

March 31, 2010

Phyllis Beaulieu  
Licensing Manager  
Nunavut Water Board  
P.O. Box 119  
Gjoa Haven, NU X0B 1J0

Dear Phyllis:

**Project No: Water Use License 1BR-MAC0712**

**Regarding: Mackar Inlet DEW Line Site**

AECOM Canada Ltd. is providing the attached annual report form as per Section B.1 of the above-noted water use license. The report is being submitted on behalf of Defence Construction Canada and the Department of National Defence.

In addition to the annual report form, we are providing a summary of the work completed to date at the site. The following is a summary of the work completed in 2009:

**Work Completed**

The following is a summary of the work completed in 2009:

**Non-Hazardous Waste Landfill:** Construction was completed in 2008 and non-hazardous waste materials were placed in the facility in 2009. The facility was winterized at the end of the 2009 season by placing a layer of intermediate fill over the debris. It is anticipated that all non-hazardous wastes will be collected from the site and placed in the landfill in 2010, followed by closure of the landfill at the end of the 2010 season.

**Tier II Disposal Facility:** Construction of the Tier II Facility was completed in July. Approximately 1200 m<sup>3</sup> of Tier II contaminated soils were disposed of in the facility by the end of the 2009 season. The facility was winterized by placing a later of intermediate fill over the contaminated soil.

**Landfarm:** Construction of the landfarm was completed in June 2009. Following completion, approximately 9,600 m<sup>3</sup> of Type B hydrocarbon impacted soil was placed in the facility for treatment. Treatment is expected to continue in 2010.

**Existing Landfill Remediation:** Excavation of the Lower Site Landfill, Airstrip Landfill and Upper Site Landfill are on-going and is expected to be completed in 2010.

**Monitoring Well Installation:** 8 monitoring wells were installed in 2009.

**Demolition:** The communication dishes, North billboard, PAP removal from module train, airstrip lights, and sewage outfall pipe were removed.

**Debris Removal:** On-going.

**Community Consultations:** The results of the community meetings held by DCC were submitted with the Project Description. The contractor typically holds a project start up meeting prior to each season.

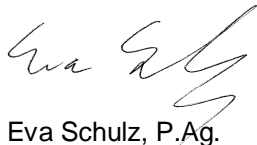
**Spill Incidences:** There was once spill incidence, which occurred on June 11, 2009. See the attached spill report for details.

### **Monitoring Program Results**

The results of the monitoring program are provided in the attached reports prepared by the Environmental Sciences Group from Kingston, ON, who are the scientific advisors for the DLCU Project. Reports were prepared documenting the results from sampling conducted in June, July, August and September at the CAM-5 site.

We trust the information provided is sufficient. Please feel free to contact the undersigned if you require any additional information.

Sincerely,  
**AECOM Canada Ltd.**



Eva Schulz, P.Ag.  
Eva.Schulz@aecom.com

EMS

Encl. Annual Report Form; Monitoring Reports; Updated Site Figures; Selected Site Photos; Spill Report  
cc: Douglas Craig, DCC

NWB Annual Report

Year being reported: 2009 ▼

License No: 1BR-MAC0712

Issued Date: July 31, 2007

Expiry Date: December 31, 2012

Project Name: CAM-5, Mackar Inlet DEW Line Site

Licensee: Defence Construction Canada

Mailing Address: Constitution Square, Suite 1700  
350 Albert Street  
Ottawa, ON K1A 0K3

Name of Company filing Annual Report (if different from Name of Licensee  
please clarify relationship between the two entities, if applicable):

AECOM  
Project Engineer and Regulatory Support

General Background Information on the Project (\*optional):

Military site clean up.

Licence Requirements: the licensee must provide the following information in  
accordance with

Part B ▼ Item 1 ▼

**A summary report of water use and waste disposal activities, including, but not limited to:  
methods of obtaining water; sewage and greywater management; drill waste management; solid  
and hazardous waste management.**

|                  |                   |                                      |
|------------------|-------------------|--------------------------------------|
| Water Source(s): | Water Supply Lake |                                      |
| Water Quantity:  | 55 per day        | Quantity Allowable Domestic (cu.m)   |
|                  | 863/97 days       | Actual Quantity Used Domestic (cu.m) |
|                  |                   | Quantity Allowable Drilling (cu.m)   |
|                  |                   | Total Quantity Used Drilling (cu.m)  |

Waste Management and/or Disposal

- ☒ Solid Waste Disposal  
☒ Sewage 483 cu.m. of sewage and greywater deposited in lagoon.  
☐ Drill Waste  
☒ Greywater  
☒ Hazardous  
☒ Other:

Additional Details:

Details of the waste management and disposal were provided in the application.  
See attached summary for details regarding quantities in 2008.

**A list of unauthorized discharges and a summary of follow-up actions taken.**

Spill No.: (as reported to the Spill Hot-line)

Date of Spill: June 11, 2009

Date of Notification to an Inspector: June 15, 2009

Additional Details: (impacts to water, mitigation measures, short/long term monitoring, etc)

See attached spill report.

### Revisions to the Spill Contingency Plan

SCP submitted and approved - no revision required or proposed



Additional Details:

### Revisions to the Abandonment and Restoration Plan

Other: (see additional details)



Additional Details:

The entire project is an abandonment and restoration plan.

### Progressive Reclamation Work Undertaken

Additional Details (i.e., work completed and future works proposed)

### Results of the Monitoring Program including:

**The GPS Co-ordinates (in degrees, minutes and seconds of latitude and longitude) of each location where sources of water are utilized;**

Details attached



Additional Details:

**The GPS Co-ordinates (in degrees, minutes and seconds of latitude and longitude) of each location where wastes associated with the licence are deposited;**

Details attached



Additional Details:

**Results of any additional sampling and/or analysis that was requested by an Inspector**

No additional sampling requested by an Inspector or the Board



Additional Details: (date of request, analysis of results, data attached, etc)



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**Any other details on water use or waste disposal requested by the Board by November 1 of the year being reported.**

|   |   |
|---|---|
| No additional sampling requested by an Inspector or the Board | ▼ |
|---|---|

Additional Details: (Attached or provided below)

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**Any responses or follow-up actions on inspection/compliance reports**

|                                     |   |
|-------------------------------------|---|
| No inspection report issued by INAC | ▼ |
|-------------------------------------|---|

Additional Details: (Dates of Report, Follow-up by the Licensee)

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**Any additional comments or information for the Board to consider**

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|                               |   |             |              |             |              |               |  |
|-------------------------------|---|-------------|--------------|-------------|--------------|---------------|--|
| <b>Date Submitted:</b>        | March 31, 2010  |             |              |             |              |               |  |
| <b>Submitted/Prepared by:</b> | Eva Schulz  |             |              |             |              |               |  |
| <b>Contact Information:</b>   | <table border="1"> <tr> <td><b>Tel:</b></td> <td>403-270-9220</td> </tr> <tr> <td><b>Fax:</b></td> <td>403-270-0399</td> </tr> <tr> <td><b>email:</b></td> <td><a href="mailto:eva.schulz@aecom.com">eva.schulz@aecom.com</a></td> </tr> </table> | <b>Tel:</b> | 403-270-9220 | <b>Fax:</b> | 403-270-0399 | <b>email:</b> | <a href="mailto:eva.schulz@aecom.com">eva.schulz@aecom.com</a> |
| <b>Tel:</b>                   | 403-270-9220  |             |              |             |              |               |  |
| <b>Fax:</b>                   | 403-270-0399  |             |              |             |              |               |  |
| <b>email:</b>                 | <a href="mailto:eva.schulz@aecom.com">eva.schulz@aecom.com</a>  |             |              |             |              |               |  |

### GPS Coordinates for water sources utilized

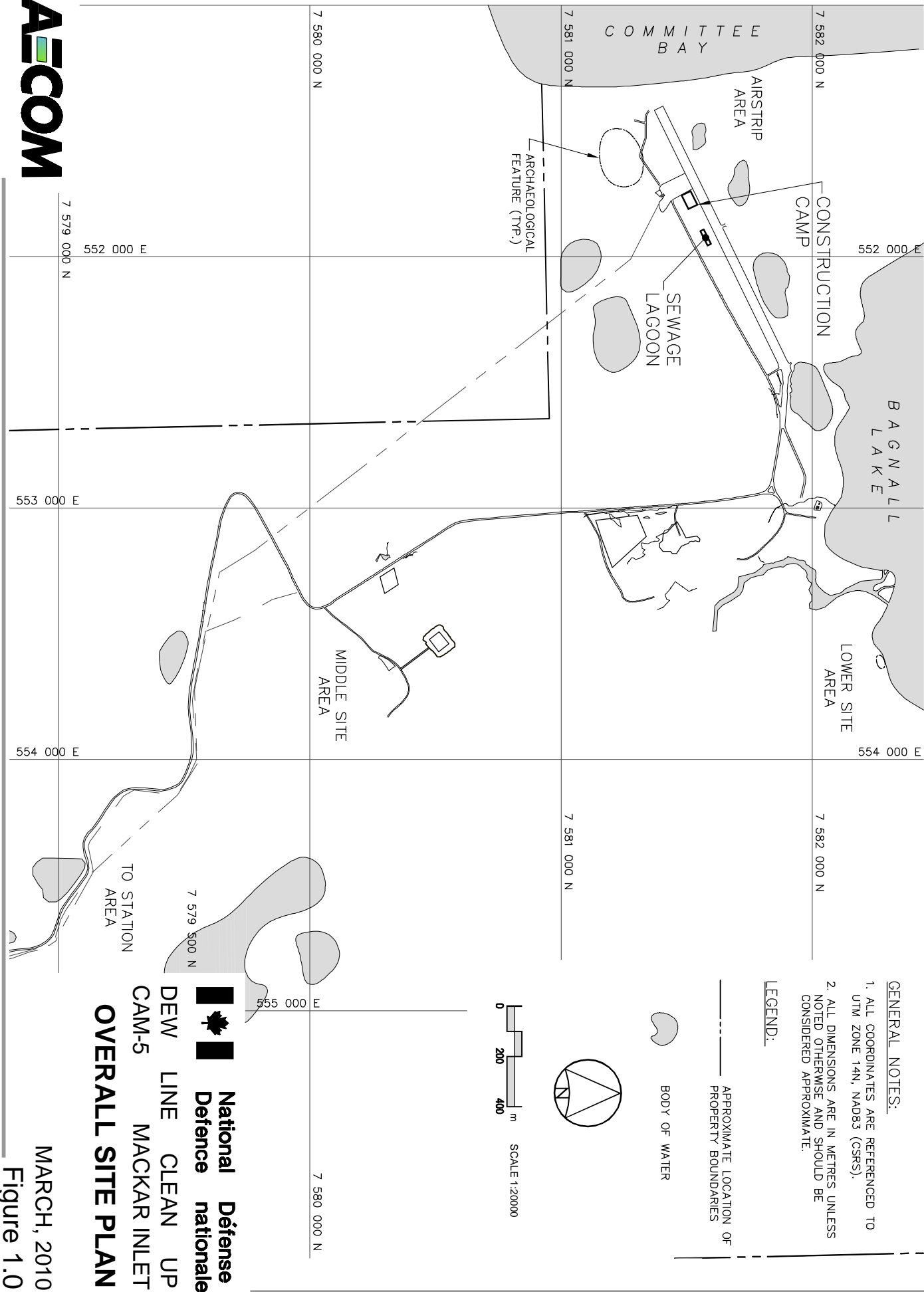
| Source Description   | UTM Zone 16N, NAD83 |         |
|----------------------|---------------------|---------|
|                      | Northing            | Easting |
| Water Source (MAC-1) | 7580000             | 554500  |
|                      |                     |         |
|                      |                     |         |
|                      |                     |         |
|                      |                     |         |
|                      |                     |         |
|                      |                     |         |
|                      |                     |         |

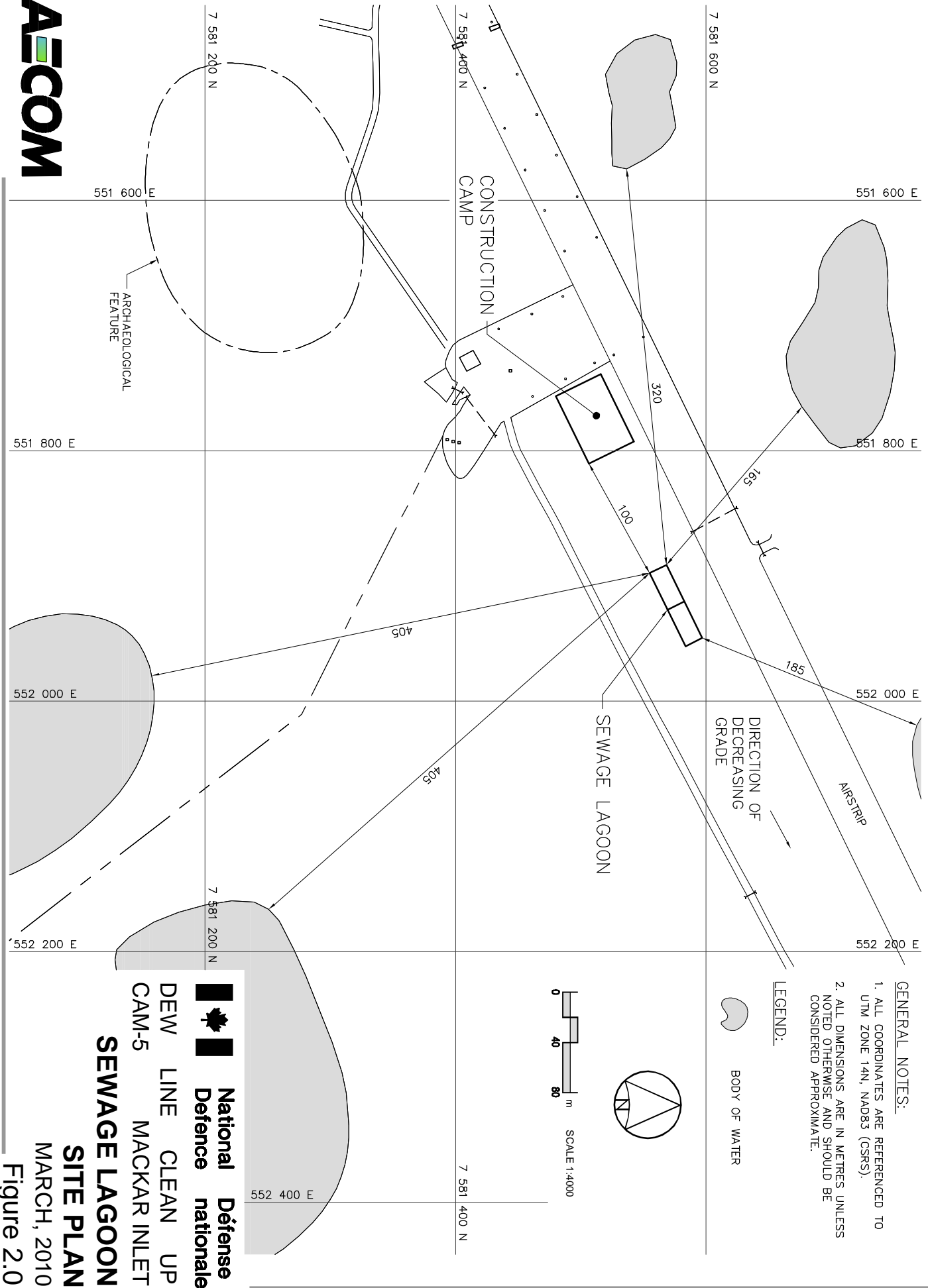
### GPS Locations of areas of waste disposal

| Location Description (type)                | UTM Zone 16N, NAD83 |          |
|--|---------------------|----------|
|  | Northing            | Easting  |
| Non-Hazardous Waste Landfill<br>Stn. 801   | 7580334             | 553239   |
| Non-Hazardous Waste Landfill<br>Stn. 802   | 7580352.3           | 553304.5 |
| Non-Hazardous Waste Landfill<br>Stn. 803   | 7580297.6           | 553339.6 |
| Non-Hazardous Waste Landfill<br>Stn. 804   | 7580279.3           | 553274.1 |
| Tier II Soil Disposal Facility<br>Stn. 901 | 7580514.8           | 553492.6 |
| Tier II Soil Disposal Facility<br>Stn. 902 | 7580551.8           | 553539.8 |
| Tier II Soil Disposal Facility<br>Stn. 903 | 7580512.5           | 553570.7 |
| Tier II Soil Disposal Facility<br>Stn. 904 | 7580475.5           | 553523.5 |
| Landfarm                                   | 7581250             | 553125   |
| Sewage Lagoon                              | 7581564             | 551918   |
|  |                     |          |
|  |                     |          |

# Attachments

Updated Site Figures

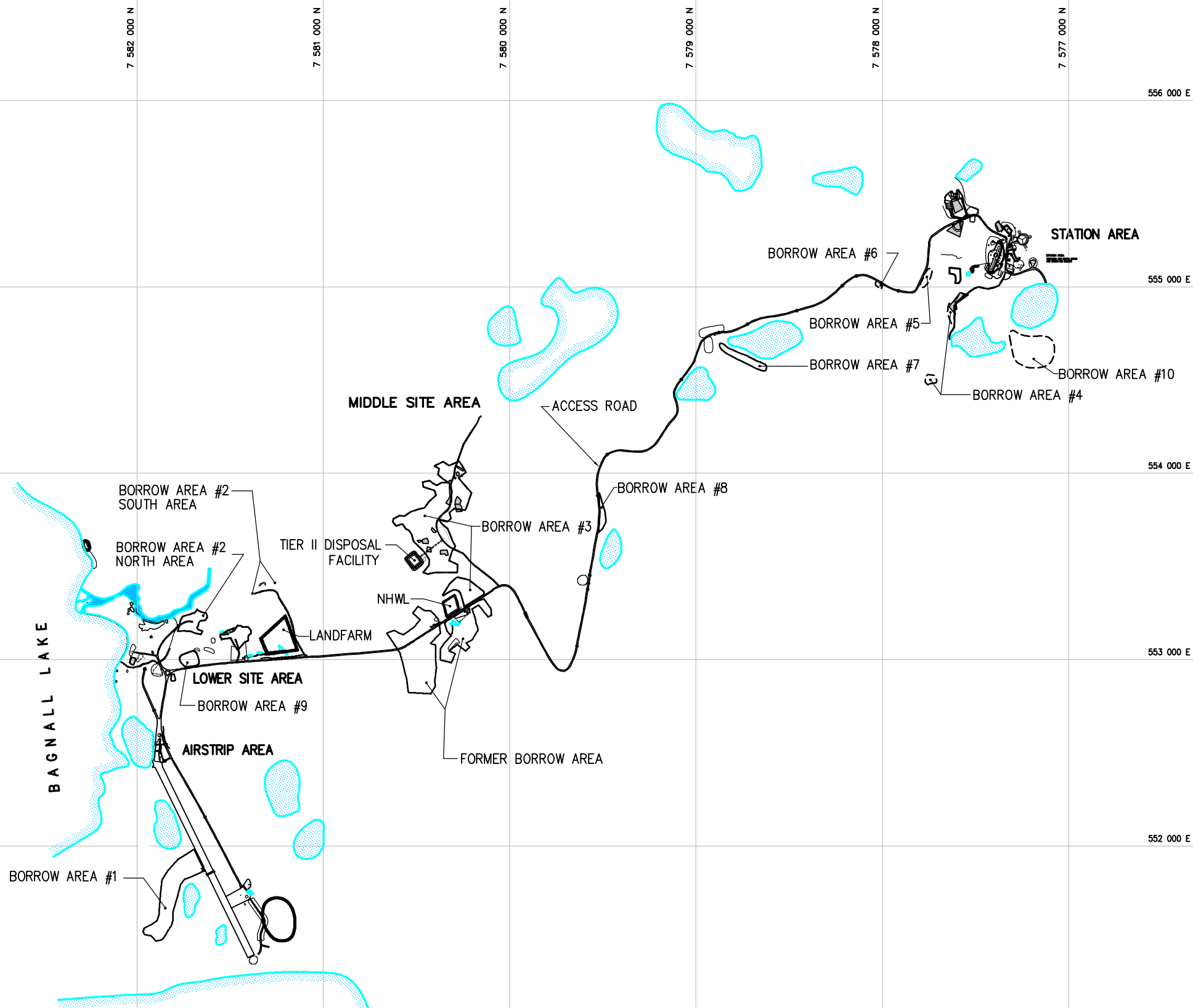




 **National Défense**  
**Defence nationale**

**DEW LINE CLEAN UP**  
**CAM-5 MACKAR INLET**

**SEWAGE LAGOON**  
**SITE PLAN**  
**MARCH, 2010**  
**Figure 2.0**



ISSUED FOR USE

LEGEND:  
- WATER BODY

0 1 000  
Scale: 1: 25 000 (metres)

CLIENT

AECOM

EBA Engineering  
Consultants Ltd.



