

Amendment Application

Water Licences: 3BM-REP 0409

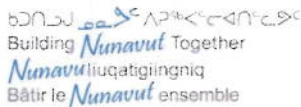
Hamlet of Repulse Bay, Nunavut

Submitted to the Nunavut Water Board

March 24, 2014

By:

Shah Alam, P. Eng.
Municipal Planning Engineer
Community and Government Services
Cambridge Bay, Nunavut
X0B 0C0



Department of Community and Government Services
Nunalingni Kavamatkunnilu Pivikhaqautikkut
Ministère des Services Communautaires et gouvernementaux

Amendment Application Water Licence: 3BM-REP 0409 Repulse Bay, NU

March 25, 2014

Nunavut Water Board

P.O. Box 119

Gjoa Haven, NU X0B 1L0

Attention: Phyllis Beaulieu, Manager of Licensing

RE: Hamlet of Repulse Bay Water Licence: 3BM-REP0409 (Formerly NWB 3REP 0409)
Amendment

Dear Ms. Phyllis,

The Hamlet of Repulse Bay is pleased to submit to Nunavut Water Board the enclosed Water Licence Renewal/Amendment Application with relevant information for your reference. We are aware of requirements of relevant documents as enclosed here and any outstanding submission once completed.

Attached and enclosed Documents with this Application:

- ✓ Licence Amendment Application Form
- ✓ Executive Summary with cover letter and background
- ✓ Interim O&M manual for Solid Waste facility and Landfarm
- ✓ Sustainable O&M plan and manual for Solid Waste facility
- ✓ Annual Reports 2004-2011 – Requested as outstanding
- ✓ Geotechnical Investigation Report for Sewage facility Improvement
- ✓ Design Brief Final for Sewage Lagoon – prepared by exp
- ✓ Design Brief of New Pumphouse Upgrading by exp Services Inc.
- ✓ Waste monitoring test results and summary

Reports and Documents in progress:

- ❖ Annual Report 2013 – submission by Marc 31, 2014
- ❖ Conformity of land use for new sewage Lagoon by NPC – submission by July 31, 2014
- ❖ Impact Assessment Report from NIRB – submission by July 31, 2014

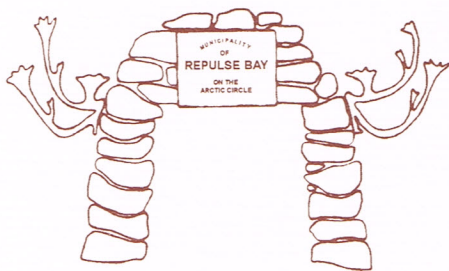
The Hamlet of Repulse Bay made couple attempts for the renewal and amendment of the expired License as seen in the included “ **Licence status and background**”, but still waiting for a successful Amendment of the Licence which is mandatory for improvement projects of facilities in regards to compliances of requirements. The Licensee also stating the current status of those request and responses made and committing to follow up once received those reports and documents.

Given importance of community needs, we request that Nunavut Water Board grant this application approval with the plan of those documents submitted and committed. An amount of \$30.00 (thirty dollars) also paid for the Amendment Application Fee.

We thank the Nunavut Water Board for considering the situation of the community and its obligation for public safety and Environmental protection. An Amendment to the Water Licence 3BM-REP 0409 is requesting to the Board to continue our service to the people of the Hamlet of Repulse Bay and ensuring its improvement projects.

Best Regards, *Shah Alam, P. Eng.* *mar 25, 2014*

*Municipal Planning Engineer,
Government of Nunavut
Community and Government Services
Kitikmeot Region, Cambridge Bay, Nu
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MUNICIPALITY OF REPULSE BAY

P.O. BOX 10

REPULSE BAY, NUNAVUT X0C 0H0

TELEPHONE: (867) 462-9952 FAX: (867) 462-4411

To the Nunavut Water Board:

March 24, 2014

I Kowesa Etitq, Senior Administrative Officer for the Incorporated Hamlet of Repulse Bay authorize Shah Alam from Community Government and Services to apply to the Nunavut Water Board on behalf of the Hamlet of Repulse Bay.

Please accept this letter as a Letter of Authorization for Mr. Alam to apply on behalf of the Hamlet of Repulse Bay.

Signed,

Kowesa Etitq

Senior Administrative Officer

Water Licence 3BM-REP 0409

Hamlet of Repulse Bay, NU

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Amendment Application Water Licence: 3BM-REP 0409

Repulse Bay

The Hamlet of Repulse Bay is responsible for the supply of potable water, disposal of sewage and solid waste for the community. These facilities are currently operating with a Water Licence which has expired on May 31, 2009. The sewage Lagoon built in the location of the old solid waste disposal facility has been in operation since built in 2002. A solid waste site built in 2004 and later included a Landfarm facility for about 1890 m³ contaminated soil storage and treatment. Improvement of solid waste site with berm and later a perimeter fence protected the site from unauthorized entry to the facility and wind blown debris into community and outside. An interim Operational and Maintenance (O&M) plan for Solid Waste facility including the Landfarm developed in 2006 by Nuna Burnside Engineering. Later, a long Term sustainable Operational and Maintenance plan developed by Trow Engineering in 2009 incorporated with the interim plan.

The exfiltration sewage Lagoon recently facing some challenges for acceptance to the Board in regards to treatment, breaching & seepage through berm and erosion on sides. A study carried on the current sewage Lagoon and concluded for a new Lagoon construction as best option in terms to cost and maintenance. A Design Brief submitted by winning consultant exp Services Inc in 2013. The construction installation of new sewage Lagoon is expecting in summer 2014. With the development of new Lagoon, community sewage disposal for next 20 years will meet for expected population 1270 in 2033. Updating of O&M manual for old lagoon will not be effective and worthy since a new O&M manual will be replaced with the new lagoon. Once completed, current sewage lagoon site will be abandoned and closure from sewage disposal. An A&R plan will be submitted including remediation plan of the proposed closure.

Existing pumphouse and truck-fill station has been in service for almost 25 years. The building is still in good condition as well as two generators, but electrical mechanical accessories, intake pumps and interior facilities required to be changed. A Design Brief for new Pumphouse upgrading has been completed by exp Services Inc in 2013, expecting construction starts in summer 2014 with completion by December 2014. The new intake pumphouse upgrading will meet the requirement for next 20 years water intake facility. A new O&M manual will be prepared by the consultant.



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Ministère des Services Communautaires et gouvernementaux

Water Licence is mandatory for the uses of potable water and operation of sewage and solid waste facilities. The Licensee is in need of the Amendment for Water Licence to implement projects for facilities improvement and thus proper operation as per requirements.

Amendment Application for Water Licence 3BM-REP04 09 Hamlet of Repulse Bay, Nunavut

Licensce status and background:

Dec 05, 2003:	Application submitted for a Water Licence to Nunavut Water Board
June 11, 2004:	NWB issued the original Licence NWB-3REP0409 –Type B, issued for water and waste disposal facilities; not included Solid Waste Facility. Date of expiry: May 31, 2009. Included 5 (five) monitoring stations REP-1 through REP-5 for waste and waste sample collection and test for contamination parameters.
May 15, 2005:	FSC Architects applied for contaminated soil clean-up of HC contaminated material and temporary storage at the Solid Waste facility.
July 08, 2005:	NWB replied FSC Architects with the requirement of an Amendment Application to the current Licence NWB-3REP 0409 with additional requirements such as Supplementary Information Requirements for HC impacted soil storage and Landfarm treatment Facilities, Long term mitigation and implementation plan, relevant maps and drawings and on site conditions.
Oct 28, 2005:	The Board acknowledged the recipient of Annual Report 2004(submitted on July 19, 2005) which wasn't accepted due to incomplete information and requested for a complete Annual Report 2004 submission. The Board also referenced the comments made by EC on Oct 24, 2005 on the Annual Report 2004.
June 8, 2006:	Environment Canada (EC) responded NWB request for comments on Amendment Application submitted by FSC Architects for a Soil Treatment Facility inside the Solid Waste Facility. EC commended for application of general conditions throughout the stages of the soil treatment process.
June 25, 2007:	An amendment Application made to NWB to allow for upgrades to the Solid Waste Disposal Facilities, by the construction of a Landfarm for HC contaminated soil treatment.
Sep 27, 2007:	The Board issued an Amendment #1 to the Licence 3BM-REP 0409, allowed a Landfarm facility uses inside the Solid Waste Facility, added two monitoring Stations (well) REP-6 and REP-7 located at the up-gradient and down-gradient of Landfarm facility.

Amendment Application for Water Licence 3BM-REP04 09 Hamlet of Repulse Bay, Nunavut

- Sep 27, 2012: NWB informed that submission of Landfarm O&M manual remains outstanding which is required as per Amendment Licence. The Board also noted, recipient only sampling results of 2010, but all Annual Reports from 2005 through 2010 have not been received. O&M manual for Sewage and Solid Waste facilities remains outstanding.
- Mar 28, 2011: A Renewal Application submitted to the Board for Licence 3BM-REP 0409
Oct 30, 2012: The Board acknowledged the recipient of unsigned and incomplete Renewal Application submitted on March 28, 2011. The Board requested for a completed Application for Amendment and requested for NPC and NIRB clearance regarding Development Impact.
- Feb 14, 2014: An Amendment Application submitted to the Board by exp consulting including Draft copies of Design Brief for sewage Lagoon upgrade, Draft Screening Environmental Assessment and Draft Wetland Assessment.
- March 6, 2014: The Board acknowledged the Amendment Application of Feb 14, 2014. The Board requested to confirm of all outstanding requirements of the expired Licence and submit a complete Amendment Application.

Amendment Application for Water Licence 3BM-REP04 09

Hamlet of Repulse Bay, Nunavut

Community Background:

The Hamlet of Repulse Bay is located at 66°31'N Latitude and 86° 14' W Longitude, on the northern shore of Repulse Bay of Nunavut. The predominant topography of Repulse Bay is extremely rugged and difficult in access. The average annual precipitation consists of 15 cm rainfall and 58 cm snowfall. Temperature average in July high 15.7, low 5.8 and January (winter) high -29 and mean low -36 degree Celsius.

Water System:

The Hamlet of Repulse Bay is applying for Amendment/Renewal of Water Licence 3BM-REP0409, which expires on May 31, 2009 as per original Licence NWB-3REP 0409, for providing water supply, sewage & solid waste disposal and contaminated soil treatment Landfarm facilities. Potable water is drawn from the Nuviq Luktujuk Lake located 4.5 km north of Hamlet, and truck-fill station adjacent to the pumphouse by Hamlet operators. To meet the requirements and Guideline of Drinking Water, biological treatment to water by adding chlorine before filling into truck and then deliver to resident house tank in town, business offices and airport. Water delivers to resident for five (5) days a week, 8:00 am to 5:00 pm regular hours with on call and emergency supply after regular operation.

