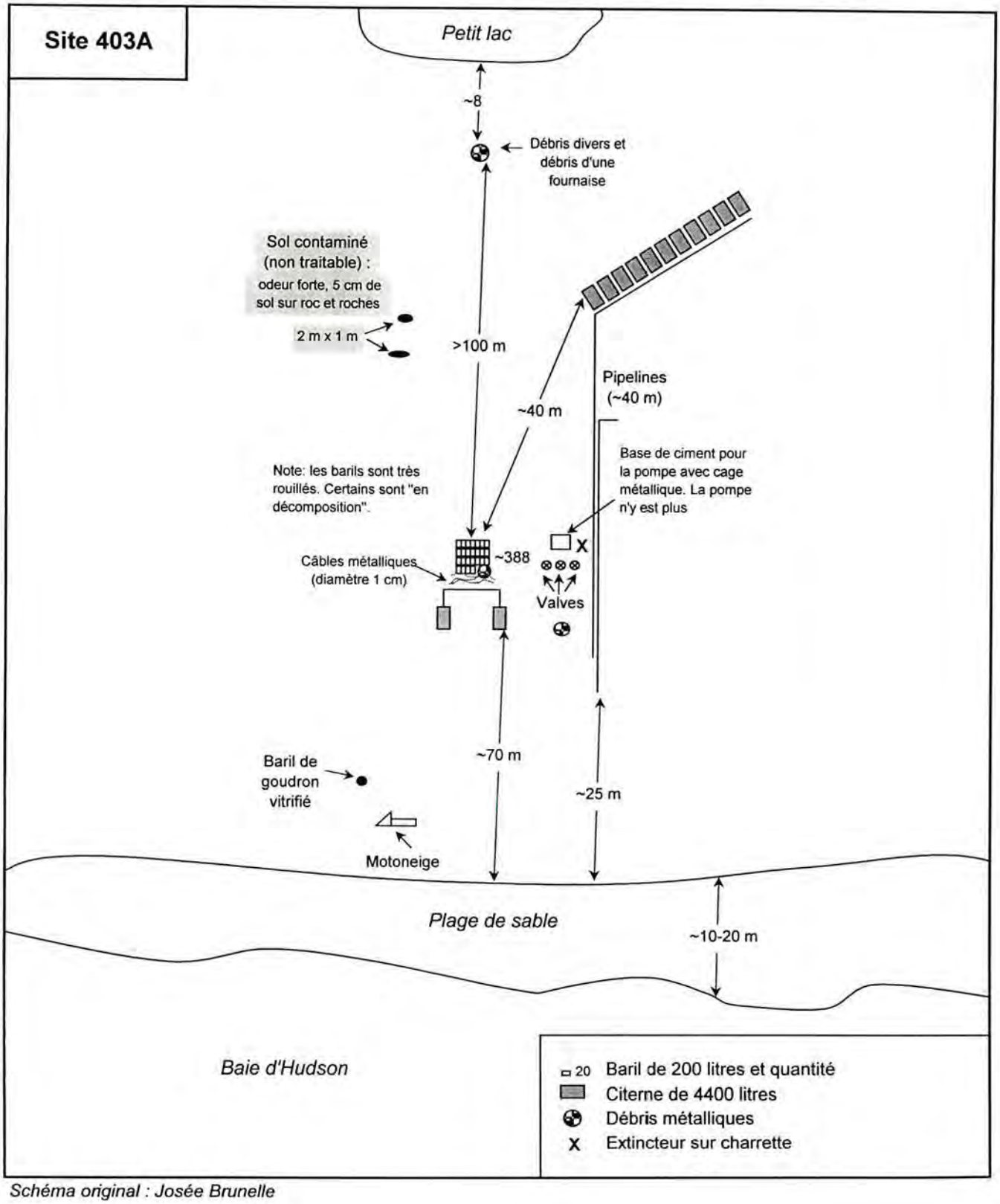


Schéma original : Josée Brunelle

APPENDIX 4

Data records of the Mid-Canada Line sites

Ligne de radar Mid Canada

Fiche descriptive des travaux effectués

Site # : 224 **Coordonnées GPS :** 55° 15.50' N; 66° 04.00' W

Dates des travaux : 21, 22, 26 et 29 juin 2000

MATIÈRES RÉSIDUELLES :

Hydrocarbures

1. Quantités résiduelles d'essence présentes dans les réservoirs, barils, installations de pompage, etc. : 0 litres

2. Quantités résiduelles de diesel présentes dans les réservoirs, barils, installations de pompage, etc. : 0 litres

3. Quantités résiduelles de _____ (**nommer chacun** des autres carburants) présentes dans les réservoirs, barils, installation de pompage, etc. : 40 litres (huile dans deux contenants)

4. Gestion de ces hydrocarbures résiduels, **en précisant les quantités selon le mode de gestion utilisée** : envoi à un centre autorisé : ONYX Industries, Sept-Îles.

Barils

5. Quantité approximative de barils empilés : 91

6. Quantité approximative de barils empilés et ayant contenu des **matières toxiques** (soit kérosène, de l'essence ou du diesel) : 91

7. Quantité approximative de barils empilés et ayant contenu une huile, une graisse ou une autre matière dangereuse non toxique : 0

8. **Quantité approximative de barils vides contaminés par une autre matière dangereuse que celles décrites aux points 6 et 7 et identifier ces matières dangereuses, s'il y a lieu : 0**

9. **Description de l'aire d'entreposage des barils vides contaminés par une matière toxique et assimilés à des matières dangereuse (superficie et volume)** _____

10. **Description de l'aire d'entreposage des barils vides contaminés par une matière dangereuse non toxique et assimilés à des déchets solides (superficie et volume)** N/A

11. Distance de l'aire d'entreposage des barils **assimilés à des matières dangereuses** par rapport à une ressource **ou une zone ou un milieu ayant une sensibilité environnementale particulière (exemple : ressources visées par la** *Stratégie de mise en œuvre au Québec de la Convention sur la diversité biologique)* : 350 m. De quelle(s) ressource(s) **ou zone ou milieu** s'agit-il ? lac

12. Distance de l'aire d'entreposage des barils **assimilés à des déchets solides** par rapport à une ressource **ou une zone ou un milieu ayant une sensibilité environnementale particulière (exemple : ressources visées par la** *Stratégie de mise en œuvre au Québec de la Convention sur la diversité biologique)* : _____m. De quelle(s) ressource(s) **ou zone ou milieu** s'agit-il ? N/A

Carcasses métalliques

13. Quantités de carcasses métalliques ou autres objets inertes contaminés en surface par une matière toxique (essence, diesel, kérosène, etc..) ou par une huile, une graisse ou un autre matière dangereuse de même que la concentration des contaminants en surface N/A

14. Description de l'aire d'entreposage des carcasses métalliques ou autres objets inertes contaminés par une matières dangereuse N/A

Démantèlement de bâtiments

15. Les bâtiments seront-ils démantelés ? Non (Dans la négative, passez à la question 22)

16. Si les bâtiments sont démantelés, quelle est la quantité approximative de matériaux de démantèlement assimilés à des déchets solides ou à des matériaux secs ? _____ m^3

17. Pour les matériaux de démantèlement assimilés à des matières dangereuses, fournir la quantité de chacun des matériaux(tuiles de plancher, panneaux muraux en fibrociment, écaille de peinture, etc.
_____

18. Gestion des matériaux de démantèlement contaminées ou contenant des BPC au-delà des quantités prévues dans le Règlement sur les matières dangereuses_____

19. Description de l'aire d'entreposage des matériaux de démantèlement contaminés par des BPC ou contenant des BPC au-delà des maximum prévus dans le Règlement sur les matières dangereuses_____

20. Distance de l'aire d'entreposage des matériaux de démantèlement assimilés à des matières dangereuses par rapport à un cours d'eau ou un plan d'eau : _____ m

21. Distance de l'aire d'entreposage des matériaux de démantèlement assimilés à des matières dangereuses par rapport à une ressource **ou une zone ou un milieu ayant une sensibilité environnementale particulière (exemple : ressources visées par la** *Stratégie de mise en œuvre au Québec de la Convention sur la diversité biologique)* : _____m. De quelle(s) ressource(s) **ou zone ou milieu** s'agit-il ? _____

Matières dangereuses résiduelles

22. Quantité de chacune des matières dangereuses résiduelles retrouvées sur le site, notamment les écailles de peinture contaminée par les BPC, les batteries au plomb, etc. et qui seront transportés vers un centre autorisé pour leur élimination Trois interrupteurs au mercure et une batterie d'urgence

23. Préciser le nom du centre de transfert ou du centre autorisé pour l'élimination des matières dangereuses résiduelles vers où seront acheminées les matières dangereuses résiduelles retrouvées sur chacun des sites. Préciser le nom des transporteurs qui prendront en charge les matières dangereuses résiduelles du site de démantèlement jusqu'au centre de transfert ou au centre autorisé pour l'élimination. Fournir le nom des endroits où transiteront les matières dangereuses, s'il y a lieu ONYX Industries inc.

Déchets solides et matériaux secs

24. Quantité approximative de déchets solides et de matériaux secs ramassés sur le terrain (en excluant les barils) : ~20 m^3

25. Description de l'aire d'entreposage des déchets solides (en excluant les barils) et des matériaux secs ramassés sur le terrain et s'il y lieu, provenant du démantèlement du bâtiment Gravier et roc

26. Distance de l'aire d'entreposage des déchets solides (en excluant les barils) et des matériaux secs ramassés sur le terrain et s'il y a lieu, provenant du démantèlement du bâtiment par rapport à un cours d'eau ou un plan d'eau : 350 m

27. Distance de l'aire d'entreposage des déchets solides et des matériaux secs ramassés sur le terrain et s'il y a lieu, provenant du démantèlement du bâtiment par rapport à une ressource **ou une zone ou un milieu ayant une sensibilité environnementale particulière (exemple : ressources visées par la** *Stratégie de mise en œuvre au Québec de la Convention sur la diversité biologique)* : 350 m. De quelle(s) ressource(s) **ou zone ou milieu** s'agit-il ? Lac

SOLS CONTAMINÉS

28. Volumes et superficies approximatifs de sols contaminés

	Volumes (m^3)	Superficies (m^2)
> C	0	0
B-C	0	0
A-B	0	0

Critères indicatifs de la contamination des sols:

Paramètre	Critère A ppm	Critère B ppm	Critère C ppm
Hydrocarbures pétroliers C_{10} à C_{50}	300	700	3500
Benzène	0.1	0.5	5
Toluène	0.2	3	30
Éthylbenzène	0.2	5	50
Xylènes	0.2	5	50
BPC	0.05	1	10

29. Distance des sols contaminés > C par rapport à un cours d'eau ou un plan d'eau : _____ m
Distance des sols contaminés B-C par rapport à un cours d'eau ou un plan d'eau : _____ m
Distance des sols contaminés A-B par rapport à un cours d'eau ou un plan d'eau : _____ m

30. Distance des sols contaminés > C par rapport à une ressource **ou une zone ou un milieu ayant une sensibilité environnementale particulière (exemple : ressources visées par la** *Stratégie de mise en œuvre au Québec de la Convention sur la diversité biologique)* : _____m.

Distance des sols contaminés B-C par rapport à une ressource **ou une zone ou un milieu ayant une sensibilité environnementale particulière (exemple : ressources visées par la** *Stratégie de mise en œuvre au Québec de la Convention sur la diversité biologique)* : _____m.

Distance des sols contaminés A-B par rapport à une ressource **ou une zone ou un milieu ayant une sensibilité environnementale particulière (exemple : ressources visées par la** *Stratégie de mise en œuvre au Québec de la Convention sur la diversité biologique)* : _____m.

De quelle(s) ressource(s) **ou zone ou milieu** s'agit-il ? _____

31. Des échantillons de sols ont-ils été prélevés afin de procéder à une étude de biotraitabilité ? Non. Dans l'affirmative, combien d'échantillons ont été prélevés ? _____

32. Ajout de matière organique, **fertilisants, ect. aux sols contaminés?** N/A

SATISFACTION DES MUNICIPALITÉS

33. Les travaux ont-ils été réalisés à la satisfaction des municipalités (communautés autochtones) ?

_____

DIVERS

34. Y a-t-il une réutilisation prévue des terrains ou des bâtiments ? Dans l'affirmative, laquelle ?

_____

35. Installation d'un panneau indicateur ? Prévu en 2001

36. Installation de panneaux de fibre de verre sur les fenêtres brisées ? Non requis

37. Une trousse d'urgence a-t-elle été laissée sur place ? Prévu en 2001

38. Remarques, commentaires : _____

Signature (responsable des travaux de l'ARK) : _____

Date : 14 décembre 2000

⇒ **En ce qui concerne les questions pour lesquelles une distance est demandée, inscrire « > 1000 m » si la distance est supérieure à 1 km.**

⇒ Les ressources visées par la *Stratégie de mise en œuvre au Québec de la Convention sur la diversité biologique* sont définies par :

- Les milieux critiques ou sensibles pour la biodiversité (tourbière, marais, marécage...) ;
- Les aires protégées (parc, réserve écologique, habitat et refuge faunique...) ;
- Les espèces menacées ou vulnérables ou susceptibles d'être ainsi désignées, ainsi que leurs habitats.

Certaines ressources ne seront peut être pas facilement identifiables lors des travaux. Si c'est le cas, veuillez le mentionner clairement dans la fiche.

⇒ Tout document permettant une meilleure compréhension de l'état du terrain et des travaux réalisés peut être annexé. Par exemple, la fiche pourra être rendue plus descriptive à l'aide de plans, schémas, croquis, photos... **Les observations, les croquis, les calculs et estimations ainsi que les résultats analytiques ayant servi à estimer les volumes et superficies approximatifs de sols contaminés seront inclus dans une fiche de terrain à joindre à la fiche descriptive des travaux.**

⇒ Cette fiche est inspirée en partie du *Système national de classification des lieux contaminés* publié par le CCME en 1992.

26/04/99

Ligne de radar Mid Canada

Fiche descriptive des travaux effectués

Site # : 227 **Coordonnées GPS : 55° 18.79' N; 66° 42.32' W**

Dates des travaux : 23 juin 2000

MATIÈRES RÉSIDUELLES :

Hydrocarbures

1. Quantités résiduelles d'essence présentes dans les réservoirs, barils, installations de pompage, etc. : 0 litres

2. Quantités résiduelles de diesel présentes dans les réservoirs, barils, installations de pompage, etc. : 0 litres

3. Quantités résiduelles de _____ (**nommer chacun** des autres carburants) présentes dans les réservoirs, barils, installation de pompage, etc. : _____ litres (**préciser la quantité pour chacun**) : _____ litres

4. Gestion de ces hydrocarbures résiduels, **en précisant les quantités selon le mode de gestion utilisée** :

_____

Barils

5. Quantité approximative de barils empilés : 70

6. Quantité approximative de barils empilés et ayant contenu des **matières toxiques** (soit kérosène, de l'essence ou du diesel) : 70

7. Quantité approximative de barils empilés et ayant contenu une huile, une graisse ou une autre matière dangereuse non toxique : 0

8. **Quantité approximative de barils vides contaminés par une autre matière dangereuse que celles décrites aux points 6 et 7 et identifier ces matières dangereuses, s'il y a lieu : 0**

9. **Description de l'aire d'entreposage des barils vides contaminés par une matière toxique et assimilés à des matières dangereuse (superficie et volume)** _____

10. **Description de l'aire d'entreposage des barils vides contaminés par une matière dangereuse non toxique et assimilés à des déchets solides (superficie et volume)** _____

11. Distance de l'aire d'entreposage des barils **assimilés à des matières dangereuses** par rapport à une ressource **ou une zone ou un milieu ayant une sensibilité environnementale particulière (exemple : ressources visées par la** *Stratégie de mise en œuvre au Québec de la Convention sur la diversité biologique)* : _____m. De quelle(s) ressource(s) **ou zone ou milieu** s'agit-il ? _____

12. Distance de l'aire d'entreposage des barils **assimilés à des déchets solides** par rapport à une ressource **ou une zone ou un milieu ayant une sensibilité environnementale particulière (exemple : ressources visées par la** *Stratégie de mise en œuvre au Québec de la Convention sur la diversité biologique)* : _____m. De quelle(s) ressource(s) **ou zone ou milieu** s'agit-il ? _____

Carcasses métalliques

13.Quantités de carcasses métalliques ou autres objets inertes contaminés en surface par une matière toxique (essence, diesel, kérosène, etc..) ou par une huile, une graisse ou un autre matière dangereuse de même que la concentration des contaminants en surface _____

14.Description de l'aire d'entreposage des carcasses métalliques ou autres objets inertes contaminés par une matières dangereuse_____

Démantèlement de bâtiments

15.Les bâtiments seront-ils démantelés ? Non (Dans la négative, passez à la question 22)

16.Si les bâtiments sont démantelés, quelle est la quantité approximative de matériaux de démantèlement assimilés à des déchets solides ou à des matériaux secs ? _____ m^3

17.Pour les matériaux de démantèlement assimilés à des matières dangereuses, fournir la quantité de chacun des matériaux(tuiles de plancher, panneaux muraux en fibrociment, écaille de peinture, etc.
_____

18.Gestion des matériaux de démantèlement contaminées ou contenant des BPC au-delà des quantités prévues dans le Règlement sur les matières dangereuses_____

19.Description de l'aire d'entreposage des matériaux de démantèlement contaminés par des BPC ou contenant des BPC au-delà des maximum prévus dans le Règlement sur les matières dangereuses_____

20.Distance de l'aire d'entreposage des matériaux de démantèlement assimilés à des matières dangereuses par rapport à un cours d'eau ou un plan d'eau : _____ m

21.Distance de l'aire d'entreposage des matériaux de démantèlement assimilés à des matières dangereuses par rapport à une ressource **ou une zone ou un milieu ayant une sensibilité environnementale particulière (exemple : ressources visées par la** *Stratégie de mise en œuvre au Québec de la Convention sur la diversité biologique)* :
_____m. De quelle(s) ressource(s) **ou zone ou milieu** s'agit-il ? _____

Matières dangereuses résiduelles

22.Quantité de chacune des matières dangereuses résiduelles retrouvées sur le site, notamment les écailles de peinture contaminée par les BPC, les batteries au plomb, etc. et qui seront transportés vers un centre autorisé pour leur élimination **Pas de matières dangereuses résiduelles sur le site**

23.Préciser le nom du centre de transfert ou du centre autorisé pour l'élimination des matières dangereuses résiduelles vers où seront acheminées les matières dangereuses résiduelles retrouvées sur chacun des sites. Préciser le nom des transporteurs qui prendront en charge les matières dangereuses résiduelles du site de démantèlement jusqu'au centre de transfert ou au centre autorisé pour l'élimination. Fournir le nom des endroits où transiteront les matières dangereuses, s'il y a lieu **N/A**

Déchets solides et matériaux secs

24.Quantité approximative de déchets solides et de matériaux secs ramassés sur le terrain (en excluant les barils) :
_____ m^3

25. Description de l'aire d'entreposage des déchets solides (en excluant les barils) et des matériaux secs ramassés sur le terrain et s'il y lieu, provenant du démantèlement du bâtiment_____

26. Distance de l'aire d'entreposage des déchets solides (en excluant les barils) et des matériaux secs ramassés sur le terrain et s'il y a lieu, provenant du démantèlement du bâtiment par rapport à un cours d'eau ou un plan d'eau : _____ m

27. Distance de l'aire d'entreposage des déchets solides et des matériaux secs ramassés sur le terrain et s'il y a lieu, provenant du démantèlement du bâtiment par rapport à une ressource **ou une zone ou un milieu ayant une sensibilité environnementale particulière (exemple : ressources visées par la** *Stratégie de mise en œuvre au Québec de la Convention sur la diversité biologique)* : _____m. De quelle(s) ressource(s) **ou zone ou milieu** s'agit-il ? _____

SOLS CONTAMINÉS

28. Volumes et superficies approximatifs de sols contaminés

	Volumes (m^3)	Superficies (m^2)
> C	0	0
B-C	0	0
A-B	0	0

Critères indicatifs de la contamination des sols:

Paramètre	Critère A ppm	Critère B ppm	Critère C ppm
Hydrocarbures pétroliers C_{10} à C_{50}	300	700	3500
Benzène	0.1	0.5	5
Toluène	0.2	3	30
Éthylbenzène	0.2	5	50
Xylènes	0.2	5	50
BPC	0.05	1	10

29. Distance des sols contaminés > C par rapport à un cours d'eau ou un plan d'eau : _____ m
Distance des sols contaminés B-C par rapport à un cours d'eau ou un plan d'eau : _____ m
Distance des sols contaminés A-B par rapport à un cours d'eau ou un plan d'eau : _____ m

30. Distance des sols contaminés > C par rapport à une ressource **ou une zone ou un milieu ayant une sensibilité environnementale particulière (exemple : ressources visées par la** *Stratégie de mise en œuvre au Québec de la Convention sur la diversité biologique)* : _____m.

Distance des sols contaminés B-C par rapport à une ressource **ou une zone ou un milieu ayant une sensibilité environnementale particulière (exemple : ressources visées par la** *Stratégie de mise en œuvre au Québec de la Convention sur la diversité biologique)* : _____m.

Distance des sols contaminés A-B par rapport à une ressource **ou une zone ou un milieu ayant une sensibilité environnementale particulière (exemple : ressources visées par la** *Stratégie de mise en œuvre au Québec de la Convention sur la diversité biologique)* : _____m.

De quelle(s) ressource(s) **ou zone ou milieu** s'agit-il ? _____

31. Des échantillons de sols ont-ils été prélevés afin de procéder à une étude de biotraitabilité ? Non . Dans l'affirmative, combien d'échantillons ont été prélevés ? _____

32. Ajout de matière organique, **fertilisants, ect. aux sols contaminés?** _____

SATISFACTION DES MUNICIPALITÉS

33. Les travaux ont-ils été réalisés à la satisfaction des municipalités (communautés autochtones) ?

_____

DIVERS

34. Y a-t-il une réutilisation prévue des terrains ou des bâtiments ? Dans l'affirmative, laquelle ? Non

35. Installation d'un panneau indicateur ? Prévu en 2001

36. Installation de panneaux de fibre de verre sur les fenêtres brisées ? Non requis

37. Une trousse d'urgence a-t-elle été laissée sur place ? Prévu en 2001

38. Remarques, commentaires : _____

Signature (responsable des travaux de l'ARK) : _____

Date : 14 décembre 2000

⇒ **En ce qui concerne les questions pour lesquelles une distance est demandée, inscrire « > 1000 m » si la distance est supérieure à 1 km.**

⇒ Les ressources visées par la *Stratégie de mise en œuvre au Québec de la Convention sur la diversité biologique* sont définies par :

- Les milieux critiques ou sensibles pour la biodiversité (tourbière, marais, marécage...) ;
- Les aires protégées (parc, réserve écologique, habitat et refuge faunique...) ;
- Les espèces menacées ou vulnérables ou susceptibles d'être ainsi désignées, ainsi que leurs habitats.

Certaines ressources ne seront peut être pas facilement identifiables lors des travaux. Si c'est le cas, veuillez le mentionner clairement dans la fiche.

⇒ Tout document permettant une meilleure compréhension de l'état du terrain et des travaux réalisés peut être annexé. Par exemple, la fiche pourra être rendue plus descriptive à l'aide de plans, schémas, croquis, photos... **Les observations, les croquis, les calculs et estimations ainsi que les résultats analytiques ayant servi à estimer les volumes et superficies approximatifs de sols contaminés seront inclus dans une fiche de terrain à joindre à la fiche descriptive des travaux.**

⇒ Cette fiche est inspirée en partie du *Système national de classification des lieux contaminés* publié par le CCME en 1992.

26/04/99

Ligne de radar Mid Canada

Fiche descriptive des travaux effectués

Site # : 330 **Coordonnées GPS : 55° 19.25' N; 74° 34.26' W**

Dates des travaux : 9 mars 2000; 5 et 6 septembre 2000

MATIÈRES RÉSIDUELLES :

Hydrocarbures

1. Quantités résiduelles d'essence présentes dans les réservoirs, barils, installations de pompage, etc. : 0 litres

2. Quantités résiduelles de diesel présentes dans les réservoirs, barils, installations de pompage, etc. : 150 litres

3. Quantités résiduelles de _____ (**nommer chacun** des autres carburants) présentes dans les réservoirs, barils, installation de pompage, etc. : _____ litres (**préciser la quantité pour chacun**) : mars 2000 : 20 litres graisse, 30 litres d'hydrocarbures. Septembre 2000 : génératrices : 300 litres d'huile; un baril : 150 litres diesel, deux contenants : 50 litres d'huile

4. Gestion de ces hydrocarbures résiduels, **en précisant les quantités selon le mode de gestion utilisée** : envoi à un centre autorisé : HEIST, à Rouyn. (À récupérer en 2001 : 5 litres d'huile : apporter un contenant)

Barils

5. Quantité approximative de barils empilés : 530

6. Quantité approximative de barils empilés et ayant contenu des **matières toxiques** (soit kérosène, de l'essence ou du diesel) : 530

7. Quantité approximative de barils empilés et ayant contenu une huile, une graisse ou une autre matière dangereuse non toxique : _____

8. **Quantité approximative de barils vides contaminés par une autre matière dangereuse que celles décrites aux points 6 et 7 et identifier ces matières dangereuses, s'il y a lieu : _____**

9. **Description de l'aire d'entreposage des barils vides contaminés par une matière toxique et assimilés à des matières dangereuse (superficie et volume) _____**

10. **Description de l'aire d'entreposage des barils vides contaminés par une matière dangereuse non toxique et assimilés à des déchets solides (superficie et volume) _____**

11. Distance de l'aire d'entreposage des barils **assimilés à des matières dangereuses** par rapport à une ressource **ou une zone ou un milieu ayant une sensibilité environnementale particulière (exemple : ressources visées par la** *Stratégie de mise en œuvre au Québec de la Convention sur la diversité biologique)* : _____m. De quelle(s) ressource(s) **ou zone ou milieu** s'agit-il ? _____

12. Distance de l'aire d'entreposage des barils **assimilés à des déchets solides** par rapport à une ressource **ou une zone ou un milieu ayant une sensibilité environnementale particulière (exemple : ressources visées par la** *Stratégie de mise en œuvre au Québec de la Convention sur la diversité biologique)* : _____m. De quelle(s) ressource(s) **ou zone ou milieu** s'agit-il ? _____

Carcasses métalliques

13.Quantités de carcasses métalliques ou autres objets inertes contaminés en surface par une matière toxique (essence, diesel, kérosène, etc..) ou par une huile, une graisse ou un autre matière dangereuse de même que la concentration des contaminants en surface _____

14.Description de l'aire d'entreposage des carcasses métalliques ou autres objets inertes contaminés par une matières dangereuse_____

Démantèlement de bâtiments

15.Les bâtiments seront-ils démantelés ? Non (Dans la négative, passez à la question 22)

16.Si les bâtiments sont démantelés, quelle est la quantité approximative de matériaux de démantèlement assimilés à des déchets solides ou à des matériaux secs ? _____ m^3

17.Pour les matériaux de démantèlement assimilés à des matières dangereuses, fournir la quantité de chacun des matériaux(tuiles de plancher, panneaux muraux en fibrociment, écaille de peinture, etc.

_____

18.Gestion des matériaux de démantèlement contaminées ou contenant des BPC au-delà des quantités prévues dans le Règlement sur les matières dangereuses_____

19.Description de l'aire d'entreposage des matériaux de démantèlement contaminés par des BPC ou contenant des BPC au-delà des maximum prévus dans le Règlement sur les matières dangereuses_____

20.Distance de l'aire d'entreposage des matériaux de démantèlement assimilés à des matières dangereuses par rapport à un cours d'eau ou un plan d'eau : _____ m

21.Distance de l'aire d'entreposage des matériaux de démantèlement assimilés à des matières dangereuses par rapport à une ressource **ou une zone ou un milieu ayant une sensibilité environnementale particulière (exemple : ressources visées par la** *Stratégie de mise en œuvre au Québec de la Convention sur la diversité biologique)* : _____m. De quelle(s) ressource(s) **ou zone ou milieu** s'agit-il ? _____

Matières dangereuses résiduelles

22.Quantité de chacune des matières dangereuses résiduelles retrouvées sur le site, notamment les écailles de peinture contaminée par les BPC, les batteries au plomb, etc. et qui seront transportés vers un centre autorisé pour leur élimination **Mars 2000 : interrupteurs au mercure, 18 batteries, 20 litres graisse et 30 litres d'hydrocarbures. Septembre 2000 : 350 litres d'huile, 150 litres diesel, 4 interrupteurs au mercure**

23.Préciser le nom du centre de transfert ou du centre autorisé pour l'élimination des matières dangereuses résiduelles vers où seront acheminées les matières dangereuses résiduelles retrouvées sur chacun des sites. Préciser le nom des transporteurs qui prendront en charge les matières dangereuses résiduelles du site de démantèlement jusqu'au centre de transfert ou au centre autorisé pour l'élimination. Fournir le nom des endroits où transiteront les matières dangereuses, s'il y a lieu **HEIST ou lac Mollet (voir rapport)**

Déchets solides et matériaux secs

24.Quantité approximative de déchets solides et de matériaux secs ramassés sur le terrain (en excluant les barils) : _____ m^3

25. Description de l'aire d'entreposage des déchets solides (en excluant les barils) et des matériaux secs ramassés sur le terrain et s'il y lieu, provenant du démantèlement du bâtiment_____

26. Distance de l'aire d'entreposage des déchets solides (en excluant les barils) et des matériaux secs ramassés sur le terrain et s'il y a lieu, provenant du démantèlement du bâtiment par rapport à un cours d'eau ou un plan d'eau : _____ m

27. Distance de l'aire d'entreposage des déchets solides et des matériaux secs ramassés sur le terrain et s'il y a lieu, provenant du démantèlement du bâtiment par rapport à une ressource **ou une zone ou un milieu ayant une sensibilité environnementale particulière (exemple : ressources visées par la** *Stratégie de mise en œuvre au Québec de la Convention sur la diversité biologique)* : _____m. De quelle(s) ressource(s) **ou zone ou milieu** s'agit-il ? _____

SOLS CONTAMINÉS

28. Volumes et superficies approximatifs de sols contaminés

	Volumes (m^3)	Superficies (m^2)
> C	43	285
B-C	0	0
A-B	0	0

Critères indicatifs de la contamination des sols:

Paramètre	Critère A ppm	Critère B ppm	Critère C ppm
Hydrocarbures pétroliers C_{10} à C_{50}	300	700	3500
Benzène	0.1	0.5	5
Toluène	0.2	3	30
Éthylbenzène	0.2	5	50
Xylènes	0.2	5	50
BPC	0.05	I	10

29. Distance des sols contaminés > C par rapport à un cours d'eau ou un plan d'eau : _____ m
Distance des sols contaminés B-C par rapport à un cours d'eau ou un plan d'eau : _____ m
Distance des sols contaminés A-B par rapport à un cours d'eau ou un plan d'eau : _____ m

30. Distance des sols contaminés > C par rapport à une ressource **ou une zone ou un milieu ayant une sensibilité environnementale particulière (exemple : ressources visées par la** *Stratégie de mise en œuvre au Québec de la Convention sur la diversité biologique)* : ~300 m.

