TAHERA
DIAMOND CORPORATION

Kevin Buck
Manager, Water Resources Division
INAC-AINC
Nunavut Regional Office
PO Box 2200
Iqaluit, NU
X0A 0H0

December 8, 2008

Dear Mr. Buck,

Attached you will find a report outlining Tahera's respones to concenrs raised by INAC with regard to our 2008 Anuual Water License Report, INAC August 2008 Field Inspection and our previsous communication with regarding handling of run-off from within the secondary containment bersm for the fuel and waste storage at the Jericho Mine Site.

Specifically, this report responds to the concernes expressed in your letter sent to me on October 21, 2008.

I trust that this report will satisfy all current concerns with regard to the points raised in your letter.

As you are also aware, Tahera is at a point where it's financial resources have been depleated to the point that it cannot continue to support the Jericho Site Care and Maintaneance, nor it's normal corporate duties. It is entirely likely that beyond Decmeber 15th, Tahera will no longer be able to employee anyone either at site, or off. This will create a scenerio where it may be impossible to continue discussing these issues and certainly implementing meaningfull solutions will no longer be possible.

Discussions have taken place to transition the site to INAC care and mainenance should it be requested and warranted by the Minister.

I will no longer be employeed after the 15th, nor will our Mine Manger Lee Staples or any of our Officers or Directors. However, I have included my personal cell and home phone numbers in the report in case there is any issue that needs further imput from former Tahera staff. Please do not hesitate to call if needed.

Sincerely,

Mike Johnson
Director of Operations
Tahera Diamond Corporation

Cc: Melissa Joy, Water Resources Office
Bernie MacIssac, Manager, INAC Field Operation Division
Peter Kusugak, INAC Field Operation Division
Ian Rumbolt, INAC Water Resources Division
Peter Gillin, Tahera Diamond Corporation, Chief Restructuring Officer
Greg Missal, Tahera Diamond Corporation, VP Corporate Affairs
Lee Staples, Tahera Diamond Corporation, Mine Manager

TAHERA RESPONSE TO INAC CONCERNS;

INAC REVIEW OF TYPE A WATER LICENSE ANNUAL REPORT AND AUGUST 2008 INAC SITE INSPECTION

Tahera Diamond Corporation

Compiled by: Mike Johnson
Director of Operations

December 8, 2008

Executive Summary

Tahera has reviewed concerns by the department of Indian and Northern Affairs Canada ("INAC") presented in a letter form Kevin Buck on October 21, 2008.

The concerns centred around a review of the 2008 Water License Annual Report, the August 2008 INAC Field Inspection and the September 9, 2008 correspondence with INAC in regard to run-off handling within our fuel and waste secondary containment berms.

In summary;

Tahera's Current Corporate Health

- Tahera currently is running out of financial resources, is still under creditor protection and no longer able to continue to maintain the site Care and Maintenance ("C&M")

Water License Review

- Tahera has submitted all the C&M documentation that it has in the form of the 2008 Contingency Plan update and the 2008 Closure and Reclamation Plan update; a C&M Operating Guide should be created
- An attached list of remediation activities associated with all unauthorized discharges is contained in this report
- Future Annual Water License Reports should have an altered title page for Appendix A
- Tahera has investigated the Lynne Lake ammonia and nitrate levels and believes that there is no significant negative impact to the lake, that the ammonia levels are less than 1% of CCME guidelines, that levels have been decreasing since 2006 and that small amount of contamination is caused by dust, not the AN pad

INAC Field Operations Inspection

- The practice of transferring potentially weakly contaminated run-off water from the secondary containment berms to the Processed Kimberlite Containment Area ("PKCA") has a negligible impact on the water quality within the PKCA due to very low concentrations of diesel hydrocarbons and conforms to Part F, Item 4d of the Water License
- Leakage from some piping connectors and valves, and fuelling stations have contributed to staining of the ground in these areas, however the bulk of the fuel contamination has been due to human error during handling of fuel; further maintenance and operational procedures and management due diligence is required for C&M
- Fuel drums are now stored only within the Waste Transfer Area ("WTA"), which is lined and bermed
- Improper maintenance and house keeping procedures were observed during the INAC inspection, particularly around the Main Tank Farm fuelling and transfer

stations; this has been rectified with better procedures and more diligent housekeeping
- The warehouse gravel floor has evidence of staining from small spills; most have been cleaned up and the remainder should be cleaned as part of any future C&M activities at the site
- Areas of bulk waste storage were poorly labelled during the inspection but this has since been rectified with the WTA reorganized and labelled as well as inventoried on a monthly basis
- A discrepancy was noted in Tahera's Contingency Plan stated procedure for handling hydrocarbon contaminated soil; this is clarified to state that it will be contained in the WTA until such a time it can be land farmed or transported offsite for proper disposal and should be reflected in any update to the Contingency Plan

September 2008 Transfer of Potentially Diesel Contaminated Run-off Water to the PKCA Area

- Tahera believes the transfer was necessary in order to preserve the secondary containment volumes that protect the environment from massive discharges of deleterious substances
- Tahera believes the practise is allowed under our Water License
- The concentrations of hydrocarbons in the water is very low and in 663,000 litres of transfer, only 3-4 litres of hydrocarbons are believed to have been transferred to the PKCA

Plan of Action Request

- Due to Tahera's uncertain future, it is unfortunate that no significant plans of action can be committed to; suggestions for actions are discussed

Table of Contents

Table of Figures

List of Tables

1.0: Introduction

Tahera Diamond Corporation's ("Tahera" or "the Company") Jericho Mine ("Jericho") has undergone significant changes since the start of 2008. At the time of writing, it is doubtful that the company will continue to function as a meaningful corporate entity at all into 2009. This makes the future stewardship of the Jericho Project uncertain and puts it in jeopardy of transitioning from C&M to reclamation within the next few years.

During such times, there is no doubt that systems and personnel will change and these changes can lead to breakdowns in proper handling of safety, environmental and operational issues. Personnel move on and discontinuities of knowledge can develop. Financial resources become limited creating further pressure to do more for even less. This is a period where the site staffing must remain vigilant in prioritizing the completion of the most significant tasks which remain and adequately protecting the environment from damage.

In February 2008, Tahera ceased mining operations after filing for creditor protection on January 15, 2008. The shutdown was intended to be short term hiatus but by early March the window to arrange an operations restart had passed. Tahera utilized the winter road to demobilize most contractors from the site. The plant continued to process from stockpiles until late April, with the final shutdown of the plant in early May. Because of this staged shutdown, the transition to C&M was gradual. This gradual transition was helpful to coordinate site operations, but had the potential of making the administration and regulatory notice of the transition seem lacking.

The period of C&M from May to November 2008 was intended to allow a sale of the company and or the project in order to allow Tahera to exit from creditor protection. Unfortunately no finalized purchase was negotiated. As of December 1, the Company only has the financial resources to support the project and any employment until December 15th. Beyond this point the company will likely cease to exist in any meaningful sense with regard to Jericho. In what form and what level the Company may survive at all beyond this time is unknown.

In August 2008, INAC Inspector Mellissa Joy was stationed at Tahera's site while completing various inspections in the area, including the Jericho annual inspection. Several concerns were brought up at that point and discussed with Melissa while on site. A letter summarizing the concerns of this inspection was to be sent to Tahera and a general time frame of 60 days was discussed for a mitigation plan.

During late August and early September, the Jericho site experience record rainfall. Although Tahera did not record quantitative precipitation data during this period, annually recorded stream flows in the area stayed above normal freshet levels for more than two weeks. During this period Tahera completed their yearly PKCA discharge. As well, we were forced to deal with secondary containment berms filling with water very quickly.

The handling of the run-off water from secondary containment berms was an issue discussed with the INAC inspector in early August. During operation, Jericho Staff had been transferring the material to the east end of the East Cell of the PKCA. It was known that the water in some containment was contaminated by diesel, but efforts were made to reduce the amount of contaminants transferred. It was believed that the East Cell of the PKCA would provide the best solution to trapping any small amount of fuel that was transferred. At the time of discussion it was anticipated that this would not be an issue until freshet 2009 allowing Tahera time to explore options such as activated carbon filtration.

This issue was discussed again with Kevin Buck and Bernie MacIssac in very early September as Jericho staff believed that there was a possibility of secondary containment compromise from rising water levels which were a result of extraordinary weather conditions. It was believed during that discussion that time existed to come up with an alternative plan for handling this run-off. But on September 2nd site staff believed that the levels had reached an emergency situation and after discussion with Mike Johnson, Jericho staff were given authorized to transfer the run-off from the secondary containment berms to the East Cell of the PKCA.

On October 21 2008, Tahera received communication from INAC's Kevin Buck with regard to a review of the companies 2007 Annual Water Licence Report and a summary of the issues from the August 2008 INAC inspection.

This document forms a response to the issues raised in the October 21 letter as well as the September discussion of the secondary containment run-off handling and the August INAC inspection.

2.0: Concerns raised in INAC review of Water License Annual Report

2.1: Care and Maintenance Plan and Related Documents

The submission of a Care and Maintenance Plan ("C & M") and other applicable monitoring plans for the site, as any proposed plan may affect present water license monitoring requirements.

In March 2008, a series of updated annual reports were submitted to Nunavut Water Board and updated with C&M process for 2008. No explicit C&M plan was submitted.

The reports written and submitted in early 2008;

- 2007 Contingency Report Update
- 2007 Closure and Reclamation (CRP) Plan Annual Report

2.2 Remediation Plan for unauthorized Discharges

The undertaking of an inspection program to determine the status of remediation activity associated with unauthorized discharges Tahera listed in the Annual Report. The program must also determine future remediation activity and be referenced in the 2008 Annual Report.

The 2008 Water License Annual Report included a list of 21 discharges from 2007. The following chart summarizes them.

Table 1: Unauthorized Discharges in 2007

TaheraID	YearID	Date	Year-Month	Responsible Company	Location	Product	Equipment	Secondary Containment	Class	Quantity	Units	Cause of Spill
38	2007-038	01-Jan-07	2007-01	Nuna	Tire laydown area	Propylene Glycol			Chem	40	L	Cube tipped over
39	2007-039	06-Mar-07	2007-03	Nuna	Tankfarm Tank#7	Diesel		Main Farm	HC	2,000	L	Overfilled tank
40	2007-040	23-Mar-07	2007-03	Nuna	Airstrip Tanks	Diesel	Bulk Tanks	Airstrip Farm	HC	47,000	L	Hose accidentally opened valve leaking fuel into secondary containment
41	2007-041	26-Mar-07	2007-03	Nuna	Truck Line-up	Hydraulic oil	Haul Truck		HC	25	L	Brake seal failed
42	2007-042	27-Mar-07	2007-03	Nuna	Main Generator Fuel Tank	diesel	Generators		HC	250	L	overfilled tank
43	2007-043	3-Apr-07	2007-04	Nuna	Fuel Transfer Area	diesel	Pickup	Main Farm	HC	100	L	Fuel truck drove away with hose attached
44	2007-044	24-Jun-07	2007-06	Tahera	Main Powerhouse	motor oil	Generators		HC	250	L	camloc vibrated loose
45	2007-045	12-Aug-07	2007-08	Nuna	Fuel Island Day Tank	diesel		Main Farm	HC	50	L	pump not shut off
46	2007-046	09-Sep-07	2007-09	Nuna	Pit	Hydraulic oil	5130 Shovel		HC	1,100	L	Hose ruptured
47	2007-047	09-Sep-07	2007-09	Nuna	Pit	Hydraulic oil	5130 Shovel		HC	1,100	L	Hose ruptured
48	2007-048	07-Oct-07	2007-10	Nuna	Pit	Hydraulic oil	5130 Shovel		HC	900	L	Hose ruptured
49	2007-049	07-Oct-07	2007-10	McCaws	Parking area (truck lineup)	Motor oil (pickup truck)	Pickup		HC	15	L	Bung fell out of oil pan
50	2007-050	27-Oct-07	2007-10	McCaws	Apron of Jericho Pit	Diesel	Drill		HC	200	L	Drill Fire
51	2007-051	26-Nov-07	2007-11	Tahera	Ambulance	Diesel	Pickup	Main Farm	HC	5	L	Overfilled tank
52	2007-052	01-Dec-07	2007-12	Tahera		FPK			KIMB	200	L	Compressed air in line
53	2007-053	02-Dec-07	2007-12	Nuna	992C Loader main pump line failure	Hydraulic Oil	992C Loader		HC	150	L	main pump line failure
54	2007-054	02-Dec-07	2007-12	Nuna	992C Loader main pump line failure	Hydraulic Oil	992C Loader		HC	120	L	main pump line failure
55	2007-055	04-Dec-07	2007-12	Tahera	sludge dump	Raw Sewage			BIO	8,000	L	inapproriate disposal of raw sewage
56	2007-056	09-Dec-07	2007-12	Tahera	Kimberlite Discharge Line	East / S. East Dam	PKCA Line		KIMB	1,000	L	leaking valve
57	2007-057	21-Dec-07	2007-12	Nuna	Sewage Treatment Plan	Raw Sewage	STP		BIO	4,370	L	broken line
58	2007-058	26-Dec-07	2007-12	McCaws	Jericho Pit	Hydraulic Oil	Drill		HC	100	L	Drill Fire

Table 2 summarizes the remediation work completed for each of the discharges.

Table 2: Remediation actions related to the 2007 unauthorized Discharges

YearID	Date	Location	Product	Quantity	Units	Cause of Spill	Immediate Action	Waste Product Handling
2007-038	1-Jan-07	Tire lay down area	Propylene Glycol	40	L	Cube tipped over	Contaminated material placed in WTA	Unknown
2007-039	6-Mar-07	Tank farm Tank#7	Diesel	2,000	L	Overfilled tank	Hand shovels and spill pads were used to capture as much diesel and contaminated material as possible	Captured contaminants were drummed and stored in the Waste Transfer area
2007-040	23-Mar-07	Airstrip Tanks	Diesel	47,000	L	Hose accidentally opened valve leaking fuel into secondary containment	Bulk fuel was drawn off out of a sump dug in the lowest part o the berm. Fuel was also absorbed using absorbent pads in areas where pooling was insufficient for vac truck recovery.	Approximately 35,000L of fuel was contained in a bulk tank within the WTA. Further bulk material was removed over a period of time afterwords and stored in the WTA, although no quantitative records woere kept. No contaminated gravel was removed from the berm. The gravel remains in the berm to this point and for a period it was raked to promote biodegradation of the hydrocarbons.
2007-041	26-Mar-07	Truck Line-up	Hydraulic oil	25	L	Brake seal failed	Most of the oil was contained within the housing of the equipment. Any that escaped was captured with spill pads and any contaminated snow was also captured	Contaminated spill pads and snow were incinerated
2007-042	27-Mar-07	Main Generator Fuel Tank	diesel	250	L	overfilled tank	Contaminated material captured in drums and transported to WTA	Stored in WTA
2007-043	3-Apr-07	Fuel Transfer Area	diesel	100	L	Fuel truck drove away with hose attached	no data	Unknown
2007-044	24-Jun-07	Main Powerhouse	motor oil	250	L	cam-loc vibrated loose	Spill pads and contaminated soil removed	unknown
2007-045	12-Aug-07	Fuel Island Day Tank	diesel	50	L	pump not shut off	Spill area was cleaned and contaminated materials were captured	unknown
2007-046	9-Sep-07	Pit	Hydraulic oil	1,100	L	Hose ruptured	Area Surveyed	Contaminated material excavated, crushed and used for stemming in Pit
2007-047	9-Sep-07	Pit	Hydraulic oil	1,100	L	Hose ruptured	Area Surveyed	Contaminated material excavated, crushed and used for stemming in Pit
2007-048	7-Oct-07	Pit	Hydraulic oil	900	L	Hose ruptured	Area Surveyed	Buried and frozen in waste rock dump area that drains towards the pit
2007-049	7-Oct-07	Parking area (truck lineup)	Motor oil (pickup truck)	15	L	Bung fell out of oil pan	Shut off truck, laid absorbent padding, replaced missing bung	Soak pads and contaminated snow were collected in garbage bags
2007-050	27-Oct-07	Apron of Jericho Pit	Diesel	200	L	Drill Fire	Fire was controlled, absorbent booms were laid around fire area	Waste rock pad was excavated and contaminated material was buried in dump to freeze
2007-051	26-Nov-07	Ambulance	Diesel	5	L	Overfilled tank	Spill was reported and area cleaned of contaminated material	unknown
2007-052	1-Dec-07		FPK	200	L	Compressed air in line	Spilled material froze immediately and was easily recovered	Recovered material was placed inside the tailings area
2007-053	2-Dec-07	992C Loader main pump line failure	Hydraulic Oil	150	L	main pump line failure	Spill pads were placed to soak up what little oil had not immediately drained into the blasted kimberlite	Kimberlite was processed through the plant
2007-054	2-Dec-07	992C Loader main pump line failure	Hydraulic Oil	120	L	main pump line failure	Spill pads were placed to soak up what little oil had not immediately drained into the blasted kimberlite	Kimberlite was processed through the plant
2007-055	4-Dec-07	sludge dump	Raw Sewage	8,000	L	inappropriate disposal of raw sewage	Dumping of raw sewage ceased immediately, investigation to determine quantity and cause	It was determined that natural drainage of the sludge pits is towards the pit and alternative drainage will be monitored as part of the annual Seepage survey
2007-056	9-Dec-07	Kimberlite Discharge Line	East / S. East Dam	1,000	L	leaking valve	Failed flange was isolated by opening upstream discharge point	procedure was implemented so that discharge points were checked 4 times daily
2007-057	21-Dec-07	Sewage Treatment Plan	Raw Sewage	4,370	L	broken line	Spilled material was immediately vacuumed, steel line and ball valve were installed for safety shut off	Sewage Treatment Plant was thoroughly cleaned, all spilt material was contained inside the plant
2007-058	26-Dec-07	Jericho Pit	Hydraulic Oil	100	L	Drill Fire	Fire was controlled, absorbent booms were laid around fire area	contaminated snow and loose rock was contained in a drum and stored in the WTA, unblasted granite under the fire area will isolated after it blasted and buried in the rock dump to be frozen

In the cases where the remediation required storage of contaminated soil, contaminated water, waste products or hazardous materials, these materials have been stored in the lined and bermed Waste Transfer Area. Depending on the product type and its container type, the material may have been transferred off-site and disposed of by Hazco or remain in the WTA.

In the case of containerized products (cubed, drums, etc), the material would have been shipped off site by Hazco in either March 2007 or 2008. In the case of bulk product, such as contaminated soil or larger volumes of contaminated hydrocarbons, the material remains stored in the Waste Transfer Area. With limited financial resources and limited staffing due to C&M transition during the spring of 2008, the disposal of this material was deferred in anticipation of eventual on-site remediation.

2.2.1 Unauthorized Discharges to-date in 2008

As an interim report for the 2008 unauthorized discharges, Table 3 lists the discharges and includes the immediate remediation completed for each.

Table 3: Unauthorized Discharges to-date in 2008

TaheraID	YearID	Date	Product	Quantity	Units	Cause of Spill	Immediate Action	Waste Product Handling
38	2007-038	1-Jan-07	Propylene Glycol	40	L	Cube tipped over	Contaminated material placed in WTA	Unknown
39	2007-039	6-Mar-07	Diesel	2,000	L	Overfilled tank	Hand shovels and spill pads were used to capture as much diesel and contaminated material as possible	Captured contaminants were drummed and stored in the Waste Transfer area
40	2007-040	23-Mar-07	Diesel	47,000	L	Hose accidentally opened valve leaking fuel into secondary containment	Bulk fuel was drawn off out of a sump dug in the lowest part o fthe berm. Fuel was also absorbed using absorbant pads in areas where pooling was insufficient for vac truck recovery.	Approximately 35,000L of fuel was contained in a bulk tank within the WTA. No contaminated gravel was removed from the berm. The gravel remains in the berm to this point and for a period is was raked to promote biodegradation of the hydrocarbons.
41	2007-041	26-Mar-07	Hydraulic oil	25	L	Brake seal failed	Most of the oil was contained within the housing of the equipment. Any that escaped was captured with spill pads and any contaminated snow was also captured	Contaminated spill pads and snow were incinerated
42	2007-042	27-Mar-07	diesel	250	L	overfilled tank	Contaminated material captured in drums and transproted to WTA	Stored in WTA
43	2007-043	3-Apr-07	diesel	100	L	Fuel truck drove away with hose attached	no data	unknown, but may have been put through processed plant or into PKCA
44	2007-044	24-Jun-07	motor oil	250	L	camloc vibrated loose	Spill pads and contaminated soil removed	unknown, but may have been put through processed plant or into PKCA
45	2007-045	12-Aug-07	diesel	50	L	pump not shut off	Spill area was cleaned and contaminated materials were captured	unknown, but may have been put through processed plant or into PKCA
46	2007-046	9-Sep-07	Hydraulic oil	1,100	L	Hose ruptured	Area Surveyed	Contaminated material excavated, crushed and used for stemming in Pit
47	2007-047	9-Sep-07	Hydraulic oil	1,100	L	Hose ruptured	Area Surveyed	Contaminated material excavated, crushed and used for stemming in Pit
48	2007-048	7-Oct-07	Hydraulic oil	900	L	Hose ruptured	Area Surveyed	Buried and frozen in waste rock dump area that drains towards the pit
49	2007-049	7-Oct-07	Motor oil (pickup truck)	15	L	Bung fell out of oil pan	Shut off truck, laid absorbent padding, replaced missing bung	Soak pads and contaminated snow were collected in garbage bags
50	2007-050	27-Oct-07	Diesel	200	L	Drill Fire	Fire was controlled, absorbent booms were laid around fire area	Wasre rock pad was excavated and contaminated material was buried in dump to freeze
51	2007-051	26-Nov-07	Diesel	5	L	Overfilled tank	Spill was reported and area cleaned of contaminated material	unknown
52	2007-052	1-Dec-07	FPK	200	L	Compressed air in line	Spilled material froze immediately and was easily recovered	Recovered material was placed inside the tailings area
53	2007-053	2-Dec-07	Hydraulic Oil	150	L	main pump line failure	Spill pads were placed to soak up what little oil had not immediately drained into the blasted kimberlite	Kimberlite was processed through the plant
54	2007-054	2-Dec-07	Hydraulic Oil	120	L	main pump line failure	Spill pads were placed to soak up what little oil had not immediately drained into the blasted kimberlite	Kimberlite was processed through the plant
55	2007-055	4-Dec-07	Raw Sewage	8,000	L	inapproriate disposal of raw sewage	Dumping of raw sewage ceased immediately, investigation to determine quantity and cause	It was determined that natural drainage of the sludge pits is towards the pit and alternative drainage will be monitored as part of the annual Seepage survey
56	2007-056	9-Dec-07	East / S. East Dam	1,000	L	leaking valve	Failed flange was isolated by opening upstream discharge point	procedure was implemented so that discharge points were checked 4 times daily
57	2007-057	21-Dec-07	Raw Sewage	4,370	L	broken line	Spilled material was immediately vacuumed, steel line and ball valve were installed for safety shut off	Sewage Treatment Plant was thoroughly cleaned, all spilt material was contained inside the plant
58	2007-058	26-Dec-07	Hydraulic Oil	100	L	Drill Fire	Fire was controlled, absorbent booms were laid around fire area	contaminated snow and loose rock was contained in a drum and stored in the WTA, unblasted granite under the fire area will isolated after it blasted and buried in the rock dump to be frozen

2.2.2 Spill frequency comparisons

Table 4 summarizes the number of spills and total spill quantities (combined) for each of 2005 through 2008. The spill frequency is actually quite consistent year to year, although this may not be statistically valid. Spill quantities vary significantly as would be expected. In terms of spill quantity, 2007 was a very unfortunate year; however the largest spills were within containments which is much better than the alternative.

Some of the 2008 spills were associated with C&M cleanup of the site, such as the 2 AN spills listed, increasing the total number beyond what might be expected from C&M activities. For the most part, spills in 2008 were of much smaller size and should have reduced frequency as well due to limited activities and limited handling of products.

Table 4: Yearly summary of unauthorized Discharges

Year	Quantity	Frequency
2005	2,064	14
2006	9,686	23
2007	66,975	21
2008	4,269	21
Grand Total	**82,994**	**79**

2.3 Water License Annual Report Format Change

Tahera should include a formal title page for sample analysis results listed in Appendix A similar to that of Appendix B of the Annual Report so that the data for wastewater discharged to the PKCA (or Processed Kimberlite Containment Area) facility is not confused with the receiving water quality data. Further to this, PKCA discharge criteria should not be referenced in the sample analysis result tables where there is no such discharge criteria.

This is a valid concern and can easily be completed for all future Water License Annual Reports. However, this should be qualified by the overriding concern that Tahera may not continue to exist as a meaningful corporate entity beyond 2008 and therefore reporting for the 2008 year may fall upon another group or remain incomplete.

2.4 Ammonia Levels in Lynne Lake

A request to investigate the cause of elevated Ammonia and Nitrate in Lynne Lake (located below and downstream of the Ammonium Nitrate Storage Pad). (Annual Report Review)

Samples were taken from Carat Lake, Lynne Lake and Pond C-3. Preliminary results indicate that Nitrate and Ammonia levels in Lynne Lake were not above CCME Guidelines for the Protection of Aquatic Life. However, Tahera should continue to monitor possible impacts from runoff originating from the Ammonium Nitrate Storage Pad. INAC's sample results will be forwarded to Tahera with the Final Inspection report. (Inspection 2008)

The ammonium nitrate ("AN") storage pad lies near the edge of the water shed of the Lynne / Key / Ash Lake system. Standing water around the AN pad may at times, depending on snow buildup and localized frozen ground, flow toward the Lynne Lake system instead of the intended drainage into a local pond slightly northeast of the pad. (see figure 1) The AN pad was intended to be a lined / bermed storage pad, but Tahera had been allowed to operate without a lined pad until such time as one could be built. Currently the storage pad is not lined.

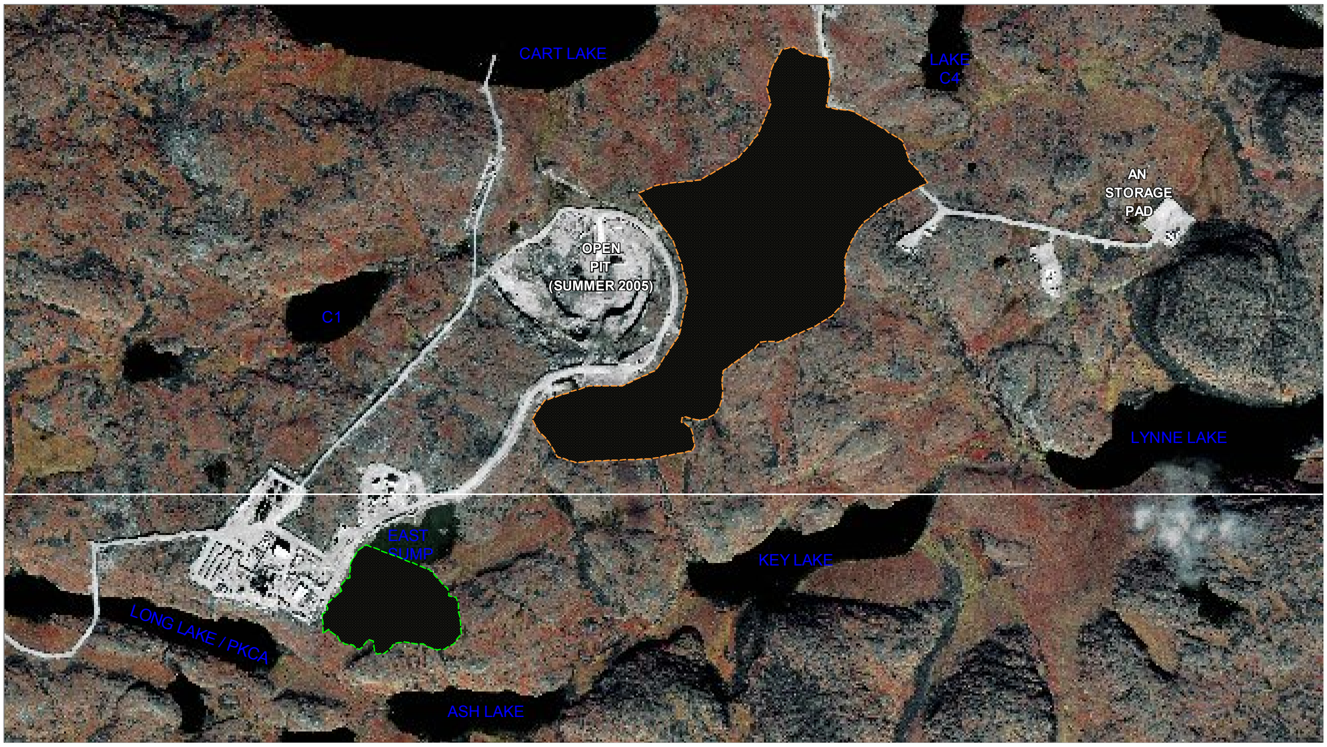


Figure 1: Map of Project Area locating Lynne, Key and Ash Lakes, Waste Dump, Pit, Coarse PK and the Ammonium Nitrate Pad

The concern for the Lynn Lake watershed would be an elevation of ammonia within Lynne Lake. The project was designed and permitted in such a way that the project is should have a negligible effect of the water quality of that watershed. From the analysis gathered to date, Tahera believes that the project has met its obligations in this respect.

The Lynne Lake system was sampled in 1996 and in 1999 as part of the baseline project water quality surveys. According to Tahera's Water License, sampling must be conducted yearly in Lynne (WQ-16), Key (WQ-17) and Ash Lake (WQ-18) during construction and operation of the project.

The data compiled from all baseline surveys and construction / operation sampling is shown in Appendix B and provided digitally.

Firstly, all total ammonia sample data are far below the CCME guidelines regardless of what year or what lake was sampled. CCME guidelines of total ammonia are pH and temperature dependent. However, the lakes in this area are essentially neutral and colder, so Tahera has assumed a pH of 7 and a temperature of 5 degrees for this analysis.

A summary of Lynne Lake total ammonia and CCME guidelines is shown in Table 3: Total Ammonia - N, Results and CCME Guidelines below.

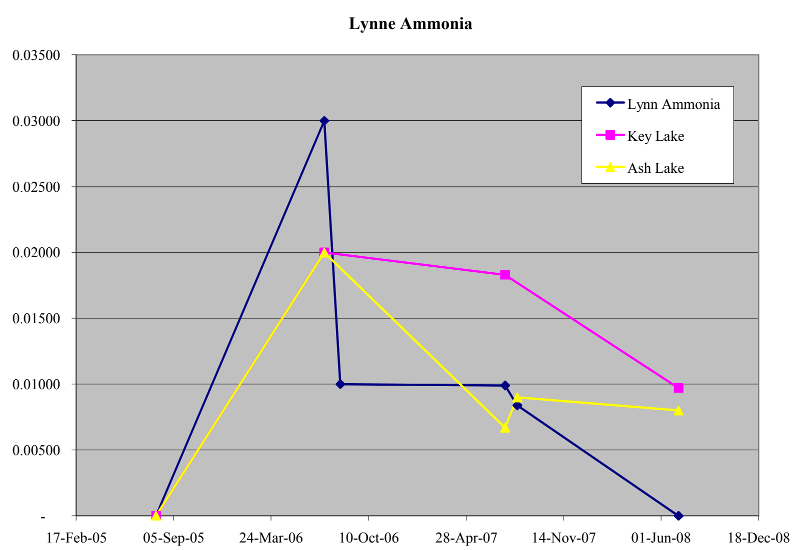
Table 3: Total Ammonia - N, Results and CCME Guidelines

Lake	*Analysis*	*Average Result, 2006 to 2008 (mg/L)*	*CCME Guideline (mg/L)*	*Assumed Temp (deg C)*	*Assumed PH*	*% Result is of CCME Guideline*
Lynn Lake	Total Ammonia	0.01	12.24	5	7	0.09%
Key Lake	Total Ammonia	0.02	12.24	5	7	0.13%
Ash Lake	Total Ammonia	0.01	12.24	5	7	0.09%

The average total ammonia levels from each of the three lakes monitored is less than one percent of the CCME guideline. The highest result ever recorded (Lynne Lake, July 2006) was 0.03mg/L.

Secondly, the results of the sampling of these sites since the summer 2006 are showing improvement with reduced total ammonia levels. For Lynne Lake, the total ammonia levels have been falling since a "spike" in 2006 of 0.03 mg/L when 1 month later the levels had been reduced to 0.01mg/L. By July 2008 the total ammonia sample results for all three lakes were below the labs detection limit of 0.005 mg/L.

Figure 2, below, shows the trend of Lynne Lake total ammonia.



Nitrate levels show a similar reduction in concentration during this period. Nitrite levels are too low to be of any analytical value and are often below detection limit.

Tahera believes that the source of the slight elevations of ammonia in Lynne lake to be dust fallout from blasting, not run-off from the AN pad or the waste dumps. Experience at Ekati[i] indicates that AN contamination in the surface/seepage water is quickly absorbed by the ammonia starved vegetation and organic matter within the arctic tundra. In as little as 100m of seepage, ammonia levels are dramatically reduced.

Seepage samples around the AN pad indicated slightly elevated but not astronomically high ammonia levels. These samples come from small ponds and pools in the immediate vicinity of the AN Pad. Total ammonia levels from seepage sampling in 2007 ranged from 0.07 to 1.21 mg/L. By comparison 2008 sampling indicated values of 0.64 to 2.60 mg/L within a few meters of the AN storage pad with an average in the vicinity of 1.42 mg/L. All values are well below CCME guidelines. At these concentrations, it is believed the seep of 500 meters required to reach Lynne Lake is unlikely to have any effect on the lake. As well, Key Lake and Ash Lake show elevated and then decreasing concentrations of ammonia and these lakes should not be effected by the AN pad since they are several kilometres and up stream of the AN pad.

A more likely cause of the slight contamination is dust fallout from blasting within the pit. The fine fallout particulate from blasting gets picked up by the wind and spread within a short distance of the pit. This explains the weak contamination on a variety of levels. Firstly, the contamination would be highest during surface blasting and then be reduced as the pit deepened and less of the dust escapes the pit. This is well aligned with the reduction in total ammonia levels discussed above. Secondly, the material would be deposited directly into the lake, without any chance for organic matter to reduce the ammonia levels, thereby being able to have even a greater effect even for limited quantity of contamination. Although it is possible that seepage from the AN pad, waste dumps, kimberlite stockpiles and coarse processed kimberlite (“CPK”) stockpile could contaminate Lynne and Key and Ash lakes, it should not have any affect of lakes C1 and C4. Lakes C1 and C4 are all elevated more in total ammonia (2008 levels; 0.332 mg/L in C1 and 0.0135 mg/L in C4) than Lynne Lake, but both are well below CCME guidelines. The closest lakes to the pit with larger surfaces areas, such as C1, would be expected to incur the largest impact and this is in alignment with the data as well.

Although the data discussed above demonstrates that the Lynne Lake watershed is at most very weakly affected by the mine sites explosives, the transition to C&M has resulted in very significant steps that will stop any further ammonia contamination in the project area.

Firstly, all explosives and bulk AN product has been completely removed from site and the emulsion plant has been taken out of service and all associated chemicals removed from site. The bulk AN storage pad has been completely cleaned up of any AN product, so no further run-off contamination is possible. Secondly, all blasting at the site has stopped indefinitely so all potential for dust related contamination has been removed.

These two actions are more than adequate to satisfy any current concerns with regard to further ammonia contamination during C&M. At this point in time, there is nothing further that could be undertaken.

Should any restart of mining activities ever occur at the site, the depth mining in the pit has already shown has an effect on the dust contribution of ammonia to the local lakes. Since most or all of any future blasting would be at a depth of 50m or more, it would mean that much more of the future blasting dust would be contained compared to the surface blasting required in late 2005 and early 2006. It is unlikely given the economics of the mine that any further surface blasting would need to occur within the pit as the push-back is more than sufficient for any high grade mine plan that would be expected.

Tahera believes strongly that the project has had a negligible effect on the Lynne Lake watershed. From the sample results and based upon the government CCME guidelines and associated research, there should have been no effect on aquatic life. As well, all further contamination during C&M has been mitigated by the cessation of blasting and the removal of all bulk sources of ammonia. Because of this and because of limited resources available to Tahera during a period of potential bankruptcy, Tahera believes that no further sampling or monitoring should take place beyond what is currently called for in our Water License.

2.5 Inconstancy between the 2008 Contingency Plan and the Type A Water Licence

A review of the Jericho Contingency Plan (April 2008 update) indicated that disposal of contaminated water, soil and vegetation will be via a contracted service and that there would be temporary storage in portable tanks in the interim. Section 6.9.1 (Storage of Contaminants) of the Plan states that contaminated sorbents will be stored in the hazardous waste storage area and shipped out via winter re-supply transport and contaminated soil would be placed in the PKCA. The placement of petroleum contaminated material in the PKCA would be contrary to Part G, Item 13 of the water license which requires hydrocarbon contaminated soils from spills to be placed within the landfarm. At this time, because there is no approved landfarm facility, Tahera must ensure all waste products are properly stored and labeled, as well as confirm a schedule for the removal of stored wastes (in accordance with your plan).

Below is a list of the main products that the site produces in any significant quantity, with an indication of the Contingency Plan and Water License Requirements for handling of these products.