CAM-5 DEW Line Clean Up  
Makar Inlet, NU

General Site Plan

PROJECT NO.  
9410995041.008  
OFFICE  
EDM

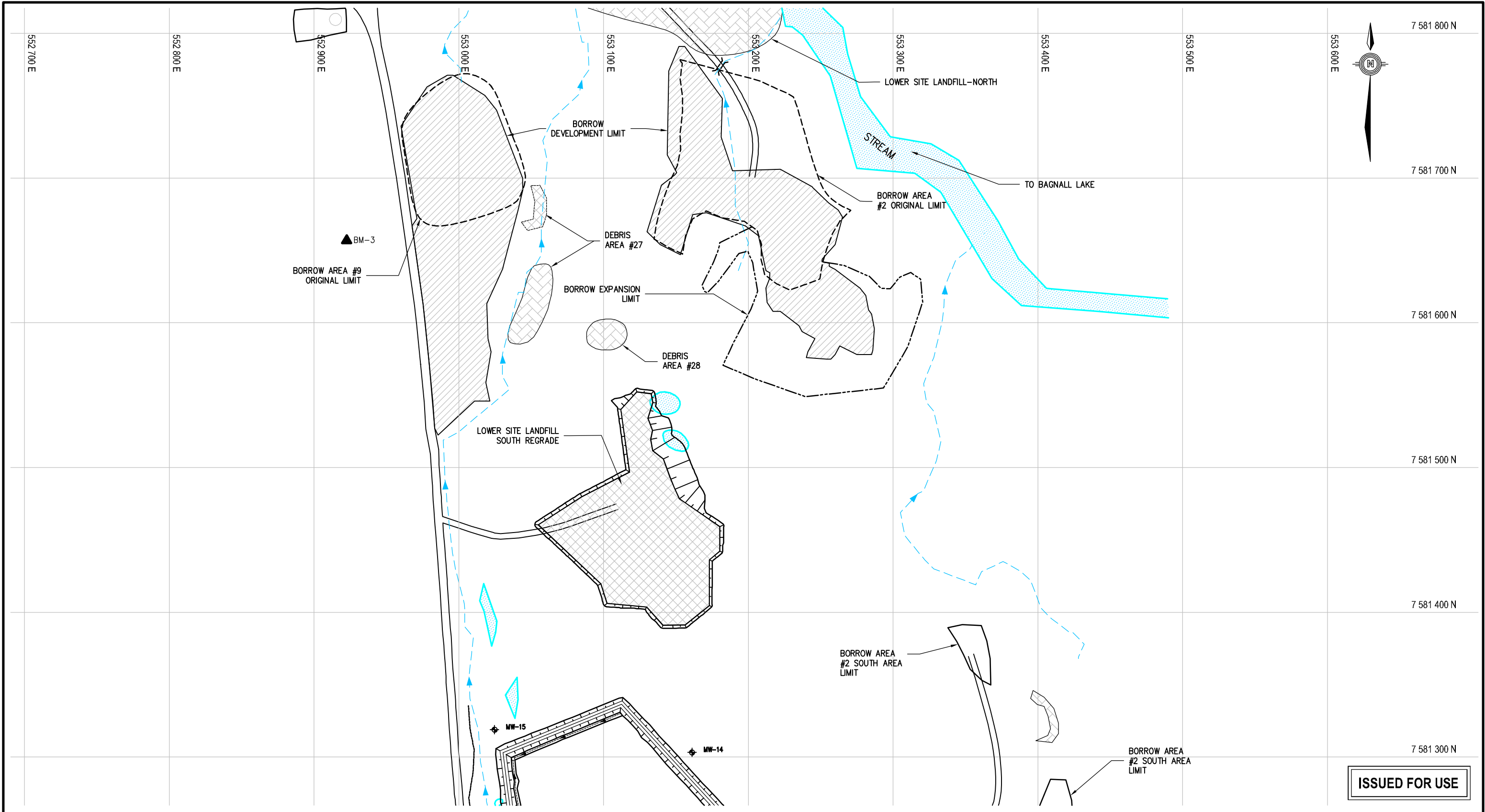
DWN  
JGD

CKD  
GDK

REV  
0

DATE  
December, 2008

Figure 1



ISSUED FOR USE

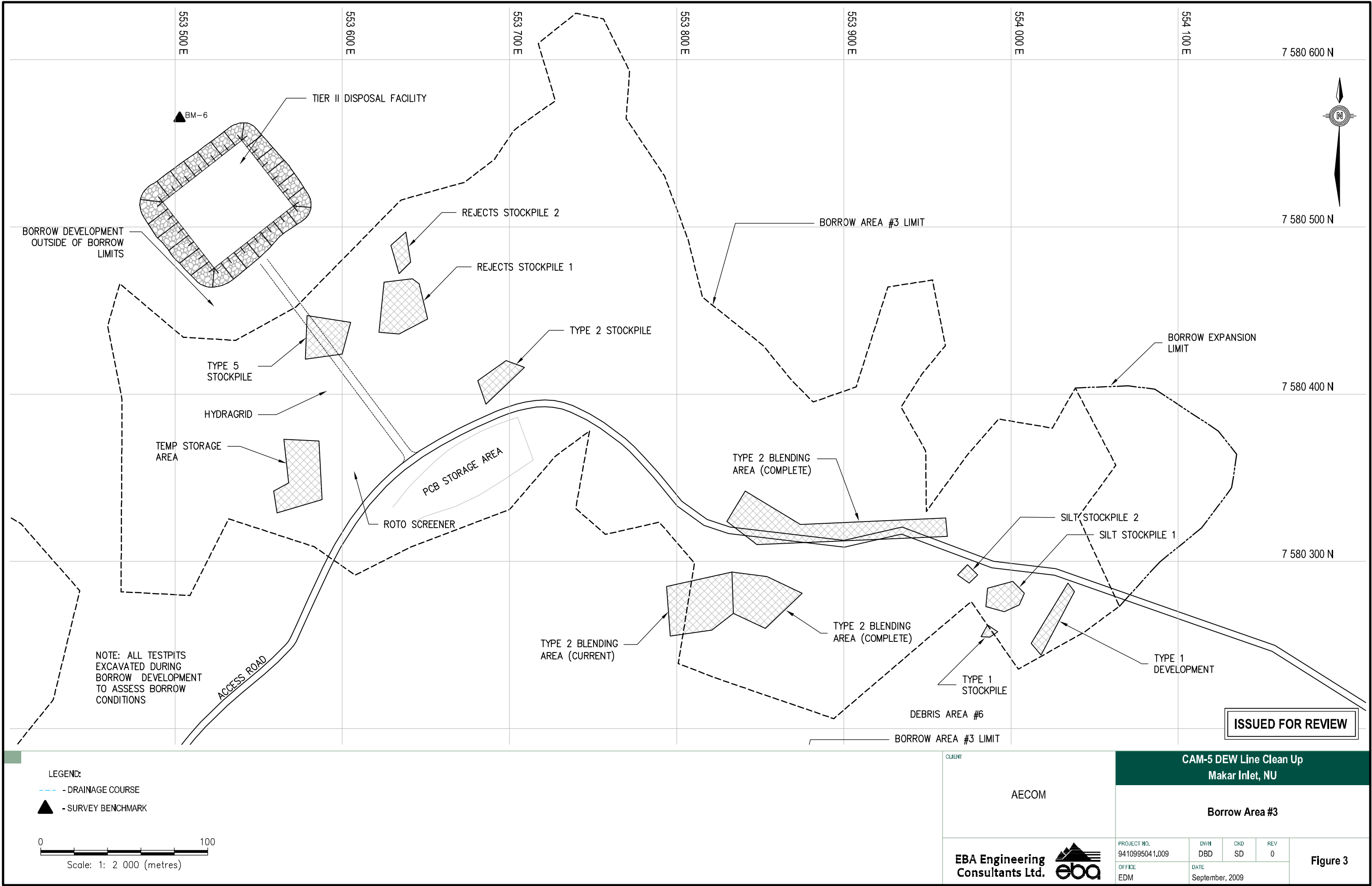
LEGEND:

- DRAINAGE COURSE AND FLOW DIRECTION
- MONITORING WELL LOCATION
- SURVEY BENCHMARK
- 2009 BORROW DEVELOPMENT
- DEBRIS AREA
- REGRADE AREA
- WATER BODY

0 100

Scale: 1: 2 500 (metres)

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|--|--|
| CLIENT<br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><b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|  |
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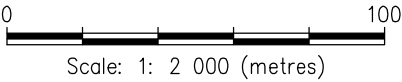




LEGEND:

- COMPLETE

- INCOMPLETE




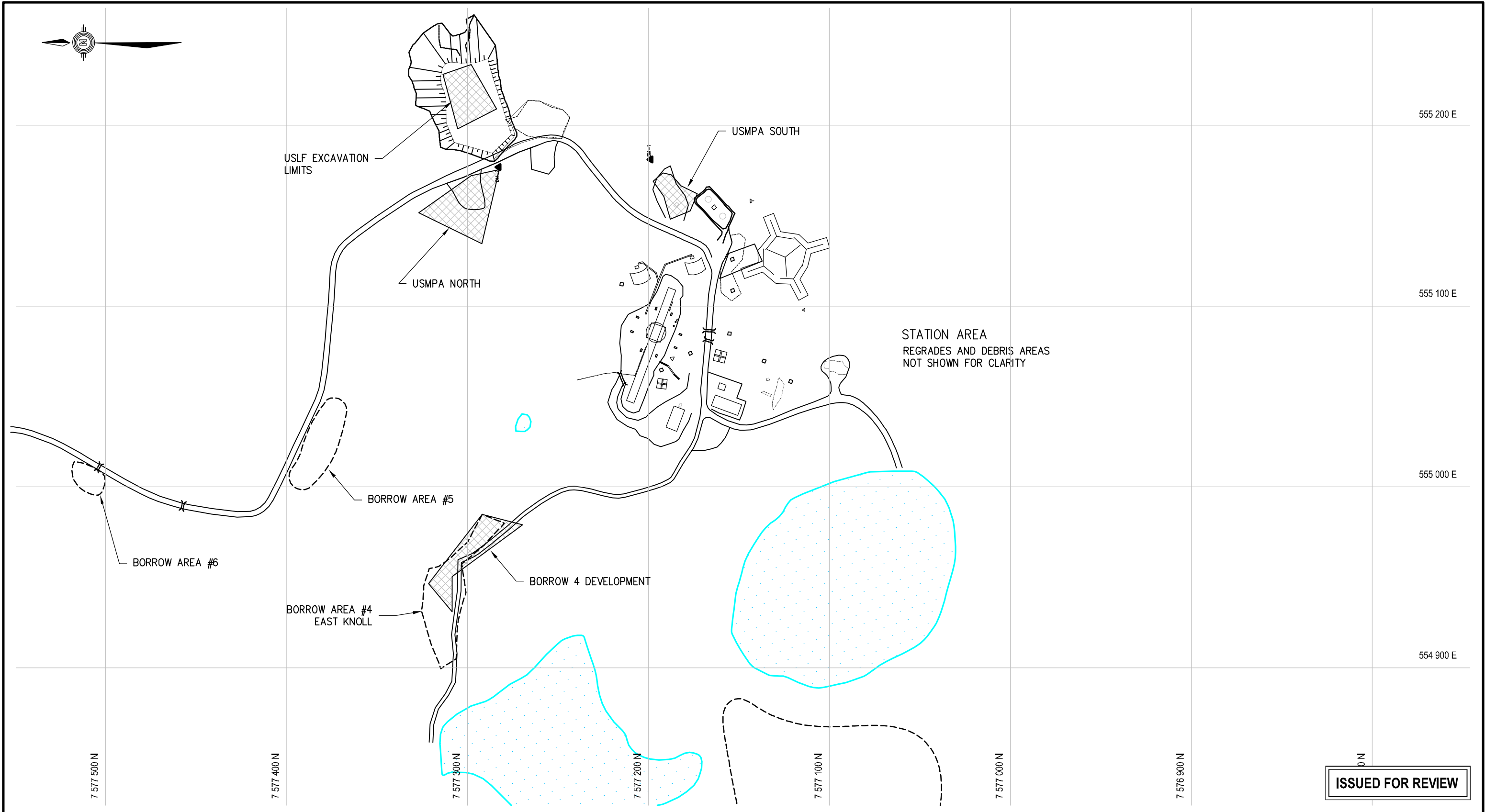
|  |  |  |                 |     |     |          |
|--|--|--|-----------------|-----|-----|----------|
| CLIENT   |  | CAM-5 DEW Line Clean Up<br>Makar Inlet, NU |                 |     |     |          |
|  |  | Lower Site                                 |                 |     |     |          |
| AECOM  |  |  |                 |     |     |          |
| <div>EBA Engineering Consultants Ltd.</div> <div></div> |  | PROJECT NO.                                | DWN             | CKD | REV | Figure 4 |
|  |  | 9410995041.009                             | DBD             | SD  | 0   |          |
|  |  | OFFICE                                     | DATE            |     |     |          |
|  |  | EDM  | September, 2009 |     |     |          |

Figure 4



ISSUED FOR REVIEW

LEGEND:  
- WATER BODY

0 250  
Scale: 1: 5 000 (metres)

CLIENT

AECOM

EBA Engineering  
Consultants Ltd.



CAM-5 DEW Line Clean Up  
Makar Inlet, NU

BORROW AREAS #4 AND #10

PROJECT NO.  
9410995041.009  
OFFICE  
EDM

DWN  
DBD  
DATE  
September, 2009

CKD  
SD  
REV  
0

Figure 5

# Attachments

Selected Site Photos



**Photograph 1 ↑**  
Landfarm



**Photograph 2 ↑**  
Non-Hazardous Waste Landfill



**Photograph 3 ↑**  
Tier II Disposal Facility

# Attachments

Spill Report



Canada

# NT-NU SPILL REPORT

OIL, GASOLINE, CHEMICALS AND OTHER HAZARDOUS MATERIALS

NT-NU 24-HOUR SPILL REPORT LINE

TEL: (867) 920-8130

FAX: (867) 873-6924

EMAIL: spills@gov.nt.ca

REPORT LINE USE ONLY

|   |  |          |   |                                      |   |                        |
|---|--|----------|---|--------------------------------------|---|------------------------|
| A | REPORT DATE: MONTH – DAY – YEAR  |          | REPORT TIME                                   |                                      | <input type="checkbox"/> ORIGINAL SPILL REPORT, OR<br><input type="checkbox"/> UPDATE # _____ TO THE ORIGINAL SPILL REPORT      | REPORT NUMBER<br>_____ |
|   | OCCURRENCE DATE: MONTH – DAY – YEAR  |          | OCCURRENCE TIME                               |                                      |   |                        |
| C | LAND USE PERMIT NUMBER (IF APPLICABLE)   |          |   | WATER LICENCE NUMBER (IF APPLICABLE) |   |                        |
|   | GEOGRAPHIC PLACE NAME OR DISTANCE AND DIRECTION FROM NAMED LOCATION  |          |   |                                      | REGION<br><input type="checkbox"/> NWT <input type="checkbox"/> NUNAVUT <input type="checkbox"/> ADJACENT JURISDICTION OR OCEAN |                        |
| E | LATITUDE   |          |   | LONGITUDE                            |   |                        |
|   | DEGREES  | MINUTES  | SECONDS                                       | DEGREES                              | MINUTES   | SECONDS                |
| F | RESPONSIBLE PARTY OR VESSEL NAME   |          | RESPONSIBLE PARTY ADDRESS OR OFFICE LOCATION  |                                      |   |                        |
|   | ANY CONTRACTOR INVOLVED  |          | CONTRACTOR ADDRESS OR OFFICE LOCATION         |                                      |   |                        |
| H | PRODUCT SPILLED  |          | QUANTITY IN LITRES, KILOGRAMS OR CUBIC METRES |                                      | U.N. NUMBER   |                        |
|   | SECOND PRODUCT SPILLED (IF APPLICABLE)   |          | QUANTITY IN LITRES, KILOGRAMS OR CUBIC METRES |                                      | U.N. NUMBER   |                        |
| I | SPILL SOURCE   |          | SPILL CAUSE                                   |                                      | AREA OF CONTAMINATION IN SQUARE METRES  |                        |
|   | FACTORS AFFECTING SPILL OR RECOVERY  |          | DESCRIBE ANY ASSISTANCE REQUIRED              |                                      | HAZARDS TO PERSONS, PROPERTY OR EQUIPMENT   |                        |
| K | ADDITIONAL INFORMATION, COMMENTS, ACTIONS PROPOSED OR TAKEN TO CONTAIN, RECOVER OR DISPOSE OF SPILLED PRODUCT AND CONTAMINATED MATERIALS |          |   |                                      |   |                        |
|   |  |          |   |                                      |   |                        |
| L | REPORTED TO SPILL LINE BY  | POSITION | EMPLOYER                                      | LOCATION CALLING FROM                | TELEPHONE   |                        |
|   | ANY ALTERNATE CONTACT  | POSITION | EMPLOYER                                      | ALTERNATE CONTACT LOCATION           | ALTERNATE TELEPHONE   |                        |

## REPORT LINE USE ONLY

|  |                           |                  |   |                 |   |
|--|---------------------------|------------------|---|-----------------|---|
| N  | RECEIVED AT SPILL LINE BY | POSITION         | EMPLOYER  | LOCATION CALLED | REPORT LINE NUMBER  |
|  |                           | STATION OPERATOR |   | YELLOWKNIFE, NT | (867) 920-8130  |
| LEAD AGENCY <input type="checkbox"/> EC <input type="checkbox"/> CCG <input type="checkbox"/> GNWT <input type="checkbox"/> GN <input type="checkbox"/> ILA <input type="checkbox"/> INAC <input type="checkbox"/> NEB <input type="checkbox"/> TC |                           |                  | SIGNIFICANCE <input type="checkbox"/> MINOR <input type="checkbox"/> MAJOR <input type="checkbox"/> UNKNOWN |                 | FILE STATUS <input type="checkbox"/> OPEN <input type="checkbox"/> CLOSED |
| AGENCY   |                           | CONTACT NAME     | CONTACT TIME  | REMARKS         |   |
| LEAD AGENCY  |                           |                  |   |                 |   |
| FIRST SUPPORT AGENCY   |                           |                  |   |                 |   |
| SECOND SUPPORT AGENCY  |                           |                  |   |                 |   |
| THIRD SUPPORT AGENCY   |                           |                  |   |                 |   |

# Attachments

## Monitoring Reports

**Tricia Cammaart  
Environmental Sciences Group  
The Royal Military College of Canada  
PO Box 17000 Stn. Forces  
Kingston, ON K7K 7B4**



**Douglas Craig  
Environmental Officer  
Defence Construction Canada  
DEW Line Cleanup PMO  
350 Albert Street, Suite 1720  
Ottawa ON K1A 0K3**

**Thursday, July 23, 2009**

**RE: June 2009 Monthly Report for Water Use License Number: 1BR-MAC0712**

The following results of the Monitoring Program (MP) and/or Water Use License are provided by the Environmental Sciences Group to meet the requirements of the above-noted license for *CAM-5 (Macker Inlet)*.