Distance des sols contaminés B-C par rapport à une ressource **ou une zone ou un milieu ayant une sensibilité environnementale particulière (exemple : ressources visées par la** *Stratégie de mise en œuvre au Québec de la Convention sur la diversité biologique)* : _____m.

Distance des sols contaminés A-B par rapport à une ressource **ou une zone ou un milieu ayant une sensibilité environnementale particulière (exemple : ressources visées par la** *Stratégie de mise en œuvre au Québec de la Convention sur la diversité biologique)* : _____m.

De quelle(s) ressource(s) **ou zone ou milieu** s'agit-il ? Milieu humide

31. Des échantillons de sols ont-ils été prélevés pour fins d'analyses ? Oui . Dans l'affirmative, combien d'échantillons ont été prélevés ? Un, le 11 octobre 2000

32. Ajout de matière organique, **fertilisants, ect. aux sols contaminés?** Oui, avec bêchage

SATISFACTION DES MUNICIPALITÉS

33. Les travaux ont-ils été réalisés à la satisfaction des municipalités (communautés autochtones) ?

_____

DIVERS

34. Y a-t-il une réutilisation prévue des terrains ou des bâtiments ? Dans l'affirmative, laquelle ? Non.

35. Installation d'un panneau indicateur ? Prévu en 2001

36. Installation de LEXAN sur les fenêtres brisées ? Oui

37. Une trousse d'urgence a-t-elle été laissée sur place ? Prévu en 2001

38. Remarques, commentaires : _____

Signature (responsable des travaux de l'ARK) : _____

Date : 14 décembre 2000

⇒ **En ce qui concerne les questions pour lesquelles une distance est demandée, inscrire « > 1000 m » si la distance est supérieure à 1 km.**

⇒ Les ressources visées par la *Stratégie de mise en œuvre au Québec de la Convention sur la diversité biologique* sont définies par :

- Les milieux critiques ou sensibles pour la biodiversité (tourbière, marais, marécage...) ;
- Les aires protégées (parc, réserve écologique, habitat et refuge faunique...) ;
- Les espèces menacées ou vulnérables ou susceptibles d'être ainsi désignées, ainsi que leurs habitats.

Certaines ressources ne seront peut être pas facilement identifiables lors des travaux. Si c'est le cas, veuillez le mentionner clairement dans la fiche.

⇒ Tout document permettant une meilleure compréhension de l'état du terrain et des travaux réalisés peut être annexé. Par exemple, la fiche pourra être rendue plus descriptive à l'aide de plans, schémas, croquis, photos... **Les observations, les croquis, les calculs et estimations ainsi que les résultats analytiques ayant servi à estimer les volumes et superficies approximatifs de sols contaminés seront inclus dans une fiche de terrain à joindre à la fiche descriptive des travaux.**

⇒ Cette fiche est inspirée en partie du *Système national de classification des lieux contaminés* publié par le CCME en 1992.

26/04/99

Ligne de radar Mid Canada

Fiche descriptive des travaux effectués

Site # : 330A **Coordonnées GPS : 55° 17.68' N; 74° 33.44'**

Dates des travaux : 9 mars 2000; 4, 6, 7 et 10 septembre 2000

MATIÈRES RÉSIDUELLES :

Hydrocarbures

1. Quantités résiduelles d'essence présentes dans les réservoirs, barils, installations de pompage, etc. : 0 litres

2. Quantités résiduelles de diesel présentes dans les réservoirs, barils, installations de pompage, etc. : 400 litres dans barils (mars 2000)

3. Quantités résiduelles de _____ (**nommer chacun** des autres carburants) présentes dans les réservoirs, barils, installation de pompage, etc. : _____ litres (**préciser la quantité pour chacun**) : 400 litres hydrocarbures dans barils (contenu parfois de qualité douteuse; septembre 2000)

4. Gestion de ces hydrocarbures résiduels, **en précisant les quantités selon le mode de gestion utilisée** : envoi à un centre autorisé : HEIST, à Rouyn, ou au lac Mollet (selon la qualité du contenu)

Barils

5. Quantité approximative de barils empilés : 912

6. Quantité approximative de barils empilés et ayant contenu des **matières toxiques** (soit kérosène, de l'essence ou du diesel) : 912

7. Quantité approximative de barils empilés et ayant contenu une huile, une graisse ou une autre matière dangereuse non toxique : _____

8. **Quantité approximative de barils vides contaminés par une autre matière dangereuse que celles décrites aux points 6 et 7 et identifier ces matières dangereuses, s'il y a lieu :** _____

9. **Description de l'aire d'entreposage des barils vides contaminés par une matière toxique et assimilés à des matières dangereuse (superficie et volume)** _____

10. **Description de l'aire d'entreposage des barils vides contaminés par une matière dangereuse non toxique et assimilés à des déchets solides (superficie et volume)** _____

11. Distance de l'aire d'entreposage des barils **assimilés à des matières dangereuses** par rapport à une ressource **ou une zone ou un milieu ayant une sensibilité environnementale particulière (exemple : ressources visées par la** *Stratégie de mise en œuvre au Québec de la Convention sur la diversité biologique)* : 30 m. De quelle(s) ressource(s) **ou zone ou milieu** s'agit-il ? Lac

12. Distance de l'aire d'entreposage des barils **assimilés à des déchets solides** par rapport à une ressource **ou une zone ou un milieu ayant une sensibilité environnementale particulière (exemple : ressources visées par la** *Stratégie de mise en œuvre au Québec de la Convention sur la diversité biologique)* : _____m. De quelle(s) ressource(s) **ou zone ou milieu** s'agit-il ? _____

Carcasses métalliques

13. Quantités de carcasses métalliques ou autres objets inertes contaminés en surface par une matière toxique (essence, diesel, kérosène, etc..) ou par une huile, une graisse ou un autre matière dangereuse de même que la concentration des contaminants en surface _____

14. Description de l'aire d'entreposage des carcasses métalliques ou autres objets inertes contaminés par une matières dangereuse_____

Démantèlement de bâtiments

15. Les bâtiments seront-ils démantelés ? Non (Dans la négative, passez à la question 22)

16. Si les bâtiments sont démantelés, quelle est la quantité approximative de matériaux de démantèlement assimilés à des déchets solides ou à des matériaux secs ? _____ m^3

17. Pour les matériaux de démantèlement assimilés à des matières dangereuses, fournir la quantité de chacun des matériaux(tuiles de plancher, panneaux muraux en fibrociment, écaille de peinture, etc.

_____

18. Gestion des matériaux de démantèlement contaminées ou contenant des BPC au-delà des quantités prévues dans le Règlement sur les matières dangereuses_____

19. Description de l'aire d'entreposage des matériaux de démantèlement contaminés par des BPC ou contenant des BPC au-delà des maximum prévus dans le Règlement sur les matières dangereuses_____

20. Distance de l'aire d'entreposage des matériaux de démantèlement assimilés à des matières dangereuses par rapport à un cours d'eau ou un plan d'eau : _____ m

21. Distance de l'aire d'entreposage des matériaux de démantèlement assimilés à des matières dangereuses par rapport à une ressource **ou une zone ou un milieu ayant une sensibilité environnementale particulière (exemple : ressources visées par la** *Stratégie de mise en œuvre au Québec de la Convention sur la diversité biologique)* : _____m. De quelle(s) ressource(s) **ou zone ou milieu** s'agit-il ? _____

Matières dangereuses résiduelles

22. Quantité de chacune des matières dangereuses résiduelles retrouvées sur le site, notamment les écailles de peinture contaminée par les BPC, les batteries au plomb, etc. et qui seront transportés vers un centre autorisé pour leur élimination_____

23. Préciser le nom du centre de transfert ou du centre autorisé pour l'élimination des matières dangereuses résiduelles vers où seront acheminées les matières dangereuses résiduelles retrouvées sur chacun des sites. Préciser le nom des transporteurs qui prendront en charge les matières dangereuses résiduelles du site de démantèlement jusqu'au centre de transfert ou au centre autorisé pour l'élimination. Fournir le nom des endroits où transiteront les matières dangereuses, s'il y a lieu _____

Déchets solides et matériaux secs

24. Quantité approximative de déchets solides et de matériaux secs ramassés sur le terrain (en excluant les barils) : _____ m^3

25. **Description de l'aire d'entreposage des déchets solides (en excluant les barils) et des matériaux secs ramassés sur le terrain et s'il y lieu, provenant du démantèlement du bâtiment**_____

26. Distance de l'aire d'entreposage des déchets solides (en excluant les barils) et des matériaux secs ramassés sur le terrain et s'il y a lieu, provenant du démantèlement du bâtiment par rapport à un cours d'eau ou un plan d'eau : _____ m

27. Distance de l'aire d'entreposage des déchets solides et des matériaux secs ramassés sur le terrain et s'il y a lieu, provenant du démantèlement du bâtiment par rapport à une ressource **ou une zone ou un milieu ayant une sensibilité environnementale particulière (exemple : ressources visées par la** *Stratégie de mise en œuvre au Québec de la Convention sur la diversité biologique)* : _____m. De quelle(s) ressource(s) **ou zone ou milieu** s'agit-il ? _____

SOLS CONTAMINÉS

28. Volumes et superficies approximatifs de sols contaminés

	Volumes (m^3)	Superficies (m^2)
> C	0.45	3
B-C	0	0
A-B	0	0

Critères indicatifs de la contamination des sols:

Paramètre	Critère A ppm	Critère B ppm	Critère C ppm
Hydrocarbures pétroliers C_{10} à C_{50}	300	700	3500
Benzène	0.1	0.5	5
Toluène	0.2	3	30
Éthylbenzène	0.2	5	50
Xylènes	0.2	5	50
BPC	0.05	1	10

29. Distance des sols contaminés > C par rapport à un cours d'eau ou un plan d'eau : ~70 m
Distance des sols contaminés B-C par rapport à un cours d'eau ou un plan d'eau : _____ m
Distance des sols contaminés A-B par rapport à un cours d'eau ou un plan d'eau : _____ m

30. Distance des sols contaminés > C par rapport à une ressource **ou une zone ou un milieu ayant une sensibilité environnementale particulière (exemple : ressources visées par la** *Stratégie de mise en œuvre au Québec de la Convention sur la diversité biologique)* : _____m.