Table 5: Waste and Spill Product disposal requirements; Contingency compared to Water License

Product (Waste, Inventory or production derivative)	Type	Water License Requirement for Disposal	Contingency Plan Requirement for Disposal
Soil contaminated with hydrocarbons	spilled	Part G Item 13 & Part H Item 5 refers to the Operations and Management plan for a Landfarm, Haz Material Mgmt. 3.7.1; which states that it will be remediated in an approved landfarm or properly disposed of off-site	Spill and Emergency Response Handbook - place contaminated soil in the PKCA or containerize for backhaul south at a hazardous waste facility; ***Needs to be modified in update to Contingency Plan to conform with Landfarm or stored in a lined berm for removal and disposal off-site***
snow contaminated with hydrocarbons	spilled	Part G Item 14 contained in a segregated sump in the CPK	Spill and Emergency Response Handbook - remove residual ice to a container and transport to the contaminated ice treatment facility at the mine or south to hazardous waste facilities
rock contaminated with hydrocarbons	spilled	Part G Item 15 contained in a segregated area of Waste Dump No.1	no reference
Soil contaminated with glycol	spilled	no reference (contaminated material captured and stored in WTA for winter road removal from site)	Spill and Emergency Response Handbook is not specific - contaminated material should be stored in WTA for winter road removal
snow contaminated with glycol	spilled	no reference (contaminated material captured and stored in WTA for winter road removal from site)	Spill and Emergency Response Handbook is not specific - contaminated material should be stored in WTA for winter road removal
rock contaminated with glycol	spilled	no reference (contaminated material captured and stored in WTA for winter road removal from site)	Spill and Emergency Response Handbook is not specific - contaminated material should be stored in WTA for winter road removal
Fine Tailings	spilled or process	Part G Item 2.c says that fine tailings will be captured and returned to PKCA	captured and transported to PKCA
Coarse Tailings	spilled or process	no reference	captured and deposited on coarse PK stockpile
AN	spilled	no reference (Hazardous Material Management Plan and Annual Seepage Survey)	Spill and Emergency Response Handbook - If spill in water attempt to divert water onto land. If not possible monitor aquatic environment until impacts are no longer evident. If on land package and label contaminated material for shipment south on the winter road.
Soil, rock or snow contaminated with heavy hydrocarbons (grease, hydraulic fluid…)	spilled	Part G Item 15 contained in a segregated area of Waste Dump No.1	Spill and Emergency Response Handbook - Temporary store in the Waste Transfer pending backhaul on the winter resupply road
Various Industrial Hazardous Chemicals (acids, bases)	spilled	no reference Hazardous Material Management Plan	Spill and Emergency Response Handbook - dilute with water or neutralize with soda ash or lime and collect for backhaul
Various Industrial Hazardous Chemicals (acids, bases)	used	no reference Hazardous Material Management Plan	Spill and Emergency Response Handbook - dilute with water or neutralize with soda ash or lime and collect for backhaul
Material contaminated with untreated sewage	spilled	no reference - stored in controlled and sampled drainage area - if possible processed through STP	no reference
Untreated sewage	process	processed in STP plant	processed in STP plant
Treated Sludge	spilled or process	no reference - Waste Water Treatment Plan - Annual Seepage Survey	transported to sludge sump area on waste dump
Ash from Incinerator	spilled	Waste Management Plan 6.1	no reference
Non-burnable Waste products (plastics, metals…)	spilled	Part G Item 12 (Annual Seepage Survey)	no reference
Open pit burnable Waste	spilled	Part G Item 12 (Annual Seepage Survey)	no reference
Hydrocarbon containers (drums from diesel, gas, jet fuel and avgas)	containers	no reference - stored in WTA for shipment off site	no reference
Hydrocarbon containers (other such as cubes)	containers	no reference - stored in WTA for shipment off site	no reference
AN bags	containers	no reference - Incinerated	No reference - Burned in incinerator

After reviewing the updated 2007 Contingency Plan data summarized in the chart above, the only inconsistency that could be found is the one noted above. At this point in the Project it is extremely unfortunate that a landfarm plan was not submitted and approved as it is a perfect, inexpensive activity for C&M.

The Contingency Plan should be updated for the 2009 iteration to read;

"Contaminated soil would be temporarily stored in the Waste Transfer Area until it can be removed for safe and proper off-site disposal, or remediated in an on-site approved landfarm facility."

In 2007 and very early 2008, some contaminated soil was placed in the PKCA, along the east and southeast Dams, although it would have been volumetrically minor. Table 3 shows that several products of spills were transported to the PKCA or put through the process plant, where the contaminated products would eventually enter the PKCA. This was only completed for hydrocarbon contaminated rock and soil. Because this practice was started in late 2007, it likely lead to the change in the 2007 Contingency Report documentation when written in early 2008. Although the author does not understand where the authorization to complete this came from it is believed that it comes from the following logical sequence.

For the most part the Water License requires snow and rock contaminated with hydrocarbons to be placed in areas that drain to the pit. Snow is supposed to be put on the CPK stockpile, while contaminated rock is to be put on the Waste Dumps. Both of these facilities drain to areas (ease sump or pit) where the run-off water is pumped back to the PKCA area. This may have lead to the assumption that the soil could simply be put in the PKCA.

It seems a serious error to create a document that so obviously contravenes the Water License, which is extremely clear on this matter. No further contaminated soil will be put in the PKCA.

3.0: Concerns raised in the INAC Field Operations Inspection, August 2008

Mellissa Joy inspected the Jericho site between August 5 and August 8 2008. The inspection was conducted while using the site as a base of operations for inspecting other mine and exploration sites in the vicinity of the Jericho Mine Site.

Several concerns were raised and discussed during and subsequent to the inspection.

Below is a list of concerns from this inspection, including responses to these concerns. In some cases where the inspectors concerns run parallel to the water license reviewers comments, that point may be discussed in another section.

3.1: Secondary Containment Run-off Transfer to Fine Processed Kimberlite Containment Areas (PKCA)

Tahera had initiated the practice of transferring hydrocarbon contaminated wastewater from on site fuel and hazardous waste storage facilities' secondary containment structures to the East Cell of the PKCA (wastewater is then discharged directly to receiving water from the West Cell after flowing through a dyke; water must then meet the discharge criteria listed in water license). The current water license does not authorize the deposit of this material into the PKCA. The Officer provided a verbal and written direction to cease this activity. Tahera was advised that this water must be treated prior to discharge. The only wastes authorized to be disposed of in the PKCA, in accordance with the water license and associated approved plans, are effluent from the sewage treatment plant and processed kimberlite tailings.

This is covered separately in Section 4 of this report. With regard to the comment above, Tahera disagrees that the Water License does not allow for deposit of this material in the PKCA. The transfer of this water is not discharge, but simply a transfer from one containment to another. Site run-off water is approved for transfer to the PKCA according to the Water License.

3.2: Fuel Storage and Secondary Containment

Evidence of leakage from several fuel storage tanks and various pipe joints in the form of contaminated soil and water within the containment areas of the main fuel tank farm and generator day tank storage facility was observed. This was also observed at the airstrip fuel storage facility where, in addition, actual hydrocarbon product was visible causing an undetermined amount of contamination of soil and substrate. All fuel storage areas require maintenance and remediation activities to prevent possible migration of contaminants into the environment.

This is a complex concern that covers several secondary containments and as well, several potential problems with each. For ease of discussion, the answers will be segmented into the categories; fuel handling, primary containers, connectors, refuelling stations and secondary containment lining. Only issues within the secondary containments will be discussed here, with external spills or hydrocarbon handling discussed elsewhere in this report.

3.2.1 Fuel Handling Systems and "Human Error"

Human error has resulted in by far the largest volume of hydrocarbon spills at the Jericho site since constructions began. Below is a short list of the largest spills and their human error causes.

Table 6: Largest 10 spills of 2007 indicating where Human Error was the cause

Location	Product	Quantity	Units	Cause of Spill	Cause Class
Airstrip Tanks	Diesel	47,000.00	L	Hose accidentally opened valve leaking fuel into secondary containm	Human Error
North end of airstrip 66.01.77N 111.27.82W	Diesel	5,000.00	L	Aircraft overshot end of runway	Human Error
Tankfarm Tank#7	Diesel	2,000.00	L	Overfilled tank	Human Error
Pit	Hydraulic oi	1,100.00	L	Hose ruptured	Equipment Failure
Pit	Hydraulic oi	1,100.00	L	Hose ruptured	Equipment Failure
Lined waste transfer area	Engine Oil	1,000.00	L	Cube of oil dropped off forks	Human Error
Pit	diesel	900.00	L	fuel line dislodged	Equipment Failure
Pit	Hydraulic oi	900.00	L	Hose ruptured	Equipment Failure
Emulsion Plant	diesel	600.00	L	Union on piping not properly tightened during construction	Human Error
Day Tank Tank Farm	Diesel	600.00	L	Overfilled tank	Human Error

Six of the largest 10 spills have been caused by human error and by quantity, 93% are caused by human error.

The reason for pointing this out is that Tahera believes that the bulk of fuel spills associated with the site and particularly the greater part of the volume are associated with human error and not maintenance related. It is possible however that the human error associated spills are simply better documented than spills that happen related to maintenance issues. For instance, to understand the source of the fuel that has contaminated a secondary berm one must understand the volume contributed by slow leaks at a connector or valve compared to the overfill spills or spills associated with lapses in concentration or system breakdown. Unfortunately the records to support such analysis at Jericho do not exist. There is no evidence however that the volume of hydrocarbons associated with the secondary containers has a significant contribution from maintenance related issues.

During C&M every effort must be made to prevent spills caused by human error. Tanks that are out of use have been locked off with locks, cable ties or chains. This prevents both accidental and malicious tampering. As well, with much less fuel consumed and fewer people handling it and with better training there will be a reduction in spill frequency and size. Extra effort was taken in this regard during the transition from operation to C&M and should continue once again be a focus if the C&M staffing is reduced or significantly changed during a transition to another steward of the site.

3.2.2 Primary Containers

Primary containers form the "front row" of containment within each bermed area. In the Main Tank Farm the primary containers are 500,000 and 1.5 million litre vertically oriented steel containers while in the Generator Day Tank berm and the Airstrip Jet Fuel containment, they are 60,000 litre "blue" metal horizontal cylinders. All of these containers are single walled and therefore are contained in a secondary berm designed to hold 110% of the largest primary container. The waste transfer berm has many different types of primary containers such as drums, bulk tanks and cubes.

At the emulsion plant and at the truck shop, there are 20,000 litre bulk tanks that are double walled and form their own secondary containment. They are mounted on a small concrete pad that forms a "tertiary containment" for small drips and spills, but this small containment is of limited use as it quickly fills up with run-off and snow.

All primary containers are inspected regularly. To the best of Tahera's knowledge no container is compromised in any fashion, which is to say that none of them leak. Any evidence or leaks or historical leaks from primary containers essentially comes from human error during handling and transfer of the products or connective sites such as piping and valves.

3.2.2.1 Main Tank Farm

The following map shows the Main Tank Farm storage including the tanks numbering designation and the current overall inventory (as of December 1, 2008), which is also summarized in a table as well.

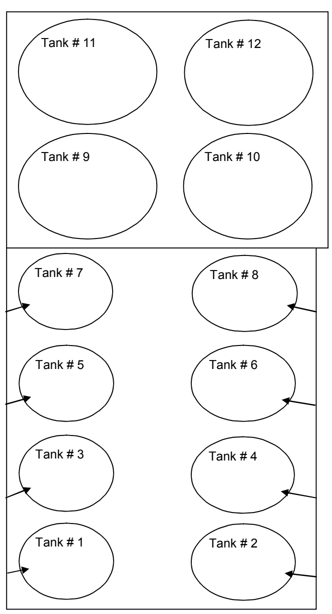


Figure 2: Map of Main Tank Farm and Tank numbering

Tanks 1 to 8 are part of the Phase 1 Tank Farm. Tanks 9-12 make up the Phase 2 Tank Farm.

Table 7: October 27 Site Fuel Inventory

October 23 2008 Jericho Site Fuel Inventory						
Tank	Description	Capacity	L / m	Inaccessable Reserve	Inventory (L)	Accessable Inventory (L)
Tank #1 - GEM-052-01		522,070	52,207	13,042	**11,266**	-
Tank #2 - GEM-052-05		522,070	52,207	13,042	**11,266**	-
Tank #3 - GEM-052-07		522,070	52,207	13,042	**11,266**	-
Tank #4 - GEM-052-04		522,070	52,207	13,042	**11,266**	-
Tank #5 - GEM-052-06		522,070	52,207	13,042	**4,639**	-
Tank #6 - GEM-052-03		522,070	52,207	13,042	**663**	-
Tank #7 - GEM-052-08		522,070	52,207	13,042	**5,965**	-
Tank #8 - GEM-052-02		522,070	52,207	13,042	**13,917**	-
Tank #9 - GEM-6-005-3	Large - SW	1,638,995	168,102	42,025	**753,088**	711,063
Tank #10 - GEM-6-005-2	Large - SE	1,638,995	168,102	42,025	**42,025**	-
Tank #11 - GEM-6-005-4	Large - NW	1,638,995	168,102	42,025	**1,171,657**	1,129,632
Tank #12 - GEM-6-005-1	Large - NE	1,638,995	168,102	42,025	**42,025**	-
	Total	10,732,538		272,436	2,079,039	1,840,695

Figure 3: Photograph of the Main Tank Farm showing the large and small bulk Fuel Tanks & Fuel transfer Pump Station

The Main Tank Farm also contains a 62,000L "blue" tank that is utilized as a day tank for the vehicles fuelling station. It is located at the south end of the Phase 1 tanks and can be seen in the SW corner of the berm in Figure 4, below.

