P.O. Box 119
Gjoa Haven, NT X0E 1J0
Tel: (403) 360-6338
Fax: (403) 360-6369

NUNAVUT WATER BOARD

1652
Nunavut
Dist

FILE No: N7L2-1652

April 1, 1997

Feuillets de transmission par télécopieur Post-it™ Fax Note 7671B	Date April 1/97	# of pages / Nbre de pages ▶
To / À Shannon Pagotto	From / De Dionne Filiatrault	
Co./Dept. / Cie/Service DIAND-Water Resources	Co. / Cie NUNAVUT WATER BOARD.	
Phone # / N° de tél. 403-669-2658	Phone # / N° de tél. 403-360-6338	
Fax # / N° de télécopieur 403-669-2716	Fax # / N° de télécopieur 403-360-6369	

Sent to Nunavut Distinct Apr. 1/97 SP

Shannon Pagotto
Nunavut Coordinator
DIAND
Yellowknife, NWT
(403) 669-2658
Fax (403) 669-2716

Dear Shannon:

Enclosed in an application for amendment for water licence N7L2-1652 the BHP Boston Project. The proponent is requesting an amendment to incorporate two changes:

1) They are requesting approval to modify the intake facilities, they propose to split the intake into two separately metred intakes, one inlet for the camp, and the other for the mine. This will allow separate operation and metering for each function The purpose of this request is to obtain more efficient operation, if the mine must shut down, the camp water supply would be unaffected (and vice versa). It should be noted that they do not plan to take more water than the total maximum allowable under the licence; and

2) In order to accommodate the increase in personnel on site which they expect to be 70 people April through September, the proponent is requesting approval to upgrade the sewage disposal system. The old sewage treatment facility would be removed from site. The current licence does not have conditions for the treatment of sewage.

I would appreciate any comments DIAND may have with regards to this amendment request. Please forward your comments to me by April 3, 1997. If you have any questions just give me a call.

Sincerely,

Dionne Filiatrault, MIT
Technical Advisor

Enclosure

970401.df

BHP

COPY

Resource Development
BHP World Minerals

20 March 1997

Mr. Philippe diPizzo
Nunavut Water Board
P.O. Box 119
Gjoa Haven, NT
Canada, X0E 1J0

Re: Amendment to Water License N7L2-1652

Dear Mr. diPizzo:

This letter is in response to your request of 18 March 1997 for addition information regarding our proposal to modify the water license (N7L2-1652) for the Boston site, to accommodate the phase II bulk sampling program for 1997.

Attached you will find a site map for Boston that includes the locations for the proposed water intake (as well as the present intake #1652-1), and the sewage treatment facility (RBC) and discharge line (the discharge point for treat effluent is the same as previously approved)

The existing water pump is a Gould well pump (1.5 HP, 7 gpm, 208V, 3-phase). The designed fish screen is an 8x8 mesh, stainless steel, with a 0.1m^2 effective screen area. Our interpretation of the new DFO specifications is that this represents twice the DFO requirements (because the specifications do not go this low of a pumping rate). The new pump for the proposed intake will be similar to the existing pump. Each pump would be metered separately, and monthly water use reports submitted to the NWB. Total water use would remain within the 150m^3 per day allocated under the current license. A heat-traced water line feeds a 1000 gallon tank with high and low switches. I apologize, but I do not have the operation and maintenance manual for the water intake and pump (it is likely on-site), but we have a full-time camp manager who does all regular maintenance on equipment such as the pump and intake.

I have attached the CMS Group Inc. Proposal for the RBC sewage treatment plant, and the Rotordisk sewage treatment system information, which include the specifications

that you requested. We are assuming an approximately 70-person camp for the 1997 season (April through September). Ultimately, the old sewage treatment facility would be removed from site.

Finally, the application for the modification is also included in this package. An original copy of all materials will be mailed, including a check in amount of CDN$30.00 for the application fee.

Please call me at (415)774-2380 if you have any questions or comments.

Sincerely,

R. Dennis Wuertz
Environmental Manager

Enclosures

NUNAVUT WATER BOARD
LICENCE APPLICATION FORM

Application for licence/amendment to licence, or renewal of licence

APPLICATION/LICENCE NO: (Amendment or renewal only) N7L2-1652

1. NAME AND MAILING ADDRESS OF APPLICANT

BHP Minerals
550 California Street
San Francisco, Ca 94104
USA

Phone: (415)774-2380 Fax: (415)774-2304

2. ADDRESS OF HEAD OFFICE IN CANADA IF INCORPORATED

BHP Minerals Canada Ltd.
1600-1055 West Pender Street
Vancouver, B.C. V6E 3S7
Canada

Phone: (604)683-6921 Fax: (604)683-4125

3. LOCATION OF UNDERTAKING (describe and attach a map, indicating watercourse and location of any proposed waste deposits)

