



LIBRARIES

UNIVERSITY OF WISCONSIN-MADISON

WPDES permit application for the Crandon Project : 93C049. 1995

Foth & Van Dyke and Associates, Inc.

Green Bay, Wisconsin: Foth & Van Dyke and Associates, Inc., 1995

<https://digital.library.wisc.edu/1711.dl/NHLGI6MTKFTA79C>

<http://rightsstatements.org/vocab/InC/1.0/>

For information on re-use see:

<http://digital.library.wisc.edu/1711.dl/Copyright>

The libraries provide public access to a wide range of material, including online exhibits, digitized collections, archival finding aids, our catalog, online articles, and a growing range of materials in many media.

When possible, we provide rights information in catalog records, finding aids, and other metadata that accompanies collections or items. However, it is always the user's obligation to evaluate copyright and rights issues in light of their own use.



Crandon Mining Company

7 N. BROWN ST., 3RD FLOOR
RHINELANDER, WI 54501-3161

Jerome D. Goodrich, Jr.
PRESIDENT

September 18, 1995

Mr. Paul Luebke
Wisconsin Department of Natural Resources
Bureau of Wastewater Management
P. O. Box 7921
Madison, WI 53707-7921

Mr. David L. Ballman
Ecologist
U. S. Army Corps of Engineers
St. Paul District
190 Fifth Street East
St. Paul, MN 55101

Dear Mr. Luebke and Mr. Ballman:

Re: Crandon Project - *WPDES Permit Application*

Crandon Mining Company (CMC) is pleased to submit the attached application for a WPDES Discharge Permit for its Crandon Project. This application has been prepared pursuant to Chapter 147 Wis. Stat., and is submitted in conjunction with two additional documents relating to surface water management. The first is a report titled *Preliminary Engineering Report for Wastewater Treatment Facilities for the Crandon Project*. The second is a *Notice of Intent for Storm Water Discharges Associated with the Crandon Project* prepared pursuant to Chapters NR 108 and 216 Wis. Admin. Code, respectively.

The permit application includes the following documents:

- Application Form 1 - General Information, Consolidated Permits Program.
- Application Form 2D - New Sources and New Dischargers: Application for Permit to Discharge Process Wastewater.
- Attachments 1 and 2, and Figures 1 through 4 provide additional information.

The WPDES Permit Application has been prepared on behalf of CMC by Foth & Van Dyke and Associates Inc. As noted on the attached distribution list, CMC has distributed the document to appropriate state and federal agencies, to local officials, and to various interested parties. It is our understanding that the Wisconsin Department of



Natural Resources (WDNR) and the U.S. Army Corps of Engineers (USCOE) will be responsible for distribution of the document to their appropriate staff members.

The primary treated wastewater discharge point, outfall 007, will be at the intake of the turbines located at the Wisconsin Public Service Corporation's Hat Rapids Dam on the Wisconsin River. The dam is located approximately four miles south of the City of Rhinelander. Outfalls 001 through 006 and 008 through 012 relate to the discharge of non-contact stormwater runoff. These outfalls are discussed in detail in the project's *Preliminary Engineering Report for Wastewater Treatment Facilities* and the *Notice of Intent for Storm Water Discharges Associated with Construction Activities* referenced above.

With respect to Chapter NR 207 Wis. Admin. Code, "Water Quality Antidegradation," CMC makes the following statements.

1. The Wisconsin River is considered a fish and aquatic life water as defined under NR 102.13.
2. As provided in NR 207.05(3), CMC waives the procedures in NR 207.05(2) (a) to (d). The Crandon Project will accommodate important economic and social development through an increase in employment and other factors enumerated under NR 207.04(1)(c). Estimations of this impact are available in Section 4.2.13 of the Crandon Project's *Environmental Impact Report* (EIR).
3. The proposed discharge cannot be altered through the use of additional conservation or recycling measures beyond those already employed. The discharge will consist of treated mine drainage water, contact runoff and excess mill process water as allowed by NR 270.104. Every effort has been made to limit the area impacted by this project and thus limit the amount of contact runoff generated from the site. See Section 4 of the EIR for further discussion of this issue.
4. The wastewater treatment facilities described in the *Preliminary Engineering Report for Wastewater Treatment Facilities* provide the technology needed to meet water quality based effluent limits. This technology has been evaluated through bench scale tests which are also discussed in the *Preliminary Engineering Report*. Alternate technologies were considered as part of the evaluation of the wastewater treatment processes, but were ruled out for various reasons. A discussion of the alternatives considered is included in the *Preliminary Engineering Report*.
5. Alternate primary discharge locations including surface water bodies other than the Wisconsin River and groundwater have been considered. A discussion of these alternate locations is included in the *Preliminary Engineering Report*.

Mr. Paul Luebke/Mr. David Ballman
September 18, 1995
Page 3

CMC is proposing to discharge treated effluent to the intake structures for the Hat Rapids Dam turbines, where virtually instantaneous mixing will occur with the waters of the Wisconsin River. CMC requests that mixing zones be used for calculating effluent limits as allowed under NR 102.05 and NR 106.06.

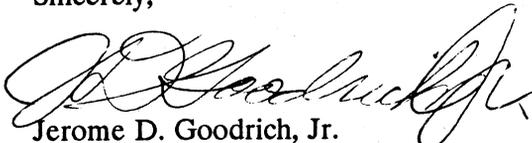
The discharge flow rate to the Wisconsin River from the project's wastewater treatment system will have significant variability over the life of the mine. While the maximum projected discharge rate is 1,200 gallons per minute, the average and minimum discharge rates are approximately 460 and 80 gallons per minute, respectively. These rates are impacted by the expected variations in mine inflow.

Wet weather and dry weather conditions will also have a significant impact on the wastewater flow rates discharged to the Wisconsin River. For example, under dry weather conditions, when the Wisconsin River has the potential to reach low flow conditions such as the $Q_{7,10}$, the discharge will also be significantly reduced.

The expected variability of the actual mine inflow rates and the correlation of river low flow conditions with minimum wastewater discharge flow rates presents an atypical situation for establishing effluent limits. Therefore, CMC requests that the WDNR issue a permit which includes limits that correspond to changing discharge rates for Outfall 007. Effluent limits should be based on discharge flow rates equal to 0.144, 0.864, and 1.728 million gallons per day (MGD). These rates are equivalent to 100, 600, and 1,200 gallons per minute (gpm). This range will provide CMC with added flexibility in managing its wastewater discharges in a manner which will result in the protection of the Wisconsin River water quality. As an example, if CMC discharged 0.600 MGD of treated wastewater the limits established under the 0.864 MGD (600 gpm) level will be the controlling factors.

CMC is requesting that this application be reviewed as expeditiously as possible so that permitting activities associated with the project can continue in a timely manner. If you or your staff have any questions regarding the application, please contact me at (715) 365-1450.

Sincerely,



Jerome D. Goodrich, Jr.
President
Crandon Mining Company

JDG:mld2:lxblmc

Distribution:

<u>No. of Copies</u>	<u>Sent To</u>
4	Mr. Bill Tans Wisconsin Department of Natural Resources Bureau of Environmental Analysis and Review 101 South Webster Street Madison, WI 53707
3	Mr. David Ballman United States Army Corps of Engineers St. Paul District 190 Fifth Street East St. Paul, MN 55101
6	Mr. Archie Wilson Wisconsin Department of Natural Resources 107 Sutcliff Avenue Rhineland, WI 54501
2	Mr. Paul Luebke Wisconsin Department of Natural Resources Bureau of Wastewater Management 101 South Webster Street, 2nd Floor Madison, WI 53707
3	Mr. Larry Lynch Wisconsin Department of Natural Resources Bureau of Solid and Hazardous Waste 101 South Webster Street, 3rd Floor Madison, WI 53707
1	Dr. Tom Wright U.S. Army Corps of Engineers Waterways Experiment Station CEWCS-ES-F 3909 Halls Falls Ferry Road Vicksburg, MS 39180-6199
1	Ainsworth, Town of Ms. Audrey Viola, Clerk N10446 Hwy 55 Pearson, WI 54462
1	Antigo, City of Mr. Miles R. Stanke, Mayor 617 Clermont Street Antigo, WI 54409-1986

Distribution *(Continued)*

- 1 Antigo Public Library
Ms. Shirley Barta
404 Superior Street
Antigo, WI 54409

- 1 Brown County Library
515 Pine Street
Green Bay, WI 54301

- 1 Crandon, City of
Mr. Vernon Kincaid, Mayor
601 West Washington Street
Crandon, WI 54520

- 1 Crandon Public Library
Ms. Michelle Koranda
104 South Lake Avenue
Crandon, WI 54520

- 1 Crandon, Town of
Mr. Rich Huber, Town Chairman
P.O. Box 1367
Crandon, WI 54520

- 1 Crescent, Town of
Mr. John Young, Chairman
7201 Long Lake Road
Rhineland, WI 54501

- 1 Forest County Board
Ms. Dora James, Clerk
County Clerk Office
200 East Madison Street
Crandon, WI 54520

- 1 Forest County Potawatomi
Mr. Al Milham, Chairman
P. O. Box 340
Crandon, WI 54520-0340

- 1 Greene, Meyer & McElroy
Ms. M. Catherine Condon
1007 Pearl Street, Suite 200
Boulder, CO 80302

Distribution *(Continued)*

- 1 Langlade County Clerk
Ms. Kathryn Jacob
800 Clermont Street
Antigo, WI 54409

- 1 Lincoln, Town of
Ms. Sandra Carter, Clerk
Route 2, P.O. Box 9
Crandon, WI 54520-0009

- 1 Madison Public Library
201 West Mifflin Street
Madison, WI 53703

- 1 Marathon County Library
400 - 1st Street
Wausau, WI 54401

- 1 Menominee Tribe
Mr. John Teller, Chairman
P.O. Box 910
Keshena, WI 54135

- 1 Milwaukee Library
814 West Wisconsin Avenue
Milwaukee, WI 53233

- 1 Nashville, Town of
Ms. Carol Marquardt, Clerk
Star Route, P.O. Box 52
Pickerel, WI 54465-0052

- 1 Nicolet College
Learning Resource Center
Ms. Maureen McCloskey, Librarian
P.O. Box 518, Hwy G
Lake Julia Campus
Rhineland, WI 54501

- 1 Public Service Commission
Mr. Ken Rineer
601 North Whitney Way
Madison, WI 53704

- 1 Oneida County Board of Supervisors
Mr. Robert Brusio, Clerk
1 Courthouse Square, P.O. Box 400
Rhineland, WI 54501