Distance des sols contaminés B-C par rapport à une ressource **ou une zone ou un milieu ayant une sensibilité environnementale particulière (exemple : ressources visées par la** *Stratégie de mise en œuvre au Québec de la Convention sur la diversité biologique)* : _____m.

Distance des sols contaminés A-B par rapport à une ressource **ou une zone ou un milieu ayant une sensibilité environnementale particulière (exemple : ressources visées par la** *Stratégie de mise en œuvre au Québec de la Convention sur la diversité biologique)* : _____m.

De quelle(s) ressource(s) **ou zone ou milieu** s'agit-il ? _____

31. Des échantillons de sols ont-ils été prélevés pour fins d'analyses ? Oui. Dans l'affirmative, combien d'échantillons ont été prélevés ? Un, le 11 octobre 2000

32. Ajout de matière organique, **fertilisants, ect. aux sols contaminés?** Oui, avec bêchage

SATISFACTION DES MUNICIPALITÉS

33. Les travaux ont-ils été réalisés à la satisfaction des municipalités (communautés autochtones) ?

_____

DIVERS

34. Y a-t-il une réutilisation prévue des terrains ou des bâtiments ? Dans l'affirmative, laquelle ? Le bâtiment est déjà utilisé comme campement pas des Cris.

35. Installation d'un panneau indicateur ? Prévu en 2001

36. Installation de LEXAN sur les fenêtres brisées ? Oui

37. Une trousse d'urgence a-t-elle été laissée sur place ? Prévu en 2001

38. Remarques, commentaires : _____

Signature (responsable des travaux de l'ARK) : _____

Date : 14 décembre 2000

⇒ **En ce qui concerne les questions pour lesquelles une distance est demandée, inscrire « > 1000 m » si la distance est supérieure à 1 km.**

⇒ Les ressources visées par la *Stratégie de mise en œuvre au Québec de la Convention sur la diversité biologique* sont définies par :

- Les milieux critiques ou sensibles pour la biodiversité (tourbière, marais, marécage...) ;
- Les aires protégées (parc, réserve écologique, habitat et refuge faunique...) ;
- Les espèces menacées ou vulnérables ou susceptibles d'être ainsi désignées, ainsi que leurs habitats.

Certaines ressources ne seront peut être pas facilement identifiables lors des travaux. Si c'est le cas, veuillez le mentionner clairement dans la fiche.

⇒ Tout document permettant une meilleure compréhension de l'état du terrain et des travaux réalisés peut être annexé. Par exemple, la fiche pourra être rendue plus descriptive à l'aide de plans, schémas, croquis, photos... **Les observations, les croquis, les calculs et estimations ainsi que les résultats analytiques ayant servi à estimer les volumes et superficies approximatifs de sols contaminés seront inclus dans une fiche de terrain à joindre à la fiche descriptive des travaux.**

⇒ Cette fiche est inspirée en partie du *Système national de classification des lieux contaminés* publié par le CCME en 1992.

26/04/99

Ligne de radar Mid Canada

Fiche descriptive des travaux effectués

Site # : 403A **Coordonnées GPS : 55° 06.48'; 78° 12.20 W**

Dates des travaux : 13 septembre 2000

MATIÈRES RÉSIDUELLES :

Hydrocarbures

1. Quantités résiduelles d'essence présentes dans les réservoirs, barils, installations de pompage, etc. : 0 litres

2. Quantités résiduelles de diesel présentes dans les réservoirs, barils, installations de pompage, etc. : 0 litres

3. Quantités résiduelles de _____ (**nommer chacun** des autres carburants) présentes dans les réservoirs, barils, installation de pompage, etc. : _____ litres (**préciser la quantité pour chacun**) : _____ litres

4. Gestion de ces hydrocarbures résiduels, **en précisant les quantités selon le mode de gestion utilisée** :
_____

Barils

5. Quantité approximative de barils empilés : ~388

6. Quantité approximative de barils empilés et ayant contenu des **matières toxiques** (soit kérosène, de l'essence ou du diesel) : ~388

7. Quantité approximative de barils ~~empilés et ayant contenu~~ **contenant** une huile, une graisse ou une autre matière dangereuse non toxique : un (goudron vitrifié, non considéré comme dangereux pour l'environnement)

8. **Quantité approximative de barils vides contaminés par une autre matière dangereuse que celles décrites aux points 6 et 7 et identifier ces matières dangereuses, s'il y a lieu : _____**

9. **Description de l'aire d'entreposage des barils vides contaminés par une matière toxique et assimilés à des matières dangereuse (superficie et volume) _____**

10. **Description de l'aire d'entreposage des barils vides contaminés par une matière dangereuse non toxique et assimilés à des déchets solides (superficie et volume) _____**

11. Distance de l'aire d'entreposage des barils **assimilés à des matières dangereuses** par rapport à une ressource **ou une zone ou un milieu ayant une sensibilité environnementale particulière (exemple : ressources visées par la** *Stratégie de mise en œuvre au Québec de la Convention sur la diversité biologique)* : ~80 m. De quelle(s) ressource(s) **ou zone ou milieu** s'agit-il ? Baie d'Hudson (goudron vitrifié, considéré non dangereux)

12. Distance de l'aire d'entreposage des barils **assimilés à des déchets solides** par rapport à une ressource **ou une zone ou un milieu ayant une sensibilité environnementale particulière (exemple : ressources visées par la** *Stratégie de mise en œuvre au Québec de la Convention sur la diversité biologique)* : _____m. De quelle(s) ressource(s) **ou zone ou milieu** s'agit-il ? _____

Carcasses métalliques

13. Quantités de carcasses métalliques ou autres objets inertes contaminés en surface par une matière toxique (essence, diesel, kérosène, etc..) ou par une huile, une graisse ou un autre matière dangereuse de même que la concentration des contaminants en surface _____

14. Description de l'aire d'entreposage des carcasses métalliques ou autres objets inertes contaminés par une matières dangereuse_____

Démantèlement de bâtiments

15. Les bâtiments seront-ils démantelés ? N/A (Dans la négative, passez à la question 24)

16. Si les bâtiments sont démantelés, quelle est la quantité approximative de matériaux de démantèlement assimilés à des déchets solides ou à des matériaux secs ? _____ m^3

17. Pour les matériaux de démantèlement assimilés à des matières dangereuses, fournir la quantité de chacun des matériaux(tuiles de plancher, panneaux muraux en fibrociment, écaille de peinture, etc.

_____

18. Gestion des matériaux de démantèlement contaminées ou contenant des BPC au-delà des quantités prévues dans le Règlement sur les matières dangereuses_____

19. Description de l'aire d'entreposage des matériaux de démantèlement contaminés par des BPC ou contenant des BPC au-delà des maximum prévus dans le Règlement sur les matières dangereuses_____

20. Distance de l'aire d'entreposage des matériaux de démantèlement assimilés à des matières dangereuses par rapport à un cours d'eau ou un plan d'eau : _____ m

21. Distance de l'aire d'entreposage des matériaux de démantèlement assimilés à des matières dangereuses par rapport à une ressource **ou une zone ou un milieu ayant une sensibilité environnementale particulière (exemple : ressources visées par la** *Stratégie de mise en œuvre au Québec de la Convention sur la diversité biologique)* : _____m. De quelle(s) ressource(s) **ou zone ou milieu** s'agit-il ? _____

Matières dangereuses résiduelles

22. Quantité de chacune des matières dangereuses résiduelles retrouvées sur le site, notamment les écailles de peinture contaminée par les BPC, les batteries au plomb, etc. et qui seront transportés vers un centre autorisé pour leur élimination_____

23. Préciser le nom du centre de transfert ou du centre autorisé pour l'élimination des matières dangereuses résiduelles vers où seront acheminées les matières dangereuses résiduelles retrouvées sur chacun des sites. Préciser le nom des transporteurs qui prendront en charge les matières dangereuses résiduelles du site de démantèlement jusqu'au centre de transfert ou au centre autorisé pour l'élimination. Fournir le nom des endroits où transiteront les matières dangereuses, s'il y a lieu _____

Déchets solides et matériaux secs

24. Quantité approximative de déchets solides et de matériaux secs ramassés sur le terrain (en excluant les barils) : ~5 m^3

25. Description de l'aire d'entreposage des déchets solides (en excluant les barils) et des matériaux secs ramassés sur le terrain et s'il y lieu, provenant du démantèlement du bâtiment **Près des barils**

26. Distance de l'aire d'entreposage des déchets solides (en excluant les barils) et des matériaux secs ramassés sur le terrain et s'il y a lieu, ~~provenant du démantèlement du bâtiment~~ par rapport à un cours d'eau ou un plan d'eau : ~70 m (baie d'Hudson); quelques débris secs à ~8 m d'un petit lac

27. Distance de l'aire d'entreposage des déchets solides et des matériaux secs ramassés sur le terrain et s'il y a lieu, provenant du démantèlement du bâtiment par rapport à une ressource **ou une zone ou un milieu ayant une sensibilité environnementale particulière (exemple : ressources visées par la** *Stratégie de mise en œuvre au Québec de la Convention sur la diversité biologique)* : _____m. De quelle(s) ressource(s) **ou zone ou milieu** s'agit-il ? _____

SOLS CONTAMINÉS

28. Volumes et superficies approximatifs de sols contaminés

	Volumes (m^3)	Superficies (m^2)
> C	0,05	2
B-C	0	0
A-B	0	0

Critères indicatifs de la contamination des sols:

Paramètre	Critère A ppm	Critère B ppm	Critère C ppm
Hydrocarbures pétroliers C_{10} à C_{50}	300	700	3500
Benzène	0.1	0.5	5
Toluène	0.2	3	30
Éthylbenzène	0.2	5	50
Xylènes	0.2	5	50
BPC	0.05	1	10

29. Distance des sols contaminés > C par rapport à un cours d'eau ou un plan d'eau : ~200 m de la baie; ~25 m du lac
Distance des sols contaminés B-C par rapport à un cours d'eau ou un plan d'eau : _____ m
Distance des sols contaminés A-B par rapport à un cours d'eau ou un plan d'eau : _____ m

30. Distance des sols contaminés > C par rapport à une ressource **ou une zone ou un milieu ayant une sensibilité environnementale particulière (exemple : ressources visées par la** *Stratégie de mise en œuvre au Québec de la Convention sur la diversité biologique)* : _____m.

