

PIN- B SUBMITTAL: DETAILS OF SEWAGE/DISPOSAL SYSTEM

June 22, 2009

All grey water and sewage (effluent) generated from the camp facility will be discharged into a single 1,135 litre surge tank adjacent to the camp. The surge tank will be fitted with a submersible macerator lift pump controlled by level switches to start and stop automatically as required. This submersible pump will pump the effluent to a lagoon situated at least 100 meters downgrade and downwind from the camp, at least 100 meters from a drainage course and 450 meters from fish bearing waters as agreed with the Departmental Representative (DR).

The lagoon will consist of two separate lagoons adjacent to each other and constructed to the dimensions as per the attached drawing. The lagoon base will be excavated approximately 0.5 meters into the existing ground. Perimeter berms will be constructed to a finished inside height of 1.5 meters allowing for a maximum depth of effluent of 1 meter and a freeboard of 0.5 meters. The lagoon base excavated material and/or Type 2 material obtained from Borrow #4 will be used to construct the lagoon berms as agreed with the DR. The berms will be compacted with the onsite vibratory compactor.

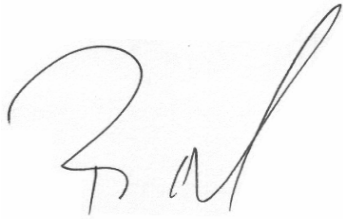
Based upon an estimated daily camp water usage of 7,000 litres per day and the same becoming effluent generated daily, allowing for 50 days of total capacity in the lagoons at a maximum effluent depth of 1 meter, the total lagoon capacity, not including the .5 meter freeboard, will be 350,000 litres, 175,000 litres per lagoon.

The lagoon discharge pipe from the camp will feed into the closest lagoon. A tee overflow pipe connecting the two lagoons will be placed so that liquid from beneath any “scum” layer at the surface can pass to the second lagoon.

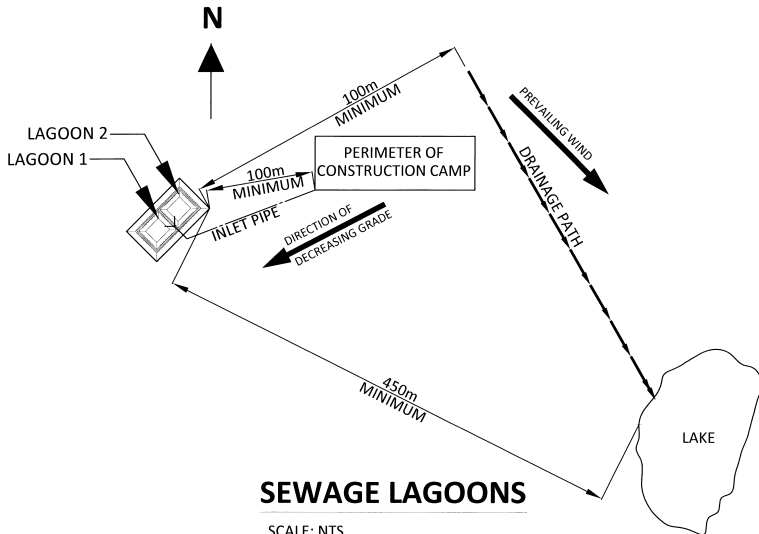
The camp facility is fitted with 2 separate grease traps that will remove visible mineral oil and grease from the camp generated effluent. EGT and our Inuit catering contractor, Kitikmeot Caterers Ltd., are very experienced in the operation of remote camps, the required wastewater discharge criteria, cooking and housekeeping practices and the ‘green’ biodegradable products that must be used (and those that must not) to ensure that any effluent can meet discharge criteria. To improve water conservation all bathroom faucets are self closing and shower heads are water saver models.

The operation, discharge and closure of the lagoons will be in compliance with the Water Licence for PINB. The effluent will be sampled and tested at an approved third party testing facility (Maxxam Analytics, Edmonton Laboratory) to determine if the required discharge criterion has been met. EGT will take all required steps to ensure samples arrive at the testing location within the allowable time limits. Once testing confirms discharge criteria is met and discharge is approved the effluent will be pumped and released onto the ground at a location as agreed and approved by the DR that is a

minimum of 30 meters from a natural drainage course, and 100 meters away from any river or any fish bearing lake.

A handwritten signature in black ink, appearing to read 'R. Newmark', with a large, sweeping flourish extending from the end.

RUSSELL NEWMARK
E. GRUBEN'S TRANSPORT LTD



GENERAL NOTES

- ALL DIMENSIONS ARE IN METRES UNLESS NOTE OTHERWISE.
 - IN THE EVENT OF SHALLOW BEDROCK, WHERE FLOOR OF THE LAGOON IS JUST BELOW ORIGINAL GROUND USE 3m WIDE TOP OF BERM.
 - COMPACTED BERMS TO 95% OF STANDARD PROCTOR DRY DENSITY (SPD), AT OPTIMUM MOISTURE CONTENT.
 - DISCHARGE WASTEWATER FROM CORNER OPPOSITE TO INLET.
 - MAXIMUM FLUID DEPTH NOT TO EXCEED 1m.
 - LAGOON TO BE LOCATED A MINIMUM OF 100m FROM CAMP AND DOWNWIND, BASED ON PREVAILING WINDS.
- ASSUMPTIONS:**
- LAGOON SIZED FOR HALF OF THE TIME THAT THE CAMP IS OCCUPIED.
 - AVERAGE CAMP OCCUPANCY OF 40 PEOPLE.
 - LOADING=0.175m³/PERSON/DAY.
 - FREEBOARD ≥ 1.0m as per Section 01560 p.4 PWSC Construction Specification.