Figure 4: Main Tank Farm from Space showing the 8 smaller Tanks and the 4 larger Tanks

3.2.2.2 Generator Day Tank

The Generator Day Tank is a 62,000 litre tank that is hard lined to the main fuel transfer station. It is used to fill the generator tanks directly. Below is a picture of the tank and secondary containment berm.

Figure 5: Generator Day Tank and Berm

It lies approximately 100m SE of the Main Tank Farm and is located several drawings in Appendix D.

3.2.2.3 Airstrip Jet Fuel Tanks

The Airstrip Jet Fuel Tanks are two 62,000 litre metal tanks that are not connected together. They currently contain approximately 45,000 litres of Jet-A fuel, which is somewhat contaminated with water. Ideally the fuel will be transferred to the diesel tanks at some point and mixed with the diesel for general use, as there is no plan to fuel aircraft from the tanks due to safety and liability concerns. The tanks are insufficient for jet fuel storage as they allow too much moisture to build in the tank due to improper vent design.

Figure 6: Airstrip Tank Farm and signage

3.2.2.3 Other Primary Fuel Tanks

There are several other fuel tanks of significance (greater than 1000 litres) on the site.

The emulsion plant has a 22,000 litre double walled tank mounted in a shallow concrete pad (see the photo below).

Figure 7: Emulsion Plant Fuel Tank

The Truck Shop has an 18,000 litre double walled tank mounted in a shallow concrete pad just south of the shop. A photo of this tank is shown below.

During a recent inspection of the double wall fuel tank which supplies the Truck Shop its primary source of fuel it was found that the concrete pad is sinking on the south side. It appears that it has settled about 12” in total. The fuel lines running from the tanks to the Truck Shop were a concern due to stress associated with the tank movement, which was evident from a bowing in the main feed line. The lines come off the top of the fuel tank as shown in Figure 8 below. At first it was believed that a flexible connection would have to be installed on the lines.

Figure 8: Truck Shop Fuel Tank

However, after the removal of the hanger support bracket from the piping stands, the line was then able to adjust and relive any stress from the piping. As it turns out, the supply line does have horizontal malleable 90 degree fitting in place to act as a swing joint in the event of anymore tanks or pad movement. The actual issue was that the intermediate pipe stands in between tank and shop were not allowing the required movement in the line. Removal of the pipe stand bracket is an effective solution for the tank movement stresses and therefore an additional flexible coupling is not needed.

Figure 9: The horizontal 90 degree Swivel on the Truck Shop Tank

The concrete pad was also inspected for cracks and deterioration which none were found at that time and remains in very good condition, aside from its obvious list. At this time there would not be any immediate concern of the state of the piping from the fuel tank as it has ample amount of movement available to accommodate any movement of the fuel tank. The fuel lines and concrete pad should be checked quarterly and the concrete pad repairs should be made in the summer months.

3.2.3 Fuel Distribution Connectors: Pipelines, Pumps and Valves

Main Tank Farm

The main tank farm has a complex engineered piping system connecting all tanks to a fuel delivery pumping station. From this station, the tanks can be filled and fuel can be transferred to either the vehicle or generator day tanks.

Figure 10: Main Tank Farm transfer Pipelines and pooling Water in the Containment

Appendix D contains detailed engineering drawings of Phase 1 and 2 Main Tank Farm systems, including details on the Vehicle Day Tank and the connection to the Generator Day Tank.

Any system of piping and pumps needs regular maintenance. Both during operation and during C&M, the pipelines and pumping systems get inspected and repaired where necessary. On C&M Tahera has retained the services of millwrights and mechanical maintenance staff to handle such situations. There is no doubt however that the wide temperature swings found in the arctic create addition challenges with maintenance of the seals, connections and valves.

It is not believed that significant quantities of hydrocarbons have leaked related to valve and connection malfunction. When seals fail, any slow drips are noticed during routine inspections and the seal is replaced or repaired in a timely fashion. Inspections take place by both the maintenance department and the environmental department. Although small quantities of hydrocarbons may escape into the secondary containments via dripping before the repairs are made, it is likely minor compared to human error related issues discussed below. In some areas the staining from drips is evident on the sand/gravel liner material below connecters and end caps.

The main spill which took place in the tank farm was the overfilling of a tank where approximately 2000 litres of diesel fuel escaped into the secondary containment. This material was cleaned up, but an unknown amount would have remained in the berm in a similar fashion to the Airstrip Tank Farm spill. This fuel is largely responsible for the overall staining in the berm. Each year as the water level rises, it "floats" the fuel across the water surface and contaminated the gravel grains throughout the berm.

A "leak detection program" has been suggested for the areas where fuel handling is completed. An automatic detection system could have been installed during the commencement of work at the site and likely now a more expensive and difficult item to add.

At this point, Tahera has not spent much time or resources looking at options for leak detection systems. Preferred Utilities make a leak detection system that can have up to 12 sensors connected to one alarm panel and have both a visual and audible alarm. These units could be installed in drip pans at valves and connectors and in sumps and could trigger an auditory alarm with any detection. It is unknown such a system would work in the arctic environment however as icing of the sensor may prevent hydrocarbon detection. Queries to the company were not addressed at the time of writing. An example of a leak detection system technical specs sheet is located in Appendix C. A quote for such a system was not available in time for this report.

Although this could be a viable option to install at a site such as this and potentially a recommendation for other sites, at this point in time Tahera does not have the resources to commit to a timeline associated with a leak detection system. In light of the uncertainty that Tahera will continue to exist as a viable company in any fashion, it would be impossible to suggest any schedule for such a system to be installed at Jericho. A better C&M solution would be weekly or monthly walk through checks of all fuel delivery pipe-work, with a formalized checklist signed off by the inspecting employees.

Remediation associated with the sand / gravel in the secondary berms is a separate issue and will be discussed below.

Generator Day Tank

A pipeline links the main tank farm to the generator day tank berm. From here, a pipeline allows fuel transfer to the generator running tanks located in the room with each main generator.

Evidence of staining can be seen within the secondary berm associated with a valve failure at the tank junction and at the outflow end of the pipeline running to the generators, just before it is submerged into the ground. Both leaks were related to seal failures and repaired immediately. Although staining is visible in the rock crush liner material and the berm crush, this is likely caused by a small amount of diesel fuel. This stained material has since been cleaned up and contained within the Waste Transfer Area.

Airstrip Jet Fuel Tanks

The airstrip Jet-A tanks are unconnected 60,000 litre tanks. The only connector system is a fuel delivery hose that has been utilized for delivery of bulk product from the tanks. For the most part, these tanks have not been used significantly source filing as the program to re-fuel aircraft was dropped before any fuel was used. Safety concerns and fuel quality were the reasons for this program being halted.

When utilized (for short term diesel storage), fuel was delivered via a 2" hose which was disconnected from the tanks when not in use. Once again there may have been small leaks associated with dripping connectors or residue in the fuel hose, but the bulk of the fuel spilled into the secondary containment was associated with human error. 47,000 litres of diesel (which was temporarily being stored in the tanks before jet fuel was on-site) was spilled into the secondary containment when a valve was accidentally opened a fuelling hose was pulled by the valve.

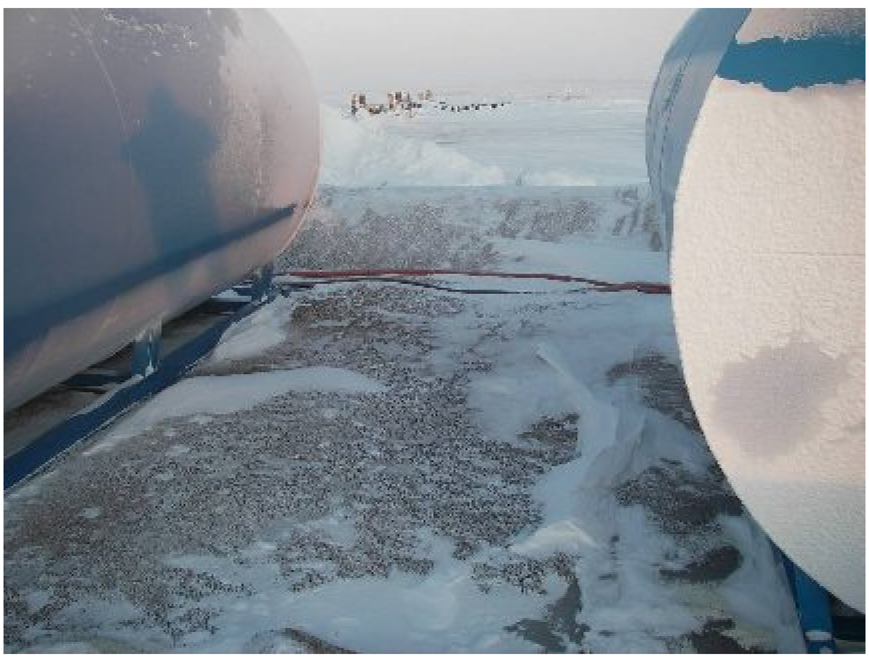


Figure 11: Airstrip Tank Farm showing the discharge hose and contaminated secondary berm liner

This makes the Airstrip secondary containment the most contaminated of all berms due to the small area and large amount of fuel that was discharged into the secondary containment.

After the spill, most of the fuel was recovered by digging a sump in the lowest corner of the berm and pumping out the fuel (and water) into several bulk tanks located in the Waste Transfer Area. Approximately 35,000 litres of the fuel recovered and was pumped into bulk containers shortly after the spill, with and undocumented amount recovered over the next few months. Finally the remainder was soaked up with absorbent pads. As with the Main Tank Farm, some of the fuel remains on the liner, in the geotextile membrane and the sand/gravel that protects the liner. This does adversely affect the water quality of run-off which develops in the berm after rain and after spring melt.

Waste Transfer Area

No connective piping or transportation system exists in the waste transfer berms. All primary containers are singular and not linked.

Valves have been inspected on all bulk tanks and drums and found to be in good order. Ongoing inspection of such containers will be completed under C&M.

A large amount of bulk contaminated soil is contained within the western cell of the Waste Transfer Area. This soil is the product of all spills on Tahera's property since construction. Since a land farm plan has not been approved, no soil has been remediated either on site or off. The major amount of contaminated soil is associated with the DC-4 Spill in December 2006, with minor amounts from other site spills and some spills from exploration camps such as Hood River (reclaimed) and Muskox Camp. This material has been covered to a greater degree with tarps. But due to its shear volume, holes that develop in the tarps due to wind and pooling water within the berm itself, the bulk soil is infiltrated by water and therefore hydrocarbons would be leached out of the pile into the secondary containment. The concentration of such has been shown via sampling (see Section 4) to be low. This contaminated soil is likely the main contributor to the small amount of hydrocarbons found in the water sample results discussed in Section 4.

An argument that covering the soil is counter productive could be made. If the soil is allowed to be open to the air, water and sun, it will begin to breakdown the hydrocarbons and remediate the soil. When covered, this process would be slowed. However, since this area is not an approved landfarm this may not be allowed.

Soil taken from the DC-4 spill was sampled by random grab samples in October 2008. Results are summarized in Table 10, below. These values are above CCME Industrial Guidelines, indicating that indeed, the soil does require remediation, but keeping the samples open to the air and sun would help to reach reduced contamination goals. As discussed below, an approved landfarm should be a near term goal for the site under any circumstances.

Truck Shop Fuel Tank

The issue with the Truck Shop boiler fuel lines was discussed in section 3.2.2.3 above.

3.2.4 Refuelling Stations

There was evidence of multiple leaks and/or spills, visible product, fuel contaminated sorbent material and soil staining outside of the containment areas, at the main fuel tank farm and the emulsion plant refueling stations. Strong hydrocarbon odours were especially notable at the main fuel tank farm refueling station. A comprehensive abatement/remediation plan is required and must include a proper maintenance plan for management of secondary containment structures.

There are two pumping stations along the west side of the Main Tank Farm. The more northerly building is the fuel transfer building and the southern one is the bulk and light vehicle fuelling station. A drawing in Appendix D shows the layout in relation to the Main Fuel Tanks and the pump stations.

During the inspection by INAC, drips and "loose fuel" in these areas was unacceptable. Tahera maintenance had been "fighting" with several mechanical seals and pump parts which were causing an unreasonable rate of dripping within both pump shacks (see figure 8). Although the shacks are designed to be "bathtubed", there was some indication that spillage had at some point exceeded the containment and entered into the secondary containment berm. This was exacerbated by poor housekeeping on the part of Tahera and this cannot be allowed to happen. Although most if not all of the fuel was being contained by spill pads, the areas needed to be kept cleaner and better maintained.


Figure 12: August 2008 leakage from the Pumps in the Fuel transfer Pump Station

Fuel staining was noted in several areas around the pump stations, including in the immediate vicinity of each pump shack. This area is contained within a lined bermed area but the cleaning of this area should be a regular part of ongoing maintenance of the site.

Since the inspection, all mechanical seals and pumps have been repaired and a regularly monthly schedule of repairs will be maintained while they are in use. As well, any contaminated soil on the fuelling berm was dug up and stored in the west cell of the Waste Transfer Area and some spill trays were installed in key areas.

Figure 13: Area outside the Fuel transfer Station after cleanup


Figure 14: Pump Station, cleaned areas around fuelling Berm.

Figure 15: Main Tank Farm Pumping Station after cleanup

Ongoing maintenance and cleanup in and around the refuelling stations has been improved for current site C&M.

3.2.5 Secondary Containment Liners and Protective Aggregate

The current condition of the liners, geotextile membranes and aggregate beds within the secondary containments is a central issue of concern for INAC. Firstly, the concern that the liners are intact and maintain a seal stopping migration from the secondary containment to the environment. Secondly, the concern is that the contamination of the gravel / membranes leads to contamination of the run-off water that builds up within the berm during freshet and after rains. The third concern is whether this soil can be remediated and/or disposed of at an intermediate stage of the site, and if it can, how would it be properly handled and in what timeframe.

The secondary containment berms are constructed by creating a "bowl" of aggregate material to form the volume for the containment. This is lined with finer crushed material and then a thin (1.6mm) membrane is laid down. The membrane is rolled out in strips and welded to the ones beside it to create a seal to the bowl that is the containment. These seals are tested before the liners are covered. This liner is susceptible to rips and punctures (which can be fixed), so it is protected by several layers of material. The first is a "felt" like material called geotextile. This is then overlain by 30-50cm of fine crush used to further protect the liner. This is documented in an EBA construction document located in Appendix E.

When a spill happens within the containment, the aggregate and geotextile soak up the hydrocarbons, however if enough liquid (either HC or water) begin to fill the dish, a pool will form.

Figure 16: Example of pooling water in the Main Tank Farm Secondary Containment (for scale, drum is full 45 gallon drum)

In order to clean up spills within the containment, a sump is dug to the liner in a low point and the fuel is drawn off from this low point. This fuel may or may not be contaminated with water, fine gravel, dust or organics. The fuel is stored in a bulk container in the Waste Transfer Area. If the fuel is sufficiently clean, it may then be used to fire a boiler or incinerator. If not, it is stored for off-site hazardous waste disposal. However, as the remaining fuel is removed and reduced in volume until it can no longer pool effectively, this method no longer works. At that point, absorbent pads are used to soak up fuel wherever possible.

In the case of the larger spills within the airstrip and main tank farm berms, this method was used to remove most of the spilled hydrocarbons. However, the aggregate, liner and geotextile material harbour residues of the product. When rains or snowmelt fill the berm, the hydrocarbons typically float on top of the water and to a lesser degree, are absorbed into the water column.

The contamination level of this water is variable and is discussed below. Once fuel can no longer be drawn from the sumps sites, it may be drawn off the surface of the water or soaked up with sausages or pads. Once sufficiently clean, further build-up of water is deemed to be handled as contaminated run-off. The relatively clean water is drawn out of the berm from below its surface and transferred to the east end of the East Cell of the PKCA. This is discussed at length below in Section 4.

However, it has been suggested by INAC staff that remediation of the aggregate within the berms should be taking place during operation and C&M. Tahera strongly disagrees with this.

Tahera believes that the contaminated material forming the lining of the berm should be left in place until reclamation of the site. Firstly, when the lower portion of the entire berm has been contaminated, the removal of this material is a practical impossibility. Tanks would have to be moved and liner would likely be punctured in the process. It would be easier to build an entirely new containment but of course, this would be prohibitively expensive. Tahera does not have the ability to move the large fuel tanks which are on site as they were assembled and constructed from sections on site. The only time that these tanks can be moved is during reclamation by dismantling them. As well, by leaving the soil in the bermed areas it will begin the remediation process by allowing bacteria to naturally begin to consume the bacteria during warmer weather, therefore reducing the burden at the end of the mine life. It is also contained within the berm where it can have no affect on the environment. Tahera does not believe the remediation of the containment berm gravel would be a cost effective or operationally reasonable process to attempt. It is recommend not to remediate the gravel within the secondary containment berms until the final reclamation. However leaving the material within the berms will have some remediating effect over the years as well and testing will have to be completed before reclamation.

As well, if the site was to restart operation at some point and another spill was to take place in the containment after it was cleaned at great expense, you would effectively be doubling the volume of contaminated material that must be remediated. Tahera currently assumes that all of the secondary containment berms will have to be tested and likely remediated in a land farm or off-site before they conform to required guidelines. Until a method of remediation is available for the contaminated material, it would simply be transferred to the waste berm. This would be a wasteful process that would cause more harm and unnecessarily increase the reclamation liability.

Table 11 in Section 3.4.3 contains a list of the current contaminated soil on site; either stored in the west cell of the Waste Transfer Area or in-situ within the secondary containments as well as predicted future spills over a 9 year project life. The total of 9,000 m^3 includes 2526 cubic meters from prediction of future contaminated material.

Within the 9,000 m^3, approximately 4,800 m^3 are the lining material of the secondary containments. Secondary containment gravel volumes are assumed to be contaminated to the point of requiring reclamation remediation although sampling can be complete prior to this work to confirm this. No hydrocarbon testing of the gravel has been completed but the run-off water within the berms has been tested (see Section 4). As discussed in Section 4, the water being drawn out from the secondary containments is not highly contaminated and the soil associated with these containments is likely remediating in-situ. The contaminated gravel lining the berms therefore poses no significant risk by simply being left where it is until reclamation.

As a due-diligence test, it would be reasonable to collect soil samples from outside the secondary containments adjacent to the berms to confirm that soil is not migrating through the liners. A Total Extractable Hydrocarbon ("TEH") test could be completed on this soil. It is unlikely that contaminated water is migrating beyond the berm as the significant volume of water that builds up in the berms indicates that the berms are sealed.

3.3: Other Fuel Related Issues

3.3.1 Drum Storage

Fuel drums at the airstrip were observed to have inadequate secondary containment as the instaberm had been either dismantled or trampled down.

Having drums stored at the airstrip is both convenient and efficient. The instaberm was utilized to provide secondary containment for the drummed fuel. Due to it's huge capacity it provide far more than sufficient capacity for as many drums as can fit in it.

However, with the aircraft powering up nearby, we found that the berm frame was often detached in the prop-wash or wind and once loose runs the risk or reduced containment and potential wind damage to the fabric. During the inspection, once again the berm had come apart and apparently torn. Although even the torn berm with a broken frame likely provided far more than 110% containment (just 226 litres), it was deemed that the problems with the berm were likely to continue and its use was discontinued.

Since use of the instaberm has been abandoned, all drums other than those being used on any given day are stored in the Waste Transfer Area. Incoming drums are moved to the berm as soon as possible and drums are removed as required. Although this process required some additional manpower and equipment and provides the increased potential for a handling spill, it provides some added protection for long term storage.

Under the current C&M operations, all drums have been organized by product and labelled. A strict inventory is tracked and checked monthly and the site is inspected weekly.

Figure 17 : Organized Drums within the Waste Transfer Area Secondary Containment

3.3.2 Warehouse Sprung Floor

Staining and petroleum-type odours were noted on the substrate floor of the maintenance shop area. Tahera is to provide confirmation as to whether there is a liner present under the floor substrate (to prevent migration of contaminants to the environment).

It is assumed that the reference to "maintenance shop area" above is actually the sprung structure used for warehousing on the south side of camp. The contaminated floor substrate in this area was discussed with Mellissa Joy in August 2008. To the best of our knowledge the actual Maintenance Shop, located north of the Process Plant and has a cement floor with proper sumps, was not of any issue during the inspection.

Although this structure was not used for any storage of hydrocarbons aside from those needed for immediate use in heaters, it is obvious from the staining that some material was spilled here. The spills are believed to be many small spills and there is no evidence of any spills larger than 5 or 10 litres in any give area.

There are several likely causes of spills in the Warehouse Sprung. Because it is such a large room, some heavy equipment (such as production drills) was parked or repaired here and this is a least a partial source of the spills. Spills also occurred within the structure as a result of refuelling of the waste oil heaters and diesel heaters for the structure. These essentially would be human error spills associated with overfilling or drips from the fuelling source. During C&M the area is not heated nor is it used for maintenance and therefore no further spill should occur in this area.

The warehouse racking prevented easy cleaning of some of the spill areas as the warehouse racking has to be dismantled before the floor can be dug up. Accessible areas of the floor have been remediated by removal of the contaminated soil to the WTA. The areas under the racking have not been cleaned up at the time of writing this report.

Due to the uncertainty of the Tahera continuing as a meaningful corporate entity into 2009, and uncertainty of the resource for continued C&M, no definitive schedule can be developed for the final clean-up of the floor. However it is not unreasonable to expect that this could be tackled in the next two months and therefore completed by the end of January. If a C&M plan for 2009 is developed by any party, the crew can prioritize this work and finalize the cleanup. In the short term, it is unlikely in the frozen state that this poses any further environmental risk.

3.4: Waste Transfer Containment Areas (WTA)

The bermed and lined waste transfer area (two cells) contained several blue fuel tanks with contaminated fuel and other tanks containing petroleum products. The second cell is being used for storage of petroleum contaminated soil, which is stored in heaped piles and in drums. Several storage drums, and the containment area itself, are open to the elements and rainwater was collecting within them. The waste transfer area cells lacked adequate signage: there was no labeling of drums, tanks or other materials stored within them, to indicate the type of wastes being stored

All material in the Waste Transfer Area has now been properly inventoried and labeled. The following pictures demonstrate the signage and organization.

East Cell

Figure 18: WTA area Waste Oil and Waste Fuel in Drums and Cubes

Figure 19: WTA inventory of Drummed Diesel Fuel

Figure 20: WTA Bulk Waste Containers

Figure 21: Organized and labelled Drums in WTA

West Cell


Figure 22: Bulk and drummed Hydrocarbon contaminated Soil


Figure 23: WTA Bulk, drummed and bagged Hydrocarbon contaminated Soil

3.4.1 Hydrocarbon and Chemical Product Inventory

The following table shows the current hydrocarbon and chemical inventory in the east cell of the Waste Transfer Area.

Table 8: Waste Transfer Area Product Supply Inventory

Waste Transfer Area Inventories: Usable Inventory, Dec 2, 2008						
Fuel & Lubricant Inventory						
Item	**Container**	**Quantity**	**Units**	**Condition**	**Location**	**Comments**
Av Gas	Drum	26	each	Good	WTA East Cell	
Jet B	Drum	74	each	Good	WTA East Cell	
Diesel (Stove Oil)	Drum	78	each	Good	WTA East Cell	Stove Oil
Gear oil	Drum	35	each	Good	WTA East Cell	
Antifreeze (glycol)	Drum	5	each	Good	WTA East Cell	
Hydrolic oil	5 gal pale	67	each	Good	WTA East Cell	
Oil (trans)	Cube	13	each	Good	WTA East Cell	
Fuel	Blue Tank	20,000	L	Good	WTA East Cell	located in west side - row of 4
Empty Drums	Drum	600	each	Variable	Laydown Area	approx number, not in contained berm

3.4.2 Waste Product Storage and Inventory

The following table shows the current waste product inventory in the east cell of the Waste Transfer Area but also including the Jet Fuel located at the Airstrip Tank Farm.

Table 9: Waste Product inventory

Waste Transfer Area Inventories: Waste Products, Dec 2, 2008						
Waste & Contaminants Inventory						
Item	**Container**	**Quantity**	**Units**	**Condition**	**Location**	**Comments**
Contaminated fuel	Drum	35	each	Waste	WTA East Cell	mostly aviation fuel with with water or partials
Waste Oil	Drum	4	each	Waste	WTA East Cell	
Used Filters	Drum	3	each	Waste	WTA East Cell	
Contaminated fuel/glycol	Blue Tank	22,500	L	Waste	WTA West Cell	located in east side of Waste Transfer with soil
Contaminated Fuel	Blue Tank	50,000	L	Waste	Airstrip Tank Farm	Airstrip - Suitable for use in Boilers and Incinerator
Contaminated Fuel	Blue Tank	500	L	Waste	WTA East Cell	Dip taken = 5 inches (basically empty)
Contaminated Fuel	Blue Tank	700	L	Waste	WTA East Cell	Dip taken = 7 inches (basically empty)
Oil	Cube	21	each	Waste/MT	WTA East Cell	6 located in Truck shop,1 in Plant, 1 in Kingland
Contaminated Soil	WTA East	1,637	m3	Waste	WTA West Cell	Land Farm material
Contaminated Soil	Drum	150	each	Waste	WTA West Cell	Land Farm material

3.4.3 Bulk Contaminated Soil

The west cell of the Waste Transfer Area is used predominantly for contaminated soil. The bulk of the soil is associated with the DC-4 spill from December 2006. Drummed and bagged material was also brought to Jericho from Hood River and Muskox exploration camps where smaller spills had been cleaned up. All of the soil is contaminated with diesel fuel or Jet fuel as little other hydrocarbon contamination exists.

