



General Notes:

Legend:

No.	DATE	REVISION	REVISION	APPR.
 ᑭᑭᑭᑭᑭᑭ ᑭᑭᑭᑭᑭᑭᑭᑭᑭᑭ Qikiqtaaluk Logistics Inc.				
PROJECT - PROJET				
CAPE CHRISTIAN, NUNAVUT				
© COPYRIGHT QIKIQTAALUK LOGISTICS INC. 2008				
TRADE - METIER		SITING		DATE 2008-12-15
SCALE - ECHELLE		NOT TO SCALE		
SUBJECT - SUJET				
CAPE CHRISTIAN REMEDAITATION PROJECT SITE DETAILS				
PRODUCTION		CONCURRENCE - ASSENTIMENT		
DESIGNED ETUDIE		Greg Johnson		
DRAWN DESSINE		Greg Johnson		
CHECKED VERIFIE		Phillppe Simon		
COORDINATION		REVIEWED - REVU		
DWG. NO. - DESSIN NO. QESIn 2007 P6-2008-01				

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QIKIQTAALUK ENVIRONMENTAL

Signature 

Date January 12th, 2009

PERMIT NUMBER: P 530

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Geologists and Geophysicists of the NWT / NU



General Notes:

1. The location of the construction camp and the sewage lagoon are not based on survey data and may be adjusted based on conditions found on the field.
2. The exact dimensions of the lagoon may be adjusted once a survey of the existing terrain at the planned location is completed and the type and properties of the soil to be used for construction of the berms are known.
3. Distances shown are the minimum distances to be respected from water courses, water bodies and the construction camp.
4. The berms will be constructed in lifts of 250 mm of loose material and each lift will be compacted to 95 percent of Maximum Dry Density in accordance with ASTM D698.

Legend:

Water Course

No.	DATE	REVISION	REVISION	APPR.
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2008

TRADE - METIER
SITING

SCALE - ECHELLE
NOT TO SCALE

SUBJECT - SUJET

CAPE CHRISTIAN REMEDIATION PROJECT
APPROXIMATE LOCATION OF THE SEWAGE LAGOON

PRODUCTION	CONCURRENCE - ASSENTIMENT
DESIGNED ETUDIE	Greg Johnson
DRAWN DESSINE	Greg Johnson
CHECKED VERIFIE	Philippe Simon
COORDINATION	REVIEWED - REVU
DWG. NO. - DESSIN NO. QESIn 2007 P6-2008-02	



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Signature *[Signature]*

Date *January 12th, 2009*

PERMIT NUMBER: P 530

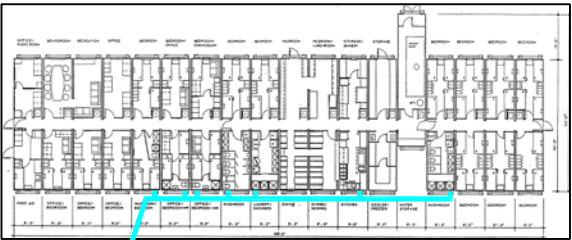
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REGISTERED PROFESSIONAL ENGINEER
R.S. JOHNSON
LICENSEE
NWT/NU

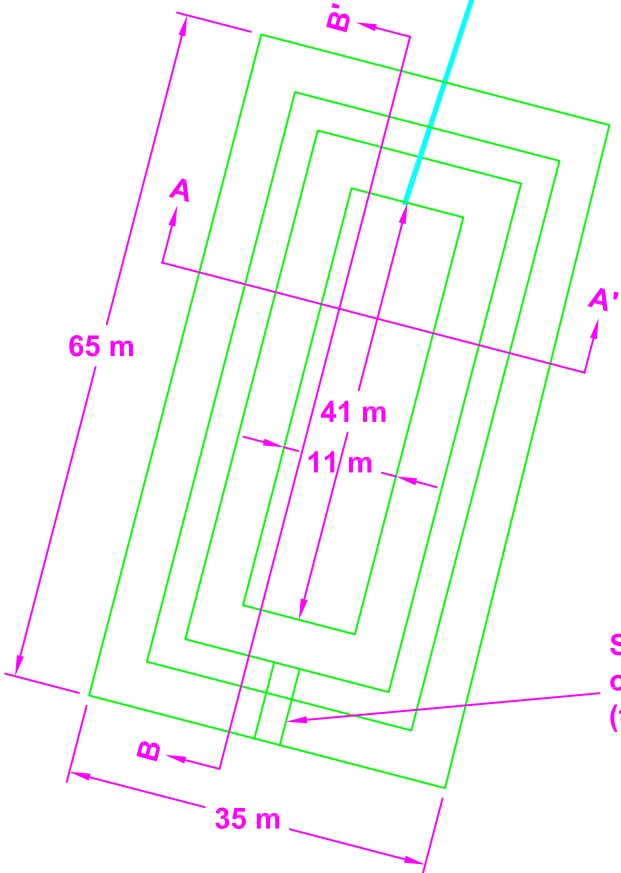
- General Notes:
1. The location of the construction camp and the sewage lagoon are not based on survey data and may be adjusted based on conditions found on the field.
 2. The exact dimensions of the lagoon may be adjusted once a survey of the existing terrain at the planned location is completed and the type and properties of the soil to be used for construction of the berms are known.
 3. The berms will be constructed in lifts of 250 mm of loose material and each lift will be compacted to 95 percent of Maximum Dry Density in accordance with ASTM D698.
 4. Cross-sections of the sewage lagoon are shown on drawing QESIn 2007 P6-2008-003.

Legend:

No.	DATE	REVISION	REVISION	APPR.
 ᑭᑭᑭᑭᑭᑭ ᑭᑭᑭᑭᑭᑭᑭᑭᑭᑭ Qikiqtaaluk Logistics Inc.				
PROJECT - PROJET CAPE CHRISTIAN, NUNAVUT				
© COPYRIGHT QIKIQTAALUK LOGISTICS INC. 2008				
TRADE - METIER SITING			DATE 2008-12-15	
SCALE - ECHELLE NOT TO SCALE				
SUBJECT - SUJET CAPE CHRISTIAN REMEDIATION PROJECT SEWAGE LAGOON DETAILS				
PRODUCTION		CONCURRENCE - ASSENTIMENT		
DESIGNED ETUDIE		Greg Johnson		
DRAWN DESSINE		Greg Johnson		
CHECKED VERIFIE		Phillppe Simon		
COORDINATION		REVIEWED - REVU		
DWG. NO. - DESSIN NO. QESIn 2007 P6-2008-03				



Sewage Pipe 6" Ø



Swail to be installed to accommodate any overflow from spring snowmelt events (to be lined with rock to prevent erosion)

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Date January 12th, 2009

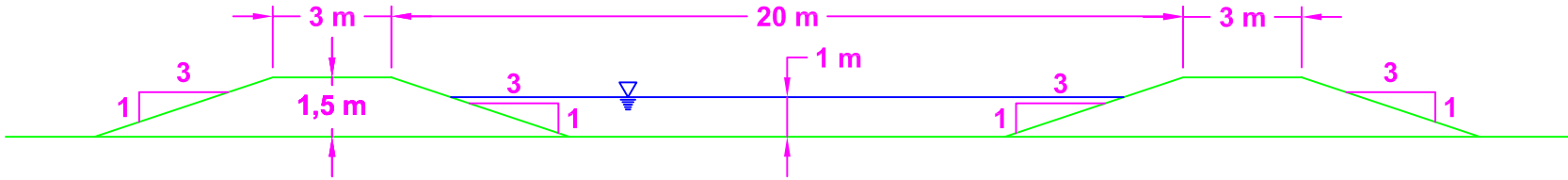
PERMIT NUMBER: P 530

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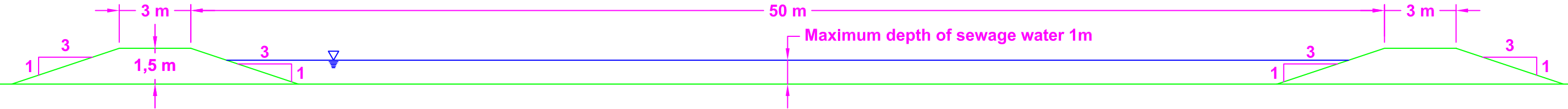


- General Notes:
1. The exact dlmenslons of the lagoon may be adjusted once a survey of the existng terrain at the planned location ls completed and the type and properties of the soll to be used for construction of the berms are known.
 2. The berms will be constructed in llfts of 250 mm of loose material and each lift will be compacted to 95 percent of Maximum Dry Density in accordance with ASTM D698.
 3. Cross-sections of the sewage lagoon are shown on drawing QESIn 2007 P6-2008-002.

Legend:



Cross-Section A-A'



Cross-Section B-B'

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TRADE - METIER
SITING
DATE
2008-12-15

SCALE - ECHELLE
NOT TO SCALE

SUBJECT - SUJET

CAPE CHRISTIAN REMEDAITION PROJECT
CROSS-SECTIONS OF SEWAGE LAGOON

PRODUCTION	CONCURRENCE - ASSENTIMENT
DESIGNED ETUDIE	Greg Johnson
DRAWN DESSINE	Greg Johnson
CHECKED VERIFIE	Phillppe Simon
COORDINATION	REVIEWED - REVU
DWG. NO. - DESSIN NO. QESIn 2007 P6-2008-04	

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Date January 12th, 2009

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Cape Christian Sewage Lagoon

Assumptions:

- Season = 122 Days (June 1st to September 30th);
- Camp Water usage = 8.5 m³ per day;
- Capacity required to meet half season = 518.5 m³;
- The lagoon will need to be emptied at least twice per season (plus one additional event for the snow melt in 2010);
- The lagoon will be pumped from the side farthest away from the entry point of the sewage water to allow time for the settlement of solids
- Impermeable type soils will be used to construct the berms;
- Friction angle of the soil = 35°;
- Maximum depth of liquid will be limited to 1 metre;
- The lagoon will be situated a minimum of 100 metres from the camp, 100 metres from any water body and 100 metres from any major drainage channels;
- Once the area for installation of the lagoon has been finalised it will have to be surveyed and the design finalised prior to construction.

Design & Construction:

- Lagoon will measure 50 metres long by 20 metres wide (inside top of slope);
- The berms will be 1.5 metres high;
- Berms will have inside and outside slopes of 3L:1H to ensure stability;
- The berms will be constructed in lifts of 250 mm of loose material and each lift will be compacted to 95 percent of Maximum Dry Density in accordance with ASTM D698;
- A swail will be incorporated into the design to allow for any overflow from spring snow melt events, the swail will be armoured with rock to prevent erosion.

Closure:

- At the end of the project just prior to closure of the site the lagoon will be closed;
- The liquid will be pumped out of the lagoon and the berms will be pushed over the remaining solids;
- Liquid will be pumped out as it pools with the berms being pushed up;
- The final cover will be track packed using a Caterpillar D6 bull dozer.