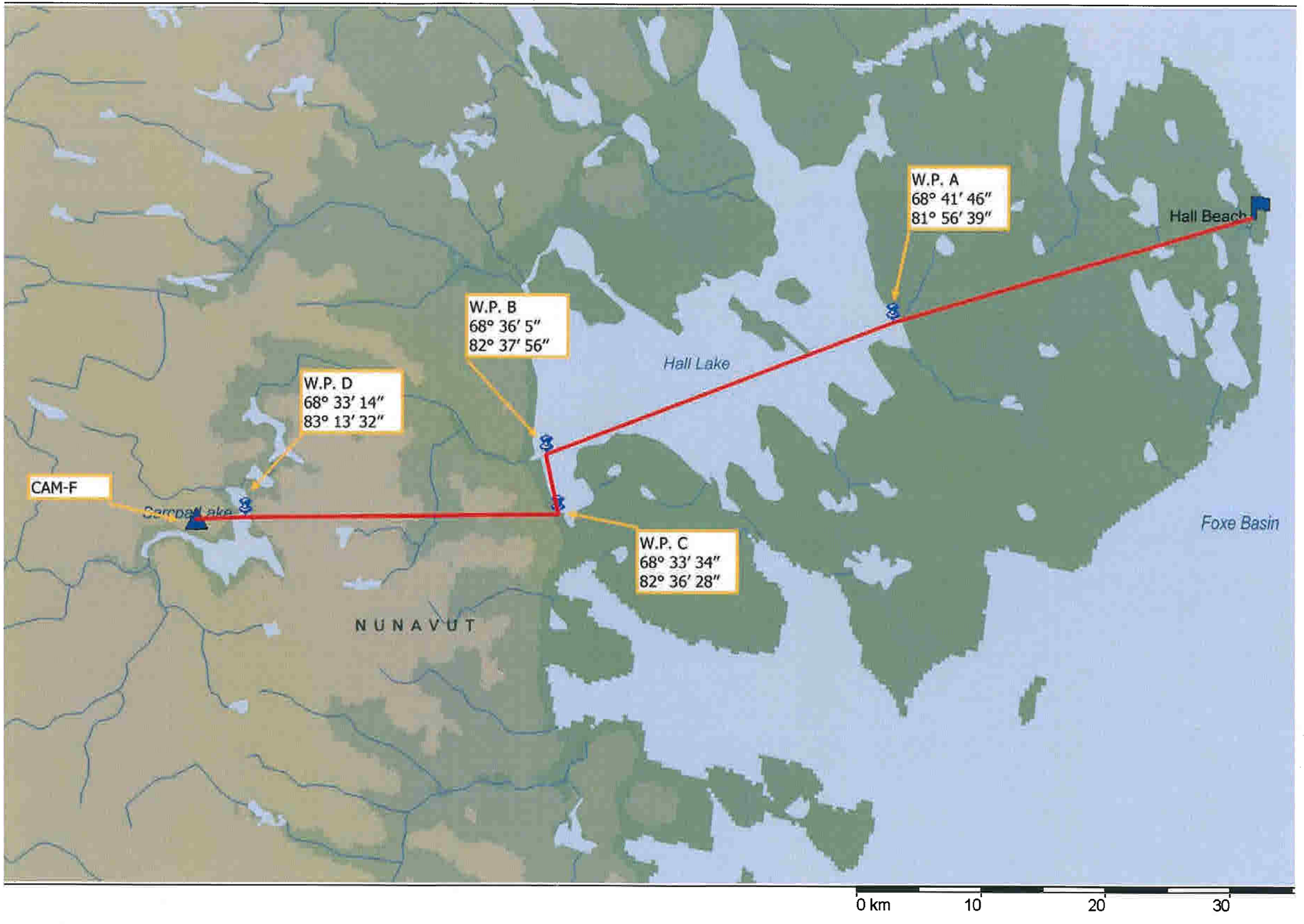
APPENDIX C

Overland Route Details

CAM F; Cat-train route



A	CONSTRUCTION	05-10-25	A.J.	G.R.	S.L.
NO.	VERSION	DATE	BY	VERIF.	APPR.