Approximately 700 km NNE of Yellowknife, NWT, and 60 km SSE of Cambridge Bay, NWT. Map Attached

Latitude: 68 09' N Longitude: 106 35' W

4. DESCRIPTION OF UNDERTAKING (describe and attach plans)

1) Addition of one separately-metered water intake.
2) Upgrade of sewage disposal system to an RBC

5. TYPE OF UNDERTAKING

- ☐ Industrial
- ☐ Power
- ☐ Agricultural
- ☐ Mining and Milling
- ☐ Conservation
- ☐ Recreation
- ☐ Municipal
- ☒ Others (describe): Bulk Sampling at Exploration phase

6. WATER USE

- ☐ To obtain Water
- ☐ Flood control
- ☐ To cross a watercourse
- ☐ To divert water
- ☐ To modify the bed or bank of a water
- ☐ To alter the flow of, or store, water
- ☒ Other (describe): Bulk Sampling at Exploration phase

7. QUANTITY OF WATER INVOLVED (litres per second, litres per day or cubic metres per year, including both quantity to be used and quality to be returned to source)

Less then 150m^3/day, as per license allocation

8. WASTE DEPOSIT (quantity, quality, treatment and disposal)

RBC specifications attached. The camp will be approximately 70-persons April-September 1997.

9. OTHER PERSONS OR PROPERTIES AFFECTED BY THIS UNDERTAKING (give name, mailing address and location; attach if necessary)

10. PREDICTED ENVIRONMENTAL IMPACTS OF UNDERTAKING AND PROPOSED MITIGATION

1) Addition of water intake will not result in additional water use; however camp size is increased to 70-persons.
2) The upgrade of the sewage disposal system currently approved will reduce environmental impacts.

11. CONTRACTORS AND SUB-CONTRACTORS (name, address and functions)

CMS Group Inc. (RBC unit)
185 Snow Blvd., Suite 200
Corcord, Ontario L4K 4N9
(Rotordisk supplier)

12. STUDIES UNDERTAKEN TO DATE (attach list if necessary)

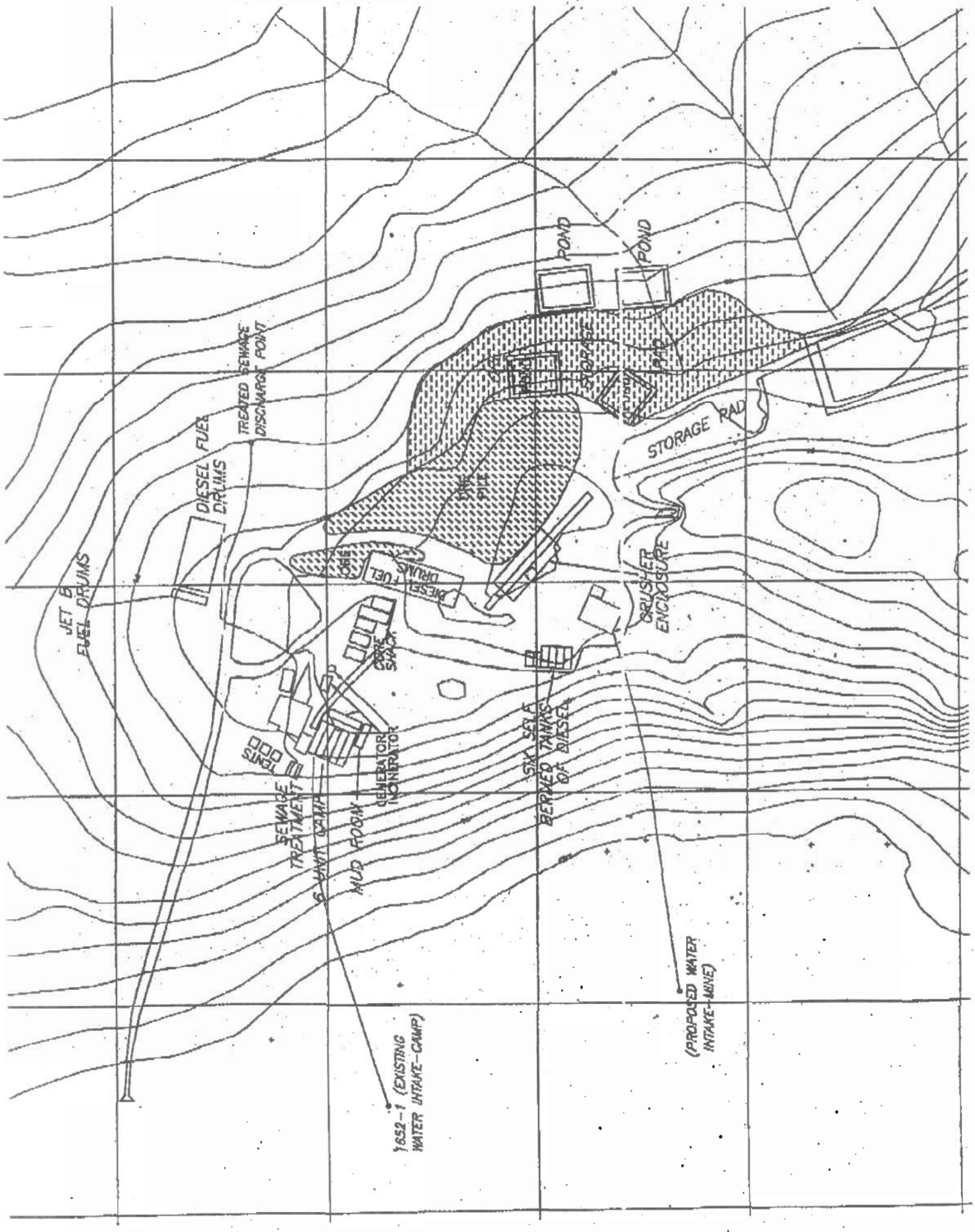
Environmental baseline data collected since 1993. Permafrost Studies.