**1. CAMP SEWAGE LAGOON**

A sewage lagoon was constructed by Biogenie to service the CAM-5 construction camp in June of 2008. The sewage lagoon is located approximately 100 m east of the contractor's camp, 100 m away from drainage channels and more than 450 m from water bodies supporting aquatic life. The GPS coordinates that are required by the Water Use License for the sewage lagoon location are 16W 0551963E 7581586N.

**2. SEWAGE EFFLUENT SAMPLES**

The Water Use License and MP require that samples from treated sewage lagoon effluent at the point of discharge to the receiving water be collected prior to each discharge event. Five sewage effluent samples were collected in June 2009 from Cell 2 of the CAM-5 sewage lagoon. A summary of the details of these results follows.

| <b>Sample Number</b> | <b>Sample Location</b>                  | <b>GPS Coordinates</b>   | <b>Sampling Date</b> |
|----------------------|---|--------------------------|----------------------|
| 09-16007             | Western Corner of Sewage Lagoon Cell #2 | 16W 0551963E<br>7581586N | June 11, 2009        |
| 09-16046             | Western Corner of Sewage Lagoon Cell #2 | 16W 0551952E<br>7581582N | June 14, 2009        |
| 09-16108             | Western Corner of Sewage Lagoon Cell #2 | 16W 0551952E<br>7581582N | June 19, 2009        |
| 09-16226             | Western Corner of Sewage Lagoon Cell #2 | 16W 0551952E<br>7581582N | June 26, 2009        |
| 09-16266             | Western Corner of Sewage Lagoon Cell #2 | 16W 0551952E<br>7581582N | June 27, 2009        |



A summary of the results for the parameters tested is provided below. Laboratory results and photographs are provided in Appendices A and B, respectively.

**LOCATION: WESTERN CORNER OF SEWAGE LAGOON CELL #2**

GPS COORDINATES: 16W 0551963E 7581586N

| <b>Parameter</b>                    | <b>Allowable<br/>Maximum<br/>Average<br/>Concentration</b> | <b>Units</b>   | <b>09-16007<br/>(June 11, 2009)</b> |
|-------------------------------------|--|----------------|-------------------------------------|
| <b>pH</b>                           | 6.0 to 9.0   | pH units       | 6.94                                |
| <b>Oil &amp; Grease</b>             | None Visible   | -              | None Visible                        |
| <b>Total Suspended Solids (TSS)</b> | 180  | mg/L           | 98                                  |
| <b>BOD</b>                          | 120  | mg/L           | 69                                  |
| <b>Faecal Coliforms</b>             | 10,000   | CFU/dL         | N/A                                 |
| <b>Total Coliforms</b>              | -  | CFU/ 100<br>mL | N/A                                 |

**LOCATION: WESTERN CORNER OF SEWAGE LAGOON CELL #2**

GPS COORDINATES: 16W 0551952E 7581582N

| <b>Parameter</b>                    | <b>Allowable<br/>Maximum<br/>Average<br/>Concentration</b> | <b>Units</b>   | <b>09-16046<br/>(June 14, 2009)</b> |
|-------------------------------------|--|----------------|-------------------------------------|
| <b>pH</b>                           | 6.0 to 9.0   | pH units       | N/A                                 |
| <b>Oil &amp; Grease</b>             | None Visible   | -              | None Visible                        |
| <b>Total Suspended Solids (TSS)</b> | 180  | mg/L           | N/A                                 |
| <b>BOD</b>                          | 120  | mg/L           | N/A                                 |
| <b>Faecal Coliforms</b>             | 10,000   | CFU/dL         | <b>15,600</b>                       |
| <b>Total Coliforms</b>              | -  | CFU/ 100<br>mL | N/A                                 |

**LOCATION: WESTERN CORNER OF SEWAGE LAGOON CELL #2**

GPS COORDINATES: 16W 0551952E 7581582N

| <b>Parameter</b>                        | <b>Allowable<br/>Maximum<br/>Average<br/>Concentration</b> | <b>Units</b>   | <b>09-16108</b><br>(June 19, 2009)  |
|---|--|----------------|-------------------------------------|
| <b>pH</b>                               | 6.0 to 9.0   | pH units       | N/A                                 |
| <b>Oil &amp; Grease</b>                 | None Visible   | -              | None Visible                        |
| <b>Total Suspended Solids<br/>(TSS)</b> | 180  | mg/L           | N/A                                 |
| <b>BOD</b>                              | 120  | mg/L           | N/A                                 |
| <b>Faecal Coliforms</b>                 | 10,000   | CFU/dL         | Cancelled due to<br>expired samples |
| <b>Total Coliforms</b>                  | -  | CFU/ 100<br>mL | N/A                                 |

**LOCATION: WESTERN CORNER OF SEWAGE LAGOON CELL #2**

GPS COORDINATES: 16W 0551952E 7581582N

| <b>Parameter</b>                        | <b>Allowable<br/>Maximum<br/>Average<br/>Concentration</b> | <b>Units</b>   | <b>09-16226</b><br>(June 26, 2009) |
|---|--|----------------|------------------------------------|
| <b>pH</b>                               | 6.0 to 9.0   | pH units       | N/A                                |
| <b>Oil &amp; Grease</b>                 | None Visible   | -              | None Visible                       |
| <b>Total Suspended Solids<br/>(TSS)</b> | 180  | mg/L           | N/A                                |
| <b>BOD</b>                              | 120  | mg/L           | N/A                                |
| <b>Faecal Coliforms</b>                 | 10,000   | CFU/dL         | <b>14000</b>                       |
| <b>Total Coliforms</b>                  | -  | CFU/ 100<br>mL | N/A                                |

**LOCATION: WESTERN CORNER OF SEWAGE LAGOON CELL #2**

GPS COORDINATES: 16W 0551952E 7581582N

| <b>Parameter</b>                        | <b>Allowable<br/>Maximum<br/>Average<br/>Concentration</b> | <b>Units</b>   | <b>09-16266<br/>(June 27, 2009)</b> |
|---|--|----------------|-------------------------------------|
| <b>pH</b>                               | 6.0 to 9.0   | pH units       | N/A                                 |
| <b>Oil &amp; Grease</b>                 | None Visible   | -              | None Visible                        |
| <b>Total Suspended Solids<br/>(TSS)</b> | 180  | mg/L           | N/A                                 |
| <b>BOD</b>                              | 120  | mg/L           | N/A                                 |
| <b>Faecal Coliforms</b>                 | 10,000   | CFU/dL         | 2,300                               |
| <b>Total Coliforms</b>                  | -  | CFU/ 100<br>mL | N/A                                 |

The water inside the western corner of sewage lagoon cell #2 meets water discharge criteria as of June 27, 2009. The water was discharged to land in accordance to the water use license, to the discharge location approved by the INAC Environmental Inspector.

We trust that the information provided meets current requirements. Please contact the undersigned if you have any questions or concerns.

Sincerely,



Tricia Cammaart  
Environmental Sciences Group

cc: Eva Schulz (UMA)  
Daniela Loock, Kat White, Shari Reed, Dean Morrow, Ian Goode (ESG)

## APPENDIX A LABORATORY RESULTS

**Client: ESG**  
 12 Verite Ave  
 Dept. of Chem. / Chem. Eng., RMC  
 P.O. Box 17000, Stn. Forces  
 Kingston, Ontario K7K 7B4  
 (613) 541-6000 ext 6567  
 Fax: (613) 541-6596

ASG Login No: 19253  
 Site: CAM-5  
 Client Login No: N/A  
 Samples Received: 15-Jun-09  
 Date of analysis: 15-Jun-09  
 Method No: ASG 042  
 Date Reported: 20-Jun-09  
 Page: 1 of 1

### RESULTS OF BOD ANALYSIS

| Sample I.D. | Unit | BOD |
|-------------|------|-----|
| 16007       | mg/L | 69  |
|             |      |     |

### LABORATORY QA/QC

| Sample I.D.    | Unit | BOD |
|----------------|------|-----|
| Blank          | mg/L | < 3 |
| Control        | mg/L | 165 |
| Control Target | mg/L | 165 |

**Client: ESG**  
 12 Verite Ave  
 Dept. of Chem. / Chem. Eng., RMC  
 P.O. Box 17000, Stn. Forces  
 Kingston, Ontario K7K 7B4  
 (613) 541-6000 ext 6567  
 Fax: (613) 541-6596

ASG Login No: 19253  
 Site: CAM-5  
 Client No: 09-036  
 Samples Received: 15-Jun-09  
 Date of analysis: 15-Jun-09  
 Method No: ASG 037  
 Date Reported: 16-Jun-09  
 Page: 1 of 1

### RESULTS OF pH ANALYSIS

| Sample I.D. | pH   |
|-------------|------|
| 2009-16007* | 6.94 |
|             |      |

\* Averaged result of duplicates

### LABORATORY QA/QC

| Sample I.D.             | pH          |
|-------------------------|-------------|
| 2009-16007* ; Duplicate | 6.94 ; 6.94 |
| Control                 | 7.01        |
| Control Target          | 7.00        |

Client : ESG  
 12 Verite Ave  
 Dept. of Chem. / Chem. Eng., RMC  
 P.O. Box 17000, Stn. Forces  
 Kingston, Ontario K7K 7B4  
 (613) 541-6000 ext 6567  
 Fax: (613) 541-6596

ASG Login No: 19253  
 Site: CAM-5  
 Client Login No: 09-036  
 Samples Received: 15-Jun-09  
 Date of analysis: 16-Jun-09  
 Method No: ASG 039  
 Date Reported: 16-Jun-09  
 Sheet: 1 of 1

### RESULTS OF TOTAL SUSPENDED SOLIDS ANALYSIS

| Sample I.D. | Sample Type^ | Unit | Total Suspended Solids |
|-------------|--------------|------|------------------------|
| 2009-16007* | SE           | mg/L | 98                     |

### LABORATORY QA/QC

|                         |         |      |          |
|-------------------------|---------|------|----------|
| Blank                   | Control | mg/L | < 1      |
| Control                 | Control | mg/L | 190      |
| Control Target          | Control | mg/L | 200      |
| 2009-16007* ; Duplicate | SE ; SE | mg/L | 93 ; 103 |

^SW =Surface Water, SI = Sewage Influent SE = Sewage Effluent

Client : ESG  
 12 Verite Ave  
 Dept. of Chem. / Chem. Eng., RMC  
 P.O. Box 17000, Stn. Forces  
 Kingston, Ontario K7K 7B4  
 (613) 541-6000 ext 6567  
 Fax: (613) 541-6596

ASG Login No: 19274  
 Site: Cam-5  
 Client No: 09-045  
 Samples Received: 16-Jun-09  
 Date of analysis: 17-Jun-09  
 Date Reported: 18-Jun-09  
 Sheet: 1 of 1

### RESULTS OF MICROBIOLOGICAL ANALYSIS

| Sample Identification | Method: ASG 036<br>Total Coliforms<br>(CFU/100 mL) | Method: ASG 036<br><i>E. coli</i><br>(CFU/100 mL) | Method: ASG 036<br>Background<br>(CFU/100 mL) | Method: ASG 041<br>Heterotrophic Plate Count<br>(CFU/mL) |
|-----------------------|--|---|---|--|
| 16046                 | 15600  | 100   | > 50000                                       | RTF  |

\* Averaged results of duplicates  
 RTF- Results to follow

### LABORATORY QA/QC

| Sample Identification | Method: ASG 036<br>Total Coliforms<br>(CFU/100 mL) | Method: ASG 036<br><i>E. coli</i><br>(CFU/100 mL) | Method: ASG 036<br>Background<br>(CFU/100 mL) | Method: ASG 041<br>Heterotrophic Plate Count<br>(CFU/mL) |
|-----------------------|--|---|---|--|
| Blank                 | 0  | 0   | 0   | RTF  |
| Control Sample        | 23   | 23  | 0   | RTF  |
| Control Target        | 29   | 29  | 0   | RTF  |

**Client : ESG**  
 12 Verite Ave  
 Dept. of Chem. / Chem. Eng., RMC  
 P.O. Box 17000, Stn. Forces  
 Kingston, Ontario K7K 7B4  
 (613) 541-6000 ext 6567  
 Fax: (613) 541-6596

ASG Login No: 19328  
 Site: Cam-5  
 Client No: 09-773  
 Samples Received: 28-Jun-09  
 Date of analysis: 28-Jun-09  
 Date Reported: 1-Jul-09  
 Sheet: 1 of 1

### RESULTS OF MICROBIOLOGICAL ANALYSIS

| Sample Identification | Method: ASG 036<br>Total<br>Coliforms<br>(CFU/100 mL) | Method: ASG 036<br>E. coli<br>(CFU/100 mL) | Method: ASG 036<br>Background<br>(CFU/100 mL) | Method: ASG 044<br>Fecal<br>Coliforms<br>(CFU/100 mL) | Method: ASG 041<br>Heterotrophic<br>Plate Count<br>(CFU/mL) |
|-----------------------|---|--|---|---|---|
| 16226^                | NR  | NR   | NR  | 14000   | NR  |
| 16227*                | 0   | 0  | 0   | NR  | 302   |
| 16228                 | 0   | 0  | 0   | NR  | 198   |
| 16229                 | 0   | 0  | 0   | NR  | 126   |
| 16230                 | 6   | 0  | 0   | NR  | 202   |
| 16231                 | 0   | 0  | 0   | NR  | 49  |
| 16232                 | 0   | 0  | 0   | NR  | 85  |

^ Sewage Sample

\* Averaged results of duplicate

NR - Not requested

### LABORATORY QA/QC

| Sample Identification | Method: ASG 036<br>Total<br>Coliforms<br>(CFU/100 mL) | Method: ASG 036<br>E. coli<br>(CFU/100 mL) | Method: ASG 036<br>Background<br>(CFU/100 mL) | Method: ASG 044<br>Fecal<br>Coliforms<br>(CFU/100 mL) | Method: ASG 041<br>Heterotrophic<br>Plate Count<br>(CFU/mL) |
|-----------------------|---|--|---|---|---|
| Blank                 | 0   | 0  | 0   | 0   | 0   |
| 16227 ; Duplicate     | 0 ; 0   | 0 ; 0                                      | 0 ; 0   | NR  | 320 ; 233   |
| Control Sample        | 25  | 25   | 0   | 25  | 25  |
| Control Sample Target | 29  | 29   | 0   | 29  | 29  |

**Client : ESG**  
 12 Verite Ave  
 Dept. of Chem. / Chem. Eng., RMC  
 P.O. Box 17000, Stn. Forces  
 Kingston, Ontario K7K 7B4  
 (613) 541-6000 ext 6567  
 Fax: (613) 541-6596

ASG Login No: 19330  
 Site: Cam-5  
 Client No: 09-774  
 Samples Received: 28-Jun-09  
 Date of analysis: 28-Jun-09  
 Date Reported: 30-Jun-09  
 Sheet: 1 of 1

### RESULTS OF MICROBIOLOGICAL ANALYSIS

| Sample Identification | Method: ASG 036<br>Total<br>Coliforms<br>(CFU/100 mL) | Method: ASG 036<br>E. coli<br>(CFU/100 mL) | Method: ASG 036<br>Background<br>(CFU/100 mL) | Method: ASG 044<br>Fecal<br>Coliforms<br>(CFU/100 mL) | Method: ASG 041<br>Heterotrophic<br>Plate Count<br>(CFU/mL) |
|-----------------------|---|--|---|---|---|
| 16260                 | 0   | 0  | 0   | NR  | 105   |
| 16261                 | 0   | 0  | 0   | NR  | 225   |
| 16262                 | 0   | 0  | 1   | NR  | 139   |
| 16263                 | 0   | 0  | 0   | NR  | 97  |
| 16264                 | 0   | 0  | 0   | NR  | 77  |
| 16265                 | 0   | 0  | 0   | NR  | 130   |
| 16266^                | NR  | NR   | NR  | 2300  | NR  |

^ Sewage Sample

RTF - Report to Follow

NR - Not requested

### LABORATORY QA/QC

| Sample Identification | Method: ASG 036<br>Total<br>Coliforms<br>(CFU/100 mL) | Method: ASG 036<br>E. coli<br>(CFU/100 mL) | Method: ASG 036<br>Background<br>(CFU/100 mL) | Method: ASG 044<br>Fecal<br>Coliforms<br>(CFU/100 mL) | Method: ASG 041<br>Heterotrophic<br>Plate Count<br>(CFU/mL) |
|-----------------------|---|--|---|---|---|
| Blank                 | 0   | 0  | 0   | 0   | 0   |
| Control Sample        | 25  | 25   | 0   | 25  | 25  |
| Control Sample Target | 29  | 29   | 0   | 29  | 29  |

## APPENDIX B PHOTOGRAPHS

**Photo 1 (DSC00274):** Sample 09-16007 collected from Cell 2 of the camp sewage lagoon on June 11, 2009. Sample was collected using swing sampler. This photo was taken facing southwest.



**Photo 2 (DSC01256):** Sample 09-16046, 09-16108, 09-16226 and 09-16266 collected from Cell 2 of the camp sewage lagoon. Sample was collected using swing sampler. This photo was taken facing east.



Tricia Cammaart  
Environmental Sciences Group  
The Royal Military College of Canada  
PO Box 17000 Stn. Forces  
Kingston, ON K7K 7B4



Douglas Craig  
Environmental Officer  
Defence Construction Canada  
DEW Line Cleanup PMO  
350 Albert Street, Suite 1720  
Ottawa ON K1A 0K3

Thursday, July 23, 2009

**RE: Analytical Results for Wastewater Samples Collected at CAM-5 in June, 2009**

The following report summarizes results of the analysis of wastewater samples as per the CAM-5 (Mackar Inlet) DEW Line Cleanup Project (DLCU) Specifications.

The CAM-5 specifications require that “wash water, melt water collection, rinse water resulting from the cleaning of fuel tanks and pipelines, and/or any other liquid effluent stream” meet the following guidelines prior to their discharge to land (01560.4.1):

| Parameter              | Maximum Allowable Concentration | Units    |
|------------------------|---------------------------------|----------|
| pH                     | 6-9                             | pH units |
| Total arsenic (As)     | 0.100                           | mg/L     |
| Dissolved cadmium (Cd) | 0.010                           | mg/L     |
| Total chromium (Cr)    | 0.100                           | mg/L     |
| Dissolved cobalt (Co)  | 0.050                           | mg/L     |
| Dissolved copper (Cu)  | 0.200                           | mg/L     |
| Dissolved lead (Pb)    | 0.050                           | mg/L     |
| Total mercury (Hg)     | 0.6                             | µg/L     |
| Dissolved nickel (Ni)  | 0.200                           | mg/L     |
| Total zinc (Zn)        | 1.000                           | mg/L     |
| Oil & grease           | 5 mg/L and None visible         | mg/L     |
| PCBs                   | 0.050*<br>0.005**               | mg/L     |
| Phenols                | 0.020                           | mg/L     |

\*Discharge to barren land, \*\*Discharge to vegetated land

*Phenols*

The wastewater samples collected by ESG at CAM-5 in June, 2009 were not analyzed for phenols but they were analyzed for oil and grease. Research conducted by ESG<sup>1</sup> has determined that a) no federal, territorial or provincial criteria exist for the discharge of

<sup>1</sup> Environmental Sciences Group. *DEW Line Clean Up Project – Phenols in Wastewater*. June, 2007.



wastewater containing phenols to land at a minimum distance of 30-m from natural drainage courses b) the maximum concentration of phenols in DLCU wastewater to date (2.44 mg/L) is below the LC<sub>50</sub> for freshwater fish and crustaceans and below the oral and dermal LD<sub>50</sub>s for rats and rodents and c) phenols in excess of the maximum allowable concentration (MAC) have historically co-occurred with a visible oil & grease sheen and/or with an exceedance of the MAC for oil & grease. This information, and a subsequent decision to not test for phenols, has been presented to the NWB. To date, verbal agreement from the NWB has been received, but the project is awaiting written confirmation of the decision to suspend testing for phenols.

#### WASTEWATER SAMPLES

Three wastewater samples were collected at CAM-5 and analyzed in June 2009. A summary of the details of these results follows.

| Sample Number | Sample Location                                   | GPS Coordinates           | Sampling Date |
|---------------|---|---------------------------|---------------|
| 09-16008      | Tank Farm (6000 gallon tank)                      | 16W 0551724E<br>7581483 N | June 11, 2009 |
| 09-16225      | Tank Farm (6000 gallon tank)                      | 16W 0551724E<br>7581485N  | June 25, 2009 |
| 09-16277      | Land Farm Discharge outside NW corner of landfarm | 16W 0553030E<br>7581239N  | June 30, 2009 |

A summary of the results for the parameters tested is provided below. Laboratory results and photographs are provided in Appendices A and B, respectively.

#### **LOCATION: TANK FARM (6000) GALLON TANK**

GPS COORDINATES: 16W 0551724 E 7581483 N

| Parameter                | Maximum Allowable Concentration | Units    | Sample # 09-16008    |
|--------------------------|---------------------------------|----------|----------------------|
| <b>pH</b>                | 6-9                             | pH units | N/A                  |
| <b>Total Arsenic</b>     | 0.100                           | mg/L     | N/A                  |
| <b>Dissolved Cadmium</b> | 0.010                           | mg/L     | N/A                  |
| <b>Total Chromium</b>    | 0.100                           | mg/L     | N/A                  |
| <b>Dissolved Cobalt</b>  | 0.050                           | mg/L     | N/A                  |
| <b>Dissolved Copper</b>  | 0.200                           | mg/L     | N/A                  |
| <b>Dissolved Lead</b>    | 0.050                           | mg/L     | N/A                  |
| <b>Total Mercury</b>     | 0.6                             | µg/L     | N/A                  |
| <b>Dissolved Nickel</b>  | 0.200                           | mg/L     | N/A                  |
| <b>Total Zinc</b>        | 1.0                             | mg/L     | N/A                  |
| <b>Oil &amp; Grease</b>  | None Visible and 5 mg/L         | mg/L     | None visible<br><2.0 |
| <b>PCBs</b>              | 50*<br>5**                      | µg/L     | N/A                  |
| <b>Phenols</b>           | 20                              | µg/L     | N/A                  |

\*Discharge to barren land, \*\*Discharge to vegetated land

**LOCATION: TANK FARM (6000) GALLON TANK**  
**GPS COORDINATES: 16W 0551724 E 7581485N**

| Parameter                | Maximum Allowable Concentration | Units    | Sample #<br>09-16225 |
|--------------------------|---------------------------------|----------|----------------------|
| <b>pH</b>                | 6-9                             | pH units | N/A                  |
| <b>Total Arsenic</b>     | 0.100                           | mg/L     | N/A                  |
| <b>Dissolved Cadmium</b> | 0.010                           | mg/L     | N/A                  |
| <b>Total Chromium</b>    | 0.100                           | mg/L     | N/A                  |
| <b>Dissolved Cobalt</b>  | 0.050                           | mg/L     | N/A                  |
| <b>Dissolved Copper</b>  | 0.200                           | mg/L     | N/A                  |
| <b>Dissolved Lead</b>    | 0.050                           | mg/L     | N/A                  |
| <b>Total Mercury</b>     | 0.6                             | µg/L     | N/A                  |
| <b>Dissolved Nickel</b>  | 0.200                           | mg/L     | N/A                  |
| <b>Total Zinc</b>        | 1.0                             | mg/L     | N/A                  |
| <b>Oil &amp; Grease</b>  | None Visible and 5 mg/L         | mg/L     | None Visible 2.3     |
| <b>PCBs</b>              | 50*<br>5**                      | µg/L     | N/A                  |
| <b>Phenols</b>           | 20                              | µg/L     | N/A                  |

\*Discharge to barren land, \*\*Discharge to vegetated land

**LOCATION: LAND FARM DISCHARGE – OUTSIDE NW CORNER OF LAND FARM**  
**GPS COORDINATES: 16W 0553030 E 7581239N**

| Parameter                | Maximum Allowable Concentration | Units    | Sample #<br>09-16277 |
|--------------------------|---------------------------------|----------|----------------------|
| <b>pH</b>                | 6-9                             | pH units | N/A                  |
| <b>Total Arsenic</b>     | 0.100                           | mg/L     | N/A                  |
| <b>Dissolved Cadmium</b> | 0.010                           | mg/L     | N/A                  |
| <b>Total Chromium</b>    | 0.100                           | mg/L     | N/A                  |
| <b>Dissolved Cobalt</b>  | 0.050                           | mg/L     | N/A                  |
| <b>Dissolved Copper</b>  | 0.200                           | mg/L     | N/A                  |
| <b>Dissolved Lead</b>    | 0.050                           | mg/L     | N/A                  |
| <b>Total Mercury</b>     | 0.6                             | µg/L     | N/A                  |
| <b>Dissolved Nickel</b>  | 0.200                           | mg/L     | N/A                  |
| <b>Total Zinc</b>        | 1.0                             | mg/L     | N/A                  |
| <b>Oil &amp; Grease</b>  | None Visible and 5 mg/L         | mg/L     | None Visible 2.8     |
| <b>PCBs</b>              | 50*<br>5**                      | µg/L     | N/A                  |
| <b>Phenols</b>           | 20                              | µg/L     | N/A                  |

\*Discharge to barren land, \*\*Discharge to vegetated land

The analytical results for the land farm discharge, outside the northwest corner of the landfarm met the wastewater discharge criteria. No soil had been placed in the landfarm prior to this date, therefore water was discharged.

We trust that the information provided meets current requirements. Please contact the undersigned if you have any questions or concerns.

Sincerely,

A handwritten signature in black ink, reading "Tricia Cammaart". The signature is written in a cursive, flowing style with a long horizontal stroke at the end.

Tricia Cammaart  
Environmental Sciences Group

cc: Eva Schulz (UMA)  
Daniela Loock, Kat White, Shari Reed, Dean Morrow, Ian Goode (ESG)

APPENDIX A  
LABORATORY RESULTS

|                                |              |  |                        |           |
|--------------------------------|--------------|--|------------------------|-----------|
| <b>ASU #</b>                   | 11968        |  | <b>Report ID:</b>      | Cam-5 W2  |
| <b>Client:</b>                 | ASG 19260    |  | <b>Date Submitted:</b> | 15-Jun-09 |
|                                |              |  | <b>Date tested:</b>    | 15-Jun-09 |
| <b>Site:</b>                   | Cam-5        |  | <b>Date:</b>           | 16-Jun-09 |
|                                | 09-039       |  | <b>Matrix:</b>         | water     |
|                                |              |  |                        |           |
| Preliminary Report of Analysis |              |  |                        |           |
|                                |              |  |                        |           |
| Sample                         | Oil & Grease |  |                        |           |
|                                | mg/L         |  |                        |           |
|                                |              |  |                        |           |
| 09-16008                       | <2.0         |  |                        |           |
|                                |              |  |                        |           |
| Blank                          | <2.0         |  |                        |           |
|                                |              |  |                        |           |
| Control                        | 17.1         |  |                        |           |
| Control Target                 | 16.1         |  |                        |           |

|                                |              |  |                        |           |
|--------------------------------|--------------|--|------------------------|-----------|
| <b>ASU #</b>                   | 12007        |  | <b>Report ID:</b>      | Cam-5 W7  |
| <b>Client:</b>                 | ASG 19345    |  | <b>Date Submitted:</b> | 29-Jun-09 |
|                                |              |  | <b>Date tested:</b>    | 29-Jun-09 |
| <b>Site:</b>                   | Cam-5        |  | <b>Date:</b>           | 29-Jun-09 |
|                                | 09-062       |  | <b>Matrix:</b>         | water     |
|                                |              |  |                        |           |
| Preliminary Report of Analysis |              |  |                        |           |
|                                |              |  |                        |           |
| Sample                         | Oil & Grease |  |                        |           |
|                                | mg/L         |  |                        |           |
|                                |              |  |                        |           |
| 09-16225                       | 2.3          |  |                        |           |
|                                |              |  |                        |           |
| Blank                          | <2.0         |  |                        |           |
|                                |              |  |                        |           |
| Control                        | 15.6         |  |                        |           |
| Control Target                 | 16.1         |  |                        |           |
|                                |              |  |                        |           |

|                                |              |  |                        |          |
|--------------------------------|--------------|--|------------------------|----------|
| <b>ASU #</b>                   | 12028        |  | <b>Report ID:</b>      | Cam-5 W9 |
| <b>Client:</b>                 | ASG 19384    |  | <b>Date Submitted:</b> | 6-Jul-09 |
|                                |              |  | <b>Date tested:</b>    | 7-Jul-09 |
| <b>Site:</b>                   | Cam-5        |  | <b>Date:</b>           | 8-Jul-09 |
|                                | 09-088       |  | <b>Matrix:</b>         | water    |
|                                |              |  |                        |          |
| Preliminary Report of Analysis |              |  |                        |          |
|                                |              |  |                        |          |
| Sample                         | Oil & Grease |  |                        |          |
|                                | mg/L         |  |                        |          |
|                                |              |  |                        |          |
| 09-16277                       | 2.8          |  |                        |          |
| 09-16390                       | <2.0         |  |                        |          |
| 09-16391                       | <2.0         |  |                        |          |
|                                |              |  |                        |          |
| Blank                          | <2.0         |  |                        |          |
|                                |              |  |                        |          |
| Control                        | 17.0         |  |                        |          |
| Control Target                 | 16.1         |  |                        |          |

## APPENDIX B PHOTOGRAPHS

**Photo 1 (DSC 00254):** Sample 09-16008 and 09-16225 collected from the ladder through the opening on top of 6000 gallon tank. The Tank Farm is on the other side of the red maritime container in the background. Picture was taken facing south.



**Photo 2 (DSC 00445):** Sample was collected from the end of the discharge hose which was being discharged to outside the west of the land farm.



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Friday, August 14, 2009

**RE: Analytical Results for Wastewater Samples Collected at CAM-5 in July, 2009**

The following report summarizes results of the analysis of wastewater samples as per the CAM-5 (Mackar Inlet) DEW Line Cleanup Project (DLCU) Specifications.

The CAM-5 specifications require that “wash water, melt water collection, rinse water resulting from the cleaning of fuel tanks and pipelines, and/or any other liquid effluent stream” meet the following guidelines prior to their discharge to land (01560.4.1):

| Parameter              | Maximum Allowable Concentration | Units    |
|------------------------|---------------------------------|----------|
| pH                     | 6-9                             | pH units |
| Total arsenic (As)     | 0.100                           | mg/L     |
| Dissolved cadmium (Cd) | 0.010                           | mg/L     |
| Total chromium (Cr)    | 0.100                           | mg/L     |
| Dissolved cobalt (Co)  | 0.050                           | mg/L     |
| Dissolved copper (Cu)  | 0.200                           | mg/L     |
| Dissolved lead (Pb)    | 0.050                           | mg/L     |
| Total mercury (Hg)     | 0.6                             | µg/L     |
| Dissolved nickel (Ni)  | 0.200                           | mg/L     |
| Total zinc (Zn)        | 1.000                           | mg/L     |
| Oil & grease           | 5 mg/L and None visible         | mg/L     |
| PCBs                   | 0.050*<br>0.005**               | mg/L     |
| Phenols                | 0.020                           | mg/L     |

\*Discharge to barren land, \*\*Discharge to vegetated land

*Phenols*

The wastewater samples collected by ESG at CAM-5 in July, 2009 were not analyzed for phenols but they were analyzed for oil and grease. Research conducted by ESG<sup>1</sup> has determined that a) no federal, territorial or provincial criteria exist for the discharge of

<sup>1</sup> Environmental Sciences Group. *DEW Line Clean Up Project – Phenols in Wastewater*. June, 2007.

wastewater containing phenols to land at a minimum distance of 30-m from natural drainage courses b) the maximum concentration of phenols in DLCU wastewater to date (2.44 mg/L) is below the LC<sub>50</sub> for freshwater fish and crustaceans and below the oral and dermal LD<sub>50</sub>s for rats and rodents and c) phenols in excess of the maximum allowable concentration (MAC) have historically co-occurred with a visible oil & grease sheen and/or with an exceedance of the MAC for oil & grease. This information, and a subsequent decision to not test for phenols, has been presented to the NWB. To date, verbal agreement from the NWB has been received, but the project is awaiting written confirmation of the decision to suspend testing for phenols.

#### WASTEWATER SAMPLES

Seven wastewater samples were collected at CAM-5 and analyzed in July 2009. A summary of the details of these results follows.

| <b>Sample Number</b> | <b>Sample Location</b>  | <b>GPS Coordinates</b> | <b>Sampling Date</b> |
|----------------------|---|------------------------|----------------------|
| 09-16292             | Western Insta Berm (fuel bladder) - sample taken from ponded water within the berm    | 0551716E<br>7581471 N  | July 2, 2009         |
| 09-16390             | Ponded water over contaminated soil areas AT-2 and AA-1                               | 0551758E<br>7581409N   | July 3, 2009         |
| 09-16391             | Ponded water over contaminated soil areas AT-2 and AA-1                               | 0551758E<br>7581409N   | July 3, 2009         |
| 09-16782             | Ponded water within AT-South Type B contaminated soil excavation.                     | 0551778E<br>7581420N   | July 8, 2009         |
| 09-16319             | Water pooled in northwest corner of the Landfarm                                      | 0553042E<br>7581275N   | July 8, 2009         |
| 09-17876             | Water pooled in northwest corner of the Landfarm                                      | 0553042E<br>7581275N   | July 29, 2009        |
| 09-17599             | Water collecting on west side of Landfarm, where a trench has been dug and bermed off | 0553044E<br>7581237N   | July 29, 2009        |

A summary of the results for the parameters tested is provided below. Laboratory results and photographs are provided in Appendices A and B, respectively.



**LOCATION: WESTERN INSTA BERM (FUEL BLADDER) SAMPLE TAKEN FROM  
PONDED WATER WITHIN THE BERM.**

GPS COORDINATES: 0551716 E 7581471 N

| Parameter         | Maximum Allowable Concentration | Units    | Sample #<br>09-16292   |
|-------------------|---------------------------------|----------|------------------------|
| pH                | 6-9                             | pH units | N/A                    |
| Total Arsenic     | 0.100                           | mg/L     | N/A                    |
| Dissolved Cadmium | 0.010                           | mg/L     | N/A                    |
| Total Chromium    | 0.100                           | mg/L     | N/A                    |
| Dissolved Cobalt  | 0.050                           | mg/L     | N/A                    |
| Dissolved Copper  | 0.200                           | mg/L     | N/A                    |
| Dissolved Lead    | 0.050                           | mg/L     | N/A                    |
| Total Mercury     | 0.6                             | µg/L     | N/A                    |
| Dissolved Nickel  | 0.200                           | mg/L     | N/A                    |
| Total Zinc        | 1.0                             | mg/L     | N/A                    |
| Oil & Grease      | None Visible and 5 mg/L         | mg/L     | <b>Visible<br/>2.9</b> |
| PCBs              | 50*<br>5**                      | µg/L     | N/A                    |
| Phenols           | 20                              | µg/L     | N/A                    |

\*Discharge to barren land, \*\*Discharge to vegetated land

The analytical results for the water contained in the instaberm met the wastewater discharge criteria however the sample did contain a visible sheen for oil and grease. The onsite team checked the wastewater for visible sheen and approved of discharge when it was not visible. The water has been discharged to land in accordance to the water use license.

**LOCATION: PONDED WATER OVER CONTAMINATED SOIL AREAS AT-2 AND AA-1**

GPS COORDINATES: 0551758 E 7581409 N

| Parameter         | Maximum Allowable Concentration | Units    | Sample #<br>09-16390 |
|-------------------|---------------------------------|----------|----------------------|
| pH                | 6-9                             | pH units | N/A                  |
| Total Arsenic     | 0.100                           | mg/L     | N/A                  |
| Dissolved Cadmium | 0.010                           | mg/L     | N/A                  |
| Total Chromium    | 0.100                           | mg/L     | N/A                  |
| Dissolved Cobalt  | 0.050                           | mg/L     | N/A                  |
| Dissolved Copper  | 0.200                           | mg/L     | <0.005               |
| Dissolved Lead    | 0.050                           | mg/L     | <0.010               |
| Total Mercury     | 0.6                             | µg/L     | N/A                  |
| Dissolved Nickel  | 0.200                           | mg/L     | N/A                  |
| Total Zinc        | 1.0                             | mg/L     | N/A                  |
| Oil & Grease      | None Visible and 5 mg/L         | mg/L     | None visible<br><2.0 |
| PCBs              | 50*<br>5**                      | µg/L     | N/A                  |
| Phenols           | 20                              | µg/L     | N/A                  |

\*Discharge to barren land, \*\*Discharge to vegetated land

**LOCATION: PONDED WATER OVER CONTAMINATED SOIL AREAS AT-2 AND AA-1**  
**GPS COORDINATES: 0551758 E 7581409 N**

| <b>Parameter</b>         | <b>Maximum Allowable Concentration</b> | <b>Units</b> | <b>Sample #<br/>09-16391</b> |
|--------------------------|--|--------------|------------------------------|
| <b>pH</b>                | 6-9                                    | pH units     | N/A                          |
| <b>Total Arsenic</b>     | 0.100                                  | mg/L         | N/A                          |
| <b>Dissolved Cadmium</b> | 0.010                                  | mg/L         | N/A                          |
| <b>Total Chromium</b>    | 0.100                                  | mg/L         | N/A                          |
| <b>Dissolved Cobalt</b>  | 0.050                                  | mg/L         | N/A                          |
| <b>Dissolved Copper</b>  | 0.200                                  | mg/L         | <0.005                       |
| <b>Dissolved Lead</b>    | 0.050                                  | mg/L         | <0.010                       |
| <b>Total Mercury</b>     | 0.6                                    | µg/L         | N/A                          |
| <b>Dissolved Nickel</b>  | 0.200                                  | mg/L         | N/A                          |
| <b>Total Zinc</b>        | 1.0                                    | mg/L         | N/A                          |
| <b>Oil &amp; Grease</b>  | None Visible and 5 mg/L                | mg/L         | None visible<br><2.0         |
| <b>PCBs</b>              | 50*<br>5**                             | µg/L         | N/A                          |
| <b>Phenols</b>           | 20                                     | µg/L         | N/A                          |

\*Discharge to barren land, \*\*Discharge to vegetated land

The analytical results for the water ponded over contaminated soil areas AT-2 and AA-1 met the wastewater discharge criteria. The water has been discharged to land in accordance to the water use license.

**LOCATION: POOLED WATER WITHIN AT-SOUTH TYPE B CONTAMINATED SOIL EXCAVATION.**

GPS COORDINATES: 0551778 E 7581420 N

| Parameter         | Maximum Allowable Concentration | Units    | Sample #<br>09-16782       |
|-------------------|---------------------------------|----------|----------------------------|
| pH                | 6-9                             | pH units | N/A                        |
| Total Arsenic     | 0.100                           | mg/L     | N/A                        |
| Dissolved Cadmium | 0.010                           | mg/L     | N/A                        |
| Total Chromium    | 0.100                           | mg/L     | N/A                        |
| Dissolved Cobalt  | 0.050                           | mg/L     | N/A                        |
| Dissolved Copper  | 0.200                           | mg/L     | N/A                        |
| Dissolved Lead    | 0.050                           | mg/L     | N/A                        |
| Total Mercury     | 0.6                             | µg/L     | N/A                        |
| Dissolved Nickel  | 0.200                           | mg/L     | N/A                        |
| Total Zinc        | 1.0                             | mg/L     | N/A                        |
| Oil & Grease      | None Visible and 5 mg/L         | mg/L     | <b>Visible<br/>&lt;2.0</b> |
| PCBs              | 50*<br>5**                      | µg/L     | N/A                        |
| Phenols           | 20                              | µg/L     | N/A                        |

\*Discharge to barren land, \*\*Discharge to vegetated land

The analytical results for the pooled water within AT-South Type B contaminated soil excavation met the wastewater discharge criteria, but did contain a visible sheen for oil and grease. The onsite team checked the wastewater for visible sheen and approved of discharge when it was not visible. The water has been discharged to land in accordance to the water use license.

**LOCATION: WATER POOLED AT NORTHWEST CORNER OF LAND FARM.**

GPS COORDINATES: 0553042 E 7581275 N

| Parameter         | Maximum Allowable Concentration | Units    | Sample #<br>09-16319 |
|-------------------|---------------------------------|----------|----------------------|
| pH                | 6-9                             | pH units | N/A                  |
| Total Arsenic     | 0.100                           | mg/L     | N/A                  |
| Dissolved Cadmium | 0.010                           | mg/L     | N/A                  |
| Total Chromium    | 0.100                           | mg/L     | N/A                  |
| Dissolved Cobalt  | 0.050                           | mg/L     | N/A                  |
| Dissolved Copper  | 0.200                           | mg/L     | N/A                  |
| Dissolved Lead    | 0.050                           | mg/L     | N/A                  |
| Total Mercury     | 0.6                             | µg/L     | N/A                  |
| Dissolved Nickel  | 0.200                           | mg/L     | N/A                  |
| Total Zinc        | 1.0                             | mg/L     | N/A                  |
| Oil & Grease      | None Visible and 5 mg/L         | mg/L     | None visible<br><2.0 |
| PCBs              | 50*<br>5**                      | µg/L     | N/A                  |
| Phenols           | 20                              | µg/L     | N/A                  |

\*Discharge to barren land, \*\*Discharge to vegetated land

**LOCATION: WATER POOLED IN NORTHWEST CONRER OF LANDFARM**

GPS COORDINATES: 0553042 E 7581275 N

| <b>Parameter</b>         | <b>Maximum Allowable Concentration</b> | <b>Units</b> | <b>Sample #<br/>09-17876</b> |
|--------------------------|--|--------------|------------------------------|
| <b>pH</b>                | 6-9                                    | pH units     | N/A                          |
| <b>Total Arsenic</b>     | 0.100                                  | mg/L         | N/A                          |
| <b>Dissolved Cadmium</b> | 0.010                                  | mg/L         | N/A                          |
| <b>Total Chromium</b>    | 0.100                                  | mg/L         | N/A                          |
| <b>Dissolved Cobalt</b>  | 0.050                                  | mg/L         | N/A                          |
| <b>Dissolved Copper</b>  | 0.200                                  | mg/L         | N/A                          |
| <b>Dissolved Lead</b>    | 0.050                                  | mg/L         | N/A                          |
| <b>Total Mercury</b>     | 0.6                                    | µg/L         | N/A                          |
| <b>Dissolved Nickel</b>  | 0.200                                  | mg/L         | N/A                          |
| <b>Total Zinc</b>        | 1.0                                    | mg/L         | N/A                          |
| <b>Oil &amp; Grease</b>  | None Visible and 5 mg/L                | mg/L         | None visible, <2.0           |
| <b>PCBs</b>              | 50*<br>5**                             | µg/L         | N/A                          |
| <b>Phenols</b>           | 20                                     | µg/L         | N/A                          |

\*Discharge to barren land, \*\*Discharge to vegetated land

The analytical results for the water pooled at the northwest corner of the landfarm met the wastewater discharge criteria. The water has been discharged to land in accordance to the water use license.

**LOCATION: WATER COLLECTED ON THE WEST SIDE OF THE LANDFARM WHERE A TRENCH HAS BEEN DUG AND BERMED OFF**  
GPS COORDINATES: 0553044 E 7581237 N

| Parameter         | Maximum Allowable Concentration | Units    | Sample #<br>09-17599 |
|-------------------|---------------------------------|----------|----------------------|
| pH                | 6-9                             | pH units | N/A                  |
| Total Arsenic     | 0.100                           | mg/L     | N/A                  |
| Dissolved Cadmium | 0.010                           | mg/L     | N/A                  |
| Total Chromium    | 0.100                           | mg/L     | N/A                  |
| Dissolved Cobalt  | 0.050                           | mg/L     | N/A                  |
| Dissolved Copper  | 0.200                           | mg/L     | N/A                  |
| Dissolved Lead    | 0.050                           | mg/L     | N/A                  |
| Total Mercury     | 0.6                             | µg/L     | N/A                  |
| Dissolved Nickel  | 0.200                           | mg/L     | N/A                  |
| Total Zinc        | 1.0                             | mg/L     | N/A                  |
| Oil & Grease      | None Visible and 5 mg/L         | mg/L     | None visible, 4.4    |
| PCBs              | 50*<br>5**                      | µg/L     | N/A                  |
| Phenols           | 20                              | µg/L     | N/A                  |

\*Discharge to barren land, \*\*Discharge to vegetated land

The analytical results for the water collected on the west side of the landfarm where a trench has been dug and bermed off met the wastewater discharge criteria. The water has been discharged to land in accordance to the water use license.

We trust that the information provided meets current requirements. Please contact the undersigned if you have any questions or concerns.

Sincerely,



Tricia Cammaart  
Environmental Sciences Group

cc: Eva Schulz (UMA)  
Daniela Loock, Kat White, Shari Reed, Dean Morrow, Ian Goode, Matt Beveridge,  
Tom Partridge (ESG)

APPENDIX A  
LABORATORY RESULTS

|                                |              |  |                        |          |
|--------------------------------|--------------|--|------------------------|----------|
| <b>ASU #</b>                   | 12022        |  | <b>Report ID:</b>      | Cam-5 W8 |
| <b>Client:</b>                 | ASG 19371    |  | <b>Date Submitted:</b> | 3-Jul-09 |
|                                |              |  | <b>Date tested:</b>    | 3-Jul-09 |
| <b>Site:</b>                   | Cam-5        |  | <b>Date:</b>           | 3-Jul-09 |
|                                | 09-078       |  | <b>Matrix:</b>         | water    |
|                                |              |  |                        |          |
| Preliminary Report of Analysis |              |  |                        |          |
|                                |              |  |                        |          |
| Sample                         | Oil & Grease |  |                        |          |
|                                | mg/L         |  |                        |          |
|                                |              |  |                        |          |
| 09-16292                       | 2.9          |  |                        |          |
|                                |              |  |                        |          |
| Blank                          | <2.0         |  |                        |          |
|                                |              |  |                        |          |
| Control                        | 17.2         |  |                        |          |
| Control Target                 | 16.1         |  |                        |          |

|                                |              |  |                        |          |
|--------------------------------|--------------|--|------------------------|----------|
| <b>ASU #</b>                   | 12028        |  | <b>Report ID:</b>      | Cam-5 W9 |
| <b>Client:</b>                 | ASG 19384    |  | <b>Date Submitted:</b> | 6-Jul-09 |
|                                |              |  | <b>Date tested:</b>    | 7-Jul-09 |
| <b>Site:</b>                   | Cam-5        |  | <b>Date:</b>           | 8-Jul-09 |
|                                | 09-088       |  | <b>Matrix:</b>         | water    |
|                                |              |  |                        |          |
| Preliminary Report of Analysis |              |  |                        |          |
|                                |              |  |                        |          |
| Sample                         | Oil & Grease |  |                        |          |
|                                | mg/L         |  |                        |          |
|                                |              |  |                        |          |
| 09-16277                       | 2.8          |  |                        |          |
| 09-16390                       | <2.0         |  |                        |          |
| 09-16391                       | <2.0         |  |                        |          |
|                                |              |  |                        |          |
| Blank                          | <2.0         |  |                        |          |
|                                |              |  |                        |          |
| Control                        | 17.0         |  |                        |          |
| Control Target                 | 16.1         |  |                        |          |

|                                |              |              |                        |                 |  |
|--------------------------------|--------------|--------------|------------------------|-----------------|--|
| <b>ASU #</b>                   | 12028        |              | <b>Report ID:</b>      | Cam-5 W10-amend |  |
| <b>Client:</b>                 | ASG 19384    |              | <b>Date Submitted:</b> | 6-Jul-09        |  |
|                                |              |              | <b>Date tested:</b>    | 7-Jul-09        |  |
| <b>Site:</b>                   | Cam-5        |              | <b>Date:</b>           | 8-Jul-09        |  |
|                                | 09-088       |              | <b>Matrix:</b>         | water           |  |
|                                |              |              |                        |                 |  |
| Preliminary Report of Analysis |              |              |                        |                 |  |
| AMENDED REPORT                 |              |              |                        |                 |  |
| Sample                         | Dissolved Pb | Dissolved Cu |                        |                 |  |
|                                | mg/L         | mg/L         |                        |                 |  |
|                                |              |              |                        |                 |  |
| 09-16390                       | <0.010       | <0.005       |                        |                 |  |
| 09-16391                       | <0.010       | <0.005       | *                      |                 |  |
|                                |              |              |                        |                 |  |
| Blank                          | <0.010       | <0.005       |                        |                 |  |
|                                |              |              |                        |                 |  |
| Control                        | 7.95         | 1.50         |                        |                 |  |
| Control Target                 | 8.00         | 1.60         |                        |                 |  |
|                                |              |              |                        |                 |  |
| 09-16391                       | <0.010       | <0.005       |                        |                 |  |
| 09-16391                       | <0.010       | <0.005       |                        |                 |  |

|                                |              |   |                |          |
|--------------------------------|--------------|---|----------------|----------|
| <b>Site:</b>                   | Cam-5        |   | <b>Date:</b>   | 8-Jul-09 |
|                                | 09-088       |   | <b>Matrix:</b> | water    |
|                                |              |   |                |          |
| Preliminary Report of Analysis |              |   |                |          |
|                                |              |   |                |          |
| Sample                         | Dissolved Pb |   |                |          |
|                                | mg/L         |   |                |          |
|                                |              |   |                |          |
| 09-16390                       | <0.010       |   |                |          |
| 09-16391                       | <0.010       | * |                |          |
|                                |              |   |                |          |
| Blank                          | <0.010       |   |                |          |
|                                |              |   |                |          |
| Control                        | 7.95         |   |                |          |
| Control Target                 | 8.00         |   |                |          |
|                                |              |   |                |          |
| 09-16391                       | <0.010       |   |                |          |
| 09-16391                       | <0.010       |   |                |          |

|                                |              |  |                        |           |
|--------------------------------|--------------|--|------------------------|-----------|
| <b>ASU #</b>                   | 12051        |  | <b>Report ID:</b>      | Cam-5 W11 |
| <b>Client:</b>                 | ASG 19440    |  | <b>Date Submitted:</b> | 13-Jul-09 |
|                                |              |  | <b>Date tested:</b>    | 14-Jul-09 |
| <b>Site:</b>                   | Cam-5        |  | <b>Date:</b>           | 14-Jul-09 |
|                                | 09-099       |  | <b>Matrix:</b>         | water     |
|                                |              |  |                        |           |
| Preliminary Report of Analysis |              |  |                        |           |
|                                |              |  |                        |           |
| Sample                         | Oil & Grease |  |                        |           |
|                                | mg/L         |  |                        |           |
|                                |              |  |                        |           |
| 09-16319                       | <2.0         |  |                        |           |
| 09-16782                       | <2.0         |  |                        |           |
|                                |              |  |                        |           |
| Blank                          | <2.0         |  |                        |           |
|                                |              |  |                        |           |
| Control                        | 17.0         |  |                        |           |
| Control Target                 | 16.1         |  |                        |           |

|                                |              |  |                        |           |
|--------------------------------|--------------|--|------------------------|-----------|
| <b>ASU #</b>                   | 12116        |  | <b>Report ID:</b>      | Cam-5 W14 |
| <b>Client:</b>                 | ASG 19554    |  | <b>Date Submitted:</b> | 31-Jul-09 |
|                                |              |  | <b>Date tested:</b>    | 31-Jul-09 |
| <b>Site:</b>                   | Cam-5        |  | <b>Date:</b>           | 31-Jul-09 |
|                                | 09-173       |  | <b>Matrix:</b>         | water     |
|                                |              |  |                        |           |
| Preliminary Report of Analysis |              |  |                        |           |
|                                |              |  |                        |           |
| Sample                         | Oil & Grease |  |                        |           |
|                                | mg/L         |  |                        |           |
|                                |              |  |                        |           |
| 09-17599                       | 4.4          |  |                        |           |
| 09-17876                       | <2.0         |  |                        |           |
|                                |              |  |                        |           |
| Blank                          | <2.0         |  |                        |           |
|                                |              |  |                        |           |
| Control                        | 17.9         |  |                        |           |
| Control Target                 | 16.1         |  |                        |           |



## APPENDIX B PHOTOGRAPHS

**Photo 1 (DSC 00461):** Sample 09-16292 water sampling from the west insta berm at the contractor tank farm, facing south UVS building is in the background.



**Photo 2 (DSC01397):** Sample 09-16390 and 09-16391 water pooling over contaminated soil area AA-1, photo faces south west.



**Photo 3 (DSC01477):** Sample 09-16782 facing southwest. Sample was collected from the middle of the AT-South excavation. Corner of the UVS building is visible in the far right corner.



**Photo 4 (DSC01446):** Sample 09-16319 facing north. Sample was collected from the edge of pooling water in the NW corner of the land farm.





**Photo 6 (DSC00734):** Sample 09-17876 landfarm water sample, lower site. Sample was collected from the pooling water in the NW corner of the land farm.



**Photo 5 (DSC00746):** Sample 09-17599 east along the trench dug for removing upwelling groundwater in the landfarm. The area is also bermed off to prevent any surface water from the landfarm from entering into the discharging water.



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DEW Line Cleanup PMO  
350 Albert Street, Suite 1720  
Ottawa ON K1A 0K3**

**Tuesday, September 22, 2009**

**RE: August 2009 Monthly Report for Water Use License Number: 1BR-MAC0712**

The following results of the Monitoring Program (MP) and/or Water Use License are provided by the Environmental Sciences Group to meet the requirements of the above-noted license for CAM-5 (*Macker Inlet*).

**1. CAMP SEWAGE LAGOON**

A sewage lagoon was constructed by Biogenie to service the CAM-5 construction camp in June of 2008. The sewage lagoon is located approximately 100 m east of the contractor's camp, 100 m away from drainage channels and more than 450 m from water bodies supporting aquatic life. The GPS coordinates that are required by the Water Use License for the sewage lagoon location are 16W 0551963E 7581586N.

**2. SEWAGE EFFLUENT SAMPLES**

The Water Use License and MP require that samples from treated sewage lagoon effluent at the point of discharge to the receiving water be collected prior to each discharge event. One sewage effluent sample was collected in August 2009 from Cell 2 of the CAM-5 sewage lagoon. A summary of the details of these results follows.

| <b>Sample Number</b> | <b>Sample Location</b>                    | <b>GPS Coordinates</b> | <b>Sampling Date</b> |
|----------------------|---|------------------------|----------------------|
| 09-22802             | Northwest Corner of Sewage Lagoon Cell #2 | 0551956 E<br>7581582 N | August 15, 2009      |

A summary of the results for the parameters tested is provided below. Laboratory results and photographs are provided in Appendices A and B, respectively.

**LOCATION: NORTHWEST CORNER OF SEWAGE LAGOON CELL #2**

GPS COORDINATES: 0551956E 7581582N

| Parameter                               | Allowable<br>Maximum<br>Average<br>Concentration | Units          | <b>09-22802</b><br>(August 15, 2009) |
|---|--|----------------|--------------------------------------|
| <b>pH</b>                               | 6.0 to 9.0                                       | pH units       | 8.17                                 |
| <b>Oil &amp; Grease</b>                 | None Visible                                     | -              | None Visible                         |
| <b>Total Suspended Solids<br/>(TSS)</b> | 180  | mg/L           | <b>435</b>                           |
| <b>BOD</b>                              | 120  | mg/L           | <b>130</b>                           |
| <b>Faecal Coliforms</b>                 | 10,000   | CFU/dL         | 9,000                                |
| <b>Total Coliforms</b>                  | -  | CFU/ 100<br>mL | >200,000                             |

The water inside the northwest corner of sewage lagoon cell #2 did not meet water discharge criteria. The water was not discharged to land in accordance to the water use license.

We trust that the information provided meets current requirements. Please contact the undersigned if you have any questions or concerns.

Sincerely,



Tricia Cammaart  
Environmental Sciences Group

cc: Eva Schulz (UMA)  
Daniela Loock, Kat White, Shari Reed, Dean Morrow, Ian Goode, Matt Beveridge,  
Tom Partridge (ESG)

## APPENDIX A LABORATORY RESULTS

**Client:** ESG  
12 Verite Ave  
Dept. of Chem. / Chem. Eng., RMC  
P.O. Box 17000, Stn. Forces  
Kingston, Ontario K7K 7B4  
(613) 541-6000 ext 6567  
Fax: (613) 541-6596

ASG Login No: 19687  
Site: Cam-5  
Client No: 09-238  
Samples Received: 17-Aug-09  
Date of analysis: 20-Aug-09  
Method No: ASG 037  
Date Reported: 20-Aug-09  
Page: 1 of 1

### RESULTS OF pH ANALYSIS

| Sample I.D. | pH   |
|-------------|------|
| 09-22282*   | 8.17 |
|             |      |

\* Averaged result of duplicates

### LABORATORY QA/QC

| Sample I.D.           | pH          |
|-----------------------|-------------|
| 09-22282* ; Duplicate | 8.17 ; 8.17 |
| Control               | 7.00        |
| Control Target        | 7.00        |

Dept. of Chem. / Chem. Eng., RMC  
P.O. Box 17000, Stn. Forces  
Kingston, Ontario K7K 7B4  
(613) 541-6000 ext 6567  
Fax: (613) 541-6596

Client No: 09-238  
Samples Received: 17-Aug-09  
Date of analysis: 17-Aug-09  
Date Reported: 19-Aug-09  
Sheet: 1 of 1

### RESULTS OF MICROBIOLOGICAL ANALYSIS

| Sample Identification | Method: ASG 036<br>Total<br>Coliforms<br>(CFU/100 mL) | Method: ASG 036<br>E. coli<br>(CFU/100 mL) | Method: ASG 036<br>Background<br>(CFU/100 mL) | Method: ASG 044<br>Fecal<br>Coliforms<br>(CFU/100 mL) |
|-----------------------|---|--|---|---|
| 22802*                | > 200 000   | 10 000                                     | > 200 000                                     | 9000  |
|                       |   |  |   |   |

### LABORATORY QA/QC

| Sample Identification | Method: ASG 036<br>Total<br>Coliforms<br>(CFU/100 mL) | Method: ASG 036<br>E. coli<br>(CFU/100 mL) | Method: ASG 036<br>Background<br>(CFU/100 mL) | Method: ASG 044<br>Fecal<br>Coliforms<br>(CFU/100 mL) |
|-----------------------|---|--|---|---|
| Blank                 | 0   | 0  | 0   | 0   |
| Control Sample        | 38  | 38   | 0   | 41  |
| Control Sample Target | 40  | 40   | 0   | 40  |
|                       |   |  |   |   |

\* Duplicate analysis completed on dilution not required

\*\*Significant background colonies (> 200 per dilution) could potentially inhibit the growth of target colonies.

**Client: ESG**  
 12 Verite Ave  
 Dept. of Chem. / Chem. Eng., RMC  
 P.O. Box 17000, Stn. Forces  
 Kingston, Ontario K7K 7B4  
 (613) 541-6000 ext 6567  
 Fax: (613) 541-6596

ASG Login No: 19687  
 Site: Cam-5  
 Client Login No: 09-238  
 Samples Received: 17-Aug-09  
 Date of analysis: 24-Aug-09  
 Method No: ASG 042  
 Date Reported: 24-Aug-09  
 Page: 1 of 1

## RESULTS OF BOD ANALYSIS

| Sample I.D. | Unit | BOD |
|-------------|------|-----|
| 09-22802*   | mg/L | 130 |
|             |      |     |

\*Averaged result of duplicates

## LABORATORY QA/QC

| Sample I.D.           | Unit | BOD       |
|-----------------------|------|-----------|
| Duplicate : 09-22802* | mg/L | 128 ; 132 |
| Blank                 | mg/L | < 3       |
| Control               | mg/L | 170       |
| Control Target        | mg/L | 165       |

**Client : ESG**  
 12 Verite Ave  
 Dept. of Chem. / Chem. Eng., RMC  
 P.O. Box 17000, Stn. Forces  
 Kingston, Ontario K7K 7B4  
 (613) 541-6000 ext 6567  
 Fax: (613) 541-6596

ASG Login No: 19687  
 Site: Cam-5  
 Client Login No: 09-238  
 Samples Received: 17-Aug-09  
 Date of analysis: 19-Aug-09  
 Method No: ASG 039  
 Date Reported: 24-Aug-09  
 Sheet: 1 of 1

## RESULTS OF TOTAL SUSPENDED SOLIDS ANALYSIS

| Sample I.D. | Sample Type* | Unit | Total Suspended Solids |
|-------------|--------------|------|------------------------|
| 09-22802*   | SE           | mg/L | 435                    |
|             |              |      |                        |

\*Average results of duplicates.

## LABORATORY QA/QC

|                       |         |      |           |
|-----------------------|---------|------|-----------|
| Blank                 | Control | mg/L | < 1       |
| 09-22802* ; Duplicate | SE ; SE | mg/L | 430 ; 440 |
| Control               | Control | mg/L | 193       |
| Control Target        | Control | mg/L | 200       |

^SW =Surface Water, SI = Sewage Influent SE = Sewage Effluent



## APPENDIX B PHOTOGRAPHS

**Photo 1 (DSC01666):** Sample 09-22802 collected from Cell 2 of the camp sewage lagoon from the Northwest corner. The picture was taken from the south on August 15, 2009.





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The Royal Military College of Canada  
PO Box 17000 Stn. Forces  
Kingston, ON K7K 7B4



Douglas Craig  
Environmental Officer  
Defence Construction Canada  
DEW Line Cleanup PMO  
350 Albert Street, Suite 1720  
Ottawa ON K1A 0K3

Tuesday, September 22, 2009

**RE: Analytical Results for Wastewater Samples Collected at CAM-5 in August, 2009**

The following report summarizes results of the analysis of wastewater samples as per the CAM-5 (Mackar Inlet) DEW Line Cleanup Project (DLCU) Specifications.

The CAM-5 specifications require that “wash water, melt water collection, rinse water resulting from the cleaning of fuel tanks and pipelines, and/or any other liquid effluent stream” meet the following guidelines prior to their discharge to land (01560.4.1):

| Parameter              | Maximum Allowable Concentration | Units    |
|------------------------|---------------------------------|----------|
| pH                     | 6-9                             | pH units |
| Total arsenic (As)     | 0.100                           | mg/L     |
| Dissolved cadmium (Cd) | 0.010                           | mg/L     |
| Total chromium (Cr)    | 0.100                           | mg/L     |
| Dissolved cobalt (Co)  | 0.050                           | mg/L     |
| Dissolved copper (Cu)  | 0.200                           | mg/L     |
| Dissolved lead (Pb)    | 0.050                           | mg/L     |
| Total mercury (Hg)     | 0.6                             | µg/L     |
| Dissolved nickel (Ni)  | 0.200                           | mg/L     |
| Total zinc (Zn)        | 1.000                           | mg/L     |
| Oil & grease           | 5 mg/L and None visible         | mg/L     |
| PCBs                   | 0.050*<br>0.005**               | mg/L     |
| Phenols                | 0.020                           | mg/L     |

\*Discharge to barren land, \*\*Discharge to vegetated land

*Phenols*

The wastewater samples collected by ESG at CAM-5 in August, 2009 were not analyzed for phenols but they were analyzed for oil and grease. Research conducted by ESG<sup>1</sup> has determined that a) no federal, territorial or provincial criteria exist for the discharge of

<sup>1</sup> Environmental Sciences Group. *DEW Line Clean Up Project – Phenols in Wastewater*. June, 2007.

wastewater containing phenols to land at a minimum distance of 30-m from natural drainage courses b) the maximum concentration of phenols in DLCU wastewater to date (2.44 mg/L) is below the LC<sub>50</sub> for freshwater fish and crustaceans and below the oral and dermal LD<sub>50</sub>s for rats and rodents and c) phenols in excess of the maximum allowable concentration (MAC) have historically co-occurred with a visible oil & grease sheen and/or with an exceedance of the MAC for oil & grease. This information, and a subsequent decision to not test for phenols, has been presented to the NWB. To date, verbal agreement from the NWB has been received, but the project is awaiting written confirmation of the decision to suspend testing for phenols.

#### WASTEWATER SAMPLES

Eleven wastewater samples were collected at CAM-5 and analyzed in August 2009. A summary of the details of these results follows.

| <b>Sample Number</b> | <b>Sample Location</b>  | <b>GPS Coordinates</b> | <b>Sampling Date</b> |
|----------------------|---|------------------------|----------------------|
| 09-16792             | West Insta Berm at Contractor Tank Farm   | 0551716E<br>7581473N   | August 1, 2009       |
| 09-23177             | West Insta Berm at Contractor Tank Farm   | 0551716E<br>7581473N   | August 19, 2009      |
| 09-17689             | East Insta Berm at Contractor Tank Farm   | 0551716E<br>7581478 N  | August 1, 2009       |
| 09-23178             | East Insta Berm at Contractor Tank Farm   | 0551716E<br>7581478 N  | August 19, 2009      |
| 09-17792             | Water Pooled in Northwest corner of Landfarm  | 0553042E<br>7581275N   | August 5, 2009       |
| 09-23817             | Water Pooled in Northwest corner of Landfarm  | 0553042E<br>7581275N   | August 26, 2009      |
| 09-22271             | Water collecting on west side of Landfarm, where a trench has been dug and bermed off | 0553044E<br>7581237N   | August 5, 2009       |
| 09-23816             | Water collecting on west side of Landfarm, where a trench has been dug and bermed off | 0553044E<br>7581237N   | August 26, 2009      |
| 09-22314             | MT West 6000 Gallon Tank  | 0555204E<br>7577338N   | August 5, 2009       |
| 09-23886             | Hazardous Waste Processing Area   | 0552914E<br>7581809N   | August 27, 2009      |
| 09-23978             | Hazardous Waste Processing Area   | 0552914E<br>7581809N   | August 29, 2009      |

A summary of the results for the parameters tested is provided below. Laboratory results and photographs are provided in Appendices A and B, respectively.

**LOCATION: WEST INSTA BERM AT CONTRACTOR TANK FARM**  
**GPS COORDINATES: 0551716 E 7581473 N**

| Parameter                | Maximum Allowable Concentration | Units    | Sample #<br>09-16792              |
|--------------------------|---------------------------------|----------|-----------------------------------|
| <b>pH</b>                | 6-9                             | pH units | N/A                               |
| <b>Total Arsenic</b>     | 0.100                           | mg/L     | N/A                               |
| <b>Dissolved Cadmium</b> | 0.010                           | mg/L     | N/A                               |
| <b>Total Chromium</b>    | 0.100                           | mg/L     | N/A                               |
| <b>Dissolved Cobalt</b>  | 0.050                           | mg/L     | N/A                               |
| <b>Dissolved Copper</b>  | 0.200                           | mg/L     | N/A                               |
| <b>Dissolved Lead</b>    | 0.050                           | mg/L     | N/A                               |
| <b>Total Mercury</b>     | 0.6                             | µg/L     | N/A                               |
| <b>Dissolved Nickel</b>  | 0.200                           | mg/L     | N/A                               |
| <b>Total Zinc</b>        | 1.0                             | mg/L     | N/A                               |
| <b>Oil &amp; Grease</b>  | None Visible and 5 mg/L         | mg/L     | <b>None Visible</b><br><b>5.7</b> |
| <b>PCBs</b>              | 50*<br>5**                      | µg/L     | N/A                               |
| <b>Phenols</b>           | 20                              | µg/L     | N/A                               |

\*Discharge to barren land, \*\*Discharge to vegetated land

**LOCATION: WEST INSTA BERM AT CONTRACTOR TANK FARM**  
**GPS COORDINATES: 0551716 E 7581473 N**

| Parameter                | Maximum Allowable Concentration | Units    | Sample #<br>09-23177 |
|--------------------------|---------------------------------|----------|----------------------|
| <b>pH</b>                | 6-9                             | pH units | N/A                  |
| <b>Total Arsenic</b>     | 0.100                           | mg/L     | N/A                  |
| <b>Dissolved Cadmium</b> | 0.010                           | mg/L     | N/A                  |
| <b>Total Chromium</b>    | 0.100                           | mg/L     | N/A                  |
| <b>Dissolved Cobalt</b>  | 0.050                           | mg/L     | N/A                  |
| <b>Dissolved Copper</b>  | 0.200                           | mg/L     | N/A                  |
| <b>Dissolved Lead</b>    | 0.050                           | mg/L     | N/A                  |
| <b>Total Mercury</b>     | 0.6                             | µg/L     | N/A                  |
| <b>Dissolved Nickel</b>  | 0.200                           | mg/L     | N/A                  |
| <b>Total Zinc</b>        | 1.0                             | mg/L     | N/A                  |
| <b>Oil &amp; Grease</b>  | None Visible and 5 mg/L         | mg/L     | None Visible<br>2.0  |
| <b>PCBs</b>              | 50*<br>5**                      | µg/L     | N/A                  |
| <b>Phenols</b>           | 20                              | µg/L     | N/A                  |

\*Discharge to barren land, \*\*Discharge to vegetated land

As of August 19, 2009 the analytical results for the water contained in the west insta berm met the wastewater discharge criteria. The water has been discharged to land in accordance to the water use license.

**LOCATION: EAST INSTA BERM AT CONTRACTOR TANK FARM**

GPS COORDINATES: 0551716 E 7581478 N

| Parameter                | Maximum Allowable Concentration | Units    | Sample #<br>09-17689        |
|--------------------------|---------------------------------|----------|-----------------------------|
| <b>pH</b>                | 6-9                             | pH units | N/A                         |
| <b>Total Arsenic</b>     | 0.100                           | mg/L     | N/A                         |
| <b>Dissolved Cadmium</b> | 0.010                           | mg/L     | N/A                         |
| <b>Total Chromium</b>    | 0.100                           | mg/L     | N/A                         |
| <b>Dissolved Cobalt</b>  | 0.050                           | mg/L     | N/A                         |
| <b>Dissolved Copper</b>  | 0.200                           | mg/L     | N/A                         |
| <b>Dissolved Lead</b>    | 0.050                           | mg/L     | N/A                         |
| <b>Total Mercury</b>     | 0.6                             | µg/L     | N/A                         |
| <b>Dissolved Nickel</b>  | 0.200                           | mg/L     | N/A                         |
| <b>Total Zinc</b>        | 1.0                             | mg/L     | N/A                         |
| <b>Oil &amp; Grease</b>  | None Visible and 5 mg/L         | mg/L     | <b>None visible<br/>6.0</b> |
| <b>PCBs</b>              | 50*<br>5**                      | µg/L     | N/A                         |
| <b>Phenols</b>           | 20                              | µg/L     | N/A                         |

\*Discharge to barren land, \*\*Discharge to vegetated land

**LOCATION: EAST INSTA BERM AT CONTRACTOR TANK FARM**

GPS COORDINATES: 0551716 E 7581478 N

| Parameter                | Maximum Allowable Concentration | Units    | Sample #<br>09-23178        |
|--------------------------|---------------------------------|----------|-----------------------------|
| <b>pH</b>                | 6-9                             | pH units | N/A                         |
| <b>Total Arsenic</b>     | 0.100                           | mg/L     | N/A                         |
| <b>Dissolved Cadmium</b> | 0.010                           | mg/L     | N/A                         |
| <b>Total Chromium</b>    | 0.100                           | mg/L     | N/A                         |
| <b>Dissolved Cobalt</b>  | 0.050                           | mg/L     | N/A                         |
| <b>Dissolved Copper</b>  | 0.200                           | mg/L     | N/A                         |
| <b>Dissolved Lead</b>    | 0.050                           | mg/L     | N/A                         |
| <b>Total Mercury</b>     | 0.6                             | µg/L     | N/A                         |
| <b>Dissolved Nickel</b>  | 0.200                           | mg/L     | N/A                         |
| <b>Total Zinc</b>        | 1.0                             | mg/L     | N/A                         |
| <b>Oil &amp; Grease</b>  | None Visible and 5 mg/L         | mg/L     | <b>None visible<br/>7.0</b> |
| <b>PCBs</b>              | 50*<br>5**                      | µg/L     | N/A                         |
| <b>Phenols</b>           | 20                              | µg/L     | N/A                         |

\*Discharge to barren land, \*\*Discharge to vegetated land

As of August 19, 2009 the analytical results for the water contained in the east insta berm did not meet the wastewater discharge criteria. The water has not been discharged to land. It was consolidated into a temporary storage tank and will undergo treatment and additional analysis prior to discharge at the beginning of the 2010 field season.

**LOCATION: WATER POOLED IN NORTHWEST CORNER OF LAND FARM**

GPS COORDINATES: 0553042E 7581275 N

| Parameter                | Maximum Allowable Concentration | Units    | Sample #<br>09-17792 |
|--------------------------|---------------------------------|----------|----------------------|
| <b>pH</b>                | 6-9                             | pH units | N/A                  |
| <b>Total Arsenic</b>     | 0.100                           | mg/L     | N/A                  |
| <b>Dissolved Cadmium</b> | 0.010                           | mg/L     | N/A                  |
| <b>Total Chromium</b>    | 0.100                           | mg/L     | N/A                  |
| <b>Dissolved Cobalt</b>  | 0.050                           | mg/L     | N/A                  |
| <b>Dissolved Copper</b>  | 0.200                           | mg/L     | N/A                  |
| <b>Dissolved Lead</b>    | 0.050                           | mg/L     | N/A                  |
| <b>Total Mercury</b>     | 0.6                             | µg/L     | N/A                  |
| <b>Dissolved Nickel</b>  | 0.200                           | mg/L     | N/A                  |
| <b>Total Zinc</b>        | 1.0                             | mg/L     | N/A                  |
| <b>Oil &amp; Grease</b>  | None Visible and 5 mg/L         | mg/L     | None visible<br><2.0 |
| <b>PCBs</b>              | 50*<br>5**                      | µg/L     | N/A                  |
| <b>Phenols</b>           | 20                              | µg/L     | N/A                  |

\*Discharge to barren land, \*\*Discharge to vegetated land

**LOCATION: WATER POOLED IN NORTHWEST CORNER OF LANDFARM**

GPS COORDINATES: 0553042E 7581275 N

| Parameter                | Maximum Allowable Concentration | Units    | Sample #<br>09-23817     |
|--------------------------|---------------------------------|----------|--------------------------|
| <b>pH</b>                | 6-9                             | pH units | N/A                      |
| <b>Total Arsenic</b>     | 0.100                           | mg/L     | N/A                      |
| <b>Dissolved Cadmium</b> | 0.010                           | mg/L     | N/A                      |
| <b>Total Chromium</b>    | 0.100                           | mg/L     | N/A                      |
| <b>Dissolved Cobalt</b>  | 0.050                           | mg/L     | N/A                      |
| <b>Dissolved Copper</b>  | 0.200                           | mg/L     | N/A                      |
| <b>Dissolved Lead</b>    | 0.050                           | mg/L     | N/A                      |
| <b>Total Mercury</b>     | 0.6                             | µg/L     | N/A                      |
| <b>Dissolved Nickel</b>  | 0.200                           | mg/L     | N/A                      |
| <b>Total Zinc</b>        | 1.0                             | mg/L     | N/A                      |
| <b>Oil &amp; Grease</b>  | None Visible and 5 mg/L         | mg/L     | <b>None visible, 8.2</b> |
| <b>PCBs</b>              | 50*<br>5**                      | µg/L     | N/A                      |
| <b>Phenols</b>           | 20                              | µg/L     | N/A                      |

\*Discharge to barren land, \*\*Discharge to vegetated land

As of August 26, 2009 the analytical results for the water contained in the northwest corner of the Landfarm did not meet the wastewater discharge criteria. The water was not discharged to land in accordance to the water use license. Additional sampling and analysis was completed in September. Results will be reported in the September report.