CAM-F SARCPA LAKE
SITE RESTORATION
SARCPA LAKE, NUNAVUT

CAT-TRAIN ROUTE

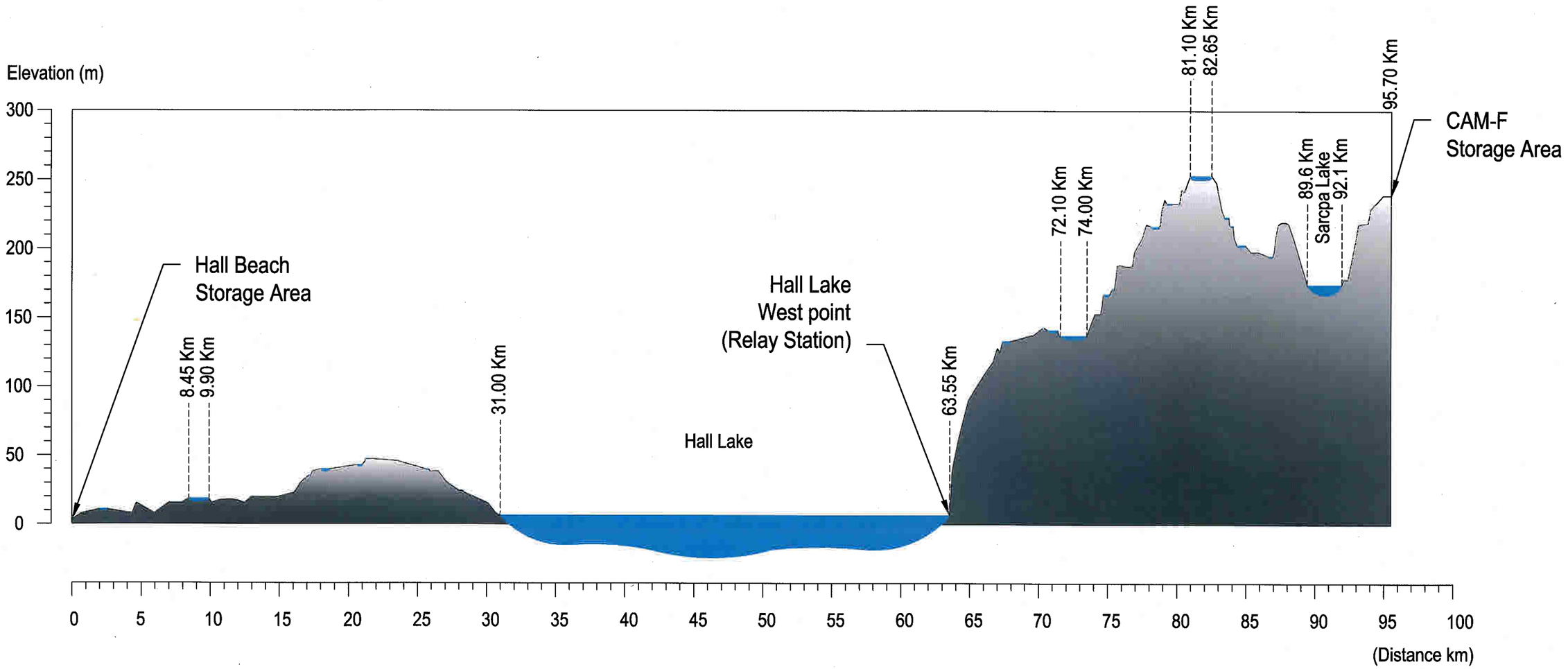
SITE REMEDIATION SOLUTIONS

Biogenie S.R.D.C. Inc.
1140 Levis Street, Lachenaie, Quebec, CANADA, J6W 5S6
Tel.: (450) 961-3535 Fax: (450) 961-0220

UNIT OF MEASURE	SCALE:	DATE (month-year):
METRE	NO SCALE	OCTOBRE 2005
DRAWN BY: A. JACQUES	VERIFIED BY: G. ROBERT	APPROVED BY: S. LABERGE
PROJECT: ZY5453-001	DRAWING NO: ZY5453_001_E1_115_2	PAGE NAME: CP

FIGURE 1

G:\ZY\5453\001\E1\6-CONST\CAD\ZY5453_001_E1_115_2.dwg



SCALE:

HORIZONTAL : 1 : 300
VERTICAL : 1 : 30 000

Note: Depths of all bodies of water herein are unknown, and are presented for illustration purposes only.