SAMPLE CALCULATIONS:

LOADING 0.175m³/PERSON/DAY
 CAMP SIZE x 40 PEOPLE
 HALF CONSTRUCTION SEASON x 50 DAYS

REQUIRED CAPACITY
 OF EACH LAGOON ~ 350m³
 (NOT INCLUDING FREEBOARD)

LENGTH (AT 0.5m ABOVE BASE) x
 WIDTH (AT 0.5m ABOVE BASE) x 1m ≥ REQUIRED CAPACITY

REV.	DESCRIPTION	DATE

E.GRUBEN'S TRANSPORT



PIN-B REMEDATION PROJECT

SEWAGE LAGOON SITE LAYOUT PLAN

DESIGNED BY P.SEMICHEV

DRAWN BY P.SEMICHEV

APPROVED BY R.NEWMARK

PROJECT MANAGER R.NEWMARK

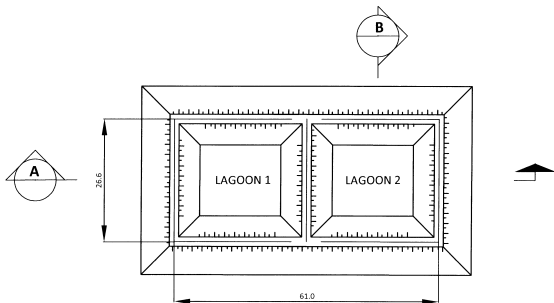
PROJECT # R.015-218-012

DATE JUNE 2009

SCALE NTS

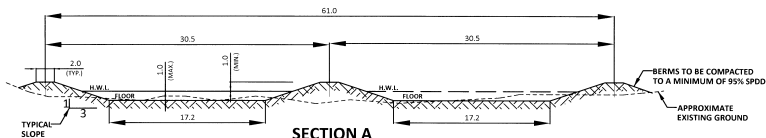
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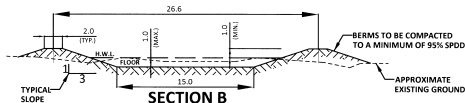
SEWAGE LAGOON PLAN

SCALE: NTS



SECTION A

SCALE: NTS



SECTION B

SCALE: NTS

GENERAL NOTES

1. ALL DIMENSIONS ARE IN METRES UNLESS NOTE OTHERWISE.
2. IN THE EVENT OF SHALLOW BEDROCK, WHERE FLOOR OF THE LAGOON IS JUST BELOW ORIGINAL GROUND USE 3m WIDE TOP OF BERM.
3. COMPACTED BERMS TO 95% OF STANDARD PROCTOR DRY DENSITY (SPDD), AT OPTIMUM MOISTURE CONTENT.
4. DISCHARGE WASTE WATER FROM CORNER OPPOSITE TO INLET.
5. MAXIMUM FLUID DEPTH NOT TO EXCEED 1m.
6. LAGOON TO BE LOCATED A MINIMUM OF 100m FROM CAMP AND DOWNWIND, BASED ON PREVAILING WINDS.

ASSUMPTIONS:

7. LAGOON SIZED FOR HALF OF THE TIME THAT THE CAMP IS OCCUPIED.
8. AVERAGE CAMP OCCUPANCY OF 40 PEOPLE.
9. LOADING = 0.175m³/PERSON/DAY.
10. FREE BOARD > 1.0m as per Section 01560 p.4 PWSC Construction Specification.

SAMPLE CALCULATIONS:

LOADING 0.175m³/PERSON/DAY
CAMP SIZE x 40 PEOPLE
HALF CONSTRUCTION SEASON x 50 DAYS

REQUIRED CAPACITY
OF EACH LAGOON
(NOT INCLUDING FREEBOARD) = 350m³

LENGTH (AT 0.5m ABOVE BASE) x
WIDTH (AT 0.5m ABOVE BASE) x 3m ≥ REQUIRED CAPACITY

REV.	DESCRIPTION	DATE

E.GRUBEN'S TRANSPORT



PROJECT TITLE

PIN-B REMEDATION PROJECT

DRAWING TITLE

SEWAGE LAGOON PLAN AND SECTIONS

DESIGNED BY

P.SEMICHEV

DRAWN BY

P.SEMICHEV

APPROVED BY

R.NEWMARK

PROJECT MANAGER

R.NEWMARK

PROJECT # R.015.218.012

SHEET

DATE

JUNE 2009

SCALE

NTS

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