**LOCATION: WATER COLLECTING ON THE WEST SIDE OF THE LANDFARM**

GPS COORDINATES: 0553044E 7581237 N

| Parameter         | Maximum Allowable Concentration | Units    | Sample #<br>09-22271 |
|-------------------|---------------------------------|----------|----------------------|
| pH                | 6-9                             | pH units | N/A                  |
| Total Arsenic     | 0.100                           | mg/L     | N/A                  |
| Dissolved Cadmium | 0.010                           | mg/L     | N/A                  |
| Total Chromium    | 0.100                           | mg/L     | N/A                  |
| Dissolved Cobalt  | 0.050                           | mg/L     | N/A                  |
| Dissolved Copper  | 0.200                           | mg/L     | N/A                  |
| Dissolved Lead    | 0.050                           | mg/L     | N/A                  |
| Total Mercury     | 0.6                             | µg/L     | N/A                  |
| Dissolved Nickel  | 0.200                           | mg/L     | N/A                  |
| Total Zinc        | 1.0                             | mg/L     | N/A                  |
| Oil & Grease      | None Visible and 5 mg/L         | mg/L     | None visible<br><2.0 |
| PCBs              | 50*<br>5**                      | µg/L     | N/A                  |
| Phenols           | 20                              | µg/L     | N/A                  |

\*Discharge to barren land, \*\*Discharge to vegetated land

**LOCATION: WATER COLLECTING ON THE WEST SIDE OF THE LAND FARM**

GPS COORDINATES: 0553044E 7581237 N

| Parameter         | Maximum Allowable Concentration | Units    | Sample #<br>09-23816 |
|-------------------|---------------------------------|----------|----------------------|
| pH                | 6-9                             | pH units | N/A                  |
| Total Arsenic     | 0.100                           | mg/L     | N/A                  |
| Dissolved Cadmium | 0.010                           | mg/L     | N/A                  |
| Total Chromium    | 0.100                           | mg/L     | N/A                  |
| Dissolved Cobalt  | 0.050                           | mg/L     | N/A                  |
| Dissolved Copper  | 0.200                           | mg/L     | N/A                  |
| Dissolved Lead    | 0.050                           | mg/L     | N/A                  |
| Total Mercury     | 0.6                             | µg/L     | N/A                  |
| Dissolved Nickel  | 0.200                           | mg/L     | N/A                  |
| Total Zinc        | 1.0                             | mg/L     | N/A                  |
| Oil & Grease      | None Visible and 5 mg/L         | mg/L     | None visible, 4.3    |
| PCBs              | 50*<br>5**                      | µg/L     | N/A                  |
| Phenols           | 20                              | µg/L     | N/A                  |

\*Discharge to barren land, \*\*Discharge to vegetated land

As of August 26, 2009 the analytical results for the water contained in the west side of the landfarm met the wastewater discharge criteria. The water has been discharged to land in accordance to the water use license.

**LOCATION: 6000 GALLON TANK FROM MT WEST**

GPS COORDINATES: 0555204E 7577338 N

| Parameter                | Maximum Allowable Concentration | Units    | Sample #<br>09-22314 |
|--------------------------|---------------------------------|----------|----------------------|
| <b>pH</b>                | 6-9                             | pH units | N/A                  |
| <b>Total Arsenic</b>     | 0.100                           | mg/L     | <0.003               |
| <b>Dissolved Cadmium</b> | 0.010                           | mg/L     | <0.001               |
| <b>Total Chromium</b>    | 0.100                           | mg/L     | 0.013                |
| <b>Dissolved Cobalt</b>  | 0.050                           | mg/L     | <0.003               |
| <b>Dissolved Copper</b>  | 0.200                           | mg/L     | 0.006                |
| <b>Dissolved Lead</b>    | 0.050                           | mg/L     | <0.010               |
| <b>Total Mercury</b>     | 0.6                             | µg/L     | <0.4                 |
| <b>Dissolved Nickel</b>  | 0.200                           | mg/L     | <0.005               |
| <b>Total Zinc</b>        | 1.0                             | mg/L     | 0.069                |
| <b>Oil &amp; Grease</b>  | None Visible and 5 mg/L         | mg/L     | None visible<br>2.3  |
| <b>PCBs</b>              | 50*<br>5**                      | µg/L     | <3.0                 |
| <b>Phenols</b>           | 20                              | µg/L     | N/A                  |

\*Discharge to barren land, \*\*Discharge to vegetated land

As of August 5, 2009 the analytical results for the water contained in the 6000 gallon tank from the MT west excavation met the wastewater discharge criteria. The water was pumped back into the open excavation and subsequently backfilled.

**LOCATION: HAZARDOUS WASTE PROCESSING AREA**

GPS COORDINATES: 0552914E 7581809 N

| Parameter                | Maximum Allowable Concentration | Units    | Sample #<br>09-23886                       |
|--------------------------|---------------------------------|----------|--|
| <b>pH</b>                | 6-9                             | pH units | 7.29                                       |
| <b>Total Arsenic</b>     | 0.100                           | mg/L     | <0.003                                     |
| <b>Dissolved Cadmium</b> | 0.010                           | mg/L     | <0.001                                     |
| <b>Total Chromium</b>    | 0.100                           | mg/L     | 0.012                                      |
| <b>Dissolved Cobalt</b>  | 0.050                           | mg/L     | <0.003                                     |
| <b>Dissolved Copper</b>  | 0.200                           | mg/L     | 0.009                                      |
| <b>Dissolved Lead</b>    | 0.050                           | mg/L     | <0.010                                     |
| <b>Total Mercury</b>     | 0.6                             | µg/L     | <0.4                                       |
| <b>Dissolved Nickel</b>  | 0.200                           | mg/L     | 0.021                                      |
| <b>Total Zinc</b>        | 1.0                             | mg/L     | 0.361                                      |
| <b>Oil &amp; Grease</b>  | None Visible and 5 mg/L         | mg/L     | None visible<br>Broken sample<br>container |
| <b>PCBs</b>              | 50*<br>5**                      | µg/L     | <3.0                                       |
| <b>Phenols</b>           | 20                              | µg/L     | N/A  |

\*Discharge to barren land, \*\*Discharge to vegetated land

As of August 27, 2009 the analytical results for the water contained in the hazardous waste processing area did meet most of the wastewater discharge criteria however, the bottle for oil and grease broke upon arrival at the lab. The tank was not discharged, and the water was resampled in September. Results will be documented in the September report.

**LOCATION: HAZARDOUS WASTE PROCESSING AREA**

GPS COORDINATES: 0552914E 7581809 N

| Parameter         | Maximum Allowable Concentration | Units    | Sample #<br>09-23978 |
|-------------------|---------------------------------|----------|----------------------|
| pH                | 6-9                             | pH units | 6.78                 |
| Total Arsenic     | 0.100                           | mg/L     | <0.003               |
| Dissolved Cadmium | 0.010                           | mg/L     | <0.001               |
| Total Chromium    | 0.100                           | mg/L     | 0.014                |
| Dissolved Cobalt  | 0.050                           | mg/L     | <0.003               |
| Dissolved Copper  | 0.200                           | mg/L     | 0.010                |
| Dissolved Lead    | 0.050                           | mg/L     | <0.010               |
| Total Mercury     | 0.6                             | µg/L     | <0.4                 |
| Dissolved Nickel  | 0.200                           | mg/L     | 0.006                |
| Total Zinc        | 1.0                             | mg/L     | 0.227                |
| Oil & Grease      | None Visible and 5 mg/L         | mg/L     | None visible<br>50.8 |
| PCBs              | 50*<br>5**                      | µg/L     | <3.0                 |
| Phenols           | 20                              | µg/L     | N/A                  |

\*Discharge to barren land, \*\*Discharge to vegetated land

As of August 29, 2009 the analytical results for the water contained in the hazardous waste processing area did not meet the wastewater discharge criteria. The water was not discharged to land in accordance to the water use license. Water samples were collected again in September and results will be documented in the September report.

We trust that the information provided meets current requirements. Please contact the undersigned if you have any questions or concerns.

Sincerely,



Tricia Cammaart  
Environmental Sciences Group

cc: Eva Schulz (UMA)  
Daniela Loock, Kat White, Shari Reed, Dean Morrow, Ian Goode, Matt Beveridge,  
Tom Partridge (ESG)



APPENDIX A  
LABORATORY RESULTS

|                                |              |  |                        |           |
|--------------------------------|--------------|--|------------------------|-----------|
| <b>ASU #</b>                   | 12121        |  | <b>Report ID:</b>      | Cam-5 W15 |
| <b>Client:</b>                 | ASG 19578    |  | <b>Date Submitted:</b> | 3-Aug-09  |
|                                |              |  | <b>Date tested:</b>    | 3-Aug-09  |
| <b>Site:</b>                   | Cam-5        |  | <b>Date:</b>           | 4-Aug-09  |
|                                | 09-186       |  | <b>Matrix:</b>         | water     |
|                                |              |  |                        |           |
| Preliminary Report of Analysis |              |  |                        |           |
|                                |              |  |                        |           |
| Sample                         | Oil & Grease |  |                        |           |
|                                | mg/L         |  |                        |           |
|                                |              |  |                        |           |
| 09-16792                       | 5.7          |  |                        |           |
| 09-17689                       | 6.0          |  |                        |           |
|                                |              |  |                        |           |
| Blank                          | <2.0         |  |                        |           |
|                                |              |  |                        |           |
| Control                        | 13.5         |  |                        |           |
| Control Target                 | 16.1         |  |                        |           |

|                                |              |  |                        |           |
|--------------------------------|--------------|--|------------------------|-----------|
| <b>ASU #</b>                   | 12143        |  | <b>Report ID:</b>      | Cam-5 W16 |
| <b>Client:</b>                 | ASG 19600    |  | <b>Date Submitted:</b> | 7-Aug-09  |
|                                |              |  | <b>Date tested:</b>    | 11-Aug-09 |
| <b>Site:</b>                   | Cam-5        |  | <b>Date:</b>           | 12-Aug-09 |
|                                | 09-205       |  | <b>Matrix:</b>         | water     |
|                                |              |  |                        |           |
| Preliminary Report of Analysis |              |  |                        |           |
|                                |              |  |                        |           |
| Sample                         | Oil & Grease |  |                        |           |
|                                | mg/L         |  |                        |           |
|                                |              |  |                        |           |
| 09-17792                       | <2.0         |  |                        |           |
| 09-22271                       | <2.0         |  |                        |           |
| 09-22314                       | 2.3          |  |                        |           |
|                                |              |  |                        |           |
| Blank                          | <2.0         |  |                        |           |
|                                |              |  |                        |           |
| Control                        | 14.9         |  |                        |           |
| Control Target                 | 16.1         |  |                        |           |

**Client : ESG**  
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 Fax: (613) 541-6596

ASG Login No: 19600  
 Site: CAM-5  
 Client No: 09-205  
 Samples Received: 7-Aug-09  
 Date of analysis: 14-Aug-09  
 Method No: ASG 021  
 Date Reported: 14-Aug-09  
 Sheet: 1 of 1

## RESULTS OF MERCURY IN WATER ANALYSIS

| Sample I.D. | Unit | Mercury^ |
|-------------|------|----------|
| 09-22314*   | µg/L | < 0.4    |

\*Results of duplicate analysis.

^ Acid digestion performed.

# Reported at 0.4 µg/L detection limit.

## LABORATORY QA/QC

| Sample I.D.           | Unit | Mercury^      |
|-----------------------|------|---------------|
| Duplicate ; 09-22314* | µg/L | < 0.4 ; < 0.4 |
| Blank                 | µg/L | < 0.4         |
| Control Target        | µg/L | 4.0           |
| Control Sample        | µg/L | 3.9           |

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ASG Login No: 19600  
 Site: Cam-5  
 Client No: 09-205  
 Samples Received: 7-Aug-09  
 Date of analysis: 11-Aug-09  
 Method No: ASG 015  
 Date Reported: 12-Aug-09  
 Sheet No: 1 of 1

## RESULTS OF PCB IN WATER ANALYSIS

| Sample Type ** | Sample I.D. | Unit | Aroclor 1254 | Aroclor 1260 |
|----------------|-------------|------|--------------|--------------|
| W              | 22314*      | µg/L | < 3.0        | < 3.0        |

\* Average result of duplicate

## LABORATORY QA/QC

|  |                       |      |               |               |
|--|-----------------------|------|---------------|---------------|
|  | Blank                 | µg/L | < 3.0         | < 3.0         |
|  | Duplicate ; 22314*    | µg/L | < 3.0 ; < 3.0 | < 3.0 ; < 3.0 |
|  | Control Sample        | µg/L | < 3.0         | 12            |
|  | Control Sample Target | µg/L | < 3.0         | 15            |

\*\* S = Soil , C = Concrete , PC = Paint Chip , SW = Swab , P = Plant , W = Water

All results corrected for the recovery of the surrogate decachlorobiphenyl

|                                |                 |        |                        |           |        |        |        |        |
|--------------------------------|-----------------|--------|------------------------|-----------|--------|--------|--------|--------|
| <b>ASU #</b>                   | 12143           |        | <b>Report ID:</b>      | Cam-5 W17 |        |        |        |        |
| <b>Client:</b>                 | ASG 19600       |        | <b>Date Submitted:</b> | 7-Aug-09  |        |        |        |        |
|                                |                 |        | <b>Date tested:</b>    | 12-Aug-09 |        |        |        |        |
| <b>Site:</b>                   | Cam-5           |        | <b>Date:</b>           | 13-Aug-09 |        |        |        |        |
|                                | 09-205          |        | <b>Matrix:</b>         | Water     |        |        |        |        |
| Preliminary Report of Analysis |                 |        |                        |           |        |        |        |        |
| <b>Total Metals</b>            | Results in mg/L |        |                        |           |        |        |        |        |
| SAMPLE                         | Cu              | Ni     | Co                     | Cd        | Pb     | Zn     | Cr     | As     |
| 09-22314                       | -               | -      | -                      | -         | -      | 0.069  | 0.013  | <0.003 |
| Blank                          | -               | -      | -                      | -         | -      | <0.010 | <0.005 | <0.003 |
| Control                        | -               | -      | -                      | -         | -      | 3.0    | 0.87   | 0.82   |
| Control Target                 | -               | -      | -                      | -         | -      | 3.0    | 0.80   | 0.80   |
| <b>Dissolved Metals</b>        |                 |        |                        |           |        |        |        |        |
| SAMPLE                         | Cu              | Ni     | Co                     | Cd        | Pb     | Zn     | Cr     | As     |
| 09-22314                       | 0.006           | <0.005 | <0.003                 | <0.001    | <0.010 | -      | -      | -      |
| Blank                          | <0.005          | <0.005 | <0.003                 | <0.001    | <0.010 | -      | -      | -      |
| Control                        | 1.7             | 1.6    | 1.7                    | 0.82      | 8.3    | -      | -      | -      |
| Control Target                 | 1.6             | 1.6    | 1.6                    | 0.80      | 8.0    | -      | -      | -      |

|                                |              |  |                        |           |
|--------------------------------|--------------|--|------------------------|-----------|
| <b>ASU #</b>                   | 12207        |  | <b>Report ID:</b>      | Cam-5 W20 |
| <b>Client:</b>                 | ASG 19733    |  | <b>Date Submitted:</b> | 24-Aug-09 |
|                                |              |  | <b>Date tested:</b>    | 25-Aug-09 |
| <b>Site:</b>                   | Cam-5        |  | <b>Date:</b>           | 26-Aug-09 |
|                                | 09-253       |  | <b>Matrix:</b>         | water     |
| Preliminary Report of Analysis |              |  |                        |           |
| Sample                         | Oil & Grease |  |                        |           |
|                                | mg/L         |  |                        |           |
| 09-23175                       | 2.6          |  |                        |           |
| 09-23176                       | 2.3          |  |                        |           |
| 09-23177                       | 2.0          |  |                        |           |
| 09-23178                       | 7.0          |  |                        |           |
| Blank                          | <2.0         |  |                        |           |
| Control                        | 14.7         |  |                        |           |
| Control Target                 | 16.1         |  |                        |           |

|                                |              |  |                        |           |
|--------------------------------|--------------|--|------------------------|-----------|
| <b>ASU #</b>                   | 12240        |  | <b>Report ID:</b>      | Cam-5 W21 |
| <b>Client:</b>                 | ASG 19794    |  | <b>Date Submitted:</b> | 1-Sep-09  |
|                                |              |  | <b>Date tested:</b>    | 2-Sep-09  |
| <b>Site:</b>                   | Cam-5        |  | <b>Date:</b>           | 3-Sep-09  |
|                                | 09-293       |  | <b>Matrix:</b>         | water     |
|                                |              |  |                        |           |
| Preliminary Report of Analysis |              |  |                        |           |
|                                |              |  |                        |           |
| Sample                         | Oil & Grease |  |                        |           |
|                                | mg/L         |  |                        |           |
|                                |              |  |                        |           |
| 09-23978                       | 50.8         |  |                        |           |
|                                |              |  |                        |           |
| Blank                          | <2.0         |  |                        |           |
|                                |              |  |                        |           |
| Control                        | 15.9         |  |                        |           |
| Control Target                 | 16.1         |  |                        |           |

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Fax: (613) 541-6596

ASG Login No: 19794  
Site: Cam-5  
Client No: 09-293  
Samples Received: 1-Sep-09  
Date of analysis: 3-Sep-09  
Method No: ASG 037  
Date Reported: 4-Sep-09  
Page: 1 of 1

### RESULTS OF pH ANALYSIS

| Sample I.D. | pH   |
|-------------|------|
| 23978*      | 6.78 |
|             |      |

\* Averaged result of duplicates

### LABORATORY QA/QC

| Sample I.D.        | pH          |
|--------------------|-------------|
| 23978* ; Duplicate | 6.78 ; 6.78 |
| Control            | 7.00        |
| Control Target     | 7.00        |

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ASG Login No: 19794  
 Site: Cam-5  
 Client No: 09-293  
 Samples Received: 1-Sep-09  
 Date of analysis: 2-Sep-09  
 Method No: ASG 021  
 Date Reported: 4-Sep-09  
 Sheet: 1 of 1

## RESULTS OF MERCURY IN WATER ANALYSIS

| Sample I.D. | Unit | Mercury <sup>^</sup> |
|-------------|------|----------------------|
| 09-23978*   | µg/L | < 0.4                |

\*Results of duplicate analysis.

<sup>^</sup> Acid digestion performed.

# Reported at 0.4 µg/L detection limit.

## LABORATORY QA/QC

| Sample I.D.           | Unit | Mercury <sup>^</sup> |
|-----------------------|------|----------------------|
| Duplicate ; 09-23978* | µg/L | < 0.4 ; < 0.4        |
| Blank                 | µg/L | < 0.4                |
| Control Target        | µg/L | 4.0                  |
| Control Sample        | µg/L | 3.8                  |

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 Fax: (613) 541-6596

ASG Login No: 19794  
 Site: Cam-5  
 Client No: 09-293  
 Samples Received: 1-Sep-09  
 Date of analysis: 1-Sep-09  
 Method No: ASG 015  
 Date Reported: 3-Sep-09  
 Sheet No: 1 of 1

## RESULTS OF PCB IN WATER ANALYSIS

| Sample Type ** | Sample I.D. | Unit | Aroclor 1254 | Aroclor 1260 |
|----------------|-------------|------|--------------|--------------|
| W              | 23978       | µg/L | < 3.0        | < 3.0        |

## LABORATORY QA/QC

|                       |      |       |       |
|-----------------------|------|-------|-------|
| Blank                 | µg/L | < 3.0 | < 3.0 |
| Control Sample        | µg/L | < 3.0 | 12    |
| Control Sample Target | µg/L | < 3.0 | 15    |

\*\* S = Soil , C = Concrete , PC = Paint Chip , SW = Swab , P = Plant , W = Water

All results corrected for the recovery of the surrogate decachlorobiphenyl

|                                |                 |        |                        |           |        |        |        |        |
|--------------------------------|-----------------|--------|------------------------|-----------|--------|--------|--------|--------|
| <b>ASU #</b>                   | 12240           |        | <b>Report ID:</b>      | Cam-5 W24 |        |        |        |        |
| <b>Client:</b>                 | ASG 19794       |        | <b>Date Submitted:</b> | 1-Sep-09  |        |        |        |        |
|                                |                 |        | <b>Date tested:</b>    | 3-Sep-09  |        |        |        |        |
| <b>Site:</b>                   | Cam-5           |        | <b>Date:</b>           | 3-Sep-09  |        |        |        |        |
|                                | 09-293          |        | <b>Matrix:</b>         | Water     |        |        |        |        |
| Preliminary Report of Analysis |                 |        |                        |           |        |        |        |        |
| <b>Total Metals</b>            | Results in mg/L |        |                        |           |        |        |        |        |
| SAMPLE                         | Cu              | Ni     | Co                     | Cd        | Pb     | Zn     | Cr     | As     |
| 09-23978                       | -               | -      | -                      | -         | -      | 0.227  | 0.014  | <0.003 |
| Blank                          | -               | -      | -                      | -         | -      | <0.010 | <0.005 | <0.003 |
| Control                        | -               | -      | -                      | -         | -      | 3.1    | 0.83   | 0.85   |
| Control Target                 | -               | -      | -                      | -         | -      | 3.0    | 0.80   | 0.80   |
| <b>Dissolved Metals</b>        | Results in mg/L |        |                        |           |        |        |        |        |
| SAMPLE                         | Cu              | Ni     | Co                     | Cd        | Pb     | Zn     | Cr     | As     |
| 09-23978                       | 0.010           | 0.006  | <0.003                 | <0.001    | <0.010 | -      | -      | -      |
| Blank                          | <0.005          | <0.005 | <0.003                 | <0.001    | <0.010 | -      | -      | -      |
| Control                        | 1.7             | 1.7    | 1.7                    | 0.84      | 8.4    | -      | -      | -      |
| Control Target                 | 1.6             | 1.6    | 1.6                    | 0.80      | 8.0    | -      | -      | -      |

## APPENDIX B PHOTOGRAPHS

**Photo 1 (DSC01952):** Sample 09-16792 water sampling from the west insta berm at the contractor tank farm, facing south UVS building is in the background.