Distance des sols contaminés B-C par rapport à une ressource **ou une zone ou un milieu ayant une sensibilité environnementale particulière (exemple : ressources visées par la** *Stratégie de mise en œuvre au Québec de la Convention sur la diversité biologique)* : _____m.

Distance des sols contaminés A-B par rapport à une ressource **ou une zone ou un milieu ayant une sensibilité environnementale particulière (exemple : ressources visées par la** *Stratégie de mise en œuvre au Québec de la Convention sur la diversité biologique)* : _____m.

De quelle(s) ressource(s) **ou zone ou milieu** s'agit-il ? _____

31. Des échantillons de sols ont-ils été prélevés afin de procéder à une étude de biotraitabilité ? Non. Dans l'affirmative, combien d'échantillons ont été prélevés ? _____

32. Ajout de matière organique, **fertilisants, ect. aux sols contaminés?** Non, roches et roc.

SATISFACTION DES MUNICIPALITÉS

33. Les travaux ont-ils été réalisés à la satisfaction des municipalités (communautés autochtones) ?

_____

DIVERS

34. Y a-t-il une réutilisation prévue des terrains ou des bâtiments ? Dans l'affirmative, laquelle ? N/A

35. Installation d'un panneau indicateur ? N/A

36. Installation de panneaux de fibre de verre sur les fenêtres brisées ? N/A

37. Une trousse d'urgence a-t-elle été laissée sur place ? N/A

38. Remarques, commentaires : _____

Signature (responsable des travaux de l'ARK) : _____

Date : 14 décembre 2000

⇒ **En ce qui concerne les questions pour lesquelles une distance est demandée, inscrire « > 1000 m » si la distance est supérieure à 1 km.**

⇒ Les ressources visées par la *Stratégie de mise en œuvre au Québec de la Convention sur la diversité biologique* sont définies par :

- Les milieux critiques ou sensibles pour la biodiversité (tourbière, marais, marécage...) ;
- Les aires protégées (parc, réserve écologique, habitat et refuge faunique...) ;
- Les espèces menacées ou vulnérables ou susceptibles d'être ainsi désignées, ainsi que leurs habitats.

Certaines ressources ne seront peut être pas facilement identifiables lors des travaux. Si c'est le cas, veuillez le mentionner clairement dans la fiche.

⇒ Tout document permettant une meilleure compréhension de l'état du terrain et des travaux réalisés peut être annexé. Par exemple, la fiche pourra être rendue plus descriptive à l'aide de plans, schémas, croquis, photos... **Les observations, les croquis, les calculs et estimations ainsi que les résultats analytiques ayant servi à estimer les volumes et superficies approximatifs de sols contaminés seront inclus dans une fiche de terrain à joindre à la fiche descriptive des travaux.**

⇒ Cette fiche est inspirée en partie du *Système national de classification des lieux contaminés* publié par le CCME en 1992.

26/04/99

Ligne de radar Mid Canada

Fiche descriptive des travaux effectués

Site # : 306 **Coordonnées GPS : 55° 15.96' N; 68° 20.70' W**

Dates des travaux : 28 juin 2000

MATIÈRES RÉSIDUELLES :

Hydrocarbures

1. Quantités résiduelles d'essence présentes dans les réservoirs, barils, installations de pompage, etc. : 0 litres

2. Quantités résiduelles de diesel présentes dans les réservoirs, barils, installations de pompage, etc. : 0 litres

3. Quantités résiduelles de _____ (**nommer chacun** des autres carburants) présentes dans les réservoirs, barils, installation de pompage, etc. : 100 litres d'huile d'une génératrice (**préciser la quantité pour chacun**) :____ litres

4. Gestion de ces hydrocarbures résiduels, **en précisant les quantités selon le mode de gestion utilisée** :
Envoi à un centre autorisé : Onyx Industries à Sept-Îles.

Barils

5. Quantité approximative de barils empilés : 332

6. Quantité approximative de barils empilés et ayant contenu des **matières toxiques** (soit kérosène, de l'essence ou du diesel) : 332

7. Quantité approximative de barils empilés et ayant contenu une huile, une graisse ou une autre matière dangereuse non toxique : _____

8. **Quantité approximative de barils vides contaminés par une autre matière dangereuse que celles décrites aux points 6 et 7 et identifier ces matières dangereuses, s'il y a lieu :** _____

9. **Description de l'aire d'entreposage des barils vides contaminés par une matière toxique et assimilés à des matières dangereuse (superficie et volume)** _____

10. **Description de l'aire d'entreposage des barils vides contaminés par une matière dangereuse non toxique et assimilés à des déchets solides (superficie et volume)** _____

11. Distance de l'aire d'entreposage des barils **assimilés à des matières dangereuses** par rapport à une ressource **ou une zone ou un milieu ayant une sensibilité environnementale particulière (exemple : ressources visées par la** *Stratégie de mise en œuvre au Québec de la Convention sur la diversité biologique)* : _____m. De quelle(s) ressource(s) **ou zone ou milieu** s'agit-il ? _____

12. Distance de l'aire d'entreposage des barils **assimilés à des déchets solides** par rapport à une ressource **ou une zone ou un milieu ayant une sensibilité environnementale particulière (exemple : ressources visées par la** *Stratégie de mise en œuvre au Québec de la Convention sur la diversité biologique)* : _____m. De quelle(s) ressource(s) **ou zone ou milieu** s'agit-il ? _____

Carcasses métalliques

13. Quantités de carcasses métalliques ou autres objets inertes contaminés en surface par une matière toxique (essence, diesel, kérosène, etc..) ou par une huile, une graisse ou un autre matière dangereuse de même que la concentration des contaminants en surface _____

14. Description de l'aire d'entreposage des carcasses métalliques ou autres objets inertes contaminés par une matières dangereuse_____

Démantèlement de bâtiments

15. Les bâtiments seront-ils démantelés ? Non (Dans la négative, passez à la question 22)

16. Si les bâtiments sont démantelés, quelle est la quantité approximative de matériaux de démantèlement assimilés à des déchets solides ou à des matériaux secs ? _____ m^3

17. Pour les matériaux de démantèlement assimilés à des matières dangereuses, fournir la quantité de chacun des matériaux(tuiles de plancher, panneaux muraux en fibrociment, écaille de peinture, etc.

_____

18. Gestion des matériaux de démantèlement contaminées ou contenant des BPC au-delà des quantités prévues dans le Règlement sur les matières dangereuses_____

19. Description de l'aire d'entreposage des matériaux de démantèlement contaminés par des BPC ou contenant des BPC au-delà des maximum prévus dans le Règlement sur les matières dangereuses_____

20. Distance de l'aire d'entreposage des matériaux de démantèlement assimilés à des matières dangereuses par rapport à un cours d'eau ou un plan d'eau : _____ m

21. Distance de l'aire d'entreposage des matériaux de démantèlement assimilés à des matières dangereuses par rapport à une ressource **ou une zone ou un milieu ayant une sensibilité environnementale particulière (exemple : ressources visées par la** *Stratégie de mise en œuvre au Québec de la Convention sur la diversité biologique)* : _____m. De quelle(s) ressource(s) **ou zone ou milieu** s'agit-il ? _____

Matières dangereuses résiduelles

22. Quantité de chacune des matières dangereuses résiduelles retrouvées sur le site, notamment les écailles de peinture contaminée par les BPC, les batteries au plomb, etc. et qui seront transportés vers un centre autorisé pour leur élimination **18 batteries et 16 interrupteurs au mercure**

23. Préciser le nom du centre de transfert ou du centre autorisé pour l'élimination des matières dangereuses résiduelles vers où seront acheminées les matières dangereuses résiduelles retrouvées sur chacun des sites. Préciser le nom des transporteurs qui prendront en charge les matières dangereuses résiduelles du site de démantèlement jusqu'au centre de transfert ou au centre autorisé pour l'élimination. Fournir le nom des endroits où transiteront les matières dangereuses, s'il y a lieu **ONYX Industries inc.**

Déchets solides et matériaux secs

24. Quantité approximative de déchets solides et de matériaux secs ramassés sur le terrain (en excluant les barils) : _____ m^3

25. **Description de l'aire d'entreposage des déchets solides (en excluant les barils) et des matériaux secs ramassés sur le terrain et s'il y lieu, provenant du démantèlement du bâtiment**_____

26. Distance de l'aire d'entreposage des déchets solides (en excluant les barils) et des matériaux secs ramassés sur le terrain et s'il y a lieu, provenant du démantèlement du bâtiment par rapport à un cours d'eau ou un plan d'eau : _____ m

27. Distance de l'aire d'entreposage des déchets solides et des matériaux secs ramassés sur le terrain et s'il y a lieu, provenant du démantèlement du bâtiment par rapport à une ressource **ou une zone ou un milieu ayant une sensibilité environnementale particulière (exemple : ressources visées par la** *Stratégie de mise en œuvre au Québec de la Convention sur la diversité biologique)* : _____m. De quelle(s) ressource(s) **ou zone ou milieu** s'agit-il ? _____

SOLS CONTAMINÉS

28. Volumes et superficies approximatifs de sols contaminés

	Volumes (m^3)	Superficies (m^2)
> C	18	120
B-C		
A-B		

Critères indicatifs de la contamination des sols:

Paramètre	Critère A ppm	Critère B ppm	Critère C ppm
Hydrocarbures pétroliers C_{10} à C_{50}	300	700	3500
Benzène	0.1	0.5	5
Toluène	0.2	3	30
Éthylbenzène	0.2	5	50
Xylènes	0.2	5	50
BPC	0.05	1	10

29. Distance des sols contaminés > C par rapport à un cours d'eau ou un plan d'eau : _____ m
Distance des sols contaminés B-C par rapport à un cours d'eau ou un plan d'eau : _____ m
Distance des sols contaminés A-B par rapport à un cours d'eau ou un plan d'eau : _____ m

30. Distance des sols contaminés > C par rapport à une ressource **ou une zone ou un milieu ayant une sensibilité environnementale particulière (exemple : ressources visées par la** *Stratégie de mise en œuvre au Québec de la Convention sur la diversité biologique)* : _____m.

