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FROM - DE

Name - Nom Sarah Aho	Position title - Titre du poste Special Projects Officer	
Directorate - Direction RR&E	Branch - Direction générale Water Resources Division	
Room - Pièce	Facsimile no. - N° de télécopieur (867) 669-2716	Telephone no. - N° de téléphone (867) 669-2402

TO - À

Name - Nom Mr. Murray Peacock Land/Resource Geographer		
	Facsimile no. - No de télécopieur (867) 598-2325	Telephone no. - N° de téléphone (867) 598-2413

Comments on Northrock's Summit Creek Program attached.





Indian and Northern Affairs Canada
Affaires indiennes et du Nord Canada
www.inac.gc.ca
P.O. Box 1500
Yellowknife, NT X1A 2R3

Affaires indiennes
et du Nord Canada
www.sinc.gc.ca

August 26, 2004

S04A-006/S04L1-006

Your file - Votre référence

900-SLWB-Northrock-Summit Creek-04/05

Our file - Notre référence

Murray Peacock
Land/Resource Geographer
Sahtu Land and Water Board
PO Box 1
Fort Good Hope, NT X0E 0H0

Dear Mr. Peacock:

**RE: Water Licence Application, Northrock Resources Ltd.
Proposed 2004/2005 Summit Creek Drilling Program**

The Water Resources Division has completed its review of the Water Licence Application submitted by Northrock Resources Ltd. for the proposed 2004/2005 Summit Creek Drilling Program. WRD offers the following comments for consideration by the Sahtu Land and Water Board:

- Using the RECLAIM Model for Oil and Gas developments, the estimate of the total cost for the abandonment and restoration of the project site and associated facilities is approximately \$525,000. The estimate is attached for your review and consideration.
- Northrock states that they will spread greywater and blackwater from the sleigh camp on the surface of the land.
 - At a minimum, the waste should undergo primary treatment to remove all suspended solids and floatable materials.
 - There should be no discharge of floating solids, garbage, grease, free oil or foam.
 - Discharge of the effluent should take place in a diffuse manner to self-contained areas with minimal slope.
 - All discharges must occur at least 100m from any waterbody.
- The preferred method of wastewater treatment for the rig camp would be a secondary or tertiary treatment system with the camp that would allow for the treated waste to be spread to the land surface or discharged to a waterbody.
- For the calculation of available winter water depths, DFO requires that a 2 metre ice thickness be taken into account in calculations, not 1 metre as stated by Northrock. The volume for Lake 3 should be recalculated using the required 2 metre ice thickness.

Canada

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- Rather than setting a freeboard limit for a sump, if the waste is to be encapsulated in permafrost, it is preferred that the waste does not come in contact with the active layer. To determine the depth of the active layer cores must be taken in the early fall, prior to the occurrence of freezing temperatures. To ensure that contact by the waste with the active layer does not occur, the following should be added to the Water Licence:
 - All drilling Waste shall be contained in the Sump a minimum of one (1) metre below the Permafrost Table.
 - "Permafrost Table" means the upper boundary of permafrost as defined by the depth of the active layer;
- The following conditions are suggested for addition to the Water Licence:
 - All monitoring data shall be submitted in printed form and electronically in a spreadsheet format on a diskette or other electronic forms acceptable to the Board.
 - All reports shall be submitted to the Board in printed format accompanied by an electronic copy in a common word processing format on diskette or other electronic forms acceptable to the Board.
 - Thirty (30) days prior to the commencement of drilling, the Licensee shall notify the Board and an Inspector of the exact wellsite location(s) that have been selected for drilling.

If you require further assistance, please contact Ms. Sarah Aho at (867) 669-2402 or Mr. David Milburn at (867) 669-2650 of the Water Resources Division.

Sincerely,



David Milburn
Manager
Water Resources Division

Attachment: RECLAIM Estimate

RECLAIM ESTIMATE - NORTHEROCK RESOURCES LIMITED**Drill Site Area**

grout top 200 m of hole, cement - 5 m³ (assume 6 inch diameter hole, volume = $\pi r^2 h = 3.34 \text{ m}^3$)

grout top 200 m of hole, labour - assume two 12 hour days per hole - 24 hours total

decant water from sump - 600 m³ (sump dimensions are 20m x 30m, assume 1m deep water)

place geotextile over cuttings - 600 m² (sump dimensions are 20m x 30m)

doze soil over cuttings - 2400 m³ (estimate - sump dimensions are 20m x 30m x 4m depth)

sampling of drilling muds - 2 sampling periods

remove refuse and waste, bury in sump - 100 m² (estimate)

collect and ship hazardous waste - 1 event

remove fuel tanks - 300 km (2 tanks, to be removed approximately 150km each - to closest community - Tulita)

excavate and treat contaminated soil - 100 m² (estimate)

contour drill pad and perimeter - 14400 m³ (drill pad is 120m x 120m and estimate 1m depth)

re-establish drainage patterns - 2000 m³ (estimate)

spread organic soil from stockpile - 1000m³ (estimate)

vegetate drill pad area - 1.44 ha (as per project description)

visual site inspection - 1 event

Camp Area

remove refuse and waste, bury in landfill/sump - 100 m³ (estimate)

excavate and treat contaminated soil - 100 m³ (estimate)

contour camp area and perimeter - 2500 m³ (camp is 50m x 50m and estimate 1m depth)

re-establish drainage patterns - 1000 m³ (estimate)

vegetate camp area - 0.25 ha (as per project description)

doze soil over camp sump - 1600 m3 (estimate dimensions to be 20m x 20m x 4m)

remove steel buildings (salvage) - assuming rig camp is same size as 64 man rig camp proposed for other programs - 1600 m2 (estimate)

winter road - 74km

access by air - 2 cvcnts

access by road - mobilize 20 workers

demobilize equipment - estimate 15 pieces @ 150 km each

accommodation - one month for 20 workers

engineering/project management - 5%

contingency - 10%

Cost Codes Used

g - grouting

gst - geotextile, filter cloth

ds - doze overburden/soil piles

ws - water sampling

sb2 - excavate, load, long haul, up to 1500m, dump

mher - mobilize heavy equipment, road access

csr - contaminated soils, remediate on site

sb1 - excavate, load, short haul (<500m), dump

sb4 - excavate, load, long haul (up to 1500m), dump, spread and compact

vhf - vegetation, hydroseed, flat

vi - visual site inspection

brs2 - buildings, remove and salvage steel

wr - winter road

mm< - mobilize workers (20 workers or less)

accm - one month accommodation (worker)

Oil Gas Reclaim Project: Northrock S04L1-006

8/13/2004

1 Oil & Gas Reclamation Site 1

Activity # 1

ACTIVITY/MATERIAL	UNITS	QUANTITY	COST CODE	UNIT COST	COST
DRILL SITE AREA					
grout top 200 m of hole, cement	m3	5	gl	180	\$900
grout top 200 m of hole, labour	hrs	24	#N/A	35	\$840
decant water from sump	m3	600	#N/A	1	\$1,000
place geotextile over cuttings	m2	600	gshdpe	5.35	\$3,210
doze soil over cuttings	m3	2400	dsh	2.83	\$6,792
Sampling of Drilling muds		2	wsh	8000	\$16,000
remove refuse & waste, bury in sump	m3	100	sb2l	3.61	\$361
collect & ship hazardous waste	allowance	1	#N/A	5000	\$5,000
remove fuel tanks	km	300	mherh	7.65	\$2,295
excavate and treat contaminated soil	m3	100	csrh	110	\$11,000
contour drill pad and perimeter	m3	14400	sb1l	2.91	\$41,904
re-establish drainage patterns	m3	2000	sb1l	2.91	\$5,820
rip rap in drainage channels	m3		#N/A	0	\$0
spread organic soil from stockpile	m3	1000	sb4h	8.14	\$8,140
vegetate drill pad area	ha	1.44	vhfh	4500	\$6,480
visual site inspection		1	vil	3200	\$3,200
Remove Steel Buildings (Salvage)	m2		brs2h	75	\$0
other			#N/A	0	\$0
remove wooden buildings	m2		#N/A	0	\$0
access road, scarify and remove culverts	m2		#N/A	0	\$0
remove gas plant equipment	each		#N/A	0	\$0
remove steel buildings	m2		#N/A	0	\$0
CAMP AREA					
remove refuse & waste, bury in landfill/sump	m3	100	sb2h	5.43	\$543
collect & ship hazardous waste	allowance		#N/A		\$0
remove fuel tanks	m2		#N/A	0	\$0
excavate and treat contaminated soil	m3	100	csr1	35	\$3,500
contour camp area and perimeter	m3	2500	sb1l	2.91	\$7,275
re-establish drainage patterns	m3	1000	sb1l	2.91	\$2,910
rip rap in drainage channels	m3		#N/A	0	\$0
spread organic soil from stockpile	m3		#N/A	0	\$0
vegetate camp area	m2	0.25	vhfh	4500	\$1,125
doze soil over camp sump		1600	dsh	2.83	\$4,528
Remove Steel Buildings (Salvage)		1600	brs2l	50	\$80,000
winter road	km	74	wrh	2400	\$177,600
MOB/DEMOB/ACCESS					
access by air	each	2	#N/A	5000	\$10,000
access by road	km	20	mm<l	175	\$3,500
mobilize/demobilize equipment	km	2250	mherh	7.65	\$17,213
mobilize/demobilize equipment	km	20	accmh	1800	\$36,000
mobilize/demobilize equipment	km		#N/A	0	\$0
mobilize misc. supplies	each		#N/A	0	\$0
other			#N/A	0	\$0

Oil Gas Reclaim Project: Northrock S04L1-006

8/13/2004

1 Oil & Gas Reclamation Site 1

Activity # 1

DATE

ACTIVITY/MATERIAL	UNITS	QUANTITY	COST CODE	UNIT COST	COST
other			#N/A	0	\$0
other			#N/A	0	\$0
SUB-TOTAL					\$457,136
		Engineering/Project Management	5.00%		\$22,857
		Contingency	10.00%		\$45,714
TOTAL					\$525,706

COMMENTS: