



Environment
Canada

Environnement
Canada

Environmental Protection Operations
Prairie and Northern Region
5019 52nd Street, 4th Floor
P.O. Box 2310
Yellowknife, NT X1A 2P7

March 4, 2011

Our File No.: 4709 001 046 002
File No.: N7L1-1831

Véronique D'Amours Gauthier
Science and Regulatory Officer
NWT Water Board
P.O Box 1326
Yellowknife, NT, X1A 2N9

Via Email at info@nwtwb.com

**RE: N7L1-1831 Water License – Unipkat I-22 Sump Remediation Project – Shell
Canada Ltd. – Comments on Draft Water License**

Dear Ms. Gauthier,

Environment Canada (EC) is pleased to submit comments on Shell Canada Ltd.'s Draft Water License to the Northwest Territories Water Board for consideration .

Comments by EC on the attached Draft Water License are made using the "track changes" tool.

Should you have any questions or wish clarification on any aspect of this submission please do not hesitate to contact me at (867) 669-4748.

Best regards,

Original Signed by

Stacey Lambert
Environmental Assessment Coordinator, EPO

cc: Randall Warren (Shell Canada Ltd.)
Carey Ogilvie (Head, Environmental Assessment, EPO)
Lisa Perry (Sr. Environmental Assessment Coordinator, EPO)
Jody Klassen (Head, Contaminated Site, EPO)



Canada

PART A: SCOPE AND DEFINITIONS

1. Scope

- a. This Licence entitles Shell Canada Ltd to use Water and dispose of Waste for industrial undertakings at Unipkat I-22, Latitude 69°11'36.07" North and Longitude 135°20'33.88" West, Northwest Territories;
- b. This Licence is issued subject to the conditions contained herein with respect to the taking of Water and the depositing of Waste of any type in any Waters or in any place under any conditions where such Waste or any other Waste that results from the deposits of such Waste may enter any Waters. Whenever new Regulations are made or existing Regulations are amended by the Governor in Council under the *Northwest Territories Waters Act*, or other statutes imposing more stringent conditions relating to the quantity or type of Waste that may be so deposited or under which any such Waste may be so deposited, this Licence shall be deemed, upon promulgation of such Regulations, to be automatically amended to conform with such Regulations; and
- c. Compliance with the terms and conditions of this Licence does not absolve the Licensee from responsibility for compliance with the requirements of all applicable Federal, Territorial and Municipal legislation.

2. Definitions

In this Licence: **N7L1-1831**

"Act" means the *Northwest Territories Waters Act*;

"Board" means the Northwest Territories Water Board established under Section 10 of the *Northwest Territories Waters Act*;

"Greywater" means all liquid Waste from showers, baths, sinks, kitchens and domestic washing facilities, but does not include Toilet Waste;

"Inspector" means an Inspector designated by the Minister under Section 35(1) of the *Northwest Territories Waters Act*;

"Licensee" means the holder of this Licence;

"Minister" means the Minister of Indian and Northern Affairs Canada;

"Modification" means an alteration to a physical work that introduces a new structure or replaces an existing structure and does not alter the purpose or function of the work, but does not include an expansion;

"Natural Boundary(ies)" means the visible high Water mark of any lake, river, stream or other body of Water where the presence and action of the Water is so common and usual, and so long continued, as to mark upon the soil of the bed of the lake, stream or other body of Water, a character distinct from that of the banks thereof, both in respect to vegetation and in respect to the nature of the soil itself. In addition, the best estimates of the edge of dormant or old side channels and marsh areas are considered to be Natural Boundaries;

"Project" means the activities to be carried out at Unipkat I-22, NT by Shell Canada Ltd as defined in the Water License application and associated documents, which include the Project Description;

"Regulations" means Regulations proclaimed pursuant to Section 33 of the *Northwest Territories Waters Act*;

"Sewage" means all Toilet Wastes and Greywater;

"Sewage Disposal Facilities" comprises the area and engineered structures designed to contain Sewage;

"Solid Waste Disposal Facilities" comprises the area and associated structures designed to contain solid Waste including structures used to contain surface runoff;