13. PROPOSED TIME SCHEDULE

Start Date: April 1997 Completion Date September 1997

R. Dennis Wuertz	Environmental Manager		20 MARCH 1997
Name (print)	Title (Print)	Signature	(dd/mm/yy)

APPLICATION	**Amount $** _____	**Receipt No.:** _____
WATER USE DEPOSIT	**Amount $** _____	**Receipt No.:** _____


POND
POND
EVAPORATOR PAD
STORAGE PAD
TREATED SEWAGE DISCHARGE POINT
FUEL
DIESEL DRUMS
JET B FUEL DRUMS
DIKE
PIT
DIESEL FUEL DRUMS
CRUSHER ENCLOSURE
CORE SHACK
SEWAGE TREATMENT
GENERATOR INCINERATOR
MUD ROOM
CAMP
SEA CAN TANKS
BERMED AREA OF DIESEL
1652-1 (EXISTING WATER INTAKE-CAMP)
(PROPOSED WATER INTAKE-MINE)

February 6 1997

BHP Minerals
550 California St.
San Francisco CA
USA
94104

FAXED

Attention: Mr. Rich Rein

RE: PROPOSAL FOR SEWAGE TREATMENT PLANT
MINING CAMP - NORTHWEST TERRITORY
CMS QUOTATION: Q-97013 - FULL STEEL

Submitted herewith is our proposal for the design, manufacture, and supply of a ROTORDISK™ wastewater treatment system and ancillary components as requested by Mr. Rein. The proposal is based on the criteria indicated below and meets these specifications except where specifically referred to in this proposal. The hydraulic load is based on 95 men at 300 litres per man per day.

1.0 DESIGN PARAMETERS

HYDRAULIC LOADING 28,500 l/day (7,529 USgpg)

	INFLUENT	EFFLUENT
BOD	220 mg/l	20 mg/l
SS	220 mg/l	20 mg/l

Ambient Temperature: 10 oC (with heater)

2.0 PRICE

Two model S-40 ROTORDISK™ sets of internals, similar to Drawing No. GS-011D complete with a total combined area of 5451 square feet of media in a full steel tanks.

[redacted]

The above quoted price is on board truck, delivered to Pearson International Airport, Toronto, and is inclusive of all the items as listed under section 3.0 Components.

The price is open for acceptance for 90 days after which component increases may be applied.

CMS GROUP INC.
185 Snow Boulevard, Suite 200, Concord, Ontario, Canada L4K 4N9
Telephone 905 660 7580 416 447 4964 Fax 905 660 1243

2.1 Taxes

All Federal and Provincial taxes applicable to the purchase of all or any part of this purchase during the life of this contract are extra and not included in the Total Price.

2.2 Terms of Payment

1) 25% deposit, prior to fabrication.
2) Balance of payment due on presentation of shipping documents.

ORDERS ARE SUBJECT TO APPROVAL OF THE CREDIT DEPARTMENT.

Approval drawings issued within two (2) weeks of intent to purchase.

Shipment 4-6 weeks after receipt of deposit and approval.

Fabrication will begin when deposit is received.

3.0 COMPONENTS

The ROTORDISK™ unit will be provided with the following components:

Two(2)	ROTORDISK™ shafts comprising multiple sections of biological support media, containing a total of 2727 square feet of media per shaft factory mounted to a common shaft
Two (2)	Four (4) section Rotorzones complete with fixed 1/4" steel plate flow control baffles, drive shaft bearings support, and grating access support all sandblasted and coated with 16 mil of coal tar epoxy paint and mounted in a steel tank forming the primary and final clarifiers. The steel tank will have I-Beam skids with insulation between the skids
Two (2)	Drive Systems
Two (2)	3/4 h.p. motors
Two (2)	reduction gear boxes
Four (4)	Sets of bearings and couplings
Two (2)	Sets of handrails and floor grating
One (1)	Electrical control panel
Two (2)	Rotation Sensors
Two (2)	1000w NEMA4X heaters

One (1) Alarm bell or light

Two (2) FRP covers

Six (6) copies of the Operation and Maintenance Manual.

The final stage of the ROTORDISK™ rotating assembly s equipped with a patented oxygen recycle device.

3.1 Purchaser's Responsibilities

The Purchaser shall be responsible for the following items unless contracted by CMS:

1. Off-loading the units at the airport
2. All regulatory permits.

3.2 Supplied By Others

1. Installation and field assembly.
2. Footings or pad.
3. Site alignment of drive and shafting.
4. Lubricants.

3.3 Items Not Included

1. Approval by Environmental or Political Authority.
2. Approval by Ministry of Labour or Hydro (prerequisite approvals for Building Permit).

4.0 ABOUT CMS

CMS Group is the oldest North American manufacturer of Rotating Biological Contactors with more installations than any other manufacturer in North America.

4.1 About Our Design

The ROTORDISK™ sewage treatment plant is a high-efficiency package plant using the process of rotating biological contactors (RBCs) to remove pollutants from wastewater. It is designed on a site-specific basis to meet the customer's requirements both with respect to the flow of influent and the effluent requirements of the regulatory authorities.

ROTORDISK™ employs disks made from 3/8" grid extruded medium density polyethylene material with U.V. light inhibitors. The grid pattern promotes oxygen transfer into the wastewater and particularly into the core of the media. The assembly is specially designed to prevent anaerobic conditions from developing.

ROTORDISK™ is a multi-staged, fixed steel baffle RBC which has been proven to be more efficient for the removal of carbonaceous BOD and nitrification than a rotating baffle and plug flow media system.

The primary clarifier is designed to accommodate long storage periods for sludge, which assists the ROTORDISK™ process by continuously providing a source of BOD. The BOD is picked up in the unique recycle system and feeds the microbe population during no flow and low flow conditions. The sludge is also desirable in cold weather operation as it generates heat which tends to keep the system in optimum operating condition.

The ROTORDISK™ plant is protected under Canadian Patents ##1082821 and 1194624.

4.2 About the RBC Module

As manufactured by CMS Group Inc., the RBC module is designed for installation in a primary clarifier as shown on the engineering drawings. The RBC trough is semi-circular and fabricated from 1/4" steel plate. All metal surfaces are sand blasted to SSPC-SP-10-63 white metal and painted with one coat of primer and two coats of coal tar epoxy to a minimum of 16 mil.

The banks of media are contained between rigid woven mat FRP endplates, supported by tension rods and polyethylene spacers. The drive train, comprised of an Electric Motor, Double Reduction Gear Box, Bearings, , and a coupling to join the shafts, is pre-assembled at the factory.

4.2.1 Drive System

The Falk Steel Flex drive coupling, is designed for high torque capacity and start up shock loadings.. The motor is T.E.F.C. for use in high moisture conditions, C-flanged, and is equal to or surpasses the Nema C high torque specs.

The reducer is a double reduction helical bevelled unit, lubricated for a minimum of five (5) years and sealed for high humidity service.

The bearings are spherical roller, self aligning, split pillow block; one fixed and one free on each shaft.

4.2.2 Shop Assembly

The ROTORDISK™ unit is completely assembled at the shop, however, travel may cause some shifting and loss of lubricants. It is shipped in as large a piece as feasible, usually as a one piece item. Additional installation requirements for grating supports on the primary and final clarifiers will be detailed after final contract award.

5.0 GUARANTEE AND WARRANTY

Term of Guarantee is fifteen (15) months from shipment or twelve (12) months from start up whichever occurs first. Parts found to be defective shall be repaired or replaced, at CMS' discretion.

Purchaser shall have seven (7) days from receipt of equipment to file loss or damage claims with the carrier. A packing slip accompanying shipment will be considered correct and all goods received in good order after that date.

6.0 ENGINEERING

6.1 Engineering Drawings

The following drawings will be provided for approval:

a) General Arrangement Drawings

b) Assembly Drawings

c) Electrical Drawings.

6.2 Commissioning

The quoted price does not include installation and commissioning. CMS Group Inc. will supply qualified personnel to install and train the Purchaser's operating and maintenance personnel, and a price can be provided, if requested.

6.4 Electrical Supply

The electrical supply required for the installation of the ROTORDISK™ plant is as available. The purchaser must notify CMS as to the power supply.

January 10, 1997

Operations Manager
BHP Minerals Canada Ltd
1600, 1050 W Pender Street
Vancouver BC V6E 3S7

Dear Sir:

Re: On-site Sewage Treatment

Enclosed please find our brochure, "A Simple Treatment System for Mining and Construction Camps". Many mining and construction companies, faced with the problem of wastewater management in remote areas, have turned to **ROTORDISK™** for a solution. Its simple operation with minimal maintenance makes it ideal for such areas. In addition, our small S-12 unit has been adapted for use underground where its effluent is reused for non-potable water applications such as flushing.

If you would like further information please call or fax us the attached sheet and we will be happy to contact you.

Yours sincerely,

CMS Group Inc.

Peter J. Ruddy,
Sales Manager

pjr
Encl.
MININGAPRJ

CMS GROUP INC.
185 Snow Boulevard, Suite 200, Concord, Ontario, Canada L4K 4N9
Telephone 905 660 7580 416 447 4964 Fax 905 660 1243

FACSIMILE TRANSMISSION COVER SHEET

DATE: _____

TO: Mr. Peter Ruddy

CMS GROUP INC.
185 Snow Blvd., Suite 200
Concord, Ontario L4K 4N9
Canada

FACSIMILE NO: *(905) 660-0243*

Further to your letter of January 10, 1997, please forward additional information on your ROTORDISK™ wastewater treatment systems to:

Name: _____

Title: _____

BHP Minerals Canada Ltd
1600, 1050 W Pender Street
Vancouver BC V6E 3S7

Fax No: _____

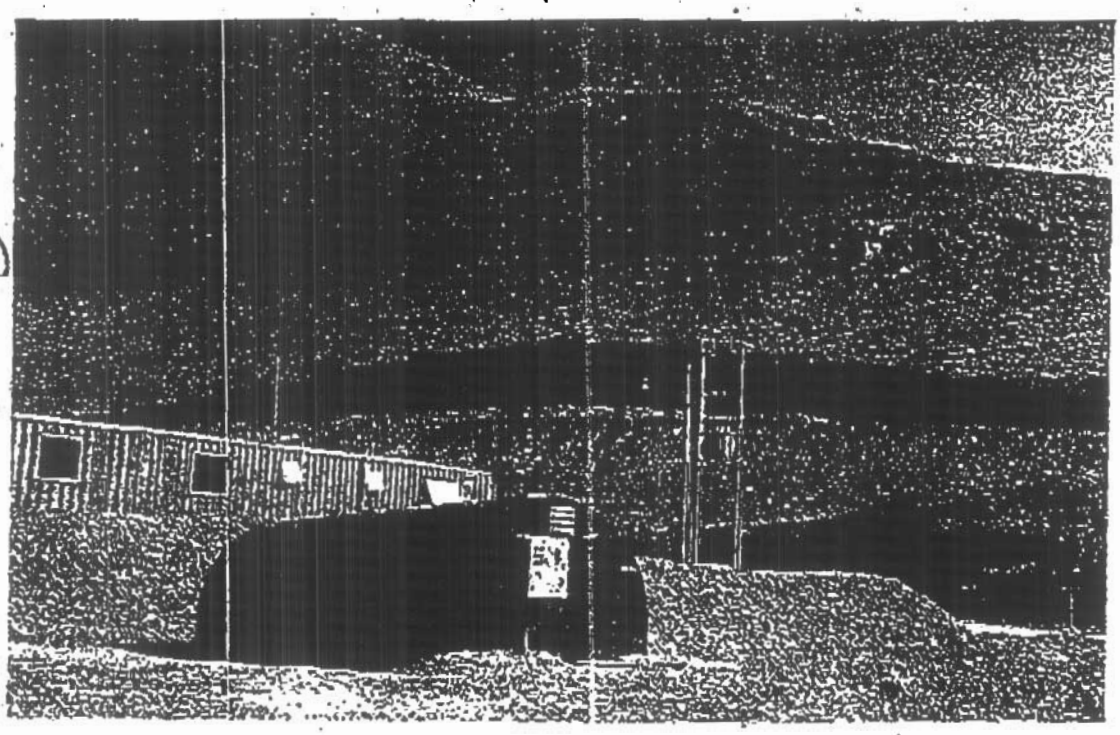
*HMN-FAXPIR

CMS GROUP INC

WASTEWATER TREATMENT SYSTEMS

ROTOR DISK™

SINCE 1974



A Simple Sewage Treatment System For Mining and Construction Camps

This is 2 through the post today - in case you haven't seen this sort of system. Jeremy