Water Demand: The annual demand of water reported approximately 22,000 m³ in 2003 and current consumption recorded 35,779 m³ in 2012 due to increase in population. Recently expired water Licence allowed only 24,000 m³ annually drawn from the source where community demand and uses much more than the quantity allowed. The Licensee is seeking more quantity allocation for potable water demand for next five years, estimating at least 60,000 m³ annually. The following Tabular Form is shown the trend of water uses:

Year	Water uses: Ref. Annual Report (cubic mtres)	Allowable Quantity (cubic metres)	Population
2003	22,000	24,000	779
2004	23,226		
2005	24,808		
2006	25,148		
2007	27,297		
2008	27,111		
2009	32,747		
2010	31,336		
2011	32,751		
2012	35,779		
2013			907

Amendment Application for Water Licence 3BM-REP04 09

Hamlet of Repulse Bay, Nunavut

Existing pumphouse and truck-fill station of Repulse Bay has been in service for almost 25 years. The building is still in good condition as well as two generators, but working inside as well as electrical mechanical accessories are required to be changed including intake pumps. A Design Brief for new Pumphouse upgrading has been completed by exp Services Inc. in 2013.

Sewage waste:

Raw sewage collected from house sewage tank, transport it by hamlet operator and dispose into the exfiltration sewage Lagoon located about 400m to northeast edge of the community. Raw sewage stays inside the retention lagoon and sewage melted water passes through filtration granular berm when thaws in summer. Additional sewage water also can be decanted to wetland where natural remediation takes place through a travel of 1400m before final run into Hudson Bay. Current sewage lagoon was built at the place of old Solid Waste disposal facility in accordance with the Study and Report by FSC architect in 2002.

Due to some issues of breaching and extrusion before sufficient retention time within the containment, current sewage treatment system facing challenges and acceptance to the inspector and the Board in accordance to the requirement of the Licence. The Licensee with the assistance of GN - CGS, made a plan for study of current sewage lagoon and treatment system. The winning consultant exp Services Inc, has carried a study and assessment of old lagoon and concluded for construction of a new lagoon as better choice in regards to cost and management. A Draft Design Brief for new Lagoon was submitted to the Board in 2013. A Final Report will be submitted after necessary regulatory screening and approval. Meanwhile, the existing lagoon will be continued for community sewage disposal until a replacement takes place. Such an updated Operational and Maintenance (O&M) manual will be provided sooner after the completion of the new lagoon. Updating of O&M manual for old lagoon will not be effective and worthy since a new O&M manual will be replaced with the new lagoon. With the development of the new lagoon, community sewage disposal for next 20 years will meet for expected population 1270 in 2033.

With annual waste segregation and hazardous waste isolation, the community fulfilled the requirement of solid waste and hazardous materials management with a possible ship out from the facility. Hamlet of Repulse Bay has a plan for waste reduction and recycling during summer. Sewage effluent and solid waste leachate are monitoring with natural remediation throughout the facility and long wetland before final discharge to Hudson Bay. Annual sampling result shows the remediation in compliance with the Licence and guidelines.

Amendment Application for Water Licence 3BM-REP04 09

Hamlet of Repulse Bay, Nunavut

Solid waste:

Solid waste collected from resident waste bins, transport to dump site and dispose to specified location using hamlet operated covered dump trucks. Waste segregation mostly carries at collection point by types and at the dump site during summer before piling & pushing down. Soil mixed granular materials use as cover materials in summer to protect paper & light debris blown away. Batteries and hazardous materials store in wooden box and put inside lined cell within the facility until ship-out by the contractor.

Solid waste facility wasn't included in the original Water Licence NWB-3REP 0409, issued in 2003. Later, a Solid Waste Facility including a Landfill area was developed in 2004 which consists of two main components:

(i) Diversion consisting of:

- Wood pile
- Bulk metals disposal area
- Hazardous waste storage area

(ii) Landfill

An Amendment #1 3BM-REP 0409 Licence issued by the Board in Sep 27, 2007

The facility was designed and constructed as a natural attenuation landfill. It does not have a liner, so contaminants are able to reach from the water and enter the natural environment. In order to protect the environment, the facility is designed to divert as much waste as possible from landfilling. This is especially important for hazardous wastes such as batteries, waste oil, waste antifreeze, and other materials that could harm the environment if landfilled.

Due to issues of leaching, lack of prevention from animal entry and protection of wind blow paper & light debris, INAC inspector and NWB suggested to secure the facility with some measures such as earthen berm at the toe of the landfill and a perimeter fence. The Licensee has installed a protection berm in 2006 and a perimeter fence in 2010 for the facility.

Operational Plan:

When bulk materials within the facility accumulate to quantities that constitute a load, Hamlet requires them to be removed from site by a licensed hauler and who will remove them from the community and dispose in a licensed facility. The area is currently unlined and has no spill control measures. Therefore, a design upgrade was needed to meet NWB requirements and operation. A study carried out by Nuna Burnside Engineering in 2006 and prepared an Interim Operational and Maintenance Plan for the Solid Waste Facility. There was no active Operational and Maintenance Plan and manual available for the facility since built in 2004. This O&M remains active until an actual plan in place and a new facility.

Amendment Application for Water Licence 3BM-REP04 09

Hamlet of Repulse Bay, Nunavut

Another study and assessment carried for a cost effective measure of Solid Waste Facility which bridge a strategy for Nunavut wide Waste Management System. A long term sustainable plan for Solid Waste Management prepared by Trow Engineering in 2009 and incorporated with the existing O&M plan. These plans and O&M remain effective for the current Solid Waste Facility of Hamlet of Repulse Bay.

Soil remediation Land farm:

The community Landfarm facility uses for contaminated soil of Type B with hydrocarbons containing petroleum products of fuel oil/or diesel fuel. The facility receives approximately 1890 m³ contaminated soil with a depth of about 100 cm and containment with a 30 cm berm surrounded for storage and primary remediation.

Abandonment, Restoration and closure:

The old Solid Waste site turned to the current exfiltration sewage lagoon with berm and connected wetland of approximately 1400m long before final merging into Hudson Bay. Due to insufficient retention time and challenge of primary treatment inside, a new sewage lagoon development is in GN Capital Project which will take over the sewage disposal operation from the current sewage lagoon. A design completed for the proposed lagoon and expected construction starts in summer 2014. Once completed, current sewage lagoon site will be abandoned and closure from sewage disposal. An A&R plan will be submitted including remediation plan of the proposed closure.



Application for Water Licence Amendment

Document Date: April 2013

Application Submission Date: 03/24/2014
Month/Day/Year

P.O. BOX 119
GJOA HAVEN, NUNAVUT
XOB 1J0
TEL: (867) 360-6338
FAX: (867) 360-6369

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NUNAVUT IMALIRIYIN KATIMAYIT
NUNAVUT WATER BOARD
OFFICE DES EAUX DU NUNAVUT

DOCUMENT MANAGEMENT

Original Document Date: April 2010

DOCUMENT AMENDMENTS

	Description	Date
(1)	Updated for public distribution as separate document from NWB Guide 7	June 2010
(2)	Updated NWB logos and reformatted table to allow rows to break across page	May 2011
(3)	New NWB logo; request for background information; and change to Block 24	April 2013
(4)		
(5)		
(6)		
(7)		
(8)		
(9)		
(10)		



3. NAME OF PROJECT

Has the name of the project changed?

☐ Yes ☒ No

If Yes, indicate the name of the project including the name of the location: _____

4. LOCATION OF UNDERTAKING

Does the proposed amendment change the location of the amended undertaking?

☐ Yes ☒ No

Provide the project extents and camp locations. Identify proposed changes.

Project Extents

NW: Latitude: (° ' " N)

Longitude: (° ' " W)

NE: Latitude: (° ' " N)

Longitude: (° ' " W)

SE: Latitude: (° ' " N)

Longitude: (° ' " W)

SW: Latitude: (° ' " N)

Longitude: (° ' " W)

Camp Location(s)

Latitude: (° ' " N)

Longitude: (° ' " W)

5. MAP

Does the proposed amendment change the locations of any of the main components of the undertaking?

☐ Yes ☒ No

Attach a topographical map, indicating the main components of the undertaking. Identify proposed changes.

NTS Map Sheet No.: _____ Map Name: _____ Map Scale: _____

6. NATURE OF INTEREST IN THE LAND

Does the proposed amendment change the nature of the interest in the land?

☐ Yes ☒ No

If Yes, indicate changes. _____

Check any of the following that are applicable to the proposed undertaking (at least one box under the 'Surface' header must be checked).

Sub-surface

☐ Mineral Lease from Nunavut Tunngavik Incorporated (NTI)
Date (expected date) of issuance: _____ Date of expiry: _____

☐ Mineral Lease from Indian and Northern Affairs Canada (INAC)
Date (expected date) of issuance: _____ Date of expiry: _____

Surface

☐ Crown Land Use Authorization from Indian and Northern Affairs Canada (INAC)
Date (expected date) of issuance: _____ Date of expiry: _____

☐ Inuit Owned Land (IOL) Authorization from Kitikmeot Inuit Association (KIA)
Date (expected date) of issuance: _____ Date of expiry: _____

☐ IOL Authorization from Kivalliq Inuit Association (KivIA)
Date (expected date) of issuance: _____ Date of expiry: _____

☐ IOL Authorization from Qikiqtani Inuit Association (QIA)
Date (expected date) of issuance: _____ Date of expiry: _____

☐ Commissioner's Land Use Authorization
Date (expected date) of issuance: _____ Date of expiry: _____

☐ Other _____

Date (expected date) of issuance: _____ Date of expiry: _____

Is the name of the entity(s) holding authorizations the same as that considered in the existing water licence?

☒ Yes ☐ No

If No, a licence assignment must be completed and approved by the NWB.

Name of entity(s) holding authorizations:

7. NUNAVUT PLANNING COMMISSION (NPC) DETERMINATION

Indicate the land use planning area in which the existing project is located.

- | | |
|---------------------------------------|---|
| <input type="checkbox"/> North Baffin | <input type="checkbox"/> Keewatin |
| <input type="checkbox"/> South Baffin | <input type="checkbox"/> Sanikiluaq |
| <input type="checkbox"/> Akunnig | <input type="checkbox"/> West Kitikmeot |

Does the proposed amendment change the land use planning area?

- ☐ Yes ☐ No

If yes, indicate the land use planning area in which the amended undertaking is located.

