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Arizona Geological Survey
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ARIZONA DEPARTMENT OF ENVIROMANTAL QUALITY

AQUIFIER PROTECTION PERMIT APPLICATION

Mr. Alan Roesler
MANAGER MINING APP. UNIT
303 N. CENTRAL AVE., 5th FLOOR
PHOENIX, ARIZONA 85012

PREPARED FOR

MORGAN MINING COMPANY
c/o Mr. A.W. Vander Pyl
2880 SOUTH LOCUST
Apt. 702-S
DENVER, COLORADO 80222
(303) 757-2070

PREPARED BY

LYNTEK
775 Mariposa Denver, Colorado 80204
(303) 623-8365 FAX (303) 623-0342

JULY 1993

Mr Alan Roesler
Arizona Department of Environmental Quality
Manager Mining APP Unit
3003 N. Central Ave., 5th Floor
Phoenix, Az 85012

Dear Mr. Roesler,

I am pleased to submit on behalf of Morgan Mining Company the Aquifer Protection Permit Application for the *Golden Eagle Mine, Mohave County*. The Aquifer Permit Application, ADEQ Water Unit Form APP 1, is included in the application document. Supplementary information for the Application can be found in Attachments 1 - 12. Drawings and supporting documentation in the form of third party consultant reports are included as Exhibits A and B.

ARIZONA AQUIFER PROTECTION PERMIT DOCUMENT

Arizona Aquifer Protection Permit Application;
Arizona Aquifer Protection Permit Application (Part II);

ATTACHMENTS:

Tab 1 - Attachment 1	Facility Summary
Tab 2 - Attachment 2	Location Maps and Site Plan
Tab 3 - Attachment 3	Process Flow Sheets
Tab 4 - Attachment 4	Characterization of Discharge
Tab 5 - Attachment 5	Demonstration of BADCT
Tab 6 - Attachment 6	Demonstration of Compliance with Standards
Tab 7 - Attachment 7	Demonstration of Technical Capability
Tab 8 - Attachment 8	Financial Capability / Cost
Tab 9 - Attachment 9	Contingency Plan for Chemical Spills
Tab 10 - Attachment 10	Operating Monitoring Program
Tab 11 - Attachment 11	Closure, Decommission and Reclamation Plan

EXHIBITS:

Tab 12 - Exhibit A	Tailings Design Plan (Lyntek Inc.)
Tab 13 - Exhibit B	Groundwater Hydrology

APPENDICES:

Tab 14 - Appendix A	Tailing, Waste Rock and Soil Characterization
Tab 15 - Appendix B	Figures

We look forward to your review and a successful project. If we can provide any additional information please contact

Mr. A.W. Vander Pyl
2880 South Locust
Apt 702-5
Denver, CO 80222
(303) 757-2070

Sincerely,

A.W. Vander Pyl

Received on behalf of the Arizona Department of Environmental Quality:

NAME: _____ **DATE:** _____

Arizona Department of Environmental Quality

AQUIFER PROTECTION PERMIT APPLICATION

(see guidance document for details)

A. FACILITY DATA

1. NAME OF FACILITY (List previous names, if any)
GOLDEN EAGLE MINE

2. a) DATE FACILITY BEGAN OPERATIONS (or is expected to begin)
January 1994

b) EXPECTED LIFE OF THE FACILITY
2 1/2 Years, plus 1 Year Reclamation

3. MAILING ADDRESS OF FACILITY
N/A

4. FACILITY ADDRESS
The facility has no address as of yet.

5. COUNTY
Mohave County, Arizona

6. FACILITY LOCATION

a)

Township	Range	Section(s)	Quarters
23N	17W	31	SW 1/4, SE, 1/4 1/4
23N	17W	2	NW 1/4, NE, 1/4 1/4

b) Latitude **35°/20'**

Longitude **114°/8'/30"**

7. FACILITY CONTACT PERSON
Mr. A.W. Vander Pyl

8. TELEPHONE NUMBER
303/757-2070

9. NATURE OF BUSINESS (FACILITY)
Mining utilizing open-pit methods to feed a flotation plant to generate gold and silver concentrates for further processing off site.

B. APPLICANT INFORMATION

1. NAME OF APPLICANT
MORGAN MINING COMPANY

2. APPLICANT MAILING ADDRESS
c/o Mr. A.W. Vander Pyl
288 South Locust, Apt. 702-5
Denver, Colorado 80222

CONSULTANT MAILING ADDRESS (OPTIONAL)
LYNTEK, INC.
775 Mariposa Street
Denver, Colorado 80204
(303) 623-8365

3. TELEPHONE NUMBER OF APPLICANT
(303) 757-2070

C. OWNER INFORMATION

1. NAME OF OWNER
MORGAN MINING COMPANY

2. OWNER MAILING ADDRESS
c/o Mr. A.W. Vander Pyl
2880 Locust, Apt. 702-5
Denver, Colorado 80222

3. TELEPHONE NUMBER OF OWNER
(303) 757-2070

4. LAND OWNER
U.S. DEPARTMENT OF INTERIOR
BUREAU OF LAND MANAGEMENT
KINGMAN RESOURCE AREA

5. LAND OWNER ADDRESS
2475 Beverly Ave.
Kingman, Arizona 86401

D. OPERATOR INFORMATION

1. OPERATOR NAME
Morgan Mining Company

2. OPERATOR ADDRESS
c/o Mr. A.W. Vander Pyl
2880 Locust, Apt. 702-5
Denver, Colorado 80222

3. OPERATOR TELEPHONE NUMBER
(303) 757-2070

E. EXISTING ENVIRONMENTAL PERMITS

1. NPDES PERMITS & NUMBERS
N/A

2. REFUSE PERMITS & NUMBERS
N/A

3. RCRA PERMITS & NUMBERS
N/A

4. AIR QUALITY PERMITS & NUMBERS
To be applied for.

5. SOLID WASTE PERMITS & NUMBERS
To be applied for

G. REQUIRED ATTACHMENTS

Please indicate in the spaces provided that the appropriate attachments or information have been included.

1. LOCATION MAP

__X__ Have you attached 2 copies of the appropriate map?

Is all of the following information indicated on the map?

__X__ The facility site boundary?

__X__ An area of at least 3 miles around the boundary?

__X__ Location of all wells within 1/2 mile of the boundary?

__X__ Land ownership or use of properties adjacent to the site?

2. SITE PLAN - TWO COPIES

__X__ Have you included the site plan?

Is all the following indicated on the plan?

__X__ Property lines?

__X__ Buildings and structures?

__X__ Locations of water wells, borings and sampling points?

__X__ Locations of discharge sites?

__X__ Topography?

__X__ Proposed Point of Compliance?

3. FACILITY DESIGN PLAN - TWO COPIES: PROPOSED AND/OR "AS BUILT"

__X__ Have you included the design drawings?

4. CHARACTERIZATION OF DISCHARGE

Summarize past (or anticipated) discharge practices:
The characterization of discharge is described in attachment 4.

a) __X__ Have you attached analytical reports or projected data describing the chemical, biological and physical properties of the discharge above?

b) List the rates at which a discharge has or will occur.
Tailings are estimated to be discharged internally at a rate of 300 tons/day.

What is the duration and frequency of the discharge?
N/A

c) List the location of each discharging facility.
Descriptive

Name	Latitude	Longitude
Process Plant	**35°/20'/1"**	**114°/8'/32"**
Tailings Line	**35°/20'/6"**	**114°/8'/29"**
Tailings Impoundment	**35°/20'/9"**	**114°/8'/30"**
Water Reclaim Tank	**35°/20'/5"**	**114°/8'/40"**

5. ___X___ Indicate that you have attached a description of pollutant control methodologies for the facility and a discussion of why they meet the BADCT requirement. You may use this page if convenient.

The BADCT demonstration is described for the mining, flotation of precious metals and tailings impoundment (Attachment 5).

The Components Addressed are:

Tailings Impoundment,
Spill Containment and Leak Detection
Monitoring Program
Closure

6. DEMONSTRATION OF COMPLIANCE WITH STANDARDS

__X__ Have you indicated a proposed Point of Compliance on the appropriate site plan or map?

Is the proposed Point of Compliance for:

_____ Hazardous substances?

__X__ Non-hazardous substances?

Provide justification for selection the proposed Point of Compliance.

The point of compliance has been selected as a monitor well located southwest and down gradient from the tailings impoundment.

7. DEMONSTRATION OF TECHNICAL CAPABILITY

a) Who is responsible for the design of the facility?
Morgan Mining Company and Lyntek, Inc.

Provide the basis for the party's capability:
See Attachment 7

b) Who is responsible for the construction of the facility or its components?
Lyntek, Inc. will engineer and supervise construction

Provide the basis for the party's capability:
See Attachment 7

c) Who is responsible for the operation of the facility?
A contractor has not been selected.

d) Provide the basis for the party's capability:
N/A

G. I certify under penalty of law that I have personally examined and am familiar with the information submitted in this application and all attachments and that based on my inquiry of those persons immediately responsible for obtaining the information contained in the application, I believe that the information is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

NAME AND OFFICIAL TITLE

Thomas K. Randall
Project Manager
Lyntek, Inc.

_____
SIGNATURE

_____
DATE SIGNED

ATTACHMENT 1
FACILITY SUMMARY

TABLE OF CONTENTS

1.0 INTRODUCTION

Morgan Mining Company (MMC) is currently developing the Golden Eagle Mine in Mohave County, Arizona (Figures 1 and 2, Appendix B). The project is located approximately 15 miles north of Kingman, Arizona. The mine site is located in Section 31, T 23 N, R 17 W, with a segment of the haul road in Section 36,T 23 N, R18 W.

The Golden Eagle Mine project is based upon the design of an environmentally acceptable facility. Zero water discharge, water management, and the use of best available demonstrated control technology (BADCT) have been the primary design considerations throughout the project.

Mining will utilize open pit methods with ore delivered to the crusher stock pile and waste delivered to the face of Cyprus Mineral Park tailing impoundment located approximately 1/2 miles east of the Golden Eagle Mine site. The detailed mine plan was developed by Mr. Ed Torgersen. The pit outline is shown on Figure 3, General Site Layout.

Design work addressing flow parameters, material balances and engineering studies on the grinding and processing plant have been undertaken on behalf of MMC by Lyntek, Inc. of Denver, Colorado. The results of this design and engineering work are shown in the process flow diagrams in Appendix B (Figures 5, 6 and 7).

Lyntek, Inc. has completed the conceptual design and preliminary engineering study on the tailings impoundment facility. Exhibit A titled Tailing Design details the various components of the proposed tailings impoundment facility.

2.0 PROCESS SUMMARY

The Golden eagle Mine will produce approximately 11,000 ounces of gold and 65,000 ounces of silver per year. The current mine plan calls for processing approximately 100,000 tons of ore annually. The overall strip ratio under the current mine plan is 9 to 1, waste rock to ore. Initial mine life is anticipated to be just over two years, subject to market factors and ongoing exploration and development activities. The project will employ approximately 25 people.

The basic activities of this operation will consist of the following:

- Open pit mining of ore and associated waste rock.
- Haul truck transportation of the ore to the crusher facility and waste rock to the Cyprus Mineral Park tailings facility.
- Crushing and grinding of the ore to form a pulp.
- Recovery of gold and silver by flotation technology into a concentrate that will be shipped off the property.
- Disposal of the flotation tailing in a zero discharge tailings impoundment.

Figure 3 is a site plan showing the general layout of the proposed project. Figures 5 and 6 are flow charts of the above processes. Figure 7 is a general arrangement of the processing facilities. MMC intends to utilize a contract mining company for the mining portion of that operation. MMC will operate the process plant.

3.0 MINING AND CRUSHING

The mine will be developed by open pit mining methods. Figure 3 also shows the project boundary and outline of the proposed pit. The site will be cleared and grubbed with vegetation kept separate from the topsoil and burned after being removed. The topsoil encountered during the grubbing operations will be stockpiled for use after mining to cover the reclaimed surfaces of the mined out area. Figure 3 shows the locations of the topsoil stockpiles.

Starting at the highest elevation of the mine pit area, a bench will be drilled and blasted to loosen the rock. Waste areas will be mined utilizing 20 foot high benches and zones containing ore will be mined in 10 foot benches to allow for close grade control and separation of the ore from the waste.

The waste will be loaded from the mine face by a 6 to 8 cubic yard wheel-loader into off-highway style trucks of the 35 to 65 ton class for transport to the vicinity of the abandoned Cyprus Mineral Park tailing pond. Cyprus Minerals will use the waste rock for armoring the downhill face of the tailing dam.

The ore received at the stockpile will be fed into the dump pocket of the crusher by a 3 to 4 cubic yard wheel-loader. The ore will be crushed to 80% passing 3/8 inch by two stages of crushing. The feed rate to the crusher will be approximately 30 to 40 tons per hour during day shift only. The total daily tonnage processed will be 12.5 tons per hour.

The crushing system will consist of a jaw crusher operating in open circuit to produce a crushed product of approximately minus 2-1/2 inches. This product will feed to a double deck screen making a split at 1/2 inch. The oversize material will pass through a cone crusher with the cone discharge returning to the screen. The final product will be 80% passing 3/8 inch and will be delivered to a 300 ton fine ore bin ahead of the ball mill circuit.

4.0 PROCESS PLANT

The crushing and process facilities will be located south of and adjacent to the tailing impoundment area. The pad will be 150 feet x 300 feet and will be constructed of waste rock fill generated by waste stripping and excess tailing impoundment excavation rock. The pad location is shown on Figure 3. More detail showing diversion ditches. roads and pipeline corridors is included as Figure 4, Mine Site Detail.

The milling circuit consists of two parallel ball mills closed with cyclones producing 300 tons per day of 80% minus 200 mesh (74 microns) flotation feed. Each mill will be rated at about 6.25 tons per hour based on 24 hour per day operation. Recycled water from the tailings impoundment will be utilized to dilute the slurry to approximately 30% solids for feed to flotation. Figure 5, Process Flow Sheet #1, details the grinding section of the processing plant.

Flotation will be accomplished in standard cell to cell machines producing a rougher concentrate from the bulk feed. The rougher tailing will be subjected to scavenger flotation to remove residual values prior to transport to the tailings impoundment area. Water in excess of that needed to transport the tailings will be removed by a thickener prior to the tailings being pumped via pipeline to the impoundment area. The tailing pipeline will be enclosed in a secondary containment pipe to control potential leaks or spills. Figure 6, Process Flow Sheet #2, details the flotation and tailings section of the processing plant.

The rougher and scavenger concentrates will be further processed by cleaner flotation to produce a final up-graded concentrate that will be dewatered by a thickener/filter system and shipped off the property by truck for further processing.

5.0 TAILINGS IMPOUNDMENT

The tailings impoundment system will be designed as a closed circuit, zero discharge facility. The principle components of the system are: run-off water diversion ditches; an impermeable tailings dam and impoundment, a water collection/internal drainage system, a reclaim water tank and a water return pipeline.

Lyntek, Inc., of Denver, Colorado has completed a conceptual design study of the tailings impoundment facility. Engineering studies have focused on the design of a tailings impoundment which combines the design components of solution containment, run-off water control, and recycle of process water. Details of the design parameters and engineering studies are contained in Exhibit A, Tailings Design.

The partially de-watered tailings will be stockpiled in an adjacent valley, Figure 3 shows the general location of the tailings impoundment facility and topsoil stockpile. The tailings will be very finely ground (80% passing 74 microns). Current tailing deposition practice dictates that dams normally cannot be constructed from this material. Therefore, the impoundment will be built with rock fill dams to contain the entire volume within and below the crest of the dams. This design will require approximately 100,000 cubic yards of material to be excavated from within the impoundment. Part of the excavated material will be utilized for dam and plant pad construction with the remainder transported as waste rock.

A main dam and wing dams will be constructed in a compacted fill manner to contain the entire volume of tailings within the valley. The dam will be approximately 40 feet high and 200 feet wide at the widest point. The slopes will be approximately 2:1 with a 20 foot wide roadway access across the top.

The area will be prepared by clearing and grubbing with vegetation being burned and topsoil stockpiled. The ground surface will then be prepared by scarifying to a depth of one foot. Six inches will be removed with the remaining six inches compacted to a low permeability, followed by compaction of the second six inch layer and careful smoothing out of the surface. High permeability geo-fabric will then be laid on top of the prepared surface. A plastic 40 mil High Density Polyethylene (HDPE) liner is then placed to manufacturers specifications within the basin and on the inside face of the main and wing dams.

Perforated pipe will be placed on top of the HDPE liner to deliver water draining through the impounded tailings to a recycle water collection tank at the toe of the main dam (Figure 8, Tailings Section - A). The reclaimed water will then be pumped from the recycle water collection tank back to the processing facility in a lined corridor or within a secondary containment pipe.

The tailing impoundment will have the capacity to contain the 100 year - 24 hour precipitation event collected within the lined area. Diversion ditches will be constructed as needed to divert other run-off away from the tailings impoundment (Figure 12, Drainage Layout). The basin has a very small watershed area, therefore excess run-off is not expected.

6.0 REAGENTS

The following is a list of the possible reagents that might be utilized in the processing plant. The dosage amounts listed are typical for this type of flotation circuit and may vary some in practice.

A-208 Sodium diethyl and sodium di-secondary butly dithiophosphate
Use: Collector — Dosage: 0.10 lb/ton

A-350 Potassium amyl xanthate
Use: Collector — Dosage: 0.08 lb/ton

COPPER SULFATE As: $CuSO4.7H2O$
Use: Conditioner — Dosage: 0.50 lb/ton

MIBC Methyl Isobutyl Carbinol
Use: Frother — Dosage: 0.005 lb/ton

F-65 Generally Polyglycol
Use: Frother — Dosage: 0.005 lb/ton

LIME CaO
Use: Ph Adjust 7.0 to 8.0 — Dosage: <0.5 lb/ton

7.0 SPILL CONTAINMENT AND LEAK DETECTION

Safeguarding the environment has been a prime concern in the design of all aspects of the project to date. The entire facility will be engineered as a zero discharge system containing safeguards to insure that the integrity of the environment will not be jeopardized. Secondary containment for the tailing and recycle water pipelines, the liner system for impoundment and extensive diversion ditches are some of the items that have been specifically designed to demonstrate awareness of BADCT requirements in the state of Arizona.

7.1 Spill Containment

The process plant site will be designed, engineered and built with secondary containment features in areas where reagents are used or stored. Containment facilities will be constructed to provide for clean up of solutions.

Secondary containment structures will be designed to hold 110% of the volume of the largest tank within the containment area. In areas where tanks are not enclosed by a building, the containment facility will be designed to accommodate the run off generated by a 100 year, 24 hour storm event within its drainage area in addition to the 110% tank volume.

The pump station and pipeline ditch of the tailing impoundment system will be lined with a synthetic HDPE liner. The liner will be laid on a prepared, graded sub-base. The low point in the pipeline will be constructed with a sump for fluid containment.

The tailing impoundment area will be lined with a synthetic HDPE liner laid on a prepared soil base. The inner surface of the tailings dam will be lined in conjunction with the tailings impoundment. The internal drainage system will prevent the build up of hydraulic head in the tailings impoundment. Details on the tailings impoundment liner system are contained in Exhibit A, Tailings Design.

The water reclaim tank is the only component of the tailings impoundment system which will have a significant fluid head. Therefore this tank will be built with a containment system consisting of bermed earth lined with a single HDPE liner with the capacity to hold 110% of the tank volume.

7.2 Leak Detection

Leak detection and monitoring practices will begin prior to the commencement of operations. The integrity of all seams in the tailing impoundment liner will be tested during installation as part of a Quality Control program to be developed by MMC's engineering firm.

A monitor well will be completed at the Point Of Compliance (POC) near the water reclaim tank. The specific POC will be determined from studies conducted during the Work Plan phase of the Aquifer Protection Permit. The approximate location of the monitor well is shown as MW1 on Figure 3.

8.0 DIVERSION STRUCTURES

8.1 Tailing Impoundment Area

Diversion ditches will be constructed on the north and south sides of the proposed tailings impoundment area. These diversion ditches will direct run-off away from the tailings impoundment area. Ditches will be sized to convey a 100 year, 24 hour storm event. Exhibit A, Tailings Design, details the location of the ditches and the calculated peak discharges for various effected areas. Figure 12 shows the overall diversion and drainage plan for the proposed facilities.

Erosion of the diversion ditches will be controlled by placing rip-rap at ditch entrances and other erosion sensitive points. Inspection of diversion ditches will be conducted on a regular basis.

8.2 Open Pit Area

Diversion ditches will be constructed on all uphill drainage in the open pit area. The channels will be constructed to control run off generated by a 100 year, 24 hour storm event. This measure will be taken to avoid any temporary flooding of the pit during intense storm events. The slope above the processing plant will have a diversion ditch to divert run-off into the open pit diversion system.

9.0 WATER CONSERVATION

The facility has been designed to optimize net water usage by recycling of process water. Water conservation, together with zero discharge conditions were the primary conservation concerns in the tailing impoundment facility.

By thickening the tailings prior to pumping them to the tailings impoundment a significant portion of process water is reclaimed within the process plant. Once tailings are deposited in the tailings impoundment the physical properties of the tails should allow for a rapid drain down, reducing water ponding and water evaporation. This relatively rapid separation of water from the tailings should allow the internal drainage system to effectively transport water to the reclaim tank via the reclaim pipe.

ATTACHMENT 2
LOCATION MAPS AND SITE PLAN

1.0 INTRODUCTION

Morgan Mining Company (MMC) is currently developing the Golden Eagle Mine in Mohave County, Arizona (Figures 1 and 2, Appendix B). The project is located approximately 15 miles north of Kingman, Arizona. The mine site is located in Section 31, T 23 N, R 17 W, with a segment of the haul road in Section 36,T 23 N, R18 W.