Distribution (Continued)

- 1 Rhinelander Public Library
106 North Stevens
Rhinelander, WI 54501
- 1 Sokaogon Chippewa Community
Mr. Arlyn Ackley, Chairman
Mole Lake Band
Route 1, P.O. Box 625
Crandon, WI 54520-0625
- 1 USEPA-Air Division (A18J)
Mr. David Kee, Director
77 West Jackson
Chicago, IL 60604-3507
- 1 U.S. Department of the Interior
Fish and Wildlife Service
Ms. Janet M. Smith, Field Supervisor
Green Bay Field Office
1015 Challenger Court
Green Bay, WI 54311-8331
- 1 U.S. Department of the Interior
Bureau of Indian Affairs
Mr. Robert Jaeger
Branch of Natural Resources
Ashland, WI 54806-0273
- 1 University of Wisconsin-Madison
Engineering Library
215 North Randall Avenue
Madison, WI 53706
- 1 University of Wisconsin-Madison
Mr. John Coleman
B102 Steenbock Library
550 Babcock Drive
Madison, WI 53706
- 1 University of Wisconsin-Stevens Point
Library-Learning Resources Center
2100 Main
Stevens Point, WI 54481
- 1 Washburn Public Library
Ms. Cheryl Michalski
307 Washington Avenue
Washburn, WI 54891

Distribution *(Continued)*

- 1 Wisconsin Department of Revenue
 Mr. John Eldredge
 125 South Webster
 Madison, WI 53707
- 1 Wisconsin Geological & Natural History Survey
 Mr. Tom Evans
 3817 Mineral Point Road, Room 108
 Madison, WI 53705



Gerald W. Sevick

9-18-95

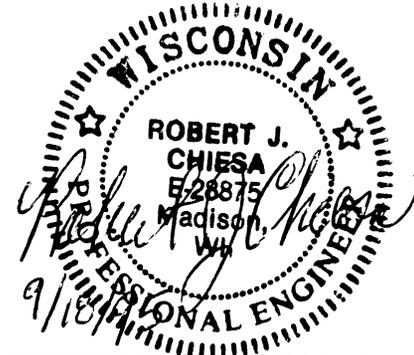
**WPDES Permit Application for
the Crandon Project**

93C049

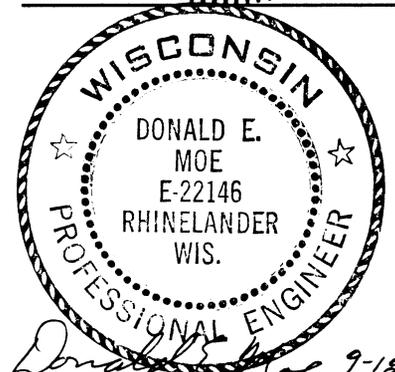
Prepared for
Crandon Mining Company
7 North Brown Street, 3rd Floor
Rhineland, Wisconsin 54501-3161

Prepared by
Foth & Van Dyke and Associates Inc.

September 1995



Robert J. Chiesa
9/18/95



Donald E. MoE 9-18-95

WPDES Permit Application Crandon Mining Company Crandon Project

Contents

Form 1	-	General Information
Form 2D	-	New Sources and New Discharges, Application for Permit to Discharge Process Water
Attachment 1	-	Additional Information for Form 1 of WPDES Permit Application
Attachment 2	-	Additional Information for Form 2D of WPDES Permit Application
Figure 1	-	Project Area
Figure 2	-	Site Layout
Figure 3	-	Proposed Pipeline Route for Wisconsin River Discharge
Figure 4	-	Overall Mill Water Balance (Average Flow Conditions)

FORM 1 GENERAL		U.S. ENVIRONMENTAL PROTECTION AGENCY GENERAL INFORMATION Consolidated Permits Program <i>(Read the "General Instructions" before starting.)</i>	I. EPA I.D. NUMBER F
LABEL ITEMS		PLEASE PLACE LABEL IN THIS SPACE	GENERAL INSTRUCTIONS
I. EPA I.D. NUMBER	If a preprinted label has been provided, affix it in the designated space. Review the information carefully; if any of it is incorrect, cross through it and enter the correct data in the appropriate fill-in area below. Also, if any of the preprinted data is absent (the area to the left of the label space lists the information that should appear), please provide it in the proper fill-in area(s) below. If the label is complete and correct, you need not complete Items I, III, V, and VI (except VI-B which must be completed regardless). Complete all items if no label has been provided. Refer to the instructions for detailed item descriptions and for the legal authorizations under which this data is collected.		
III. FACILITY NAME			
V. FACILITY MAILING ADDRESS			
VI. FACILITY LOCATION			

II. POLLUTANT CHARACTERISTICS

INSTRUCTIONS: Complete A through J to determine whether you need to submit any permit application forms to the EPA. If you answer "yes" to any questions, you must submit this form and the supplemental form listed in the parenthesis following the question. Mark "X" in the box in the third column if the supplemental form is attached. If you answer "no" to each question, you need not submit any of these forms. You may answer "no" if your activity is excluded from permit requirements; see Section C of the instructions. See also, Section D of the instructions for definitions of bold-faced terms.