- | | |
|---------------------------------------|--|
| <input type="checkbox"/> North Baffin | <input checked="" type="checkbox"/> Keewatin |
| <input type="checkbox"/> South Baffin | <input type="checkbox"/> Sanikiluaq |
| <input type="checkbox"/> Akunnig | <input type="checkbox"/> West Kitikmeot |

Was a land use plan conformity determination required from NPC prior to the issuance of the existing water licence?

- ☐ Yes ☒ No

If Yes, indicate date issued and attach copy. _____

Does the proposed amendment change the original NPC conformity determination or the need to obtain one?

- ☐ Yes ☒ No

If Yes, indicate date issued (or expected) and attach a copy. _____

If No, provide written confirmation from NPC confirming that a land use plan conformity review is not required.

8. NUNAVUT IMPACT REVIEW BOARD (NIRB) DETERMINATION

Was a screening determination required from NIRB prior to the issuance of the existing water licence?

- ☐ Yes ☒ No

If Yes, indicate date issued and attach copy. _____

Does the proposed amendment change the original NIRB screening determination or the need to obtain one?

- ☐ Yes ☒ No

If Yes, indicate date issued (or expected) and attach a copy. _____

If No, provide written confirmation from NIRB confirming that a screening determination is not required.

9. DESCRIPTION OF UNDERTAKING

Does the proposed amendment change the description of the undertaking?

☐ Yes ☒ No

List and attach plans and drawings or project proposal. Identify proposed changes.

10. OPTIONS

Does the proposed amendment change any of the alternative methods and locations that were considered to carry out the project?

☐ Yes ☒ No

Provide a brief explanation of the alternative methods or locations that were considered to carry out the project. Identify proposed changes.

11. CLASSIFICATION OF PRIMARY UNDERTAKING

Indicate the primary classification of undertaking for the existing licence by checking one of the following boxes:

- | | |
|---|--|
| <input type="checkbox"/> Industrial | <input type="checkbox"/> Agricultural |
| <input type="checkbox"/> Mining and Milling (includes exploration/drilling/exploration camps) | |
| <input type="checkbox"/> Conservation | |
| <input type="checkbox"/> Municipal (includes camps/lodges) | <input type="checkbox"/> Recreational |
| <input type="checkbox"/> Power | <input checked="" type="checkbox"/> Miscellaneous (describe below):
soil treatment landfarm and sewage lagoon |

Does the proposed amendment change the classification of primary undertaking?

☐ Yes ☒ No

If Yes, indicate the primary undertaking of the amendment: _____

Information in accordance with applicable Supplemental Information Guidelines (SIG) must be updated and submitted with an Application for Amendment. Indicate which SIG(s) are applicable to your application.

- ☐ Hydrostatic Testing
- ☐ Tannery
- ☐ Tourist / Remote Camp
- ☐ Landfarm & On-Site Storage of Hydrocarbon Contaminated Soil
- ☐ Onshore Oil and Gas Exploration Drilling
- ☐ Mineral Exploration / Remote Camp
- ☐ Advanced Exploration
- ☐ Mine Development
- ☐ Municipal
- ☐ General Water Works
- ☐ Power

12. WATER USE

Indicate, using the boxes below, the types of water use(s) approved in the existing licence.

- | | |
|--|---|
| <input checked="" type="checkbox"/> To obtain water for camp/ municipal purposes | |
| <input type="checkbox"/> To obtain water for industrial purposes | <input type="checkbox"/> To divert a watercourse |
| <input type="checkbox"/> To cross a watercourse | <input type="checkbox"/> To modify the bed or bank of a watercourse |
| <input type="checkbox"/> To alter the flow of, or store water | <input type="checkbox"/> Flood control |
| <input type="checkbox"/> Other: _____ | |

Does the proposed amendment change the type(s) of water use(s)?

☐ Yes ☒ No

If Yes, indicate using the boxes below, the proposed change(s) to the type(s) of water use(s) noting any water use(s) that are to be added, continued, or removed.

- | | |
|---|---|
| <input type="checkbox"/> To obtain water for camp/ municipal purposes | |
| <input type="checkbox"/> To obtain water for industrial purposes | <input type="checkbox"/> To divert a watercourse |
| <input type="checkbox"/> To cross a watercourse | <input type="checkbox"/> To modify the bed or bank of a watercourse |
| <input type="checkbox"/> To alter the flow of, or store water | <input type="checkbox"/> Flood control |
| <input type="checkbox"/> Other: _____ | |

13. QUANTITY OF WATER INVOLVED

Does the proposed amendment change the source of water? ☐ Yes ☒ No

Indicate the water source(s). Identify proposed changes.:

(show location(s) on map)

Does the proposed amendment change the quality of the water source and/or its available capacity?

☐ Yes ☒ No

Describe the quality of the water source(s) and the available capacity(s). Identify any changes.: _____

Does the proposed amendment change the overall quantity of water to be used?

☒ Yes ☐ No

Provide the overall estimated quantity to be used. Identify proposed changes: 60,000 m³/Year (230 m³/day)

Does the proposed amendment change the quantity of water to be used from each source?

☒ Yes ☐ No

Provide the estimated quantity(s) of water to be used from each source. Identify proposed changes: 60,000 m³/year or 230 m³/day based on minimum 5 days/week intake

Does the proposed amendment change the quantity of water to be used for each purpose?

☐ Yes ☒ No

Provide the estimated quantities to be used for each purpose (camp, drilling, etc.). Identify proposed changes:

Does the proposed amendment change the method(s) of extraction?

☐ Yes ☒ No

Describe the method(s) of extraction. Identify proposed changes. : _____

Does the proposed amendment change the quantity(s) of water returned to source(s)?

☐ Yes ☒ No

Estimated quantity(s) of water returned to source(s). Identify proposed changes. : _____ m³/day

Does the proposed amendment change the quality(s) of water returned to source(s)?

☐ Yes ☒ No

Describe the quality(s) of water(s) returned to source(s). Identify any changes.

- *Snow melts from nearby areas during early summer carrying sandy, soil, gravel, and suspended solids generating turbidity to water.*
- *Accumulated snow melts water within the surface area of the lake and connected water bodies .*

14. WASTE

Check the appropriate box(s) to indicate the types of waste(s) approved in the existing licence.

- | | |
|---|---|
| <input checked="" type="checkbox"/> Sewage | <input type="checkbox"/> Waste oil |
| <input checked="" type="checkbox"/> Solid Waste | <input type="checkbox"/> Greywater |
| <input checked="" type="checkbox"/> Hazardous | <input type="checkbox"/> Sludges |
| <input checked="" type="checkbox"/> Bulky Items/Scrap Metal | <input type="checkbox"/> Contaminated soil and/or water |
| <input checked="" type="checkbox"/> Animal Waste | |
| <input checked="" type="checkbox"/> Other (describe): _____ | |

Does the proposed amendment change the type(s) of waste(s) to be generated or deposited?

☐ Yes ☒ No

If Yes, indicate using the boxes below, the proposed change(s) to the type(s) of waste(s) to be generated and/or deposited noting the addition, removal or continued generation and/or disposal of waste(s).

- | | |
|--|---|
| <input type="checkbox"/> Sewage | <input type="checkbox"/> Waste oil |
| <input type="checkbox"/> Solid Waste | <input type="checkbox"/> Greywater |
| <input type="checkbox"/> Hazardous | <input type="checkbox"/> Sludges |
| <input type="checkbox"/> Bulky Items/Scrap Metal | <input type="checkbox"/> Contaminated soil and/or water |
| <input type="checkbox"/> Animal Waste | |
| <input type="checkbox"/> Other (describe): _____ | |

15. QUANTITY AND QUALITY OF WASTE INVOLVED

Does the proposed amendment change the quantity(s) of the types of wastes involved?

☒ Yes ☐ No

Does the proposed amendment change the composition(s) of the types of wastes involved?

☐ Yes ☒ No

Does the proposed amendment change the method(s) of treatment for the types of waste involved?

☒ Yes ☐ No

Does the proposed amendment change the method(s) of disposal for the types of waste involved?

☐ Yes ☒ No

If Yes to any of the above, describe the proposed changes: _____

For each type of waste indicated in Block 14, describe its composition, quantity in **cubic meters/year**, method of treatment and method of disposal.

Type of Waste	Composition	Quantity Generated	Treatment Method	Disposal Method
Sewage	Grey water, wash room waste and toilet flus water. (90%-95% water)	35,000 m3/year	Exfiltration Sewage Lagoon	Truck fill from house tank, offload into sewage lagoon and decant into wetland
Solid Waste	House waste, metal waste, auto parts, batteries, tires, electronics, paper, wood etc.	6,000 m3/year	Compact and push down, cover with waste mix soil and granular.	House hold bin and collect by covered truck and dump on pile at location
Hazardous waste	Battery, paint, switch, antifreeze, bulb,	250 m3/year	Store in wooden box with plastic around until ship out.	<i>Ship to south with contractor</i>
Bulk metals	Auto body, snow mobile, metal door, window, electronic	800 m3/year	Pile on cell and smash to smaller pieces before cover with materials	<i>Reusable items put in sea can and send by barge</i>
Animal waste	Meat, bone, skin of caribou, muskox, fish	50 m3/year	Cover with granular cover materials	Put in place compost body and cover
Waste oil	Engine oil, heating oil	130 m3/year	Store in container with cover until ship out	<i>Ship out in container</i>
Contaminated soil	With petroleum HC	1,890 total		

16. OTHER AUTHORIZATIONS

Does the proposed amendment change the need for other authorizations in addition to the sub-surface and surface land use authorizations provided in Block 6?

☐ Yes ☒ No

If Yes, indicate any additional authorizations required, which authorizations are no longer required, and which authorizations continue to be required.

For each provide the following:

Authorization: _____

Administering Agency: _____

Project Activity: _____

Date (expected date) of issuance: _____ Date of expiry: _____

17. PREDICTED ENVIRONMENTAL IMPACTS OF UNDERTAKING AND PROPOSED MITIGATION MEASURES

Does the proposed amendment change the predicted environmental impacts of the undertaking or the mitigation measures?

☐ Yes ☒ No

Describe direct, indirect, and cumulative impacts related to water and waste. Identify any changes.

18. WATER RIGHTS OF EXISTING AND OTHER WATER USERS

Was compensation paid and/or an agreement(s) for compensation been entered into with any existing or other users of water during consideration of the existing licence?

☐ Yes ☒ No

If Yes, provide the names, addresses and the nature of water use by those persons or properties.

Does the proposed amendment adversely affect any known persons or property including those that hold licences for water use in precedence to the application, domestic users, in-stream users, authorized waste depositors, owners of property, occupiers of property, and/or holders of outfitting concessions, registered trapline holders, and holders of other rights of a similar nature?

☐ Yes ☒ No

If Yes, provide the names, addresses and the nature of water use of those persons or properties.