Body of water

SITE REMEDIATION SOLUTIONS

Biogenie S.R.D.C. Inc.
1140 Levis Street, Lachenaie, Quebec, CANADA, J6W 5S6
Tel.: (450) 961-3535 Fax: (450) 961-0220

CLIENT: Public Works and Government Services Canada

PROJECT: DEW LINE SITE RESTORATION CAM-F

SARCPA LAKE

TITLE: ICE ROAD SECTION HALL BEACH - CAM-F SARCPA LAKE

FIGURE 2

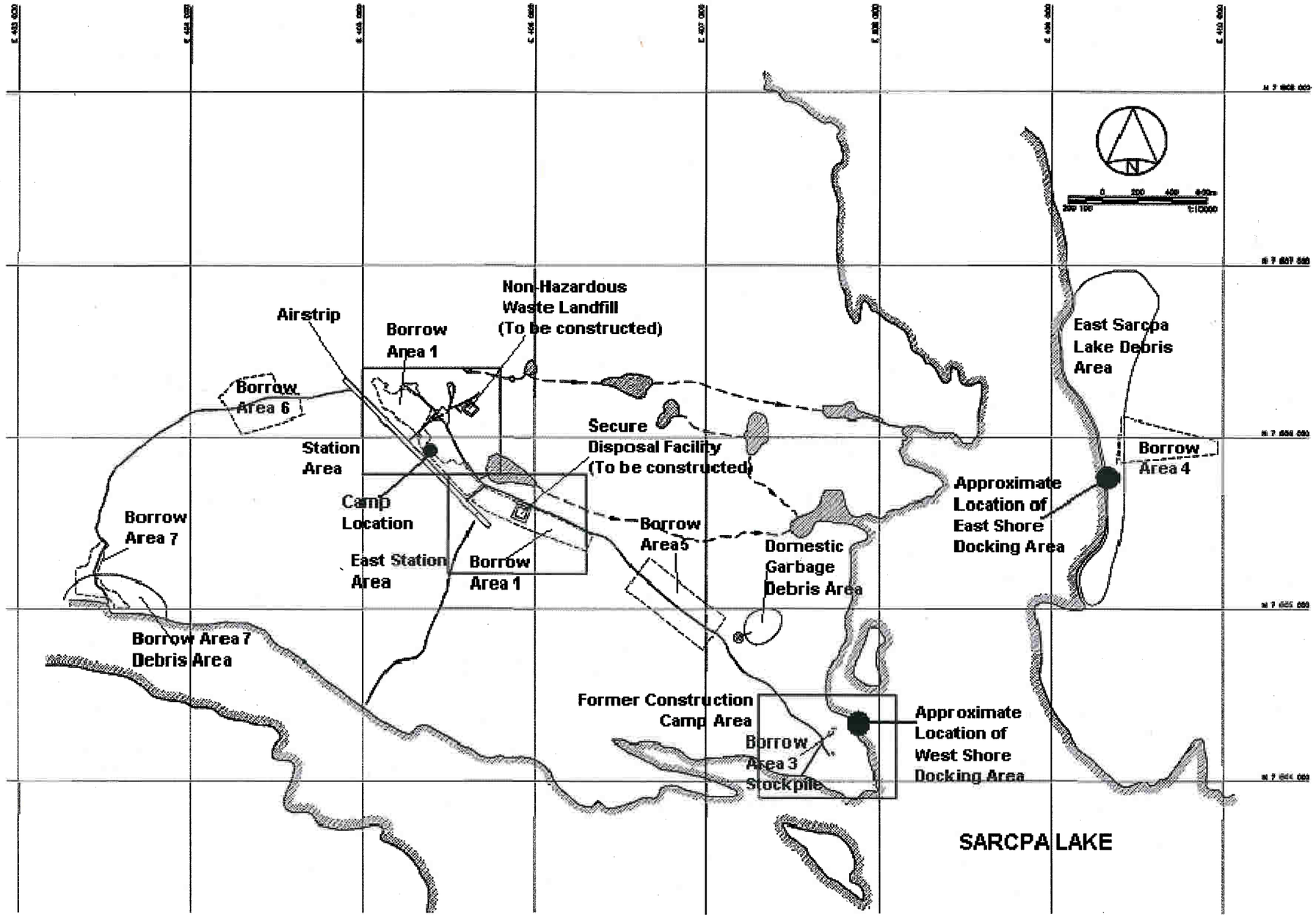
NO.	VERSION		BY	VERIF.	APPR.
A	PRELIMINARY	05-10-07	A.J.	G.R.	S.L.