SPECIFIC QUESTIONS	MARK 'X'			SPECIFIC QUESTIONS	MARK 'X'		
	YES	NO	FORM ATTACHED		YES	NO	FORM ATTACHED
A. Is this facility a publicly owned treatment works which results in a discharge to waters of the U.S.? (FORM 2A)		X		B. Does or will this facility (either existing or proposed) include a concentrated animal feeding operation or aquatic animal production facility which results in a discharge to waters of the U.S.? (FORM 2B)		X	
C. Is this a facility which currently results in discharges to waters of the U.S. other than those described in A or B above? (FORM 2C)		X		D. Is this a proposed facility (other than those described in A or B above) which will result in a discharge to waters of the U.S.? (FORM 2D)	X		X
E. Does or will this facility treat, store, or dispose of hazardous wastes? (FORM 3)		X		F. Do you or will you inject at this facility industrial or municipal effluent below the lowermost stratum containing, within one quarter mile of the well bore, underground sources of drinking water? (FORM 4)		X	
G. Do you or will you inject at this facility any produced water or other fluids which are brought to the surface in connection with conventional oil or natural gas production, inject fluids used for enhanced recovery of oil or natural gas, or inject fluids for storage of liquid hydrocarbons? (FORM 4)		X		H. Do you or will you inject at this facility fluids for special processes such as mining of sulfur by the Frasch process, solution mining of minerals, in situ combustion of fossil fuel, or recovery of geothermal energy? (FORM 4)		X	
I. Is this facility a proposed stationary source which is one of the 28 industrial categories listed in the instructions and which will potentially emit 100 tons per year of any air pollutant regulated under the Clean Air Act and may affect or be located in an attainment area? (FORM 5)		X		J. Is this facility a proposed stationary source which is NOT one of the 28 industrial categories listed in the instructions and which will potentially emit 250 tons per year of any air pollutant regulated under the Clean Air Act and may affect or be located in an attainment area? (FORM 5)		X	

III. NAME OF FACILITY

1	SKIP	CRANDON MINING COMPANY
---	------	------------------------

IV. FACILITY CONTACT

A. NAME & TITLE (last, first, & title)	B. PHONE (area code & no.)
2 DONALD E MOE PERMITTING MNGR.	7 1 5 3 6 5 1 4 5 0

V. FACILITY MAILING ADDRESS

A. STREET OR P.O. BOX			
3 7 N BROWN ST, 3RD FLOOR			
B. CITY OR TOWN		C. STATE	D. ZIP CODE
4 RHINELANDER		WI	5 4 5 0 1 - 3 1 6 1

VI. FACILITY LOCATION

A. STREET, ROUTE NO. OR OTHER SPECIFIC IDENTIFIER					
5 (SEE ATTACHMENT 1)					
B. COUNTY NAME					
FOREST					
C. XXXXXX TOWN			D. STATE	E. ZIP CODE	F. COUNTY CODE (if known)
6 LINCOLN			WI		

B. Attach a line drawing showing the water flow through the facility. Indicate sources of intake water, operations contributing wastewater to the effluent, and treatment units labeled to correspond to the more detailed descriptions in Item III-A. Construct a water balance on the line drawing by showing average flows between intakes, operations, treatment units, and outfalls. If a water balance cannot be determined (e.g., for certain mining activities), provide a pictorial description of the nature and amount of any sources of water and any collection or treatment measures. (see Figure 4)

C. Except for storm runoff, leaks, or spills, will any of the discharges described in item III-A be intermittent or seasonal?

Yes (complete the following table) No (go to item IV)

Outfall Number	1. Frequency---		-2. Flow		
	a. Days Per Week (specify average)	b. Months Per Year (specify average)	a. Maximum Daily Flow Rate (in mgd)	b. Maximum Total Volume (specify with units)	c. Duration (in days)

IV. Production

If there is an applicable production-based effluent guideline or NSPS, for each outfall list the estimated level of production (projection of actual production level, not design), expressed in the terms and units used in the applicable effluent guideline or NSPS, for each of the first 3 years of operation. If production is likely to vary, you may also submit alternative estimates (attach a separate sheet).

Year	a. Quantity Per Day	b. Units of Measure	c. Operation, Product, Material, etc (specify)
Not applicable	-	Although	there are NSPSs applicable to the discharge from Outfall 007, these NSPSs are not production-based.

V. Effluent Characteristics

A, and B: These items require you to report estimated amounts (*both concentration and mass*) of the pollutants to be discharged from each of your outfalls. Each part of this item addresses a different set of pollutants and should be completed in accordance with the specific instructions for that part. Data for each outfall should be on a separate page. Attach additional sheets of paper if necessary.

General Instructions (See table 2D-2 for Pollutants)

Each part of this item requests you to provide an estimated daily maximum and average for certain pollutants and the source of information. Data for all pollutants in Group A, for all outfalls, must be submitted unless waived by the permitting authority. For all outfalls, data for pollutants in Group B should be reported only for pollutants which you believe will be present or are limited directly by an effluent limitations guideline or NSPS or indirectly through limitations on an indicator pollutant.

1. Pollutant	2. Maximum Daily Value (include units)	3. Average Daily Value (include units)	4. Source (see instructions) (see Attachment 2)
Flow Rate	1,200 gallons per minute	461 gallons per minute	Design Capacity of the WWS (maximum flow) Water Balance (average flow)
5-Day Biochemical Oxygen Demand	10 mg/L	5 mg/L	Treatability Testing
Chemical Oxygen Demand	20 mg/L	< 10 mg/L	Treatability Testing
Total Organic Carbon	10 mg/L	< 5 mg/L	Best Professional Judgement
Total Suspended Solids	20 mg/L	< 5 mg/L	Best Professional Judgement
Ammonia (as N)	9 mg/L	3.6 mg/L	Best Professional Judgement
Temperature (winter)	50° F	35° F	Best Professional Judgement
Temperature (summer)	85° F	60° F	Best Professional Judgement
pH	9.0 (max.) 6.0 (min.)	8.0	Best Professional Judgement
Fluoride	0.5 mg/L	0.2 mg/L	Best Professional Judgement
Nitrate + Nitrite (as N)	23 mg/L	9 mg/L	Best Professional Judgement
Oil and Grease	15 mg/L	< 5 mg/L	Best Professional Judgement
Total Phosphorus	0.2 mg/L	0.05 mg/L	Treatability Testing
Sulfate (as SO ₄)	1,500 mg/L	1,000 mg/L	Leaching Testing
Sulfide (as S)	5 mg/L	< 2 mg/L	Best Professional Judgement
Sulfite (as SO ₃)	< 1 mg/L	< 1 mg/L	Best Professional Judgement
Total Aluminum	0.3 mg/L	0.12 mg/L	Treatability Testing
Total Barium	0.06 mg/L	0.03 mg/L	Leaching Testing
Total Cobalt	1.0 mg/L	0.5 mg/L	Leaching Testing
Total Iron	0.1 mg/L	0.02 mg/L	Treatability Testing
Total Magnesium	75 mg/L	30 mg/L	Leaching Testing
(continued on Page 3B of 5)			

V. Effluent Characteristics

A, and B: These items require you to report estimated amounts (*both concentration and mass*) of the pollutants to be discharged from each of your outfalls. Each part of this item addresses a different set of pollutants and should be completed in accordance with the specific instructions for that part. Data for each outfall should be on a separate page. Attach additional sheets of paper if necessary.

General Instructions (See table 2D-2 for Pollutants)

Each part of this item requests you to provide an estimated daily maximum and average for certain pollutants and the source of information. Data for all pollutants in Group A, for all outfalls, must be submitted unless waived by the permitting authority. For all outfalls, data for pollutants in Group B should be reported only for pollutants which you believe will be present or are limited directly by an effluent limitations guideline or NSPS or indirectly through limitations on an indicator pollutant.

1. Pollutant	2. Maximum Daily Value (include units)	3. Average Daily Value (include units)	4. Source (see instructions) (see Attachment 2)
Total Manganese	0.2 mg/L	0.06 mg/L	Treatability Testing
Total Antimony	0.01 mg/L	< 0.05 mg/L	Leachate Testing
Total Chromium	0.01 mg/L	< 0.005 mg/L	Treatability Testing
Total Lead	0.006 mg/L	< 0.003 mg/L	Treatability Testing
Total Nickel	0.04 mg/L	< 0.02 mg/L	Treatability Testing
Total Silver	0.002 mg/L	< 0.001 mg/L	Treatability Testing
Total Zinc	0.10 mg/L	0.02 mg/L	Treatability Testing
Total Arsenic	0.01 mg/L	< 0.004 mg/L	Treatability Testing
Total Cadmium	0.002 mg/L	0.0015 mg/L	Treatability Testing
Total Copper	0.080 mg/L	0.010 mg/L	Treatability Testing
Total Mercury	N.D. ¹	N.D. ¹	Treatability Testing
Total Selenium	0.29 ² mg/L	0.09 mg/L	Leachate Testing
Total Thallium	0.02 mg/L	< 0.01 mg/L	Treatability Testing
Total Cyanide	0.53 mg/L ³	0.09 mg/L	Best Professional Judgement
Hardness	1,050	500	Leaching Testing

¹ N.D. = Not detectable. The detection level for mercury using approved analytical methods for the WPDES permit program is approximately 0.0002 mg/L. Crandon Project effluent when tested is expected to show a no detect.

² Maximum concentration when treated effluent consists solely of treated excess mill process water. Normal maximum concentration when treated effluent includes treated mine drainage is estimated to be 0.24 mg/L.

³ Maximum concentration when treated effluent consists solely of treated excess mill process water. Normal maximum concentration when treated effluent includes treated mine drainage is estimated to be 0.14 mg/L.

C. Use the space below to list any of the pollutants listed in Table 2D-3 of the instructions which you know or have reason to believe will be discharged from any outfall. For every pollutant you list, briefly describe the reasons you believe it will be present.

1. Pollutant	2. Reason for Discharge
<p>None - No pollutants listed in Table 2D-3 of the instructions are expected to be in the discharge from Outfall 007.</p>	

VI. Engineering Report on Wastewater Treatment

A. If there is any technical evaluation concerning your wastewater treatment, including engineering reports or pilot plant studies, check the appropriate box below.

Report Available No Report

B. Provide the name and location of any existing plant(s) which, to the best of your knowledge, resembles this production facility with respect to production processes, wastewater constituents, or wastewater treatments.

Name	Location
<p>(see Attachment 2)</p>	

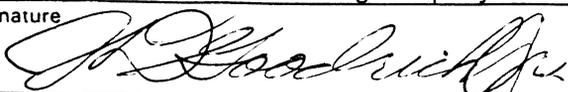
VII. Other Information (Optional)

Use the space below to expand upon any of the above questions or to bring to the attention of the reviewer any other information you feel should be considered in establishing permit limitations for the proposed facility. Attach additional sheets if necessary.

(see Attachment 2)

VIII. Certification

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

A. Name and Official Title (type or print) Jerome D. Goodrich, Jr. President, Crandon Mining Company	B. Phone No. (715) 365-1450
C. Signature 	D. Date Signed 9/18/95

Attachment 1

Additional Information for Form 1 of WPDES Permit Application

Crandon Mining Company Crandon Project

ITEM VI.A - FACILITY LOCATION: STREET, ROUTE OR OTHER SPECIFIC IDENTIFIER

The Crandon Project's wastewater treatment facility will be located in the Southwest quarter of Section 30, Township 35 North, Range 13 East, Town of Lincoln, Forest County, Wisconsin. The facility will be located five miles south of the City of Crandon and two miles east of State Trunk Highway 55. The facility location is shown on the attached Figures 1 and 2. The project's wastewater discharge outfall (007) will be located at the Hat Rapids Dam in the Southwest quarter of Section 27, Township 36 North, Range 8 East, Town of Crescent, Oneida County, Wisconsin. The discharge pipeline route and discharge location are shown on the attached Figure 3.

ITEM X - EXISTING ENVIRONMENTAL PERMITS

Because this is a new project, Crandon Mining Company (CMC) has no existing environmental permits for the facility other than its exploration license. However, CMC has applied for environmental permits and approvals, including but not limited to the following submittals to the Wisconsin Department of Natural Resources and U.S. Army Corps of Engineers:

- Environmental Impact Report
- Air Pollution Control Permit Application
- Groundwater Withdrawal Permit Application
- Water Regulatory Permit Applications pursuant to Chapters 30 and 31, Wis. Stat.
- Water Regulatory Permit Application under Section 404 of the Federal Clean Water Act
- Notice of Intent for Storm Water Discharges Associated with Construction Activities Under a General WPDES Permit
- Mine Permit Application
- Tailings Management Area Feasibility Report/Plan of Operation
- Wastewater Treatment Facilities Engineering Report
- High Capacity Well Permit Application

Attachment 2

Additional Information for Form 2D of WPDES Permit Application

Crandon Mining Company Crandon Project

ITEM II - DISCHARGE DATE

CMC has applied for environmental permits for the facility, including those listed in item X of Form 1. Facility construction will begin after needed environmental permits have been issued. The discharge from outfall 007 is expected to begin approximately 19 months after the commencement of facility construction.

ITEM III.A.3 - TREATMENT RECEIVED BY THE WASTEWATER

Mine drainage, excess water from the mill process water system and contact runoff will be treated by a wastewater treatment system before discharge. Wastewater treatment processes will include the following:

- Neutralization of wastewaters and precipitation of metals as metal hydroxides by addition of lime.
- Coagulation and flocculation of the metal hydroxide precipitates and other suspended solids by addition of a polymer prior to clarification.
- Removal of the precipitates and other suspended solids by clarification.
- pH adjustment by addition of sulfuric acid.
- Precipitation of metals as metal sulfides by addition of sodium sulfide.
- Coagulation and flocculation of metal sulfide precipitates and other suspended solids by addition of a polymer prior to filtration.
- Removal of the metal sulfides and other suspended solids by filtration.
- pH adjustment, if necessary, by addition of sulfuric acid.
- Disposal of clarifier sludge and filter backwash in a tailings pond.

The treated effluent from the wastewater treatment system will normally be discharged, but may also be used as make-up water for the mill process water system or the mine utility water system.

Sanitary sewage will be treated by a sewage treatment plant. Sewage treatment processes will include aerobic biological treatment and disinfection, and aerobic digestion of the sludge produced by the aerobic biological treatment process. Aerobically digested sludge will be periodically removed for off-site disposal. The treated effluent from the sewage treatment plant will be reused in the mill process water system.

ITEM V.A AND B - EFFLUENT CHARACTERISTICS: SOURCES OF INFORMATION

Several sources of information were used to estimate the expected effluent characteristics of the discharge to outfall 007, including the following:

- Water balances for the facility during operation of the mine and mill (Figure 4).
- Leach testing of the ore, waste rock, and tailings.
- Wastewater treatability testing using mine drainage water generated from ore from the Crandon Formation and using mill process water from an existing mine with a mill similar to that proposed for the Crandon Project.
- Design capacity of the wastewater treatment system.
- Best professional judgement, based on an understanding of the following:
 - the geology and hydrogeology of the site;
 - the processes and chemicals to be used for ore beneficiation in the mill;
 - the methods which will be used for underground mining;
 - the performance of other wastewater treatment systems using lime for metal hydroxide precipitation and sodium sulfide for metal sulfide precipitation to remove metals from wastewaters; and
 - the variability in the concentrations of various parameters in the untreated wastewaters.

Where "treatability testing" is identified as the source of information for a parameter, the source(s) of information are as follows:

- the average daily value shown is based on the results of treatability testing.
- the maximum daily value shown is based on the actual performance of the wastewater treatment system of the Flambeau Mining Company (FMC) in Ladysmith, WI where the untreated wastewater quality is similar to that expected from the CMC facility; or, alternatively, is based on best professional judgement when the untreated wastewater at CMC is expected to differ from that at FMC.

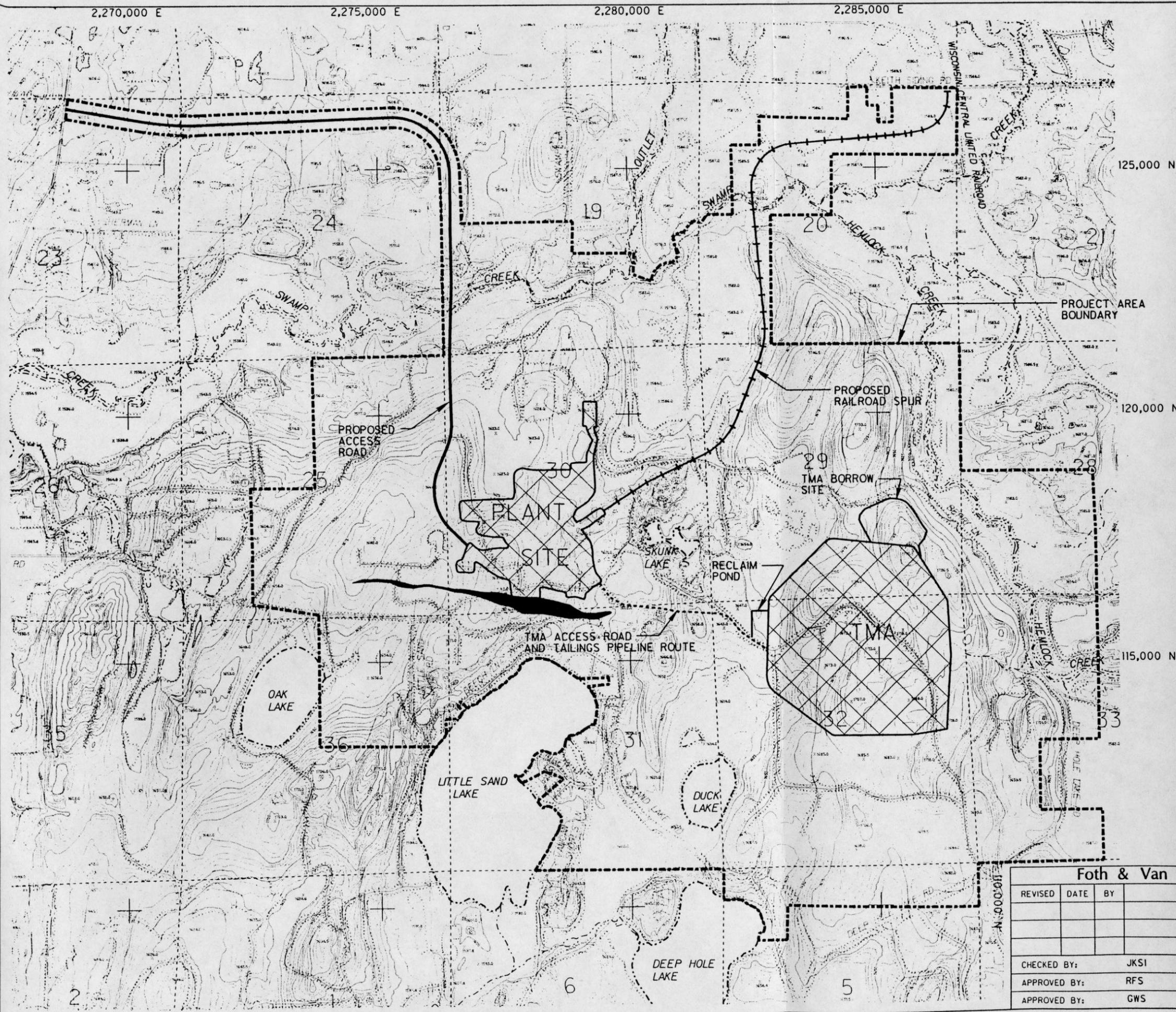
ITEM VI.A - ENGINEERING REPORT ON WASTEWATER TREATMENT

A *Preliminary Engineering Report for Wastewater Treatment Facilities for the Crandon Project* has been prepared which describes the wastewaters which will be generated by the facility, and the wastewater treatment facilities which will be used to treat these wastewaters. A description of treatability studies completed for the project and their results is included as an appendix to this report. This engineering report has been submitted to the Wisconsin Department of Natural Resources.

ITEM VI.B - EXISTING PLANTS WHICH RESEMBLE THIS FACILITY

The Flambeau Mining Company has a metallic ore mine which resembles the CMC facility in many respects, especially the quality of the untreated mine drainage and the design of the wastewater treatment system. The name and location are as follows:

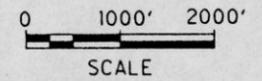
Flambeau Mining Company
 N4100 Highway 27
 Ladysmith, WI 54848



LEGEND

- LAKES
- STREAMS
- EXISTING ROAD
- EXISTING CONTOUR
- EXISTING SPOT ELEVATION
- SECTION LINE
- ORE BODY
- PROPOSED ACCESS ROAD
- PROPOSED TMA ACCESS ROAD AND TAILINGS PIPELINE ROUTE
- PROPOSED RAILROAD SPUR
- PROPOSED FACILITIES