Distance des sols contaminés B-C par rapport à une ressource **ou une zone ou un milieu ayant une sensibilité environnementale particulière (exemple : ressources visées par la** *Stratégie de mise en œuvre au Québec de la Convention sur la diversité biologique)* : _____m.

Distance des sols contaminés A-B par rapport à une ressource **ou une zone ou un milieu ayant une sensibilité environnementale particulière (exemple : ressources visées par la** *Stratégie de mise en œuvre au Québec de la Convention sur la diversité biologique)* : _____m.

De quelle(s) ressource(s) **ou zone ou milieu** s'agit-il ? _____

31. Des échantillons de sols ont-ils été prélevés afin de procéder à une étude de biotraitabilité ?_____. Dans l'affirmative, combien d'échantillons ont été prélevés ? _____

32. Ajout de matière organique, **fertilisants, ect. aux sols contaminés?** Oui

SATISFACTION DES MUNICIPALITÉS

33. Les travaux ont-ils été réalisés à la satisfaction des municipalités (communautés autochtones) ?

_____

DIVERS

34. Y a-t-il une réutilisation prévue des terrains ou des bâtiments ? Dans l'affirmative, laquelle ? Non

35. Installation d'un panneau indicateur ? Prévue en 2001

36. Installation de Lexan sur les fenêtres brisées ? Oui

37. Une trousse d'urgence a-t-elle été laissée sur place ? Prévue en 2001

38. Remarques, commentaires :_____

Signature (responsable des travaux de l'ARK) : _____

Date : _____

⇒ **En ce qui concerne les questions pour lesquelles une distance est demandée, inscrire « > 1000 m » si la distance est supérieure à 1 km.**

⇒ Les ressources visées par la *Stratégie de mise en œuvre au Québec de la Convention sur la diversité biologique* sont définies par :

- Les milieux critiques ou sensibles pour la biodiversité (tourbière, marais, marécage...) ;
- Les aires protégées (parc, réserve écologique, habitat et refuge faunique...) ;
- Les espèces menacées ou vulnérables ou susceptibles d'être ainsi désignées, ainsi que leurs habitats.

Certaines ressources ne seront peut être pas facilement identifiables lors des travaux. Si c'est le cas, veuillez le mentionner clairement dans la fiche.

⇒ Tout document permettant une meilleure compréhension de l'état du terrain et des travaux réalisés peut être annexé. Par exemple, la fiche pourra être rendue plus descriptive à l'aide de plans, schémas, croquis, photos... **Les observations, les croquis, les calculs et estimations ainsi que les résultats analytiques ayant servi à estimer les volumes et superficies approximatifs de sols contaminés seront inclus dans une fiche de terrain à joindre à la fiche descriptive des travaux.**

⇒ Cette fiche est inspirée en partie du *Système national de classification des lieux contaminés* publié par le CCME en 1992.

26/04/99

APPENDIX 5

Photographs of clean-up work and Mid-Canada Line sites

Photo 1. Typical detection site located on the top of a hill with a main building, a survival shelter, fuel tanks, barrels and two tall antennas.

Photo 2. Draining generator oil tanks at Site 321 (September 8, 2000). Note: round metal boxes (arrows) on one of the tanks located at the end of the room contain mercury switches.

Photo 3. Setting barrels containing hydrocarbons in a net at Site 330A, and transportation by sling to the outfitter camp at Mollet Lake (September 10, 2000).

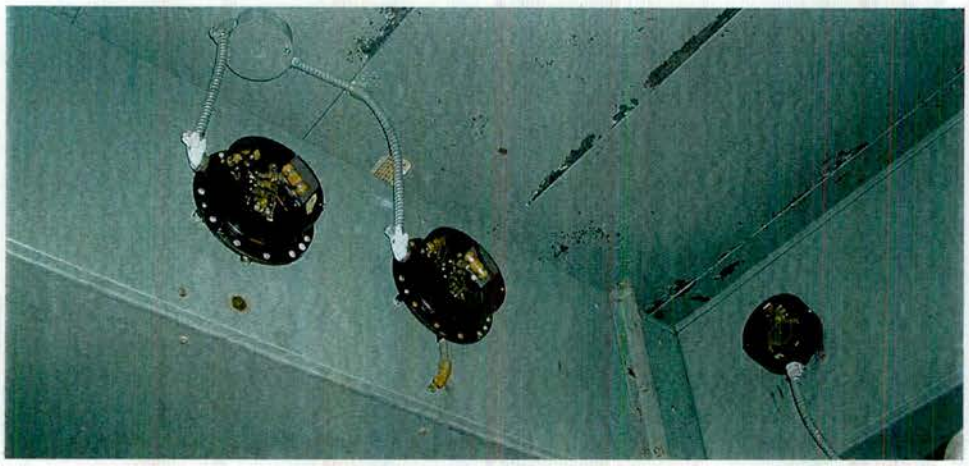


Photo 4. Black metal boxes containing mercury switches on warm-air duct in the generator room (Site 330, September 6, 2000).

Photo 5. Biological degradation process applied at Site 306 (June 28, 2000) and two areas which underwent biological treatment at Site 330 (September 6, 2000).

Photo 6. Transfer of waste liquid from barrels using a pump at Site 224A (June 26, 2000). Water constituted more than 90% of the waste liquid.

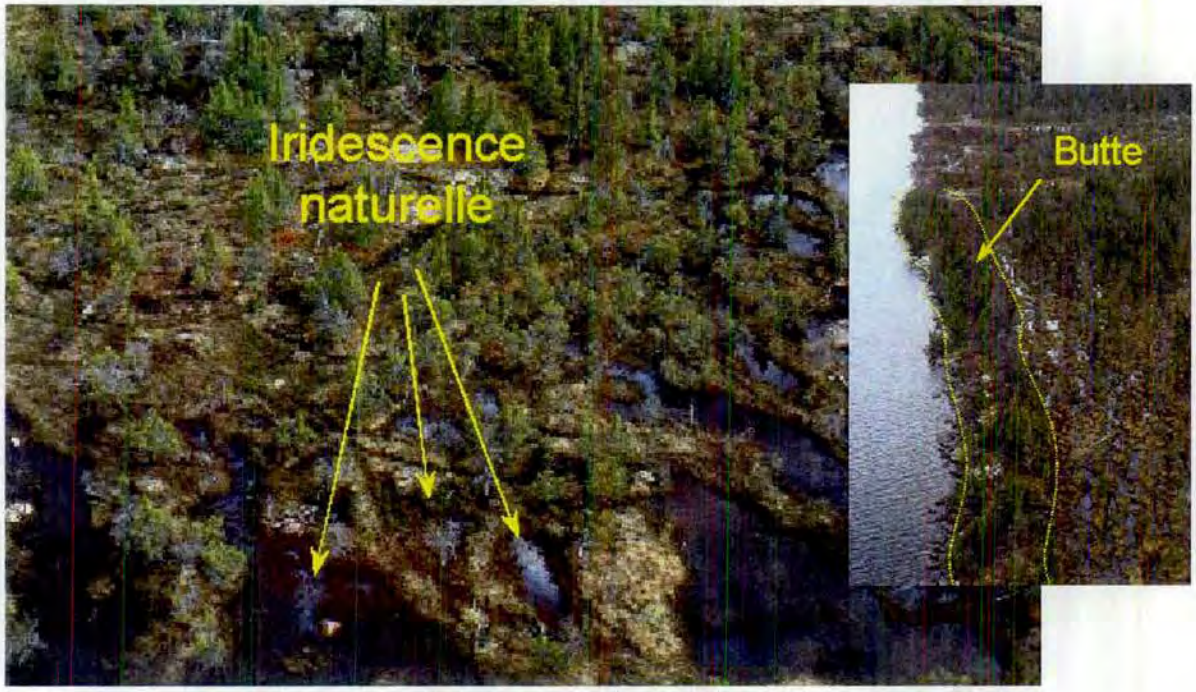


Photo 7. Naturally-occurring iridescent ("Iridescence naturelle") film on surface of pools in peat area about one kilometre from Site 218A. Mound ("Butte") of sphagnum and shrubs forms a natural buffer zone between the lake and the bog (June 20, 2000).

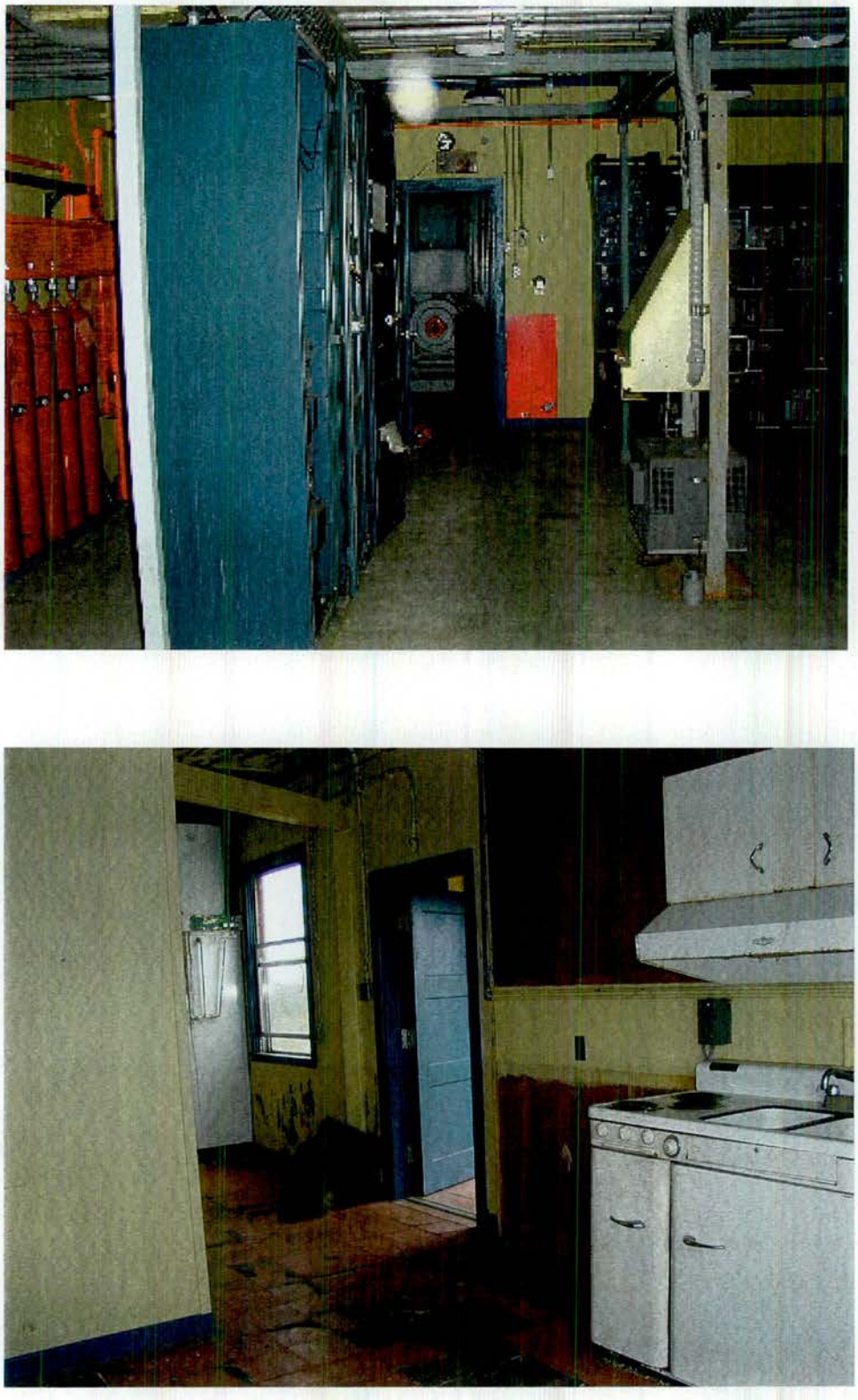


Photo 8. Equipment room and kitchen at Site 330, after clean-up (September 6, 2000).

Photo 9. View of a section of Site 330A, after clean-up (September 10, 2000).

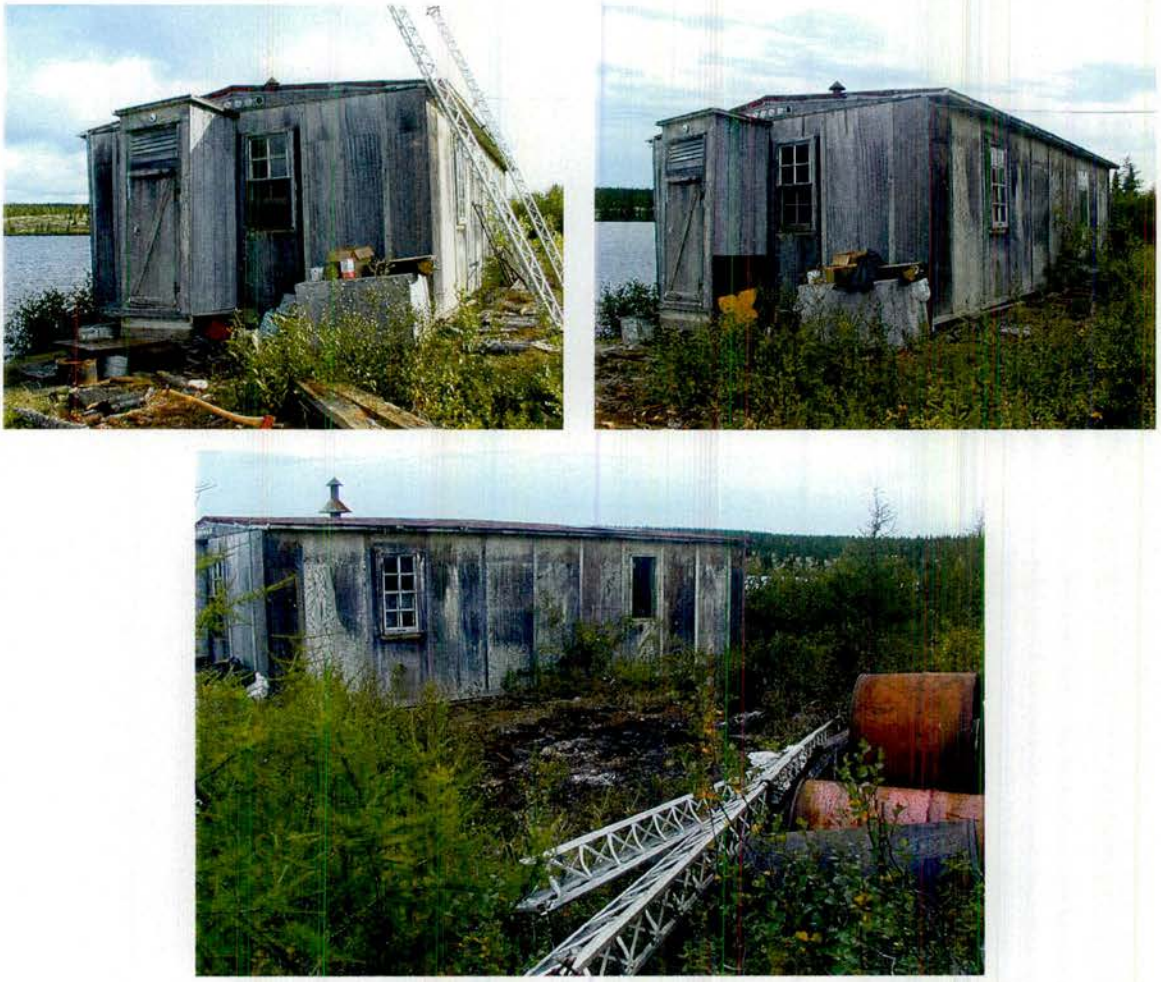


Photo 10. View of a building at Site 330A: before (top left) and after clean-up (two other photos) in September 2000.

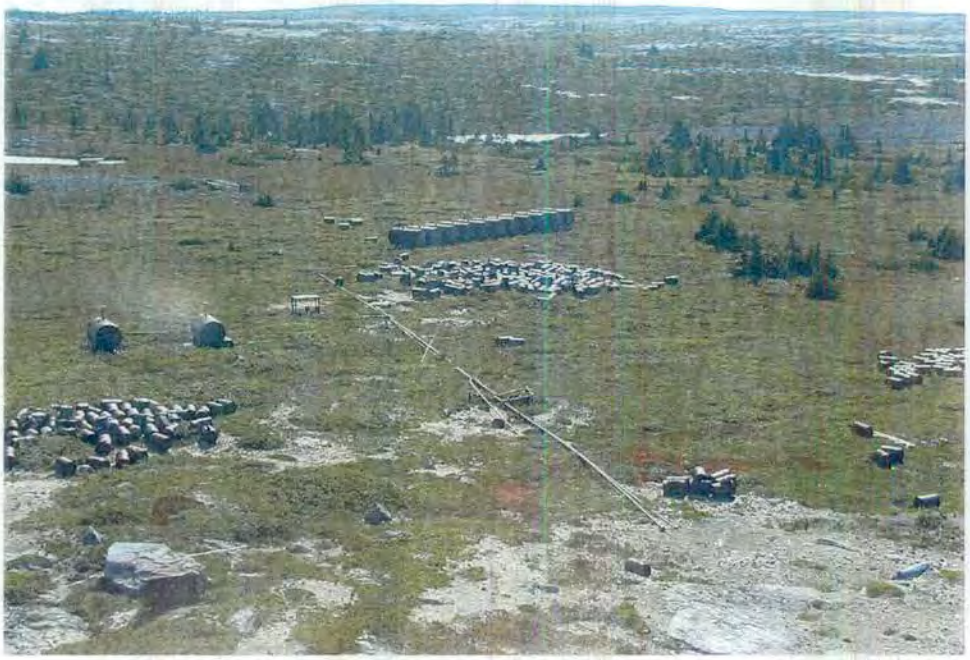


Photo 11. View of Site 403A before clean-up (September 12, 2000). Compare with diagram in Appendix 3.

Photo 12. Relocation of empty barrels and four barrels containing oil to the top of the slope in order to move them away from the lake (June 23, 2000). The barrels containing oil will be removed from the site in 2001.

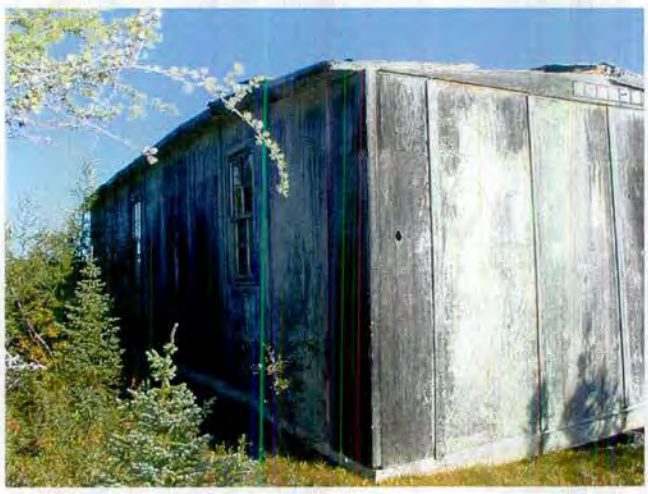


Photo 13. Aerial view of Site 321A before (September 8, 2000) and after clean-up (September 11, 2000). View behind building where the foundation has collapsed.