Advise the Board if compensation has been paid and/or an agreement(s) for compensation has been reached with any existing or other water users with respect to the proposed amendment.

19. INUIT WATER RIGHTS

Was compensation paid/ or an agreement(s) for compensation been entered into with any Designated Inuit Organization (DIO) during consideration of the existing licence?

☐ Yes ☒ No

If Yes, which DIO(s) _____

Does the proposed amendment substantially affect the quality, quantity or flow of waters flowing through Inuit Owned Land (IOL)?

☐ Yes ☒ No

If Yes, advise the Board if negotiations have commenced or an agreement to pay compensation for any loss or damage has been reached with one or more DIO(s) with respect to the proposed amendment.

20. CONSULTATION - Provide a summary of any consultation meetings including when the meetings were held, where and with whom. Include a list of concerns expressed and measures to address concerns.

21. SECURITY INFORMATION

Does the proposed amendment change the financial security assessment?

☐ Yes ☐ No

Does the proposed amendment change the estimate of the total financial security for final reclamation?

☐ Yes ☐ No

Provide an estimate of the total financial security for final reclamation equal to the total outstanding reclamation liability for land and water combined sufficient to cover the highest liability over the life of the undertaking. Estimates of reclamation costs must be based on the cost of having the necessary reclamation work done by a third party contractor if the operator defaults. The estimate must also include contingency factors appropriate to the particular work to be undertaken. Identify any changes in the financial security assessment resulting from the proposed amendment.

Where applicable, the financial security assessment should be prepared in a manner consistent with the principals respecting mine site reclamation and implementation found in the *Mine Site Reclamation Policy for Nunavut*, Indian and Northern Affairs Canada, 2002.

22. FINANCIAL INFORMATION

Is the statement of financial security the same as that considered in the existing water licence?

☐ Yes ☐ No

Provide an updated statement of financial security.

If the applicant is a business entity please answer the questions below:

Is the list of the officers of the company the same as those considered in the existing water licence?

☐ Yes ☐ No

Provide a list of the officers of the company.

Is the Certificate of Incorporation or evidence of registration of the company name the same?

☐ Yes ☐ No

Attach a copy of the Certificate of Incorporation or evidence of registration of the company name.

23. STUDIES UNDERTAKEN TO DATE

List and attach updated studies, reports, research etc.

- ✓ Annual Reports 2004-2011 – noted as incomplete and outstanding
- ✓ Design Brief Final Sewage Lagoon upgrading
- ✓ Design Development Report for new Pumphouse improvement
- ✓ Interim O&M plan for Solid waste facility and Landfarm – noted outstanding
- ✓ Long Term sustainable Operational Plan for Solid Waste Facility – by Trow in 2009

Previous submission and NWB recipient confirmed:

- ✓ 131011-3BM-REP0409- Overall Site plan (SP)
- ✓ 131011-3BM-REP0409- Site Location plan (SLP)
- ✓ 131011-3BM-REP0409- Design Brief Sewage Lagoon Upgrade (DB SLU)
- ✓ 131011-3BM-REP0409- Screening Level Environmental Assessment (SL EA)
- ✓ 130924-3BM-REP0409- Draft Wetland Assessment(WA)

Provide a compliance assessment and status report including a response to any inspector's reports. The licensee must contact the NWB for licence specific direction in completing the assessment and report.

If in non-compliance, a licence may not be issued until compliance is achieved. If in non-compliance, attach plans/reports for consideration. Application will not be processed if significant issues of non-compliance exist.

24. PROPOSED TIME SCHEDULE

When are proposed amendments scheduled to be undertaken: _____

Does the proposed amendment change the time schedule considered in the existing licence for any phase of development?

☐ Yes ☐ No

Indicate the start and completion dates for each applicable phase of development (construction, operation, closure, and post closure). Identify proposed changes.

Construction

Proposed Start Date: _____ Proposed Completion Date: _____
(month/year) (month/year)

Operation

Proposed Start Date: _____ Proposed Completion Date: _____
(month/year) (month/year)

Closure

Proposed Start Date: _____ Proposed Completion Date: _____
(month/year) (month/year)

Post - Closure

Proposed Start Date: _____ Proposed Completion Date: _____
(month/year) (month/year)

For each applicable phase of development indicate which season(s) activities occur.

Construction

☐ Winter ☐ Spring ☐ Summer ☐ Fall ☐ All season

Operation

☐ Winter ☐ Spring ☐ Summer ☐ Fall ☐ All season

Closure

☐ Winter ☐ Spring ☐ Summer ☐ Fall ☐ All season

Post - Closure

☐ Winter ☐ Spring ☐ Summer ☐ Fall ☐ All season

25. PROPOSED TERM OF LICENCE

On what date does the existing licence expire? _____

Is the Licensee applying for a combined renewal and amendment of the existing licence?

☐ Yes ☐ No

If Yes, indicate the proposed term of the renewal (maximum of 25 years): _____

Requested date of renewal issuance: _____ Requested Expiry Date: _____
(month/year) (month/year)

(The requested date of renewal issuance must be at least three (3) months from the date of application for a type B water licence and at least one (1) year from the date of application for a type A water licence, to allow for processing of the water licence application. These timeframes are approximate and do not account for the time to complete any pre-licensing land use planning or development impact requirements, time for the applicant to prepare and submit a water licence application in accordance with any project specific guidelines issued by the NWB, or the time for the applicant to respond to requests for additional information. See the NWB's *Guide 5: Processing Water Licence Applications* for more information)

26. ANNUAL REPORTING

Will the proposed amendment change the content of annual reports or the annual report template?

☐ Yes ☐ No

If Yes, provide details regarding the content of annual reports and a proposed outline or template of the annual report.

27. CHECKLIST

The following must be included with the application for Amendment for the water licensing process to begin.

Completed Application for Water Licence Amendment form.

☒ Yes ☐ No If no, date expected _____

Information addressing Supplement Information Guideline (SIG), where applicable (see Block 11)

☒ Yes ☐ No If no, date expected _____

Compliance Assessment / Status Report (see Block 23).

☒ Yes ☐ No If no, date expected _____

Indication of Renewal Requirement (see Block 26)

☒ Yes ☐ No If no, date expected _____

English Summary of Amendment Application.

☒ Yes ☐ No If no, date expected _____

Inuktitut and/or Inuinnaqtun Summary of Amendment Application.

☒ Yes ☐ No If no, date expected _____

Application fee of \$30.00 CDN (Payee Receiver General for Canada).

☒ Yes ☐ No If no, date expected _____

Water Use Fee Deposit of \$30.00 CDN (Payee Receiver General for Canada). The actual water use fee will be calculated by the NWB based upon the amount of water authorized for use in accordance with the Regulations at the time of issuance of the licence.

☐ Yes ☐ No If no, date expected not applicable

28. SIGNATURE

Kowesa Etitig
Name (Print)

Senior Admin Officer
Title (Print)

[Signature]
Signature

March 24/14
Date



Hamlet of Repulse Bay
ATTN: KEVIN TEGUMIAR
PO Box 10
Repulse Bay NU X0C 0H0

Date Received: 03-JUL-12
Report Date: 26-JUL-12 14:11 (MT)
Version: FINAL

Client Phone: 867-462-9952

Certificate of Analysis

Lab Work Order #: L1171564
Project P.O. #: NOT SUBMITTED
Job Reference: REPULSE BAY MONITORING PROGRAM
C of C Numbers:
Legal Site Desc:

Paul Nicolas
Account Manager

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1171564-1 REP-2							
Sampled By: KEVIN TEGUMIAR on 29-JUN-12 @ 11:40							
Matrix: WASTE WATER							
Miscellaneous Parameters							
Ammonia, Total (as N)	0.014		0.010	mg/L		11-JUL-12	R2396763
Biochemical Oxygen Demand	<6.0		6.0	mg/L	04-JUL-12	09-JUL-12	R2394790
BOD Carbonaceous	<6.0		6.0	mg/L	04-JUL-12	09-JUL-12	R2394789
Fecal Coliforms	<3		3	MPN/100mL		06-JUL-12	R2394237
Oil and Grease, Total	<2.0		2.0	mg/L	06-JUL-12	06-JUL-12	R2394615
Phenols (4AAP)	<0.0010		0.0010	mg/L	10-JUL-12	10-JUL-12	R2395644
Phosphorus (P)-Total	<0.010		0.010	mg/L		09-JUL-12	R2394869
Total Organic Carbon	5.5		1.0	mg/L		26-JUL-12	R2405143
Total Suspended Solids	8.0		5.0	mg/L		14-JUL-12	R2399078
Routine Soluble + Metal scan							
Alkalinity							
Alkalinity, Total (as CaCO3)	85		20	mg/L		03-JUL-12	R2391974
Bicarbonate (HCO3)	103		24	mg/L		03-JUL-12	R2391974
Carbonate (CO3)	<12		12	mg/L		03-JUL-12	R2391974
Hydroxide (OH)	<6.8		6.8	mg/L		03-JUL-12	R2391974
Chloride by Ion Chromatography							
Chloride	12.2		0.50	mg/L		04-JUL-12	R2393169
Conductivity							
Conductivity	224		20	umhos/cm		03-JUL-12	R2391974
Hardness Calculated							
Hardness (as CaCO3)	93.6		0.30	mg/L		06-JUL-12	
Nitrate as N by Ion Chromatography							
Nitrate-N	<0.050		0.050	mg/L		04-JUL-12	R2393169
Nitrate+Nitrite							
Nitrate and Nitrite as N	<0.071		0.071	mg/L		03-JUL-12	
Nitrite as N by Ion Chromatography							
Nitrite-N	<0.050		0.050	mg/L		04-JUL-12	R2393169
Sulfate by Ion Chromatography							
Sulfate	16.5		0.50	mg/L		04-JUL-12	R2393169
TDS calculated							
TDS (Calculated)	125		5.0	mg/L		06-JUL-12	
Total Metals by ICP-MS							
Aluminum (Al)-Total	<0.020		0.020	mg/L	05-JUL-12	05-JUL-12	R2393489
Antimony (Sb)-Total	<0.0010		0.0010	mg/L	05-JUL-12	05-JUL-12	R2393489
Arsenic (As)-Total	<0.0010		0.0010	mg/L	05-JUL-12	05-JUL-12	R2393489
Barium (Ba)-Total	0.00909		0.00050	mg/L	05-JUL-12	05-JUL-12	R2393489
Beryllium (Be)-Total	<0.0010		0.0010	mg/L	05-JUL-12	05-JUL-12	R2393489
Bismuth (Bi)-Total	<0.00050		0.00050	mg/L	05-JUL-12	05-JUL-12	R2393489
Boron (B)-Total	<0.030		0.030	mg/L	05-JUL-12	05-JUL-12	R2393489
Cadmium (Cd)-Total	<0.00020		0.00020	mg/L	05-JUL-12	05-JUL-12	R2393489
Calcium (Ca)-Total	29.1		0.20	mg/L	05-JUL-12	05-JUL-12	R2393489
Cesium (Cs)-Total	<0.00050		0.00050	mg/L	05-JUL-12	05-JUL-12	R2393489
Chromium (Cr)-Total	<0.0020		0.0020	mg/L	05-JUL-12	05-JUL-12	R2393489
Cobalt (Co)-Total	<0.00050		0.00050	mg/L	05-JUL-12	05-JUL-12	R2393489
Copper (Cu)-Total	<0.0020		0.0020	mg/L	05-JUL-12	05-JUL-12	R2393489
Iron (Fe)-Total	<0.10		0.10	mg/L	05-JUL-12	05-JUL-12	R2393489
Lead (Pb)-Total	<0.0010		0.0010	mg/L	05-JUL-12	05-JUL-12	R2393489
Lithium (Li)-Total	<0.0020		0.0020	mg/L	05-JUL-12	05-JUL-12	R2393489
Magnesium (Mg)-Total	5.12		0.050	mg/L	05-JUL-12	05-JUL-12	R2393489
Manganese (Mn)-Total	0.0034		0.0010	mg/L	05-JUL-12	05-JUL-12	R2393489
Molybdenum (Mo)-Total	<0.00050		0.00050	mg/L	05-JUL-12	05-JUL-12	R2393489