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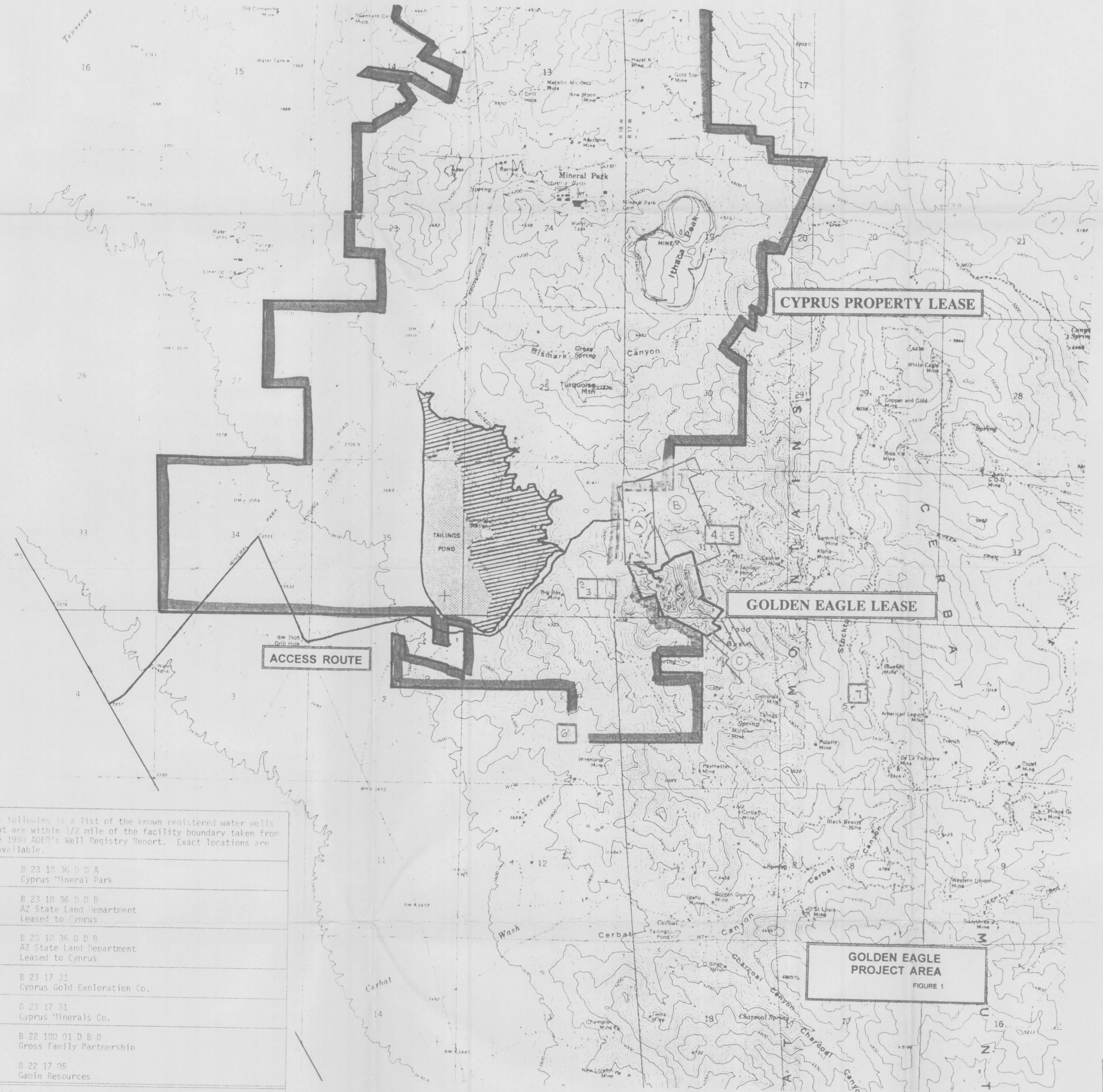
- Recovery of gold and silver by flotation technology into a concentrate that will be shipped off the property.
- Disposal of the flotation tailing in a zero discharge tailings impoundment.



The following is a list of the known registered water wells that are within 1/2 mile of the facility boundary taken from the 1990 ADEQ's Well Registry Report. Exact locations are unavailable.	
1.	B 23 18 36 D D A Cyprus Mineral Park
2.	B 23 18 36 D D B AZ State Land Department Leased to Cyprus
3.	B 23 18 36 D D B AZ State Land Department Leased to Cyprus
4.	B 23 17 31 Cyprus Gold Exploration Co.
5.	B 23 17 31 Cyprus Minerals Co.
6.	B 22 180 01 D B D Gross Family Partnership
7.	B 22 17 05 Gamin Resources
Land Status of Neighboring Lands as of 1987	
A.	Patterson & George
B.	Chico Group
C.	Golconda Unpatented

MORGAN MINING
GOLDEN EAGLE PROJECT

LOCATION MAP

LYNTEK INC.

15 OCT 93

FIGURE. 1

SAMPLE POINT	DESCRIPTION	LATITUDE	LONGITUDE	COLLAR ELEVATION	DEPTH	ANGLE
E-1	DRILL HOLE	35° 20' 27"	114° 8' 40"	4050'	210'	55°
E-2	DRILL HOLE	35° 20' 09"	114° 8' 31"	4250'	140'	55°
E-3	DRILL HOLE	35° 20' 10"	114° 8' 35"	4300'	225'	60°
E-4	DRILL HOLE	35° 20' 07"	114° 8' 31"	4300'	150'	55°
E-5	DRILL HOLE	35° 20' 04"	114° 8' 29"	4360'	280'	70°
E-6	DRILL HOLE	35° 20' 02"	114° 8' 30"	4320'	230'	65°
MBH-1	SOIL SAMPLE PIT	35° 20' 08"	114° 8' 34"	4230'	10'	PIT
MBH-2	SOIL SAMPLE PIT	35° 20' 10"	114° 8' 35"	4270'	10'	PIT
MBH-3	SOIL SAMPLE PIT	35° 20' 06"	114° 8' 35"	4240'	10'	PIT
MBH-4	SOIL SAMPLE PIT	35° 20' 11"	114° 8' 30"	4310'	10'	PIT
MW1	MONITOR WELL	35° 20' 07"	114° 8' 43"	4100'	350'	90°

R-18-W R-17-W

SECTION 36

SECTION 31

E-1

TAILING SAND

EXISTING ROAD

HAUL ROAD (NEW CONSTRUCTION WITHIN SECTION 36)

EXISTING ROAD

BIG BOY MINE

4000

4200

4400

4600

PROJECT BOUNDARY

TOPSOIL STOCKPILE

RELOCATED ACCESS ROAD

EXCAVATED AREA

N 0+00

N 0+200

TS 0+00

LINED TAILING IMPOUNDMENT

TN 0+400

N 0+500

UNDERDRAIN COLLECTION PIPELINE

MBH2

E-2

TS 0+200

MBH4

E-3

TS 0+400

TAILING PIPELINE

RECLAIM WATER TANK

MW1

MBH1

MBH3

PLANT SITE

RELOCATED ACCESS ROAD

E-4

S 2+000

S 1+500

RECYCLE WATER PIPE

0+500

0+00

E-5

0+500

WASTE HAUL ROAD

E-6

0+00

4120'

4150'

4200'

4250'

4300'

4350'

4400'

4450'

LOWEST DAYLIGHT

S 1+000

OPEN PIT MINE

S 0+500

S 0+00

4931

35° 20' 00"

114° 7' 00"

36 | 31
1 | 6

T-23-N
T-22-N

⊕ LOCATIONS OF BACKHOE AND DRILL SAMPLES

NO.	REVISIONS	BY	APP'D
B	ADDED LATITUDE & LONGITUDE	DJG	TR

MORGAN MINING GOLDEN EAGLE PROJECT

GENERAL SITE LAYOUT

LYNTEK INC.

NO.	DWG. NO.	DRAWING TITLE
		REFERENCE DRAWINGS

PROJECT NUMBER	9238	DISK NUMBER	506	DWG. SIZE	D

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CKD.	Tony K.		
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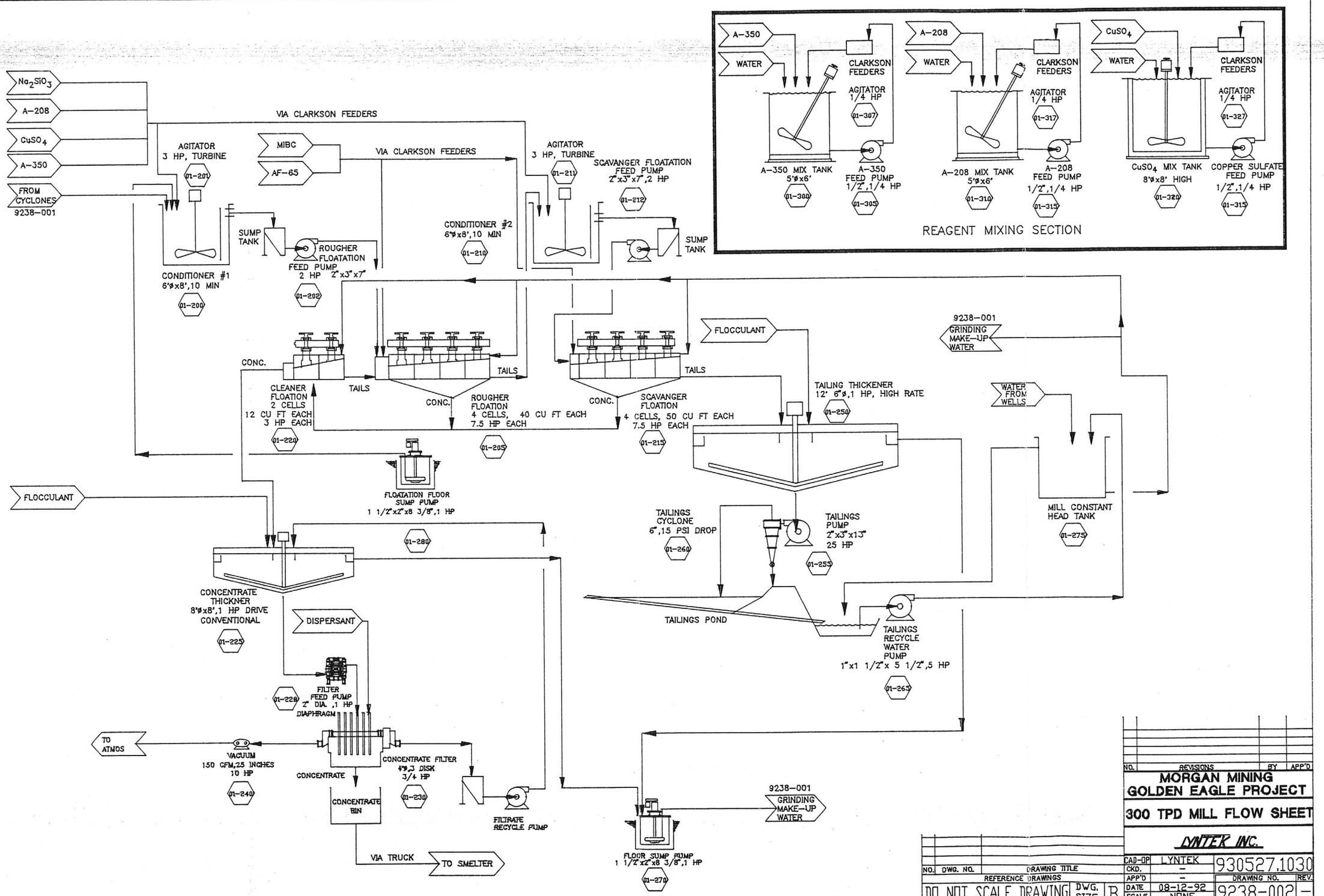
ATTACHMENT 3
PROCESS FLOW SHEETS



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MORGAN MINING
GOLDEN EAGLE PROJECT
300 TPD MILL FLOW SHEET
LYNTEK INC.

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DO NOT SCALE DRAWING		DWG. SIZE	B		

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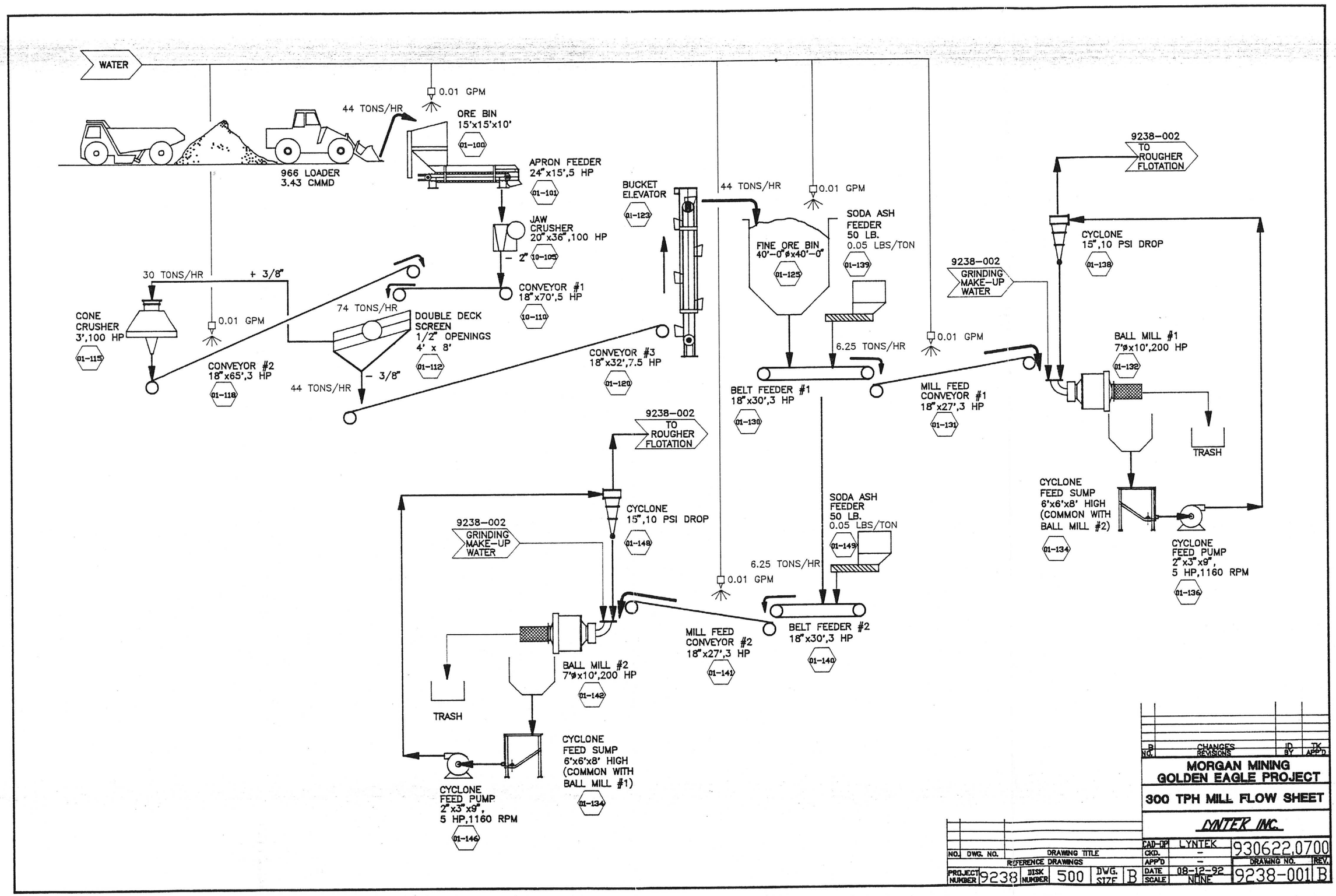

NO.	CHANGES REVISIONS	ID BY	CK APP'D

MORGAN MINING
GOLDEN EAGLE PROJECT

300 TPH MILL FLOW SHEET

LYNTER INC.

NO.	DWG. NO.	DRAWING TITLE			
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APP'D	-	DRAWING NO.	REV.
DATE	08-12-92	9238-001	B
SCALE	NONE		

ATTACHMENT 4
CHARACTERIZATION OF DISCHARGE

TABLE OF CONTENTS

1.0 INTRODUCTION

Morgan Mining Company (MMC) will process gold ore in a closed circuit, environmentally safe and contained flotation plant. This plant will consist of a crushing and grinding circuit, flotation and thickening then the concentrate is shipped off site for further processing. Following flotation the barren ore, or tailings, will be pumped to a zero discharge tailings impoundment for final disposal (See Figures 5 and 6, Process Flow Diagrams, Appendix B).

2.0 HISTORY OF DISCHARGE

The Golden Eagle Mine is a new facility. There is no known history of gold ore processing or material discharge.

3.0 DISCHARGE CHEMISTRY

The Golden Eagle Mine will have no discharge points. To ensure completeness, the following have been identified as potential discharge points, Figure 4, Mine Site Detail:

1.	Tailings Impoundment	(Site 001)
2.	Tailings Pipeline	(Site 002)
3.	Process Plant	(Site 003)
4.	Water Reclaim Tank	(Site 004)

In order to quantify the chemistry and possible toxicity of potential discharge., MMC collected samples of ore, tailings and waste rock. These samples were subjected to a range of chemical analyses, including EPA (Environmental Protection Agency) designed TCLP (Toxicity Characteristic Leach Procedure) and EP (Extractive Procedure) leach tests (Appendix A).

3.1 Description of Samples

Waste

Samples were taken from the surface of the designated pit area. The sample is well representative of the barren rock which will be utilized for general construction fills and for armorizing the face of the Cyprus Mineral Park tailing dam against erosion.

Tailings

Samples were collected as the filtered leach slurry from metallurgical testwork carried out by Hazen Research in June 1992. The sample is representative of the leached pulp from the process plant which will be dispatched to the tailings impoundment.

3.2 Geochemistry

EP Toxicity and TCLP tests were conducted on metallurgical samples representative of leached tails and waste rock. The results of these tests are contained in Appendix A, Tailing, Waste Rock and Soil Characterization.

3.2.1 TCLP and EP Tests

The Toxicity Characteristic Leach Procedure (TCLP) is an EPA designed procedure to simulate the chemical environment that might exist in the worst case scenario when industrial wastes are co-disposed with municipal wastes within a landfill. The test replaces the EP (Extractive Procedure) leach test as the recommended procedure for environmental evaluation of the potential Toxicity Characteristic of solid waste, following criticism that the EP test provided an unrealistic measurement of waste toxicity, give results which were not systematically reproducible and was a test that was not easily conducted.

The Toxicity Characteristic of solid waste is defined in Federal Report 40 CFR 261 as:
"A solid waste exhibits the characteristic of toxicity if, using the test methods described ... the extract from representative sample of the waste contains any of the contaminants listed in ... Table 1 ... at the concentration to or greater than the respective value given in the table."

The EPA bases all regulatory levels for hazardous chemicals on health-based concentration thresholds modified for dilution/attenuation factor specific to each chemical. The *concentration threshold* indicates how much of the chemical adversely affects human health, while the *dilution/attenuation factor* (DAF) indicates how easily the chemical can seep (or "leach") into ground water.

Contaminant concentrations are regulated not to exceed the national Interim Drinking Water Standards in any down gradient wells, after allowing the natural dilution and/or attenuation during groundwater transport. The DAF Factors have been set by the EPA following sophisticated computer modelling and practical research into groundwater movement and metal transport.

Table 1 Maximum Concentration of Contaminants for the Toxicity Characteristic with Test Results for Golden Eagle Samples

CONTAMINANT	REGULATORY LEVEL (mg/L)	WASTE		TAILINGS	
		EP mg/L	EP mg/L	EP mg/L	EP mg/L
Arsenic	5	0.2	0.1	<0.1	<0.1
Barium	100	<0.5	0.8	<0.5	0.5
Cadmium	1	<0.02	<0.02	<0.02	<0.02
Chromium	5	<0.05	<0.05	<0.05	<0.05

Lead	4	<0.3	<0.3	<0.3	<0.3
Mercury	2	<0.001	<0.001	<0.001	0.0003
Selenium	1	<0.02	<0.02	<0.2	0.02
Silver	5	<0.05	<0.05	<0.05	<0.05

The basic procedures for the TCLP and EP tests are the same, consisting of the extraction by acid leaching of contained metals from a finely crushed and ground sample and the analysis of this extract for arsenic, barium, cadmium, chromium, lead, selenium and silver by inductively Coupled Plasma techniques and for mercury by Atomic Adsorption Spectrometry.

As the Toxicity Characteristic is designed primarily for the evaluation of municipal landfills which combine both industrial and household waste the EPA also provide maximum concentrations for a range of organic compounds. In the Golden Eagle case, is not appropriate to include the organic compounds in the analyses as mine waste dumps contain only naturally occurring rock material with no industrial waste.

The major differences between the TCLP and the EP procedures lie in the extraction fluid use (TCLP uses a more acidic leaching fluid for alkaline wastes), the liquid/solid separation techniques, the methods used for the particle size reduction, the extraction vessels used, the agitation procedures, the extraction time and the required quality control procedures.

3.2.2 Acid Generation Potential

Explanation of Acid Generation Potential:

The Acid Generation Potential (AGP) or Acid Neutralization Potential is described in the U.S. Department of Commerce National Technical Information Service bulletin PB-280 495, also referenced as EPA 600/2-78-054. The acid Generation Potential of surface disturbances such as highway construction and mining relates primarily to the exposure of iron disulfide to the atmosphere and their subsequent oxidation. The evaluation of the AGP is undertaken using a chemical technique called *acid based accounting* which relates the maximum potential acidity from total or pyritic sulphur with the neutralization potential of contained alkaline carbonates, exchangeable bases, weatherable silicates or other rock sources capable of neutralizing strong acids.

The amount of neutralizing bases present in a sample is determined by treating the sample to a known volume of standardized hydrochloric acid, heating to ensure complete reaction between the acid and the neutralizes, and then measuring the volume of unconsumed acid. From the acid base account, potential toxic material is defined as any rock or earth material having a net potential deficiency of 5 tons of calcium carbonate material or more per 1000 tons of material, that is an AGP of 0.5%.

Golden Eagle AGP Results:

AGP testing of the Golden Eagle waste rock returned a value of $<0.5\%$, confirming that waste rock will not generate acid waters from the surface run-off.

3.3 Reagents

The following reagents will be used in the gold recovery process.

Soda Ash Na_2CO_3

Use: pH Adjust 7.0 to 8.0 Dosage: L.S lb/ton

A-208 Sodium diethyl and sodium di-secondary butyl dithiophosphate

Use: Collector Dosage: 0.10 lb/ton

A-350 Potassium amyl xanthate

Use: Collector Dosage: 0.08 lb/ton

COPPER SULFATE As: CuSO4.7H20

Use: Conditioner Dosage: 0.50 lb/ton

MIBC Methyl Isobutyl Carbinol

Use: Frother Dosage: 0.005 lb/ton

F-65 Generally Polyglycol

Use: Frother Dosage: 0.005 lb/ton

3.4 Septic Waste

A portable septic system will be installed at the processing plant for use by MMC and contract personnel. This system will be completely contained with zero discharge to the surrounding environment.

4.0 RATE OF DISCHARGE

The Golden Eagle Mine surface discharge facility has been designed to operate as a zero discharge facility. No discharge rate is therefore anticipated. The process plant is designed to operate at a daily rate of approximately 300 tons per day. A similar amount of spent ore will be deposited in the tailings impoundment on a daily basis.

ATTACHMENT 5
DEMONSTRATION OF BADCT

TABLE OF CONTENTS

1.0 INTRODUCTION

Morgan Mining Company (MMC) proposes to mine and recover gold from an orebody in the Kingman District of Mohave County Arizona. MMC plans to mine the orebody by open pit mining methods consisting of drilling, blasting, loading and hauling. The ore will be hauled by off road trucks to the proposed processing facility to be crushed. Crushed ore will then be ground in the ball mill system and finally reduced to a concentrate in the flotation circuit. The concentrate will then be trucked off site to be further processed (See Figures 5 and 6, Process Flow Diagrams, Appendix B)

This section of the proposal describes the optimal design for the Golden Eagle facility as selected from Chapters IV and V of the APP Guidance Manual for tailings treatment and disposal. For this proposal, the site characteristics, as determined from the geotechnical studies, enhance the environmental protection of the optimal design. Aquifer protection and water conservation have been the primary considerations in the selection of the final design.

2.0 TAILINGS DEPOSITION DESIGN

The tailings impoundment site design encompasses the following Best Available Demonstrated Control Technology (BADCT) elements: tailings pipeline; lined impoundment area; run-off water diversion ditches; impermeable tailings dam; reclaim water collection drainage system; reclaim water tank; water return pipeline (Figure 4, Mine Site Detail); design for the 100 year, 24 hour storm event; and a closure plan. Lyntek, Inc., of Denver Colorado, has undertaken the engineering and design work on the tailings impoundment facility, Exhibit A.

The first step in handling the tailings for disposal will be thickening, in which water not needed to pump the tails will be removed by cyclones. The overflow from the cyclones will be returned to the process plant for reuse in the grinding circuit.

The fine grind employed will produce material that will be unsuitable for building impoundment dams. Therefore, the entire tailing basin will be constructed prior to deposition of tailing.

The characteristics of the ore are such that a minimum amount of slime will be produced in the grinding process. As a result, a substantial portion of the water contained in the slurry will quickly separate from the solids and enter the internal drainage system of the impoundment to be reclaimed for reuse in the processing circuit.

2.1 Water Reclaim

The water reclaim system will collect water in the tailings impoundment area for reuse in the processing plant. This system will consist of an internal drainage pipe, a reclaim water tank and a reclaim return pipeline. Details 4 and 5 on Figure 11 (Details Tailings Impoundment), as well as Figures 4 and 8 shows details of the layout and construction of the water reclaim system. All water flowing with the exception of the return pipeline is gravity driven. The pipe in the internal drainage system will collect water and direct flow into the reclaim pipe. The reclaim pipe will extend through the tailings dam , and direct water flow into the reclaim tank. Reclaimed water is then piped back to the process plant via the return pipeline.

The reclaim drainage pipe will have a water control gate to regulate the amount of water which can flow into the reclaim tank. This safety feature is provided to prevent the overflow of the water reclaim tank during a 100 year, 24 hour storm event.

The water reclaim tank will be constructed on a synthetic liner pad to control any spills that might occur around the tank and pumps.

3.0 SPILL CONTAINMENT AND LEAK DETECTION

Safeguarding the environment has been a prime concern in the design of all aspects of the project. The entire facility will be engineered as a zero discharge system containing safeguards to insure that the integrity of the environment is not jeopardized.

3.1 Spill Containment

The process plant site has been designed to have secondary containment facilities in areas where reagents are used or stored. Containment areas will be built in parts of the plant where spills or leaks are possible. The sumps will be fitted with pumps to provide for clean up of solutions.

The pump stations and pipeline ditches of the tailing impoundment system will be lined and graded to facilitate drainage of any fugitive solutions into containment sumps or directly to the lined surface of the tailings impoundment area or to the processing plant floor sump. Double walled pipelines are also implemented on the tailings and water reclaim lines to contain potential leaks.

3.1.1 Mill Containment

Tanks and processing systems will meet the following requirements:

1. Tanks and processing units will be designed for easy visual inspection for leaks. These containers will be located in areas with secondary containment equal to 110 percent of the largest storage tank.

2. Tanks and processing units that are not sheltered from the element will, including the containment of 110 percent of the largest tank, also be designed to contain precipitation from the 100 year, 24 hour storm event.

3. Tanks and other containers that cannot be visually inspected will have a leak detection system.

4. The containment system will include sumps equipped with pumps to return spilled material to temporary storage sites.

5. The Operating Monitoring Program (Attachment 10) includes sites in the mill area that are located in and adjacent to the processing system and is designed to detect any leaked process solutions.

3.1.2 Tailings and Reclaim Pipeline Ditch

The tailings and reclaim pipelines will be placed in a ditch lined with a flexible membrane of High Density Polyethylene (HDPE). The ditch is designed to catch and channel any leakage into lined collection sumps placed at low points in the pipeline run. The OMP includes daily inspections of the pipeline ditch and sumps.

3.1.3 Tailings Impoundment

The tailings impoundment will be located in the upper reaches of a small ephemeral drainage and will be bordered to the north and east by surface water diversion channels to prevent flooding of the impoundment by the 100 year, 24 hour storm event. The impoundment is designed to hold the expected run-off from a 100 year,24 hour storm event at all times. The impoundment will be lined with a flexible membrane liner of HDPE overlying a compacted base to prevent contamination of the environment.

3.1.4 Reclaim Tank

The area surrounding the reclaim tank will be lined with a HDPE liner. The area will also be bermed to contain 110 percent of the capacity of the tank should a rupture occur plus precipitation from a 100 year, 24 hour storm event should one occur.

Level sensors in the tank will determine the availability of reclaim water and will regulate the operation of the delivery pump. If the level becomes low, the pump will shut off and if the level is too high, an alarm will sound and the operator can close the valve at the toe of the tailings impoundment until the level drops in the tank.

3.2 Leak Detection

A monitoring well will be installed near the toe of the tailings dam. Collection ditches, pipes and diversion systems will be thoroughly examined on a routine basis to ensure that the integrity and performance of each system is maintained. Monitoring will be conducted on a regular basis.

4.0 MONITORING PROGRAM

A monitoring program is currently under development in conjunction with the ADEQ Aquifer Protection Permit. This program will be designed to: 1) demonstrate compliance with the regulatory requirements; 2) identify potential problems; and 3) to direct remedial action should a problem be detected. This monitoring plan will detail the location and construction of ground and surface water monitoring sites, sampling methods, frequency of sampling, chemical analyses to be performed, chain of sample custody documentation, a reporting schedule and threshold levels for remedial action.

As part of the monitoring program a notification schedule is being developed. This schedule will detail notification actions, time frames, containment, neutralization and cleanup procedures, cleanup equipment lists and availability, documentation and reporting methods which will be used in the event of a leak or spill. The entire monitoring program will be submitted to the BLM for approval prior to the start up of operations.

5.0 CLOSURE, DECOMMISSIONING AND RECLAMATION

A Closure, Decommissioning and Reclamation Plan (CDRP) has been developed which will satisfy both the ADEQ and the BLM's requirements (Attachment 11). The CDRP includes BADCT as outlined for the APP. Covered in the CDRP are the procedures to decommission the site facilities followed by implemention of the final phase of reclamation. The goal of CDRP will be to establish a post operational environment which is both safe and compatible with the existing land uses in the area.

5.1 Closure

Closure of the site could take place as a result of conditions which in MMC judgement are short term which would result in temporary closure of mining operations. Should operations be suspended for a period exceeding 60 days BLM will be given a written 30 day advance notice. MMC will then comply with the temporary closure provisions contained in the ADEQ's APP.

Permanent closure would result when the mine has exhausted the ore reserves and any future mining from the pit could not occur in the near term. Closure of mine site will involve termination of mining and processing activities. This will be followed by decommissioning and final reclamation.

5.1.1 Facility Decommissioning

Decommissioning will involve the removal of all equipment not required for final reclamation as well as removal of all buildings and equipment related to the processing facilities and infrastructure. During decommissioning all chemicals and fuels will be removed prior to site reclamation.

5.1.2 Process Site

Foundations for the process facility will be washed and detoxified if necessary . The foundations will then be buried in-place or, if practical, removed to a designated site.

5.1.3 Water Reclaim Tank

The water reclaim tank will be removed from site and the foundation buried. The surrounding berms will be recontoured to the existing landscape. The collection pipeline will be capped and the return line will be removed and the ditches will also be recontoured. Any remaining solution will be pumped to the tailings impoundment for containment.

5.2 Reclamation

Reclamation of the Morgan Mining Golden Eagle Facility will be an ongoing process throughout out the life of the mine. Staged reclamation with the termination of areas of the project will be implemented wherever possible.

Reclamation of the site will begin during construction of the site by stockpiling coversoil together with seedbed material.

5.2.1 Coversoil Stockpiles

Coversoil salvage efforts will be directed toward recovering as much of the uppermost root zone as possible. Vegetation which is not transplanted will be incorporated into the coversoil stockpiles. The net result of these efforts will be a soil media with an attendant high water retention capacity. This will aid in transplanting efforts and assist pioneering plants during the reclamation phase of operations.

5.2.2 Open Pit

The open pit will have no impact on the current groundwater conditions. The analysis of both waste rock and ore rock indicates that there is no potential for acid generation or leaching of metals into the ground water system. Because evaporation rates in the area exceed the annual rain fall, standing water in the pit is not expected to be a problem. The fractured nature of the pit bottom will also inhibit the buildup of any standing water.

The pit walls have been designed to provide safe stable working conditions within the pit. Therefore, grading is not proposed. Signs noting the pit's existence will be appropriately posted, access blocked and the high wall perimeter will be bermed.

Neither coversoil replacement nor transplanting is proposed for the pit site. Grasses and shrubs are expected to pioneer this area over time. Disturbed areas peripheral to the pit will be smoothed, coversoil replaced and vegetation transplanted from on site nurseries.

5.2.3 Processing and Surrounding Facilities

Compacted surfaces will be ripped and graded. Available coversoil will be replaced and vegetation transplanted from the on-site nurseries.

5.2.4 Tailings Impoundment

The tailings impoundment site will be stabilized and allowed to dry a sufficient time to permit safe access by heavy equipment. The surface will then be capped with available coversoil. Vegetation will be transplanted to those areas receiving the coversoil.

5.2.5 Roads

Unless otherwise requested by the BLM, roads will be closed and reclaimed. Access will be blocked by means of boulders or berms. Grading to reestablish natural drainage ways will be conducted. All culverts will be removed and any crossings contoured back to condition similar to that of pre-existing area. Roads will be out sloped to permit natural drainage. This can be accomplished by back dragging the berm across the roadway and spreading it. Coversoil materials will be replaced and vegetation transplanted.

ATTACHMENT 6
DEMONSTRATION OF COMPLIANCE WITH STANDARDS

The facility is designed to have no discharge. The entire facility meets optimum or BADCT standards to ensure no discharge. The tailings pond will have a synthetic liner with leak detection and a water reclaim pipeline, such that no discharge will occur (see Facility Summary, Attachment 1; Demonstration of BADCT, Attachment 5). The design will satisfy the demonstration of compliance.

The recommended Point of Compliance is the monitoring well located west of the tailings area (Figure 3, General Site Layout, Appendix B). The monitoring well will be used to determine the direction of groundwater flow and groundwater quality data. The well will be sampled for water quality to develop pre-operation background data, operation data and closure data (see Hydrology Report, Exhibit B).

ATTACHMENT 7
DEMONSTRATION OF TECHNICAL CAPABILITY

MORGAN MINING LTD.

Morgan Mining Ltd. is a corporation in the State of Colorado. The business of Morgan Mining consists of exploration and development of environmentally clean mining projects. No projects involving cyanide or potentially environmentally damaging methods have ever been completed or contemplated.

Attachment 8 describes the net worth of Morgan Mining Ltd. The major asset consists of the Golden Eagle project which has proven reserves of 20,000 ounces of gold and 432,000 ounces of silver.

No judgements of any kind have ever been rendered against Morgan Mining or any of the principals of the company.

Neither the company nor any principals have been involved in any bankruptcy or insolvency proceedings.

Names and dates of birth of executive officers are as follows:

Louis J. Morgan	President	11/05/36
Adrian Vander Pyl	Vice President	09/02/25
Jacquelin A. Morgan	Secretary	10/17/37
Louis J. Morgan, II	Treasurer	07/13/63

Morgan Mining Ltd. has in place or is in the process of negotiating sufficient financing for the operation and closure of the Golden Eagle project. Our plan of operation does not require any post-closure care. The company believes that at all times it will retain sufficient cash to provide for meeting closure requirements.

LYNTEK, INC. CAPABILITIES

Lyntek, Inc. has been involved in all aspects of the mining industry since 1983. Lyntek has been responsible for designing, permitting, construction, reclamation and detoxification of facilities across the United States and around the world.

Our qualifications specific to the Golden Eagle Mine project include acceptance by the Bureau of Land Management as the third party contractor to write the Environmental Assessment for the facility. Lyntek has also written the Mining Plan of Operations for the BLM as well as the Air Quality Permit Application submitted to the ADEQ; and will handle the other permits on the county level.

ATTACHMENT 8
FINANCIAL CAPABILITY / COSTS

BALANCE SHEET - MORGAN MINING LTD.

ASSETS	6/22/93
Current Assets:	
Cash and cash equivalents	$99,458.02
Property and equipment, at cost	
Golden Eagle lease	$200,000.00
Leasehold improvements	$222,527.52
Morgan Exploration, (acquisition of)	$140,000.00
Deposits and other assets	
Total Assets	**$661,985.54**

Liabilities and Stockholders' Equity - June 1993

Current Liabilities	
Accounts Payable	$2,122.00
Long Term Liabilities	
Notes payable to third parties	$420,000.00
Total Liabilities	**$422,122.00**
Stockholders's equity	**$239,863.54**
Total liabilities and stockholders' equity	**$661,985.54**

ATTACHMENT 9
CONTINGENCY PLAN FOR CHEMICAL SPILLS

TABLE OF CONTENTS

1.0 INTRODUCTION

The Morgan Mining Company (MMC) contingency plan for the Golden Eagle Mine outlines the procedures that will be taken to mitigate a chemical spill. The plan identifies the spill discovery and notification procedure, the general cleanup procedures for chemical spills, pipeline leaks, pipeline breaks, other releases from fluid management systems and the reporting procedures. The procedures outlined in this plan apply to major releases and significant spills that escape the secondary containment structures.

A chemical spill is defined as the escape of any product or solution containing hazardous substances, as defined at Title 40 of the Code of Federal Regulations, Part 302, to the environment. A major release or significant spill from the fluid management system may be considered noncompliance with the Mining Plan of Operations if more that 500 gallons of fluids, chemicals or petroleum products are released or spilled.

2.0 NOTIFICATION ACTIONS

2.1 Emergency Procedures

Any person discovering a chemical or petroleum product spill, or an accidental discharge from any component of the fluid management system, will immediately notify MMC's Health, Safety and Environmental (HSE) Officer or his designated alternate. The HSE Officer will then be responsible for initiating the formal Notification Procedure (outlined below), gathering all relevant information on the scope of the spill or discharge and coordinating the emergency response.

The Process Maintenance Supervisor will be responsible for organizing the manpower and equipment necessary to shut off the source of the spill, contain the spillage and implement the cleanup procedures.

The Notification Procedure is:

A. The person discovering the spill or release will immediately notify:

HSE Officer: _____ Phone _____

B. The HSE Officer will immediately notify:
Process Maintenance Supervisor
_____ Phone _____

The following information will accompany any notification of a chemical spill:

The location of the release point(s) where the spill occurred
The magnitude of the spill, expressed in the units of applicable liquid, limitation and the operating data and calculations used in determining the magnitude of the spill

The time and duration or expected duration of the spill
The identity of the equipment causing the spill
The nature and cause of the spill
If the spill was the result of a malfunction, steps taken to remedy the malfunction and the steps taken or planned to prevent the recurrence of malfunctions.
The steps that were or are being taken to limit the spill. If the operating permit contains procedures governing source operation during periods of start-up or malfunction, the report shall contain a list of steps taken to comply with the permit procedures.

2.2 Public Notification

The public will be notified if there is a substantial spill that would endanger the welfare of adjacent landowners. Public notification will be made in consultation with the Bureau of Land Management (BLM) and Arizona Department of Environmental Quality (ADEQ).

2.3 Documentation and Reporting

MMC will maintain monitoring and audit files as documentation of compliance with permit conditions/stipulations. These files will be available for inspection by a representative from the ADEQ and the BLM Compliance Officer.

Any discharge or spill of a reportable quantity of a hazardous substance, will be reported orally to the BLM not later than 5:00 pm of the next regular work day after the release has occurred. Every effort will be made to report spills as soon as possible. A written summary will be provided to the BLM within ten (10) days of the oral report. The written summary shall contain a description of the release and its cause, the periods of release (including exact dates and time), whether the release has been corrected, and if not, the anticipated time it is expected to continue, and the steps taken or planned to reduce, eliminate and prevent recurrence of the release.

The BLM will notify the National Response Center if hazardous materials are released from the operation exceeding reportable quantities.

In the event that any portion of the containment system fails resulting in the violation of permit conditions, MMC will notify the ADEQ's Water Pollution Compliance Unit, adjacent landowners and the Mohave County Health Department within 72 hours to determine the appropriate action to mitigate the effects of the violation. Any wildlife mortalities discovered during a spill cleanup will be reported to the BLM.

3.0 CONTAINMENT FACILITIES

3.1 Spill Containment Design

The MMC ore processing system has been designed with sufficient secondary containment to capture solutions that might escape storage or the piping systems. The containment of process solutions inside the mill structures provides for simple clean up and prevents any possible

contamination to the environment. That portion of the process system that extends outside the mill - the tailings and reclaim pipelines (Figure 3, Appendix B), have also received special containment designs to prevent the loss of solutions to the environment. A full discussion of Best Available Demonstrated Control Technology (BADCT) is presented in Attachment 5.

3.2 Cleanup Procedures

The following is a list of the possible reagents that might be utilized in the processing plant:

A-208 Sodium diethyl and sodium di-secondary butly dithiophosphate

A-350 Potassium amyl xanthate

COPPER SULFATE As: $CuSO4.7H2O$

MIBC Methyl Isobutyl Carbinol

F-65 Generally Polyglycol

LIME CaO

Should a leak or spill occur into a secondary containment structure the spill will be isolated and pumped into temporary storage containers. The secondary containment area will then be washed and the wash solution will be sumped and pumped in as process solution.

Should a leak or spill occur outside the secondary containment the affected area will immediately isolated and contained using adsorbent materials (stored on site). The area will then be excavated to a depth equal to moisture penetration and disposed of in the tailings impoundment. The area will be tested for contaminates to assure further excavation is not necessary.

Petroleum Products

In the event that petroleum products escape from secondary containment structures the following specific actions will be undertaken:

1. moats and earthen dikes will be constructed to contain the spill;
2. pumps and absorbent materials (stored on site) will be used to remove the spilled fluid from the contained area into alternate storage;
3. contaminated soils, to a depth equal to moisture penetration will be excavated and disposed of in a manner approved by the Bureau of Land Management;
4. the area will be tested for contaminates;
5. steps 2 through 4 will be repeated until test levels indicate background levels of contaminates are achieved.

4.0 EQUIPMENT LISTS AND AVAILABILITY

The mine equipment listed in Table 1 will be available 24 hours per day to assist in the containment and cleanup of a spill.

Table 1 Mining Equipment

EQUIPMENT TYPE	QUANTITY
Loaders CAT - 988D	2
Dozers CAT - D9N	2
Haul Trucks CAT - 773B	3
Motor Grader CAT - 14G	1
Water Truck CAT - G21	1
Rotary Drill	1
Service Truck	1
Mechanical Truck	1
Parts Trailer	1
Pickup Trucks	3

5.0 LOCATION OF SENSITIVE AREAS

Although there area no sensitive areas such as domestic water supplies, significant wildlife habitats or fisheries which will be affected by this facility, all areas will be treated by MMC as sensitive.

6.0 MONITORING ACTIONS

An Operating Monitoring Plan (OMP) is included as Attachment 10. The OMP outlines in detail the timing and procedures for inspections which will safeguard personnel and the environment.

ATTACHMENT 10
OPERATING MONITORING PROGRAM

TABLE OF CONTENTS

1.0 SITE MONITORING

Morgan Mining Company (MMC) will maintain an active site Operating Monitoring Program (OMP) covering all aspects of mine operating and safety. The program will be continuous for the life of the mine. The OMP will enable MMC to detect a variety of conditions that, if unnoticed, could negatively impact the natural or human environment. An organized system of inspections, carried by MMC personnel, will assure complete coverage of all aspects of the operation. Specific items may be modified and/or added to the OMP to comply with new regulations or changes in mine design or procedures. In general the monitoring will be broken down into quarterly, monthly, weekly and daily assignments (Table 1).

1.1 Monitoring Check List and Notification

A daily, weekly and monthly check list/report form will be designed and used during all inspections at the site (Section 3.0). Each Area foreman will have an individually designed checklist/report covering his or her responsibility. MMC will maintain full records of all completed inspection forms. Inspection personnel will be expressly instructed to inform the foreman of all exceptions or conditions noted in the inspection rounds. Area foremen will be responsible for gathering details or any variations to the standard conditions. The foreman will immediately notify the supervisor of the situation. Notification will include written and/or direct personal communication. Corrective actions will then be planned and implemented. MMC supervisors will supply the mine manager with a detail report of the monitoring program results.

1.2 Personal Safety

Personal safety is of primary concern to MMC. The monitoring program will include an extensive personnel safety checklist. Personnel safety equipment will be located throughout the mine operation in the mill, crusher area and plant site. An employee safety manual will be developed and implemented prior to construction.

Daily inspection items will include checking the pit wall and haul road for hazardous conditions. These inspections will include checking for loose or hazardous rock in the pit wall, checking for rock debris on haul roads and checking protective berms along haul roads and tailings impoundment area.

Weekly inspections will include emergency equipment function and condition. Specific inspections will include eye wash stations, emergency showers, self contained breathing equipment, shut off switches, alarms and first aid equipment. There will be weekly inspections of emergency communications systems. Weekly checks will confirm the viability of emergency phone numbers and lists of local emergency equipment available. A weekly examination will be made of the MMC perimeter fence and animal exclusion fence around the tailings pond.

Monthly inspections will include checking for clear marking of all safety equipment. In addition, all reagent tanks will be inspected for clear content labels. Monthly confirmation of the condition and viability of emergency medical supplies will be made. There will be monthly inspections of the fire fighting water supply and pressure, operation of hydrants, hoses, valves and nozzles. Fire extinguisher inspections will be made in accordance with local fire department directions.

Table 1
Operating Monitoring Program Summary

MONITOR CONDITION	DAILY INSPECTION	WEEKLY INSPECTION	MONTHLY INSPECTION	AREA
Road and pit hazards	X			Personnel Safety
Emergency equipment function		X		"
Emergency communication systems		X		"
Perimeter and exclusion fences		X		"
Emergency equipment markings/signs			X	"
Emergency medical supplies			X	"
Fire fighting system and equipment			X	"
Active leak detection system	X			Fluid Transport Lines
Tailing and reclaim pipelines	X			"
Pipeline, ditches and sumps	X			"
Reclaim Tank pump and electrical		X		"
Reclaim tank control valve		X		"
Chemical and process tanks, overflow sumps	X			Storage, Process Tanks and Sumps
Fluid lines and pumps	X			"
Mill area sump pump function		X		"
Fuel storage areas	X			Other Storage Areas

Table 1 (cont)
Operating Monitoring Program Summary

MONITOR CONDITION	DAILY INSPECTION	WEEKLY INSPECTION	MONTHLY INSPECTION	AREA
Activities around fuel storage	X			"
Fuel tank shut off valves		X		"
Equipment storage area leaks		X		"
Explosives storage area		X		"
Warehouse and outdoor storage		X		"
Tailings area diversion ditches			X	Diversion Ditches
Tailing deposition system	X			Tailings Dam
Standing water in tailings	X			"
Steady state reclaim flow monitor system	X			"
Tailings dam condition		X		"
Animal exclusion fence		X		"

1.3 Fluid Transport Lines

Before start up of the facility MMC will perform a system leak detection utilizing water. This system-wide check shall verify that all facilities function as designed and shall detect leaks, if any, in the ball mill, processing tanks, piping, pump connections and tailings facility areas.

Daily inspections will include a visual inspection of the tailings pipeline and reclaim return lines for leakage. Any leakage will collect in sumps designed into the lined ditch. Other daily checks will include looking for blocked drains from the pipeline trenches to the sumps and inspecting for damage to the ditch liner system.

There will be weekly inspections of electrical supply lines, switches and control boxes for the reclaim return water line pump. The water reclaim flow control valve will be inspected and tested for proper function each week.

1.4 Storage, Process, Tanks and Sumps

Daily visual inspections will include all chemical and process tanks and sumps in the process site. Inspection personnel will look for any indications of overflow from the process tanks into the sumps. Fluid lines and pumps will be examined for leaks and proper operation. Daily inspections will include the reagent storage area.

Weakly tests will be made of the sump pump function. Testing will include operation of each pump and the float operated switches that control the sump pumps. Sump liners and containment areas will be examined weekly for cracks or deterioration.

1.5 Other Storage Areas

Daily inspections will be carried out at fuel storage areas. These areas will be examined for leakage from the storage tanks, lines and pumps. The inspector will look for possible damage to confinement areas from traffic or construction. Fuel oil and propane shut off valves will be inspected weekly as will the waste oil capture system. All of the mine equipment storage areas will be visually inspected for leakage from equipment fuel or lubrication systems.

Weekly safety inspections will be made in the explosives storage areas to confirm the physical separation of ANFO, primers and detonation components and for leaking or spilled material. Weekly inspections will be made of all warehouse and outdoor storage areas for damaged containers or refuse buildup.

1.6 Diversion Ditches

Monthly monitoring is planned for the surface water diversion ditches around the tailings area and pit. The ditches will be examined for blockage and cross channeling. Additional inspections will be made after heavy rain to assure integrity during adverse conditions.

1.7 Tailings Dam

Daily inspections will be made of the tailing deposition system to assure proper dispersal of the tailings material behind the tailings dam. The tailings impoundment will be inspected daily for the presence of standing water. The entire system will be checked daily to verify that the steady-state reclaim water flow is equivalent to the application rate of tailings fluid, allowing for evaporation and retention of tailings.

Weekly inspections of the tailings dam will include checking for erosion channeling. Piezometers installed within the tailings dam build-up area to monitor levels will be inspected weekly. Inspection will be made of the liner edge for signs of undercutting or lifting. Immediate inspections will be made following heavy thunder storm activity or after a local seismic event. The weekly inspection will include a full check of the fence around the tailings facility.

2.0 QUARTERLY GROUNDWATER MONITORING PROGRAM

A quarterly groundwater monitoring plan will be developed to establish baseline groundwater quality, monitor site groundwater quality (if ground water is present) and monitor any potential impact from the tailings.

The program will be designed for continual baseline monitoring of groundwater quality as well as the drilling of a monitor well (MW1, see Figure 4, Appendix B) in the tailings impoundment site. The location of the well will be determined by the ADEQ to be the "Point Of Compliance" for the Aquifer Protection Permit.

3.0 EXAMPLE MONITORING PROGRAM
DAILY CHECKLIST

OPERATING MONITORING PROGRAM
DAILY CHECKLIST AND REPORT FORM

EXAMPLE

Mill Operations

Inspected by:_____ Date_____
Results Reviewed by:_____ Date_____
(Each daily check list is specialized for different segments of the mine operation. All daily checks and inspections will be the same for every form. The weekly inspections, integrated automatically into each daily form, will be done throughout the week. The number of weekly items per day will be adjusted to match the anticipated work load. Each monthly inspection will be spread out through the weeks, highlighting one week per month as the monthly inspection period.)

SAFETY

YES	NO	SEE NOTE	INSPECTION ITEM, SPECIFIC CHECK
			Emergency eye wash station operating properly?
			Signs to the eyewash station well placed and readable?
			Emergency shower operating properly?
			Signs to the shower well placed and readable?
			Emergency breathing equipment operating properly?
			Signs for location of first aid kit clearly visible?

NOTE:

OPERATING MONITORING PROGRAM
DAILY CHECK LIST AND REPORT FORM

Mill Process Systems

YES	NO	SEE NOTE	INSPECTION ITEM, SPECIFIC NOTE
			Flow monitor system readings:
			Tailings and reclaim pipeline in good condition? No visible leaks?
			Pipeline ditches and sumps clean?
			Pipeline ditch liner in good condition?
			Reclaim water control valve operational?
			Tailing deposition system functional?
			Tailings impoundment free of water?
			Reclaim tank operational?

NOTE:

ATTACHMENT 11
CLOSURE, DECOMMISSION AND RECLAMATION PLAN

TABLE OF CONTENTS

1.0 INTRODUCTION

Morgan Mining Company's Closure, Decommissioning and Reclamation Plan (CDRP) outlines the procedures to decommission the site facilities followed by implemention of the final phase of reclamation. The goal of CDRP will be to establish a post operational environment which is both safe and compatible with the existing land uses in the area.

1.1 Closure

Closure of the Golden Eagle facility could take place as a result of conditions which in MMC judgement are short term which would result in Temporary Closure of mining operations. Permanent Closure would result when the mine has exhausted the ore reserves and any future mining from the pit could not occur in the near term. Closure of the Golden Eagle Mine site will involve termination of mining and processing activities. This will be followed by decommissioning and final reclamation.

1.2 Temporary Closure

Temporary closure could result from failure of a major piece of equipment such as the mill which would require extended repair, or interruptions to the supply of required reagents to operate the flotation circuit. Other conditions requiring temporary closure are related to market conditions which MMC cannot predict such as the price of gold. Should operations be suspended for a period exceeding 60 days BLM will be given a written 30 day advance notice. MMC will then comply with the temporary closure provisions contained in MMC's Aquifer Protection Permit.

1.3 Permanent Closure

Permanent Closure of the mine will result only when the economic conditions indicate that no further mining can be accomplished because of the depletion of ore reserves.

Following the decision to undergo Permanent Closure MMC will notify the BLM and the ADEQ with a 60 day written notice. The notification will outline the time table for decommissioning and reclamation.

2.0 FACILITY DECOMMISSIONING

Decommissioning will involve the removal of all contractors equipment not required for final reclamation as well as the removal of all buildings and equipment related to the processing facilities and infrastructure. During decommissioning all chemicals will be removed or neutralized prior to site reclamation.

2.1 Processing Area

This area includes the stockpile and processing plant sites (Figure 4, Mine Site Detail, Appendix B). After the project has been terminated the entire facility will be thoroughly cleaned. The entire system will be flushed with water, removing and processing solutions from the system. All of the rinse water will be directed to the tailings impoundment for disposal.

All buildings and processing equipment will be salvaged from the site. The equipment includes crushers, mill, tanks, pumps etc will have retained a significant resale value. Most of this equipment is semi-portable and designed for easy removal and reuse at other mining projects.

2.2 Reagents

Excess reagents will be returned to wholesale vendors in the original transport containers for re-sale to other operations. All remaining empty reagent containers will be returned to vendors or disposed of in an approved manner.

2.3 Explosives

The mine contractor will be responsible for removing ANFO, dynamite and blasting caps in a manner meeting the safety specifications of the State Mine Inspector. The storage building for explosives will be salvaged from the mine site for re-use elsewhere.

2.4 Refuse and Sewage Facilities

Portable facilities will be removed from the site and returned to the vendor.

2.5 Fences

Fencing will be removed from all site areas except the open pit and the tailings impoundment sites. One year after reclamation is completed all fences will be removed.

2.6 Well Abandonment

The well field will be abandoned in accordance with regulations of the ADWR. Pipelines from the well field will be salvaged and the well capped with a welded plate. Disturbances will be graded and coversoil replaced. As per BLM's request the ownership of the well will revert to BLM following abandonment.

3.0 RECLAMATION

Reclamation of the Golden Eagle Mine will be an ongoing process throughout the life of the mine. Staged reclamation will be implemented wherever possible. This will involve staging reclamation to coincide with the termination of areas of the project no longer required.

3.1 General

Reclamation of the site will begin during the construction of the Golden Eagle site by stockpiling coversoil together with seed bed material.

3.1.1 Coversoil Stockpiles

Coversoil will be removed and stockpiled from the processing plant, open pit and tailings impoundment sites. Coversoil salvage operations will utilize scrapers, graders, dozers and front end loaders to move the coversoil. Stockpiles will be constructed and located out of major drainage. Stockpiles will be designed so as to minimize erosion losses. Stockpiles will also be used as nursery sites for salvaged vegetation further minimizing erosional losses. Once constructed, rehandling of the stockpiles will be avoided until reclamation operations commence.

Coversoil from road cuts will be distributed along the cut slopes. Coversoil and side cast material from diversion ditches and pipeline trenches will be distributed along these disturbances. Vegetation by pioneering plants will improve visuals in the intermine period and reduce erosion.

3.2 Open Pit

Because evaporation rates in the area exceed annual rain fall, standing water in the pit in not expected to be a problem. The fractured nature of the pit bottom will also inhibit the buildup of any standing water.

The pit walls have been designed to provide safe stable working conditions within the pit. Therefore, grading is not proposed. Signs noting the pits existence will be appropriately posted, access to the pit will be blocked and the high wall perimeter will be bermed.

Neither coversoil replacement nor transplanting is proposed for the pit site. Grasses, shrubs and other vegetation are expected to pioneer this area over time. Disturbed areas peripheral to the pit will be smoothed, coversoil replaced and vegetation transplanted from on site nurseries.

3.3 Processing Plant Areas

Compacted surfaces will be ripped and graded. Available coversoil will be replaced and vegetation transplanted from on-site nurseries.

3.4 Tailing Impoundment

The tailings impoundment site will be stabilized and allowed sufficient time to dry to permit safe access by heavy equipment. The surface will then be capped with available coversoil (Figure 8, Tailing Section - A). Coversoil will be placed on the face of the tailings dam as availability permits. Vegetation will transplanted from the nearest site to those areas receiving coversoil.

3.5 Reclaim Pipeline

The water reclaim pipeline from the tailings impoundment to the reclaim tank will be removed and the pipeline at the toe of the dam will be capped. This area will then be graded and covered with top soil and vegetation.

3.6 Roads

Unless otherwise requested by the BLM, roads will be closed and reclaimed. Access will be blocked by means of boulders or berms. Grading to reestablish natural drainage ways will be conducted. All culverts will be removed and any crossings contoured back to a condition similar to that of the pre-existing area. Roads will be out sloped to permit natural drainage. Coversoil materials will be replaced and available vegetation transplanted.

EXHIBIT A
TAILINGS DESIGN

TABLE OF CONTENTS

1.0 EXECUTIVE SUMMARY

The following is a summary of the primary design elements regarding the tailings impoundment area and reclaim water recirculation tank for Morgan Mining Company's Golden Eagle Mine. Arizona Best Available Demonstrated Control Technology (BADCT) criteria has been considered during the design of all of the elements contained within the tailings impoundment area.

The area has been designed to contain 244,000 tons with the general design criteria including tailings disposal capacity for 100,000 tons per year. The facility will be constructed in one phase. The construction will include the reclaim water recirculation system, diversion ditches, the main dam for the tailings impoundment, and wing dams to a crest elevation of 4,320 feet.

The tailings impoundment will have a single 40 mil synthetic HDPE liner placed over compacted earth fill. The recirculation system will consist of a 50,000 gallon tank with a pumpback circuit. Reclaim water will gravity drain from the tailings impoundment area via the perforated underdrain collection pipe within the lined tailings area.

The construction of the tailings impoundment will include sufficient freeboard to contain the 100 year, 24 hour storm event. The recirculation system will employ an operator controlled valve on the underdrain collection line to allow for holding of the water from the 100 year, 24 hour precipitation event within the impoundment area.

The diversion ditch system will be capable of diverting the run-off of the surrounding area from the tailings impoundment in a 100 year, 24 hour precipitation event. These ditches will have small cross sections due to the very limited upslope areas above the impoundment basin.

2.0 DESIGN ELEMENTS

Morgan Mining Company requested that a conceptual design report be prepared by Lyntek, Inc. of Denver, Colorado for a tailings impoundment facility to be located in Section 31, T23N, R17W, Mohave County, Arizona. Figures 1 and 2 (Appendix B) show the general location of the Golden Eagle minesite. The purpose of this report is to provide the basic design elements and discharge control components which will meet the BADCT requirements of the Arizona Department of Environmental Quality (ADEQ). This report will augment the Pre-Application Work Plan developed by Morgan Mining Company.

It is Lyntek's understanding that general tailing and waste rock characterization studies have been conducted by other consulting firms and Morgan Mining. Lyntek has, however, supervised the excavation of four backhoe test pits in the vicinity proposed main tailings dam. The results of the tailing and waste rock characterization studies and soil study are included in Appendix A of this report. This report is restricted to the conceptual design of the tailings impoundment facility. A discussion of climatological factors and their affects on the discharge control components and design of the surface water diversion, liner, reclaim water collection and tailings dam system are also detailed. Preliminary drawings of each system are included in Appendix B.

2.1 Facility Description

Ore will be extracted by conventional open pit mining methods at a rate of 100,000 tons per year. Ore material will be crushed to minus 3/8 inch prior to milling (utilizing two parallel ball mills) to 80% passing 200 mesh. Each mill will be rated at about 6.25 tons per hour based on 24 hour per day operation. Recycled water from the tailings impoundment will be utilized to dilute the slurry to approximately 30% solids for feed to the flotation circuit.

Flotation will be accomplished in standard cell to cell machines producing a rougher concentrate from the bulk feed. The rougher tailing will be subjected to scavenger flotation to remove residual values prior to transport to the tailings impoundment area. Water in excess of that necessary to transport the tailings will be removed by a thickener prior to the tailings being pumped, via a containment enclosed pipeline, to the impoundment area.

The rougher and scavenger concentrates will be further processed by cleaner flotation to produce a final up-graded concentrate that will be dewatered by a thickener/filter system and shipped off the site by trucks for further processing. A more detailed process description is included in the Attachment 1, Facility Summary.

Tailings water will be recovered and pumped back to the processing area from the recirculation system as process conditions require. The tailing impoundment will have the required capacity to contain the 100 year, 24 hour precipitation event.

2.2 Siting

The tailings impoundment facility is located on a rather steep hillside which is well suited for containment due to its natural contours and limited up-slope extent as shown on Figures 3 and 4. Morgan Mining has conducted independent site characterization studies to determine the optimal siting area for the tailings impoundment facility. Inspection of the site has indicated that the area chosen for the tailings impoundment is the only possible area within the property boundary large enough to hold the required volume of tailings.

2.3 Climate

The climate in the area of the proposed site is typical of the Northern Arizona desert regions with monthly mean temperatures ranging from a maximum of 97.5 degrees Fahrenheit in July to a low of 56 degrees Fahrenheit in January. The mean evaporation rate ranges from a high of 19.36 inches in July to a minimum 6.87 inches in January, with an average yearly total evaporation of 150.36 inches. This data has been gathered from the "Climatological Data Annual Summary", Arizona, 1988, Volume 92, Number 13, published by the National Oceanic and Atmospheric Administration, National Climatological Data Center, Asheville, North Carolina. Temperature and precipitation data is from Phoenix District-Kingman Resource Area, Kingman station (4639). Evaporation data is from Davis Dam #2 (2439). Table 1 details data excerpted from the NOAA publication, as well as the projected water balance for the Golden Eagle mine site.

The water balance indicates that the overall water use exceeds precipitation so that additional water will be required from wells. The projected balance shows a requirement of an average of 38,145 gallons per day or 26 gallons per minute. The highest flow required will be about 39 gpm in June and the lowest will be about 17 gpm in January.

2.4 Tailings Depositional Practices

The tailing material will be finely ground ore that is 80% passing 200 mesh. It will, however, contain few true slimes. The first step in handling the tailings for disposal will be thickening, wherein excess water not needed to transport and cyclone the solids will be reclaimed in the processing plant.

The underflow from the thickener will be pumped to the impoundment area where it will be deposited by a series of pipes perpendicular to the tailing header placed around the perimeter of the impoundment basin. By depositing tailings through several of these spigots at a time and rotating the deposition points, the uniformity of the deposited tailings will be maximized, allowing the most effective drainage of water from the ponded slurry into the reclaim system.

Table 1 - Climatological Data Survey and Water Balance

		JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	ANNUAL
MAX. DAILY TEMP. (F)	DEGREE F	75	82	90	97	103	109	111	111	108	98	90	77	95.9
MEAN TEMPERATURE (F)	DEGREE F	56	60.3	65.1	73.4	82.3	91.6	97.5	94.9	90.8	80.5	65.6	57.5	76.3
MIN. DAILY TEMP. (F)	DEGREE F	32.1	33.9	36.9	44.2	51.3	59.1	68	66.2	58.8	49.4	38.7	33.1	47.6
MEAN PPTL TOTAL (IN.)	INCHES	1.03	0.89	1.02	0.74	0.23	0.17	0.74	1.49	0.72	0.64	0.77	0.96	9.4
GREATEST MONTHLY PRECIP.	INCHES	3.18	4.48	3.6	4.04	0.91	0.93	2.43	6.57	9.85	2.64	3.08	3.89	3.8
MEAN EVAPORATION RATE	INCHES	6.87	7.31	9.89	12.59	16.43	18.95	19.36	17.5	14.18	11.5	8.33	7.45	150.36
MOISTURE OF ORE	PERCENT	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	
ORE PROCESSING RATE (TPM)	TONS/MONTH	9,066	9,066	9,066	9,066	9,066	9,066	9,066	9,066	9,066	9,066	9,066	9,066	108,789
FINAL MOISTURE CONTENT	PERCENT	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	
SOLUTION REQ. FOR ORE	GALLONS	369,884	369,884	369,884	369,884	369,884	369,052	369,884	369,884	369,884	369,884	369,884	369,884	4,438,605
AVG. SOL'N IN SLURRY	GALLONS	2,176,657	2,176,657	2,176,657	2,176,657	2,176,657	2,176,657	2,176,657	2,176,657	2,176,657	2,176,657	2,176,657	2,176,657	26,119,888
TOTAL PPT. COLLECTED	GALLONS	119,379	103,152	118,220	85,767	26,657	19,703	85,767	172,693	83,449	74,177	89,244	111,266	1,089,475
TOTAL EVAPORATIVE LOSS	GALLONS	265,415	282,414	382,089	486,400	634,754	732,112	747,952	676,093	547,828	444,284	321,820	287,822	5,808,988
DUST CONTROL - ROADS	GALLONS	217,626	231,565	313,293	398,824	520,466	600,294	613,282	554,362	449,191	364,295	263,876	263,000	4,763,074
RECYCLABLE WATER	GALLONS	1,806,620	1,806,620	1,806,620	1,806,620	1,806,620	1,806,620	1,806,620	1,806,620	1,806,620	1,806,620	1,806,620	1,806,620	21,679,441
SOLUTION RETURNED TO MILL	GALLONS	1,660,584	1,627,359	1,542,751	1,405,987	1,198,523	1,094,212	1,144,436	1,303,221	1,342,241	1,436,508	1,574,044	1,630,063	16,959,927
NET WATER REQUIREMENTS	GALLONS	733,693	780,856	947,193	1,169,487	1,498,594	1,682,733	1,645,497	1,427,791	1,283,601	1,463,508	866,483	782,587	13,922,955
NET GPM	GPM	17	18	22	27	35	39	38	33	30	26	20	18	26

The water will be reclaimed through an underdrain that will be placed in the bottom of the valley within the tailings disposal area as shown on Figure 4 and Figure 8, Detail 8. The reclaim water collection line will be perforated and wrapped with non-woven geotextile of high hydraulic conductivity and covered in gravel. Water that pools against the perimeter farthest from the dam crest as well as water that seeps out of the emplaced tailings, will be allowed to flow into the line through the geotextile and gravel blanket to be collected in the recirculation tank located below the dam.

The reclaimed water will be pumped from the recirculation tank to the plant area for re-use in the ore processing operations. The recirculation tank will be sited on a bermed area that will be covered with the 40 mil. HDPE synthetic liner. The containment will have a capacity to contain 110% of the volume of the tank plus precipitation collected within the containment. The return line will be enclosed in a containment pipe of larger diameter that drains back to the bermed containment should a break occur in the underdrain line.

2.5 Tailings Impoundment Capacity

The area selected for tailings disposal will be in Section 31, T23N, R17W. The tailings will be deposited at a rate of 100,000 tons per year to a projected total of 244,000 tons. The elevation of the upper fringe of the liner and the crest elevation of the dam will be the same at 4330 feet.

The nature of the mill tailing, namely the fineness of grind, and lack of structural stability of stocked tailings, requires that the entire volume of tailings be contained within a structurally sound facility. Due to the relief encountered on the minesite, a significant amount of excavation is required to develop the volume necessary to store the required tonnage for the life of the project.

A monitor well, designated as MW1, will be located at the property boundary in the draw below the recirculation tank as shown on Figure 3. This monitor well will be at the Point of Compliance (POC) for groundwater monitoring for the entire operation.

Tailings Impoundment Construction

The location of components of the impoundment basin are shown on Figure 4. The foot print of the tailing dam and other cut and fill areas will be prepared by clearing and grubbing of the area with vegetation being burned and the topsoil removed to a topsoil stockpile.

Excavation of the keyway for the dam will be made on both sides of the draw that the dam will span. Earth will be removed to bedrock, providing a slot in which to anchor the sides and bottom of the dam. The dam has been sited up hill from a group of abandoned underground mine openings, both shafts and adits. Avoiding openings will ensure a stable foundation for the structure.

A series of backhoe pits, identified by MBH designations, were dug in the dam area as shown on Figure 4. The results of the soil work are shown in Section 4.3. The soil foundation will support the dam structure and the uppermost layer will provide sufficient clayey material of low permeability for use as the secondary soil liner.

Excavation of the cut portion of the main basin will commence to provide fill material for construction of the main dam. Material will be bulldozer ripped where possible and drilled and blasted where necessary to allow removal of burden.

Once the subgrade has been prepared, clayey material will be imported from a topsoil stockpile, spread in a six-inch layer, and compacted. A second six-inch layer will then be spread and compacted. The 40 mil. synthetic HDPE liner will then be laid down on top of the compacted layer and keyed in around the entire perimeter of the impoundment basin. This design utilizes the Best Available Demonstrated Control Technology (BADCT) for this particular application, taking into consideration the terrain and composition of the tailing.

3.0 DISCHARGE CONTROL COMPONENTS

Another principle area of design which must meet BADCT requirements consists of the discharge control components. The under-drainage reclaim water collection system is designed to rapidly transfer solution from the impoundment liner to the recirculation tank. This serves the multiple purposes of minimizing ponding on the tailing surface thereby reducing evaporation and conserving water and lessening the hydraulic head on the dam and liner systems (Figure 8). The absence of ponding will also make the area less attractive to wildlife.

The liner systems of the tailings impoundment and containment for the recirculation tank will be constructed of synthetic material (40 mil HDPE) installed on a compacted base of natural materials. The tailings dam system will be designed to impound all run-off within the lined area and deliver it to the recirculation tank.

3.1 Surface Water Diversion

The tailings impoundment facility is located in the uppermost portion of a catchment basin which is well suited for containment due to its natural contours of the draw and limited up-slope extent as shown on Figure 3. However, to further limit the size of the catchment basin, diversion ditches have been designed to channel run-off away from the impoundment area. They are placed to limit the size of the catchment basin that would be affected by the 100 year, 24 hour precipitation event. Figure 12 shows the locations of the diversion ditches and the areas collected in each ditch. The ditches are designated by the upslope areas collected.

Surface water is limited to ephemeral run-off from rain fall. Surface water run-off and sediment transport are typical of the general region. Figure 11, Detail 7 shows the cross section of a typical diversion ditch to be employed.

Table 2 details the various events that probably could take place at the Golden Eagle mine site. The 100 year, 24 hour data presented has been extracted directly from the Isopluvial charts for Arizona published by NOAA in "Atlas of Precipitation Frequencies, Western U.S., Volume VIII", prepared by the U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National Weather Service, Office of Hydrology. The charts were prepared for U.S. Department of Agriculture, Soil Conservation Service, Engineering Division.

Table 2 Details of Precipitation Events

FREQUENCY OF EVENT - YEARS	24 HOURS INCHES	6 HOURS INCHES	1 HOUR INCHES
2	1.5	1.2	0.9
10	2.5	2.0	1.5
25	3.2	2.7	1.8
50	3.6	2.9	2.0
100	4.2	3.2	2.3

Table 3 details the volumes of run-off collected on the various areas involved, for the maximum 100 year, 24 hour event. Run-off is directly related to the soil characteristics of the area. The 24 hour precipitation event will result in 4.2 inches of rain falling in the area. The resultant run-off, calculated with soil characteristics taken into account, is equivalent to 1.05 inches of precipitation. These run-off calculations were performed utilizing methods published by the Soil Conservation Service National Engineering Handbook as well as supplements to Technical Release No. 55, Urban Hydrology for Small Watersheds.

The surface water run-off from the 100 year, 24 hour rainfall event will be directed around the tailings impoundment by diversion ditches constructed on the north and south sides of the lined area, as shown on Figure 12.

Table 3 Run-off From the 100 Year, 24 Hour Precipitation Event Maximium 100 Year Event

AREA	AREA (FT2)	PPT (IN.)	RUN-OFF (IN.)	RUN-OFF-100 YR (GAL.)
B-1	281,137	4.2	1.05	184,004
B-2	143,300	4.2	1.05	93,789
C-1	116,925	4.2	1.05	76,527
C-2	245,368	4.2	1.05	160,593
D	399,279	4.2	1.05	261,328
E	1,041,975	4.2	1.05	681,972
F	571,921	4.2	1.05	374,322

The tailing impoundment area will be protected by diversion ditches as shown on Figure 12, with one set of ditches to be constructed within the tailings impoundment basin. These ditches will pass through the dam structure where cut meets fill. The purpose of this design is to drain the disturbed cut area within the basin. These ditches are designed to divert areas C-1 and B-1 as shown on Figure 12.

The second set of ditches will be placed to intersect run-off from the hillside above the disturbed cut area of the impoundment basin. This design will prevent run-off from the hillside from entering the improved area within the basin. These ditches are designed to divert areas D, E, and F. They intersect the C-1 and B-1 ditches outside of the basin at the outer section of the cut and the fill portion of the impoundment structure.

3.2 Liner System

The tailings impoundment area and containment for the recirculation tank will be covered with an impermeable liner. The liner under the tailings basin will consist of an impermeable 40 mil HDPE synthetic liner installed over compacted materials. The impoundment basin will be subject to grading and reshaping prior to laying down the liner. The recirculation system will consists of a main underdrain collection pipeline connected to the collection tank, and penetrating the main toe dam. This pipe will collect all water contained within the lined tailings impoundment. The tank in turn will be connected to a pump and pipe line that will return recovered water to the mill. BADCT guidelines have been considered regarding the design of the liner systems. Typical construction details are shown on Figures 8 and 11, and are discussed in more detail in the following paragraphs.

Tailings Impoundment Area

The tailings impoundment area will be constructed according to the following general guidelines. The impoundment area will be cleared and grubbed with the clayey top layer moved to a topsoil stockpile for later use in producing the compacted base. The site will be reshaped and graded to normalize slopes that will be covered by liner.

The primary liner will consist of a 40 mil thick layer of High Density Polyethylene (HDPE) installed directly on top of the reworked low permeability bedding layer in accordance with the manufacturer's specifications. The synthetic membrane liner will be secured with typical anchor trenches at the sides of the basin as shown in Figure 11, Detail 2.

Recirculation Tank and Collection Line

The tailings water recirculation tank will be built at the toe of the tailings facility to catch water that drains out of the deposited tailings. Precipitation that falls within the lined area will also be collected in the recirculation tank. All water collected in the recirculation tank will be pumped to the processing facility.

The recirculation tank is designed to collect all drainback from the tailings impoundment area. The run-off resulting from rainfall within the inside perimeter of the tailing diversion ditches will be stored within the impoundment and gradually bled back into the recirculation tank. The underdrain collection pipeline will be placed in the basin in the lowest part of the valley. This system will quickly drain water away from the impounded tailings, reducing the hydraulic head on the liner. Perforated ADS pipe will be utilized. The pipe will be covered by blanket of highly permeable geotextile fabric and buried in minus 2-inch gravel. Details of the assembly can be seen on Figure 9, Detail 8.

The underdrainage collection piping will be equipped with a butterfly valve on the discharge end as shown on Figure 11, Detail 5, to allow for the flow to be cut off during the 100 yr, 24 hour precipitation event. The volume of excess water accumulating within the impoundment basin during the 100 year, 24 hour precipitation event will be stored within the impoundment and will be discharged by bleed through the recirculation tank for reuse in the processing plant.

Table 4 details the volumes that are required to be available in the recirculation tank. The level will be maintained at 15,000 gallons during normal operations. Volume is then available to contain the drain-down comprising 22,000 gallons while maintaining freeboard of approximately five feet.

Table 4 Volumes Required for Operation of Recirculation Tank

DESCRIPTION OF VOLUME	RECIRCULATION TANK - GALLONS
Operating Volume	15,000
24 Hour Draindown	22,000
Freeboard - 5 Feet	13,000
TOTAL VOLUME	**50,000**

The dimensions of the recirculation tank is 20 feet in diameter by 20 feet high.

The recirculation tank will be operated with a floating level controller to insure the return of solution to the processing facility. The level controller will activate the pump when the level of the tank reaches a preset level. This will insure that the tank never becomes too full. The level switch will also shut down the pump if the level of the tank become to low for the pump to operate effectively.

As this system will be operating with a tank as opposed to a pond it will prevent excessive loss of water to evaporation and preclude waterfowl from coming in contact with the contained water.

3.3 Reclaim Water Collection System

A valley floor reclaim water collection drain will be installed to collect seepage through the tailings and deliver it to the recirculation tank. The general layout of the drain follows Arizona BADCT criteria, and can be seen on Figure 4.

The reclaim water collection drain will generally be placed in the lowest depression within the lined area. Adjacent ground will be graded so that all water entering the geotextile drain blanket will flow by gravity to the reclaim water collection drain. Some shaping of the ground may be necessary to prevent pockets from being formed that would trap water. The general placement of the reclaim water collection drain pipe on top of the synthetic liner is shown in the detail on Figure 9, Detail 8.

The underdrain collection pipeline will be ADS slotted type pipe having sufficient strength to withstand the compressive forces of the tailing column emplaced on top of it. The pipe will be completely wrapped with non-woven, high permeability geotextile before being installed. The installed pipe will be covered with a one foot thick layer of porous drain rock. The upstream end of the reclaim water collection drain line will be kept accessible, making it easy to attach more lengths of pipe to the string as the tailings level in the impoundment rises.

The reclaim water collection drain pipes will be connected to a solid drain pipe that will extend through the toe dam and discharge into the recirculation tank as shown on Figure 8 and Figure 11, Details 4 and 5. A solid boot anchored on a concrete footer will be provided at the liner penetration point on the inside of the main dam surface. The discharge end of the drain pipe will be provided with a butterfly valve on the outside toe of the main toe dam prior to entering the recirculation tank. The closing of this valve during periods of high infiltration of water will allow excessive water to be stored within the tailings impoundment.

APPENDIX A
TAILING, WASTE ROCK AND SOIL CHARACTERIZATION

Hazen Research, Inc.
4601 Indiana St. • Golden, Colo. 80403
Tel: (303) 279-4501 • Telex 45-860
FAX: (303) 278-1528

DATE June 9, 1992
HRI PROJECT 002-78H
HRI SERIES NO. E189/92-1
DATE RECD. 05/11/92
CUST P.O.#

Morgan Mining, Ltd.
Adrian Vander Pyl
2880 South Locust, Apt. 702S
Denver, CO 80222

REPORT OF ANALYSIS

Synthetic Precipitation Leaching Procedure

SAMPLE NO. E189/92-1
SAMPLE IDENTIFICATION: 5-6 #1

	Result mg/l	Limit mg/l	Spike Recovery,%	Method	Date Completed
Arsenic	0.2	5.0	99	EPA 206.4	05/21/92
Barium	<0.5	100	104	SW846 6010	06/02/92
Cadmium	<0.02	1.0	102	SW846 7130	05/21/92
Chromium	<0.05	5.0	119	SW846 7190	05/21/92
Lead	<0.3	5.0	104	SW846 7420	05/21/92
Mercury	<0.001	0.2	95	SW846 1312	05/15/92
Potassium	3.12	NA	101	SW846 7610	06/03/92
Selenium	<0.02	1.0	69	SW846 7740	06/03/92
Silver	<0.05	5.0	102	SW846 7760	05/21/92

Extraction Fluid Used: pH 5
Date Extraction Started: 05/13/92
Final pH: 7.68

By:
Robert Rostad
Laboratory Manager

NOTE: The leach was done according to SW846 Method 1312.

Hazen Research, Inc.
4601 Indiana St. • Golden, Colo. 80403
Tel: (303) 279-4501 • Telex 45-860
FAX: (303) 278-1528

DATE June 9, 1992
HRI PROJECT 002-78H
HRI SERIES NO. E189/92-2
DATE RECD. 05/11/92
CUST P.O.#

Morgan Mining, Ltd.
Adrian Vander Pyl
2880 South Locust, Apt. 702S
Denver, CO 80222

REPORT OF ANALYSIS

Synthetic Precipitation Leaching Procedure

SAMPLE NO. E189/92-2
SAMPLE IDENTIFICATION: 5-6 #2

	Result mg/l	Limit mg/l	Spike Recovery,%	Method	Date Completed
Arsenic	0.1	5.0	92	EPA 206.4	05/21/92
Barium	0.8	100	102	SW846 6010	06/02/92
Cadmium	<0.02	1.0	101	SW846 7130	05/21/92
Chromium	<0.05	5.0	118	SW846 7190	05/21/92
Lead	<0.3	5.0	103	SW846 7420	05/21/92
Mercury	<0.001	0.2	95	SW846 1312	05/15/92
Potassium	6.27	NA	106	SW846 7610	06/03/92
Selenium	<0.02	1.0	58	SW846 7740	06/03/92
Silver	<0.05	5.0	100	SW846 7760	05/21/92

Extraction Fluid Used: pH 5
Date Extraction Started: 05/13/92
Final pH: 7.52

By:
Robert Rostad
Laboratory Manager

NOTE: The leach was done according to SW846 Method 1312.

Hazen Research, Inc.
4601 Indiana St. • Golden, Colo. 80403
Tel: (303) 279-4501 • Telex 45-860
FAX: (303) 278-1528

DATE June 9, 1992
HRI PROJECT 002-78H
HRI SERIES NO. E189/92-3
DATE RECD. 05/11/92
CUST P.O.#

Morgan Mining, Ltd.
Adrian Vander Pyl
2880 South Locust, Apt. 702S
Denver, CO 80222

REPORT OF ANALYSIS

Synthetic Precipitation Leaching Procedure

SAMPLE NO. E189/92-3
SAMPLE IDENTIFICATION: 5-6 #3

	Result mg/l	Limit mg/l	Spike Recovery,%	Method	Date Completed
Arsenic	<0.1	5.0	90	EPA 206.4	05/21/92
Barium	<0.5	100	101	SW846 6010	06/02/92
Cadmium	<0.02	1.0	100	SW846 7130	05/21/92
Chromium	<0.05	5.0	115	SW846 7190	05/21/92
Lead	<0.3	5.0	102	SW846 7420	05/21/92
Mercury	<0.001	0.2	95	SW846 1312	05/15/92
Potassium	8.75	NA	68	SW846 7610	06/03/92
Selenium	<0.02	1.0	58	SW846 7740	06/03/92
Silver	<0.05	5.0	100	SW846 7760	05/21/92

Extraction Fluid Used: pH 5
Date Extraction Started: 05/13/92
Final pH: 7.75

By:
Robert Rostad
Laboratory Manager

NOTE: The leach was done according to SW846 Method 1312.

Hazen Research, Inc.
4601 Indiana St. • Golden, Colo. 80403
Tel: (303) 279-4501 • Telex 45-860
FAX: (303) 278-1528

DATE	June 9, 1992
HRI PROJECT	002-78H
HRI SERIES NO.	E189/92-4
DATE RECD.	05/11/92
CUST P.O.#	

Morgan Mining, Ltd.
Adrian Vander Pyl
2880 South Locust, Apt. 702S
Denver, CO 80222

REPORT OF ANALYSIS

SAMPLE NO. E189/92-1
SAMPLE IDENTIFICATION: 5-6 #1

Potential Acidity, tons H^+/1000 tons Soil	<0.01
Potential Acidity, tons $CaCO_3$ equivalent/1000 tons Soil	<0.5
Neutralization Potential, tons $CaCO_3$ equivalent/1000 tons Soil	12.2

By:
Robert Rostad
Laboratory Manager

Hazen Research, Inc.
4601 Indiana St. • Golden, Colo. 80403
Tel: (303) 279-4501 • Telex 45-860
FAX: (303) 278-1528

DATE	June 9, 1992
HRI PROJECT	002-78H
HRI SERIES NO.	E189/92-5
DATE RECD.	05/11/92
CUST P.O.#	

Morgan Mining, Ltd.
Adrian Vander Pyl
2880 South Locust, Apt. 702S
Denver, CO 80222

REPORT OF ANALYSIS

SAMPLE NO. E189/92-2
SAMPLE IDENTIFICATION: 5-6 #2

Potential Acidity, tons H^+/1000 tons Soil	0.10
Potential Acidity, tons $CaCO_3$ equivalent/1000 tons Soil	5.0
Neutralization Potential, tons $CaCO_3$ equivalent/1000 tons Soil	23.5

By:
Robert Rostad
Laboratory Manager

Hazen Research, Inc.
4601 Indiana St. • Golden, Colo. 80403
Tel: (303) 279-4501 • Telex 45-860
FAX: (303) 278-1528

DATE	June 9, 1992
HRI PROJECT	002-78H
HRI SERIES NO.	E189/92-6
DATE RECD.	05/11/92
CUST P.O.#	

Morgan Mining, Ltd.
Adrian Vander Pyl
2880 South Locust, Apt. 702S
Denver, CO 80222

REPORT OF ANALYSIS

SAMPLE NO. E189/92-3
SAMPLE IDENTIFICATION: 5-6 #3

Potential Acidity, tons H^+/1000 tons Soil	0.22
Potential Acidity, tons $CaCO_3$ equivalent/1000 tons Soil	10.9
Neutralization Potential, tons $CaCO_3$ equivalent/1000 tons Soil	17.1

By:
Robert Rostad
Laboratory Manager

SMI
Shepherd Miller, Inc.

CONSULTING ENVIRONMENTAL & GEOTECHNICAL ENGINEERS

August 27, 1992

Mr. Thomas K. Randall
LYNTEK, Inc.
775 Mariposa
Denver, Co. 80204

Dear Tom:

The backhoe sample test results of the tailings impoundment area for Morgan Gold Mine are summarized below. The samples taken were first analyzed for soil classification. Based on those results, samples were grouped together for permeability testing, compacted at 95% standard Proctor and optimum moisture content.

Composite Material	LL	PI	#4	#200	Unified Soil Class	Max. Dry Density	Opt. Moisture	Permeability (cm/sec)
C-3 MBH-1 0.0-2.7'	48	27	76	20.1	SC	115.9	14	2.06 x 10-6

Note: Test analysis performed on the SIDE WALL -6 sample indicated the sample was composed of material similar to cemented soil. No sieve analysis could be correctly performed due to the sample's composition.

Sincerely,
SHEPHERD MILLER, INC.

Nicole High

Nicole High
Project Engineer

1600 Specht Point Drive, Suite F, Fort Collins, Colorado 80525 • Tel:(303)484-4414 • Fax:(303)484-7540

LANDMARK LABORATORIES LTD.

SOIL CLASSIFICATION SUMMARY SHEET

CLIENT: Shepherd Miller, Inc. PROJECT: #325 & 327 PROJECT NO. SHEMI-92078I-04-702 DATE: 8-7-92

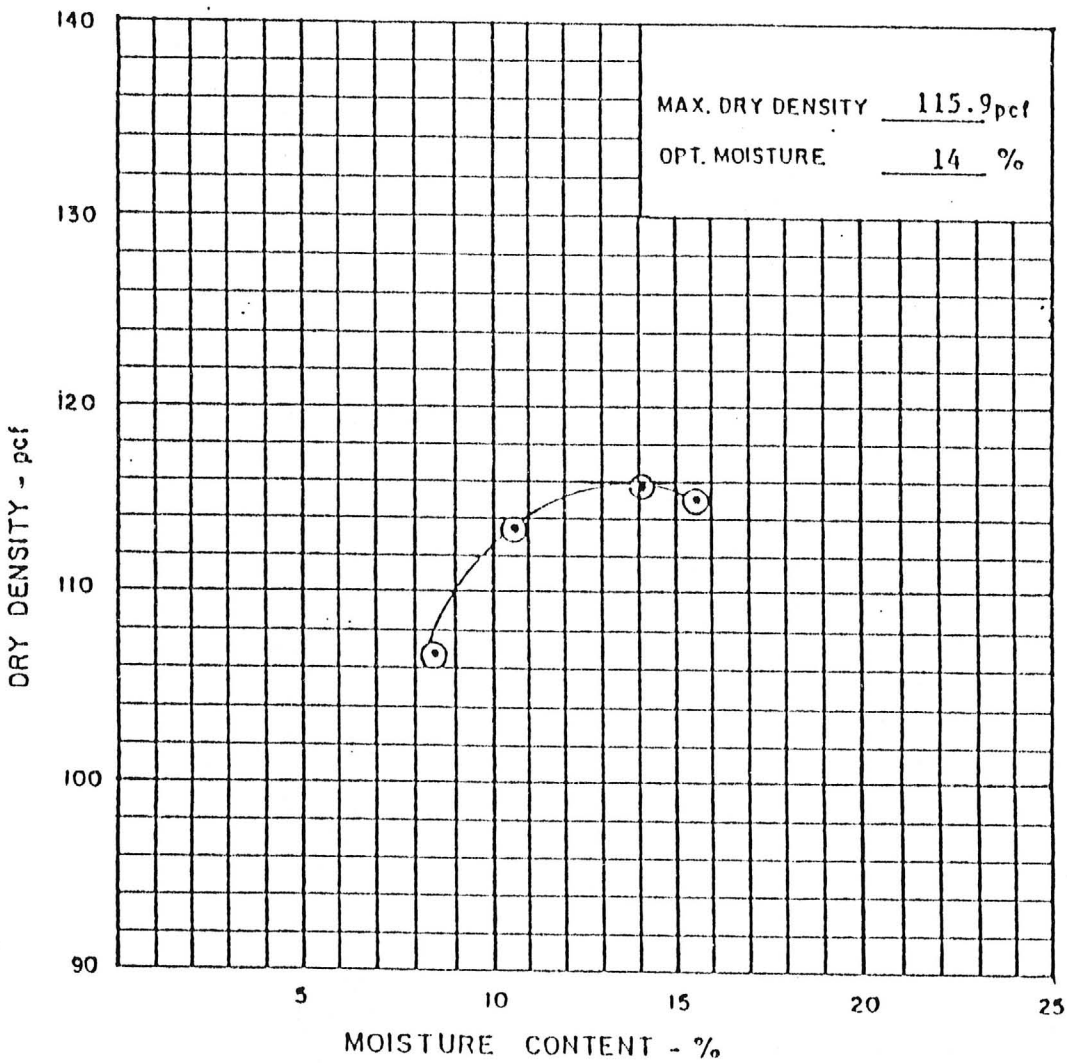
SAMPLE I.D.	NATURAL MOISTURE %	Sieve Analysis (% Passing) 3/4"	#4	#10	#40	#200	Liquid Limit	Plasticity Index	Unified Soil Class.	Soil Description
MBH-1	5.6	96	76	63	44	20.1	48	27	SC	Clayey Sand W/Gravel
MBH-4 @ 0-2'	7.3	100	93	86	73	31.4	56	33	SC	Clayey Sand
MBH-4 @ 2-3.5'	6.7	96	76	65	48	15.7		N.P.	SM	Silty Sand W/Gravel (Decomposed Schist)
MBH-4 @ 3.5-6'	3.5	81	47	29	13	2.3		N.P.	GW	Well Graded Gravel W/Sand (Decomposed Schist)

MOISTURE - DENSITY RELATIONS

Landmark LABORATORIES LTD.

PROCTOR CURVE NO. C-3

CLIENT S.M.I.	JOB NO. SHEMI-92078I-04-702
PROJECT #325 & 327	DATE TESTED 8-19-92



METHOD ASTM D 698 Method A	RAMMER (MANUAL
PREPARATION PROCEDURE (MOIST)	ORIGIN Composite Sample #3
MATERIAL MBH-1 @ 0 - 2.7'	

Falling Head Permeability @ 95% Std. Proctor & Opt. Moisture = 2.06×10^{-6} cm/sec

Note: Proctor & Permeability performed on -#4 material only

tab 13

EXHIBIT B
GROUND WATER HYDROLOGY

TABLE OF CONTENTS

1.0 INTRODUCTION

Information on groundwater in the project area has been developed from data generated during the drilling program and will be further developed during the drilling of the monitor well. In addition, there is a shaft and underground ground workings in the project which allow for a visual inspection of the underground geology and hydrology. Ground water data on local wells registered with the Arizona Department of Water Resources has also been included.

2.0 GEOLOGY

2.1 Topography

The tailings impoundment will be located in the upper reaches of a small ephemeral drainage and will be bordered to the north and east by surface water diversion channels to prevent flooding of the impoundment by the 100 year, 24 hour storm event. The impoundment is designed to hold the expected run-off from a 100 year,24 hour storm event at all times. Figures 4 (Mine Site Detail) and 12 (Drainage Layout) detail the general areas that will be contained by diversion ditches, Table 3 lists the calculated volumes of run-off expected for the contained areas.

Run-off is directly related to the soil characteristics of the area. Appendix A lists the soil classification for the site taken from backhor samples. Apendix A also lists the potential acidity of waste rock and tailing toxicity. The 24 hour precipitation event will result in 4.2 inches of rain falling in the area (Table 2). The resultant run-off, calculated with soil characteristics taken into account, is equivalent to 1.05 inches of precipitation. These run-off calculations were performed utilizing methods published by the Soil Conservation Service National Engineering Handbook as well as supplements to Technical Release No. 55, Urban Hydrology for Small Watersheds.

Table 1
Average Climatological Data

MONTH	PRECIPITATION (INCHES)	TEMPERATURE DAILY MAX.	TEMPERATURE DAILY MIN.
January	1.03	75.0	32.1
February	0.89	82.0	33.9
March	1.02	90.0	36.9
April	0.74	97.0	44.2
May	0.23	103.0	51.3
June	0.17	109.0	59.1
July	0.74	111.0	68.0
August	1.49	111.0	66.2
September	0.72	108.0	58.8
October	0.64	98.0	49.4
November	0.77	90.0	38.7
December	0.96	77.0	33.1
Annual	9.40	96.0	47.6

Total annual precipitation in the project area is 9.4 inches. The duration and recurrence interval of calculated storm events is presented in Table 2.

Table 2
Storm Events

RECURRENCE (YEARS)	6 HOUR DURATION	24 HOUR DURATION
2	1.2	1.5
10	2.0	2.5
25	2.7	3.2
50	2.9	3.6
100	3.2	4.2

Table 3
Run-off From the 100 Year, 24 Hour Precipitation Event

Maximum 100 Year Event

AREA	AREA (FT2)	PPT (IN.)	RUN-OFF (IN.)	RUN-OFF-100 YR (GAL.)
B-1	281,137	4.2	1.05	184,004
B-2	143,300	4.2	1.05	93,789
C-1	116,925	4.2	1.05	76,527
C-2	245,368	4.2	1.05	160,593
D	399,279	4.2	1.05	261,328
E	1,041,975	4.2	1.05	681,972
F	571,921	4.2	1.05	374,322

The tailing impoundment area will be protected by diversion ditches, with one set of ditches to be constructed within the tailings impoundment basin. These ditches will pass through the dam structure where cut meets fill. The purpose of this design is to drain the disturbed cut area within the basin. These ditches are designed to divert areas C-1 and B-1 as shown on Figure 12.

The second set of ditches will be placed to intersect run-off from the hillside above the disturbed cut area of the impoundment basin. This design will prevent run-off from the hillside from entering the improved area within the basin. These ditches are designed to divert areas D, E, and F. They intersect the C-1 and B-1 ditches outside of the basin at the outer section of the cut and the fill portion of the impoundment structure.

2.2 Geological Setting

The following geological description of the property has been excerpted from a report by Kenneth T. Bondurant, prepared May, 1989 for Cyprus Minerals Company.

2.2.1 Stratigraphy

Rocks in the Wallapai district are chiefly pre-Cambrian crystalline units, primarily of granitic composition, that have been intruded by late Cretaceous to early Tertiary Ithaca Peak granite. The pre-Cambrian rocks consist of fine to medium-grained amphibolite made up of hornblende and plagioclase, granite gneiss with biotite-rich lenses and bands alternating with bands of quartz and feldspar hornblende and biotite schists, granites and gnessic granites (Dings, 1951). The

Ithaca Peak granite of Dings is actually a quartz monzonite porphyry that has been dated at 71.5± 2.6 m.y. In addition to the large mass at Mineral Park, many dikes, plugs, and small bodies of this rock are found throughout the district. The youngest rocks in the district are dikes of varying composition ranging from gabbro to rhyolite and apparently younger than the Ithaca Peak granite. Several rhyolite dikes are prominently exposed in the central part of the district and are thought to be genetically related to the Tertiary volcanic remnants found around the margins of the Cerbat mountains (Dolence, 1987).

In the mine area, the mineralized veins are hosted in a complex of near-vertical granite gneiss and amphibolite schist that alternate in bands from a few to tens of feet in width. East and west of the mine the bedrock is more massive, weakly foliated, gneissic granite without amphibolite bands. Minor granite, pegmatite, aplite, rhyolite and lamprophyre dikes occur in the mine area mainly within shear and fault zones and are quite abundant in the areas drilled (Dolence, 1987). Figure 13 , included in Appendix B, is a geologic map of the surface in the mine area.

2.2.2 Faults

The dominant structure in the mine area is a wide fault zone striking about N 30°W. From surface mapping, this zone appears to extend up to 800 feet east of the main shaft where it abruptly terminates in unsheared rock and up to 1,500 feet west where it weakens gradually. This fault zone cuts the district foliation at a low angle and is reflected on the surface in shearing, brecciation, and silicification (Dolence, 1987).

Veins emplaced along this fault zone tend to pinch and swell both along strike and dip and tend to parallel smaller faults which, in places, trend 20° to 30° to the strike of the main fault zone. Recurrent movement along these faults has sheared many of the veins and in the central part of the drilled area, post-mineral movement along a west-dipping fault appears to have offset the veins and dikes some tens of feet in a downdip direction (Dolence, 1987). Figure 14 is a typical geologic cross section through the center of the deposit and shows the stratigraphic and structural relationships as well as the mineralization encountered.

2.2.3 Alteration

Throughout the district, alteration is generally confined to the structures hosting the veins, except in the Ithaca Peak Mine area where the entire intrusion is extensively altered. In the Golden Eagle mine area, the amphibolite schists nearest the veins are altered to clay, sericite, and chlorite. Lewis (1962) notes that "the known alteration zone extends 40 feet east and 40 feet west of the shaft and trends north-northwest." Logs of drill holes almost always note the presence of weak to strong clay alteration in all zones containing mineralization.

2.2.4 Mineralization

Dings (1951) classifies the vein deposits of the district as mesothermal and places their age as younger than the dikes due to their cross-cutting relationships. He also believes the source of the vein-forming solutions to be the magnetic reservoir of the Ithaca Peak granite stock. Primary vein minerals consists mostly of sphalerite, galena, and pyrite with lesser arsenopyrite and chalcopyrite in a gangue of limonite, quartz, carbonate and clay. Common supergene vein

minerals are anglesite, cerrusite, cerargyrite, and native silver and gold. Veins are usually oxidized to depths of 75 to 200 feet but, locally, pyrite is maybe found below 75 feet and essentially all of the oxidized portions of the known deposits have been exhausted.

According to Dings (1951), the paragenesis of the principal primary mineralization is quartz, pyrite, arsenopyrite, sphalerite, galena, and chalcopyrite. Much of the ore he examined showed a second generation of pyrite following galena and the introduction of quartz intermittently throughout the period of mineralization. "Valuable constituents" of the veins were probably deposited after a reopening of the veins subsequent to the initial deposition of quartz and pyrite (Dings, 1951).

Most of the gold and silver encountered in the Golden Eagle drilling appears to be associated with primary sulfide minerals in the veins and mineralized zones. No secondary ore minerals have been identified, but there could be minor areas of secondary enrichment at the tops of blind, unmined ore shoots, the primary portions of which were penetrated in the drilling. A minor portion of the ore is weakly to highly oxidized and consists of mixed iron oxides and sulfides.

Sulfides associated with the gold and silver values in the drill hole intercepts are pyrite, galena, arsenopyrite, and chalcopyrite. The drill logs give an estimate of the percent of pyrite and gray sulfides present by 5 foot sample interval and there does not appear to be a one-to-one relationship between sulfides and gold or silver values. Most of the holes encountered either separate quartz veins or portions of veins with trace to as high as 10 percent estimated total sulfides, some with no appreciable gold or silver values. On the other hand, all gold and silver values seem to be associated with sulfides to some degree, possible evidence of the multiple phases of mineralization noted by Dings.

Drilling in 1988 established the presence of gold and silver mineralization exceeding a 0.02 opt gold cutoff in veins and vein zones from 2 to 100 feet wide extending from about 400 feet south of the Golden Eagle shaft to a point some 250 feet north of the shaft along the trend mined in the past. Essentially barren holes at both ends of this trend indicate that while the structure persists, the veining and precious metals content is practically nil. The mineralized zone immediately north and south of the main shaft is composed of unmined portions of the veins above and below the old workings.

3.0 SURFACE WATER AND WATER QUALITY

The climate of the Golden Eagle Minesite is unique in that the average evaporation rate exceeds the average precipitation rate. Under these conditions no perennial water bodies exist on or near the property boundary. The location of the facility is in the upper reaches of a small ephemeral drainage, thus the only surface water present will be run-off from major storm events which will be diverted around the facility and back to natural drainages.

A series of drill holes were placed in the approximate location of the facility and the results are listed in Table 4, Depth to Ground Water.

TABLE 4 DEPTH TO GROUNDWATER					
Drill Hole No.	Total True Depth		Water Level		Description
	Feet	Elevation	Depth	Elevation	
E-1	172	4098			Dry
E-2	114	4136			Dry
E-3	194	4076	121	4149	Wet, not making water
E-4	123	4127			Dry
E-5	263	3947	169	4041	Wet not making water
E-6	208	4052	177	4083	Wet not making water

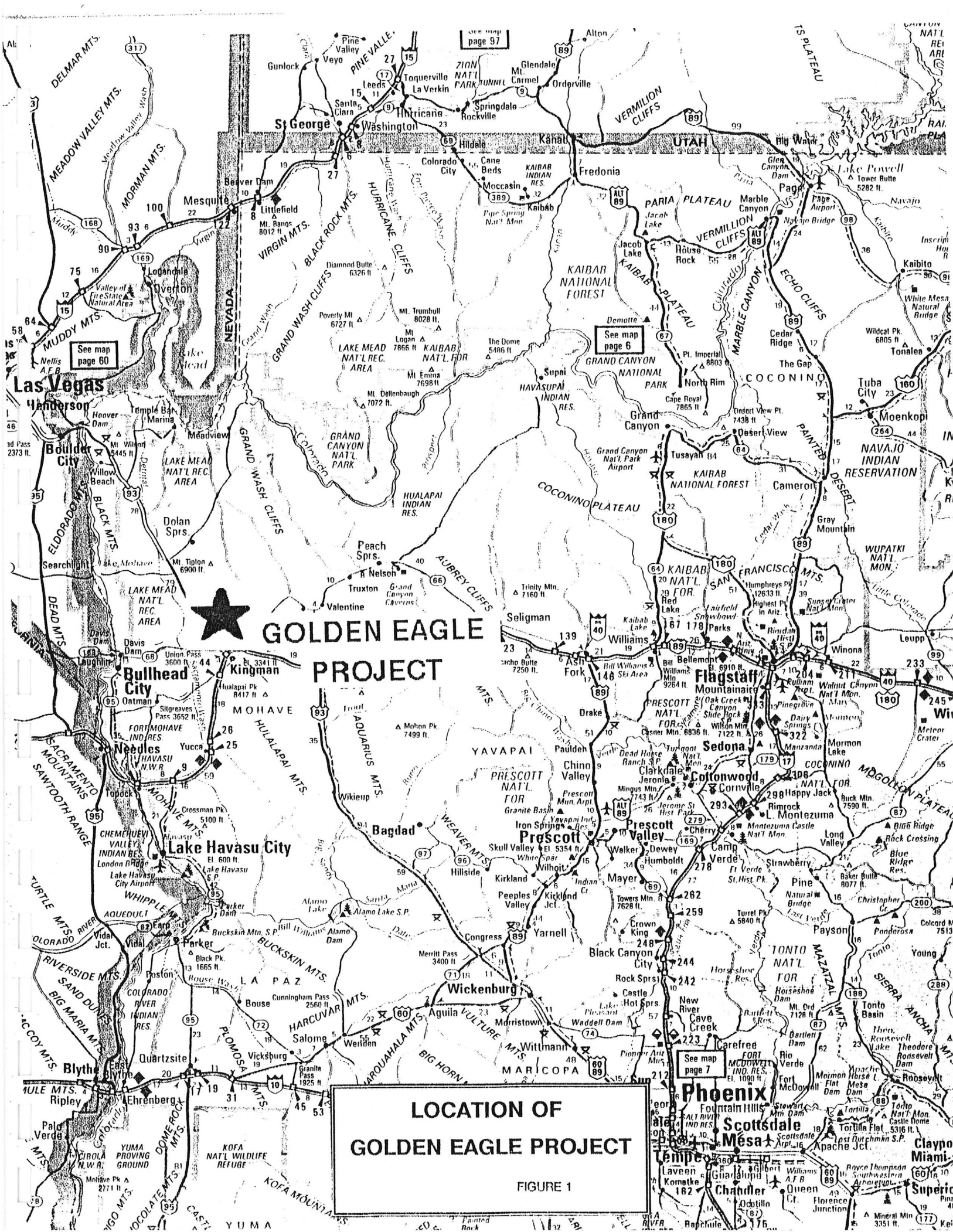
Noting Table 4, ground water data was unavailable to attain, standing water was not found on the property at the depths drilled.

4.0 DISCHARGE IMPACT AREA

The proposed Golden Eagle Facility is designed as a zero discharge facility. The tailings impoundment area will be fitted with a synthetic HDPE liner and water reclaim system and any process solutions not required for the tailings will be recycled back to the plant. For further detail about the tailings review Exhibit A, Tailings Design Plan.

A monitor well, designated MW1 (See Figure 4), along with a proposed monitoring program (Attachment 10) will complete the requirements for the Point of Compliance.

APPENDIX B
FIGURES



LOCATION OF GOLDEN EAGLE PROJECT

FIGURE 1

GOLDEN EAGLE

ACCESS ROUTE

GOLDEN EAGLE PROJECT AREA

FIGURE 2

R-18-W

R-17-W

SECTION 36

SECTION 31

TAILING SAND

EXISTING ROAD

HAUL ROAD (NEW CONSTRUCTION WITHIN SECTION 36)

EXISTING ROAD

BIG BOY MINE

4000

4200

4400

4600

PROJECT BOUNDARY

TOPSOIL STOCKPILE

RELOCATED ACCESS ROAD

EXCAVATED AREA

N 0+00

N 0+200

TS 0+00

N 0+400

TS 0+200

N 0+500

UNDERDRAIN COLLECTION PIPELINE

LINED TAILING IMPOUNDMENT TS 0+400

TAILING PIPELINE

TOPSOIL STOCKPILE

RECLAIM WATER TANK

MW1

RELOCATED ACCESS ROAD

RECYCLE WATER PIPE

PLANT SITE

S 0+00

S 2+000

S 1+500

0+500

0+500

WASTE HAUL ROAD

0+00

LOWEST DAYLIGHT

4931

S 1+000

OPEN PIT MINE

S 0+500

S 0+00

36 31

1 6

T-23-N

T-22-N

4000

4400

Figure 3
General Site Layout

NO.	REVISIONS	BY	APP'D
A	ADDED EXCAVATED AREA	DJG	TR

MORGAN MINING
GOLDEN EAGLE PROJECT

GENERAL SITE LAYOUT

LYNTEK INC.
775 MARIPOSA DENVER, CO. 80204
PH. (303)-623-8365
FAX (303) 623-0342

NO.	DWG. NO.	DRAWING TITLE
		REFERENCE DRAWINGS

DO NOT SCALE DRAWING | DWG. SIZE B

CAD-OP	LYNTEK	931001.0930
CKD.	–	
APP'D	–	DRAWING NO. / REV.
DATE	11-11-92	9238-400 / A
SCALE	1"=500'	

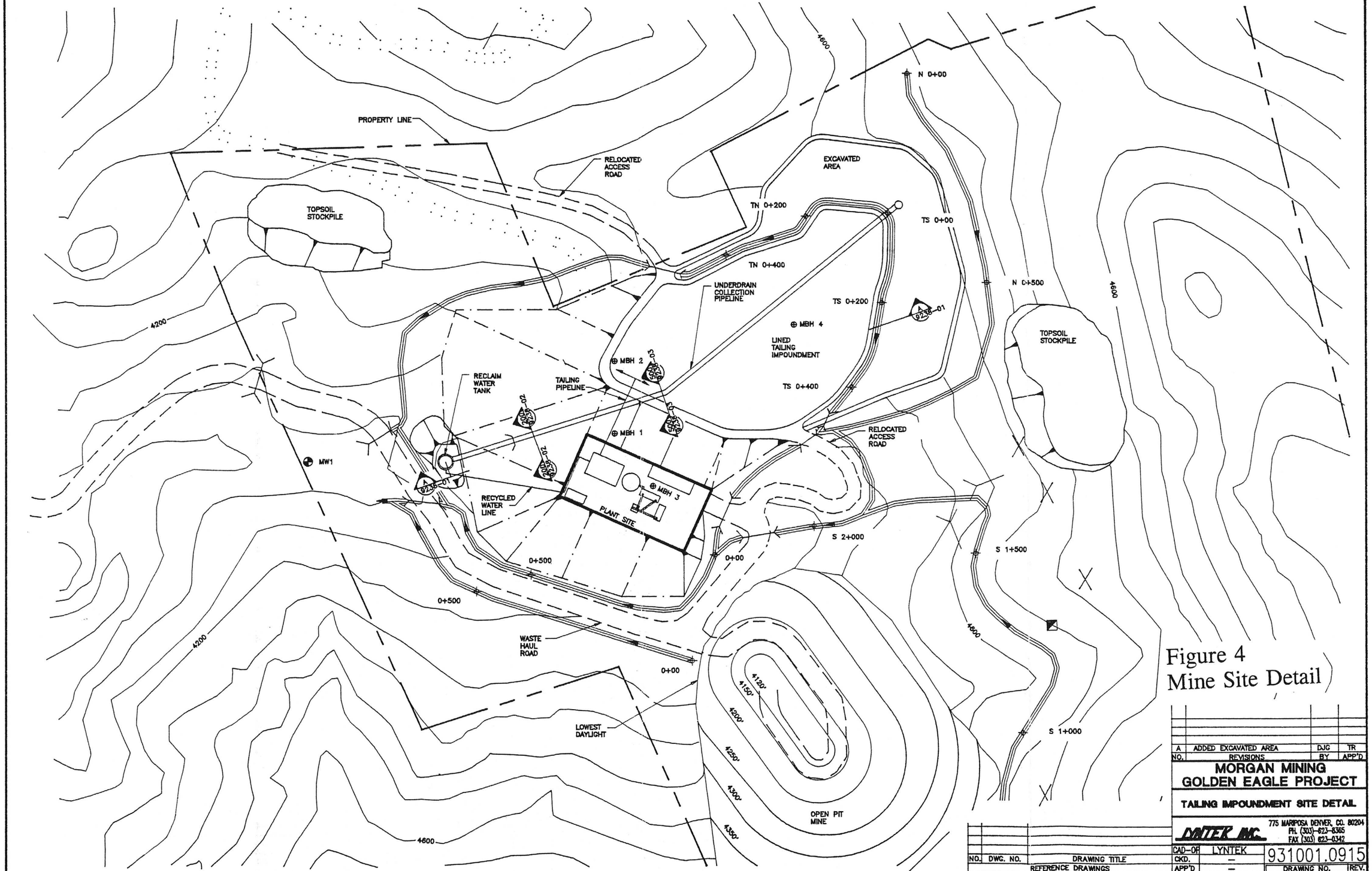


Figure 4
Mine Site Detail

NO.	REVISIONS	BY	APP'D
A	ADDED EXCAVATED AREA	DJG	TR

MORGAN MINING
GOLDEN EAGLE PROJECT

TAILING IMPOUNDMENT SITE DETAIL

LYNTEK INC.
775 MARIPOSA DENVER, CO. 80204
PH. (303)-623-8365
FAX (303) 623-0342

NO.	DWG. NO.	DRAWING TITLE
		REFERENCE DRAWINGS

DO NOT SCALE DRAWING | DWG. SIZE B

CAD-OP	LYNTEK
CKD.	–
APP'D	–
DATE	11-16-92
SCALE	1"=200'

931001.0915

DRAWING NO. 9238-405 REV. A

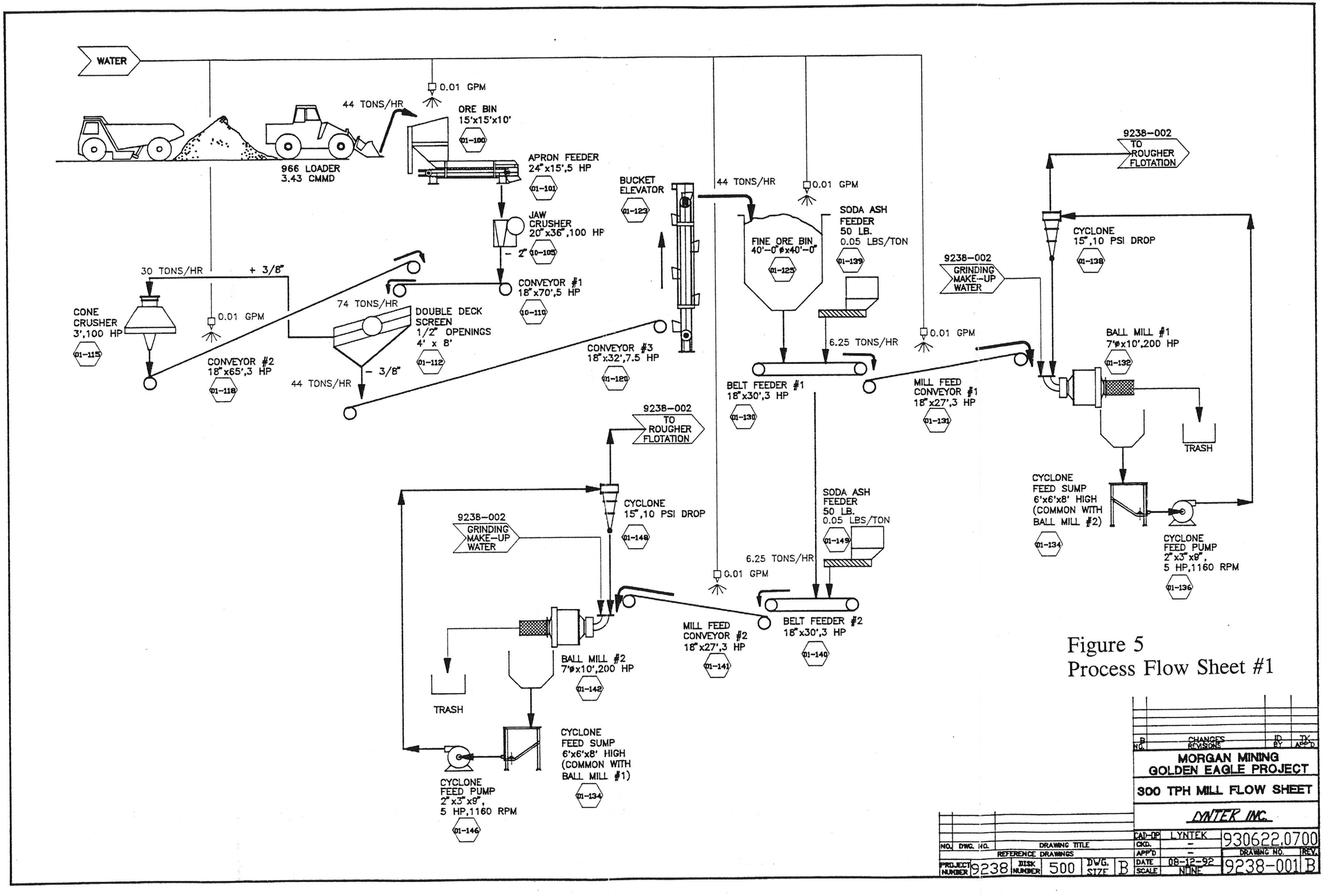


Figure 5
Process Flow Sheet #1

NO.	CHANGES REVISIONS	ID BY	CK APP'D

MORGAN MINING
GOLDEN EAGLE PROJECT

300 TPH MILL FLOW SHEET

LYNTER INC.

NO.	DWG. NO.	DRAWING TITLE
		REFERENCE DRAWINGS

PROJECT NUMBER	9238	DISK NUMBER	500	DWG. SIZE	B	SCALE	NONE

CAD-OP	LYNTEK	930622.0700
CKD.	–	DRAWING NO. REV.
APP'D	–	
DATE	08-12-92	9238-001 B

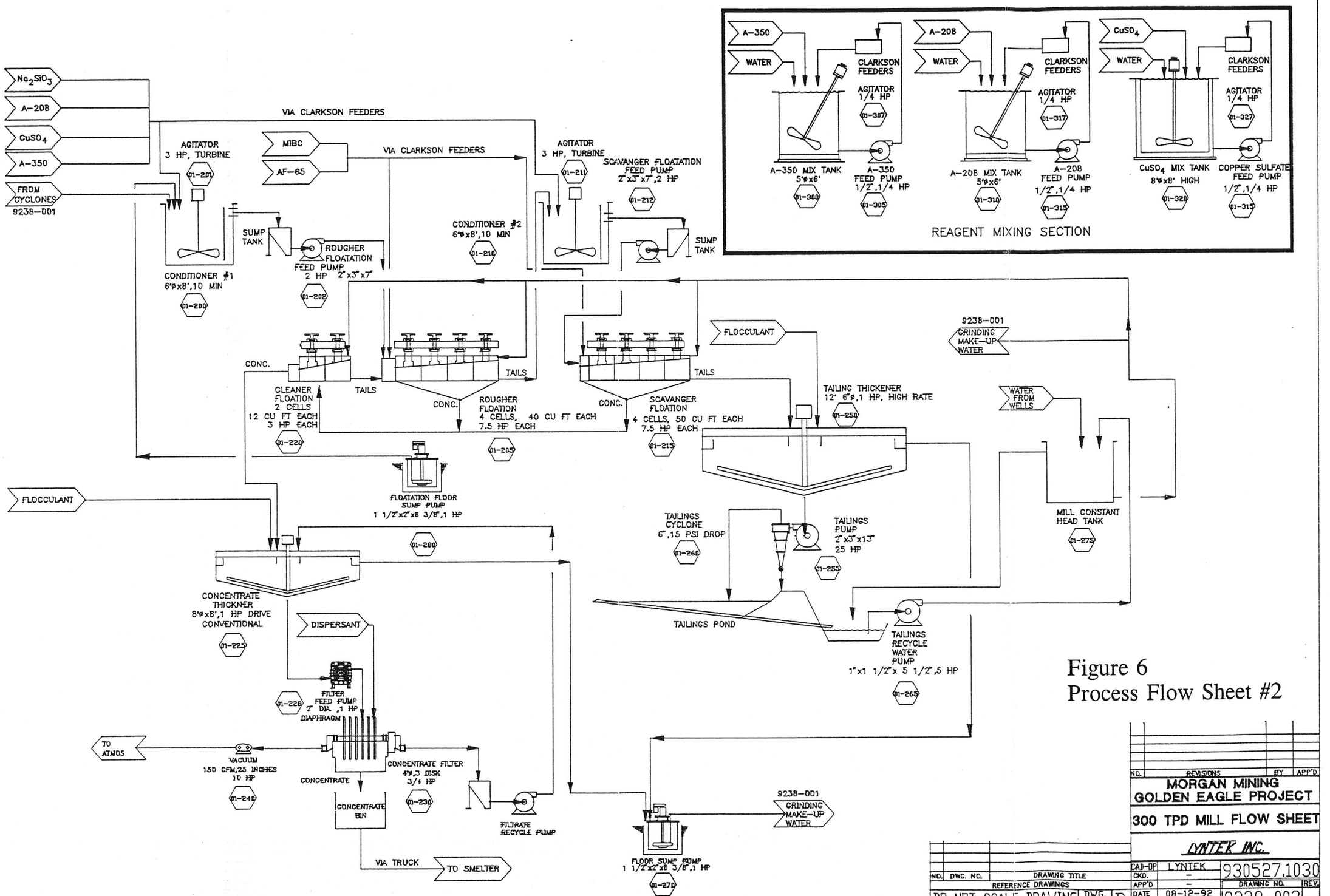


Figure 6
Process Flow Sheet #2

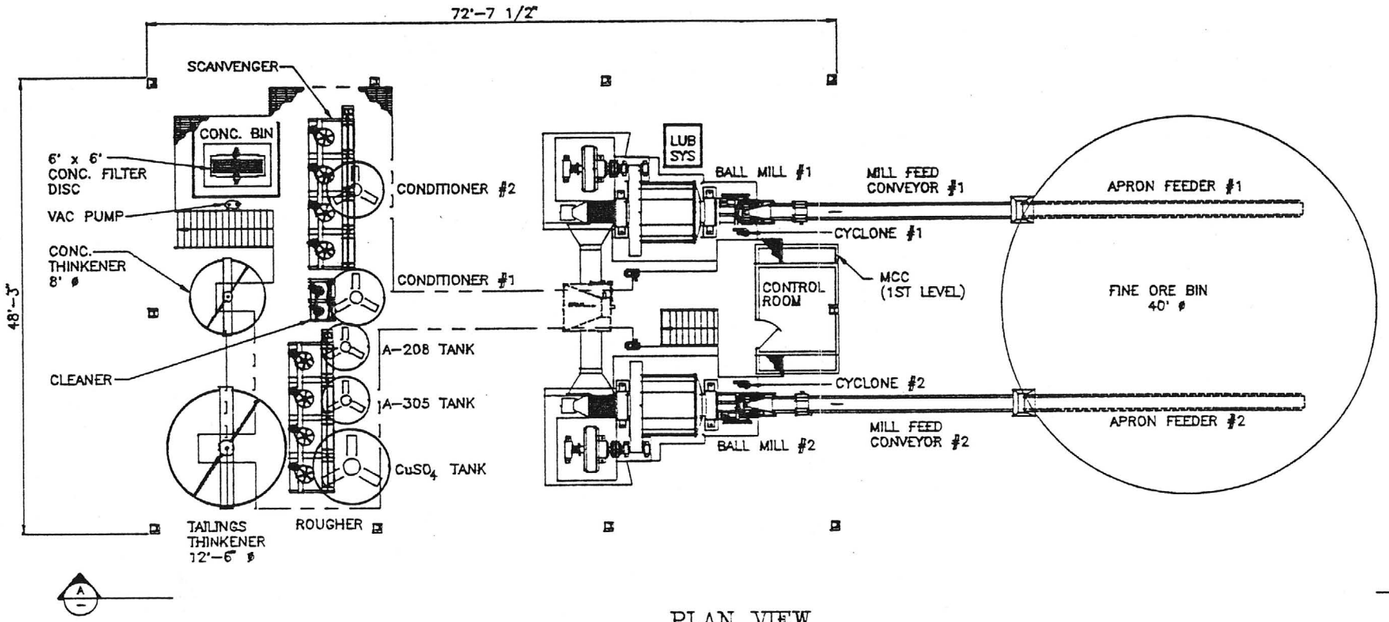
NO.	REVISIONS	BY	APP'D

MORGAN MINING
GOLDEN EAGLE PROJECT
300 TPD MILL FLOW SHEET
LYNTEK INC.

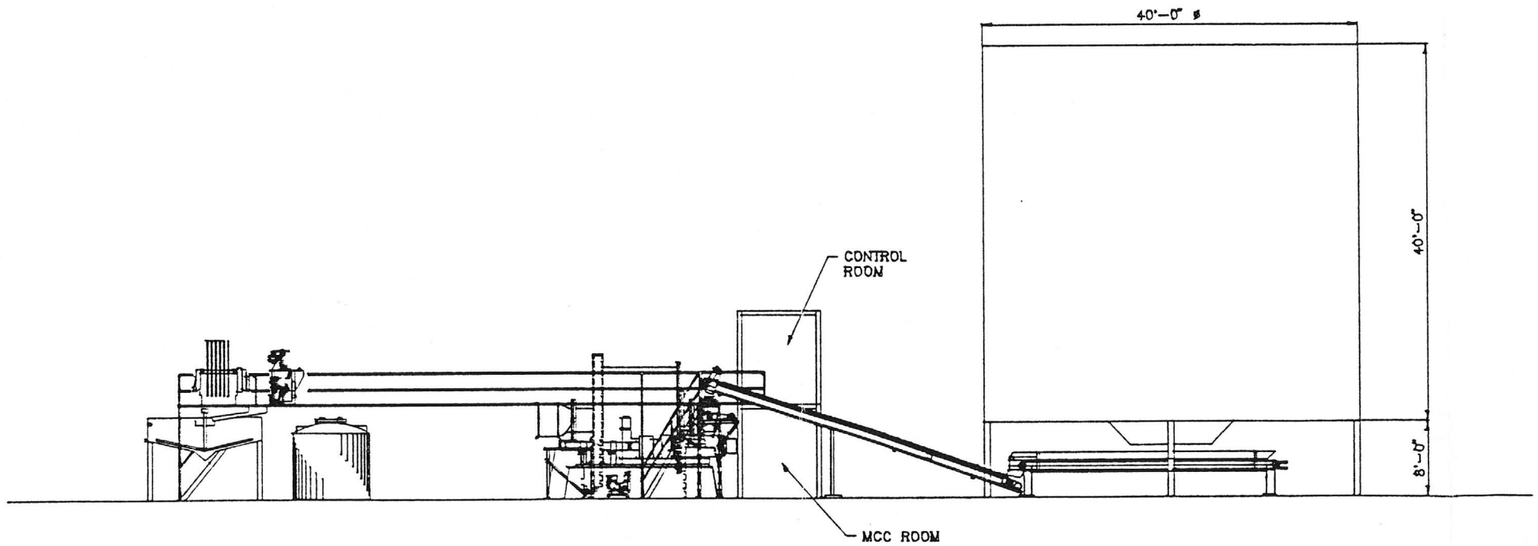
NO.	DWG. NO.	DRAWING TITLE
		REFERENCE DRAWINGS

DO NOT SCALE DRAWING | DWG. SIZE B

CAD-DP	LYNTEK	930527.1030	
CKD.	–		
APP'D	–	DRAWING NO.	REV.
DATE	08-12-92	9238-002	–
SCALE	NONE		



PLAN VIEW
SCALE: 1/16"=1'-0"



SECTION
SCALE: 1/16"=1'-0"

Figure 7
General Arrangement

NO.	REVISIONS	BY	APP'D

MORGAN MINING
GOLDEN EAGLE PROJECT

MILL BUILDING G.A.

LYNTEK INC.

NO.	DWG. NO.	DRAWING TITLE
		REFERENCE DRAWINGS
		DO NOT SCALE DRAWING

DWG. SIZE B

CAD-DP	LYNTEK
CKD.	–
APP'D	–
DATE	11-24-92
SCALE	1/16"=1'-0"

930527.1100
DRAWING NO. 9238-003 REV. –

FIGURE 7
TAILING SECTION - A

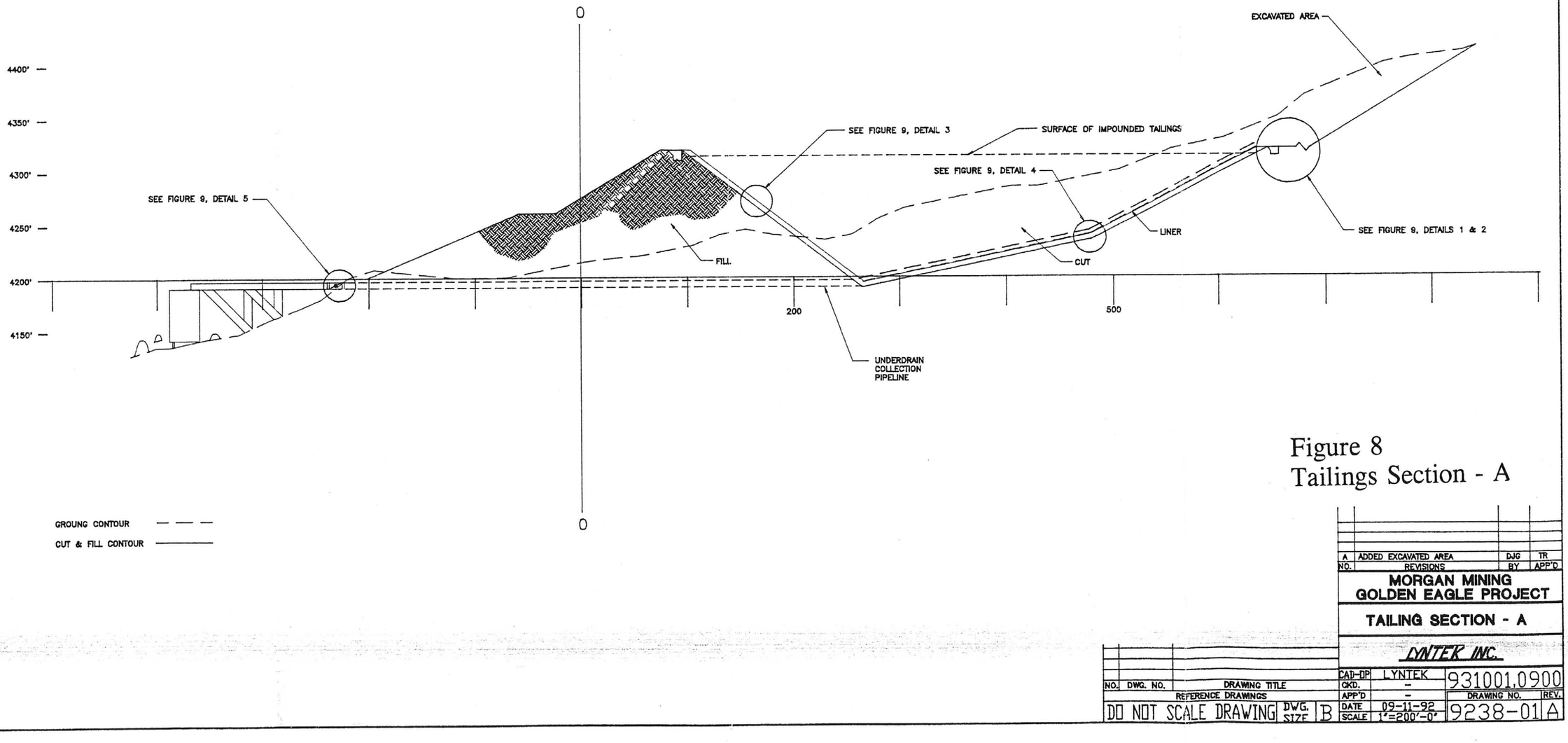


Figure 8
Tailings Section - A

NO.	REVISIONS	BY	APP'D
A	ADDED EXCAVATED AREA	DJG	TR

MORGAN MINING
GOLDEN EAGLE PROJECT

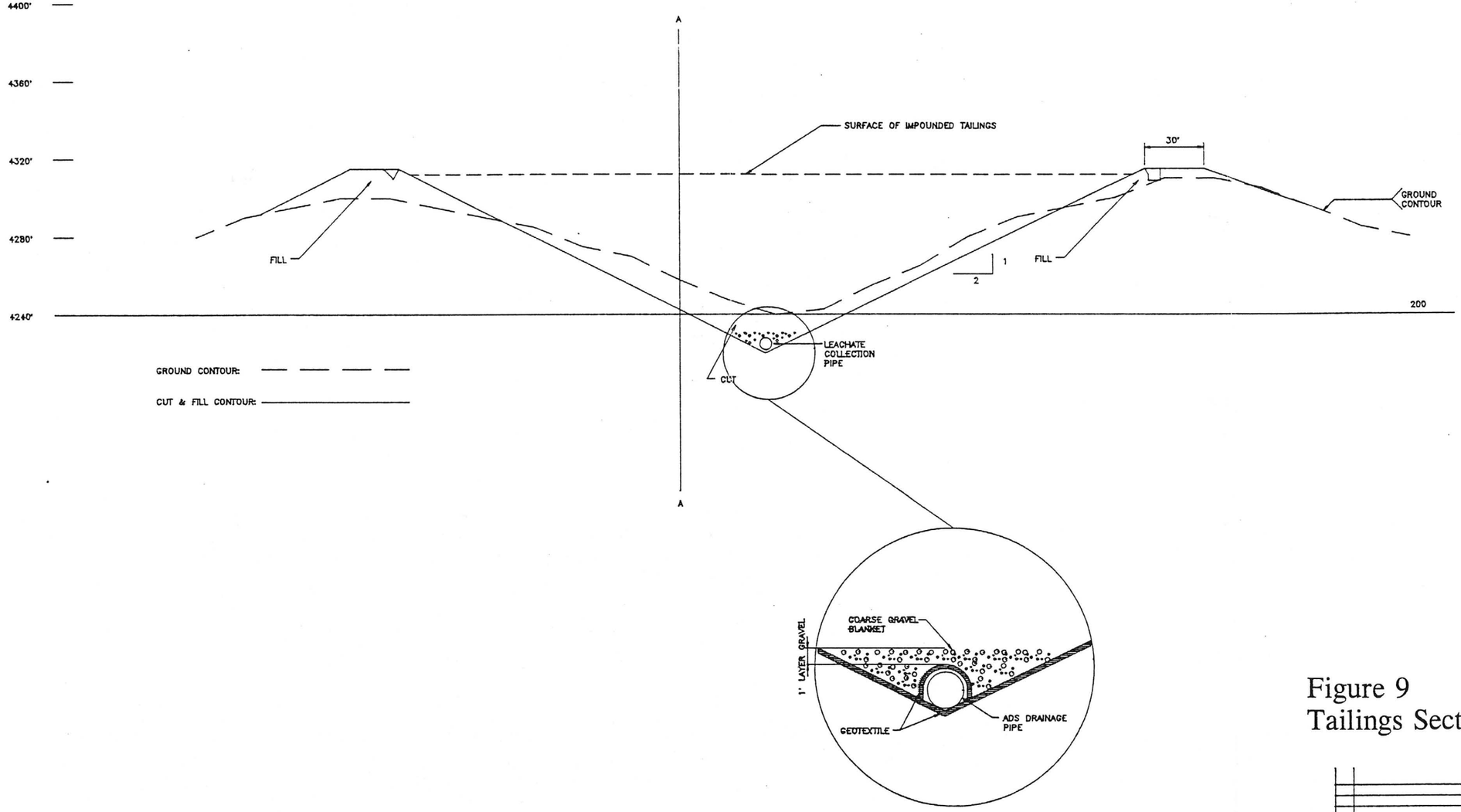
TAILING SECTION - A

LYNTEK INC.

NO.	DWG. NO.	DRAWING TITLE
		REFERENCE DRAWINGS

DO NOT SCALE DRAWING | DWG. SIZE B

CAD-DP	LYNTEK	931001.0900	
CKD.	–		
APP'D	–	DRAWING NO.	REV.
DATE	09-11-92	9238-01	A
SCALE	1"=200'-0"		



DETAIL 8

Figure 9
Tailings Section - 200

NO.	REVISIONS	BY	APP'D

MORGAN MINING
GOLDEN EAGLE PROJECT

TAILING SECTION 200

LYNTEK INC.

NO.	DWG. NO.	DRAWING TITLE
		REFERENCE DRAWINGS

DO NOT SCALE DRAWING | DWG. SIZE | B

CAD-OP	LYNTEK	930527.1200
CKD.	-	
APP'D	-	DRAWING NO. / REV.
DATE	09-11-92	9238-02 / -
SCALE	1"=60'	

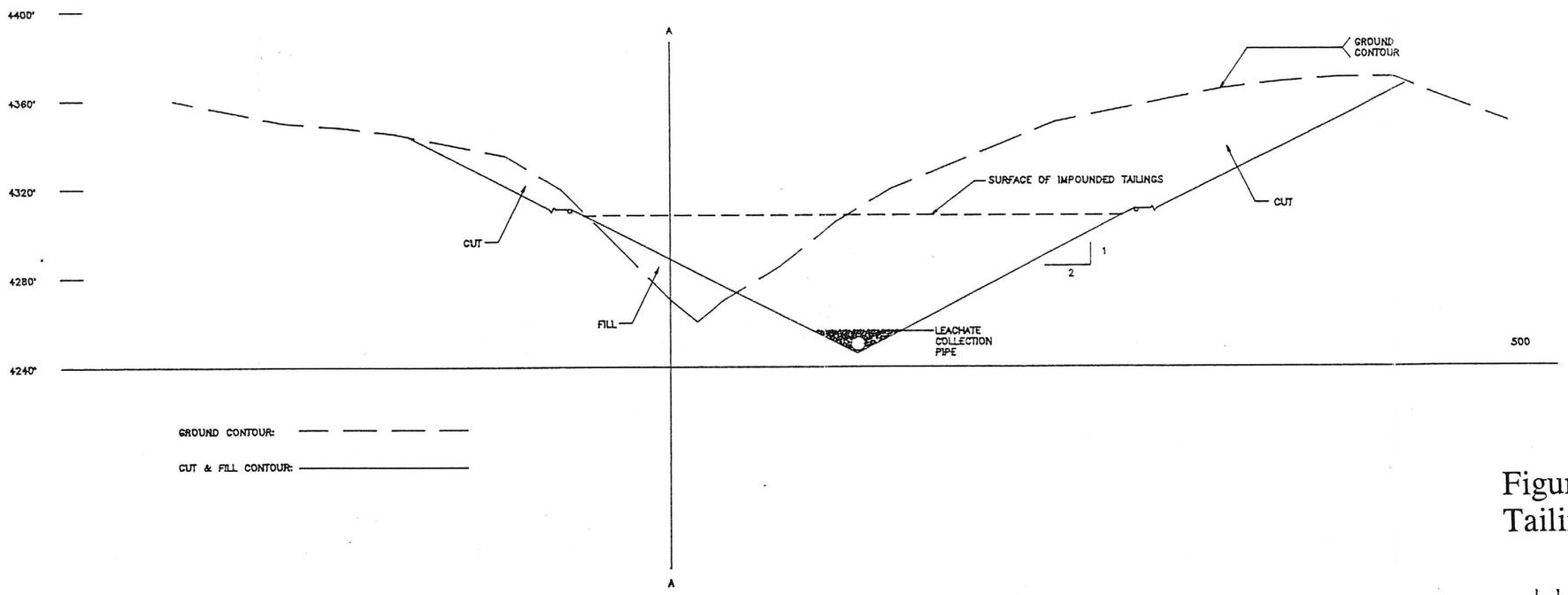


Figure 10
Tailings Section - 500

NO.	REVISIONS	BY	APP'D

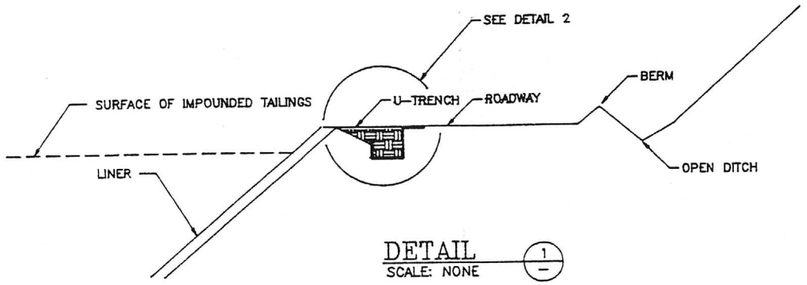
MORGAN MINING
GOLDEN EAGLE PROJECT

TAILING SECTION 500

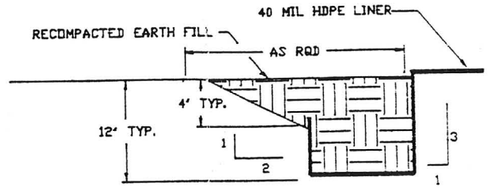
LYNTEK INC.

NO.	DWG. NO.	DRAWING TITLE			
		REFERENCE DRAWINGS			
DO NOT SCALE DRAWING			DWG. SIZE	B	

CAD-DP	LYNTEK	930527.1215	
CK'D.	–		
APP'D	–	DRAWING NO.	REV.
DATE	09-11-92	9238-03	–
SCALE	1"=60'		

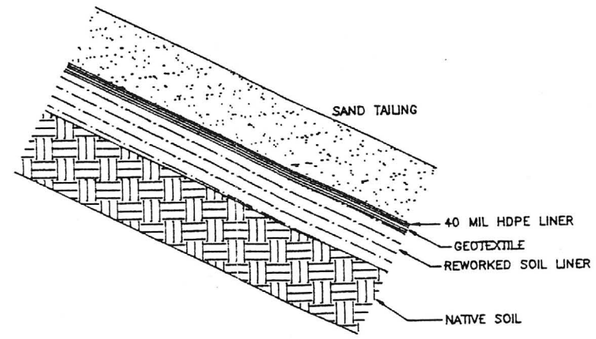


DETAIL 1
SCALE: NONE



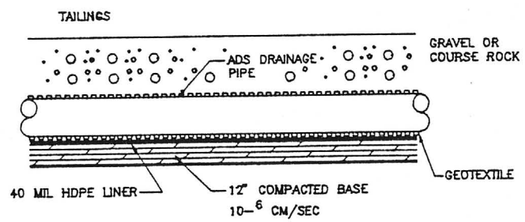
Liner U-Trench

DETAIL 2
SCALE: NONE

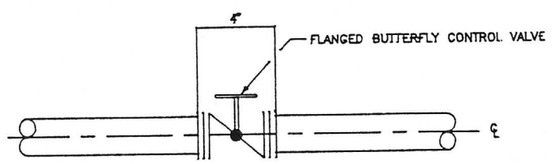


DETAIL 3
SCALE: NONE

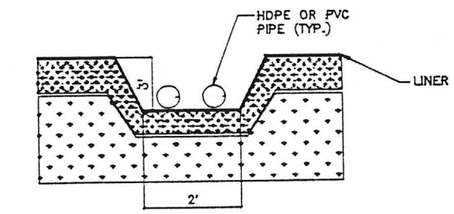
Figure 11
Details Tailings Impoundment



DETAIL 4
SCALE: NONE

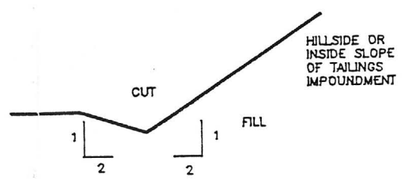


DETAIL 5
SCALE: NONE



PIPING TRENCH
CONTAINING LEACHATE COLLECTION OR MAIN TAILINGS LINE FROM PROCESS PLANT TO IMPOUNDMENT

DETAIL 6
SCALE: NONE



DETAIL 7
SCALE: NONE

NO.	REVISIONS	BY	APP'D

MORGAN MINING
GOLDEN EAGLE PROJECT
DETAILS
TAILINGS IMPOUNDMENT

LYNTER INC.

NO.	DWG. NO.	DRAWING TITLE			
		REFERENCE DRAWINGS			
DO NOT SCALE DRAWING		DWG. SIZE	B		

CAD-DP	LYNTEK	930527.1230	
CK'D.	-		
APP'D	-	DRAWING NO.	REV.
DATE	09-11-92	9238-04	-
SCALE	NONE		

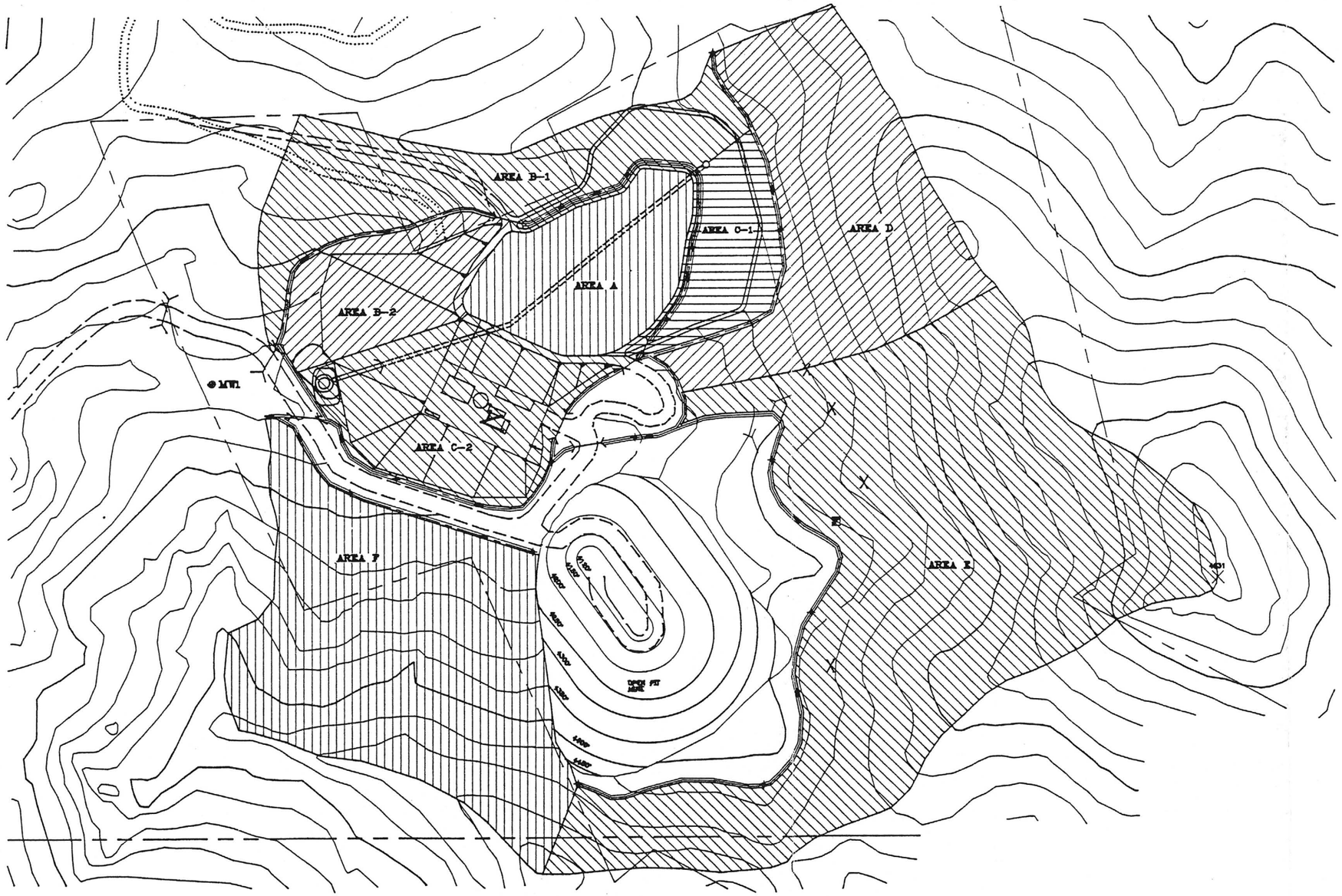


Figure 12
Drainage Layout

NO.	REVISIONS	BY	APP'D

MORGAN MINING
GOLDEN EAGLE PROJECT

DRAINAGE LAYOUT

LYNTEK INC.
775 MARIPOSA DENVER, CO 80204
(303) 623-2365
FAX (303) 623-0382

NO.	DWG. NO.	DRAWING TITLE
		REFERENCE DRAWINGS
		DO NOT SCALE DRAWING

CAD-OP	LYNTEK	930527.1300	
CKD.			
APP'D			
DATE	11-09-92	DRAWING NO.	REV.
SCALE	1"=300'	9238-403	—

DWG. SIZE: B

GOLDEN EAGLE MINE
MOHAVE CO., ARIZONA

GEOLOGIC OUTCROP MAP

- RHY — Small intrusives (dikes, sills)
- DB, GAB — Rhyolite, Diabase, Gabbro
- LA — Latite, Andesite
- LA — Locally porphyritic
- AND — Usually without shear cleavage (or S_3)
- GR — Granite, Granite Gneiss, Pegmatite
- GN — Gneiss has well developed cleavage, usually S_2 (or $S_1 = S_2$) cleavage and foliation not conforming with later S_3 (shear cleavage)
- PEG — Locally GN almost parallel to S_2 cleavage and foliation not conforming with later S_3 (shear cleavage)
- SCH — Amphibolite Schist, banded iron Fm.
- B/F — GN (metased, quartzite, usually S_1 (bedding) = S_2 foliation, early cleavage) B/F is mostly goethite-quartz, minor hematite.
- GN-META SED — Some GN earlier, conformable with SCH some GN later, truncates SCH, not differentiated in mapping
- QTZ VN — Approximate outline of underground ore reserves (projected to surface)

FIGURE 14
SURFACE GEOLOGY MAP

Figure 3

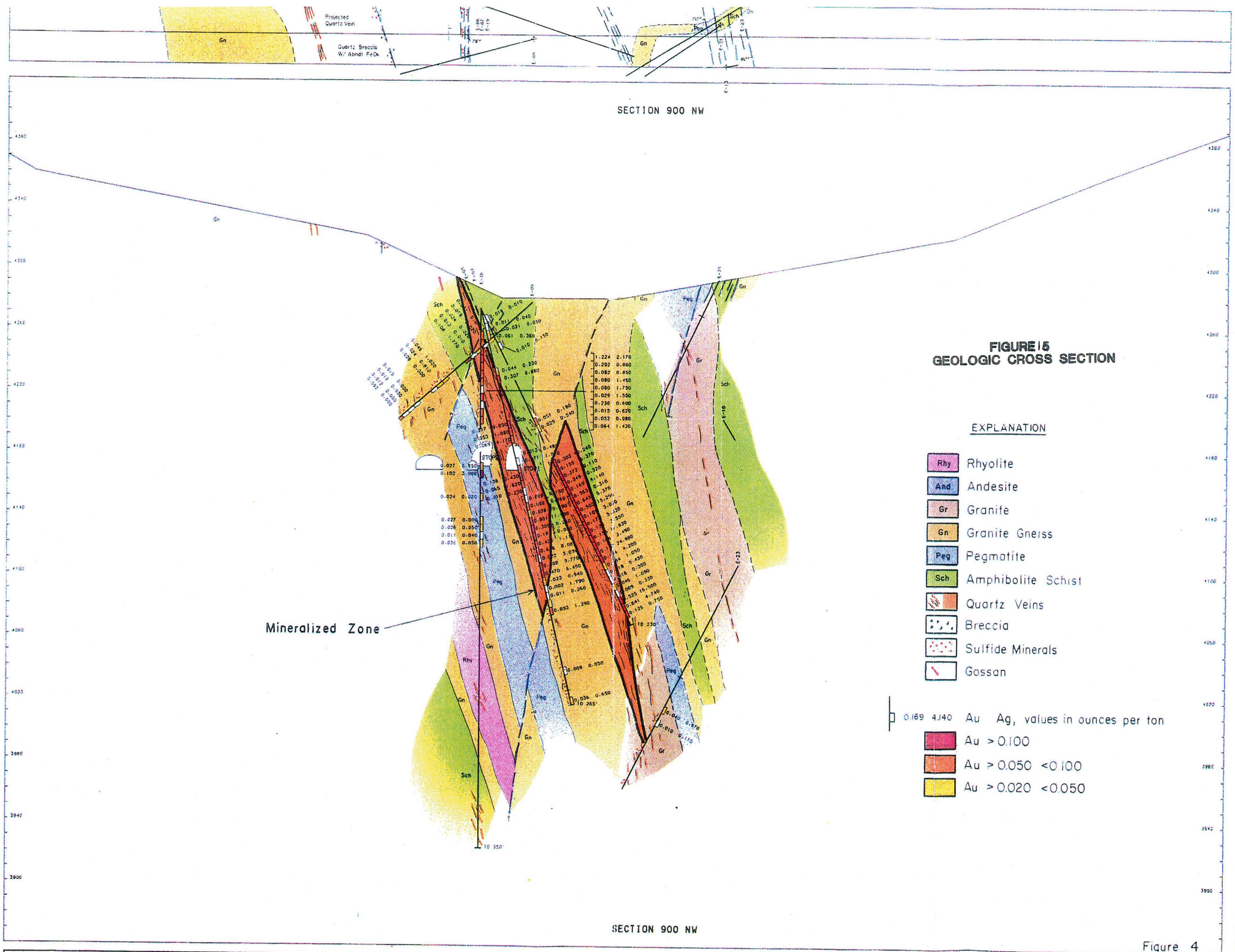


Figure 4

CYPRUS MINERALS COMPANY
CYPRUS GOLD DIVISION
ENGLEWOOD, COLORADO

GOLDEN EAGLE
MOHAVE COUNTY, ARIZONA