UNIT: METER	SCALE: INDICATED	DATE (month-year): 05-10-07
DRAW BY: A. JACQUES	VERIFIED BY: G. ROBERT	APPROVED BY: S. LABERGE
PROJECT: TP5454-001	DRAWING NO: TP5454_001_E3_135_1	PAGE NAME: RS

G:\TP\5454\001\E3_ROAD SECTION\2-PRÉ\CAD\TP5454_001_E3_115_1.DWG

APPENDIX D

CAM-F Site Plan



NO.	VERSION	DATE	G.G. PAR	J.–P.P. VERIF.	Y.P. APPR.
1	CONSTRUCTION				

Public Works and Government Services Canada

CAM-F SARCPA LAKE SITE RESTORATION

SARCPA LAKE, NUNAVUT

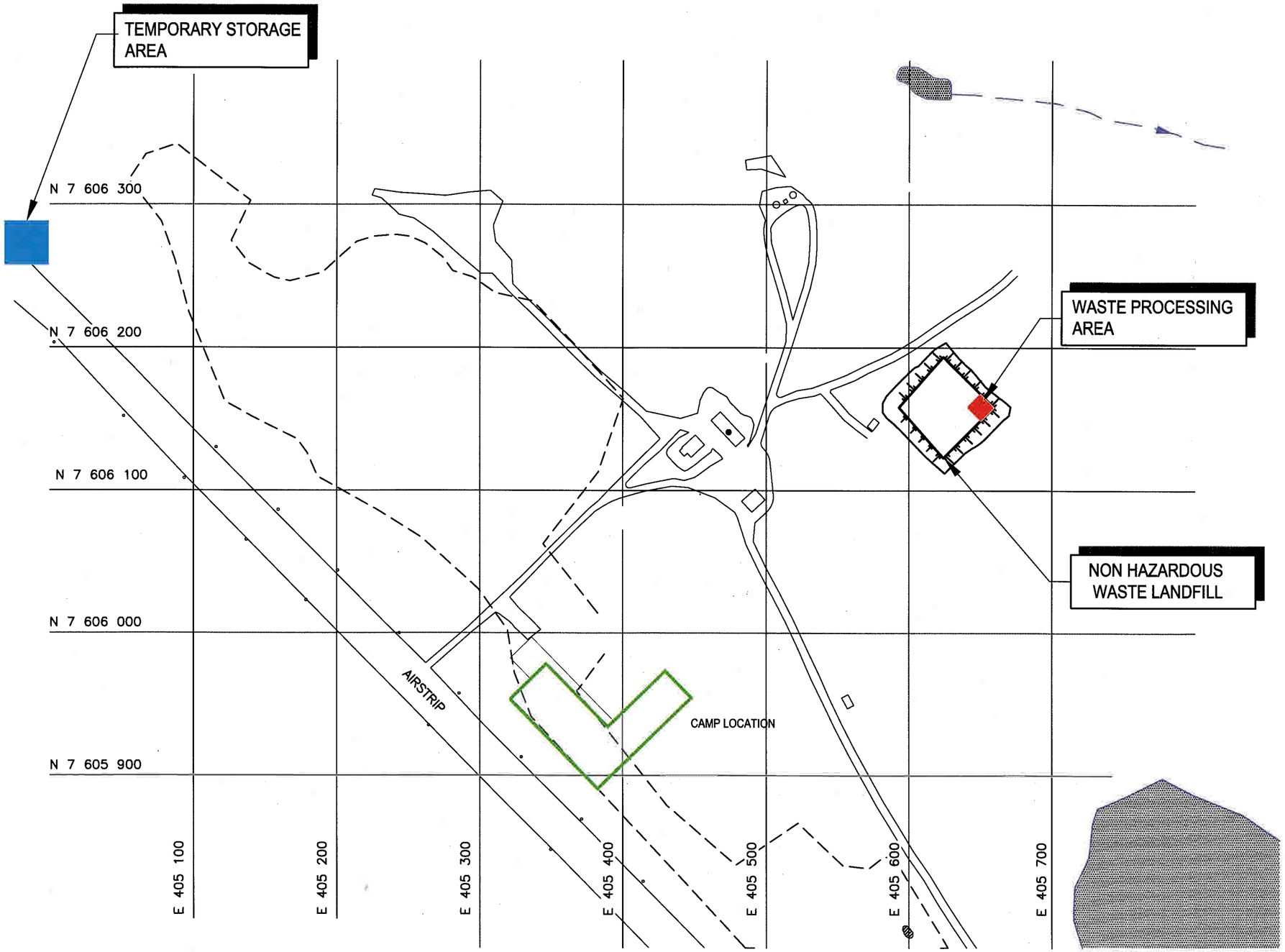
SITE PLAN

SITE REMEDIATION SOLUTIONS

Biogenie S.R.D.C. inc.
4495 Wilfrid-Hamel blvd, Suite 200
Quebec, (Quebec) CANADA G1P 2J7
Phone: (418) 653-4422 Fax.: (418) 653-3583

MEASUREMENT UNIT	SCALE:	DATE (month–year):
Metre	NO SCALE	NOVEMBER 2005
DRAWN BY: G. GODMAIRE	VERIFIED BY: J.–P. PELLETIER	APPROVED BY: Y. POULIOT
PROJECT NO: TP5454	DRAWING NO: TP5454-WORK PLAN	PAGE C-B-A-PAY-C-V-REHAB

FIGURE 3



SOURCE : UMA AN AECOM COMPANY, PROJECT N°41334, SHEET N° C03, 3 MARCH 2005

0 30 60 90 120 150m

NO.	VERSION	DATE	PAR	VERIF.	APPR.
A	CONSTRUCTION	05-12-16	A.J.	G.R.	M.P.

Public Works and Government Services Canada

CAM-F SARCPA LAKE SITE RESTORATION

SARCPA LAKE, NUNAVUT

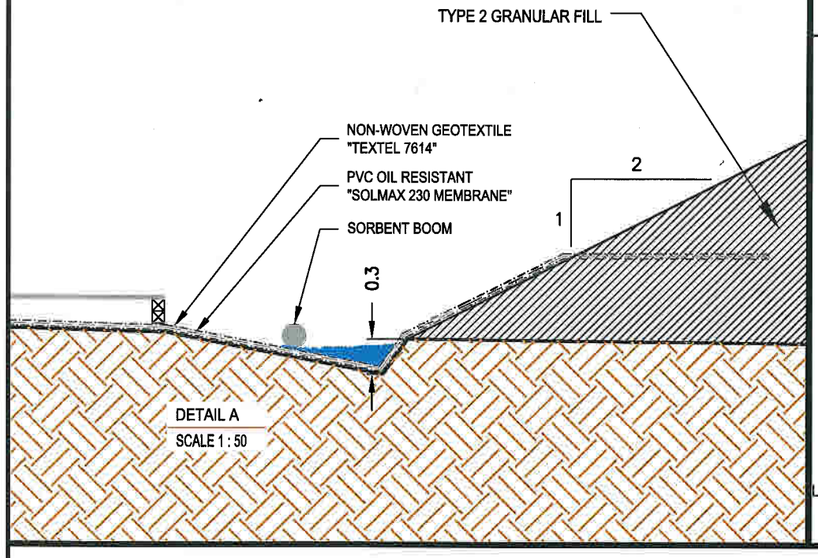
LOCATION OF WASTE PROCESSING AND TEMPORARY STORAGE AREA

SITE REMEDIATION SOLUTIONS

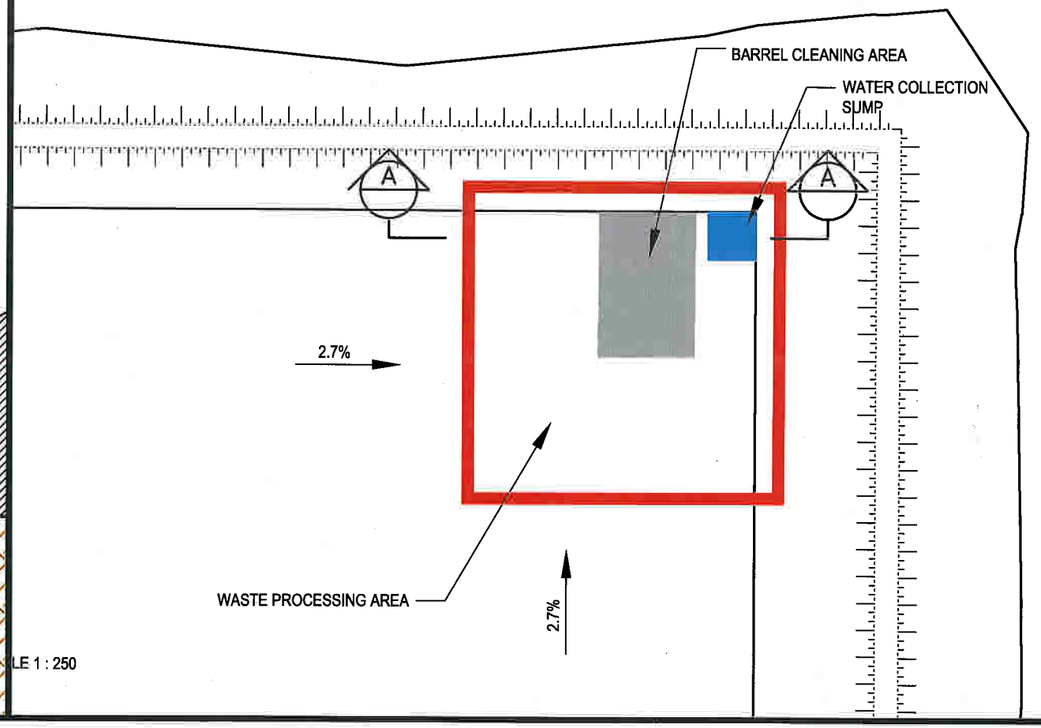
Biogenie S.R.D.C. Inc.
1140 Levis Street, Lachenaie, Quebec, CANADA, J6W 5S6
Tel.: (450) 961-3535 Fax: (450) 961-0220

UNIT OF MEASURE	SCALE:	DATE (month-year):
METER	1 : 3000	DECEMBER 2005
DRAWN BY: A. JACQUES	VERIFIED BY: G. ROBERT	APPROVED BY: M. POULIOT
PROJECT: TP5454-001	DRAWING NO: TP5454_001_E6_115_1	PAGE NAME: DF

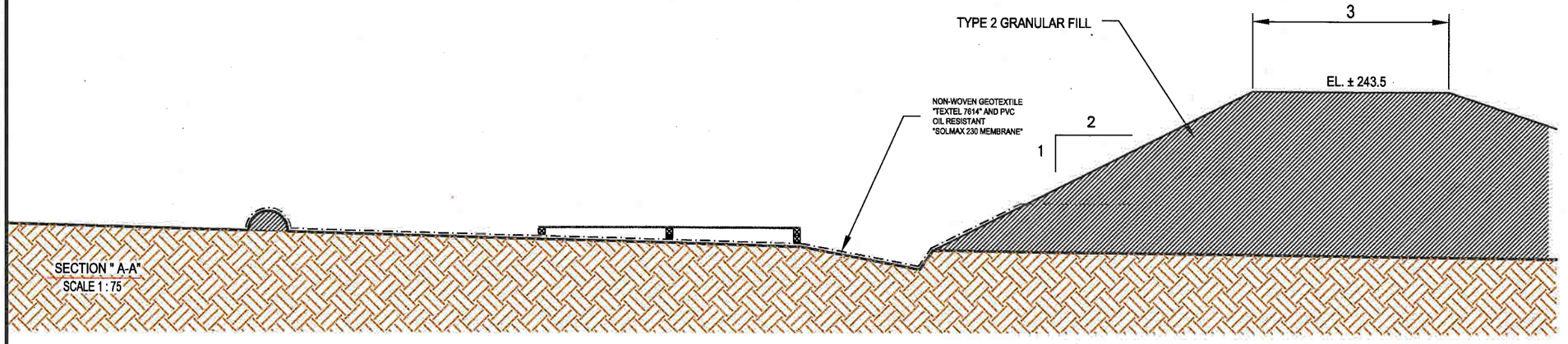
FIGURE 4



DETAIL A
SCALE 1 : 50



LE 1 : 250



SECTION " A-A"
SCALE 1 : 75

SOURCE : UMA AN AECOM COMPANY, PROJECT N°41334, SHEET N° C03, 3 MARCH 2005

NO.	VERSION	DATE	PAR	VERIF.	APPR.
A	CONSTRUCTION	05–12–15	A.J.	G.R.	M.P.