The level of contamination is not well known for he material in the west cell of the WTA. In October 2008, three grab samples were analyzed from the material. The results are presented in Table 10. The soil did not pass CCME Insustrial Guidelines F2 and F3 weight hydrocarbon content, however one sample was close to the guidelines.

Table 10: Grab Sample analysis of DC-4 Diesel Spill contaminated Soil

Sample ID	JER08-1	JER08-2	JER08-3	
Date Sampled	07-OCT-08	07-OCT-08	07-OCT-08	
ALS Sample ID	L694289-1	L694289-2	L694289-3	Commercial/ Industrial
Matrix	Soil	Soil	Soil	Guideline
% Moisture	1.48	2.56	3.88	
Volatile Organic Compounds				
Benzene	<0.040	<0.040	<0.040	0.03
Ethylbenzene	<0.050	<0.050	<0.050	0.082
Toluene	<0.050	<0.050	<0.050	0.37
Xylenes	<0.10	<0.10	<0.10	11
Hydrocarbons				
F2 (C10-C16)	3890	1020	267	260
F3 (C16-C34)	4430	531	299	1700
F4 (C34-C50)	<50	<50	<50	3300
F1-BTEX	<10	17	<10	320

Orange indicates above industrial guideline

Table 11 summarizes the current and predicted future contaminated soil including all soil forming the lining of secondary containment berms. Currently on hand in the west cell of the WTA, is approximately 1637 m^3 of contaminated soil (see Table 7).

Table 5 in Section 2.5 summarizes many of the potential waste products that the site may create and both the Contingency Plan and Water License requirements for disposal. According to the Water License, all soil contaminated with diesel fuel will be remediated in an on-site landfarm once a landfarm plan has been approved, but this approval and even the application has not been completed. In lieu of land farming, the only approved alternative is removal from site for proper disposal in a treatment facility in the south.

Table 11: Hydrocarbon contaminated Soil expected for site Life-of-mine for remediation planning

Current Estimate of Contaminated Soil On Hand			**Approximate Contaminated Soil Volume**				
Soil Source	**Source Group**	**Status**	**VolCalcX**	**VolCalcY**	**VolCalcZ**	**Volm3**	**Volume Method**
Hood River Spill	Exploration	In WTA West Cell				14	estimate of bag count
Muskox Spill	Exploration	In WTA West Cell				360	estimate of drum count
DC-4 Spill	Buffalo Airlines	In WTA West Cell				1,239	spill report - excavation surve
Airport Soil Spill	Jericho	In Airport Tank Farm				4	estimate
Other Misc Small Spills	Jericho	In WTA West Cell				20	guesstimate
Main Tank Farm- small tanks	Jericho	in-situ	60	38	0.45	1,026	dimension calc
Main Tank Farm- large tanks	Jericho	in-situ	54	54	0.45	1,312	dimension calc
Fuel Loading Area	Jericho	in-situ	48	23	0.50	552	dimension calc
Generator Tank Berm	Jericho	in-situ	18	14	0.45	113	dimension calc
Airport Tank Berm	Jericho	in-situ	18	25	0.45	203	dimension calc
Waste Transfer Berm - East Cell		in-situ	45	45	0.45	911	dimension calc
Waste Transfer Berm - West Cell		in-situ	40	40	0.45	720	dimension calc
Future Spill Estimate	prediction assuming 3 years of 9 year life complete					2,526	estimate, based upon actual to date
Total Life of Mine						9,000	

The total soil on hand in the West Cell of the WTA is 1637m^3, made up of soil from exploration project spills, the DC-4 spill and other miscellaneous site spills. Over the Life-of-Mine (assuming the project is completed in 6 more years) the expected amount rises to approximately 9,000m^3. An estimate of 2500m^3 is used to estimate future spill soil contamination (assumes the DC-4 spill is not likely to repeat). The remainder of the soil is the liner material from all secondary containments. It is assumed that all material would have to be remediated at the reclamation of the site.

Within the Water License, there does not seem to be a required timing for the soil remediation to take place, nor the need to provide a schedule for such work. However, the Water License does call for the Landfarm Plan to be submitted and approved within the first year of after the effective date of the Water License, which would have been by December 21, 2005. It is possible however, that a modification of the Waste Disposal Facilities was requested by Tahera in the interim period, and the author has not looked into this possibility. Essentially the contaminated soil disposal issue at the site revolves around the lack of a landfarm. In the absence of a landfarm, Tahera has contained all contaminated soil within the Waste Transfer Area.

INAC has now requested a schedule for proper disposal of this material. This is difficult as there is no current timeline for landfarm approval and it is now unlikely for a winter road to be constructed into the site for several years. This is due to lack of need from inventory re-supply (i.e. no need for further fuel needed) and lack of financial resources under an uncertain C&M scenario. The state of the company and the uncertainty of C&M planning make it impossible to suggest a schedule with any meaning at this time.

However, the suggestion of Tahera's current site management would be to commission the design of and approval of a landfarm facility as soon as possible. Removal of the material off site and disposal in a landfarm or disposal site in the South involves a massive expense in light of the large volume of material that is currently on site and contemplated over the life of the mine. Trucking cost alone for the 1,637m3 on hand would be approximately $1,000,000 plus disposal costs. While a low level of C&M staff exists, and at relatively low cost, the landfarm facility could be built and the soil currently in inventory could begin a program of remediation starting in early summer 2009.

If an area of 7,000m^2 was used at a depth of 0.25m, the currently on-hand contaminated soil may be remediated within 1-3 years[ii]. There are several feasible locations for a landfarm including; the upper benches at the north end of the pit where run-off is contained and the site gets good southern exposure; the west cell of the WTA, or a created landfarm berm somewhere within the site; or on top of the fine Processed Kimberlite ("PK") (which is dominantly clay) within an area of the PKCA. Engineering analysis of these or other sites would be required. However, use of the PKCA would be disrupted in the event of any re-start of processing. A mine operations restart in 2009 is impossible in any event, and if spread thin enough, the material may completely remediate in one season.

4.0: Handling of Secondary Containment Run-off; Potential for Contamination and Related Monitoring

4.1 Background Information

Secondary containment berms are lined structures which are designed to be impermeable and therefore contain any spilled material within them. In the case of the Main Fuel Tank Farm, this is an engineered structure and drawings and detailed plans of this structure have been filed and approved by the NWB as part of NWB1JER0410/D12. Several drawings of cross sections and plan layouts of these containments are provided in Appendix D.

Because the berms are impermeable, any rain and snow that fall within the berm stay within the berm and the berm begins to fill up. In the case of the main Fuel Tank Farm, the total volume of the lined berm is more than 110% of the largest fuel container. This is a requirement of the secondary containment in the event of a spill. As the water level rises, the capacity of the containment berm is reduced and if sufficient water was to build up in the containment, a dangerous situation could arise. If there was the unfortunate situation where a fuel tank or line was compromised, the fuel could overflow the containment berm due to the addition of both fuel and run-off water. This could result in an unauthorized discharge to the environment of significant quantities of fuel.

As well, due to spills within the containment and the fact that a large portion of the spill fuel floats on top of the water, overflowing of the water without any further spills from the primary containments could create an unauthorized discharge of material spilled months before the overflow. In fact, the build-up of run-off within the containments is a major function of the site C&M.

In effect, the build-up of water in the secondary containment berms is a positive indication of the containments integrity. It indicates that the liner is well sealed and functioning properly. Although this is expected, the water is secondary evidence of this.

4.2 Secondary Berm Status

As noted in Section 3.5.2, several secondary containment areas at Jericho have had spills within them. The airstrip Jet-A containment berm had approximately 45,000 litres spill into it when a valve was mistakenly left open. The main tank farm has also had a spill when approximately 2000L of fuel was overflowed into the Main Tank Farm containment when a tank was overfilled. It is also possible that the main tank farm has had other spills of small quantities of fuel over the two years of operation.

In both of these instances, a cleanup within the berms was conducted. A sump was dug in the low corner of the berm and the fuel was drawn out of the berm from this sump. The recovered fuel was then moved to a bulk fuel container within the WTA. Although the spilled fuel was removed, some amount of fuel would remain tied up in the containment area as residue on the liner, on the protective membrane (geotextile) cover and between the sand/gravel grains that form the protective layers placed on the liner material.

In the instance of the Airstrip Tank Farm spill, it was estimated of approximately 47,000 litres spilled, approximately 35,000 litres was recovered from pumping to bulk tanks immediately afterward. Over a period of time after the spill, further contaminated fuel was drawn from the sump within the berm but no records can be found. Because of this, it is impossible to state what overall fraction of the original spill was recovered. Further recovery was completed by soaking up by absorbent pads but a significant amount of fuel must have remained, trapped in the liner and around the gravel grains.

The fuel left behind by the cleanup shows up as sheen upon the water that builds up within the berm from the point of the spill onward, with heavier carbons chains forming yellow foam on the water surface. This sheen does not necessarily indicate a large volume of hydrocarbons, and may represent very low quantities compared to the overall run-off build up.

Sampling of the waters that accumulated within the secondary containment berms was completed in September and October 2008. An F1 to F4 hydrocarbon test was utilized but since diesel is the expected contaminant, it is likely that on the F2 and F3 would show significant quantities. **Error! Reference source not found.**Table 12 below summarizes the results.

Table 12: F1-F4 Hydrocarbon Sample Results for Secondary Containment Water

	Round 1 Concentration Total mg / L					Round 2 Concentration Total mg / L					Average Concentration (mg/L)				
HC Analysis Class--->	F1 (C6-C10)	F2 (C10-C16)	F3 (C16-C34)	F4 (C34-C50)	Total F1-F4	F1 (C6-C10)	F2 (C10-C16)	F3 (C16-C34)	F4 (C34-C50)	Total F1-F4	F1 (C6-C10)	F2 (C10-C16)	F3 (C16-C34)	F4 (C34-C50)	Total F1-F4
JER-WASTE TRANSFER		0.3	0.9		1.2	-	-	0.4	-	0.4	-	0.2	0.6	-	0.8
JER-AIRPORT CONTAINMENT		6.1	26.7		32.8	-	4.2	19.5	1.1	24.8	-	5.2	23.1	1.1	29.4
JER-POWER PLANT DAY TANK		1.9	8.1		10.0	-	1.4	3.9	-	5.3	-	1.6	6.0	-	7.7
FUEL FARM		1.9	8.6		10.4							1.9	8.6		10.4

The airstrip run-off water is the most contaminated, with average hydrocarbon concentrations of 29.4 mg/L compared to 10.4 mg/L for the Main Tank Farm and 7.7 mg/L for the Generator Day Tank containment run-off. The WTA samples returned 0.8mg/L.

The Laboratory made a mistake in the Round 1 September samples and did not complete the F1 and F4 even though they were requested. From Round 2 in October, it is obvious that F1 and F4 contribute little to the contamination as expected. In Round 2, the Main Tank Farm was not sampled. Overall, the values derived from Round 2 compared well with Round 1 hopefully showing that the sampling is representative.

Although Tahera has not compared these values to any guidelines that may be applicable, it was assumed that the values derived by the tests did not allow for the water to be released directly into the environment. The run-off that had accumulated in these berms therefore was assumed to not meet the Water License limits.

According to the Water License, Part F, Conditions Applying to Water Management, Item 4d;

"Any runoff accumulated and/or seepage that does not meet the effluent quality criteria Part G, Item 6(a) shall be collected and directed to the PKCA and measures shall be employed to reduce seepage."

Tahera believes that this clause requires the company to divert such water to the PKCA. The material was therefore transferred to the east end of the PKCA compound where it would have to percolate through the entire fine PK containment before there was any chance of the material reaching the West Cell.

Alternate methods of handling this water were discussed briefly with INAC representatives in September 2008. Storage, gravity separation and activated carbon filtration have all been considered.

Storage of 600,000 litres of water was just not an option. The only tanks large enough would have been to use two small fuel tanks, but these tanks have some useable diesel left in them. These tanks are simply not designed to be used for that purpose. To compound the problem, come freshet, we would have even more water to deal with and would soon run out of capacity to retain it in any event.

Gravity separation (allowing the fuel to settle to the top and draw the water off the bottom) required huge storage capacity as well and simply wasn't available. However, the containment itself provided an excellent gravity separator and this was utilized when the transfer was completed.

Filtration systems have been discussed, but getting one to site in time for the bulk of the water transfer was impossible and the capacity of such system would have made process of removing the water very slow. Considering the emergency that would occur if while the containments were lowered there was a tank or valve rupture, this was not a viable option in the short term, but could be considered for longer term C&M or operation.

4.3 Run-off Waste Transfer Procedure

Procedure utilized for contaminated run-off water transfer from secondary containments to PKCA East Cell in September and October 2008.

Transfer Purpose:

To transfer the waste water from several containment berms around the Jericho Mine Site to the PKCA area. This is a procedure that will be replaced once a filtration system can be procured and installed at the mine site.