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Sample Details/Parameters		Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1171564-1	REP-2							
Sampled By: KEVIN TEGUMIAR on 29-JUN-12 @ 11:40								
Matrix: WASTE WATER								
Total Metals by ICP-MS								
Nickel (Ni)-Total		<0.0020		0.0020	mg/L	05-JUL-12	05-JUL-12	R2393489
Phosphorus (P)-Total		<0.50		0.50	mg/L	05-JUL-12	05-JUL-12	R2393489
Potassium (K)-Total		1.53		0.10	mg/L	05-JUL-12	05-JUL-12	R2393489
Rubidium (Rb)-Total		0.00148		0.00050	mg/L	05-JUL-12	05-JUL-12	R2393489
Selenium (Se)-Total		<0.0050		0.0050	mg/L	05-JUL-12	05-JUL-12	R2393489
Silicon (Si)-Total		<0.30		0.30	mg/L	05-JUL-12	05-JUL-12	R2393489
Silver (Ag)-Total		<0.0010		0.0010	mg/L	05-JUL-12	05-JUL-12	R2393489
Sodium (Na)-Total		9.82		0.050	mg/L	05-JUL-12	05-JUL-12	R2393489
Strontium (Sr)-Total		0.0298		0.00050	mg/L	05-JUL-12	05-JUL-12	R2393489
Tellurium (Te)-Total		<0.0010		0.0010	mg/L	05-JUL-12	05-JUL-12	R2393489
Thallium (Tl)-Total		<0.0050		0.0050	mg/L	05-JUL-12	05-JUL-12	R2393489
Thorium (Th)-Total		<0.0010		0.0010	mg/L	05-JUL-12	05-JUL-12	R2393489
Tin (Sn)-Total		<0.00060		0.00060	mg/L	05-JUL-12	05-JUL-12	R2393489
Titanium (Ti)-Total		<0.0010		0.0010	mg/L	05-JUL-12	05-JUL-12	R2393489
Tungsten (W)-Total		<0.0020		0.0020	mg/L	05-JUL-12	05-JUL-12	R2393489
Uranium (U)-Total		0.00134		0.00050	mg/L	05-JUL-12	05-JUL-12	R2393489
Vanadium (V)-Total		<0.0020		0.0020	mg/L	05-JUL-12	05-JUL-12	R2393489
Zinc (Zn)-Total		<0.020		0.020	mg/L	05-JUL-12	05-JUL-12	R2393489
Zirconium (Zr)-Total		<0.0010		0.0010	mg/L	05-JUL-12	05-JUL-12	R2393489
pH								
pH		7.90		0.10	pH units		03-JUL-12	R2391974
L1171564-2	REP-4							
Sampled By: KEVIN TEGUMIAR on 29-JUN-12 @ 11:40								
Matrix: WASTE WATER								
Miscellaneous Parameters								
Ammonia, Total (as N)		12.5	DLA	1.0	mg/L		12-JUL-12	R2397587
Biochemical Oxygen Demand		<6.0		6.0	mg/L	04-JUL-12	09-JUL-12	R2394790
BOD Carbonaceous		<6.0		6.0	mg/L	04-JUL-12	09-JUL-12	R2394789
Fecal Coliforms		430		3	MPN/100mL		06-JUL-12	R2394237
Oil and Grease, Total		<2.0		2.0	mg/L	06-JUL-12	06-JUL-12	R2394615
Phenols (4AAP)		0.0010		0.0010	mg/L	10-JUL-12	10-JUL-12	R2395644
Phosphorus (P)-Total		1.08		0.010	mg/L		09-JUL-12	R2394869
Total Organic Carbon		13.1		1.0	mg/L		26-JUL-12	R2405143
Total Suspended Solids		11.0		5.0	mg/L		14-JUL-12	R2399078
Routine Soluble + Metal scan								
Alkalinity								
Alkalinity, Total (as CaCO3)		94		20	mg/L		03-JUL-12	R2391974
Bicarbonate (HCO3)		115		24	mg/L		03-JUL-12	R2391974
Carbonate (CO3)		<12		12	mg/L		03-JUL-12	R2391974
Hydroxide (OH)		<6.8		6.8	mg/L		03-JUL-12	R2391974
Chloride by Ion Chromatography								
Chloride		13.7		0.50	mg/L		04-JUL-12	R2393169
Conductivity								
Conductivity		240		20	umhos/cm		03-JUL-12	R2391974
Hardness Calculated								
Hardness (as CaCO3)		77.3		0.30	mg/L		24-JUL-12	
Nitrate as N by Ion Chromatography								
Nitrate-N		0.116		0.050	mg/L		04-JUL-12	R2393169
Nitrate+Nitrite								
Nitrate and Nitrite as N		0.116		0.071	mg/L		03-JUL-12	
Nitrite as N by Ion Chromatography								

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters		Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1171564-2	REP-4							
Sampled By: KEVIN TEGUMIAR on 29-JUN-12 @ 11:40								
Matrix: WASTE WATER								
Nitrite as N by Ion Chromatography								
Nitrite-N		<0.050		0.050	mg/L		04-JUL-12	R2393169
Sulfate by Ion Chromatography								
Sulfate		7.96		0.50	mg/L		04-JUL-12	R2393169
TDS calculated								
TDS (Calculated)		124		5.0	mg/L		24-JUL-12	
Total Metals by ICP-MS								
Aluminum (Al)-Total		0.031		0.020	mg/L	05-JUL-12	05-JUL-12	R2393489
Antimony (Sb)-Total		<0.0010		0.0010	mg/L	05-JUL-12	05-JUL-12	R2393489
Arsenic (As)-Total		<0.0010		0.0010	mg/L	05-JUL-12	05-JUL-12	R2393489
Barium (Ba)-Total		0.00403		0.00050	mg/L	05-JUL-12	05-JUL-12	R2393489
Beryllium (Be)-Total		<0.0010		0.0010	mg/L	05-JUL-12	05-JUL-12	R2393489
Bismuth (Bi)-Total		<0.00050		0.00050	mg/L	05-JUL-12	05-JUL-12	R2393489
Boron (B)-Total		<0.030		0.030	mg/L	05-JUL-12	05-JUL-12	R2393489
Cadmium (Cd)-Total		<0.00020		0.00020	mg/L	05-JUL-12	05-JUL-12	R2393489
Calcium (Ca)-Total		23.2		0.20	mg/L	05-JUL-12	05-JUL-12	R2393489
Cesium (Cs)-Total		<0.00050		0.00050	mg/L	05-JUL-12	05-JUL-12	R2393489
Chromium (Cr)-Total		<0.0020		0.0020	mg/L	05-JUL-12	05-JUL-12	R2393489
Cobalt (Co)-Total		<0.00050		0.00050	mg/L	05-JUL-12	05-JUL-12	R2393489
Copper (Cu)-Total		0.0059		0.0020	mg/L	05-JUL-12	05-JUL-12	R2393489
Iron (Fe)-Total		0.38		0.10	mg/L	05-JUL-12	05-JUL-12	R2393489
Lead (Pb)-Total		<0.0010		0.0010	mg/L	05-JUL-12	05-JUL-12	R2393489
Lithium (Li)-Total		<0.0020		0.0020	mg/L	05-JUL-12	05-JUL-12	R2393489
Magnesium (Mg)-Total		4.71		0.050	mg/L	05-JUL-12	05-JUL-12	R2393489
Manganese (Mn)-Total		0.0229		0.0010	mg/L	05-JUL-12	05-JUL-12	R2393489
Molybdenum (Mo)-Total		0.00057		0.00050	mg/L	05-JUL-12	05-JUL-12	R2393489
Nickel (Ni)-Total		<0.0020		0.0020	mg/L	05-JUL-12	05-JUL-12	R2393489
Phosphorus (P)-Total		0.92		0.50	mg/L	05-JUL-12	05-JUL-12	R2393489
Potassium (K)-Total		4.56		0.10	mg/L	05-JUL-12	05-JUL-12	R2393489
Rubidium (Rb)-Total		0.00489		0.00050	mg/L	05-JUL-12	05-JUL-12	R2393489
Selenium (Se)-Total		<0.0050		0.0050	mg/L	05-JUL-12	05-JUL-12	R2393489
Silicon (Si)-Total		0.85		0.30	mg/L	05-JUL-12	05-JUL-12	R2393489
Silver (Ag)-Total		<0.0010		0.0010	mg/L	05-JUL-12	05-JUL-12	R2393489
Sodium (Na)-Total		13.1		0.050	mg/L	05-JUL-12	05-JUL-12	R2393489
Strontium (Sr)-Total		0.0340		0.00050	mg/L	05-JUL-12	05-JUL-12	R2393489
Tellurium (Te)-Total		<0.0010		0.0010	mg/L	05-JUL-12	05-JUL-12	R2393489
Thallium (Tl)-Total		<0.0050		0.0050	mg/L	05-JUL-12	05-JUL-12	R2393489
Thorium (Th)-Total		<0.0010		0.0010	mg/L	05-JUL-12	05-JUL-12	R2393489
Tin (Sn)-Total		<0.00060		0.00060	mg/L	05-JUL-12	05-JUL-12	R2393489
Titanium (Ti)-Total		<0.0010		0.0010	mg/L	05-JUL-12	05-JUL-12	R2393489
Tungsten (W)-Total		<0.0020		0.0020	mg/L	05-JUL-12	05-JUL-12	R2393489
Uranium (U)-Total		0.00072		0.00050	mg/L	05-JUL-12	05-JUL-12	R2393489
Vanadium (V)-Total		<0.0020		0.0020	mg/L	05-JUL-12	05-JUL-12	R2393489
Zinc (Zn)-Total		<0.020		0.020	mg/L	05-JUL-12	05-JUL-12	R2393489
Zirconium (Zr)-Total		<0.0010		0.0010	mg/L	05-JUL-12	05-JUL-12	R2393489
pH								
pH		7.76		0.10	pH units		03-JUL-12	R2391974
L1171564-3	REP-6							
Sampled By: KEVIN TEGUMIAR on 29-JUN-12 @ 11:40								
Matrix: WASTE WATER								
BTEX plus F1-F4								
BTX plus F1 by GCMS								