Public Works and Government Services Canada

CAM-F SARCPA LAKE SITE RESTORATION

SARCPA LAKE, NUNAVUT

DETAILS WASTE PROCESSING AREA

SITE REMEDIATION SOLUTIONS

Biogenie S.R.D.C. Inc.
1140 Levis Street, Lachenaie, Quebec, CANADA, J6W 5S6
Tel.: (450) 961-3535 Fax: (450) 961-0220

UNIT OF MEASURE	SCALE:	DATE (month–year):
METER	AS INDICATED	DECEMBER 2005
DRAWN BY:	VERIFIED BY:	APPROVED BY:
A. JACQUES	G. ROBERT	M. POULIOT
PROJECT:	DRAWING NO:	PAGE NAME
TP5454-001	TP5454_001_E6_115_1	DF

FIGURE 5

APPENDIX E

DEW Line Cleanup Protocol for Barrels

DEW LINE CLEANUP PROTOCOL FOR BARRELS

Background:

Initial proposals for the methodology for dealing with barrels and their contents at the DEW Line sites were put forward at a meeting in Victoria in 1993. The general approaches were discussed by representatives of the government agencies present which included Indian and Northern Affairs, Department of National Defence, Environment Canada and the Government of the Northwest Territories. At a follow up meeting in April 1994, the group endorsed the protocol. The protocol was employed during the decommissioning of the Horton River site and in further field investigations at Resolution Island during the summer of 1994. The following outlines the procedures for the cleanup of barrels on the DEW Line.

A flow diagram of the methodology for the processing, cleanup and disposal of barrels is attached.

1. Inspection:

.1 The area around the barrels should be tested with a VOC meter to ensure safe working conditions. If the VOC level exceeds 20% of the Lower Explosive Limit (LEL), then all work shall be conducted in accordance with appropriate sections of the NIOSH Guidelines, the National Fire Code of Canada and the TDGA for flammable and combustible materials.

.2 All barrels are to be inspected to address the following items which shall be recorded and used as a guide when opening barrels (section 2):

.1 Symbols, words, or other marks on the barrel that identify its contents, and/or that its contents are hazardous: e.g. radioactive, explosive, toxic, flammable.

.2 Symbols, words, or other marks on the barrel that indicate that it contains discarded laboratory chemicals, reagents, or other potentially dangerous materials in small volume containers.

.3 Signs of deterioration or damage such as corrosion, rust, or leaks at seams, rims, and V grooves.

.4 Spillage or discoloration on the top and sides of the barrel.

.5 Signs that the barrel is under pressure such as bulging and swelling.

2. Opening and Inspection:

.1 Pressurized barrels are extremely hazardous and shall be opened with extreme caution. Only non-sparking equipment shall be used to open barrels. All personnel responsible for opening barrels shall be provided with appropriate safety equipment and clothing. Procedures outlined in NIOSH USEPA 1988 Safety and Health Compliance for Managers (165.8) USEPA-29 CFR, 1910 –1920 shall be followed.

.2 If the bungs can readily be moved, then the barrels shall be opened slowly allowing time for any pressure in the barrel to be released before the bung is removed.

.3 If the bungs are not readily moved, or inspection suggests that opening of the barrel presents a special hazard, then the barrels shall be vented remotely to relieve any internal pressure that may be present prior to opening. Remote venting shall be conducted using a suitable device such as, a sharp spear weighted and dropped from an appropriate height or released from a tube housing a spring to penetrate the barrel. The remote venting operation shall be conducted from a safe distance from other site operations and from behind suitable walls or barriers. After sampling, the spear opening shall be plugged.

.4 Samples of the contents of all barrels shall be extracted using a drum thief. All barrels shall be clearly numbered using spray paint or other suitable marker.

.5 Barrels shall not be transported until it has been determined that they are not under pressure, do not leak, and are sufficiently sound for transport.

.6 Barrels containing less than 50 mm of liquid may be combined with compatible material prior to sampling; samples inferred to contain only water on a visual examination shall be tested prior to this consolidation. Barrel contents which consist of black oil shall not be consolidated.

.7 Consolidation of barrel contents shall take place in a secure barrel processing area. At many DEW Line sites several caches of barrels are present and, therefore, it may be desirable to establish several secure sorting areas; barrels scattered on the tundra may be vented, then closed, and then transported to a barrel sorting area for sampling and possible consolidation.

