DEPARTMENT OF ENVIRONMENTAL RESOURCES REVIEW NOTICE

This report, prepared by outside consultants, has been reviewed by the Department of Environmental Resources and approved for publication. The contents indicate the conditions that are existing as determined by the consultant, and the consultant's recommendations for correction of the problems. The foregoing does not signify that the contents necessarily reflect the policies, views, or approval of the Department.

TABLE OF CONTENTS

	Page No.
LIST OF TABLES	
LIST OF FIGURES	
LIST OF DRAWINGS	
INTRODUCTION	1
Phase I - Ernest Mine Complex	2
Phase II - Surficial and Subsurface Investigation	2
Phase III - Design Considerations	2
-	2
Phase IV - Construction of the Mine Drainage	2
Abatement System	3
Phase V - Piezometer Monitoring Program	3
PHASE I - ERNEST MINE COMPLEX	4
Project Objectives	4
General Site Conditions	4
Mine Drainage Abatement Study	5
Review of Available Documentation	5
Existing Mine Water Pools	6
Implementation of Project Objectives	6
Critical Mine Shafts, Entries and Boreholes	7
Mine Drainage Abatement Procedure	9
Effect on Existing Mine Water Pools	11
Adjoining Mine Complexes	11
Effects on Residential Water Supply	12
Proposed Treatment Plant	14
Water Quality Tests	15

TABLE OF CONTENTS (Continued)

			Page No.
PHASE II - SURFICIAL AND SUBSURFACE INVESTIGATION		16	
	Subsurface	Drilling and Calipering	16
	Surficial Stu	ldy and Elevation Survey	17
PHASE III - DE	ESIGN CONS	SIDERATIONS	19
	Cummings	Shaft (Drawing 70-108-M10)	19
	E-1 and E-2 respectively	2 Entries (Drawings 70-108-M1l and M12,	20
	E-I and E-2	Transfer Pipe (Drawing 70-108-M13)	20
	E-3 Entries	(Drawing 70-108-M14)	20
	DDH-44 Bo	rehole and Crooked Creek Borehole	21
	E-4 Boreho	les (Drawing 70-108-M15)	21
	Drawdown A	Analysis	21
	Fulton Shaf	ts (Drawing 70-108-M16)	22
	Piezometer	Installation (Drawing 70-108-M16)	22
	Design Dra	wings and Technical Specifications	23
PHASE IV - CONSTRUCTION MINE DRAINAGE ABATEMENT SYSTEM		24	
	General		24
	Material Qu	antities and Costs	25
	Concrete C	ompressive Strength Tests	25
	Work Area	Descriptions	26
		Cummings Shaft (Drawing 70-108-M10) E-1 Entry (Drawing 70-108-Mil)	26 27
		E-1 and E-2 Transfer Pipe (Drawing 70-108-M13)	28
		E-2 Entries (Drawing 70-108-M12)	28
		E-3 Entries (Drawing 70-108-M14)	29
		Borehole DDH-44 in Creekside	29

TABLE OF CONTENTS (Continued)

	Crooked Creek Boreholes	<u>Page No.</u> 30
	E-4 Boreholes (Drawing 70-108-M15)	30
	Fulton Shafts (Drawing 70-108-M16)	31
	Piezometer Installation (Drawing 70-108-M16)	32
PHASE V - PI	EZOMETER MONITORING PROGRAM	34
	General	34
	Objectives	34
	Treatment Plant Piezometers	35
	Procedures	36
	Water Quality Tests of the E-3 Discharge	39
	Piezometer Readings	39
CONCLUSIONS		40
TABLES		
FIGURES		
DRAWINGS		
APPENDICES	}	
A - Treatment	Plant Borings	
B - Caliper Lo	ogs	
C - Technical	Specifications	
D - Daily Cons	struction Diary	
E - Construction	on Progress Reports	
F - Construction	on Quantities and Costs	
G - Concrete I	Mix Design	

LIST OF TABLES

Table No.	<u>Title</u>
1	Summary of Construction Costs (through August 1971)
II	Concrete Compressive Strength Test Results
III	Piezometer Installation Details
IV	Summary - Piezometer Monitoring Program (8 pages)

LIST OF FIGURES

Figure No.	<u>Drawing No.</u>	<u>Title</u>
1 E-4 Boreholes	70-108-B1 , Ernest Mine Complex	Flow Characteristics,
2 Monitoring Pro	70-108-M17 ogram, Ernest Mine Complex	Piezometer

LIST OF DRAWINGS

Drawing No	<u>Title</u>
70-108-T1	Title Sheet
70-108-M1	Plan - Ernest Mine Complex and Location of Known Entries
70-108-M2	Detailed Plan of Mine Workings Showing Critical Entries, Mine Water Elevations and Work Completed, Sheet 1 of 2
70-108-M3	Detailed Plan of Mine Workings Showing Critical Entries, Mine Water Elevations and Work Completed, Sheet 2 of 2
70-108-M4	Sections Through the Ernest Mine Complex Showing Actual and Proposed Mine Water Elevations
70-108-M5	Subsurface Investigation - Boring Logs, Core Boring at E-4 and Auger Borings at E-3 and Fulton A and Fulton B Shafts
70-108-M6	Piezometer Installation - Boring Logs P-1, P-3, P-4 and P-5
70-108-M7	Piezometer Installation - Boring Logs P-6 and P-7
70-108-M8	Piezometer Installation - Boring Logs P-8, P-10 and P-11
70-108-M9	Plan - Property Easements and Piezometer Locations
70-108-M10	Cummings Shaft, Plan and Details
70-108-MII	E-1 Entry, Plan and Details
70-108-M12	E-2 Entries: E-2, E-2A and E-2B, Plan and Details
70-1.08-M13	E-1 and E-2 Transfer Pipe, Plan and Details
70-108-M14	E-3 Entries, Plan and Details
70-108-M15	E-4 Boreholes, Plan and Details
70-108-M16	Fulton Run and Piezometer Installation, Plan and Details and General Notes