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1171564-3 REP-6							
Sampled By: KEVIN TEGUMIAR on 29-JUN-12 @ 11:40							
Matrix: WASTE WATER							
BTX plus F1 by GCMS							
Benzene	<0.00050		0.00050	mg/L		11-JUL-12	R2396218
Toluene	<0.0010		0.0010	mg/L		11-JUL-12	R2396218
Ethyl benzene	<0.00050		0.00050	mg/L		11-JUL-12	R2396218
o-Xylene	<0.00050		0.00050	mg/L		11-JUL-12	R2396218
m+p-Xylenes	<0.00050		0.00050	mg/L		11-JUL-12	R2396218
Xylenes	<0.0015		0.0015	mg/L		11-JUL-12	R2396218
F1 (C6-C10)	<0.10		0.10	mg/L		11-JUL-12	R2396218
Surrogate: 4-Bromofluorobenzene (SS)	80.5		70-130	%		11-JUL-12	R2396218
CCME Total Hydrocarbons							
F1-BTEX	<0.10		0.10	mg/L		13-JUL-12	
F2-Naphth	<0.25		0.25	mg/L		13-JUL-12	
F3-PAH	<0.25		0.25	mg/L		13-JUL-12	
Total Hydrocarbons (C6-C50)	<0.44		0.44	mg/L		13-JUL-12	
F2-F4 PHC method							
F2 (C10-C16)	<0.25		0.25	mg/L	05-JUL-12	05-JUL-12	R2393657
F3 (C16-C34)	<0.25		0.25	mg/L	05-JUL-12	05-JUL-12	R2393657
F4 (C34-C50)	<0.25		0.25	mg/L	05-JUL-12	05-JUL-12	R2393657
Surrogate: 2-Bromobenzotrifluoride	87.6		65-135	%	05-JUL-12	05-JUL-12	R2393657
Miscellaneous Parameters							
Ammonia, Total (as N)	0.024		0.010	mg/L		11-JUL-12	R2396763
Biochemical Oxygen Demand	<6.0		6.0	mg/L	04-JUL-12	09-JUL-12	R2394790
BOD Carbonaceous	<6.0		6.0	mg/L	04-JUL-12	09-JUL-12	R2394789
Fecal Coliforms	<3		3	MPN/100mL		06-JUL-12	R2394237
Oil and Grease, Total	<2.0		2.0	mg/L	06-JUL-12	06-JUL-12	R2394615
Phenols (4AAP)	<0.0010		0.0010	mg/L	10-JUL-12	10-JUL-12	R2395644
Phosphorus (P)-Total	0.033		0.010	mg/L		09-JUL-12	R2394869
Total Organic Carbon	19.8		1.0	mg/L		26-JUL-12	R2405143
Total Suspended Solids	<5.0		5.0	mg/L		14-JUL-12	R2399078
Polyaromatic Hydrocarbons (PAHs)							
1-Methyl Naphthalene	<0.000020		0.000020	mg/L	06-JUL-12	11-JUL-12	R2398036
2-Methyl Naphthalene	<0.000020		0.000020	mg/L	06-JUL-12	11-JUL-12	R2398036
Acenaphthene	<0.000020		0.000020	mg/L	06-JUL-12	11-JUL-12	R2398036
Acenaphthylene	<0.000020		0.000020	mg/L	06-JUL-12	11-JUL-12	R2398036
Anthracene	<0.000010		0.000010	mg/L	06-JUL-12	11-JUL-12	R2398036
Acridine	<0.000020		0.000020	mg/L	06-JUL-12	11-JUL-12	R2398036
Benzo(a)anthracene	<0.000010		0.000010	mg/L	06-JUL-12	11-JUL-12	R2398036
Benzo(a)pyrene	<0.0000050		0.0000050	mg/L	06-JUL-12	11-JUL-12	R2398036
Benzo(b&j)fluoranthene	<0.000010		0.000010	mg/L	06-JUL-12	11-JUL-12	R2398036
Benzo(g,h,i)perylene	<0.000020		0.000020	mg/L	06-JUL-12	11-JUL-12	R2398036
Benzo(k)fluoranthene	<0.000010		0.000010	mg/L	06-JUL-12	11-JUL-12	R2398036
Chrysene	<0.000020		0.000020	mg/L	06-JUL-12	11-JUL-12	R2398036
Dibenzo(a,h)anthracene	<0.0000050		0.0000050	mg/L	06-JUL-12	11-JUL-12	R2398036
Fluoranthene	<0.000020		0.000020	mg/L	06-JUL-12	11-JUL-12	R2398036
Fluorene	<0.000020		0.000020	mg/L	06-JUL-12	11-JUL-12	R2398036
Indeno(1,2,3-cd)pyrene	<0.000010		0.000010	mg/L	06-JUL-12	11-JUL-12	R2398036
Naphthalene	<0.000050		0.000050	mg/L	06-JUL-12	11-JUL-12	R2398036
Phenanthrene	<0.000050		0.000050	mg/L	06-JUL-12	11-JUL-12	R2398036
Pyrene	<0.000010		0.000010	mg/L	06-JUL-12	11-JUL-12	R2398036
Quinoline	<0.000030	DLM	0.000030	mg/L	06-JUL-12	11-JUL-12	R2398036
B(a)P Total Potency Equivalent	<0.000030		0.000030	mg/L	06-JUL-12	11-JUL-12	R2398036
Surrogate: Acenaphthene d10	60.5		50-150	%	06-JUL-12	11-JUL-12	R2398036

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1171564-3 REP-6							
Sampled By: KEVIN TEGUMIAR on 29-JUN-12 @ 11:40							
Matrix: WASTE WATER							
Polyaromatic Hydrocarbons (PAHs)							
Surrogate: Acridine d9	68.0		50-150	%	06-JUL-12	11-JUL-12	R2398036
Surrogate: Chrysene d12	80.8		50-150	%	06-JUL-12	11-JUL-12	R2398036
Surrogate: Naphthalene d8	50.4		50-150	%	06-JUL-12	11-JUL-12	R2398036
Surrogate: Phenanthrene d10	64.4		50-150	%	06-JUL-12	11-JUL-12	R2398036
Routine Soluble + Metal scan							
Alkalinity							
Alkalinity, Total (as CaCO3)	130		20	mg/L		03-JUL-12	R2391974
Bicarbonate (HCO3)	138		24	mg/L		03-JUL-12	R2391974
Carbonate (CO3)	<12		12	mg/L		03-JUL-12	R2391974
Hydroxide (OH)	<6.8		6.8	mg/L		03-JUL-12	R2391974
Chloride by Ion Chromatography							
Chloride	10.2		0.50	mg/L		04-JUL-12	R2393169
Conductivity							
Conductivity	289		20	umhos/cm		03-JUL-12	R2391974
Hardness Calculated							
Hardness (as CaCO3)	168		0.30	mg/L		06-JUL-12	
Nitrate as N by Ion Chromatography							
Nitrate-N	<0.050		0.050	mg/L		04-JUL-12	R2393169
Nitrate+Nitrite							
Nitrate and Nitrite as N	<0.071		0.071	mg/L		03-JUL-12	
Nitrite as N by Ion Chromatography							
Nitrite-N	<0.050		0.050	mg/L		04-JUL-12	R2393169
Sulfate by Ion Chromatography							
Sulfate	26.7		0.50	mg/L		04-JUL-12	R2393169
TDS calculated							
TDS (Calculated)	183		5.0	mg/L		06-JUL-12	
Total Metals by ICP-MS							
Aluminum (Al)-Total	0.046		0.020	mg/L	05-JUL-12	05-JUL-12	R2393489
Antimony (Sb)-Total	<0.0010		0.0010	mg/L	05-JUL-12	05-JUL-12	R2393489
Arsenic (As)-Total	<0.0010		0.0010	mg/L	05-JUL-12	05-JUL-12	R2393489
Barium (Ba)-Total	0.0123		0.00050	mg/L	05-JUL-12	05-JUL-12	R2393489
Beryllium (Be)-Total	<0.0010		0.0010	mg/L	05-JUL-12	05-JUL-12	R2393489
Bismuth (Bi)-Total	<0.00050		0.00050	mg/L	05-JUL-12	05-JUL-12	R2393489
Boron (B)-Total	<0.030		0.030	mg/L	05-JUL-12	05-JUL-12	R2393489
Cadmium (Cd)-Total	<0.00020		0.00020	mg/L	05-JUL-12	05-JUL-12	R2393489
Calcium (Ca)-Total	48.9		0.20	mg/L	05-JUL-12	05-JUL-12	R2393489
Cesium (Cs)-Total	<0.00050		0.00050	mg/L	05-JUL-12	05-JUL-12	R2393489
Chromium (Cr)-Total	<0.0020		0.0020	mg/L	05-JUL-12	05-JUL-12	R2393489
Cobalt (Co)-Total	<0.00050		0.00050	mg/L	05-JUL-12	05-JUL-12	R2393489
Copper (Cu)-Total	0.0042		0.0020	mg/L	05-JUL-12	05-JUL-12	R2393489
Iron (Fe)-Total	<0.10		0.10	mg/L	05-JUL-12	05-JUL-12	R2393489
Lead (Pb)-Total	<0.0010		0.0010	mg/L	05-JUL-12	05-JUL-12	R2393489
Lithium (Li)-Total	0.0059		0.0020	mg/L	05-JUL-12	05-JUL-12	R2393489
Magnesium (Mg)-Total	11.1		0.050	mg/L	05-JUL-12	05-JUL-12	R2393489
Manganese (Mn)-Total	0.0011		0.0010	mg/L	05-JUL-12	05-JUL-12	R2393489
Molybdenum (Mo)-Total	0.00125		0.00050	mg/L	05-JUL-12	05-JUL-12	R2393489
Nickel (Ni)-Total	<0.0020		0.0020	mg/L	05-JUL-12	05-JUL-12	R2393489
Phosphorus (P)-Total	<0.50		0.50	mg/L	05-JUL-12	05-JUL-12	R2393489
Potassium (K)-Total	2.78		0.10	mg/L	05-JUL-12	05-JUL-12	R2393489
Rubidium (Rb)-Total	0.00209		0.00050	mg/L	05-JUL-12	05-JUL-12	R2393489
Selenium (Se)-Total	<0.0050		0.0050	mg/L	05-JUL-12	05-JUL-12	R2393489
Silicon (Si)-Total	0.70		0.30	mg/L	05-JUL-12	05-JUL-12	R2393489

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Sample Details/Parameters		Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L1171564-3	REP-6							
Sampled By: KEVIN TEGUMIAR on 29-JUN-12 @ 11:40								
Matrix: WASTE WATER								
Total Metals by ICP-MS								
Silver (Ag)-Total		<0.0010		0.0010	mg/L	05-JUL-12	05-JUL-12	R2393489
Sodium (Na)-Total		4.96		0.050	mg/L	05-JUL-12	05-JUL-12	R2393489
Strontium (Sr)-Total		0.0401		0.00050	mg/L	05-JUL-12	05-JUL-12	R2393489
Tellurium (Te)-Total		<0.0010		0.0010	mg/L	05-JUL-12	05-JUL-12	R2393489
Thallium (Tl)-Total		<0.0050		0.0050	mg/L	05-JUL-12	05-JUL-12	R2393489
Thorium (Th)-Total		<0.0010		0.0010	mg/L	05-JUL-12	05-JUL-12	R2393489
Tin (Sn)-Total		<0.00060		0.00060	mg/L	05-JUL-12	05-JUL-12	R2393489
Titanium (Ti)-Total		0.0016		0.0010	mg/L	05-JUL-12	05-JUL-12	R2393489
Tungsten (W)-Total		<0.0020		0.0020	mg/L	05-JUL-12	05-JUL-12	R2393489
Uranium (U)-Total		0.00439		0.00050	mg/L	05-JUL-12	05-JUL-12	R2393489
Vanadium (V)-Total		<0.0020		0.0020	mg/L	05-JUL-12	05-JUL-12	R2393489
Zinc (Zn)-Total		<0.020		0.020	mg/L	05-JUL-12	05-JUL-12	R2393489
Zirconium (Zr)-Total		<0.0010		0.0010	mg/L	05-JUL-12	05-JUL-12	R2393489
pH								
pH		8.72		0.10	pH units		03-JUL-12	R2391974

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

Sample Parameter Qualifier Key:

Qualifier	Description
DLA	Detection Limit Adjusted For required dilution
DLM	Detection Limit Adjusted For Sample Matrix Effects
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ALK-TOT-WP	Water	Alkalinity	APHA 2320B
Alkalinity of water is a measure of its acid neutralizing capacity. Alkalinity is imparted by bicarbonate, carbonate and hydroxide components of water. It is determined by titration with a standard solution of strong mineral acid to the successive HCO ₃ ⁻ and H ₂ CO ₃ endpoints indicated electrometrically.			
BOD-CBOD-WP	Water	Carbonaceous BOD	APHA 5210 B-5 day Incub.-O ₂ electrode
A sample of water is incubated for 5 days at 20 degrees Celcius. Comparison of dissolved oxygen content at beginning and end of incubation provides a measure of Biochemical oxygen demand. If carbonaceous BOD is requested, TCMP is added to the sample to chemically inhibit nitrogenous oxygen demand. If soluble BOD is requested, the sample is filtered prior to analysis. Surface waters have a DL of 1 mg/L. Effluents are diluted according to their history and will have a sample DL of 6 mg/L or greater, depending on the dilutions used.			
BOD-WP	Water	Biochemical Oxygen Demand (BOD)	APHA 5210 B
The sample is incubated for 5 days at 20 degrees Celcius. Comparison of dissolved oxygen content at the beginning and end of incubation provides a measure of biochemical oxygen demand. If carbonaceous BOD is requested, TCMP is added to the sample to chemically inhibit nitrogenous oxygen demand. If soluble BOD is requested, the sample is filtered prior to analysis. Surface waters have a DL of 1 mg/L. Effluents are diluted according to their history and will have a sample DL of 6 mg/L or greater, depending on the dilutions used.			
BTEXS+F1-HSMS-WP	Water	BTX plus F1 by GCMS	EPA SW846 8260B REV 2 SEPT 1994
The water sample, with added reagents, is heated in a sealed vial to equilibrium. The headspace from the vial is transferred into a gas chromatograph. Target compound concentrations are measured using mass spectrometry detection.			
C-TOT-ORG-WP	Water	Total Organic Carbon	APHA 5310 B-INSTRUMENTAL-WP
This method is applicable to the analysis of ground water, wastewater, and surface water samples. The form detected depends upon sample pretreatment: Unfiltered sample = TC, 0.45um filtered = TDC. Samples are injected into a combustion tube containing an oxidation catalyst. The carrier gas containing the combustion product from the combustion tube flows through an inorganic carbon reactor vessel and is then sent through a halogen scrubber into a sample cell set in a non-dispersive infrared gas analyzer (NDIR) where carbon dioxide is detected. For total inorganic carbon and dissolved inorganic carbon, the sample is injected into an IC reactor vessel where only the IC component is decomposed to become carbon dioxide.			
The peak area generated by the NDIR indicates the TC/TDC or TIC/DIC as applicable. The total organic carbon content of the sample is calculated by subtracting the TIC from the TC. TOC = TC-TIC, DOC = TDC-DIC, Particulate = Total - Dissolved.			
CL-IC-WP	Water	Chloride by Ion Chromatography	EPA 300.1 (modified)
Anions in aqueous matrices are analyzed using ion chromatography with conductivity and/or UV absorbance detectors.			
EC-WP	Water	Conductivity	APHA 2510B
Conductivity of an aqueous solution refers to its ability to carry an electric current. Conductance of a solution is measured between two spatially fixed and chemically inert electrodes.			
ETL-HARDNESS-TOT-WP	Water	Hardness Calculated	HARDNESS CALCULATED
ETL-SOLIDS-CALC-WP	Water	TDS calculated	CALCULATION
F1-F4-CALC-WP	Water	CCME Total Hydrocarbons	CCME CWS-PHC DEC-2000 - PUB# 1310-L

Analytical methods used for analysis of CCME Petroleum Hydrocarbons have been validated and comply with the Reference Method for the CWS PHC.

In cases where results for both F4 and F4G are reported, the greater of the two results must be used in any application of the CWS PHC guidelines and the gravimetric heavy hydrocarbons cannot be added to the C6 to C50 hydrocarbons.

In samples where BTEX and F1 were analyzed, F1-BTEX represents a value where the sum of Benzene, Toluene, Ethylbenzene and total Xylenes has been subtracted from F1.

In samples where PAHs, F2 and F3 were analyzed, F2-Naphth represents the result where Naphthalene has been subtracted from F2. F3-PAH represents a result where the sum of Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Dibenzo(a,h)anthracene, Fluoranthene, Indeno(1,2,3-cd)pyrene, Phenanthrene, and Pyrene has been subtracted from F3.

Unless otherwise qualified, the following quality control criteria have been met for the F1 hydrocarbon range:

1. All extraction and analysis holding times were met.
2. Instrument performance showing response factors for C6 and C10 within 30% of the response factor for toluene.
3. Linearity of gasoline response within 15% throughout the calibration range.

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
<p>Unless otherwise qualified, the following quality control criteria have been met for the F2-F4 hydrocarbon ranges:</p> <ol style="list-style-type: none"> 1. All extraction and analysis holding times were met. 2. Instrument performance showing C10, C16 and C34 response factors within 10% of their average. 3. Instrument performance showing the C50 response factor within 30% of the average of the C10, C16 and C34 response factors. 4. Linearity of diesel or motor oil response within 15% throughout the calibration range. 			
F2-F4-WS-WP	Water	F2-F4 PHC method	EPA 3510/8000
<p>This is the determination of the Petroleum Hydrocarbon fractions in water (F2, F3 and F4). A water sample volume of 200 mL in a 250 mL glass amber bottle is shaken with 10 mL hexane for two hours on a wrist action shaker, and then sonicated for 5 minutes. After extraction, the solvent layer is drawn off and analyzed against C10, C16 and C34 standards on a gas chromatograph equipped with a flame ionization detector.</p>			
FC-MPN-WP	Water	Fecal Coliform	APHA 9221A-C
<p>The Most Probable Number (MPN) method is based on the Multiple Tube Fermentation technique. The results of examination of replicate tubes and dilutions of a sample are reported after confirmations specific to total coliform, fecal coliform and E. coli are performed. Results are reported in MPN/100 mL for water and MPN/gram for food and solid samples.</p>			
IONBALANCE-OP05-WP	Water	Ion Balance Calculation No Reporting	APHA 1030E
MET-T-MS-WP	Water	Total Metals by ICP-MS	U.S. EPA 200.8-T
<p>Total Metals by ICP-MS: This analysis is carried out using sample preparation procedures adapted from Standard Methods for the examination of Water and Wastewater Method 3030E and analytical procedures adapted from U.S EPA Method 200.8 for analysis of metals by inductively coupled-mass spectrometry.</p>			
NH3-COL-WP	Water	Ammonia by colour	APHA 4500 NH3 F
<p>Ammonia in water samples forms indophenol when reacted with hypochlorite and phenol. The intensity is amplified by the addition of sodium nitroprusside and measured colourmetrically.</p>			
NO2+NO3-CALC-WP	Water	Nitrate+Nitrite	CALCULATION
NO2-IC-WP	Water	Nitrite as N by Ion Chromatography	EPA 300.1 (modified)
<p>Anions in aqueous matrices are analyzed using ion chromatography with conductivity and/or UV absorbance detectors.</p>			
NO3-IC-WP	Water	Nitrate as N by Ion Chromatography	EPA 300.1 (modified)
<p>Anions in aqueous matrices are analyzed using ion chromatography with conductivity and/or UV absorbance detectors.</p>			
OGG-TOT-WT	Water	Oil and Grease, Total	APHA 5520 B
<p>Sample is extracted with hexane, extract is then evaporated and the residue is weighed to determine total oil and grease.</p>			
P-T-COL-WP	Water	Phosphorus, Total	APHA 4500 P PHOSPHORUS
<p>This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorous is determined colourimetrically after persulphate digestion of the sample.</p>			
PAH,PANH-WP	Water	Polyaromatic Hydrocarbons (PAHs)	EPA SW 846/8270-GC/MS
<p>Water is spiked with a surrogate spike mix and extracted using solvent extraction techniques. Analysis is performed by GC/MS in the selected ion monitoring (SIM) mode.</p>			
PH-WP	Water	pH	APHA 4500H
<p>The pH of a sample is the determination of the activity of the hydrogen ions by potentiometric measurement using a standard hydrogen electrode and a reference electrode.</p>			
PHENOLS-4AAP-WT	Water	Phenol (4AAP)	EPA 9066
<p>An automated method is used to distill the sample. The distillate is then buffered to pH 9.4 which reacts with 4AAP and potassium ferricyanide to form a red complex which is measured colorimetrically.</p>			
SO4-IC-WP	Water	Sulfate by Ion Chromatography	EPA 300.1 (modified)
<p>Anions in aqueous matrices are analyzed using ion chromatography with conductivity and/or UV absorbance detectors.</p>			
SOLIDS-TOTSUS-WP	Water	Total Suspended Solids	APHA 2540 D (modified)
<p>Total suspended solids in aqueous matrices is determined gravimetrically after drying the residue at 103 105°C.</p>			

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
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The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
WP	ALS ENVIRONMENTAL - WINNIPEG, MANITOBA, CANADA
WT	ALS ENVIRONMENTAL - WATERLOO, ONTARIO, CANADA

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample

mg/kg ww - milligrams per kilogram based on wet weight of sample

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight

mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

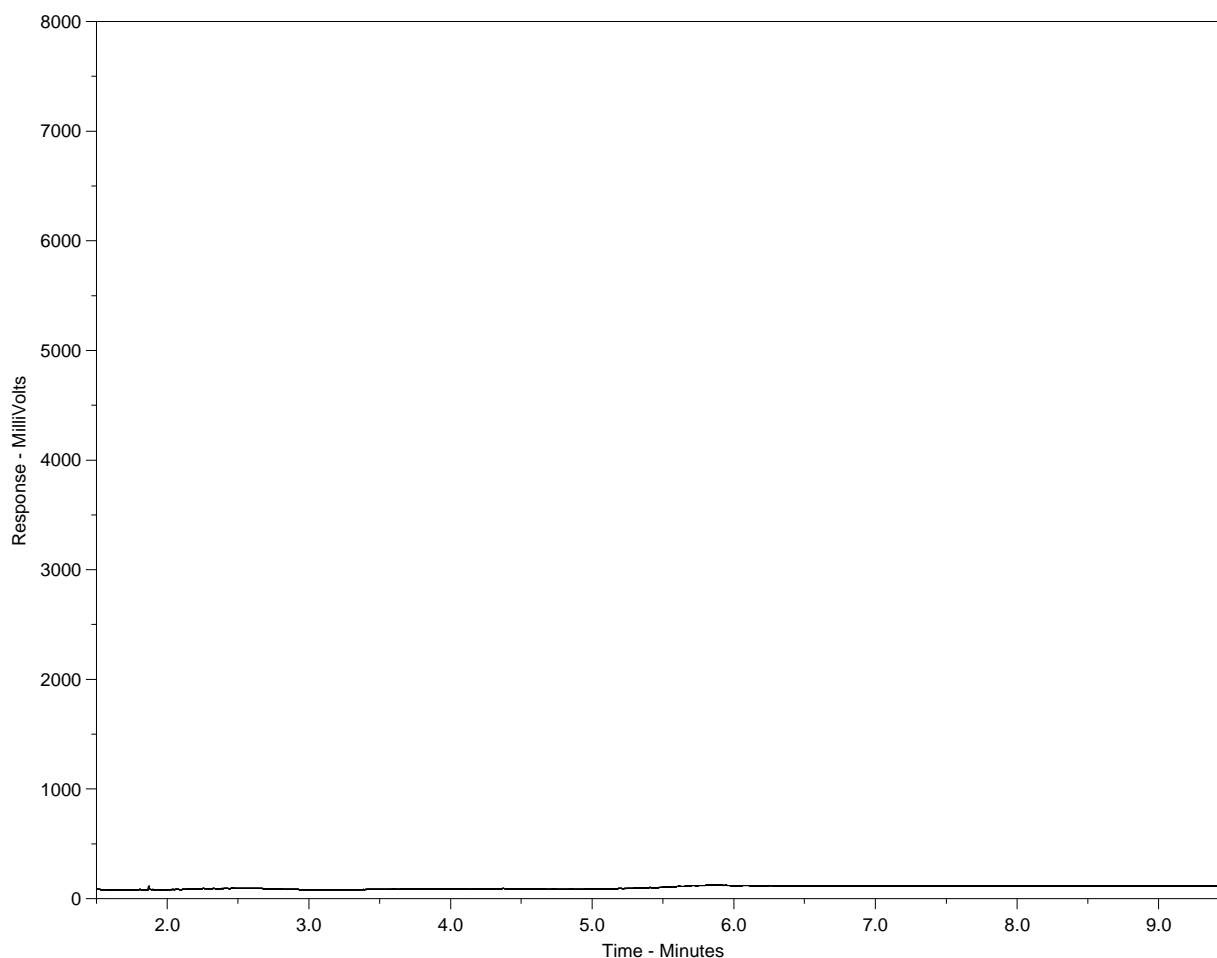
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

Hydrocarbon Distribution Report



ALS Sample ID: L1171564-3
Client ID: REP-6



<-nC10-----nC16-----nC34-----nC50----->
<-----nC11-----nC30----->
<---Gasoline-----> <-----Heavy Oils----->
|-----Diesel-----|

The Canada Wide Standard Hydrocarbon Distribution Report is intended to assist you in characterizing hydrocarbon products that may be present in your sample. The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products as well as a number of specified n-alkane hydrocarbon marker compounds. Comparison of this report with those of reference standards may also assist in characterizing hydrocarbons present in the sample.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

Note: This chromatogram was produced with a high temperature GC method that is specific to the Canada-Wide Standard method (December 2007 version). Note that retention times and distribution profiles from reports produced using different GC programs will differ.



117156L

GENF 20.00 Front

Appendix:

Reports by DIAND/INAC/AANDC, EC, NWB
Repulse Bay Water Licence 3BM-REP0409



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TEL: (867) 360-6338
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NUNAVUT WATER BOARD
NUNAVUT IMALIRIYIN KATIMAYINGI

NWB File No: NWB3REP0409

July 8, 2005

Ron Kent, P. Eng.,
Manager, Environmental Engineering
FSC Architects & Planners
4910 53rd Street, P.O. Box 1777
Yellowknife, NT X1A 2P4
Email: ron@fsc.ca

Re: Contaminated Soil Clean-up

Dear Mr. Kent:

In response to your letter of May 15, 2005 to Jim Wall regarding contaminated soil clean-up of hydrocarbon contaminated material and temporary storage at the Solid Waste Facility, the proposed activity would require an amendment to the current water licence (No. NWB3REP0409) held by the Hamlet of Repulse Bay.

The minimum requirements would include but not be limited to the following:

1. Completed application form
<http://ftp.nunavut.ca/nwb/NWB%20Administration/NWB%20GENERAL%20INFORMATION/Application%20Forms/>
2. Completed "Supplementary Information Requirements ("SIR") For Hydrocarbon-Impacted Soil Storage and Landfarm Treatment Facilities"
<http://ftp.nunavut.ca/nwb/NWB%20Administration/NWB%20GENERAL%20INFORMATION/Questionnaires/> as applicable to this project which may include detailed engineering description of the proposed activity, including:
 - a. relevant maps and engineering drawings
 - b. on-site conditions
 - c. completed monitoring results and proposed monitoring plan
 - d. mitigation measures proposed to ensure protection of water resources

- e. long term mitigation and implementation plan (Note: Should the Hamlet contemplate design and construction of a lined treatment landfarm facility, a subsequent amendment application would need to be filed with the NWB.)
- 3. Brief summary of the application in both English and Inuktitut
 - 4. Application fee of \$30 payable to the Receiver General for Canada

We look forward to receiving the application. If you have any questions about procedures, contact the Manager of Licensing, Phyllis Beaulieu at 867-360-6338 ext 15 or email: licensing@nwb.nunavut.ca. If you have any questions regards technical details of the application once filed, please contact the undersigned.

Sincerely,

Original signed by:

Dionne Filiatrault, P. Eng.,
Manager of Technical Services

Cc: Hamlet of Repulse Bay
INAC Manager of Water Resources, Jim Rogers



P.O. Box 119
GJOA HAVEN, NU X0B 1J0
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NUNAVUT WATER BOARD
NUNAVUT IMALIRIYIN KATIMAYIT
OFFICE DES EAUX DU NUNAVUT

NWB File No.: 3BM-REP0409

October 30, 2012

Steve Mapsalak
Senior Administrative Officer
Hamlet of Repulse Bay
P.O. Box 10
Repulse Bay, Nunavut
X0C 0H0
Email: saorepulse@qiniq.com

Subject: 3BM-REP0409 - Application to Renew Water Licence

Dear Mr. Mapslak:

On March 28, 2011, the Nunavut Water Board (“NWB” or “Board”) received an unsigned, partially completed application to renew water licence 3BM-REP0409 (Licence) from the Hamlet of Repulse Bay.

The NWB conducted a preliminary review of the application document and determined that the application is incomplete. In addition, the NWB notes that as indicated in Block 13 of the application form, the overall estimated quantity of water to be used will increase to 89.73 cubic meters per day from the current licenced amount of 24,000 cubic meters per year or 65.75 cubic meters per day. As such, a water licence renewal and amendment is required.

To complete the water licence renewal and amendment application, the NWB requires the following additional information:

- Completed and signed *Application for a Water Licence Amendment* (see attached form);
- Confirmation in writing from the Nunavut Planning Commission (NPC) confirming that NPC’s requirements regarding land use plan conformity have been addressed;
- Confirmation in writing from the Nunavut Impact Review Board (NIRB) confirming that NIRB’s requirements regarding development impact assessment have been addressed;
- Compliance assessment and status report including a response to any inspector’s reports (see attached *Guide to the Preparation of a Plan for Compliance*);
- Executive summary in English;
- Executive summary in Inuktitut; and
- Application fee of \$30.

The Board will proceed with processing the application upon receipt of the items listed above and an assessment of the completion of the application.

Finally, the Hamlet of Repulse Bay is reminded that its water licence expired on May 31, 2009; however, expiry of the Licence does not relieve the holder from any obligations imposed by the Licence.

Should you have any questions please do not hesitate to contact the NWB office.

Sincerely,

Original signed by:

Phyllis Beaulieu
Manager of Licensing

PB/kt/

Cc: Bryan Purdy, GN

Attachment Application for Water Licence Amendment
 NWB Draft Guide to the Preparation of a Plan for Compliance