- NOTES:**
1. TOPOGRAPHIC BASE MAP DIGITIZED FROM 1" = 1000' SCALE, 5' CONTOUR INTERVAL MAP PREPARED BY AERO-METRIC ENGINEERING, INC., SHEBOYGAN, WISCONSIN. DATE OF PHOTOGRAPHY APRIL 28, 1976.
 2. HORIZONTAL DATUM BASED ON WISCONSIN STATE PLANE COORDINATE SYSTEM - NORTH ZONE.
 3. VERTICAL DATUM BASED ON MEAN SEA LEVEL DATUM. CONTOUR INTERVAL IS 25 FEET.
 4. COUNTY AND TOWNSHIP LINES DIGITIZED FROM 7.5' SERIES USGS MAPS.
 5. ORE BODY OUTLINE IS REPRESENTATIVE OF THE SUBCROP AT THE BASE OF THE OVERBURDEN.

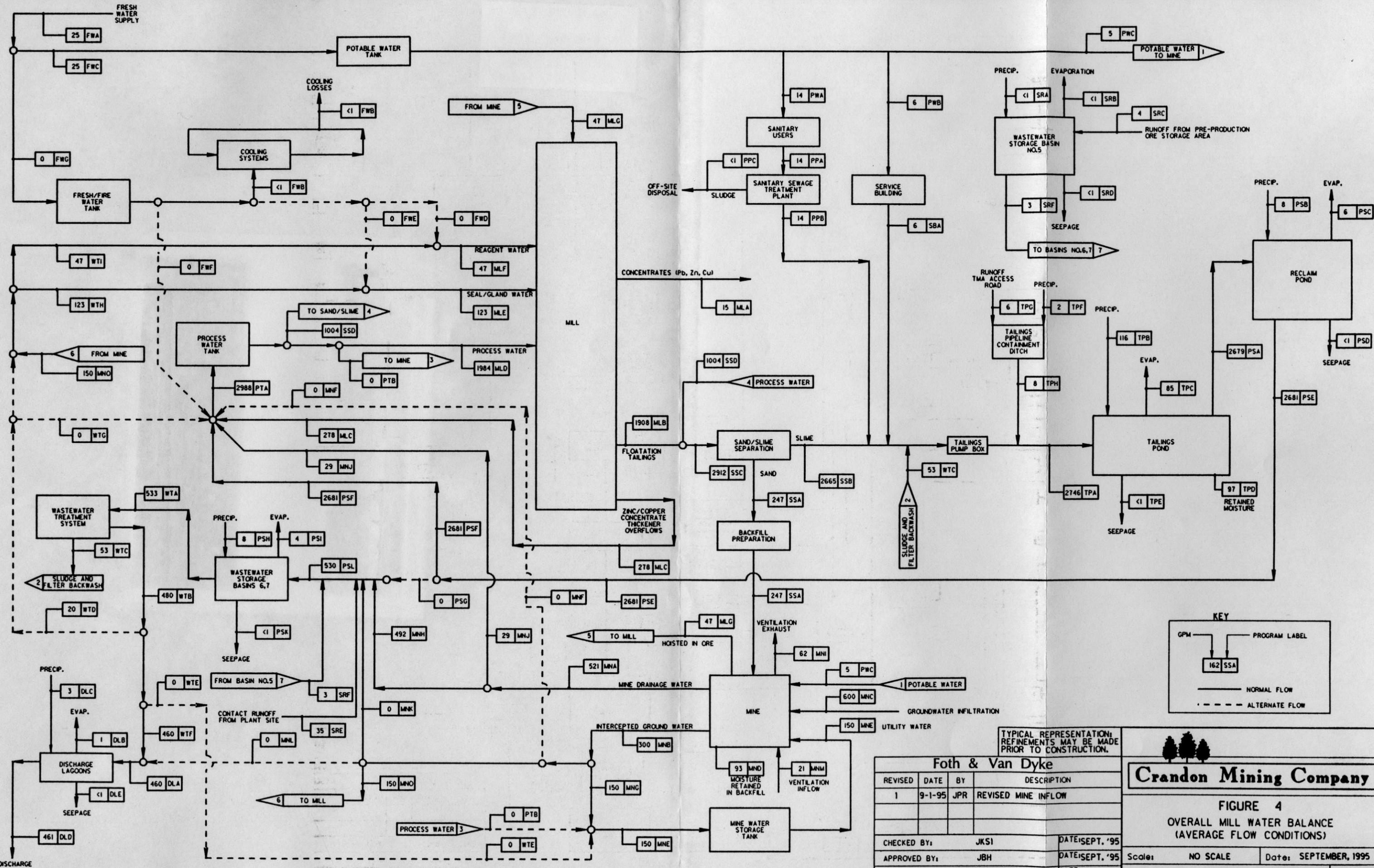


Foth & Van Dyke			
REVISED	DATE	BY	DESCRIPTION
CHECKED BY:		JKS1	DATE: SEPT.'95
APPROVED BY:		RFS	DATE: SEPT.'95
APPROVED BY:		GWS	DATE: SEPT.'95

Crandon Mining Company

FIGURE 1
PROJECT AREA

Scale: AS SHOWN	Date: SEPTEMBER, 1995
Prepared By: Foth & Van Dyke	By: JRB



Crandon Mining Company

FIGURE 4
OVERALL MILL WATER BALANCE
(AVERAGE FLOW CONDITIONS)