3. Testing:

.1 Liquid samples shall be inspected and classified as either containing water or organic materials. Samples thought to contain water shall be

analyzed on-site to confirm that they are indeed water, and contain less than 2% glycols or alcohols by Fourier transform infrared spectroscopy (FTIR).

.2 The contents of barrels containing organic materials, including aqueous samples which contain more than 2% glycols or alcohols, shall be tested for PCBs, total chlorine, cadmium, chromium and lead, in addition to identification of their major components. E.g. fuel oil, lubricating oil. Samples containing more than 1000 ppm chlorine shall be further tested to identify the chlorinated compounds present.

.3 Contents of barrels which contain two or more phases shall have all phases analyzed; the organic phases as described above and the aqueous phases to ascertain whether it contains less than 2% organics. In addition, the aqueous phases shall be tested for any components found in the organic phases above the criteria described below.

4. Disposal of Barrel Contents:

.1 Barrels containing only rust and sediment shall be treated as empty barrels.

.2 Barrel contents comprising water only (less than 2% glycols or alcohols) shall be transferred to an open vessel such as a utility tub or half-barrel and any organic material removed by agitation with a pillow or segment of oil absorbent material. The water may then be discarded on the ground that is a minimum of 30 metres distance from natural drainage courses. Used oil absorbent material shall be treated as described in clause 4.5.

.3 Barrel contents which are composed of water with glycols and/or alcohols or organics phases, and which contain less than 2 ppm PCBs, 1000 ppm chlorine, 2 ppm cadmium, 10 ppm chromium, and 100 ppm lead, may be disposed of by incineration. Alternatively these contents may be disposed of off-site at a licensed disposal facility. The solid residual material resulting from incineration shall be subjected to a leachate extraction test. Material found to be not leachate toxic shall be disposed of as DCC Tier II contaminated soil. Leachate toxic material shall be treated as hazardous waste, packaged in accordance with TDGA and/or IATA regulations as required, and disposed of off-site at a licensed disposal facility.

.4 Barrel contents which contain greater than 2 ppm PCBs, 1000 ppm chlorine, 2 ppm cadmium, 10 ppm chromium, or 100 ppm lead shall be disposed of off-site at a licensed disposal facility. Contents may be combined with compatible materials for shipping purposes (note clause 5.1). Flash point may be required to be determined if they cannot be inferred from product identification.

.5 Used oil absorbent material should be treated as hazardous waste and disposed of off-site at a licensed disposal facility unless, it is shown to be uncontaminated with PCBs (< 2 ppm), chlorine (< 1000 ppm), cadmium (< 2 ppm), chromium (< 10ppm), and lead (< 100 ppm) in which case it may be incinerated on site.

5. Cleaning and Disposal of Barrels:

.1 Empty barrels resulting from consolidation of contaminated material (Section 4), shall be triple rinsed with solvent (Varsol, diesel etc.) prior to steam cleaning; solvent washings shall be added to bulked contaminated products unless analyzed separately and shown to be suitable for incineration. Alternatively, the empty barrels may be shipped off-site and labelled appropriately (TDGA).

.2 Only empty barrels resulting from consolidation of small volumes (clause 2.6), from incineration (clause 4.3), and from solvent washing (clause 5.1) require steam cleaning.; after cleaning they shall be treated as described in clause 5.3. Recycling of rinsate is permitted. The resulting wash water shall have any organic material removed by agitation with a pillow or segment of oil absorbent material. The water shall then be analyzed for cadmium, chromium and lead. If these metals are present at less than 0.01, 0.10 and 0.10 ppm respectively, then the water may be discarded on land that is a minimum of 30 metres from natural drainage courses, but if not then it shall be disposed of off-site at a licensed disposal facility. Alternatively, the wash water may be shipped off site without testing for disposal at a licensed disposal facility. Used absorbent material shall be disposed of as described in clause 4.5.

.3 Empty barrels may be crushed or shredded and be landfilled on –site as non-hazardous wastes. The barrels shall be crushed in such a manner so as to reduce their volume by a minimum of 75%.Shredded barrels may be disposed of off-site as recycled metals.

FLOW CHART FOR THE DEW LINE CLEAN UP BARREL PROTOCOL