Site Areas Effected by Transfer:

Source Areas and approximate September 2nd 2008 containment run-off water volumes (see map)

Table 13: Early September estimate of Secondary Containment Run-off Water volumes

		Approximate depth, dimensions and volumes				
#	**Sump Site**	**Water Depth**	**Length**	**Width**	**Volume m3**	**Volume litres**
1	Main Fuel - small tanks	0.15	65	30	292.5	292,500
2	Main Fuel - big tanks	0.15	55	55	453.75	453,750
3	Generator Day Tank	0.15	20	20	60	60,000
4	Airstrip Jet-B storage	0.15	20	20	60	60,000
5	Waste storage, west	0.15	45	45	303.75	303,750
6	Waste storage, east	0.15	40	40	240	240,000
6	Total				1,410	1,410,000

Dump Location;

The water will be pumped or vac truck transported to a site along the East and Southeast Dam of the east cell of the PKCA (See Map in Appendix F)

Material Transferred:

The material in the berms is water with variable amounts of diesel contaminants.

Transfer Procedure:

Step 1:

Identify areas of immediate concern with regard to water build up within a containment area. These are areas that may overflow into uncontained areas or areas that a build up of water or ice will limit the effectiveness of containment systems in the event of a spill.

Step2:
A sump has been created that will be placed in the deepest point of water or the area with the best access. This sump will consist of a 45 gallon drum ringed with absorbent booms and holes cut into lower end. This will protect the bottom of the berm from dewatering while trying to collect the bulk of the surface contamination in the absorbent booms. (See Picture Below) As much as possible, water will therefore be drawn from below the potentially more contaminated surface water.

Figure 24: Pumping from the Main Tank Farm

Step3:
All water removed from containment areas will be deposited along the east and southeast dams of the PKCA (See attached map). This will allow the potentially contaminated water the greatest distance to travel before passing through the Divider Dyke between the East and West cells.

Figure 25 : Transfer site to PKCA

Transfer Monitoring:

Volume of water pumped and/or vac truck loads of water will be logged for accurate volume estimates from each containment. All water licence required testing will be completed with regard to PKCA water quality both within the cell and at the discharge site.

By limiting the draw of water to the subsurface of the accumulated pond, the surface contaminant concentrations (floating diesel spectrum hydrocarbons) are not drawn out and cleaner water from below the surface is transferred.

4.4 Resulting Material Transfer

The total water transferred between September 2nd and September 14 (Round 1) and September 23 and October 8 (Round 2) is summarized below.

Table 14: Transfer volumes of Secondary Containment Run-off to the PKCA

Round	Start Date	End Date	Transfer Days	Total Transfer (Litres)	Waste Transfer Area	Main Tank Farm	Generator Day Tank	Airstrip Tank Farm
1	02-Sep	14-Sep	10	567,000	368,550	158,760	28,350	11,340
2	23-Sep	08-Oct	3	96,390	90,720	-	-	5,670
Total	02-Sep	08-Oct	13	663,390	459,270	158,760	28,350	17,010

The transfers were completed in 13 days for an average daily transfer of 51,000 litres per day. The highest volume transferred occurred on September 2, when 113,400 litres was transferred.

The estimates of the total material volume were significantly higher than these actual figures. Because the berm "floors" are not level and quite large, it is difficult to estimate the berm wide average depth, and the depth was used to create the estimate of water volumes.

4.5 Total Diesel Hydrocarbons estimated deposited the PKCA East Cell

Table 11 below summarizes the total volume transferred to the PKCA in both transfer rounds, per containment. The average concentration of the samples from the two rounds was used to calculate the total hydrocarbons in mg and an SG of 0.85kg/litre was used to calculate the total F1-F4 hydrocarbons in litres.

Table 15: Calculation summary for converting Sample Results to total Hydrocarbons transferred per Containment

Location / Secondary Containment	Test	Litres Tranferred to PKCA	Lab Result (Avg R1 & R2)	Total F1-F4 Hydrocarbons	Total F1-F4 Hydrocarbons (at SG 0.85g/L)
Waste Transfer Area	F1-F4 average	459,270	0.8	365,120	0.43
Airport Tank Farm	F1-F4 average	17,010	29.4	499,414	0.59
Generator Day Tank	F1-F4 average	28,350	7.7	217,303	0.26
Main Tank Farm	F1-F4 average	158,760	10.4	1,657,454	1.95
Total from all secondary containments	F1-F4 average	663,390	4.1	2,739,290	3.22
			mg / L	*mg*	*litres*

The total transfer to the PKCA from all containments was only 3.22 litres. This is a very small quantity of fuel and Tahera staff were somewhat surprised by this. The largest contributor was the Main Tank Farm at 1.95 litres of diesel due to a concentration of 10.4 mg/L and a large volume of water. The airstrip water was most contaminated but the overall volume led to only 0.59 litres of diesel due to an overall small water volume.

4.6 Discussion and Estimated Overall Affect on the PKCA

Although the total hydrocarbon transfer in September and October was only 3.2 litres, this is only one period in the year. A conservative estimate would be that this level of transfer would have to take place three times per year, dominantly at freshet. Assuming these concentrations remain the same and that the total yearly diesel contribution to the PKCA would be 9.6 litres.

EBA has estimated the yearly typical inflows and outflows to the PKCA cells. The results are summarized in Table 16.

Table 16: Water receipt and transfer summary for the PKCA cells, EBA estimates and actual 2008 discharge

	East Cell	West Cell	Both Cells	units
Cell Rainfall Contributaion	38,000	65,000	103,000	m3
Other Run-off pumped to Cel	298,000	-	298,000	m3
Tailings melting contribution	75,000	-	75,000	m3
Total	411,000	65,000	476,000	m3
Transfer through Divider	- 396,000	396,000		m3
PKCA Discharge		- 276,500		m3

EBA had expected the West Cell to received 396,000m^3 from the East Cell, but since the PKCA discharge is 276,000m^3 and the cell surface elevation went down slightly, the prediction is likely too high. This is probably because the process plant did not keep running through to discharge and because the plant ran at a lower rate than expected, therefore resulting in less water entering the East Cell. The actual discharge from the West Dam during 2008 was 276,000m^3.

However, this means that during this year, inflow into the East Cell was likely between 250,000 and 300,000m^3. That means the 9.6 litres of diesel expected from the secondary containment transfers would be diluted into this vast amount of water on a yearly basis.

As well, the hydrocarbon contaminated water would have to percolate through more than 500m of fine PK. The fine kimberlite particles, due to their chemistry and ultramafic nature, quickly alter to clays, particularly in the presence of water. The fine PK is therefore dominantly clay particles and would continue to breakdown further within the PKCA. This clay would act as a filter for the diesel molecules which are large and tend to get “stuck” in the clays.

This would result in only a small fraction of the any diesel which enters the east end of the PKCA from actually migrating to the Diffusion Dyke, if any. Further barriers to migration of fuel to the West Dam discharge point would be the slow breakdown of the diesel due to microbial action within the bacteria rich environment of the PKCA, the actual filtration offered by the Diffusion Dyke itself and the fact that the PKCA discharge is drawn from depth and not off the surface of the pond where any small amount of hydrocarbons would concentrate.

All of these factors would combine to result in no diesel reaching the C3 discharge.

As mentioned previously, F2-F3 hydrocarbon testing of the water during the summer of 2009 would help to confirm that this hypothesis is valid.

In summary, Tahera believes that the diesel concentration of water in the berms is low and that it is following the Water License by handling the water in this way. It also believes that the effect on both the PKCA cells and the discharge material is insignificant and immeasurable by any method currently available.

5.0: Further Actions Required

INAC has requested that Tahera complete a Plan of Action to address some of the issues discussed above. Unfortunately in light of the company's uncertain future, any plans are impossible to make at this time.

The following is a list of, and response to, the seven (7) Plan of Action requests.

5.1 Water License Amendment

INAC has suggested that Tahera complete the process to amend to the Water License to would allow the pumping of hydrocarbon contaminated waste to the PKCA area. Unfortunately, Tahera is currently in no position to reopen the water license as it is unlikely that Tahera will continue to exist as a corporate entity into 2009. It is entirely possible the further C&M will be presided over by INAC or an INAC appointed group.

It is Tahera's current belief however, that our current Water License allows for the transfer of contaminated run-off to the PKCA area and that in fact this is the only place Tahera is allowed to store it. This is also common industry practise at other site. The run-off quantity is entirely too large to be meaningfully contained on site. In a typical year, it might amount to 1.5million litres of very weekly contaminated water.

A small filtration system, such as a 5 gallon per minute activated carbon system, would have to run 20 hours per day for 66 days per year to process the material and may not produce much improvement in the product. Although this type of filtration is not impossible to install, it is currently beyond Tahera to implement but could be a consideration for any future miner at the site or for the C&M crew. Tahera management has no direct experience with these units however and was not provided with any supporting evidence of their value. Appendix G contains specifications or two types of hydrocarbon filters along with a quote supplied by Raymec Environmental.

It is understood that these types of filtration systems are limited in their ability to eliminate fuel from the water. The quoted systems are able to reach no lower than 10mg/L concentrations from their effluent. This means that of the 4 secondary containments pumped, this type of filtration would have been effective only for the Airstrip Tank Farm. It is likely that any filtration system would be far less effective than the PKCA clays inherently are over 500m of seepage.

Filtration is likely not necessary however. Based upon the data presented in Section 4, the total transfer from 4 containment areas in September and October 2008 resulted in the 663,000 litres of water being transferred to the PKCA area, and that is estimated to contain only 3-4 litres of diesel fuel (as measured in F1-F4 tests) and very limited volatiles. This might translate into 5-10 litres of total hydrocarbons per year into the PKCA. As well, the clay rich <0.8mm processed kimberlite fines would be an excellent filter for hydrocarbons and is likely to let only a small percent percolate to the diffusion dyke. After clay filtration, bioremediation in the PKCA pond and dilution from more than 300,000,000 litres of run-off, the likely affect is that almost no hydrocarbons are present in the PKCA discharge.

5.2 Sampling and Monitoring for Hydrocarbon Contamination of the East PKCA Cell

INAC has asked for addition sampling and monitoring of the East PKCA Cell in order to determine the concentration of hydrocarbons within the cell. As discussed in Section 4 and 5.1, it is extremely unlikely that measurable hydrocarbons will be found in the East Cell water, as sampled near the diffusion dyke.

Although Tahera does not believe that there is any evidence that a program of samples is required, a short series of F1-F4 hydrocarbons tests through next summer should support this theory and is relatively inexpensive. However a concern for the project would be to understand what level will be considered acceptable. This should be determined before the tests are completed.

Of course, Tahera is not in a position to be able to commit to any schedule as it is unlikely to continue to exist as any meaningful entity beyond December 2008.

5.3 Remediation of Secondary Containment Berm gravels

As discussed in Section 3.4.3, Tahera believes that there is no reasonable method or need to remediate the secondary containment liner gravels until the site is reclaimed.

As discussed above, the following reasons are presented by Tahera on why the material should not be remediated until reclamation of the site;

- The gravels will remediate within the berm.
- By leaving it in the berms, it is not significantly contributing to further containment.
- It would require another waste containment cell as our current site storage in the WTA would not accommodate the addition of 4,000 m^3 of contaminated soil on top of the 1,637 m^3 we already have in the West Cell of the WTA. Under C&M there is unlikely to be a winter road access to the site until reclamation or until a potential site buyer were to re-open the site.
- It would be nearly impossible to remove the soil from berms which contain the large tanks as we do not have equipment or personnel on site that can move the tanks
- Any disturbance in the berms may cause liner ruptures, endangering the environment more
- The waste water is not as contaminated as one would think and therefore does not pose a significant problem as it is currently being handled.

It would be reasonable however to put further effort into prevention of further leaks and in cleaning up any residual fuel from the surface of the run-off water as this would further alleviate the contamination of the water and would be inexpensive to complete even with a C&M crew.

5.4 Other issues discussed in the Part 1 of the INAC Review

Tahera believes that the 4 main points of the INAC review have been addressed in Section 2 of this report

5.5 Comprehensive Leak Detection Program for Fuel and Waste Storage Areas

This has been discussed in Section 3.2.3 of this report. Unfortunately Tahera has not had the resources to adequately look into a leak detection system and would not be able to commit to any schedule or plans to install one at this time.

However, a more rigorous inspection schedule and inspection checklist for the C&M staff would go a long way to help reduce human error and maintenance induced spills. This should be completed by any continued C&M at the site.

The simple fact is that on C&M, fewer fuel tanks are being used, less fuelling is taking place and better trained staff should be more competent and therefore dramatically reduce C&M related leaks and spills.

5.6 Other INAC Field Inspection Related Items

Tahera believes that the 8 main points of the INAC field inspection have been addressed in Section 2 and 3 of this report

5.7 Review of the Contingency Plan

A review of the 2008 Contingency Plan was completed for all waste products on site. This was compared to the Water License requirements and is summarized in a Table 3 in Section 2.5.

The only contradiction that was found is the contaminated soil handling. This must be changed in any future version of the contingency plan.