**Photo 2 (DSC00900):** Sample 09-23177 water sampling from the east insta berm at the contractor tank farm, facing south. The UVS Building is in the background.



**Photo 3 (DSC01951):** Sample 09-17689 water sampling from the east insta berm at the contractor tank farm, facing south west. Sample was taken from the front corner shown in the photo.



**Photo 4 (DSC00901):** Sample 09-23178 water sampling from the east insta berm at the contractor tank farm, facing south west. Sample was taken from the front corner shown in the photo.





**Photo 5 (DSC01618):** Sample 09-17792 and 09-23817 where water has pooled. Sample was taken from the Key Trench in the northwest corner of the landfarm. Photo is taken facing north.



**Photo 6 (DSC01620):** Sample 09-22271 and 09-23816 photo is taken from the top of the western berm of the land farm looking east along the trench dug for removing upwelling groundwater in the landfarm from entering into the discharging water.



**Photo 7 (DSC00799):** Sample 09-22314 water from MT West excavation was pumped into a 6000 gallon holding tank. Sample was taken from the tank shown in the picture below. In the background is the billboard.



**Photo 8 (DSC00906):** Samples 09-23886 and 09-23978. Photo was taken looking west towards the Hazardous Waste Processing area water tank where lower site POL Pad South was located prior to deconstruction and excavation.



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Douglas Craig  
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DEW Line Cleanup PMO  
350 Albert Street, Suite 1720  
Ottawa ON K1A 0K3

Friday, November 6, 2009

**RE: Analytical Results for Wastewater Samples Collected at CAM-5 in September, 2009**

The following report summarizes results of the analysis of wastewater samples as per the CAM-5 (Mackar Inlet) DEW Line Cleanup Project (DLCU) Specifications.

The CAM-5 specifications require that “wash water, melt water collection, rinse water resulting from the cleaning of fuel tanks and pipelines, and/or any other liquid effluent stream” meet the following guidelines prior to their discharge to land (01560.4.1):

| Parameter              | Maximum Allowable Concentration | Units    |
|------------------------|---------------------------------|----------|
| pH                     | 6-9                             | pH units |
| Total arsenic (As)     | 0.100                           | mg/L     |
| Dissolved cadmium (Cd) | 0.010                           | mg/L     |
| Total chromium (Cr)    | 0.100                           | mg/L     |
| Dissolved cobalt (Co)  | 0.050                           | mg/L     |
| Dissolved copper (Cu)  | 0.200                           | mg/L     |
| Dissolved lead (Pb)    | 0.050                           | mg/L     |
| Total mercury (Hg)     | 0.6                             | µg/L     |
| Dissolved nickel (Ni)  | 0.200                           | mg/L     |
| Total zinc (Zn)        | 1.000                           | mg/L     |
| Oil & grease           | 5 mg/L and None visible         | mg/L     |
| PCBs                   | 0.050*<br>0.005**               | mg/L     |
| Phenols                | 0.020                           | mg/L     |

\*Discharge to barren land, \*\*Discharge to vegetated land

### *Phenols*

The wastewater samples collected by ESG at CAM-5 in September, 2009 were not analyzed for phenols but they were analyzed for oil and grease. Research conducted by ESG<sup>1</sup> has determined that a) no federal, territorial or provincial criteria exist for the discharge of wastewater containing phenols to land at a minimum distance of 30-m from natural drainage courses b) the maximum concentration of phenols in DLCU wastewater to date (2.44 mg/L) is below the LC<sub>50</sub> for freshwater fish and crustaceans and below the oral and dermal LD<sub>50</sub>s for rats and rodents and c) phenols in excess of the maximum allowable concentration (MAC) have historically co-occurred with a visible oil & grease sheen and/or with an exceedance of the MAC for oil & grease. This information, and a subsequent decision to not test for phenols, has been presented to the NWB. To date, verbal agreement from the NWB has been received, but the project is awaiting written confirmation of the decision to suspend testing for phenols.

### WASTEWATER SAMPLES

Six wastewater samples were collected at CAM-5 and analyzed in September 2009. A summary of the details of these results follows.

| <b>Sample Number</b> | <b>Sample Location</b>  | <b>GPS Coordinates</b> | <b>Sampling Date</b> |
|----------------------|---|------------------------|----------------------|
| 09-24068             | Hazardous Waste Processing Area   | 16W 0552914<br>7581809 | September 2,<br>2009 |
| 09-24069             | Hazardous Waste Processing Area   | 16W 0552914<br>7581809 | September 2,<br>2009 |
| 09-24078             | Hazardous Waste Processing Area   | 16W 0552914<br>7581809 | September 8,<br>2009 |
| 09-24070             | Water collecting on the west side of the landfarm, where a trench has been dug and bermed off | 16W 0553044<br>7581237 | September 2,<br>2009 |
| 09-24071             | Water collecting on the west side of the landfarm, where a trench has been dug and bermed off | 16W 0553044<br>7581237 | September 2,<br>2009 |
| 09-24072             | Water pooled in NW corner of landfarm   | 16W 0553042<br>7581275 | September 2,<br>2009 |

A summary of the results for the parameters tested is provided below. Laboratory results and photographs are provided in Appendices A and B, respectively.

---

<sup>1</sup> Environmental Sciences Group. *DEW Line Clean Up Project – Phenols in Wastewater*. June, 2007.



**LOCATION: HAZARDOUS WASTE PROCESSING AREA**

GPS COORDINATES: 16W 0552914 7581809

| Parameter         | Maximum Allowable Concentration | Units    | Sample #<br>09-22868        |
|-------------------|---------------------------------|----------|-----------------------------|
| pH                | 6-9                             | pH units | N/A                         |
| Total Arsenic     | 0.100                           | mg/L     | N/A                         |
| Dissolved Cadmium | 0.010                           | mg/L     | N/A                         |
| Total Chromium    | 0.100                           | mg/L     | N/A                         |
| Dissolved Cobalt  | 0.050                           | mg/L     | N/A                         |
| Dissolved Copper  | 0.200                           | mg/L     | N/A                         |
| Dissolved Lead    | 0.050                           | mg/L     | N/A                         |
| Total Mercury     | 0.6                             | µg/L     | N/A                         |
| Dissolved Nickel  | 0.200                           | mg/L     | N/A                         |
| Total Zinc        | 1.0                             | mg/L     | N/A                         |
| Oil & Grease      | None Visible and 5 mg/L         | mg/L     | <b>Non Visible<br/>11.8</b> |
| PCBs              | 50*<br>5**                      | µg/L     | N/A                         |
| Phenols           | 20                              | µg/L     | N/A                         |

\*Discharge to barren land, \*\*Discharge to vegetated land

**LOCATION: HAZARDOUS WASTE PROCESSING AREA**

GPS COORDINATES: 16W 0552914 7581809

| Parameter         | Maximum Allowable Concentration | Units    | Sample #<br>09-22869        |
|-------------------|---------------------------------|----------|-----------------------------|
| pH                | 6-9                             | pH units | N/A                         |
| Total Arsenic     | 0.100                           | mg/L     | N/A                         |
| Dissolved Cadmium | 0.010                           | mg/L     | N/A                         |
| Total Chromium    | 0.100                           | mg/L     | N/A                         |
| Dissolved Cobalt  | 0.050                           | mg/L     | N/A                         |
| Dissolved Copper  | 0.200                           | mg/L     | N/A                         |
| Dissolved Lead    | 0.050                           | mg/L     | N/A                         |
| Total Mercury     | 0.6                             | µg/L     | N/A                         |
| Dissolved Nickel  | 0.200                           | mg/L     | N/A                         |
| Total Zinc        | 1.0                             | mg/L     | N/A                         |
| Oil & Grease      | None Visible and 5 mg/L         | mg/L     | <b>Non Visible<br/>16.1</b> |
| PCBs              | 50*<br>5**                      | µg/L     | N/A                         |
| Phenols           | 20                              | µg/L     | N/A                         |

\*Discharge to barren land, \*\*Discharge to vegetated land

**LOCATION: HAZARDOUS WASTE PROCESSING AREA**

GPS COORDINATES: 16W 0552914 7581809

| Parameter         | Maximum Allowable Concentration | Units    | Sample #<br>09-22878       |
|-------------------|---------------------------------|----------|----------------------------|
| pH                | 6-9                             | pH units | N/A                        |
| Total Arsenic     | 0.100                           | mg/L     | N/A                        |
| Dissolved Cadmium | 0.010                           | mg/L     | N/A                        |
| Total Chromium    | 0.100                           | mg/L     | N/A                        |
| Dissolved Cobalt  | 0.050                           | mg/L     | N/A                        |
| Dissolved Copper  | 0.200                           | mg/L     | N/A                        |
| Dissolved Lead    | 0.050                           | mg/L     | N/A                        |
| Total Mercury     | 0.6                             | µg/L     | N/A                        |
| Dissolved Nickel  | 0.200                           | mg/L     | N/A                        |
| Total Zinc        | 1.0                             | mg/L     | N/A                        |
| Oil & Grease      | None Visible and 5 mg/L         | mg/L     | <b>Non Visible<br/>9.8</b> |
| PCBs              | 50*<br>5**                      | µg/L     | N/A                        |
| Phenols           | 20                              | µg/L     | N/A                        |

\*Discharge to barren land, \*\*Discharge to vegetated land

As of September 8<sup>th</sup>, the samples from the Hazardous Waste Processing Area (09-22868, 09-22869, 09-22878) did not meet the waste water discharge criteria for oil and grease and therefore the water was not discharged to land. These samples will be treated and re-sampled in 2010.

**LOCATION: WATER COLLECTING ON THE WEST SIDE OF THE LANDFARM, WHERE  
A TRENCH HAS BEEN DUG AND BERMED OFF**

GPS COORDINATES: 16W 0553044 7581237

| Parameter         | Maximum Allowable Concentration | Units    | Sample #<br>09-22870 |
|-------------------|---------------------------------|----------|----------------------|
| pH                | 6-9                             | pH units | N/A                  |
| Total Arsenic     | 0.100                           | mg/L     | N/A                  |
| Dissolved Cadmium | 0.010                           | mg/L     | N/A                  |
| Total Chromium    | 0.100                           | mg/L     | N/A                  |
| Dissolved Cobalt  | 0.050                           | mg/L     | N/A                  |
| Dissolved Copper  | 0.200                           | mg/L     | N/A                  |
| Dissolved Lead    | 0.050                           | mg/L     | N/A                  |
| Total Mercury     | 0.6                             | µg/L     | N/A                  |
| Dissolved Nickel  | 0.200                           | mg/L     | N/A                  |
| Total Zinc        | 1.0                             | mg/L     | N/A                  |
| Oil & Grease      | None Visible and 5 mg/L         | mg/L     | Non Visible<br><2.0  |
| PCBs              | 50*<br>5**                      | µg/L     | N/A                  |
| Phenols           | 20                              | µg/L     | N/A                  |

\*Discharge to barren land, \*\*Discharge to vegetated land

**LOCATION: WATER COLLECTING ON THE WEST SIDE OF THE LANDFARM, WHERE  
A TRENCH HAS BEEN DUG AND BERMED OFF**  
GPS COORDINATES: 16W 0553044 7581237

| Parameter         | Maximum Allowable Concentration | Units    | Sample #<br>09-22871 |
|-------------------|---------------------------------|----------|----------------------|
| pH                | 6-9                             | pH units | N/A                  |
| Total Arsenic     | 0.100                           | mg/L     | N/A                  |
| Dissolved Cadmium | 0.010                           | mg/L     | N/A                  |
| Total Chromium    | 0.100                           | mg/L     | N/A                  |
| Dissolved Cobalt  | 0.050                           | mg/L     | N/A                  |
| Dissolved Copper  | 0.200                           | mg/L     | N/A                  |
| Dissolved Lead    | 0.050                           | mg/L     | N/A                  |
| Total Mercury     | 0.6                             | µg/L     | N/A                  |
| Dissolved Nickel  | 0.200                           | mg/L     | N/A                  |
| Total Zinc        | 1.0                             | mg/L     | N/A                  |
| Oil & Grease      | None Visible and 5 mg/L         | mg/L     | Non Visible<br><2.0  |
| PCBs              | 50*<br>5**                      | µg/L     | N/A                  |
| Phenols           | 20                              | µg/L     | N/A                  |

\*Discharge to barren land, \*\*Discharge to vegetated land

**LOCATION: WATER POOLED IN NW CORNER OF LANDFARM**  
GPS COORDINATES: 16W 0553042 7581275

| Parameter         | Maximum Allowable Concentration | Units    | Sample #<br>09-22872 |
|-------------------|---------------------------------|----------|----------------------|
| pH                | 6-9                             | pH units | N/A                  |
| Total Arsenic     | 0.100                           | mg/L     | N/A                  |
| Dissolved Cadmium | 0.010                           | mg/L     | N/A                  |
| Total Chromium    | 0.100                           | mg/L     | N/A                  |
| Dissolved Cobalt  | 0.050                           | mg/L     | N/A                  |
| Dissolved Copper  | 0.200                           | mg/L     | N/A                  |
| Dissolved Lead    | 0.050                           | mg/L     | N/A                  |
| Total Mercury     | 0.6                             | µg/L     | N/A                  |
| Dissolved Nickel  | 0.200                           | mg/L     | N/A                  |
| Total Zinc        | 1.0                             | mg/L     | N/A                  |
| Oil & Grease      | None Visible and 5 mg/L         | mg/L     | Non Visible<br><2.0  |
| PCBs              | 50*<br>5**                      | µg/L     | N/A                  |
| Phenols           | 20                              | µg/L     | N/A                  |

\*Discharge to barren land, \*\*Discharge to vegetated land

As of September 2<sup>nd</sup>, samples 09-22870, 09-22871, 09-22872, met the waste water discharged criteria and therefore all water was discharged to the INAC approved discharge location for the Landfarm.

We trust that the information provided meets current requirements. Please contact the undersigned if you have any questions or concerns.

Sincerely,

A handwritten signature in black ink, appearing to read 'Casucci'.

Candice Casucci  
Environmental Sciences Group

cc: Eva Schulz (UMA)  
Daniela Loock, Kat White, Shari Reed, Dean Morrow, Ian Goode, Tom Partridge  
(ESG)



# APPENDIX A LABORATORY RESULTS

|                                |              |  |                        |           |
|--------------------------------|--------------|--|------------------------|-----------|
| <b>ASU #</b>                   | 12262        |  | <b>Report ID:</b>      | Cam-5 W27 |
| <b>Client:</b>                 | ASG 19821    |  | <b>Date Submitted:</b> | 4-Sep-09  |
|                                |              |  | <b>Date tested:</b>    | 4-Sep-09  |
| <b>Site:</b>                   | Cam-5        |  | <b>Date:</b>           | 8-Sep-09  |
|                                | 09-316       |  | <b>Matrix:</b>         | water     |
|                                |              |  |                        |           |
| Preliminary Report of Analysis |              |  |                        |           |
|                                |              |  |                        |           |
| Sample                         | Oil & Grease |  |                        |           |
|                                | mg/L         |  |                        |           |
|                                |              |  |                        |           |
| 09-24068                       | 11.8         |  |                        |           |
| 09-24069                       | 16.1         |  |                        |           |
|                                |              |  |                        |           |
| Blank                          | <2.0         |  |                        |           |
|                                |              |  |                        |           |
| Control                        | 18.0         |  |                        |           |
| Control Target                 | 16.1         |  |                        |           |

|                                |              |  |                        |           |
|--------------------------------|--------------|--|------------------------|-----------|
| <b>ASU #</b>                   | 12261        |  | <b>Report ID:</b>      | Cam-5 W26 |
| <b>Client:</b>                 | ASG 19820    |  | <b>Date Submitted:</b> | 4-Sep-09  |
|                                |              |  | <b>Date tested:</b>    | 4-Sep-09  |
| <b>Site:</b>                   | Cam-5        |  | <b>Date:</b>           | 8-Sep-09  |
|                                | 09-317       |  | <b>Matrix:</b>         | water     |
|                                |              |  |                        |           |
| Preliminary Report of Analysis |              |  |                        |           |
|                                |              |  |                        |           |
| Sample                         | Oil & Grease |  |                        |           |
|                                | mg/L         |  |                        |           |
|                                |              |  |                        |           |
| 09-24070                       | <2.0         |  |                        |           |
| 09-24071                       | <2.0         |  |                        |           |
| 09-24072                       | <2.0         |  |                        |           |
|                                |              |  |                        |           |
| Blank                          | <2.0         |  |                        |           |
|                                |              |  |                        |           |
| Control                        | 18.0         |  |                        |           |
| Control Target                 | 16.1         |  |                        |           |

## APPENDIX B PHOTOGRAPHS

**Photo 1 (DSC00932): Sample 09-24068**  
Photo is taken looking west towards the Hazardous Waste Processing area water tank, where the lower site POL Pad South was located prior to deconstruction and excavation.



**Photo 2 (DSC00933): Sample 09-24069** Photo is taken looking west towards the Hazardous Waste Processing area water tank, where the lower site POL Pad South was located prior to deconstruction and excavation.



**Photo 3 (DSC01620): Sample 09-24070/71** Photo is taken from the top of the western berm of the Landfarm looking east along the trench dug for removing upwelling groundwater in the landfarm, the area is also bermed off to prevent any surface water from the landfarm from entering into the discharging water. CAM-5, August 5, 2009.



**Photo 4 (DSC01618): Sample 09-24072** Sample taken from the Key Trench in the North-West corner of the landfarm. Photo here is taken facing north. Lower Site, CAM-5, August 5, 2009.



**Photo 5 (DSC00932): Sample 09-24078** Photo is taken looking west towards the Hazardous Waste Processing area water tank, where the lower site POL Pad South was located prior to deconstruction and excavation.