Jan 28/96

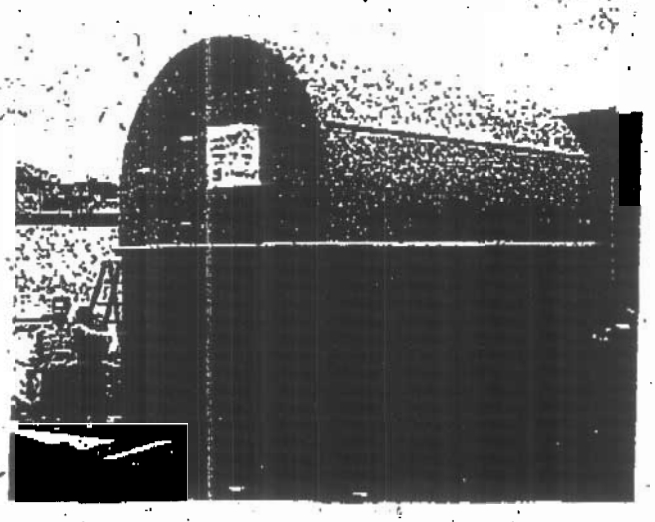
Post-it FAX TRANSMITTAL MEMO 7671 6 NO. OF PAGES

TO: Rich Reid/Dennis Wheeler	FROM: Jeremy Howe
CO.:	CO.:
DEPT.: Res Dept	PHONE #:
FAX #: Auto	FAX #:

INTRODUCTION

The ROTORDISK™ package sewage treatment system is ideal for servicing permanent or temporary remote installations such as mining and construction camps. Features of the ROTORDISK™ which make it a compelling alternative to other sewage treatment options for remote sites and cold weather operations are as follows:

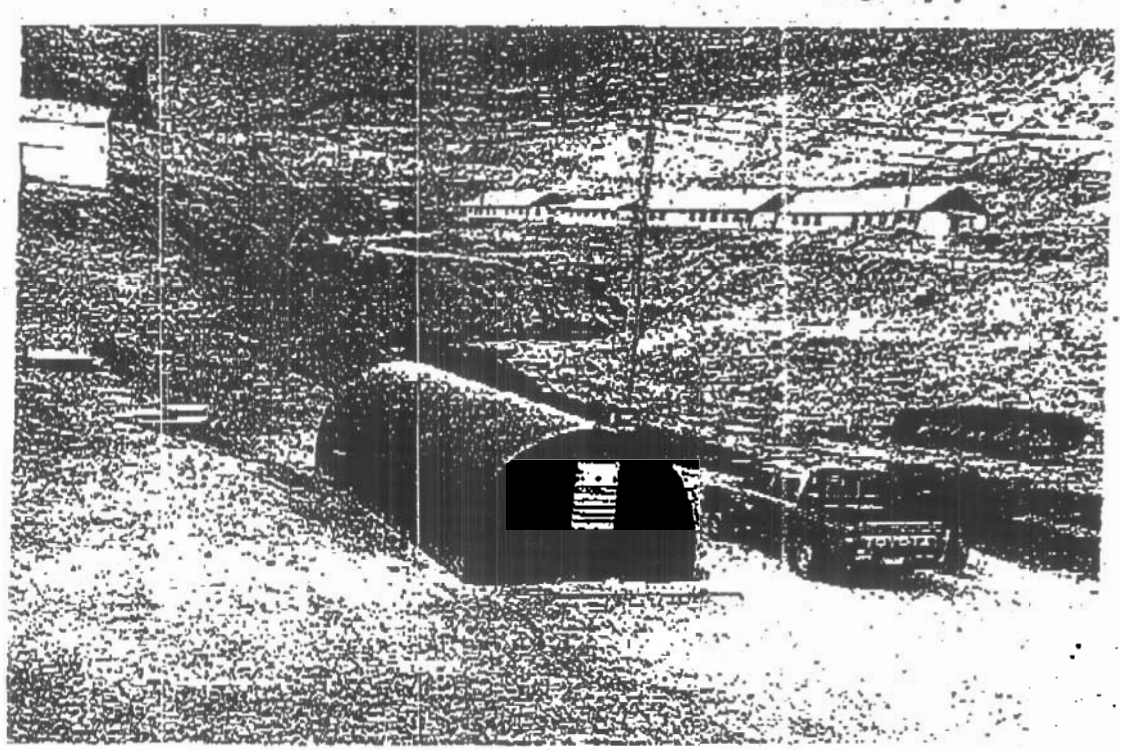
- The modular design allows for timely expansion, as required.
- Full steel construction allows for ease of installation and re-use at other sites.
- Heat controlled, fully-insulated units allow for cold weather operation.
- Units can be factory assembled and shipped as one complete system, resulting in easy installation and start-up procedure.
- A simple drive system eases operation and maintenance procedures.
- Start-up is accomplished by simply introducing sewage flows. No complex aeration devices or control is required.
- The ROTORDISK™ design accepts hydraulic and organic surges without loss of treatment efficiency.
- Units can be easily adapted to upgrade effluent quality.
- Not affected by altitude.