"Spring Freshet" means the sudden increase in flow carried by a stream as snowmelt occurs at higher elevations in the watershed;

"Toilet Wastes" means all human excreta and associated products but does not include Greywater;

"Waste(s)" means Waste as defined by Section 2 of the *Northwest Territories Waters Act*;

"Water(s)" means any Waters as defined by Section 2 of the *Northwest Territories Waters Act*;

"Waterbody(ies)" means any area that in a normal year has Water flowing or standing above ground to the extent that evidence of an ordinary high Water mark is established. Wetlands contiguous to the Waterbody are considered part of the Waterbody; and

"Watercourse(s)" means any flowing body of Water.

PART B: GENERAL CONDITIONS

1. The Licensee shall file a Final Report with the Board and an Inspector no later than September 30th, 2011 that shall contain, at a minimum, the following information:
 - a. a description of the Water use activities carried out during the Project;
 - b. the total quantities in cubic metres of fresh Water obtained from all sources;
 - c. the total volume for each type of Waste disposed of, and their disposal location(s);
 - d. the total volume of contaminated soil or snow disposed of, their concentration level and their disposal location(s);
 - e. the total volume of contaminated soil or snow that will remain onsite and their concentration level;
 - f. the total quantities of sump material removed from the sump for disposal and, if any, the total quantities of sump material that will remain onsite;
 - g. the results of any sampling and monitoring program undergone during and after the removal of contaminated soil and sump material;
 - h. the delineation of all potentially operable contaminant pathways and the measures taken to prevent migration of contaminants from remaining contaminated soil into Water;
 - i. a summary of the total volume for each type of hazardous materials stored on site and transported off site;
 - j. a summary of the remediation and restoration activities undertaken under the term of this Water Licence, including photographs, monitoring results and analytical data in relation to the effectiveness of the remediation undertaken;
 - k. a list of any spills and unauthorized discharged;
 - l. a plan of action for future remediation of the Unipkat I-22 site; and
 - m. any other details on Water use or Waste disposal requested by the Board within forty-five (45) days before the annual report is due.
2. The final report required to be submitted to the Board and an Inspector will be unbound and reproducible by standard photocopier, accompanied by two

Comment [EC1]: Using what parameters? Part J, 1i.?

Comment [EC2]: and to provide the details on the areas of suspected contamination. EC notes that the Proponent has indicated that there is other contamination elsewhere at the site, although no details were provided (Section 5.2 Previous Work of the Project Description and Section 5.3.5 Soil Excavation).

Comment [EC3]: Using CCME Canada Wide Standard for Petroleum Hydrocarbons in Soil (2008) guidance or adapt the Alberta Tier 1 guidance for petroleum hydrocarbon contaminated soil for natural area land use. Please note that environmental soil quality guidelines do not apply within 10m of a surface water body. Contamination that is present within 10m of a surface water body must be dealt with on a site-specific basis to develop criteria which are protective of aquatic life such that no deleterious impacts to fish or sediment occur.

electronic copies to the Board and one copy to an Inspector.

3. Any meters, devices or other such methods used for measuring the volumes of Water used or Waste disposed and discharged shall be installed, operated and maintained to the satisfaction of an Inspector.
4. The Licensee shall immediately report to the 24 Hour Spill Report Line (867 920-8130) any spills which are reported to, or observed by, the Licensee within the Project boundaries.
5. The Licensee shall ensure a copy of this Licence is maintained at the site of operation at all times.
6. Prior to the use of Water for this operation or the disposal of Waste, the Licensee shall have posted and shall maintain a security deposit in the amount of **“awaiting for INAC-WRD calculation”** Dollars for this operation pursuant to section 17(1) of the Act and section 12 of the Regulations. The security deposit shall be maintained until such time as it is fully or in part refunded by the Minister pursuant to section 17 of the Act. This clause shall survive the expiry of this Licence.
7. The Licensee shall, at a minimum, implement all of the policies, practices, mitigation measures, recommendations and procedures for the protection of the environment referred to in its application, Project Description and other documents submitted regarding the Unipkat I-22 Project. All field operation staff shall be provided with appropriate advice/training on how to implement these policies, practices, mitigation measures, recommendations and procedures.

Comment [EC4]: Please note that any spill of fuel or hazardous / deleterious materials, adjacent to or into a water body regardless of quantity must be report to the NWT / NU 24-Hour Spill Line.

PART C: CONDITIONS APPLYING TO WATER USE

1. The Licensee shall obtain all Water from Arvoknar Channel or Middle Channel of the Mackenzie River as described in the Project Description or as otherwise approved by an Inspector.
2. The Licensee may obtain Water from an alternate Water supply for use on an emergency basis upon approval of an Inspector when it is not possible to obtain Water from Arvoknar Channel or Middle Channel of the Mackenzie River as stated in Part C, Item 1.
3. The daily quantity of Water used for all purposes shall not exceed 295 cubic metres.

PART D: CONDITIONS APPLYING TO WATERCOURSE ALTERATION

1. All disturbed ground surfaces shall be stabilized in such a manner so as to prevent erosion and surface runoff during the undertakings.
2. For the excavation of backfill material and the removal of debris activities, the Licensee shall control siltation or sedimentation downstream of the work area and minimize further erosion to the extent possible, utilizing appropriate measures to the satisfaction of an Inspector.
3. Excavated material and removed debris shall be deposited to a disposal area, approved by an Inspector, a minimum of 10 horizontal metres beyond the Natural Boundary of any Watercourses.
4. All material excavated from the Waterbody must be deposited in such a manner as to remain in a stable condition.
5. Equipments used during the excavation and removal of debris shall be mechanically sound and free of leaks. Mechanized clearing should not be done immediately adjacent to any Watercourse.
6. Equipment used to excavate sediment and to remove debris from the Arvoknar Channel shall be perpendicular (90°) to the Watercourse and shall be made at locations where the bed is of rock or coarse granular material.
7. The Arvoknar Channel shall not be disturbed beyond the immediate area required for the purpose of the undertaking, as described in the application and related documents.
8. The Licensee shall minimize the disturbance of riparian vegetation within the immediate boundary of any Watercourse to the extent practicable.
9. All disturbed ground surfaces shall be regarded in a manner which is consistent with the topography of the site and which prevents erosion and surface runoff from carrying sediment into any Waterbody. Where soil conditions permit, disturbed areas shall be re-vegetated with appropriate reclamation seeds and/or plant species that are native to the Northwest Territories.

Deleted: Watercourse

Comment [EC5]: Remove condition. The material on site is sand and silt. No gravel or rock is present in this area.

Deleted: Watercourse

PART E: CONDITIONS APPLYING TO WATERCOURSE CROSSING

1. If the Licensee requires a Watercourse crossing, it is recommended that the following measures be implemented at all Watercourses crossings:
 - a. winter stream crossings should be located to minimized approach grades and be constructed entirely of ice and snow materials;

- b. the Licensee shall ensure that only clean snow is used for construction of snowfills for vehicle and equipment access on all Watercourses crossing and that no debris is placed in the Watercourse channel;
- c. the banks of any Watercourse should be protected using suitable erosion control measures;
- d. ice and snow crossings should not impede the flow of any Watercourse. These crossings shall be removed before spring break-up to facilitate natural flow;
- e. any materials placed below the normal high Water mark used in the construction of Water crossings shall be free of any contaminants, debris, or fine materials; and
- f. Water crossing should be at right angles to streams.

PART F: CONDITIONS APPLYING TO THE ON SITE EXCAVATION

1. No excavated loose soil should be left on top of the ice to avoid sediment discharge in the Water streams during the spring break-up.
2. Excavated materials shall be stabilized and stored to the satisfaction of an Inspector and at a safe distance from any Waterbody, prior to transportation off-site.
3. The Licensee shall ensure that following the excavation of the sump and contaminated soils, these areas are backfilled and compacted as much as possible to ensure that any potential sediment from the excavation does not enter the river upon Spring's Freshet.

PART G: CONDITIONS APPLYING TO WASTE DISPOSAL

1. All type of Wastes, soils, sump materials, vegetation associated with the Project shall be handled, stored, transported or disposed of in such a manner that they are not deposited, or allowed to be deposited, into any Watercourse. All materials shall be stored above the ordinary high Water mark to the satisfaction of an Inspector.
2. All Sewage and Greywater from the camp shall be directed to a licensed Sewage Disposal Facility or disposed of in a manner approved by an Inspector.
3. The Licensee shall dispose of all solid Wastes at a licensed Solid Waste Disposal Facility or in a manner acceptable to an Inspector.

Deleted: Wastes Waters

4. The Licensee shall dispose of all contaminated soil at a licensed treatment facility or in a manner acceptable to an Inspector.
5. The Licensee shall dispose of all sump material at a licensed facility capable of receiving this type of material or in a manner acceptable to an Inspector.
6. The Licensee shall submit to the Board a copy for each agreement(s) between third parties to store, transport or dispose of Wastes. The copy submitted to the Board shall include, at a minimum, the following:
 - a. type of Waste;
 - b. quantities of Waste;
 - c. disposal location(s), and
 - d. proof of acceptance from third parties.
7. The Licensee shall store all contaminated soil or snow and sump material in such a manner as to minimize the potential for migration of contaminants into any Waters, to the satisfaction of an Inspector.
8. When transported off-site, contaminated soil or snow and sump materials shall be properly covered.

PART H: CONDITIONS APPLYING TO OPERATION AND MAINTENANCE

1. The Licensee shall submit a Waste Management Plan prior the start of the Project for review and approval by the Board.
2. The Licensee shall submit a Spill Contingency Plan prior the start of the Project for review and approval by the Board.
3. The Licensee shall implement the Waste Management Plan, as and when approved by the Board.
4. The Licensee shall implement the Spill Contingency Plan, as and when approved by the Board.
5. If the Board has not reviewed the Waste Management Plan prior the start of the Project, the Licensee shall implement the Unipkat I-22 Waste Management Plan 2011, dated January 25, 2011 as submitted to the Board.
6. If the Board has not reviewed the Spill Contingency Plan prior the start of the Project, the Licensee shall implement the Spill Contingency Plan as submitted to the Board.

7. If not approved by the Board, the Waste Management Plan shall be revised and resubmitted for approval within ten (10) working days of receiving notification of the Board's decision.
8. If not approved by the Board, the Spill Contingency Plan shall be revised and resubmitted for approval within ten (10) working days of receiving notification of the Board's decision.
9. All employees shall be trained in procedures to be followed and the equipment to be used in the containment of a spill.
10. The Unipkat I-22 Waste Management Plan 2011, dated January 25, 2011 shall be posted on site for the duration of the Project.
11. Fuel, lubricants, hydraulic fluids, coolants and similar substances shall be stored a minimum of 30 metres from the Natural Boundary of any Watercourse, in such a way that said substances are not deposited in or allowed to be deposited in Waters.
12. Hazardous Materials should be handled in a manner to prevent contamination of any Watercourse.
13. Hazardous Materials shall be stored in a manner approved by an Inspector and at a safe distance from any Waterbody.
14. A dedicated area should be used for refuelling equipment with measures taken to ensure capture and containment of drips and potential spills. Secondary containment or a surface liner should be used when refuelling any equipment on site and should also be used at all fuel drum locations. An appropriate spill kit with absorbent material should be located at all fuel storage and transfer sites.
15. Refuelling of equipment with limited mobility may be refuelled above and beyond the Natural Boundary of Arvoknar Channel and Middle Channel of the Mackenzie River. Refuelling activities shall adhere to the following:
 - a. The fuel transfer shall be visually and continually monitored;
 - b. A containment tray will be placed below the vehicle's refuelling portal;
 - c. Fuel transfer nozzles shall be operated manually and will not be locked in the open positions;
 - d. Spill kits, including absorbent pads shall be maintained in close proximity to the stationary equipment during refuelling operations;

- e. Fuel transfers shall be conducted with an operator at each end of the transfer hose;
- f. Shall only be conducted during daylight hours; and
- g. Fuel transfer equipment components such as pumps, hoses and nozzles shall be visually checked for leaks or damage prior to each refuelling operation.

PART I: CONDITIONS APPLYING TO MODIFICATIONS

1. The Licensee may, without written approval from the Board, carry out Modifications to the planned undertakings provided that such Modifications are consistent with the terms of this Licence and the following requirements are met:
 - a. the Licensee has notified the Board in writing of such proposed Modifications at least five (5) days prior to beginning the Modifications;
 - b. such Modifications do not place the Licensee in contravention of either the Licence or the Act;
 - c. the Board has not, during the five (5) days following notification of the proposed Modifications, informed the Licensee that review of the proposal will require more than five (5) days; and
 - d. the Board has not rejected the proposed Modifications.
2. Modifications for which the conditions referred to in Part F, Item 1 have not been met may be carried out only with written approval from the Board.
3. The Licensee shall provide to the Board site plans of the Modifications referred to in Part F, Item 1 within ninety (90) days of completion of the Modifications.

PART J: CONDITIONS APPLYING TO MONITORING AND SAMPLING

1. Following the on site excavation, a Site Monitoring and Sampling Plan should be submitted to the Board for review and approval by September 30, 2011 and shall include, but not be limited to the following:
 - a. name of the Licensee and Water Licence number;
 - b. introduction;
 - c. a map and attached table with detailed legend illustrating monitoring and sampling locations;

- d. a description, including a detailed rationale, of the type of monitoring and sampling required to ensure the risk of Water contamination is reduce or eliminated;
- e. description of monitoring and sampling protocols, methodologies, parameters and frequency;
- f. a summary of baseline data including baseline data collected to date;
- g. description of quality assurance and quality control measures to be followed;
- h. a summary of mitigation measures in place to prevent, reduce or manage the potential impacts to Water from Project related activities and remaining contaminated soils;
- i. an analysis and interpretation of the sampling and monitoring results, including temperature, PAHs, dioxin, furans, PHCs (F1, F2, F3 and F4), KCL, Ba;
- j. an evaluation of any identified environmental changes relative to baseline conditions that occurred as a result of the Project;
- k. an evaluation of the overall effectiveness of the site monitoring program to date;
- l. if required, a description of the adaptive management strategy and measures that will be undertaken in response to the results of the site monitoring and sampling program;
- m. identification of any impact mitigation measures needed to reduce or eliminate effects on Waters from contaminated soils that will remain on site;
- n. identification of any additional impact mitigation measures needed to reduce or eliminate Project related effects on Waters;
- o. information regarding ponding in the backfilled areas;
- p. if any ponding is apparent, a plan for the sampling of waters and sediment in the ponds;
- q. plan for the re-vegetation of disturbed areas;
- r. conclusion;

Comment [EC6]: of contaminated snow and soil removed from the site, as well as what remains on site after the sump is excavated.

- s. recommendation; and
 - t. any other items as directed by the Board.
2. The Site Monitoring and Sampling Plan required to be submitted to the Board will be unbound and reproducible by standard photocopier, accompanied by two electronic copies to the Board and one copy to an Inspector.
 3. The Licensee shall implement the Site Monitoring and Sampling Plan as approved by the Board.
 4. If not approved by the Board, the Site Monitoring and Sampling Plan shall be revised and resubmitted for approval within thirty (30) days of receiving notification of the Board's decision.
 5. Thermistors used to monitor the integrity of the barrier should be extended below the depth of impacted soil.
 6. The licensee shall submit to the NWT Water Board any other information or documents regarding monitoring and sampling requested by the Board at least six (6) months prior to the expiry date of the licence.

PART K: CONDITIONS APPLYING TO ABANDONMENT AND RESTORATION

1. Upon completion of all activities, the Licensee shall ensure that all materials, equipment, temporary structures and debris are removed from the site. Other final restoration activities as may be outlined in the Project Description should be implemented to the satisfaction of an Inspector.
2. The use of the ice road shall be completed by April 15, 2011.

NORTHWEST TERRITORIES WATER BOARD

Chairperson (Eddie Dillon)

Witness



1 Arctic Road
P. O. Box 1871
Inuvik, Northwest Territories
X0E 0T0

March 4, 2011

Your file *Voire référence*

N7L1-1831

Our file *Notre référence*

10-HCAA-CA6-00097

Veronique D'Amours-Gauthier
NWT Water Board
PO Box 2531
Inuvik, Northwest Territories
X0E 0T0



Dear Ms. D'Amours-Gauthier:

Subject: Unipkat I-22 Sump Remediation on Arvoknar Channel

This letter is in response to your request for comments on the draft water licence N7L1-1831. Below are the recommendations from Fisheries & Oceans Canada (DFO) with regards to the water licence.

With respect to Condition D4 - "All material excavated from the Watercourse must be deposited in such a manner as to remain in a stable condition."

1. DFO recommends using the wording "water body" as this includes the area within the ordinary high water mark and is more indicative of the work being done on site.

With respect to Condition D6 - "Equipment used to excavate sediment and to remove debris from the Arvoknar Channel shall be perpendicular (90°) to the Watercourse and shall be made at locations where the bed is of rock or coarse granular material."

1. The material on site is sand and silt. No gravel or rock is present in this area. Also, DFO has authorized the harmful alteration, disruption, or destruction of fish habitat (HADD) created from the removal of point bar material from Arvoknar Channel which includes descriptions of how to excavate and form the remaining material to avoid impacts to fish and fish habitat.

Should you have any questions or comments, please contact me directly by telephone at (867) 777-7515, by fax at (867) 777-7501, or by e-mail at Amanda.Joynt@dfo-mpo.gc.ca.

Yours sincerely,

(original signed by Amanda Joynt)

Amanda Joynt
Fish Habitat Biologist

c.c.: S. Bird – IEG
T. Stein – DFO
D. Arey – INAC
C. Inglangasuk – EISC



Fisheries and Oceans
Canada

Pêches et Océans
Canada

Fisheries and Oceans Canada
Central and Arctic Region
5204-50th Avenue, Suite 301
Yellowknife, NT X1A 1E2

March 2, 2011

Our file Notre référence
11-HCAA-CA6-00008

Randall Warren
Shell Canada Energy
400 4th Avenue S.W., P.O. Box 100 Station M
Calgary, Alberta
T2P 2H5

Dear Mr. Warren,

Re: Fisheries Act Authorization

Pursuant to Sections 32 and 35(2) of the Fisheries Act, Fisheries & Oceans Canada is providing the attached Fisheries Act Authorization for impacts to fish and fish habitat arising from the removal of frozen material from a point bar within Arvoknar Channel.

The attached Authorization also takes into consideration the impacts to aquatic species at risk, which are otherwise prohibited under Section 32, 33, and 58 of the Species at Risk Act.

Failure to comply with all the conditions of the attached Authorization may lead to prosecution under the Fisheries Act and/or the Species at Risk Act.

An environmental assessment was conducted in accordance with the Canadian Environmental Assessment Act which concluded that the project is not likely to cause significant adverse environmental effects if the mitigation measures taken into consideration during the environmental assessment are implemented.

Please notify this office 10 days before starting the work, undertaking, operation, or activity associated with the authorization. A copy of this Authorization should be kept on site while the work is in progress. Work crews should be familiar with and able to adhere to the conditions.

If you or anyone conducting work on your behalf have any questions please contact Amanda Joynt at our Inuvik District Office at 867-777-7515, by fax at 867-777-7501 or by email at Amanda.Joynt@dto-mpo.gc.ca.

Yours sincerely,

Michael Hecimovich
Area Director
Western Arctic Area
Central and Arctic Region
Fisheries & Oceans Canada





Fisheries and Oceans Pêches et Océans
Canada Canada

cc: K. Burke – DFO
 L. Dow – DFO
 J. Malone – FJMC
 T. Stein – DFO
 V. D'Amours Gauthier – NWTWB
 D. Arey – INAC
 S. Bird – IEG

Attach: Authorization – 11-HCAA-CA6-00008



FISHERIES ACT AUTHORIZATION

Authorization issued to:

Shell Canada Energy (*hereafter referred to as the "Proponent"*)
400 4th Avenue S.W., P.O. Box 100 Station M
Calgary, Alberta
T2P 2H5

Location of Proposed Development

Nearest community (city, town, village): Tuktoyaktuk
Municipality, district, township, county: Inuvialuit Settlement Region
Province: Northwest Territories
Name of watercourse, waterbody: Arvoknar Channel, Mackenzie River
Longitude and latitude, UTM Coordinates: 69.188229°N 135.325584°W, 487090 E 7675385 N

Valid Authorization Period for Impacts to Fish and Fish Habitat

The valid period of this authorization for the harmful alteration, disruption or destruction of fish habitat pursuant to subsection 35(2) includes:

From
March 7, 2011

To
May 31, 2011

The valid authorization periods for other conditions of this Authorization are set out below as
Conditions of Authorization.

Description of Proposed Development

The harmful alteration, disruption, or destruction of fish habitat hereby authorized is the destruction of approximately 2.4 ha of fish habitat for the removal of approximately 3000m³ of sand and silt material from the above-ice surface of a frozen point bar across from the Unipkat I-22 site on Arvoknar Channel. The destruction of habitat occurs as a result from potential flow change as well as the loss of in-stream habitat during freshet from the removal of material from the sandbar. An Iron Wolf Excavator will be used to remove material over an area of approximately 2.4ha. The depth of the sandbar is approximately 0.3m and excavation will not occur deeper than 0.1m above the river ice level. The work will occur during frozen conditions and the sides of the excavation will be smoothed and sloped towards the river to promote drainage and prevent fish entrapment during freshet.

Description of Authorized Impacts to Fish and Fish Habitat

Authorized impacts to fish and fish habitat resulting from the works, undertakings, operations or activities associated with proposed development described above include:

- The point bar consists of sand and silt sitting above the frozen water level of Arvoknar Channel. The sensitivity of the fish habitat is low, especially during frozen conditions.
- There is no expected fish mortality as a result of this HADD.
- Impacts from flow changes include increased flooding of associated riparian areas from unimpeded flows due to the loss of point bar height, and change in flow direction particularly during freshet due to the loss of point bar height.
- Passage and/or migration impacts include impacts from a loss of in-stream habitat during freshet. While under water the point bar could provide resting areas within the channel for the fish due to areas of lesser flow being created on the downstream side of the point bar.

Conditions of Authorization

1. Conditions that relate to the **Proponent's Plan**:

- 1.1 The conditions of this Authorization notwithstanding, should the above authorized impacts to fish and fish habitat in the opinion of the Fisheries and Oceans Canada (DFO) be greater than previously assessed, then DFO may suspend any works, undertakings, activities and/or operations associated with the proposed development, to avoid or mitigate adverse impacts to fish and fish habitat. DFO may also direct the Proponent and its agents, and contractors, to carry out at the Proponent's expense any modifications, works or activities deemed necessary by DFO to avoid or mitigate further adverse impacts to fish and fish habitat. In circumstances where DFO is of the view that greater impacts may occur than were contemplated by the parties DFO may also modify or rescind this authorization. If the authorization is to be
-

changed the Proponent will be given an opportunity to discuss any proposed modifications or rescission.

- 1.2 The Proponent confirms that all plans and specifications relating to this Authorization have been duly prepared and reviewed by appropriate professionals working on behalf of the Proponent and acknowledges that they are solely responsible for all design, safety and workmanship aspects of all the works associated with this Authorization.
- 1.3 The works, undertakings, activities and operations must comply with the means and conditions as identified within this Authorization. Impacts to fish and fish habitat other than that specifically identified within this Authorization are not permitted.
- 1.4 Works will be conducted as per the practices outlined in the following that constitutes the proponent plan:
 1. Application for Fisheries Act Authorization for the Use of Frozen River Sediment as a Source of Backfill for the Unipkat I-22 Sump Remediation on Arvoknar Channel – Feb.9, 2011. * Note that within this document the maximum depth of the excavation is stated to be 0.3m. However much of the point bar is 0.3m in depth and therefore the mitigation was changed to ensuring the excavation left a minimum of 0.1m depth of point bar above the ice level. This change is stated in the following document (2). All other plans within the Application for Fisheries Act Authorization for the Use of Frozen River Sediment as a Source of Backfill for the Unipkat I-22 Sump Remediation on Arvoknar Channel – Feb.9, 2011 will be implemented.
 2. Application for Fisheries Act Authorization for the Use of Frozen River Sediment as a Source of Backfill for the Unipkat I-22 Sump Remediation on Arvoknar Channel – Supplementary document, Feb.18, 2011.

2.0 Conditions that relate to the **mitigation** of potential impacts to fish and fish habitat:

- 2.1 No instream work or construction activity shall occur from March 7, 2011 to May 30, 2011, without the specific written permission from Fisheries & Oceans Canada.
- 2.2 Sediment and erosion control measures must be in place and shall be upgraded and maintained to prevent impacts to fish and fish habitat greater than allowed by this Authorization.
- 2.3 The mitigation measures will be implemented as stated within the Application for Fisheries Act Authorization for the Use of Frozen River Sediment as a Source of Backfill for the Unipkat I-22 Sump Remediation on Arvoknar Channel – Feb.9, 2011. In addition to the mitigation of layering ice on the excavation, snow will be placed over the ice layer to ensure melting on the excavation site is similar in timing to the surroundings.

3.0 Conditions that relate to monitoring and reporting of Authorization conditions:

-
- 3.1 The Proponent shall undertake monitoring and report to DFO, by May 30, 2011 for the direct works and undertakings and by September 30, 2011 and September 30, 2013 for the ongoing monitoring program. This monitoring will determine whether works, undertakings, activities or operations for the mitigation of potential impacts to fish and fish habitat were conducted according to the conditions of this Authorization, by:
- 3.1.1 Providing dated photographs and inspection reports to demonstrate effective implementation and functioning of mitigation works undertakings, activities or operations described above as mitigation conditions.
 - 3.1.2 Providing details of any contingency measures that were followed to prevent impacts greater than allowed by this Authorization in the event that mitigation measures did not function as described in the Proponent Plan.
 - 3.1.3 Providing reports as stated within the Application for Fisheries Act Authorization for the Use of Frozen River Sediment as a Source of Backfill for the Unipkat I-22 Sump Remediation on Arvoknar Channel – Supplementary document, Feb.18, 2011.
- 4.0 Conditions that relate to the **compensation** for the authorized impacts to fish and fish habitat:
- 4.1 Not applicable.
- 5.0 Conditions that relate to monitoring and reporting of **compensation** (described above):
- 5.1 Not applicable
- 6.0 Conditions that relate to the **financial security**:
- 6.1 Not applicable

Authorization Limitations and Application Conditions

The holder of this authorization is hereby authorized under the authority of subsection 35(2) of the Fisheries Act, R.S.C., 1985, c.F. 14 to carry out the works, undertakings, activities and/or operations

as described herein. This authorization is valid only with respect to fish and fish habitat and for no other purposes. It does not purport to release the applicant from any obligation to obtain permission from or to comply with the requirements of any other regulatory agencies.

This Authorization does **not** permit the deposit of a deleterious substance in water frequented by fish. Subsection 36(3) of the *Fisheries Act* prohibits the deposit of any deleterious substances into waters frequented by fish except under conditions that can only be authorized by regulations made by Governor in Council.

At the date of issuance of this Authorization, no aquatic SARA listed species were identified. In the event that a SARA listed species is identified or an aquatic species becomes listed under SARA, this authorization does not permit harm, harassment or killing of any species at risk (SARA section 32), the damage or destruction of residence (SARA section 33) or the destruction of critical habitat (SARA section 58).

Failure to comply with any condition of this authorization may result in charges being laid under the *Fisheries Act* and/or the *Species at Risk Act*.

This authorization should be held on site and work crews should be made familiar with the conditions attached.

The Proponent shall advise DFO in advance if the ownership or responsibility for the conditions of this authorization changes.

Date of Issuance: Mar 2 2011

Approved by: 

Michael Hecimovich
Area Director – Western Arctic Area
Central & Arctic Region
Fisheries and Oceans Canada