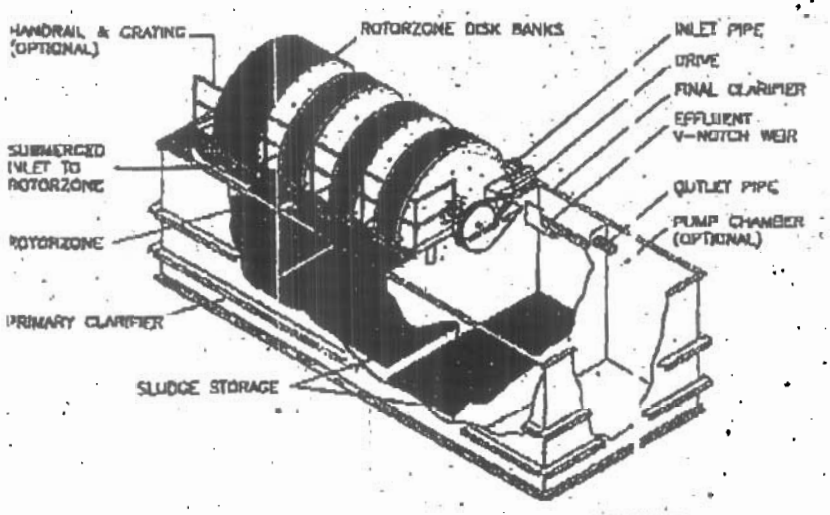


DESIGN FLEXIBILITY

ROTORDISK™ systems have been designed to handle stringent operating requirements:

- Peak flow: up to 5X hourly, or 3X over 2.5 hours.
- Effluent quality suitable for subsurface or surface water discharge.
- Low influent wastewater temperatures of 7°C, exterior air temperatures of -40°C.
- Temporary or permanent installations to handle a wide range of population.





THE ROTORDISK™ PROCESS

The patented **ROTORDISK™** wastewater treatment plant integrates four separate operations into one system:

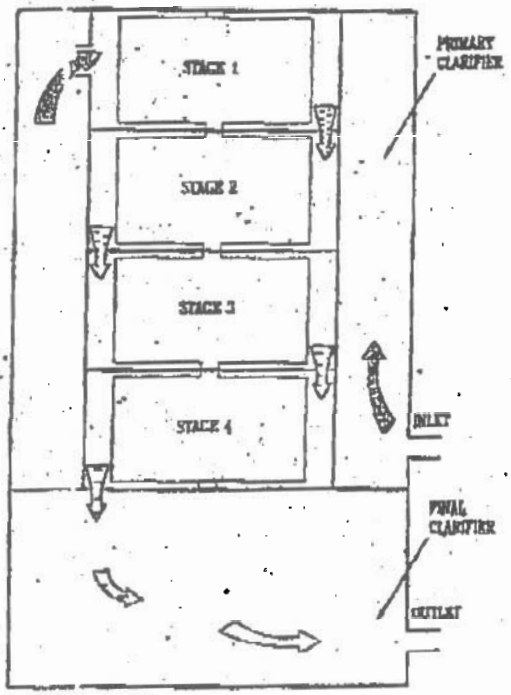
- Primary settling tank for suspended solids and grit removal.
- A multi-stage Rotating Biological Contactor (RBC) for removal of organic matter (BOD) by active biomass.
- Final settling tank for biosolids removal.
- Biosolids storage capacity for low cost solids management.

The ROTORZONE, located over the primary tank, consists of a trough and shaft on which a multiple number of disks are mounted. The disks are 40% immersed in the wastewater being treated. Each disk is made of a high density polyethylene mesh which provides a greater effective surface area than flat or corrugated disks. Slow rotation of these disks alternately expose the attached micro-organisms to the wastewater and air allowing for pollutant absorption and oxygen uptake. The naturally occurring micro-organisms, or biomass, feed on the organic waste and convert it to CO_2 and H_2O.

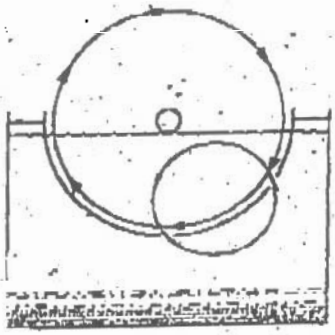
Fixed baffles are used to provide distinct stages in the ROTORZONE and a serpentine flow pattern is used to achieve the maximum retention time.

A small amount of biomass continually sloughs off the disks and is carried by the treated water to the final settling tank where it is settled out.

Two special features of the **ROTORDISK™** are a slot in the bottom of the first stage of the ROTORZONE and a water wheel in the fourth stage of the ROTORZONE. Both features serve to transfer oxygen and recycle most of the excess biomass to the primary settling tank. Recycling dampens shock loadings and maintains aerobic conditions in the upper layers of the primary tank. Extra primary settling tank capacity allows solids to accumulate where further digestion reduces the volume of biosolids for disposal and provides a continual nutrient supply for the biomass on the disks.



Fixed baffles result in distinct staging and ensure maximum contact between biomass and pollutants. The number of stages can be modified to satisfy treatment efficiency requirements.



Depletion of oxygen in the Primary Settling Tank is eliminated by means of recirculation from the ROTORZONE.

APPLICATIONS

Major corporations such as Hydro Quebec, Falconbridge and Barrick Gold are using **ROTORDISK™** in mining and construction camp installations.

Hydro Quebec considered several methods of sewage treatment for the servicing of remote work camps, including septic systems, extended aeration package systems, and the **ROTORDISK™** system. **ROTORDISK™** was chosen as the best alternative for its ability to handle relatively extreme hydraulic and organic peaks, lower installation costs, reusability, minimal maintenance, lower space requirements, and lower energy costs. A total of ten **ROTORDISK™** units were used for the servicing of remote work camps in Northwestern Quebec for their hydroelectric construction projects.

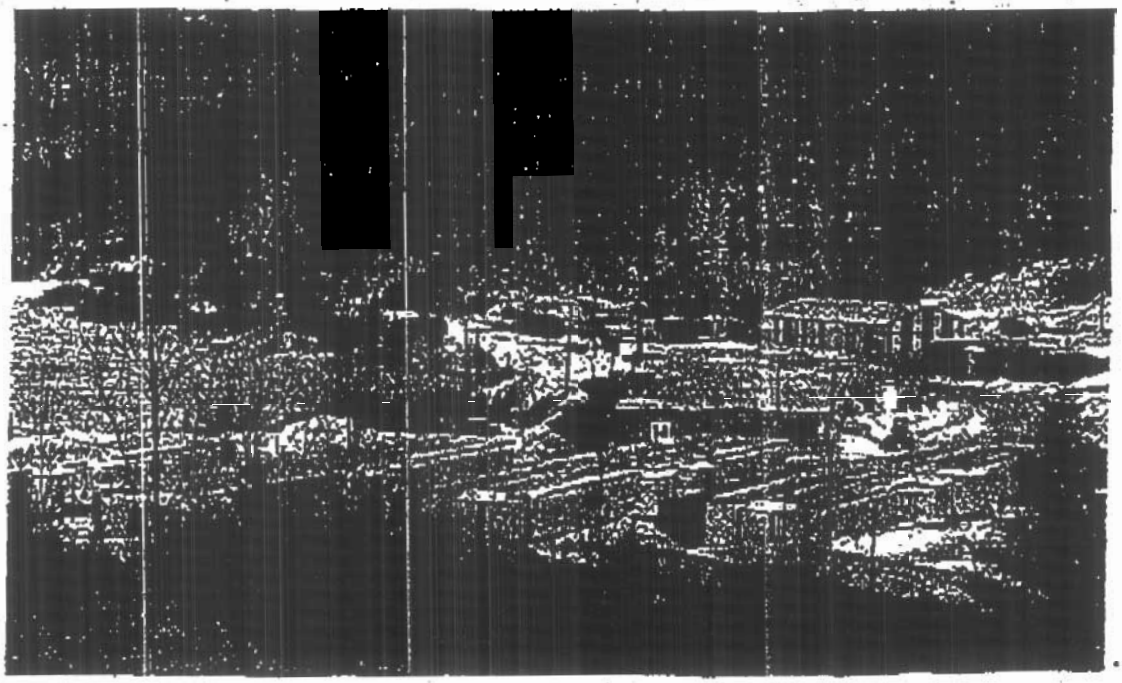
Four large treatment systems were supplied to the El Indio mines in Chile to service mining camps including a 1,000 person camp.

A Model M200 was supplied in 1994 to the Omai Gold Mine in Guyana owned by Cambrior Inc. Other units have been shipped to Getchell Mines, Echo Bay Mines and Gold Stream Mines in 1990, which relocated the unit from Idaho to Watson Lake in the Yukon.

ROTORDISK™ SPECIFICATIONS

PERSONS PER CAMP	MODEL	UNIT DIMENSIONS		
		LENGTH (ft.)	WIDTH (ft.)	HEIGHT (ft.)
25	S-20	10'-0"	7'-8"	7'0"
50	S-30	12'-7"	8'-2"	7'-0"
75	S-40	13'-0"	8'-4"	7'-6"
100	M-50	15'-7"	8'-4"	7'-9"
150	M-75	15'-1"	10'-1"	10'-3"
200	M-100	17'-4"	10'-10"	11'-0"
250	M-100	17'-4"	10'-10"	11'-0"
300	M-100	17'-4"	10'-10"	11'-0"
400	M-125	20'-7"	10'-10"	11'-0"
500	M-175	25'-1"	10'-10"	12'-2"
600	M-200	24'-11"	11'-7"	13'-3"
700	L-333	32'-4"	11'-10"	15'-6"
800	L-400	36'-10"	12'-1"	15'-6"
900	L-400	36'-10"	12'-1"	15'-6"
1000	L-500	41'-0"	12'-1"	15'-6"

Flow based on : 00 litres per person per day and standard removal of BOD and suspended solids



REPRESENTED BY: