TASK ENGINEERING MANAGEMENT INC.

PO BOX 660548
BIRMINGHAM, ALABAMA 35266
(205) 978-5070

October 10, 2018

Mr. Stephen D. Miles, P.E.
Alabama Surface Mining Commission
P.O. Box 2390
Jasper, Alabama 35502-2390

Re: Cedar Lakes Mining, Inc.
Bull Gap Mine - P-3960
Sediment Basin 002

Dear Mr. Miles:

I hereby certify the enclosed modification plans for Sediment Basin 002 for the above referenced mine are in accordance with the regulations of the Alabama Surface Mining Commission as adopted by Act 81-435 of December 18, 1981 and as amended to date and that the information used in the enclosed basin design plans is true and correct to the best of my knowledge and belief.

If you have any questions or need additional information, please do not hesitate to call us at (205) 978-5070 or email us at jw-task@charter.net.

Sincerely,

Jerry W. Williams, P.E.
Alabama Reg. No. 12739

HYDROLOGY STUDY
FOR
CEDAR LAKE MINING, INC.

BULL GAP MINE, P-3960
BLOUNT COUNTY, ALABAMA

DETAILED DESIGN PLANS

SEDIMENT BASIN 002
ATTACHMENT III-B-2(a)

DIVERSIONS 1-4, 2-1 & 2-2
ATTACHMENT III-B-3

Submitted by:

TASK Engineering Management Inc.

P. O. Box 660548
Birmingham, Alabama 35266
Telephone: (205) 978-5070
Email: jw-task@charter.net

CONTENTS

INTRODUCTION

SEDIMENT BASIN 002, DIVERSIONS 1-4, 2-1 & 2-2

Based on the mining plan approved by the Regulatory Authority, each proposed sediment basin has one (1) or more associated diversions that will convey drainage to the said basin from designated spoil depository areas in existing abandoned un-reclaimed pit areas that were mined pre-law or from the spoil areas of active mining operations.

Sediment Basin 002 and Diversions 1-4, 2-1 and 2-2 will be constructed and utilized to process drainage from mining Increments No. 1 and No. 2. Diversion 2-1 is located in mining Increment No. 2 and is a continuation of Diversion 1-4 and Diversion 2-2 conveys drainage generally due west from mining areas of Increment No. 2 to Basin 002.

Initial mining operations conducted in Increment No. 1 will spoil overburden material to the south into the existing abandoned surface mine pit. As the pit area is filled with overburden from operations and the elevation of spoils approach the top of the existing abandoned spoil piles, Diversion 1-4 will be constructed to collect and covey mine drainage due east, into an existing stream channel and eventually into Basin 002 (See attached Typical Diversion Ditch w/ Containment Berm Detail.) The existing open pit now drains naturally along this same drainage route. As spoil is deposited in the open pit area and reaches critical elevation, Diversion 1-4 will be constructed and stabilized in five hundred (500') foot intervals. Drainage from the end of any diversion ditch section can flow naturally into the pit area and hence into the existing stream channel and finally into Basin 002. At the boundary of Increment No. 1, Diversion 1-4 will flow into the pit area of Increment No. 2 until mining operations commence in the increment and the corresponding diversion constructed as previously discussed.

Diversions 2-1 and 2-2 will be constructed only during mining operations of Increment No. 2.

PART 1

HYDROLOGY STUDY

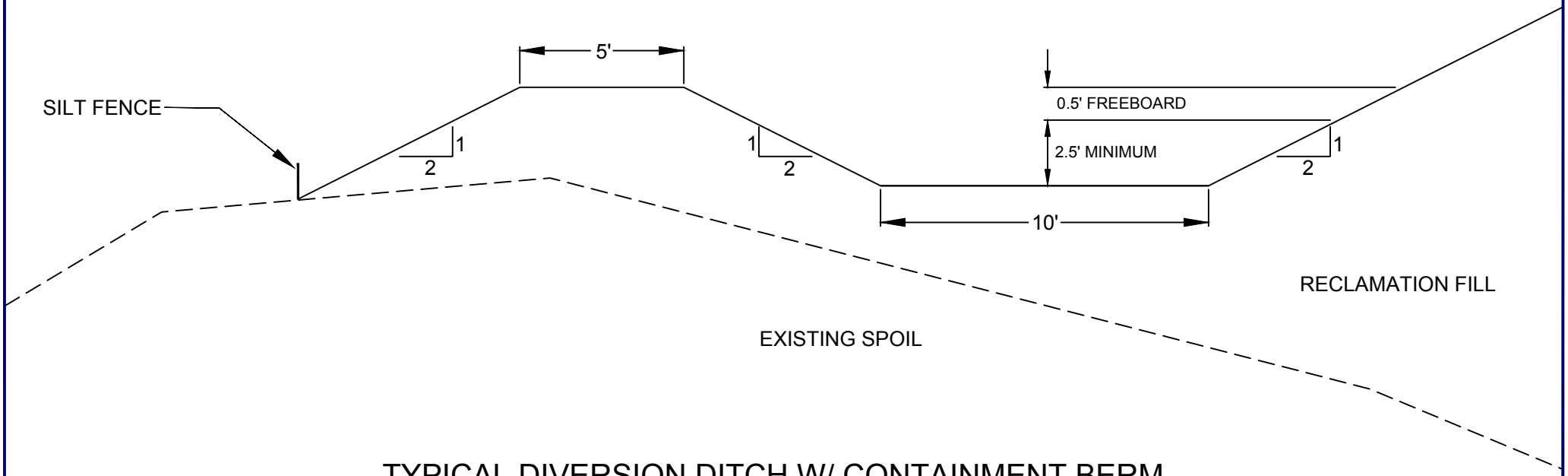
FOR

CEDAR LAKE MINING, INC.
BULL GAP MINE, P-3960
BLOUNT COUNTY, ALABAMA

DETAILED DESIGN PLANS
SEDIMENT BASIN 002

Submitted by:

TASK Engineering Management Inc.
P. O. Box 660548
Birmingham, Alabama 35266
Telephone: (205) 978-5070
Email: jw-task@charter.net



TYPICAL DIVERSION DITCH W/ CONTAINMENT BERM
FLAT BOTTOM 10' WIDTH

CHANNEL LINING TO CONSIST OF A MIXTURE OF FESCUE AND BERMUDA GRASS
NO SCALE

TASK EMI
CONSULTING ENGINEERS
P.O. BOX 660548
BIRMINGHAM, ALABAMA 35266
(205)978-5070

GENERAL NOTES:

Once initial construction begins on the basin, it will be constructed and certified to the Regulatory Authority within 90 days unless an extension is approved by the Director.

Basin 002 is a semi-incised impoundment and was built under P-3711 (Altoona Mine) and designated as Basin 001. The original basin capacity was 9.18 ac-ft at the spillway elevation of 975', 5.60 ac-ft was designated as sediment storage and 3.58 ac-ft as detention storage. Basin design called for a concrete spillway equipped with a broad-crested weir structure at the normal pool elevation of 975'. On September 14, 1998, the basin was designated as a permanent water impoundment by the Regulatory Authority. At that time, annual basin certifications dated 5/16/94 and 2/4/97 both indicated an existing storage capacity of 8.00 ac-ft. Due to damage of the spillway structure, it was rebuilt and re-certified, dated 10/7/97. At that time the broad-crested weir structure was removed and the spillway was constructed as a concrete spillway with a width of 8.5'. The drainage area for the initial basin structure was 212.0 acres.

An as-built survey was conducted on 06/19/18 on the embankment structure and eighteen (18) depth soundings were made by boat. Water elevation at the time of the survey was 974.60' and the top of the dam elevation was 980.10'. The bottom elevations were calculated based on the data obtained by the soundings and corrected for the existing basin water level. Bottom elevation data was then used to contour the existing pool area and calculations were made based on the existing conditions. The existing storage capacity at normal pool is now 5.89 ac-ft. The embankment of the basin is structurally stable and no cracks or erosion ditches were noted. The spillway structure is stable at the embankment area but the tail ditch of the spillway has eroded substantially under the outlet end where outflow is deposited into the existing stream channel.

The proposed modification for Basin 002 will be to remove the existing concrete spillway due to existing structural problems, raise the top of the dam to 985.0' and raise the spillway from 975.0' to 980.0'. The proposed drainage area for the modified basin will now be 199.70 acres. (See Appendix A for copies of the original Basin 001 detailed design plans and a copy of the request and approval to leave Basin 001 as a permanent water impoundment.)

The construction sequence of Basin 002 will be as follows:

A geotechnical bore in the foundation area indicates that the stiff base material to be at a depth of two (2') feet.

Lower the existing water elevation in the basin by pumping to approximately 972' elevation. Undesirable material will be removed from the downstream side of the existing structure to a level such that the material exposed is suitable to be used as the basin embankment foundation. (Approximately two (2') feet based on geotechnical data.)

Move the existing embankment material forward (downstream) to create a pad to allow the embankment structure to be built up to the proposed construction height of 985.5' elevation. The build-up will be accomplished by placing material in one (1') foot intervals and compacting to 95% of standard proctor values.

Construct a concrete primary spillway ten (10') feet in width in the center of the re-constructed structure.

A floating silt-boom will be installed for subsurface withdrawal.

To allow the modification of this basin, the impounded water will be dewatered in an environmentally sound manner prior to the construction of Basin 002. Water samples have indicated that under normal weather conditions water discharge from the impoundment meets NPDES parameters but if sampling indicates that effluent that does not meet NPDES parameters, the basin will be chemically treated and allowed to stabilize for a minimum of one (1) week and new samples will be taken and analyzed. Once analyses indicate that water within the basin meets NPDES parameters, pumping operations can proceed according to the approved plans.

Prior to the start of pumping operations, the Regulatory Authority and ADEM will be informed via written notification that the dewatering of the impoundment will commence. A recent in-pond water sample will be submitted with the notification. A riprap splash pad suitable in size and depth to prevent additional erosion will be placed at the discharge point of the pump. Discharge samples will be taken daily for the first three (3) days of pumping, then weekly for the remainder of the project, if required. Water samples will be taken more often if water quality appears to change. NPDES parameters will be analyzed on all samples. Results of the analyses will be submitted to the Regulatory Authority and ADEM at the completion of the de-watering operations of the impoundment.

Upon written approval from the Regulatory Authority, Sediment Basin 002 will be constructed and certified to the Regulatory Authority prior to any mining operations in its respective drainage area.

SEDIMENT BASIN CONSTRUCTION SPECIFICATIONS

Sediment basins (temporary or permanent) will be designed and constructed using the following as minimum specifications:

1. EMBANKMENT REQUIREMENTS

A) The minimum width of the top of the embankment will under no circumstance be less than twelve (12) feet.

B) The embankment will have a minimum front and back slope no steeper than the slopes listed on the detailed design sheet.

C) The foundation area of the embankment will be cleared and grubbed of all organic matter with no surface slope steeper than one (1) horizontal to one (1) vertical. The entire wet area as measured from the upstream toe of the embankment to the normal pool level will be cleared of trees and large bush.

D) A core will be constructed in a cutoff trench along the centerline of the embankment. The cutoff trench will be of suitable depth and width to attain relatively impervious material.

E) The embankment construction material will be free of sod, roots, stumps, rocks, etc., which exceed six (6) inches in diameter. The embankment material will be placed in layers of twelve (12) inches or less and compacted to ninety-five (95%) percent of the standard proctor density as set forth ASTM.

F) The embankment, foundation and abutments will be designed and constructed to be stable under normal construction and operating conditions with a minimum static safety factor of 1.3 at normal pool level with steady seepage saturation conditions.

G) The actual constructed height of the embankment will be a minimum of five (5%) percent higher than the design height to allow for settling over the life of the embankment.

H) The design embankment height for temporary impoundments will be a minimum of one (1) foot above the maximum water level anticipated from a ten (10) year - twenty-four (24) hour or a twenty-five (25) year - six (6) hour precipitation event (whichever is greater). The design embankment height for permanent impoundments will be minimum of one (1) foot above the maximum water level anticipated from a ten (10) year - twenty-four (24) hour or a twenty-five (25) year - six (6) hour precipitation event (whichever is greater).

I) For embankments constructed as point source discharges, the embankment will be constructed and abutments keyed into undisturbed, virgin ground if at all possible. In the event that this cannot be achieved, additional design and construction specifications will be submitted in the Detailed Design Plans.

J) The embankment all areas disturbed in the construction of the embankment will be seeded with a mixture of perennial and annual grasses, fertilized and mulched to prevent erosion and ensure restabilization. Hay dams, silt fences, rock check dams, etc. will be installed, where deemed necessary, as additional erosion prevention methods.

2. DISCHARGE STRUCTURE REQUIREMENTS

A) The primary spillway will be designed to adequately carry the anticipated peak runoff from a ten (10) year - twenty-four (24) hour precipitation event. The combination primary and secondary (emergency) spillway system will be designed to safely carry the anticipated peak runoff from a twenty -five (25) year - six (6) hour precipitation event. When sediment basins are proposed in the drainage course of a public water supply, the spillway system will be designed and constructed to adequately carry the runoff from a fifty (50) year - twenty-four hour precipitation event.

B) Channel linings for secondary (emergency) spillways will be a trapezoidal open channel constructed in natural ground and planted with a mixture of both annual and perennial grasses being predominantly fescue and Bermuda. In the event the spillway cannot be constructed in natural ground, the spillway will be lined with riprap, concrete, asphalt or double rock (See Detailed Design Plans for Spillway Lining).

C) When consisting of pipe, the primary spillway will be installed according to Class "C" pipe installation for embankment bedding.

D) Sediment basins with a single spillway system such as a skimmer board will be a trapezoidal open channel constructed in consolidated, nonerodible material and lined with rip-rap, concrete, asphalt or durable rock (See Detailed Design Plans for Spillway Lining).

E) The primary spillway will be designed and constructed with device to eliminate floating solids from leaving the impoundment. This device will consist of a turned down elbow when using pipe or a skimmer system when using an open channel spillway.

F) When necessary to prevent erosion of the embankment or discharge area, a splash pad of rip-rap, durable rock, sacrete, etc. will be installed at the discharge end of the primary spillway.

G) The combined spillway systems, for sediment basins constructed in series, will be designed to adequately accommodate the entire drainage area.

3. INSPECTION, MAINTENANCE AND CERTIFICATION REQUIREMENTS

A) Inspections will be conducted regularly during construction of the sediment basin by a qualified registered engineer or other qualified person under the direction of a professional engineer. Upon completion of construction, the sediment basin will be certified, by a qualified Registered Professional Engineer, to the Regulatory Authority as being constructed in accordance with the approved Detailed Design Plans.

B) Sediment basins will be inspected semi-monthly for erosion, instability, etc., with maintenance performed as necessary, until the removal of the structure or until a Phase III Bond Release is granted.

C) Sediment basins will be examined quarterly for structure weakness, instability, erosion, slope failure or other hazardous conditions with maintenance performed as necessary.

D) Formal inspections will be made annually by a qualified Registered Professional Engineer or other qualified person under the direction of a Professional Engineer, including any reports or modifications, in accordance with 880-X-.20[1(j)] of the Alabama Surface Mining Regulations.

E) Retained sediment will be removed from each sediment basin when the accumulated sediment reaches the maximum allowable sediment volume as set forth in the detailed design plans.

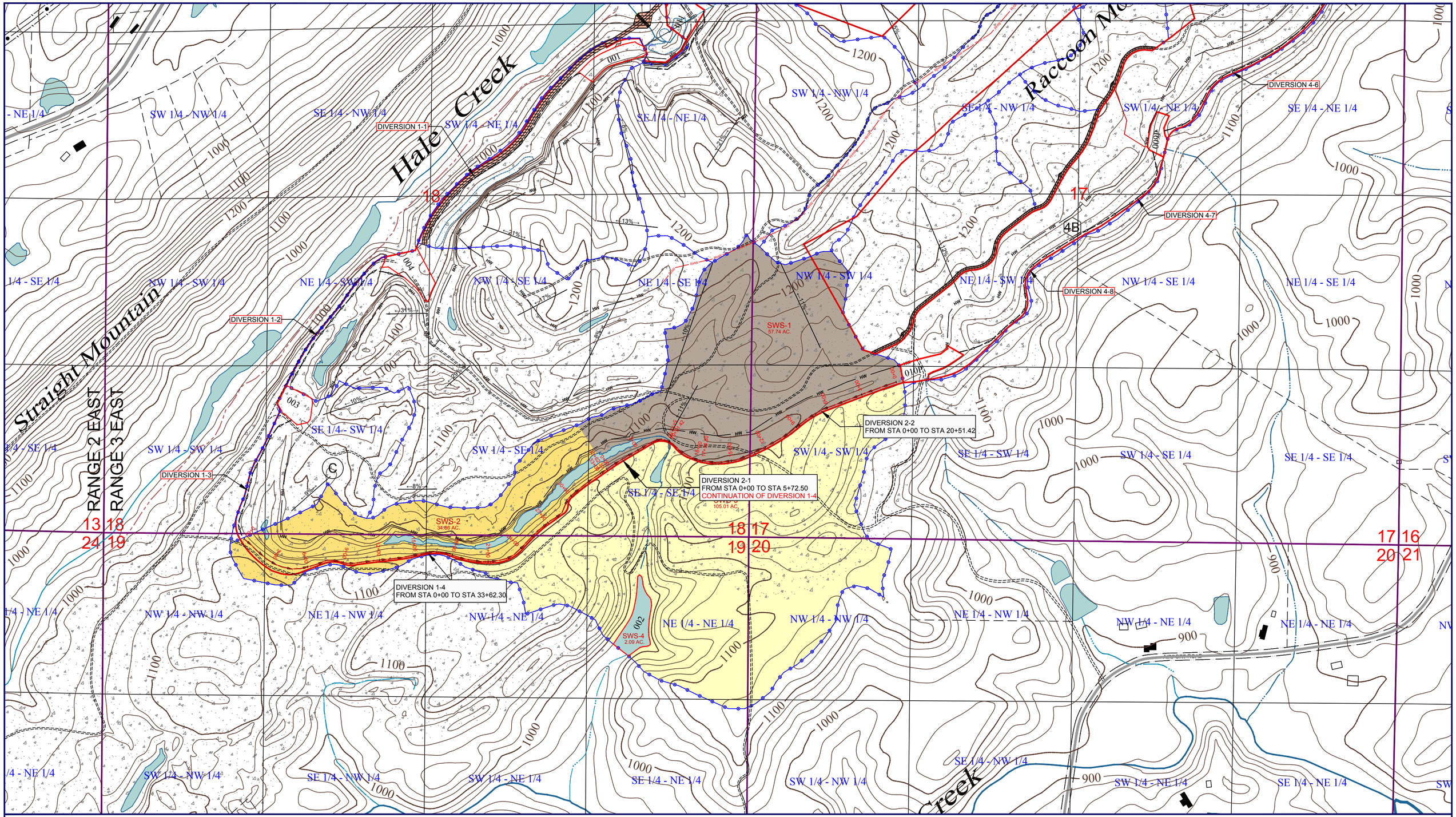
4. BASIN REMOVAL REQUIREMENTS

A) Upon completion of mining, reclamation, re-stabilization and effluent standards being met, each sediment basin not proposed as a permanent water impoundment will be dewatered in a controlled manner by either pumping or siphoning. Upon successful dewatering, a determination will be made as to the retained sediment level in the basin. After determining the retained sediment level, a channel will be cut into the embankment down to the retained sediment level on the side of the embankment deemed most suitable to reach natural ground without encountering prohibiting rock. The embankment material removed from this newly constructed channel will be spread and compacted over the previous impoundment (wet area) area to prevent erosion and ensure re-stabilization. The newly constructed channel will be of adequate width (minimum thirty (30) feet) and sloped to a grade (approximately 1% to 3%) which will cause all surface drainage to travel across this area in sheet flow, minimizing the possibility of erosion. Also, where necessary, hay dams will be installed in strategic locations across the width of the channel to retain sediment and slow the water velocity to a favorable rate. Upon removal of the embankment section, all disturbed areas will be graded in such a manner to ensure slope stability, successful restabilization and to minimize erosion. All disturbed areas will be seeded with a mixture of annual and perennial grasses, fertilized and mulched. No slope, existing or created in the removal of the sediment basin, will be left on a grade that will slip or slough.

5. PERMANENT WATER IMPOUNDMENT REQUIREMENTS

A) Prior to a request for a Phase II Bond Release, all sediment basins being left as permanent water impoundments will have supplemental data submitted to the Regulatory Authority concerning water quality, water quantity, size, depth, configuration, postmining land use, etc.

B) Final grading slopes of the entire permanent water impoundment area will not exceed a slope of two (2) Horizontal to one (1) Vertical to provide for safety and access for future water users.



CEDAR LAKE MINING, INC.
BULL GAP MINE, P-3960

WATERSHED MAP
SCALE: 1" = 500'
CONTOUR INTERVAL: 20 FT.

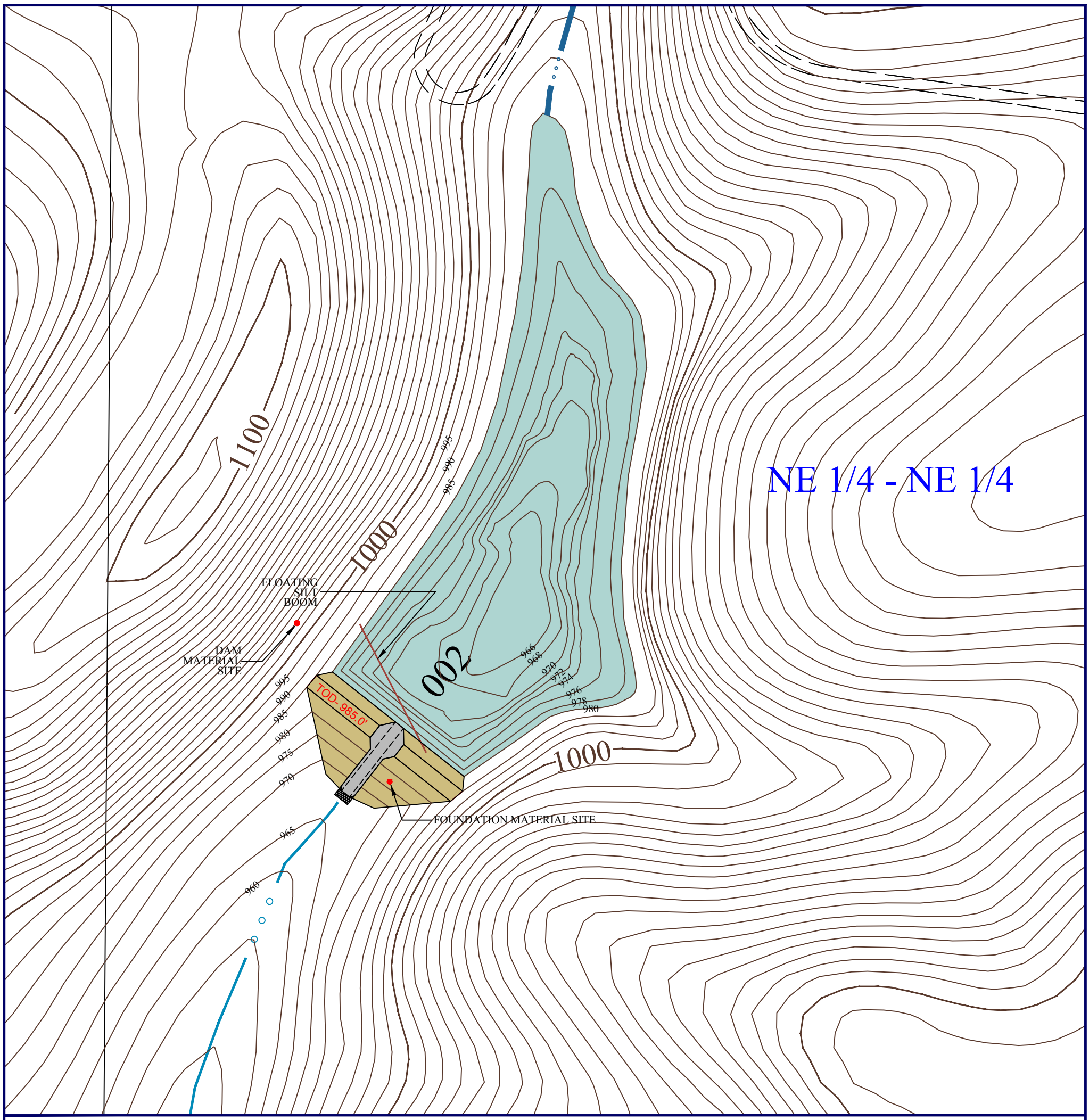
SEDIMENT BASIN 002

N
W E
S

LEGEND

- PERMIT BOUNDARY
- PREVIOUSLY SURFACE MINED
- GRADED & BARE, CN 81
- MINED, REVEG. 0-2 MONTHS, CN 79
- MINED, REVEG. 2-12 MONTHS, CN 74
- MINED, RECLAIMED GRASSLAND, CN 69
- MOSTLY FOREST, GOOD COVER, CN 72
- PONDS/SEDIMENT BASINS, CN 100
- BASIN 001 — SEDIMENT BASIN/OUTFALL
- WATER IMPOUNDMENT
- DRAINAGE DIVIDE
- ROADSIDE DITCH
- DIVERSION DITCH
- PRIMARY ROAD
- PERENNIAL AND/OR INTERMITTENT STREAM
- DRAINAGE COURSE
- 100' STREAM BUFFER ZONE BOUNDARY
- HW — HIGHWALL
- RHW — RECLAIMED HIGHWALL

TASK EMI
CONSULTING ENGINEERS
P.O. BOX 660548
BIRMINGHAM, ALABAMA 35266
(205)978-5070
email: jw-task@charter.net



CEDAR LAKE MINING, INC.
BULL GAP MINE - P-3960
GENERAL PLAN VIEW
SCALE: 1" = 100'
CONTOUR INTERVAL: 5 FT.
BASIN INTERIOR CONTOUR INTERVAL: 2 FT.

SEDIMENT BASIN 002

SEDIMENT BASIN 002

UPSTREAM TOE ELEVATION: 962.00' (PER P-3711 DESIGN 1993)
UPSTREAM TOE ELEVATION: 972.00'
SEDIMENT REMOVAL ELEVATION: 976.34'
PRIMARY SPILLWAY ELEVATION: 980.00'
EMERGENCY SPILLWAY ELEVATION: 980.00'
**MAXIMUM WATER ELEVATION: 982.52'
TOP OF DAM ELEVATION: 985.00' DESIGN
TOP OF DAM ELEVATION: 985.50' CONSTRUCTION

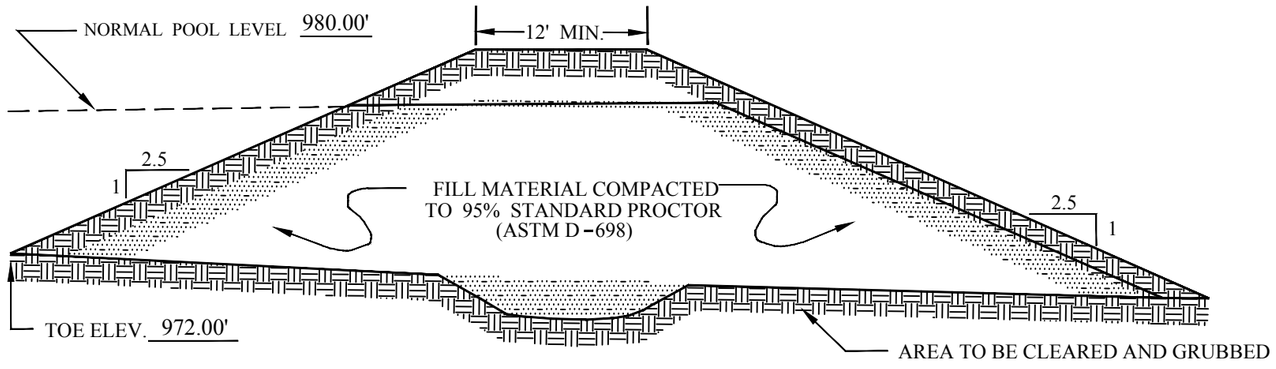
PRIMARY SPILLWAY: 10' TRAPEZOIDAL CHANNEL CONCRETE LINED
475 EXCAVATED CONTOURS
475 ORIGINAL CONTOURS
BASIN EMBANKMENT
NORMAL POOL AREA
CONCRETE SPILLWAY
DIVERSIONS AND/OR MAJOR INFLOW TO BASIN
SF SILT FENCE
7' X 16' ENERGY DISSIPATER (CLASS II SANDSTONE RIPRAP)
FLOATING SILT BOOM
PRIMARY ROAD
PERENNIAL AND/OR INTERMITTENT STREAM
DRAINAGE COURSE
100' STREAM BUFFER ZONE BOUNDARY
HW HIGHWALL
RHW RECLAIMED HIGHWALL

** 25 YEAR - 6 HOUR PRECIPIATATION EVENT

N W E S

TASK EMI
CONSULTING ENGINEERS
P.O. BOX 660548
BIRMINGHAM, ALABAMA 35266
(205)978-5070
email: jw-task@charter.net

EMBANKMENT CROSS−SECTION



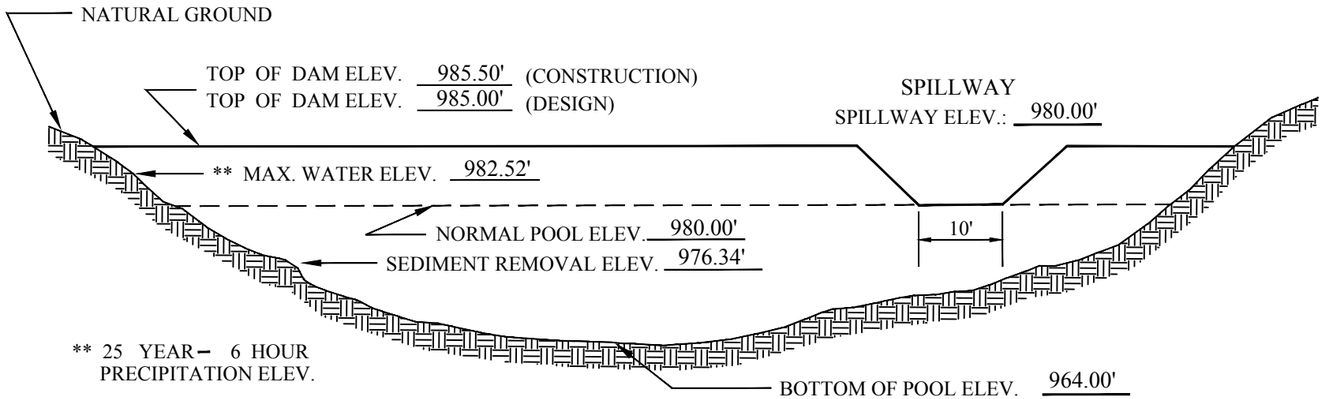
COMPANY: CEDAR LAKE MINING, INC.

MINE NAME: BULL GAP MINE

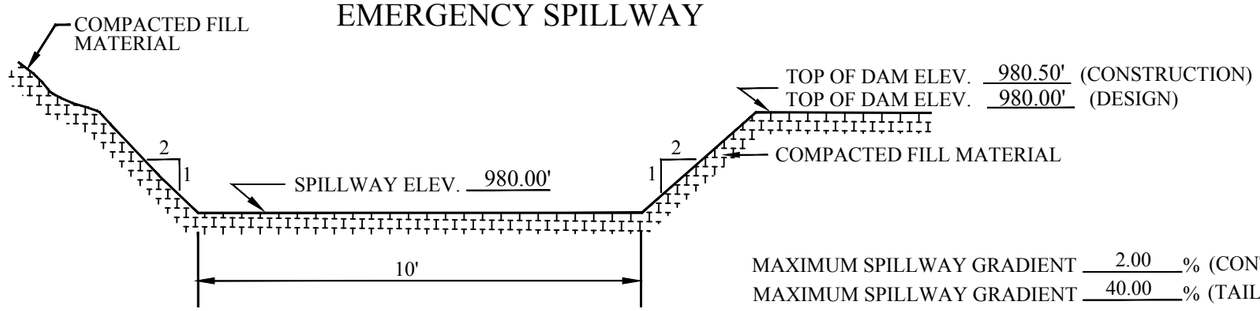
PERMIT #: P − 3960

BASIN I.D. #: SEDIMENT BASIN 002

IMPOUNDMENT PROFILE



EMERGENCY SPILLWAY



MAXIMUM SPILLWAY GRADIENT 2.00 % (CONTROL SECTION)

MAXIMUM SPILLWAY GRADIENT 40.00 % (TAIL DITCH SECTION)

KEY BASIN PARAMETERS

DRAINAGE AREA	199.70	ACRES
DISTURBED AREA	94.69	ACRES
SEDIMENT STORAGE	7.58	AC.FT.
DETENTION STORAGE	6.44	AC.FT.
PERMANENT POOL CAPACITY	14.02	AC.FT.
* TOTAL BASIN STORAGE CAPACITY	19.54	AC.FT.
** PEAK INFLOW	235.71	C.F.S.
** PEAK OUTFLOW	144.46	C.F.S.

NOTE: ALL ELEVATIONS ASSUMED.

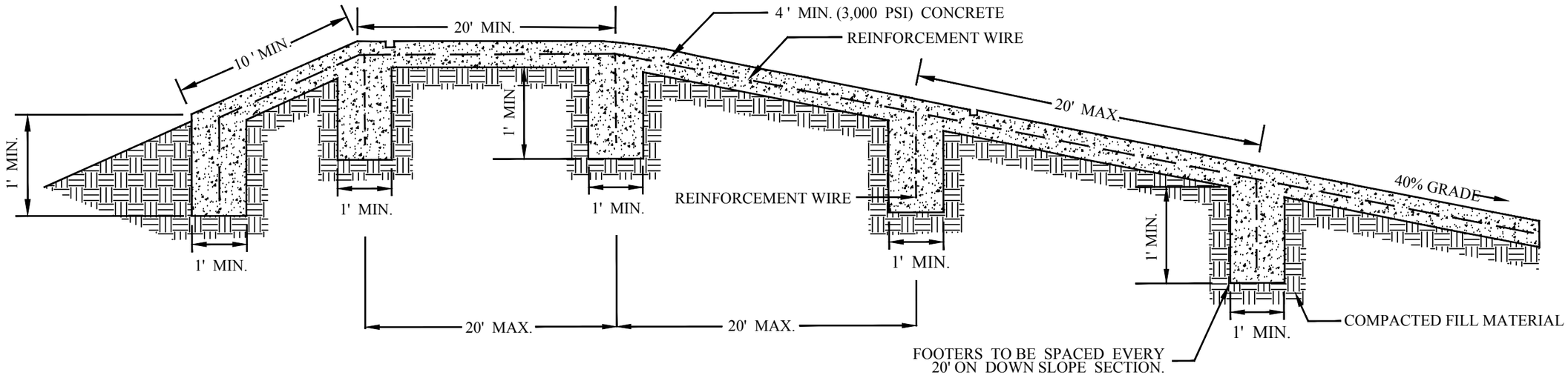
* 10 YEAR − 24 HOUR PRECIPITATION EVENT.

** 25 YEAR − 6 HOUR PRECIPITATION EVENT.

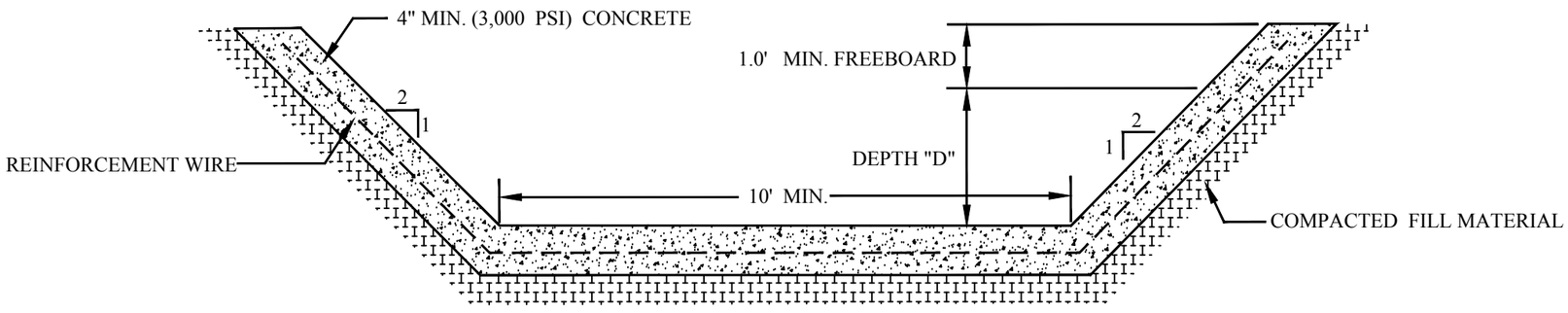
SEE TYPICAL SPILLWAY PROFILE SHEET, SPILLWAY CONTROL SECTION AND TAIL DITCH DESIGN FOR CHANNEL LINING REQUIREMENTS

TASK EMI
CONSULTING ENGINEERS
P.O. BOX 660548
BIRMINGHAM, ALABAMA 35266
(205)978-5070
email: jw-task@charter.net

BASIN 002
TYPICAL SPILLWAY PROFILE



TYPICAL SPILLWAY CROSS - SECTION



MINIMUM SPILLWAY DEPTH "D" = 1.22 FEET (CONTROL SECTION)
MINIMUM SPILLWAY DEPTH "D" = 0.51 FEET (TAIL DITCH SECTION)
TOTAL SPILLWAY DEPTH "D+1" = 2.22 FEET (CONTROL SECTION)
TOTAL SPILLWAY DEPTH "D+1" = 1.51 FEET (TAIL DITCH SECTION)

TASK EMI
CONSULTING ENGINEERS
P.O. BOX 660548
BIRMINGHAM, ALABAMA 35266
(205)978-5070
email: jw-task@charter.net

BASIN 002 - EAC

Elevation-Area-Capacity Table

Elevation (ft)	Area (ac)	Capacity (ac-ft)
964.00	0.060	0.000
964.50	0.080	0.035
965.00	0.103	0.081
965.50	0.129	0.139
966.00	0.158	0.210
966.50	0.193	0.298
967.00	0.232	0.404
967.50	0.274	0.530
968.00	0.320	0.679
968.50	0.387	0.855
969.00	0.460	1.067
969.50	0.539	1.316
970.00	0.625	1.607
970.50	0.669	1.931
971.00	0.715	2.277
971.50	0.763	2.646
972.00	0.812	3.040
972.50	0.853	3.456
973.00	0.895	3.893
973.50	0.938	4.351
974.00	0.982	4.831
974.50	1.060	5.342
975.00	1.141	5.891
975.50	1.224	6.483
976.00	1.311	7.116
976.50	1.416	7.798
977.00	1.526	8.533
977.50	1.639	9.324
978.00	1.757	10.173
978.50	1.837	11.072
979.00	1.918	12.011
979.50	2.002	12.991
980.00	2.087	14.013
980.50	2.147	15.071
981.00	2.208	16.160
981.50	2.270	17.280
982.00	2.333	18.430

Elevation (ft)	Area (ac)	Capacity (ac-ft)
982.50	2.417	19.618
983.00	2.502	20.848
983.50	2.589	22.120
984.00	2.677	23.437
984.50	2.767	24.798
985.00	2.858	26.204
985.50	2.878	27.638
986.00	2.898	29.082
986.50	2.918	30.536
987.00	2.938	32.000

SPILLWAY CHANNEL SPECIFICATIONS
SEDIMENT BASIN 002

The entire control section and tail ditch section of the emergency spillway will be cut into the compacted fill of the embankment and lined with a minimum of four (4) inches of reinforced concrete. All concrete will be reinforced with 10 gauge, 6"X 6" welded wire mesh. Fibermesh may be added to the concrete for additional strength; however, the addition of fibermesh shall not be used in place of the required 6"X 6" welded wire.

The gradient of the control section of the emergency spillway will not exceed two (2%) percent. The gradient of the tail ditch section of the emergency spillway will not exceed thirty (30%) percent.

The control section and tail ditch section of the emergency spillway will extend from the inner face of the embankment, past the centerline of the embankment and be carried out well beyond the downstream slope of the embankment.

The control section of the emergency spillway will be a minimum of 2.22 feet as measured vertically, allowing 1.22 feet for the maximum anticipated flow and 1.0 feet of dry freeboard. The tail ditch section of the emergency spillway will be a minimum of 1.51 feet as measured vertically, allowing 0.51 feet for the maximum anticipated flow and 1.0 feet of dry freeboard. There will be a transition zone of at least ten (10') feet in length between the control section and the tail section. The minimum depth at the beginning of the transition will be 2.22 feet and 1.51 feet at the end of the transition. The flow line of the spillway will be smoothed at the transition to avoid abrupt changes in the flow line slope.

See enclosed SEDCAD 4.0 spillway tail ditch section design and attached Plan Sheet cross-section for the minimum and maximum emergency spillway construction requirements.

A floating silt fence (lightweight turbidity curtain) will be installed near the entrance to the spillway to accomplish sub-surface withdrawal. The floating silt fence (lightweight turbidity curtain) will be set at normal pool and will be anchored by steel fence posts at the 10 Year – 24 Hour peak stage elevation.

Basin 002 - Spillway Control Section

Material: Concrete, Rubble

Trapezoidal Channel

Bottom Width (ft)	Left Sideslope Ratio	Right Sideslope Ratio	Slope (%)	Manning's n	Freeboard Depth (ft)	Freeboard % of Depth	Freeboard Mult. x (VxD)
10.00	2.0:1	2.0:1	2.0	0.0220	1.00		

	w/o Freeboard	w/ Freeboard
Design Discharge:	144.46 cfs	
Depth:	1.22 ft	2.22 ft
Top Width:	14.90 ft	18.90 ft
Velocity:	9.48 fps	
X-Section Area:	15.24 sq ft	
Hydraulic Radius:	0.985 ft	
Froude Number:	1.65	

Basin 002 - Spillway Tail Ditch Section

Material: Concrete, Rubble

Trapezoidal Channel

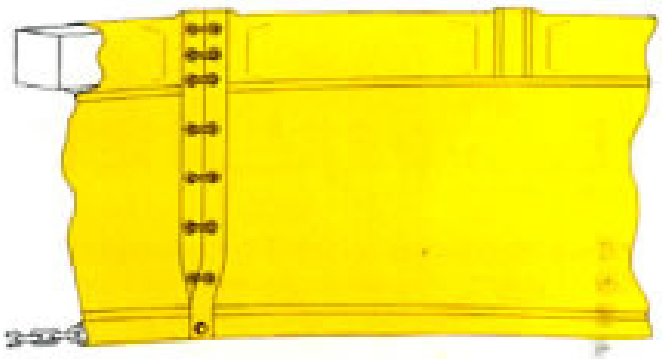
Bottom Width (ft)	Left Sideslope Ratio	Right Sideslope Ratio	Slope (%)	Manning's n	Freeboard Depth (ft)	Freeboard % of Depth	Freeboard Mult. x (VxD)
10.00	2.0:1	2.0:1	40.0	0.0220	1.00		

	w/o Freeboard	w/ Freeboard
Design Discharge:	144.46 cfs	
Depth:	0.51 ft	1.51 ft
Top Width:	12.05 ft	16.05 ft
Velocity:	25.53 fps	
X-Section Area:	5.66 sq ft	
Hydraulic Radius:	0.460 ft	
Froude Number:	6.57	

SUBSURFACE WITHDRAWAL UTILIZING FLOATING SILT BOOM

LIGHTWEIGHT TURBIDITY CURTAIN

Application: Calm waters with little current, such as lakes, ponds, canals and shoreline areas



Specifications

- Barrier to be anchored at the maximum anticipated peak stage elevation (10 Year - 24 Hour Precipitation Event).
- PVC coated floatation units - ultraviolet resistant
- Geotextile Fabric Screens - Polyester reinforced vinyl high visibility yellow.
- Depths per site requirements - utilizing 50' linear sections at a 24" minimum depth.
- Connector - Sections are laced together through grommets and load lines are bolted together.
- Flotation - 6" expanded polystyrene over 9 lbs./ft. buoyancy.
- Ballast - 1/4" galvanized chain (.7 lbs/ft).

HYDROLOGY AND SEDIMENTOLOGY PREDICTION
10 YEAR - 24 HOUR PRECIPITATION EVENT
SEDIMENT BASIN 002

Submitted by:

TASK Engineering Management Inc.
P. O. Box 660548
Birmingham, Alabama 35266
Telephone: (205) 978-5070
Email: jw-task@charter.net

Cedar Lake Mining, Inc.
Bull Gap Mine, P-3960
Basin 002

DRN 58

10 Year - 24 Hour Event, 5.72 In.

Jerry W. Williams, P.E.

TASK Engineering Management Inc.
P.O. Box 660548
Birmingham, AL 35226

Phone: 205.978.5070
Email: jw-task@charter.net

General Information

Storm Information:

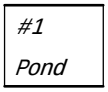
Storm Type:	DRN 58
Design Storm:	10 yr - 24 hr
Rainfall Depth:	5.720 inches

Particle Size Distribution:

Size (mm)	TOPSOIL	SPOIL
3.0000	100.000%	100.000%
2.0000	99.000%	93.000%
1.0000	88.000%	84.000%
0.5000	77.000%	72.000%
0.3000	67.000%	60.000%
0.2000	60.000%	52.000%
0.1000	49.000%	44.000%
0.0500	38.000%	35.000%
0.0300	30.000%	25.000%
0.0200	23.000%	19.000%
0.0100	20.000%	15.000%
0.0050	16.000%	12.000%
0.0030	11.000%	5.000%
0.0020	3.000%	2.000%
0.0010	0.000%	0.000%

Structure Networking:

Type	Stru #	(flows into)	Stru #	Musk. K (hrs)	Musk. X	Description
Pond	#1	==>	End	0.000	0.000	Sediment Basin 002



Structure Summary:

		Immediate Contributing Area (ac)	Total Contributing Area (ac)	Peak Discharge (cfs)	Total Runoff Volume (ac-ft)	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc. (ml/l)	24VW (ml/l)
#1	In	199.700	199.700	153.34	42.02	5,007.0	163,062	108.88	56.48
	Out			138.44	41.99	748.1	24,128	0.31	0.19

Particle Size Distribution(s) at Each Structure

Structure #1:

Size (mm)	In	Out
3.0000	100.000%	100.000%
2.0000	95.967%	100.000%
1.0000	86.699%	100.000%
0.5000	74.340%	100.000%
0.3000	61.967%	100.000%
0.2000	53.710%	100.000%
0.1000	45.442%	100.000%
0.0500	36.144%	100.000%
0.0300	25.825%	100.000%
0.0200	19.628%	100.000%
0.0100	15.500%	100.000%
0.0050	12.400%	82.996%
0.0030	5.179%	34.660%
0.0020	2.068%	13.839%
0.0010	0.000%	0.000%

Structure Detail:

Structure #1 (Pond)

Sediment Basin 002

Pond Inputs:

Initial Pool Elev:	980.00 ft
Initial Pool:	6.44 ac-ft
*Sediment Storage:	7.58 ac-ft
Dead Space:	20.00 %

**Sediment capacity was entered by user*

Emergency Spillway

Spillway Elev	Crest Length (ft)	Left Sideslope	Right Sideslope	Bottom Width (ft)
980.00	20.00	2.00:1	2.00:1	10.00

Pond Results:

Peak Elevation:	982.46 ft
H'graph Detention Time:	1.07 hrs
Pond Model:	CSTRS
Dewater Time:	0.84 days
Trap Efficiency:	85.06 %

Dewatering time is calculated from peak stage to lowest spillway

Elevation-Capacity-Discharge Table

Elevation	Area (ac)	Capacity (ac-ft)	Discharge (cfs)	Dewater Time (hrs)	
976.34	1.383	0.000	0.000		Top of Sed. Storage
976.50	1.416	0.224	0.000		
977.00	1.526	0.959	0.000		
977.50	1.639	1.750	0.000		
978.00	1.757	2.599	0.000		
978.50	1.837	3.498	0.000		
979.00	1.918	4.436	0.000		
979.50	2.002	5.416	0.000		
980.00	2.087	6.438	0.000		Spillway #1
980.50	2.147	7.497	1.830	7.00*	
981.00	2.208	8.586	25.483	9.30	
981.50	2.270	9.705	53.905	2.45	

Elevation	Area (ac)	Capacity (ac-ft)	Discharge (cfs)	Dewater Time (hrs)	
982.00	2.333	10.856	93.036	0.80	
982.46	2.412	11.958	138.442	0.50	Peak Stage
982.50	2.417	12.044	141.972		
983.00	2.502	13.273	200.972		
983.50	2.589	14.546	270.364		
984.00	2.677	15.862	350.507		
984.50	2.767	17.223	441.772		
985.00	2.858	18.630	544.530		
985.50	2.878	20.064	659.150		
986.00	2.898	21.507	785.996		
986.50	2.918	22.961	925.421		
987.00	2.938	24.425	1,077.775		

**Designates time(s) to dewater have been extrapolated beyond the 50 hour hydrograph limit.*

Detailed Discharge Table

Elevation (ft)	Emergency Spillway (cfs)	Combined Total Discharge (cfs)
976.34	0.000	0.000
976.50	0.000	0.000
977.00	0.000	0.000
977.50	0.000	0.000
978.00	0.000	0.000
978.50	0.000	0.000
979.00	0.000	0.000
979.50	0.000	0.000
980.00	0.000	0.000
980.50	1.830	1.830
981.00	25.483	25.483
981.50	53.905	53.905
982.00	93.036	93.036
982.50	141.972	141.972
983.00	200.972	200.972
983.50	270.364	270.364
984.00	350.507	350.507
984.50	441.772	441.772
985.00	544.530	544.530
985.50	659.150	659.150
986.00	785.996	785.996

Elevation (ft)	Emergency Spillway (cfs)	Combined Total Discharge (cfs)
986.50	925.421	925.421
987.00	1,077.775	1,077.775

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	57.740	0.133	0.095	0.380	81.000	F	66.69	16.826
	2	34.860	0.519	0.106	0.394	79.000	M	27.72	7.948
	3	105.010	0.246	0.000	0.000	72.000	S	58.61	16.251
	4	2.090	0.001	0.000	0.000	100.000	F	3.13	0.995
	Σ	**199.700**						**153.34**	**42.021**

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.320	200.00	14.44	0.9000	1.0000	2	4,998.8	334,859	223.67	131.89
	2	0.320	200.00	4.33	0.0030	1.0000	1	1.6	257	0.15	0.09
	3	0.320	200.00	8.77	0.0030	1.0000	1	8.4	656	0.38	0.22
	4	0.320	200.00	0.00	0.0030	1.0000	1	0.0	8	0.01	0.00
	Σ							**5,007.0**	**163,062**	**108.88**	**56.48**

Subwatershed Time of Concentration Details:

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	1	5. Nearly bare and untilled, and alluvial valley fans	6.61	28.64	433.09	2.570	0.046
		9. Small streams flowing bankfull	0.42	12.71	2,999.12	5.850	0.142
#1	**1**	**Time of Concentration:**					**0.133**
#1	2	3. Short grass pasture	16.08	59.92	372.68	3.200	0.032
		8. Large gullies, diversions, and low flowing streams	5.32	134.28	2,523.25	6.920	0.101
#1	**2**	**Time of Concentration:**					**0.519**
#1	3	3. Short grass pasture	2.19	11.42	522.36	1.180	0.122
		8. Large gullies, diversions, and low flowing streams	0.36	9.21	2,560.34	1.790	0.397
#1	**3**	**Time of Concentration:**					**0.246**
#1	4	1. Forest with heavy ground litter	8.93	39.90	446.79	0.750	0.165
		8. Large gullies, diversions, and low flowing streams	5.84	124.71	2,134.72	7.250	0.081
#1	**4**	**Time of Concentration:**					**0.001**

Subwatershed Muskingum Routing Details:

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	1	8. Large gullies, diversions, and low flowing streams	8.95	316.26	3,534.66	8.970	0.109
#1	**1**	**Muskingum K:**					**0.095**
#1	2	8. Large gullies, diversions, and low flowing streams	3.21	59.00	1,840.18	5.370	0.095
#1	**2**	**Muskingum K:**					**0.106**
#1	3	8. Large gullies, diversions, and low flowing streams	4.46	107.91	2,417.18	6.330	0.106
#1	**3**	**Muskingum K:**					**0.000**

HYDROLOGY AND SEDIMENTOLOGY PREDICTION
25 YEAR - 6 HOUR PRECIPITATION EVENT
SEDIMENT BASIN 002

Submitted by:

TASK Engineering Management Inc.
P. O. Box 660548
Birmingham, Alabama 35266
Telephone: (205) 978-5070
Email: jw-task@charter.net

Cedar Lake Mining, Inc.

Bull Gap Mine, P-3960

Basin 002

SCS 6 HOUR

25 Year - 6 Hour Event, 4.82 In.

Jerry W. Williams, P.E.

TASK Engineering Management Inc.
P.O. Box 660548
Birmingham, AL 35226

Phone: 205.978.5070
Email: jw-task@charter.net

General Information

Storm Information:

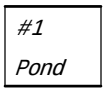
Storm Type:	SCS 6 HOUR
Design Storm:	25 yr - 6 hr
Rainfall Depth:	4.820 inches

Particle Size Distribution:

Size (mm)	TOPSOIL	SPOIL
3.0000	100.000%	100.000%
2.0000	99.000%	93.000%
1.0000	88.000%	84.000%
0.5000	77.000%	72.000%
0.3000	67.000%	60.000%
0.2000	60.000%	52.000%
0.1000	49.000%	44.000%
0.0500	38.000%	35.000%
0.0300	30.000%	25.000%
0.0200	23.000%	19.000%
0.0100	20.000%	15.000%
0.0050	16.000%	12.000%
0.0030	11.000%	5.000%
0.0020	3.000%	2.000%
0.0010	0.000%	0.000%

Structure Networking:

Type	Stru #	(flows into)	Stru #	Musk. K (hrs)	Musk. X	Description
Pond	#1	==>	End	0.000	0.000	Sediment Basin 002



Structure Summary:

		Immediate Contributing Area (ac)	Total Contributing Area (ac)	Peak Discharge (cfs)	Total Runoff Volume (ac-ft)	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc. (ml/l)	24VW (ml/l)
#1	In	199.700	199.700	235.71	32.18	6,486.0	310,520	202.11	89.38
	Out			144.46	32.18	1,179.8	38,307	1.59	1.12

Particle Size Distribution(s) at Each Structure

Structure #1:

Size (mm)	In	Out
3.0000	100.000%	100.000%
2.0000	100.000%	100.000%
1.0000	97.749%	100.000%
0.5000	83.806%	100.000%
0.3000	69.863%	100.000%
0.2000	60.568%	100.000%
0.1000	51.260%	100.000%
0.0500	40.773%	100.000%
0.0300	29.131%	100.000%
0.0200	22.140%	100.000%
0.0100	17.484%	96.120%
0.0050	13.987%	76.896%
0.0030	5.840%	32.106%
0.0020	2.332%	12.821%
0.0010	0.000%	0.000%

Structure Detail:

Structure #1 (Pond)

Sediment Basin 002

Pond Inputs:

Initial Pool Elev:	980.00 ft
Initial Pool:	6.44 ac-ft
*Sediment Storage:	7.58 ac-ft
Dead Space:	20.00 %

**Sediment capacity was entered by user*

Emergency Spillway

Spillway Elev	Crest Length (ft)	Left Sideslope	Right Sideslope	Bottom Width (ft)
980.00	20.00	2.00:1	2.00:1	10.00

Pond Results:

Peak Elevation:	982.52 ft
H'graph Detention Time:	0.86 hrs
Pond Model:	CSTRS
Dewater Time:	1.96 days
Trap Efficiency:	81.81 %

Dewatering time is calculated from peak stage to lowest spillway

Elevation-Capacity-Discharge Table

Elevation	Area (ac)	Capacity (ac-ft)	Discharge (cfs)	Dewater Time (hrs)	
976.34	1.383	0.000	0.000		Top of Sed. Storage
976.50	1.416	0.224	0.000		
977.00	1.526	0.959	0.000		
977.50	1.639	1.750	0.000		
978.00	1.757	2.599	0.000		
978.50	1.837	3.498	0.000		
979.00	1.918	4.436	0.000		
979.50	2.002	5.416	0.000		
980.00	2.087	6.438	0.000		Spillway #1
980.50	2.147	7.497	1.830	41.35	
981.00	2.208	8.586	25.483	2.00	
981.50	2.270	9.705	53.905	0.65	
982.00	2.333	10.856	93.036	1.70	

Elevation	Area (ac)	Capacity (ac-ft)	Discharge (cfs)	Dewater Time (hrs)	
982.50	2.417	12.044	141.972	1.25	
982.52	2.421	12.096	144.465	0.05	Peak Stage
983.00	2.502	13.273	200.972		
983.50	2.589	14.546	270.364		
984.00	2.677	15.862	350.507		
984.50	2.767	17.223	441.772		
985.00	2.858	18.630	544.530		
985.50	2.878	20.064	659.150		
986.00	2.898	21.507	785.996		
986.50	2.918	22.961	925.421		
987.00	2.938	24.425	1,077.775		

Detailed Discharge Table

Elevation (ft)	Emergency Spillway (cfs)	Combined Total Discharge (cfs)
976.34	0.000	0.000
976.50	0.000	0.000
977.00	0.000	0.000
977.50	0.000	0.000
978.00	0.000	0.000
978.50	0.000	0.000
979.00	0.000	0.000
979.50	0.000	0.000
980.00	0.000	0.000
980.50	1.830	1.830
981.00	25.483	25.483
981.50	53.905	53.905
982.00	93.036	93.036
982.50	141.972	141.972
983.00	200.972	200.972
983.50	270.364	270.364
984.00	350.507	350.507
984.50	441.772	441.772
985.00	544.530	544.530
985.50	659.150	659.150
986.00	785.996	785.996
986.50	925.421	925.421
987.00	1,077.775	1,077.775

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	57.740	0.133	0.095	0.380	81.000	F	143.56	13.105
	2	34.860	0.519	0.106	0.394	79.000	M	38.88	6.134
	3	105.010	0.246	0.000	0.000	72.000	S	70.87	12.105
	4	2.090	0.001	0.000	0.000	100.000	F	9.65	0.839
	Σ	**199.700**						**235.71**	**32.183**

Subwatershed Sedimentology Detail:

Stru #	SWS #	Soil K	L (ft)	S (%)	C	P	PS #	Sediment (tons)	Peak Sediment Conc. (mg/l)	Peak Settleable Conc (ml/l)	24VW (ml/l)
#1	1	0.320	200.00	14.44	0.9000	1.0000	2	6,676.5	490,616	321.62	210.78
	2	0.320	200.00	4.33	0.0030	1.0000	1	1.7	284	0.15	0.11
	3	0.320	200.00	8.77	0.0030	1.0000	1	7.9	663	0.32	0.23
	4	0.320	200.00	0.00	0.0030	1.0000	1	0.0	14	0.01	0.01
	Σ							**6,486.0**	**310,520**	**202.11**	**89.38**

Subwatershed Time of Concentration Details:

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	1	5. Nearly bare and untilled, and alluvial valley fans	6.61	28.64	433.09	2.570	0.046
		9. Small streams flowing bankfull	0.42	12.71	2,999.12	5.850	0.142
#1	**1**	**Time of Concentration:**					**0.133**
#1	2	3. Short grass pasture	16.08	59.92	372.68	3.200	0.032
		8. Large gullies, diversions, and low flowing streams	5.32	134.28	2,523.25	6.920	0.101
#1	**2**	**Time of Concentration:**					**0.519**
#1	3	3. Short grass pasture	2.19	11.42	522.36	1.180	0.122
		8. Large gullies, diversions, and low flowing streams	0.36	9.21	2,560.34	1.790	0.397
#1	**3**	**Time of Concentration:**					**0.246**
#1	4	1. Forest with heavy ground litter	8.93	39.90	446.79	0.750	0.165
		8. Large gullies, diversions, and low flowing streams	5.84	124.71	2,134.72	7.250	0.081
#1	**4**	**Time of Concentration:**					**0.001**

Subwatershed Muskingum Routing Details:

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	1	8. Large gullies, diversions, and low flowing streams	8.95	316.26	3,534.66	8.970	0.109
#1	**1**	**Muskingum K:**					**0.095**
#1	2	8. Large gullies, diversions, and low flowing streams	3.21	59.00	1,840.18	5.370	0.095
#1	**2**	**Muskingum K:**					**0.106**
#1	3	8. Large gullies, diversions, and low flowing streams	4.46	107.91	2,417.18	6.330	0.106
#1	**3**	**Muskingum K:**					**0.000**

STABILITY ANALYSIS
SEDIMENT BASIN 002

STABILITY ANALYSIS PROCEDURE

The computer program used to analyze slope stability for Basin 002 was the REAME Slope Stability Program, developed by Dr. Yang H. Huang, P.E. of the University of Kentucky.

Basin 002 was constructed and certified under permit P-3711 (Designated as Basin 001). The present plans for the use of the basin with permit P-3960 consists of removing the existing concrete spillway which shows structural damage, raise the top of dam elevation from 980.5 to 985.0, and install a new concrete spillway at elevation 980.0'.

Geotechnical samples of both the foundation and dam material site were taken and analyzed by Bhate Geosciences Corporation. The foundation bore indicated the depth to the stiff base was two (2') feet.

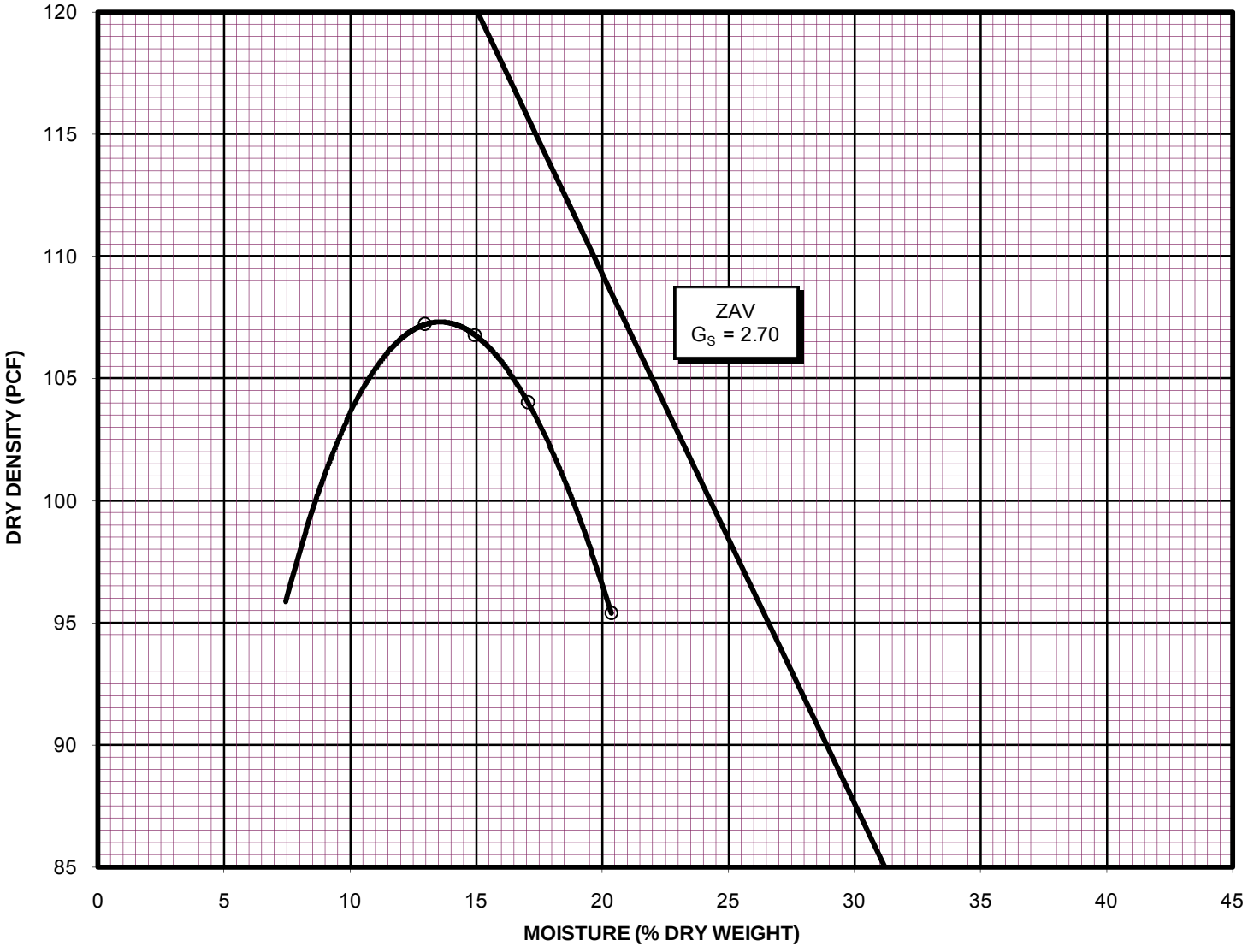
SOIL PROPERTIES

USAGE	TYPE	COHESION (pcf)	INTERNAL ANGLE OF FRICTION	EFFECTIVE DENSITY (pcf)
002 FOUNDATION	ML	100.80	29.70	129.50
002 EMBANKMENT	SM	273.60	33.00	132.10

RESULT OF ANALYSIS

BASIN	STATIC SAFETY FACTOR
002	1.718

REPORT OF MOISTURE DENSITY RELATIONSHIP



Elev./ Depth	Classification		G_S	%< #200	Natural Moisture	Liquid Limit	Plasticity Index	%> 3/4 "	%> 3/8"	%> #4
	USCS	AASHTO								
	ML			52.3		39	13	6.2		

Test Results

Maximum Dry Density (PCF): 107.3
Optimum Moisture (%): 13.6

Material Description

Grey and brown sandy silt with sandstone, coal and organic odor, grass, roots, etc…
Sample Number: 15489

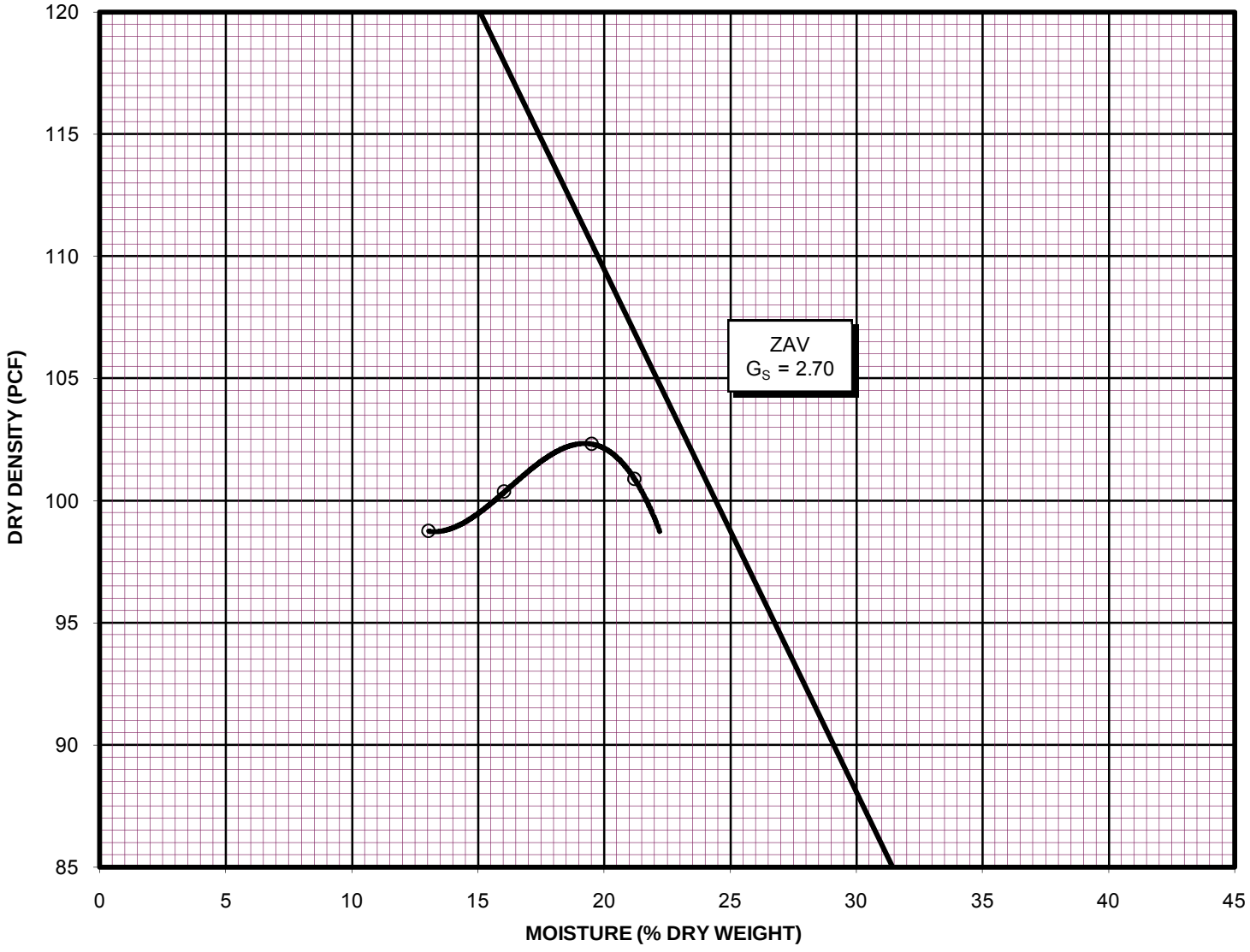
Project Name: Task Engineering
Project Number: 112112
Sample Location: 002 E-1
Client: Task Engineering
Date: 02/03/2012

Remarks: Oversize Correction @ **6.2% = 109.8 and 13.1**
Tested by: D. Burns
Checked by:

Test Type		Procedure	
"Standard" ASTM D 698	☑	A	☐
		B	☑
"Modified" ASTM D 1557	☐	C	☐

Bhate Geosciences Corporation
Geotechnical, Materials, Environmental Engineers

REPORT OF MOISTURE DENSITY RELATIONSHIP



Elev./ Depth	Classification		G_S	%< #200	Natural Moisture	Liquid Limit	Plasticity Index	%> 3/4 "	%> 3/8"	%> #4
	USCS	AASHTO								
	SM			49.2		44	15	4.1		

Test Results

Maximum Dry Density (PCF): 102.3
Optimum Moisture (%): 19.2

Material Description

Grey and brown silty sand with sandstone, coal and organic odor, grass, roots, etc…
Sample Number: 15490

Project Name: Task Engineering
Project Number: 112112
Sample Location: 002 E-2
Client: Task Engineering
Date: 02/03/2012

Remarks: Oversize Correction @ **4.1% = 104.0 and 18.6**
Tested by: D. Burns
Checked by:

Test Type		Procedure	
"Standard" ASTM D 698	☑	A	☐
		B	☑
"Modified" ASTM D 1557	☐	C	☐

Bhate Geosciences Corporation
Geotechnical, Materials, Environmental Engineers

REAME
(Rotational Equilibrium Analysis of Multilayered Earthworks)
Cedar Lake Mining, Inc. – Bull Gap Mine P-3960
Sediment Basin 002

INPUT FILE NAME -C:\REAME2012\BG-BASIN002.DAT
TITLE -BG-BASIN 002

NO. OF STATIC AND SEISMIC CASES (NCASE) = 1
NO. OF NONCIRCULAR FAILURE SURFACES (NNS) = 0
TWO-DIMENSIONAL ANALYSIS (THREED = 0)
ANALYSIS BY DETERMINISTIC METHOD (PROB = 0)

CASE NO. 1 SEISMIC COEFFICIENT (SEIC) =0.000

NO. OF BOUNDARY LINES (NBL) = 4

NO. OF POINTS ON BOUNDARY LINE 1 = 2
1 X COORD.= 200 Y COORD.= 50
2 X COORD.= 700 Y COORD.= 45

NO. OF POINTS ON BOUNDARY LINE 2 = 2
1 X COORD.= 405 Y COORD.= 52
2 X COORD.= 522 Y COORD.= 52

NO. OF POINTS ON BOUNDARY LINE 3 = 3
1 X COORD.= 200 Y COORD.= 52
2 X COORD.= 405 Y COORD.= 52
3 X COORD.= 445 Y COORD.= 68

NO. OF POINTS ON BOUNDARY LINE 4 = 7
1 X COORD.= 200 Y COORD.= 68
2 X COORD.= 445 Y COORD.= 68
3 X COORD.= 457.5 Y COORD.= 73
4 X COORD.= 469.5 Y COORD.= 73
5 X COORD.= 513 Y COORD.= 55.6
6 X COORD.= 522 Y COORD.= 52
7 X COORD.= 700 Y COORD.= 52

LINE NO. AND SLOPE OF EACH SEGMENT ARE:
1 -0.010
2 0.000
3 0.000 0.400
4 0.000 0.400 0.000 -0.400 -0.400 0.000

MIN. DEPTH OF TALLEST SLICE (DMIN) = 0
NO. OF RADIUS CONTROL ZONES (NRCZ) = 1

RADIUS DECREMENT (RDEC) FOR ZONE 1 = 0
NO. OF CIRCLES (NCIR) FOR ZONE 1 = 5
NO. OF BOTTOM LINES (NOL) FOR ZONE 1 = 1
LINE NO. (LINO) BEG. NO. (NBP) END NO. (NEP)
1 1 2

ENGLISH UNITS ARE USED WITH DISTANCE IN FEET AND FORCE IN POUND.

SOIL No.	ENVELOPE (TSSE)	COHESION (C)	FRIC. ANGLE (PHID)	UNIT WEIGHT (G)
1	1	100.800	29.700	129.500
2	1	273.600	33.000	132.100
3	1	0.000	0.000	62.400

USE PHREATIC SURFACE
USE GRID
NO. OF SLICES (NSLI) = 10
NO. OF ADD. CIRCLES (NAC) = 3
ANALYSIS BY SIMPLIFIED BISHOP METHOD (MTHD=2)
NUMBER OF FORCES (NFO)= 0
SOFT SOIL NUMBER (SSN)= 0

NO. OF POINTS ON WATER TABLE (NPWT) = 7
1 X COORD.= 200 Y COORD.= 52
2 X COORD.= 405 Y COORD.= 52
3 X COORD.= 445 Y COORD.= 68
4 X COORD.= 477 Y COORD.= 65
5 X COORD.= 513 Y COORD.= 55.6
6 X COORD.= 522 Y COORD.= 52
7 X COORD.= 700 Y COORD.= 52

NO. OF SOILS WITH DIFFERENT WATER TABLE (NSDW) = 0
NO. OF SOILS WITH DIFFERENT PORE PRESSURE RATIO (NSDP) = 0

INPUT COORD. OF GRID POINTS 1,2,AND 3

POINT 1 X COORD. = 480 Y COORD. = 130
POINT 2 X COORD. = 480 Y COORD. = 80
POINT 3 X COORD. = 520 Y COORD. = 80

X INCREMENT (XINC) = 4 Y INCREMENT (YINC) = 4
NO. OF DIVISIONS BETWEEN POINTS 1 AND 2 (ND12) = 5
NO. OF DIVISIONS BETWEEN POINTS 2 AND 3 (ND23) = 4
ONLY A SUMMARY TABLE IS PRINTED (NPRT = 0)
SLICES WILL BE SUBDIVIDED
AUTOMATIC SEARCH WILL FOLLOW AFTER GRID

FACTORS OF SAFETY BASED ON GRID

IN THE FOLLOWING TABLE WARNING INDICATES HOW MANY TIMES THE
MAXIMUM RADIUS IS LIMITED BY THE END POINTS OF GROUND LINES

CENTER X COORDINATE	CENTER Y COORDINATE	NO. OF CIRCLE TOTAL	CRITIC.	RADIUS	LOWEST F.S.	WARNING
480.0	130.0	5	1	82.796	4.046	0
480.0	120.0	5	1	72.796	3.914	0
480.0	110.0	5	1	62.797	3.769	0
480.0	100.0	5	1	52.797	3.630	0
480.0	90.0	5	1	42.798	3.503	0
480.0	80.0	5	1	32.798	3.464	0
490.0	130.0	5	1	82.896	2.738	0
490.0	120.0	5	1	72.896	2.616	0
490.0	110.0	5	1	62.897	2.490	0
490.0	100.0	5	1	52.897	2.375	0
490.0	90.0	5	1	42.898	2.300	0
490.0	80.0	5	1	32.898	2.356	0
500.0	130.0	5	1	82.996	2.144	0
500.0	120.0	5	1	72.996	2.028	0
500.0	110.0	5	1	62.997	1.926	0
500.0	100.0	5	1	52.997	1.845	0
500.0	90.0	5	1	42.998	1.828	0
500.0	80.0	5	1	32.998	1.907	0
510.0	130.0	5	1	83.096	1.929	0
510.0	120.0	5	1	73.096	1.849	0
510.0	110.0	5	1	63.097	1.780	0
510.0	100.0	5	1	53.097	1.735	0
510.0	90.0	5	1	43.098	1.748	0
510.0	80.0	5	1	33.098	1.814	0
520.0	130.0	5	1	83.196	1.985	0
520.0	120.0	5	1	73.196	1.965	0
520.0	110.0	5	1	63.197	1.992	0
520.0	100.0	5	1	53.197	2.054	0
520.0	90.0	5	1	43.198	2.142	0
520.0	80.0	5	1	33.198	2.274	0

LOWEST FACTOR OF SAFETY AT EACH GRID POINT IS TABULATED BELOW

COORDINATE	480.000	490.000	500.000	510.000	520.000
130.000	4.046	2.738	2.144	1.929	1.985
120.000	3.914	2.616	2.028	1.849	1.965
110.000	3.769	2.490	1.926	1.780	1.992
100.000	3.630	2.375	1.845	1.735	2.054
90.000	3.503	2.300	1.828	1.748	2.142
80.000	3.464	2.356	1.907	1.814	2.274

ONLY ONE MINIMUM F.S. OF 1.735 EXISTS AT (510.000,100.000)

FACTORS OF SAFETY BASED ON SEARCH

IN THE FOLLOWING TABLE WARNING INDICATES HOW MANY TIMES THE
MAXIMUM RADIUS IS LIMITED BY THE END POINTS OF GROUND LINES

CENTER X COORDINATE	CENTER Y COORDINATE	NO. OF CIRCLE TOTAL	CRITIC.	RADIUS	LOWEST F.S.	WARNING
510.0	100.0	5	1	53.097	1.735	0
514.0	100.0	5	1	53.137	1.804	0
506.0	100.0	5	1	53.057	1.742	0
510.0	104.0	5	1	57.097	1.747	0
510.0	96.0	5	1	49.098	1.735	0
511.0	100.0	5	1	53.107	1.748	0
509.0	100.0	5	1	53.087	1.728	0
508.0	100.0	5	1	53.077	1.728	0
507.0	100.0	5	1	53.067	1.733	0
508.0	101.0	5	1	54.077	1.733	0
508.0	99.0	5	1	52.077	1.723	0
508.0	98.0	5	1	51.077	1.721	0
508.0	97.0	5	1	50.078	1.719	0
508.0	96.0	5	1	49.078	1.718	0
508.0	95.0	5	1	48.078	1.718	0
509.0	96.0	5	1	49.088	1.724	0
507.0	96.0	5	1	49.068	1.718	0

AT POINT (508.0 , 96.0) RADIUS 49.078

THE MINIMUM FACTOR OF SAFETY IS 1.718

SUMMARY OF SLICE INFORMATION FOR MOST CRITICAL FAILURE SURFACE

SL. NO.	SOIL NO.	SLICE WIDTH	SLICE HEIGHT	WATER HEIGHT	BOTTOM SINE	TOTAL WEIGHT	EFFEC. WEIGHT	RESIS. MOMENT	DRIVING MOMENT
1	2	4.854	4.084	0.000	-.834	.262E+04	.262E+04	.164E+06	.107E+06
2	2	1.655	8.124	1.080	-.768	.178E+04	.166E+04	.687E+05	.669E+05
3	2	6.509	10.817	5.024	-.684	.930E+04	.726E+04	.289E+06	.312E+06
4	2	6.509	13.362	8.906	-.552	.115E+05	.787E+04	.314E+06	.311E+06
5	2	2.087	14.182	10.323	-.464	.391E+04	.257E+04	.104E+06	.891E+05
6	1	4.423	14.436	11.030	-.398	.842E+04	.538E+04	.162E+06	.164E+06
7	1	6.509	14.245	11.597	-.287	.122E+05	.749E+04	.234E+06	.172E+06
8	1	6.509	13.114	11.371	-.154	.112E+05	.658E+04	.215E+06	.846E+05
9	1	6.509	11.084	10.244	-.021	.945E+04	.528E+04	.180E+06	.985E+04
10	1	2.789	9.103	8.909	.073	.332E+04	.177E+04	.632E+05	-.120E+05
11	1	3.721	7.452	7.452	.140	.362E+04	.189E+04	.709E+05	-.248E+05
12	1	5.279	4.800	4.800	.231	.330E+04	.171E+04	.735E+05	-.374E+05
13	1	1.230	2.851	2.851	.298	.454E+03	.235E+03	.127E+05	-.664E+04
14	1	6.509	1.463	1.463	.377	.123E+04	.639E+03	.513E+05	-.228E+05
					SUM	.200E+07	.121E+07		

AT CENTER (508.000 , 96.000) WITH RADIUS 49.078 AND SEIS. COEFF. 0.00
FACTOR OF SAFETY BY NORMAL METHOD IS 1.650
FACTOR OF SAFETY BY SIMPLIFIED BISHOP METHOD IS 1.718

SUMMARY OF STABILITY ANALYSIS

FACTOR OF FAFETY IS DETERMINED BY SIMPLIFIED BISHOP METHOD
NUMBER OF CASES = 1

CASE 1 SEISMIC COEFFICIENT = 0
FACTOR OF SAFETY BASED ON 2D ANALYSIS = 1.718

PART 2

HYDROLOGY STUDY

FOR

CEDAR LAKE MINING, INC.
BULL GAP MINE, P-3960
BLOUNT COUNTY, ALABAMA

DETAILED DESIGN PLANS
DIVERSION 1-4/2-1 & 2-2

Submitted by:

TASK Engineering Management Inc.
P. O. Box 660548
Birmingham, Alabama 35266
Telephone: (205) 978-5070
Email: jw-task@charter.net

DIVERSION DITCH AND DIVERSION BERM
DESIGN AND CONSTRUCTION SPECIFICATIONS

1) Temporary diversions will be designed and constructed to adequately carry the runoff from a two (2) year - six (6) hour precipitation event.

2) Permanent diversions will be designed and constructed to adequately carry the runoff from a ten (10) year - six (6) hour precipitation event.

3) Permanent diversions will be designed and constructed with gently sloping banks stabilized with appropriate vegetation.

4) All diversions will be designed, constructed and maintained, using the best technology currently available, whereas additional contribution of suspended solids to stream-flow and to runoff outside the permit area is prevented.

5) Maintenance of appropriate gradient, channel lining, revegetation, roughness structures, detention basins, etc. will be used, when necessary, as sediment control measures for these diversions.

6) Diversions will not be constructed on existing landslides nor be located so as to increase the potential for landslides.

7) Temporary diversions will be removed and the affected area regraded, topsoiled (if required) and revegetated in accordance with Rules 880-X-10C-.10, 880-X-10C-.11, 880-X-10C-.52 thru 880-X-10C-.57 and 880-X-10C-.58, 880-X-10C-.60 and 880-X-10C-.62, when no longer needed.

8) Channel linings, for diversions with slopes of three (3%) percent or less, will consist of a mixture of both annual and perennial grasses being predominantly fescue and bermuda. Channel linings, for diversions with slopes greater than three (3%) percent, will consist of rip-rap or other non-erodible material or cut into non-erodible material.

9) Adequate freeboard will be provided for protection for transition of flows and critical areas such as swales and curves along the entire diversion length.

10) At discharge points where diversions intersect with natural streams or exit velocities of the diversion are greater than that of the receiving streams, energy dissipaters will be installed when deemed necessary.

11) Topsoil removed from the diversion area (if required) will be handled in accordance with Rules 880-X-10C-.07 thru 880-X-10C-.11.

12) Excess material excavated in the construction of the diversion, not needed for diversion channel geometry or the regrading of the channel, will be disposed of in accordance with Rule 880-X-10C-.36.

13) Diversions will not be designed or constructed to divert water into underground mines without written approval from the Regulatory Authority.

14) The entire area in which a diversion berm is proposed will be cleared and grubbed of all organic material, scarified and no surface slopes will be left steeper than one (1) Vertical to one (1) Horizontal.

15) Diversion berms will be constructed with desirable material, free of sod, stones, roots, limbs, etc. over six (6) inches in diameter. This material will be spread in layers no greater than twelve (12) inches in thickness and compacted to ninety-five (95%) percent of the standard proctor density, as outlined in ASTM, until the design height is reached.

16) Upon completion of diversion ditches or diversion berms, all disturbed areas will be seeded with a mixture of both annual and perennial grasses, fertilized and mulched in order to minimize erosion and ensure restabilization.

17) All diversions (berms or ditches) will be examined quarterly for erosion, instability, structural weakness or other hazardous conditions and maintenance performed as necessary.

18) The diversion will be constructed and stabilized in 500 feet sections.

DIVERSION 1-4 & 2-1

DETAILED DESIGN PLANS

Submitted by:

TASK Engineering Management Inc.
P. O. Box 660548
Birmingham, Alabama 35266
Telephone: (205) 978-5070
Email: jw-task@charter.net

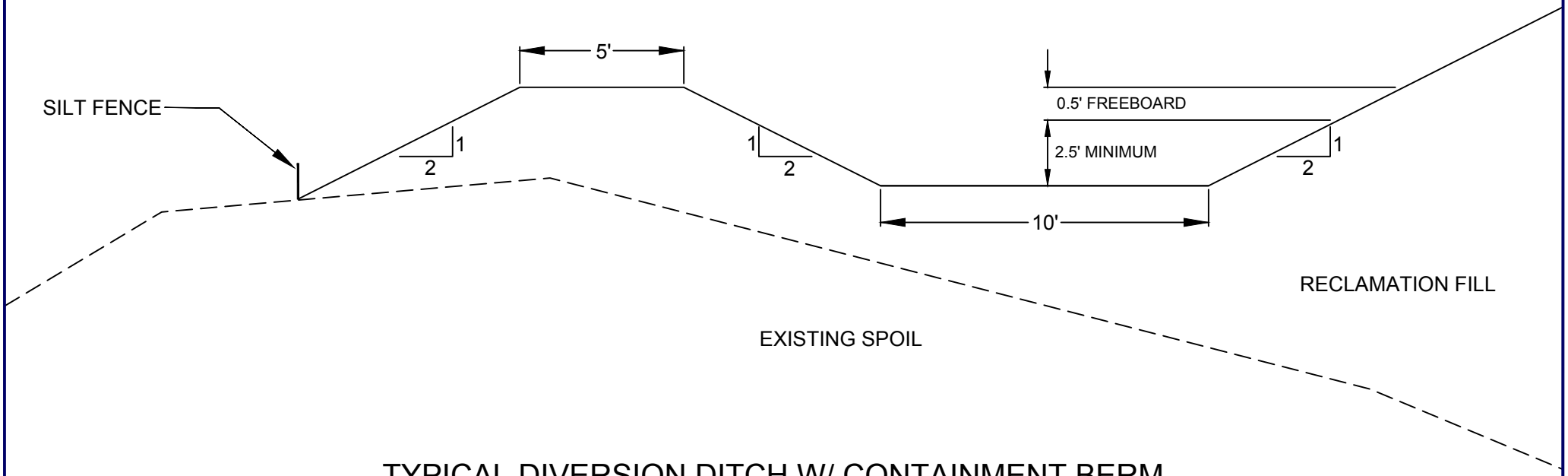
INTRODUCTION

Diversion 1-4 will be a flat bottom trapezoidal ditch ten (10') feet in width and will be lined with a grass mixture from Station 0+00 to Station 33+62.30 from

Diversion 1-4 will be constructed in conjunction with active mining operations within Increment No. 1 of permit P-3960. The existing open pit area of Increment No. 1 will be used for spoil placement for spoils generated in the first and second mining cuts. As the pit areas are filled, a Diversion Berm will be constructed along the top ridge of the existing spoil piles and Diversion Ditch 1-4 will be constructed with the berm structure (See attached Typical Diversion Ditch w/ Containment Berm Detail .) As mining advances and spoils are placed in the existing pit areas, Diversion 1-4 will be constructed, stabilized and vegetated in five hundred (500') foot intervals and will convey flow generally to the east and then to the northeast up to the boundary of Increment No. 1.

Diversion 2-1 is a continuation of Diversion 1-4 and will be constructed as mining moves into Increment No. 2. Spoil placement will continue as started in Increment No. 1 and construction of the Diversion 2-1 will convey drainage generally to the northeast until the diversion dumps its flow into an existing stream channel that conveys drainage and into Basin 002. Due to the increased slopes, Diversion 2-1 will be lined with Class 1 Rip Rap (See attached Rip-Rap Specifications). Diversion 2-1 will be constructed and stabilized in five hundred (500') foot intervals. No construction of Diversion 2-1 will commence until Increment No. 2 is activated and mining within the increment commences. (See attached Watershed Map – Diversion 1-4 & 2-1 for a plan view of the diversions.)

No part of the containment berms for Diversion 1-4 and Diversion 2-1 will be greater than eight (8') in depth so a stability analysis of the diversion structure will not be required.



TYPICAL DIVERSION DITCH W/ CONTAINMENT BERM
FLAT BOTTOM 10' WIDTH

CHANNEL LINING TO CONSIST OF A MIXTURE OF FESCUE AND BERMUDA GRASS
NO SCALE

TASK EMI
CONSULTING ENGINEERS
P.O. BOX 660548
BIRMINGHAM, ALABAMA 35266
(205)978-5070

RIP-RAP CLASSIFICATION SPECIFICATIONS FOR DIVERSION DITCHES

CLASS 1 RIP-RAP

No more than 10% of the stone will have a diameter greater than twelve (12) inches; no more that 50% of the stone will have a diameter less than ten (10) inches: and no more than 10% of the stone will have a diameter less than six (6) inches. The thickness of the rip-rap liner will be no less than twelve (12) inches.

CLASS 2 RIP-RAP

No more than 10% of the stone will have a diameter greater than sixteen (16) inches; no more than 50% of the stone will have a diameter less than twelve (12) inches; and no more than 10% of the stone will have a diameter of less than six (6) inches. The thickness of the rip-rap liner will be no less than sixteen (16) inches.

CLASS 3 RIP-RAP

No more than 10% of the stone will have a diameter greater than twenty-two (22) inches; no more than 50% of the stone will have a diameter less than sixteen (16) inches; and no more than 10% of the stone will have a diameter of less than eight (8) inches. The thickness of the rip-rap liner will be no less than twenty-two (22) inches.

CLASS 4 RIP-RAP

No more than 10% of the stone will have a diameter greater than twenty-seven (27) inches; no more than 50% of the stone will have a diameter of less than twenty-two (22) inches; and no more than 10% of the stone will have a diameter of less than ten (10) inches. The thickness of the rip-rap liner will be no less than twenty-seven (27) inches.

CLASS 5 RIP-RAP

No more than 10% of the stone will have a diameter greater than thirty-four (34) inches; no more than 50% of the stone will have a diameter less than twenty-seven (27) inches; and no more than 10% of the stone will have a diameter of less than sixteen (16) inches. The thickness of the rip-rap liner will be no less than thirty-four (34) inches.

DIVERSION DITCH 1-4 & 2-1 DESIGN INFORMATION

Station	Drainage Area (acres	Peak Flow (cfs)	Lining	Percent Grade (%)	Velocity (fps)	Flow Depth (ft)	Freeboard (ft)	Depth with Freeboard (ft)
0+00 – 33+62.30	34.86	44.36	Grass Mixture	0.36	2.29	2.38	0.50	2.88
33+62.30 – 39+34.80	6.54	49.09	Class 1 Rip Rap	12.87	* Not Listed	0.39	0.50	0.89

* Velocity and Manning's n calculations may not apply for Simons/OSM Method – Steep Slope Design. (See attached SEDCAD4 run.)

INDEX OF DRAWINGS

See attached **SedCad4** runs for the peak flow from the 10 year 6 hour design event and corresponding SedCad4 Utility Runs for each segment.

DIVERSION 1-1

DIVERSION 1-2

DIVERSION 1-3

DIVERSION 1-4
FROM STA 0+00 TO STA 33+62.30

DIVERSION 2-1
FROM STA 0+00 TO STA 5+72.50
CONTINUATION OF DIVERSION 1-4

DIVERSION 2-2

SWS-1
34.86 AC.

SWS-2
6.54 AC.

NW 1/4 - SW 1/4 | NE 1/4 - SW 1/4 | NW 1/4 - SE 1/4 | NE 1/4 - SE 1/4 | NW 1/4 - SW 1/4 | NE 1/4

SW 1/4 - SW 1/4 | SE 1/4 - SW 1/4 | SW 1/4 - SE 1/4 | SE 1/4 - SE 1/4 | SW 1/4 - SW 1/4 | SE 1/4

NW 1/4 - NW 1/4 | NE 1/4 - NW 1/4 | NW 1/4 - NE 1/4 | NE 1/4 - NE 1/4 | NW 1/4 - NW 1/4 | NE 1/4

18 17
19 20

TASK EMI
CONSULTING ENGINEERS
P.O. BOX 660548
BIRMINGHAM, ALABAMA 35266
(205)978-5070
email: jw-task@charter.net

N
W E
S

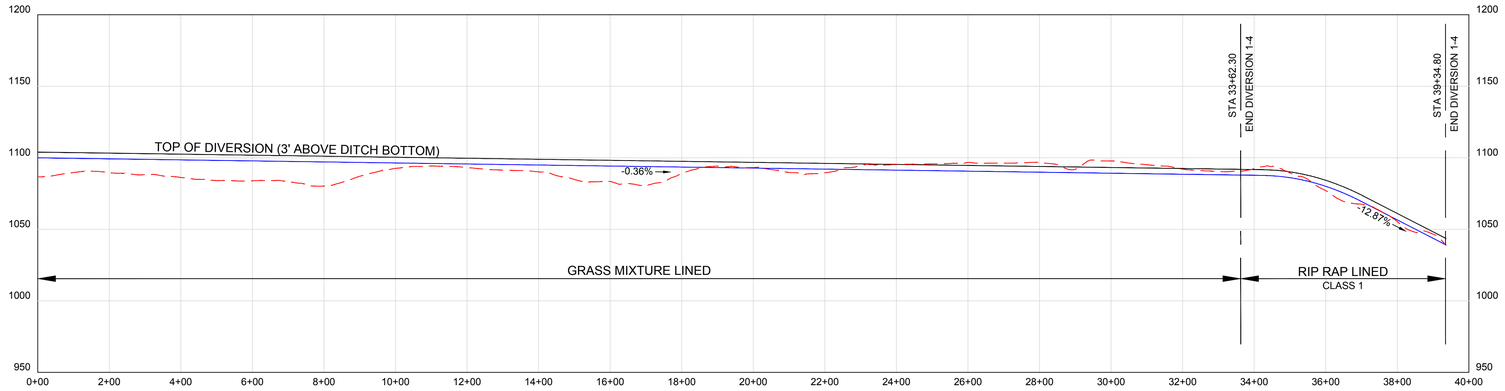
CEDAR LAKE MINING, INC.
BULL GAP MINE, P-3960

WATERSHED MAP
SCALE: 1" = 200'
CONTOUR INTERVAL: 20 FT.

DIVERSIONS 1-4 & 2-1

LEGEND

- PERMIT BOUNDARY
- PREVIOUSLY SURFACE MINED
- GRADED & BARE, CN 81
- MINED, REVEG. 0-2 MONTHS, CN 79
- MINED, REVEG. 2-12 MONTHS, CN 74
- MINED, RECLAIMED GRASSLAND, CN 69
- MOSTLY FOREST, GOOD COVER, CN 72
- PONDS/SEDIMENT BASINS, CN 100
- SEDIMENT BASIN/OUTFALL
- WATER IMPOUNDMENT
- DRAINAGE DIVIDE
- ROADSIDE DITCH
- DIVERSION DITCH
- PRIMARY ROAD
- PERENNIAL AND/OR INTERMITTENT STREAM
- DRAINAGE COURSE
- 100' STREAM BUFFER ZONE BOUNDARY
- HIGHWALL
- RHW - RECLAIMED HIGHWALL



LEGEND

- EXISTING GROUND PROFILE
- PROPOSED DIVERSION 1-4 & 2-1
- TOP OF DIVERSION (4' ABOVE DITCH BOTTOM)

PROFILE DIVERSION 1-4 & 2-1

HORZ. SCALE 1"= 200'
VERT. SCALE 1"= 50'
STATION 0+00 TO STATION 39+34.80

TASK ENGINEERING MANAGEMENT INC.
CONSULTING ENGINEERS
P.O. BOX 660548
BIRMINGHAM, ALABAMA 35266
(205) 978-5070

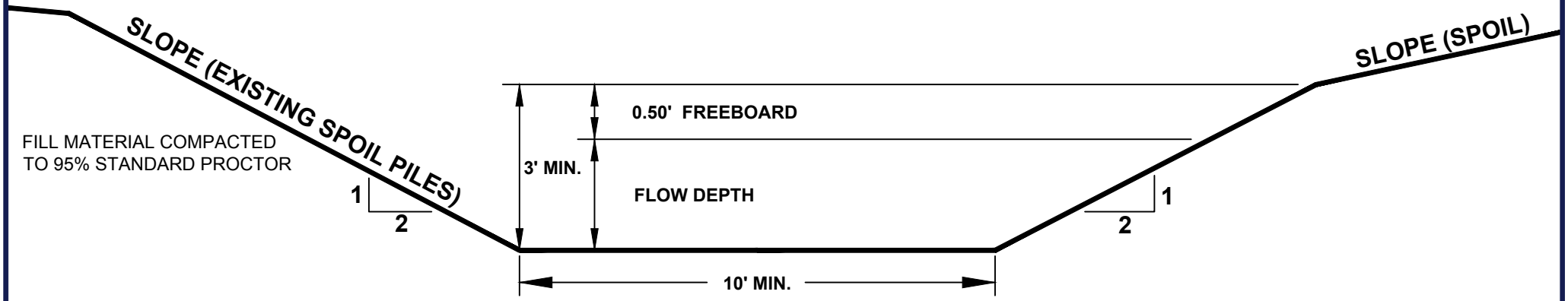
Cedar Lake Mining, Inc.

BULL GAP MINE
ASMC PERMIT NO. P-3960

DIVERSION 1-4 & 2-1 PROFILE
STA 0+00 TO STA 39+34.80

FILE: CL-003	SCALE: 1" = 200' H, 1" = 50' V	JOB NO: M-004	
APPROVED BY: JWW	DATE: 09-27-18	SHEET: 1 OF 1	

DIVERSION DITCH No. 1-4
TYPICAL CROSS-SECTION
TRAPEZOIDAL CONFIGURATION
GRASS-LINED
NTS



DIVERSION SPECIFICATIONS	
STATIONS	0+00 - 33+62.30
CHANNEL BED SLOPE	0.36%
DITCH BED LINER	GRASS MIXTURE
FREEBOARD	0.50'
MAX. FLOW DEPTH	2.38'
TOTAL DEPTH W/ FREEBOARD	2.88'

GENERAL SPECIFICATIONS

DIVERSION/BERM PROTECTIVE LINER: GRASS MIXTURE (FESCUE, BERMUDA AND RYE).

FLOW LIMITED BY MAXIMUM ALLOWABLE VELOCITY (5.0 FPS)

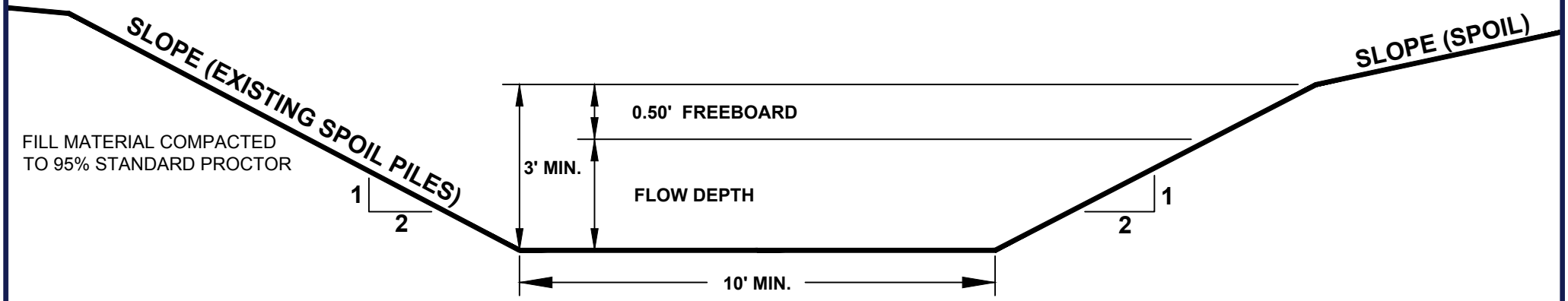
STORM TYPE: SCS 6 HOUR

DESIGN STORM: 10 yr - 6 hr

RAINFALL DEPTH: 4.110 inches

TASK EMI
CONSULTING ENGINEERS
P.O. BOX 660548
BIRMINGHAM, ALABAMA 35266
(205)978-5070

DIVERSION DITCH No. 2-1
TYPICAL CROSS-SECTION
TRAPEZOIDAL CONFIGURATION
RIP RAP-LINED
NTS



DIVERSION SPECIFICATIONS	
STATIONS	33+62.30 - 39+34.80
CHANNEL BED SLOPE	12.87%
DITCH BED LINER	RIP-RAP
FREEBOARD	0.50'
MAX. FLOW DEPTH	0.39'
TOTAL DEPTH W/ FREEBOARD	0.89'

GENERAL SPECIFICATIONS

DIVERSION/BERM PROTECTIVE LINER: GRASS MIXTURE (FESCUE, BERMUDA AND RYE).

FLOW LIMITED BY MAXIMUM ALLOWABLE VELOCITY (5.0 FPS)

STORM TYPE: SCS 6 HOUR

DESIGN STORM: 10 yr - 6 hr

RAINFALL DEPTH: 4.110 inches

TASK EMI
CONSULTING ENGINEERS
P.O. BOX 660548
BIRMINGHAM, ALABAMA 35266
(205)978-5070

Cedar Lake Mining, Inc.
Bull Gap Mine, P-3960
Increment No. 1
Diversion 1-4 & 2-1

SCS 6 HOUR

10 Year 6 - Hour Event, 4.11 In.

Jerry W. Williams, P.E.

TASK Engineering Management Inc.
P.O. Box 660548
Birmingham, AL 35226

Phone: 205.978.5070
Email: jw-task@charter.net

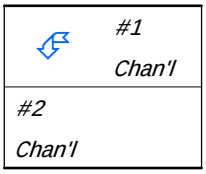
General Information

Storm Information:

Storm Type:	SCS 6 HOUR
Design Storm:	10 yr - 6 hr
Rainfall Depth:	4.110 inches

Structure Networking:

Type	Stru #	(flows into)	Stru #	Musk. K (hrs)	Musk. X	Description
Channel	#1	==>	#2	0.018	0.419	DIVERSION 1-4
Channel	#2	==>	End	0.000	0.000	DIVERSION 2-1



Structure Routing Details:

Stru #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	8. Large gullies, diversions, and low flowing streams	8.54	48.91	572.53	8.76	0.018
#1	**Muskingum K:**					**0.018**

Structure Summary:

	Immediate Contributing Area (ac)	Total Contributing Area (ac)	Peak Discharge (cfs)	Total Runoff Volume (ac-ft)
#1	34.860	34.860	44.36	6.06
#2	6.540	41.400	49.09	7.27

Structure Detail:

Structure #1 (Vegetated Channel)

DIVERSION 1-4

Trapezoidal Vegetated Channel Inputs:

Material: Grass mixture

Bottom Width (ft)	Left Sideslope Ratio	Right Sideslope Ratio	Slope (%)	Retardance Classes	Freeboard Depth (ft)	Freeboard % of Depth	Freeboard Mult. x (VxD)	Limiting Velocity (fps)
10.00	2.0:1	2.0:1	0.4	D, B	0.50			5.0

Vegetated Channel Results:

	Stability Class D w/o Freeboard	Stability Class D w/ Freeboard	Capacity Class B w/o Freeboard	Capacity Class B w/ Freeboard
Design Discharge:	44.36 cfs		44.36 cfs	
Depth:	1.49 ft	1.99 ft	2.38 ft	2.88 ft
Top Width:	15.98 ft	17.98 ft	19.53 ft	21.53 ft
Velocity:	2.29 fps		1.26 fps	
X-Section Area:	19.40 sq ft		35.19 sq ft	
Hydraulic Radius:	1.163 ft		1.703 ft	
Froude Number:	0.37		0.17	
Roughness Coefficient:	0.0432		0.1011	

Structure #2 (Riprap Channel)

DIVERSION 2-1

Trapezoidal Riprap Channel Inputs:

Material: Riprap

Bottom Width (ft)	Left Sideslope Ratio	Right Sideslope Ratio	Slope (%)	Freeboard Depth (ft)	Freeboard % of Depth	Freeboard Mult. x (VxD)
10.00	2.0:1	2.0:1	12.9	0.50		

Riprap Channel Results:

Simons/OSM Method - Steep Slope Design

	w/o Freeboard	w/ Freeboard
Design Discharge:	49.09 cfs	

	w/o Freeboard	w/ Freeboard
Depth:	0.39 ft	0.89 ft
Top Width:	11.58 ft	13.58 ft
Velocity*:		
X-Section Area:	4.26 sq ft	
Hydraulic Radius:	0.362 ft	
Froude Number*:		
Manning's n*:		
Dmin:	3.00 in	
D50:	9.00 in	
Dmax:	11.25 in	

Velocity and Manning's n calculations may not apply for this method.

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	34.860	0.495	0.018	0.419	81.000	F	44.36	6.059
	Σ	**34.860**						**44.36**	**6.059**
#2	1	6.540	0.029	0.000	0.000	81.000	F	15.68	1.206
	Σ	**41.400**						**49.09**	**7.266**

Subwatershed Time of Concentration Details:

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	1	5. Nearly bare and untilled, and alluvial valley fans	2.19	11.42	522.36	1.470	0.098
		8. Large gullies, diversions, and low flowing streams	0.36	9.21	2,562.75	1.790	0.397
#1	**1**	**Time of Concentration:**					**0.495**
#2	1	5. Nearly bare and untilled, and alluvial valley fans	25.02	27.76	110.94	5.000	0.006
		8. Large gullies, diversions, and low flowing streams	8.66	63.74	735.80	8.820	0.023
#2	**1**	**Time of Concentration:**					**0.029**

Subwatershed Muskingum Routing Details:

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	1	8. Large gullies, diversions, and low flowing streams	8.54	48.91	572.53	8.760	0.018
#1	**1**	**Muskingum K:**					**0.018**
#2	1	5. Nearly bare and untilled, and alluvial valley fans	0.00	0.00	0.00	0.000	0.000
#2	**1**	**Muskingum K:**					**0.000**

DIVERSION 2-2

DETAILED DESIGN PLANS

Submitted by:

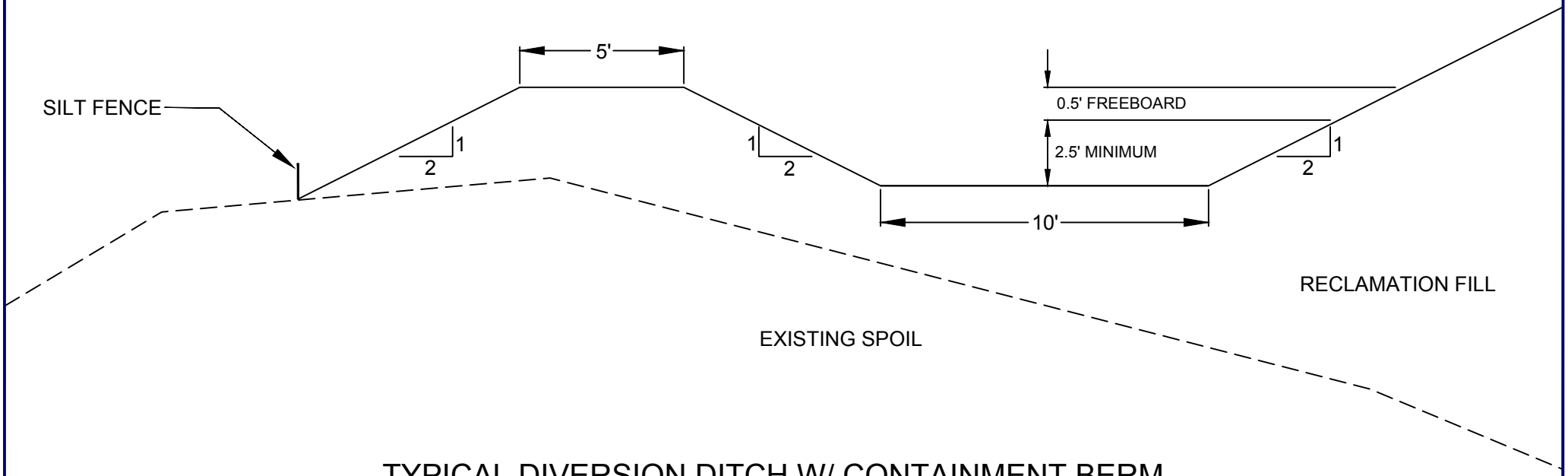
TASK Engineering Management Inc.
P. O. Box 660548
Birmingham, Alabama 35266
Telephone: (205) 978-5070
Email: jw-task@charter.net

INTRODUCTION

Diversion 2-2 will be a flat bottom trapezoidal ditch ten (10') feet in width and will be lined with a grass mixture from Station 0+00 to Station 17+34.12 and with Class 4 Rip Rap from Station 17+34.12 to its dumping point into an existing drainage course at Station 20+51.42.

Diversion 2-2 will be constructed in conjunction with active mining operations within Increment No. 2 of permit P-3960. The existing open pit area of Increment No. 2 will be used for spoil placement for spoils generated in the first and second mining cuts. As the pit areas are filled, a Diversion Berm will be constructed along the top ridge of the existing spoil piles and Diversion Ditch 2-2 will be constructed with the berm structure (See attached Typical Diversion Ditch w/ Containment Berm Detail .) As mining advances and spoils are placed in the existing pit areas, Diversion 2-2 will be constructed, stabilized and vegetated in five hundred (500') foot intervals and will convey flow generally to the west until the diversion dumps its flow into an existing stream channel that conveys drainage and into Basin 002. Due to the increased slopes, Diversion 2-2 will be lined with Class 4 Rip Rap commencing at Station 17+34.12 (See attached Rip-Rap Specifications). Diversion 2-2 will be constructed and stabilized in five hundred (500') foot intervals but no construction will commence until Increment No. 2 is activated and mining within the increment commences. (See attached Watershed Map – 2-2 for a plan view of the diversions.)

No part of the containment berm for Diversion 2-2 will be greater than eight (8') in depth so a stability analysis of the diversion structure will not be required.



TYPICAL DIVERSION DITCH W/ CONTAINMENT BERM
FLAT BOTTOM 10' WIDTH

CHANNEL LINING TO CONSIST OF A MIXTURE OF FESCUE AND BERMUDA GRASS
NO SCALE

TASK EMI
CONSULTING ENGINEERS
P.O. BOX 660548
BIRMINGHAM, ALABAMA 35266
(205)978-5070

RIP-RAP CLASSIFICATION SPECIFICATIONS FOR DIVERSION DITCHES

CLASS 1 RIP-RAP

No more than 10% of the stone will have a diameter greater than twelve (12) inches; no more that 50% of the stone will have a diameter less than ten (10) inches: and no more than 10% of the stone will have a diameter less than six (6) inches. The thickness of the rip-rap liner will be no less than twelve (12) inches.

CLASS 2 RIP-RAP

No more than 10% of the stone will have a diameter greater than sixteen (16) inches; no more than 50% of the stone will have a diameter less than twelve (12) inches; and no more than 10% of the stone will have a diameter of less than six (6) inches. The thickness of the rip-rap liner will be no less than sixteen (16) inches.

CLASS 3 RIP-RAP

No more than 10% of the stone will have a diameter greater than twenty-two (22) inches; no more than 50% of the stone will have a diameter less than sixteen (16) inches; and no more than 10% of the stone will have a diameter of less than eight (8) inches. The thickness of the rip-rap liner will be no less than twenty-two (22) inches.

CLASS 4 RIP-RAP

No more than 10% of the stone will have a diameter greater than twenty-seven (27) inches; no more than 50% of the stone will have a diameter of less than twenty-two (22) inches; and no more than 10% of the stone will have a diameter of less than ten (10) inches. The thickness of the rip-rap liner will be no less than twenty-seven (27) inches.

CLASS 5 RIP-RAP

No more than 10% of the stone will have a diameter greater than thirty-four (34) inches; no more than 50% of the stone will have a diameter less than twenty-seven (27) inches; and no more than 10% of the stone will have a diameter of less than sixteen (16) inches. The thickness of the rip-rap liner will be no less than thirty-four (34) inches.

DIVERSION DITCH 2-2 DESIGN INFORMATION

Station	Drainage Area (acres)	Peak Flow (cfs)	Lining	Percent Grade (%)	Velocity (fps)	Flow Depth (ft)	Freeboard (ft)	Depth with Freeboard (ft)
0+00 – 17+34.12	26.80	50.47	Grass Mixture	2.22	4.70	1.39	0.50	1.89
17+34.12 – 20+51.42	51.20	97.67	Class 4 Rip Rap	27.69	*Not Listed	0.38	0.50	0.88

* Velocity and Manning's n calculations may not apply for Simons/OSM Method – Steep Slope Design. (See attached SEDCAD4 run.)

INDEX OF DRAWINGS

See attached **SedCad4** runs for the peak flow from the 10 year 6 hour design event and corresponding SedCad4 Utility Runs for each segment.

Hale Cr

DIVERSION 1-1

DIVERSION 1-2

DIVERSION 1-4

DIVERSION 2-1
CONTINUATION OF DIVERSION 1-4

DIVERSION 2-2
FROM STA 0+00 TO STA 20+51.42

DIVERSION 4-7

DIVERSION 4-8

SWS-1
26.80 AC.

SWS-2
24.40 AC.

SE 1/4 - NW 1/4 | SW 1/4 - NE 1/4 | SE 1/4 - NE 1/4 | SW 1/4 - NW 1/4 | SE 1/4 - NW 1/4 | SW 1/4 - N

E 1/4 - SW 1/4 | NW 1/4 - SE 1/4 | NE 1/4 - SE 1/4 | NW 1/4 - SW 1/4 | NE 1/4 - SW 1/4 | NW 1/4 - S

SE 1/4 - SW 1/4 | SW 1/4 - SE 1/4 | SE 1/4 - SE 1/4 | SW 1/4 - SW 1/4 | SE 1/4 - SW 1/4 | SW 1/4 - SE

18 | 17 | 4B

19 | 20

004 | 010P | 600

C

1000 | 1100 | 1200

31% | 21% | 13% | 8% | 17% | 10% | 29% | 11% | 12%

0+00 | 3+00 | 6+00 | 9+00 | 12+00 | 15+00 | 18+00 | 20+51.42 | 17+34.12

HW | MH | RHW

N | S | E | W

TASK EMI
CONSULTING ENGINEERS
P.O. BOX 660548
BIRMINGHAM, ALABAMA 35266
(205)978-5070
email: jw-task@charter.net

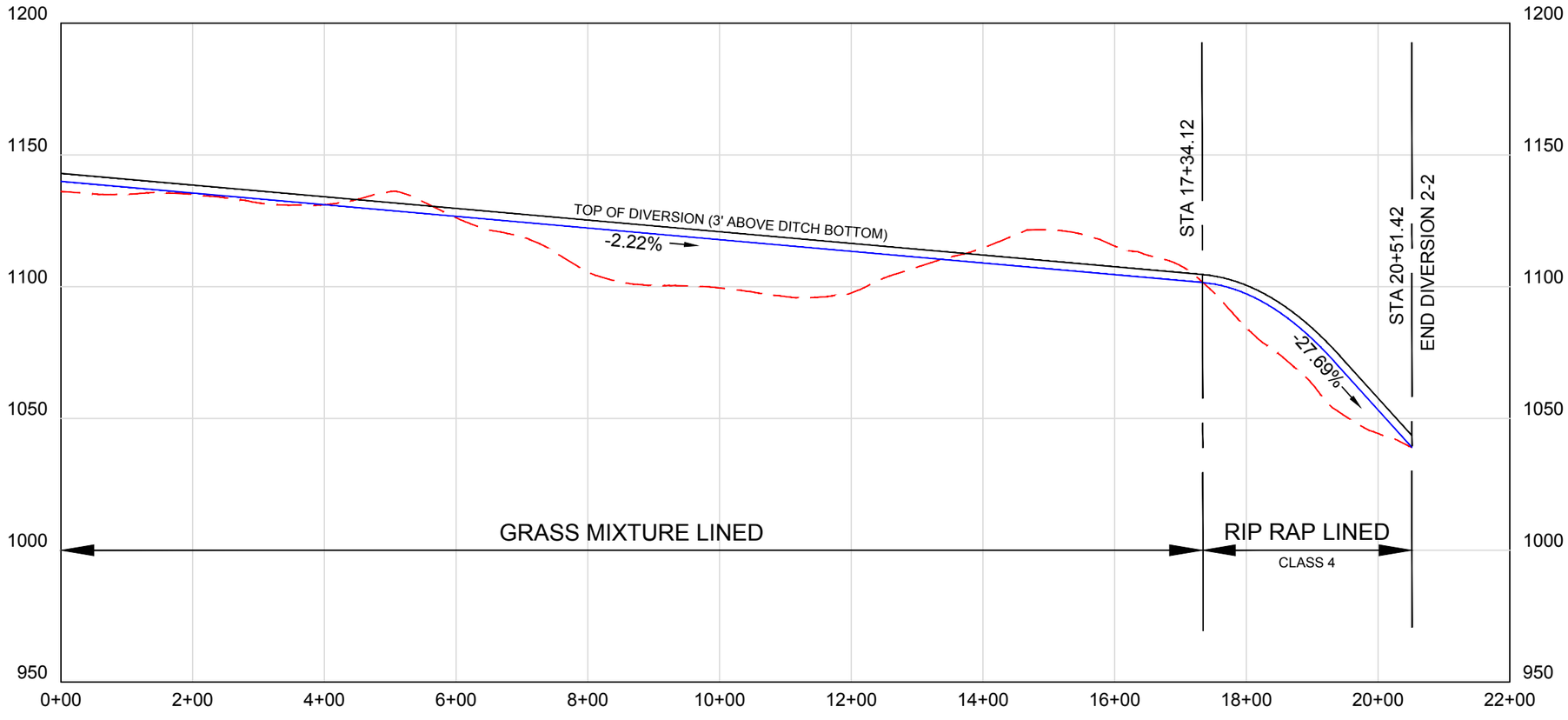
CEDAR LAKE MINING, INC.
BULL GAP MINE, P-3960

WATERSHED MAP
SCALE: 1" = 200'
CONTOUR INTERVAL: 20 FT.

DIVERSION 2-2

LEGEND

- PERMIT BOUNDARY
- PREVIOUSLY SURFACE MINED
- GRADED & BARE, CN 81
- MINED, REVEG. 0-2 MONTHS, CN 79
- MINED, REVEG. 2-12 MONTHS, CN 74
- MINED, RECLAIMED GRASSLAND, CN 69
- MOSTLY FOREST, GOOD COVER, CN 72
- PONDS/SEDIMENT BASINS, CN 100
- SEDIMENT BASIN/OUTFALL
- WATER IMPOUNDMENT
- DRAINAGE DIVIDE
- ROADSIDE DITCH
- DIVERSION DITCH
- PRIMARY ROAD
- PERENNIAL AND/OR INTERMITTENT STREAM
- DRAINAGE COURSE
- 100' STREAM BUFFER ZONE BOUNDARY
- HW HIGHWALL
- RHW RECLAIMED HIGHWALL



PROFILE DIVERSION 2-2

HORZ. SCALE 1"= 200'
VERT. SCALE 1"= 50'
STATION 0+00 TO STATION 20+51.42

LEGEND

- **EXISTING GROUND PROFILE**
- **PROPOSED DIVERSION 2-2**
- **TOP OF DIVERSION (3' ABOVE DITCH BOTTOM)**

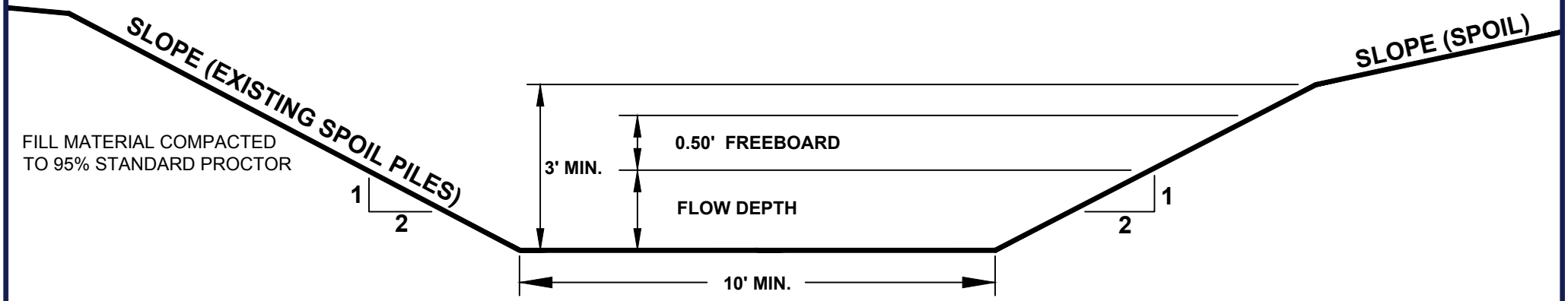
TASK EMI
CONSULTING ENGINEERS
P.O. BOX 660548
BIRMINGHAM, ALABAMA 35266
(205) 978-5070

CLIENT / MINE
CEDAR LAKE MINING, INC.
BULL GAP MINE

SCALE
1" = 200'H
1" = 50'V

SHEET
1 OF 1

DIVERSION DITCH No. 2-2
STATION 0+00 to STATION 17+34.12
TYPICAL CROSS-SECTION
TRAPEZOIDAL CONFIGURATION
GRASS-LINED
NTS



DIVERSION SPECIFICATIONS	
STATIONS	0+00 - 17+34.12
CHANNEL BED SLOPE	2.22%
DITCH BED LINER	GRASS MIXTURE
FREEBOARD	0.50'
MAX. FLOW DEPTH	1.39'
TOTAL DEPTH W/ FREEBOARD	1.89'
MINIMUM CONSTRUCTION HEIGHT	3.00'

GENERAL SPECIFICATIONS

DIVERSION/BERM PROTECTIVE LINER: GRASS MIXTURE (FESCUE, BERMUDA AND RYE).

FLOW LIMITED BY MAXIMUM ALLOWABLE VELOCITY (5.0 FPS)

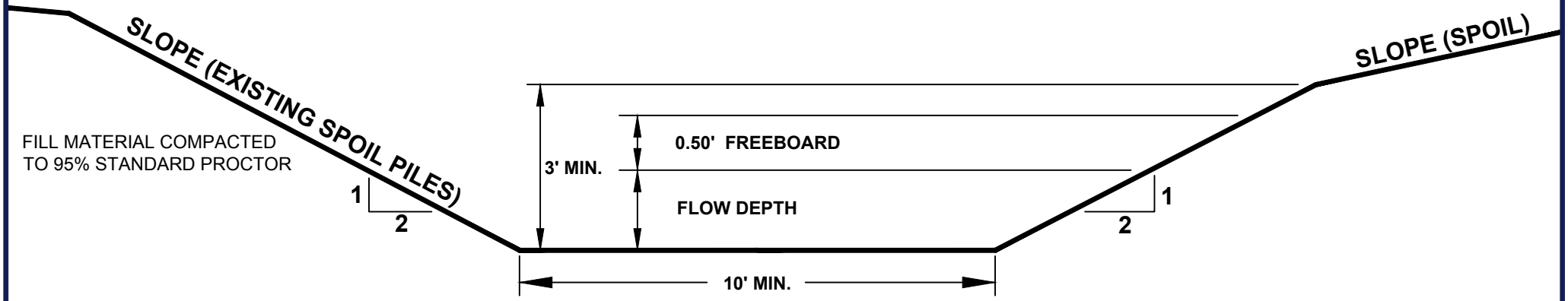
STORM TYPE: SCS 6 HOUR

DESIGN STORM: 10 yr - 6 hr

RAINFALL DEPTH: 4.110 inches

TASK EMI
CONSULTING ENGINEERS
P.O. BOX 660548
BIRMINGHAM, ALABAMA 35266
(205)978-5070

DIVERSION DITCH No. 2-2
STATION 17+34.12 to STATION 20+51.42
TYPICAL CROSS-SECTION
TRAPEZOIDAL CONFIGURATION
RIP RAP-LINED
NTS



DIVERSION SPECIFICATIONS	
STATIONS	17+34.12 - 20+51.42
CHANNEL BED SLOPE	27.69%
DITCH BED LINER	CLASS 4 RIP RAP
FREEBOARD	0.50'
MAX. FLOW DEPTH	0.38'
TOTAL DEPTH W/ FREEBOARD	0.88'
MINIMUM CONSTRUCTION HEIGHT	3.00'

GENERAL SPECIFICATIONS

DIVERSION/BERM PROTECTIVE LINER: GRASS MIXTURE (FESCUE, BERMUDA AND RYE).

FLOW LIMITED BY MAXIMUM ALLOWABLE VELOCITY (5.0 FPS)

STORM TYPE: SCS 6 HOUR

DESIGN STORM: 10 yr - 6 hr

RAINFALL DEPTH: 4.110 inches

TASK EMI
CONSULTING ENGINEERS
P.O. BOX 660548
BIRMINGHAM, ALABAMA 35266
(205)978-5070

Cedar Lake Mining, Inc.

Bull Gap Mine, P-3960

Increment No. 1

Diversion 2-2

SCS 6 HOUR

10 Year - 6 Hour Event, 4.11 In.

Jerry W. Williams, P.E.

TASK Engineering Management Inc.
P.O. Box 660548
Birmingham, AL 35226

Phone: 205.978.5070
Email: jw-task@charter.net

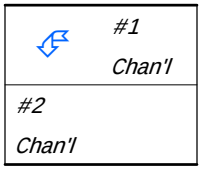
General Information

Storm Information:

Storm Type:	SCS 6 HOUR
Design Storm:	10 yr - 6 hr
Rainfall Depth:	4.110 inches

Structure Networking:

Type	Stru #	(flows into)	Stru #	Musk. K (hrs)	Musk. X	Description
Channel	#1	==>	#2	0.000	0.000	DIVERSION 2-2 SEGMENT #1
Channel	#2	==>	End	0.000	0.000	DIVERSION 2-2 SEGMENT #2



Structure Summary:

	Immediate Contributing Area (ac)	Total Contributing Area (ac)	Peak Discharge (cfs)	Total Runoff Volume (ac-ft)
#1	26.800	26.800	50.47	4.76
#2	24.400	51.200	97.67	9.27

Structure Detail:

Structure #1 (Vegetated Channel)

DIVERSION 2-2 SEGMENT #1

Trapezoidal Vegetated Channel Inputs:

Material: Grass mixture

Bottom Width (ft)	Left Sideslope Ratio	Right Sideslope Ratio	Slope (%)	Retardance Classes	Freeboard Depth (ft)	Freeboard % of Depth	Freeboard Mult. x (VxD)	Limiting Velocity (fps)
10.00	2.0:1	2.0:1	2.2	D, B	0.50			5.0

Vegetated Channel Results:

	Stability Class D w/o Freeboard	Stability Class D w/ Freeboard	Capacity Class B w/o Freeboard	Capacity Class B w/ Freeboard
Design Discharge:	50.47 cfs		50.47 cfs	
Depth:	0.91 ft	1.41 ft	1.39 ft	1.89 ft
Top Width:	13.64 ft	15.64 ft	15.57 ft	17.57 ft
Velocity:	4.70 fps		2.84 fps	
X-Section Area:	10.74 sq ft		17.80 sq ft	
Hydraulic Radius:	0.764 ft		1.097 ft	
Froude Number:	0.93		0.47	
Roughness Coefficient:	0.0395		0.0832	

Structure #2 (Riprap Channel)

DIVERSION 2-2 SEGMENT #2

Trapezoidal Riprap Channel Inputs:

Material: Riprap

Bottom Width (ft)	Left Sideslope Ratio	Right Sideslope Ratio	Slope (%)	Freeboard Depth (ft)	Freeboard % of Depth	Freeboard Mult. x (VxD)
10.00	2.0:1	2.0:1	27.7	0.50		

Riprap Channel Results:

Simons/OSM Method - Steep Slope Design

	w/o Freeboard	w/ Freeboard
Design Discharge:	97.67 cfs	

	w/o Freeboard	w/ Freeboard
Depth:	0.38 ft	0.88 ft
Top Width:	11.53 ft	13.53 ft
Velocity*:		
X-Section Area:	4.12 sq ft	
Hydraulic Radius:	0.352 ft	
Froude Number*:		
Manning's n*:		
Dmin:	7.00 in	
D50:	21.00 in	
Dmax:	26.25 in	

Velocity and Manning's n calculations may not apply for this method.

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#1	1	26.800	0.127	0.006	0.443	81.000	F	50.47	4.765
	Σ	**26.800**						**50.47**	**4.765**
#2	1	24.400	0.068	0.000	0.000	81.000	F	58.49	4.502
	Σ	**51.200**						**97.67**	**9.266**

Subwatershed Time of Concentration Details:

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	1	5. Nearly bare and untilled, and alluvial valley fans	14.20	52.92	372.68	3.760	0.027
		8. Large gullies, diversions, and low flowing streams	3.53	71.69	2,032.39	5.630	0.100
#1	**1**	**Time of Concentration:**					**0.127**
#2	1	5. Nearly bare and untilled, and alluvial valley fans	15.47	64.83	418.95	3.930	0.029
		8. Large gullies, diversions, and low flowing streams	8.21	101.29	1,233.16	8.590	0.039
#2	**1**	**Time of Concentration:**					**0.068**

Subwatershed Muskingum Routing Details:

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	1	8. Large gullies, diversions, and low flowing streams	19.67	62.60	318.25	13.300	0.006
#1	**1**	**Muskingum K:**					**0.006**

APPENDIX A

STATE OF ALABAMA
SURFACE MINING COMMISSION
P. O. BOX 2390 — JASPER, ALABAMA 35502-2390
(205) 221-4130

PERMITTING

March 17, 1993

M. S. & R. Equipment Co., Inc.
2361 Cumberland Lake Drive
Pinson, AL 35126

ATTENTION: Mr. Otis R. Robinson, Jr.

RE: P-3711
Altoona Mine

Dear Sir:

Please accept this letter as notification that the detailed design plans submitted for proposed sedimentation pond 001 are hereby approved.

If there are any questions, please do not hesitate to call.

Sincerely,

J. Michael Harrison
P.E.

/kb

cc: Frank Holis & Associates, Inc.
File

PART III. B. SHEET 1

SPECIFICATIONS & REQUIREMENTS FOR SEDIMENTATION PONDS #3711

I. GENERAL REQUIREMENTS

A. All surface drainage from the disturbed area shall be passed through a sedimentation pond or a series of sedimentation ponds.

B. Sedimentation ponds shall be maintained until the disturbed area has been restored and revegetated. In no case shall the structure be removed sooner than two years after the last augmented seeding.

C. Discharge of water from areas disturbed by mining activities shall be made in compliance with all applicable State and Federal water quality effluent limitation quidelines for coal mining.

D. Sedimentation ponds used individually or in series shall:
1. Be constructed before any disturbance of an area from which drainage is received;
2. Be located as near as possible to the disturbed area and out of perennial streams unless approved by the State Regulatory Authority;
3. Be designed and certified by a qualified registered professional engineer licensed to practice in the State of Alabama;
4. Be designed, constructed, and maintained to provide adequate detention time so that discharges shall meet the effluent limitations for coal mine point source discharges established by applicable State and Federal Laws and Regulations;
5. Be designed, constructed, and maintained to minimize short-circuiting to the extent possible.

II. DESIGN REQUIREMENTS

A. Sedimentation ponds used individually or in series are designed to contain or treat the 10 year, 24 hour precipitation event, unless a lesser event is approved by the Regulatory Authority.

B. Sedimentation ponds are designed and constructed to provide adequate sediment storage volume. Accumulated sediment shall be removed when the maximum storage elevation, specified in the detail design, has been reached.

C. Spillways
1. Sedimentation ponds meeting the size or other qualifying criteria of 30 CFR 77.216(a) shall comply with all the requirements of that section, and shall have principal and emergency spillways that in combination will safely pass a 100 year, 6 hour precipitation event.

2. Sedimentation ponds not meeting the qualifying criteria of 30 CFR 77.216(a) shall have an appropriate combination of principal and emergency spillways to safely discharge the runoff from a 25 year, 6 hour precipitation event, unless the pond is to be a permanent water impoundment whereas the design precipitation event shall be a 50 year, 6 hour event at a minimum.

D. Dams of sediment ponds are designed and constructed to ensure against excessive settlement. Although the required 95% compaction will prohibit excessive settlement, the construction height of the dam will be increased 5 percent to further protect the structure.

E. Impoundments are designed to have a minimum static safety factor of 1.5 for the normal pool with steady seepage saturation conditions and a seismic safety factor of at least 1.2.

F. Impoundments are designed to have adequate freeboard to resist over-topping by waves and by sudden increases in storage volume. A minimum of 1' between the top of the emergency spillway and the top of the settled dam is required.

G. Foundation and abutments for the impounding structure are designed to be stable under all conditions of construction and operation. All necessary foundation investigation and laboratory testing shall be performed in order to determine the design requirements for foundation stability.

H. Sedimentation pond design will be certified by a registered professional engineer experienced in the design and construction of impoundments to meet the requirements of Rules 880-X-10C-.13, .17, .18, and .20 of ASMC Rules for Surface Coal Mine Operations specifically the design, construction, operation, and maintenance requirements and the timetable and plans for removal of the structure, using current prudent engineering practices.

III. CONSTRUCTION REQUIREMENTS

A. The entire area of the impoundment shall be cleared of trees and brush, and the dam foundation area shall be scarified and cleared of all organic matter.

B. Material

1. The dam shall be constructed of suitable compacted material with the core extending a minimum of 2' into an impervious material. Core trench shall be a minimum of 8' wide with side slopes not exceeding 1 H: 1 V. All material shall be compacted to 95 percent density as established by AASHTO T-99. To allow for settlement constructed height of dam will be increased 5 percent above designed height.

2. The fill material shall be free of sod, large roots, other vegetative matter, stones over 6 inches in diameter, frozen soil, and other objectionable material, and in no case shall acid or toxic-forming coal processing waste be used. All material shall be placed and spread over the entire fill area, starting at the lowest point of the foundation, in horizontal layers not to exceed 12 inches in thickness. Construction of the fill shall be undertaken only at such times that the moisture content of the fill material will permit satisfactory compaction in accordance with ASSHTO T-99.

C. Dimensions
1. Dam width will be as specified on the dam detailed cross section.
2. Proposed upstream and downstream slopes are as specified on the dam detailed cross section.
3. Any highwalls adjacent to or a part of a sediment pond will be sloped to below the low water line on a maximum of 2 H:1V slope.

D. A non-clogging dewatering device adequate to maintain the required detention time will be constructed. The specific device will be as shown on the detail design plan.

E. Spillway
1. There shall be a minimum of 1.0 feet of freeboard between the maximum design flow of the emergency overflow and the top of the settled dam.
2. The spillway shall be constructed of or in non-erodible material and runoff channelled so that the dam will not be harmed. The slope of the entrance and exit to the spillway control section shall not exceed 3 percent. The spillway shall be constructed with a control section of at least 20 feet long and side slope not steeper than 2 H : 1 V. Riprap and/or concrete shall be used to line the spillway channel in order to prevent erosion, unless the channel is constructed in non-erodible material and capable of maintaining sustained flows. Earth or grassed lined spillways for single spillway ponds are prohibited.

F. After construction and prior to certification, the dam and surrounding areas disturbed during construction shall be stabilized with respect to erosion by a vegetative cover, or other means. This includes the upstream face of the dam above the low pool elevation. Hay bales or riprap shall be placed at the toe to control erosion. Areas where vegetation is not successful or where rills or gullies develop shall be repaired and revegetated.

G. Sediment shall be removed from sediment pond and properly disposed of when the maximum storage elevation, as specified on the detail design, has been reached. If coal is encountered during the

cleanout operation, it shall be removed and properly disposed of.

H. Inspections

1. Pond construction will be supervised and inspected by a qualified registered professional engineer or technician under his direction. Certification of the structure by the engineer will be made upon completion of construction. Copies of the pond certification will be filed with the Regulatory Authority and at the mine office.

2. Ponds will be maintained for proper operation. Certified inspection reports will be prepared by the engineer and filed with the Regulatory Authority and at the mine office..
3. All impoundments will be inspected at least quarterly for hazardous conditions by a qualified person designated by the mine operator.
4. If any hazardous conditions are found, the Regulatory Authority shall be informed of the problem and the procedure implemented to correct the condition.

I. Sediment basins will not be removed until reclamation of the mine area is complete and drainage meets water quality requirements. Reclamation of the pond will be in strict compliance with current reclamation procedures unless the pond has been approved as a permanent water impoundment. After receiving approval from the Regulatory Authority, the ponds will be reclaimed by the following procedures: A diversion will be established around the basin to keep runoff from eroding the basin fill material and sediment while it is being stabilized. This diversion will be designed for a 2 year, 24 hour flow since it will be in use for only a short period of time. The pond will be pumped dry and the contained sediment then allowed to dry. Dam fill material will then be graded into the excavated area of the pond so as to cover the accumulated sediment and return the pond site to its approximate original contours. The entire area will be stabilized with respect to erosion by a vegetative cover or other means. A channel will then be established across the pond site which is suitable for the expected flows from the drainage basin involved. This channel will be the permanent drain from the basin and will be protected from excessive erosion by the placement of riprap or other suitable methods for the expected flow volumes and velocities. As soon as the new channel is complete and stable, the flow will be routed to it and the temporary diversion removed and revegetated.

NOTE: The plan for removal of sediment basins outlined above applies only to those ponds and impoundments not approved to be left as permanent water impoundments.

NOTE: All pond plans attached herein and all future pond plans submitted will correspond to specifications approved herein unless otherwise specified.

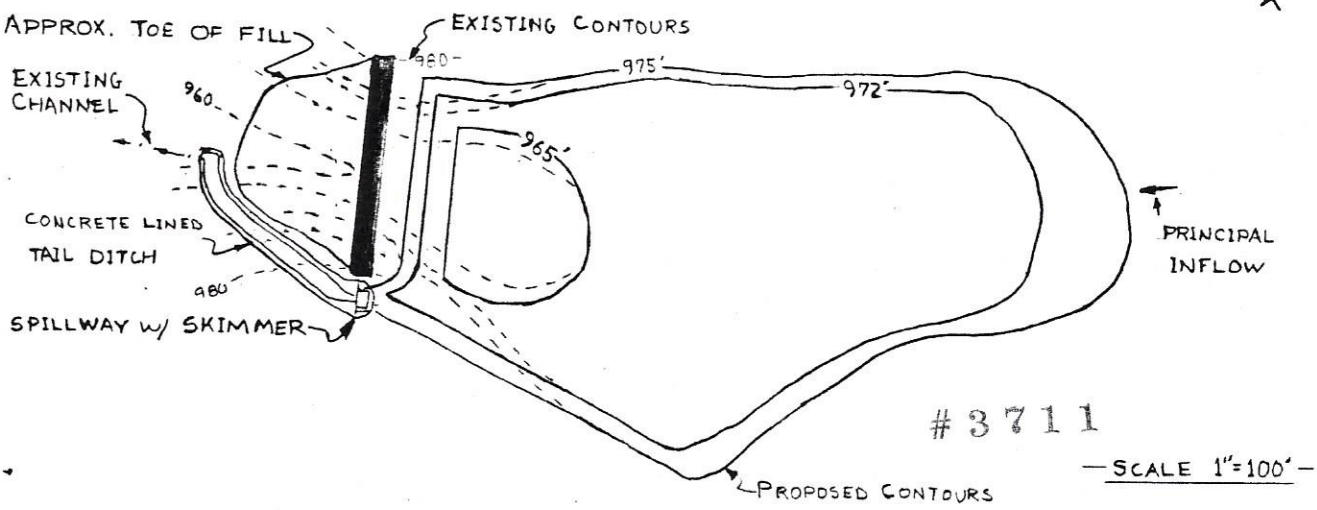
#3711

SHEET 5

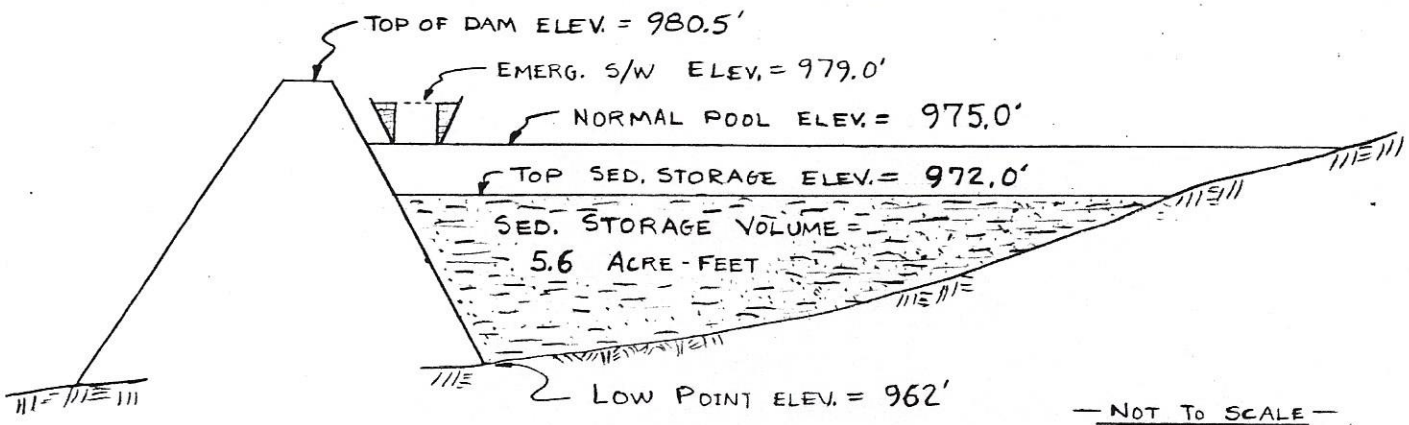
PRINCIPAL SPILLWAY PIPE INSTALLATION SPECIFICATIONS

1) The pipe shall be of material and gauge as per manufacturer's intended usage applications.
2) The pipe shall be of the size noted on the detailed design plan.
3) If acidic waters are anticipated to develop at the mining operation, the pipe shall be bituminous coated for extra corrosion resistance.
4) If seepage through the soil material around the pipe is anticipated (i.e. sandy or gravelly soils with high permeability), anti-seep collars will be designed and installed.
5) An "elbow" fitting will be installed on the inlet of the pipe to prevent surface withdrawal of water from the pond. There shall be a minimum clearance of 1' around the entrance of the elbow.
6) Compaction of the fill material around the pipe shall be achieved by hand tamping until the depth of the fill is high enough to allow mechanical compaction of the fill without damage to the pipe.
7) The pipe shall be laid on a uniform grade of 1% or steeper if the detail design drawing so specifies. The crest elevation of the pipe shall be as specified on the detailed design drawing.
8) The discharge of the pipe shall be set in undisturbed soil and a discharge ditch cut from this point to the original drainage channel below the base of the dam. This ditch shall be riprapped to control erosion.
9) Couplings used to join sections of pipe shall be furnished by pipe manufacturer and installed according to manufacturer's recommendations.

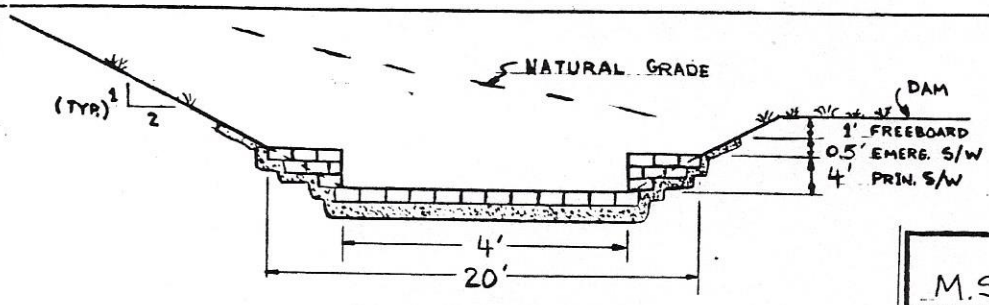
POND 001



PLAN



PROFILE



SPILLWAY DETAILS
- NOT TO SCALE -

DRAINAGE AREA = 212 ACRES

AREA TO BE DISTURBED = 56 ACRES

VOLUME POND PROVIDED = 16.15 Ac.-Ft. @ 979.0' ELEV.

SURFACE AREA PROVIDED = 1.34 ACRES @ 975' ELEV.

DRAINAGE STRUCTURE PROVIDED = 1-4' WIDE x 4' DEEP RECTANGULAR MASONRY WEIR w/ SKIMMER; AND 1 20' WIDE x 0.5' DEEP TRAPEZOIDAL EMERG. S/W.

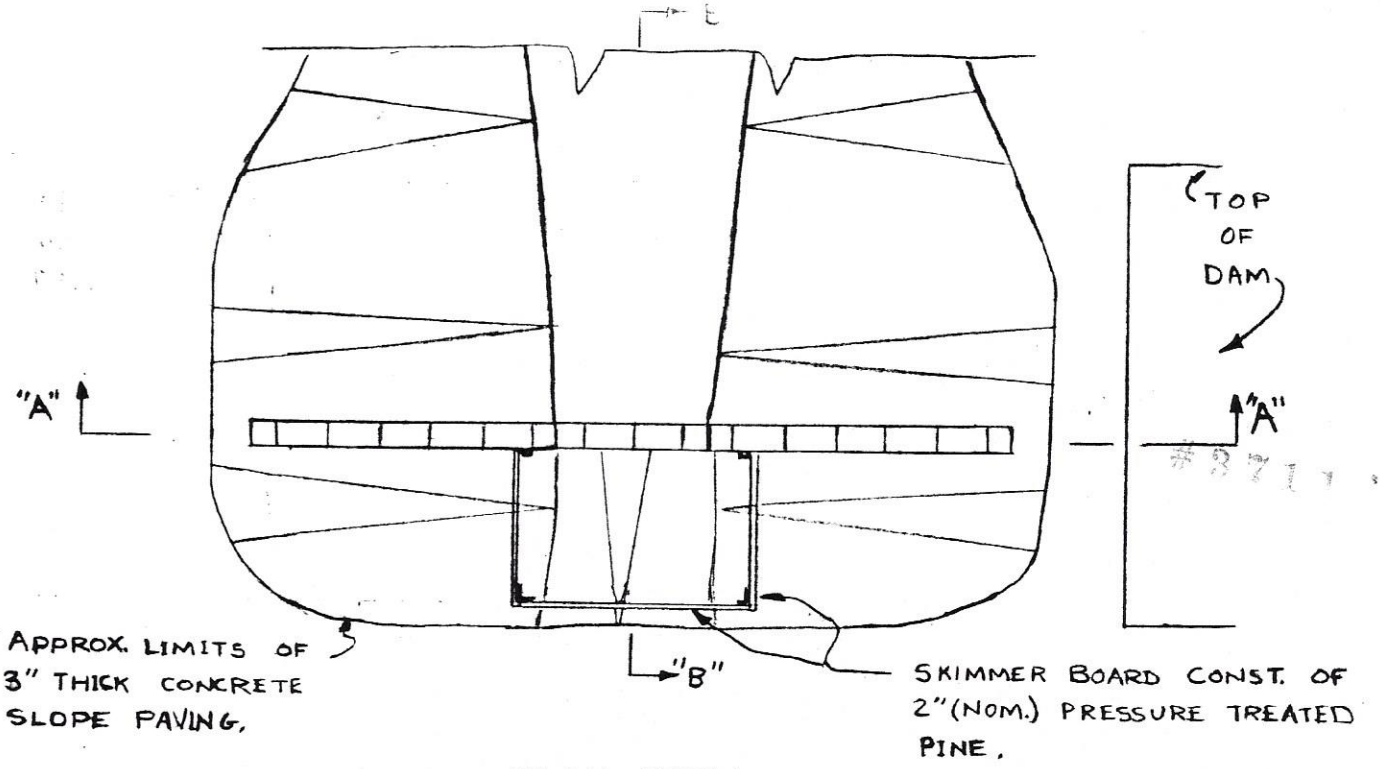
M.S. & R. EQUIPMENT CO.

ALTOONA MINE - POND 001

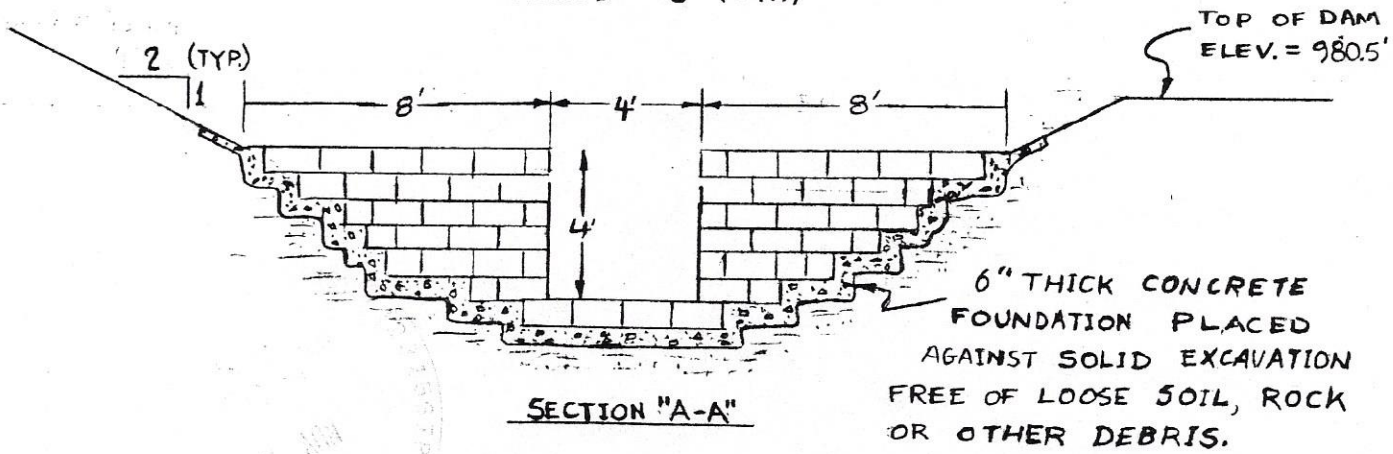
SECTION 19, T-12-S, R-3-E

QUADRANGLE	COUNTY
HYATT GAP	BLOUNT

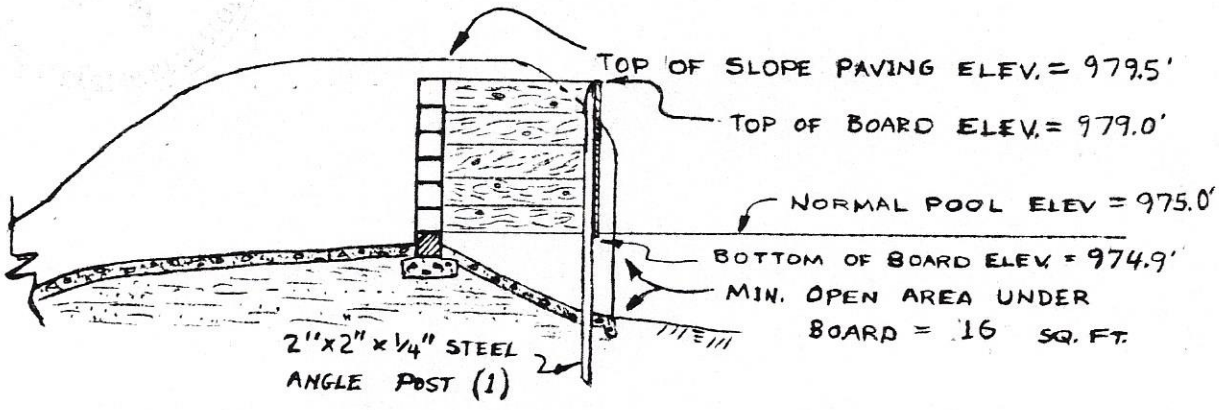
DRAWN BY:	PREPARED BY:
R.W.	FRANK HOLLIS & ASSO. 206 3rd Ave. East P.O. Drawer 99 Oneonta, AL 35121 Phone: 205-625-4432
SCALE: AS NOTED	



PLAN VIEW
SCALE: 1" = 5' (TYP.)

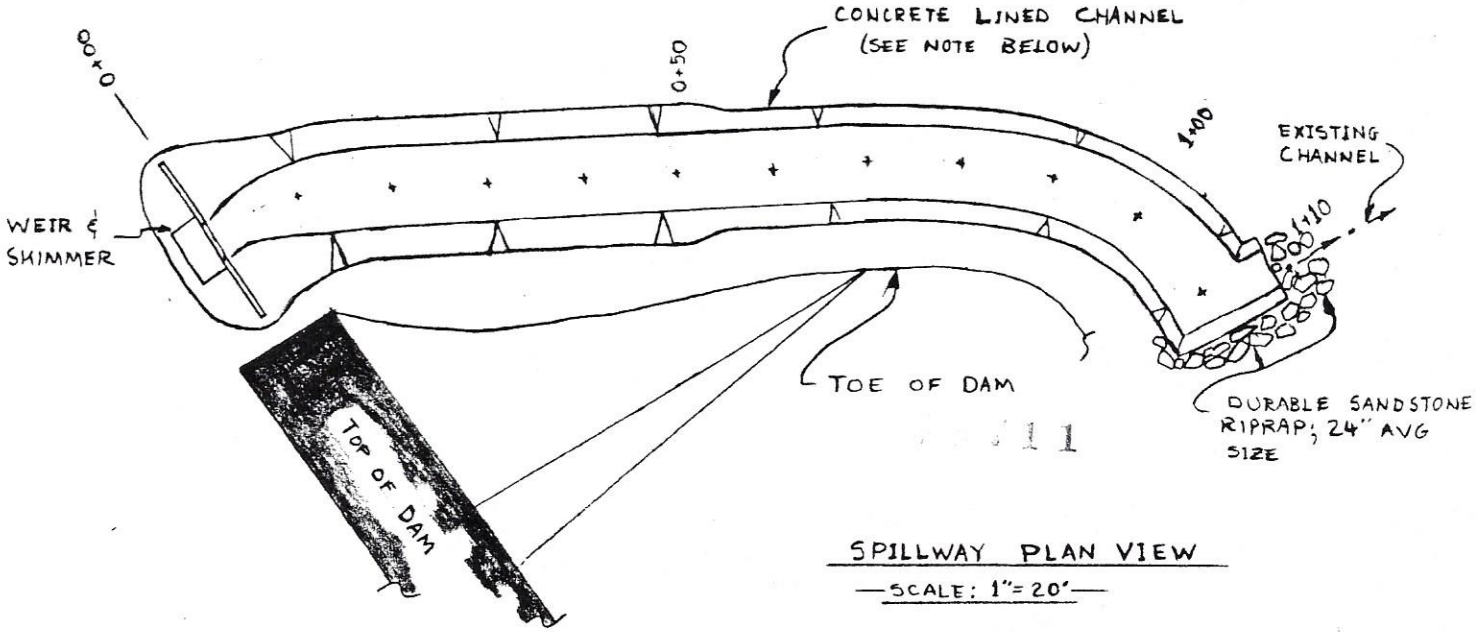


SECTION "A-A"



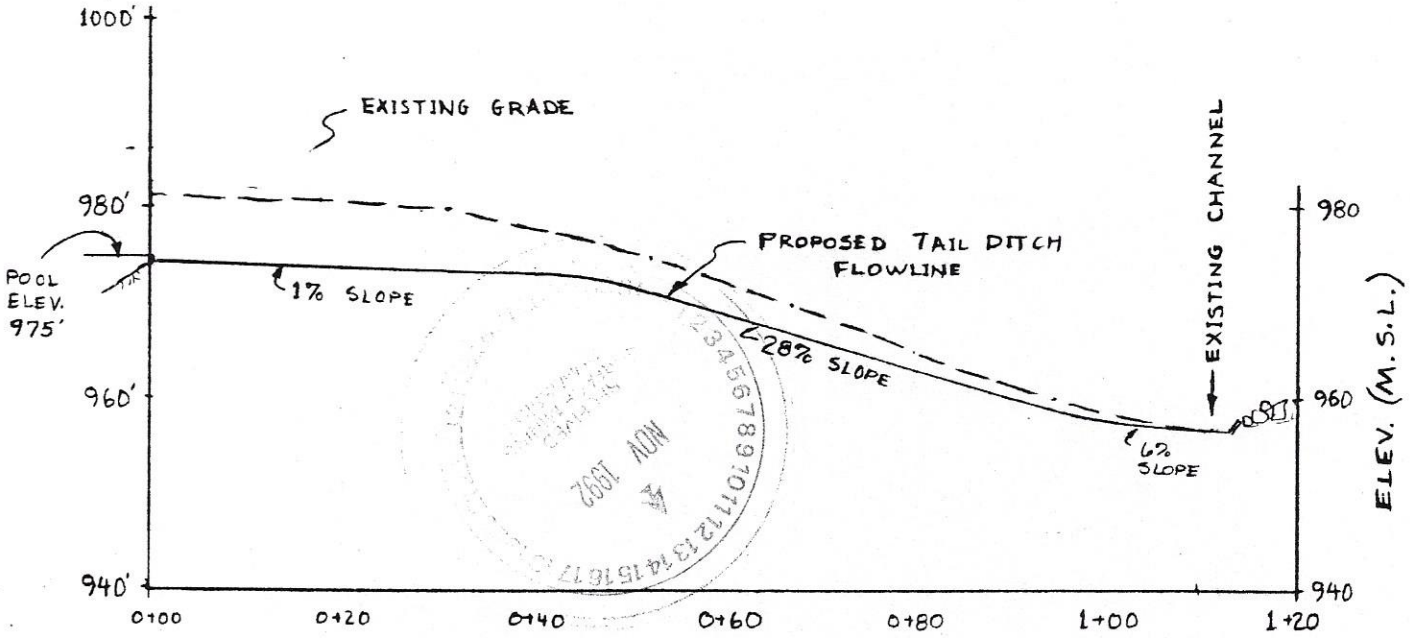
SECTION "B-B"

M.S.&R. EQUIPMENT CO.
ALTOONA MINE
POND 001 SPILLWAY DETAILS



SPILLWAY PLAN VIEW

—SCALE: 1"= 20'—



SPILLWAY TAIL-DITCH PROFILE

SCALE: 1"= 20' HOR. & VERT.

NOTES:

1.) CONCRETE TO HAVE A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 3000 P.S.I.

2.) CONCRETE TO BE REINFORCED WITH EMBEDDED GLASS FIBERS (FIBER MESH) IN ACCORDANCE WITH ACI. CODES TO MINIMIZE STRESS CRACKS.

3.) CONCRETE LINING MAY BE OMITTED IN AREAS WHERE SOLID DURABLE SANDSTONE IS EXPOSED IN DITCH EXCAVATION.

M.S. & R EQUIPMENT CO.
ALTOONA MINE
POND 001 SPILLWAY TAIL DITCH
PLAN & PROFILE

SEDCAD+ NONERODIBLE CHANNEL DESIGN

M.S.&R., ALTOONA, POND 1, TAIL DITCH

INPUT VALUES:

Shape	TRAPEZOIDAL	
Discharge	126.00 cfs	
Slope	1.00 %	
Sideslopes	2.00:1 (L)	2.00:1 (R)
Bottom Width	8.00 ft	
Manning's n	0.015	
Material	CONCRETE	
Freeboard	.3 ft	

RESULTS:

Depth	1.24 ft
with Freeboard	1.54 ft
Top Width	12.97 ft
with Freeboard	14.17 ft
Velocity	9.67 fps
Cross Sectional Area	13.03 sq ft
Hydraulic Radius	0.96 ft
Froude Number	1.70

SEDCAD+ NONERODIBLE CHANNEL DESIGN

M.S.&R., ALTOONA, POND 1, TAIL DITCH

INPUT VALUES:

Shape	TRAPEZOIDAL	
Discharge	126.00 cfs	
Slope	28.00 %	
Sideslopes	2.00:1 (L)	2.00:1 (R)
Bottom Width	8.00 ft	
Manning's n	0.015	
Material	CONCRETE	
Freeboard	.3 ft	

RESULTS:

Depth	0.48 ft
with Freeboard	0.78 ft
Top Width	9.91 ft
with Freeboard	11.11 ft
Velocity	29.53 fps
Cross Sectional Area	4.27 sq ft
Hydraulic Radius	0.42 ft
Froude Number	7.93

SEDCAD+ NONERODIBLE CHANNEL DESIGN

M.S.&R., ALTOONA, POND 1, TAIL DITCH

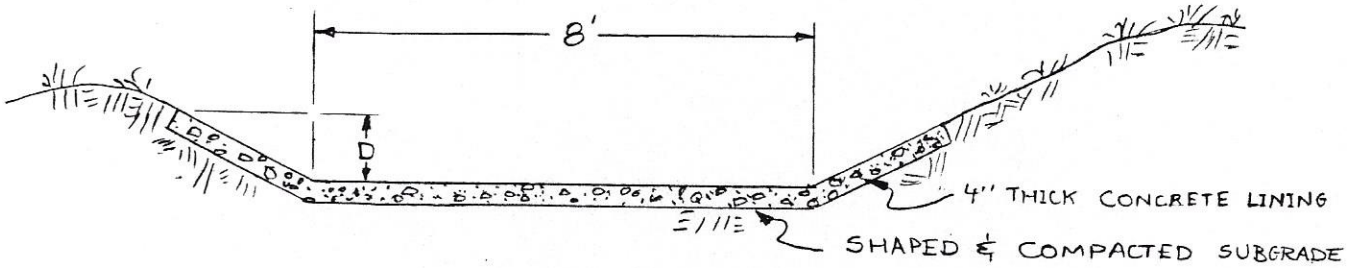
#3711

INPUT VALUES:

Shape	TRAPEZOIDAL	
Discharge	126.00 cfs	
Slope	6.00 %	
Sideslopes	2.00:1 (L)	2.00:1 (R)
Bottom Width	8.00 ft	
Manning's n	0.015	
Material	CONCRETE	
Freeboard	.3 ft	

RESULTS:

Depth	0.75 ft
with Freeboard	1.05 ft
Top Width	10.99 ft
with Freeboard	12.19 ft
Velocity	17.78 fps
Cross Sectional Area	7.08 sq ft
Hydraulic Radius	0.62 ft
Froude Number	3.90



SPILLWAY TAIL-DITCH SECTION

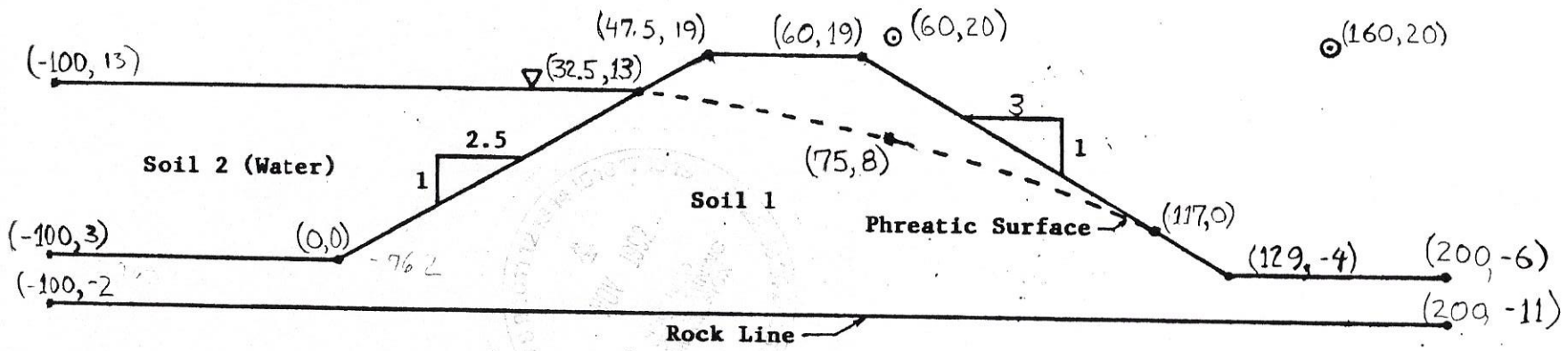
DEPTH "D" = 1.6' FROM STA. 0+10 TO STA. 0+50
= 1.1' FROM STA. 0+50 TO STA. 1+12 (END)

DEPTH TRANSITIONS FROM 4' TO 2' AND WIDTH TRANSITIONS FROM 4' TO 8' BETWEEN STATIONS 0+00 AND 0+10.

	SOIL #1	SOIL #2 (WATER)
Effective Cohesion:	120 lb/ft²	0
Effective Friction Angle:	28°	0
Total Density:	132 lb/ft³	62.4

Top Width of Dam = 12' ; Depth to Bedrock = 5'

Seismic Coef. = 0.025 ; Ground Slope = 1.8°



STABILITY ANALYSIS RESULTS

Unified Soil Classification: SC; CLAYEY SANDS, POORLY GRADED SAND-CLAY MIX.

Testing performed by: GROUND ENGINEERING & TESTING SERVICE, INC.

Stability Analysis performed using REAME computer aided design method and steady seepage saturation conditions at normal pool

STATIC SAFETY FACTOR = NOT RUN DUE TO HIGH SEISMIC S/F.

SEISMIC SAFETY FACTOR = 1.52

M.S.& R. EQUIPMENT CO.,	
ALTOONA MINE – POND 001	
Dam Detail Cross Section	
SECT. 19, T-12-S, R-3-E	
HYATT GAP QUADRANGLE	
BLOUNT COUNTY, ALABAMA	
DRAWN BY: R.W.	**PREPARED BY:** FRANK HOLLIS & ASSOC., 206 3rd Ave. East, P. O. Drawer 99, Oneonta, AL 35121, (205) 625-4432
SCALE: NONE	

#3211

GROUND ENGINEERING AND TESTING SERVICE, INC.

October 5, 1992

Frank Hollis and Associates
P. O. Drawer 99
Oneonta, AL 35121

ATTENTION: Mr. Frank Hollis

Subject: **LABORATORY TESTS ON SOIL**
M. S. & R. (ALTOONA)
DRAGONFLY MINING
Our Job No. B6307-001

Gentlemen:

Ground Engineering and Testing Service, Inc., has completed standard Proctor tests on soil samples for the above mentioned projects. Attached is a report of the results of the tests.

It has been our pleasure to have performed this work. If you have any questions, please contact our office.

Very truly yours,

GROUND ENGINEERING AND TESTING SERVICE, INC.

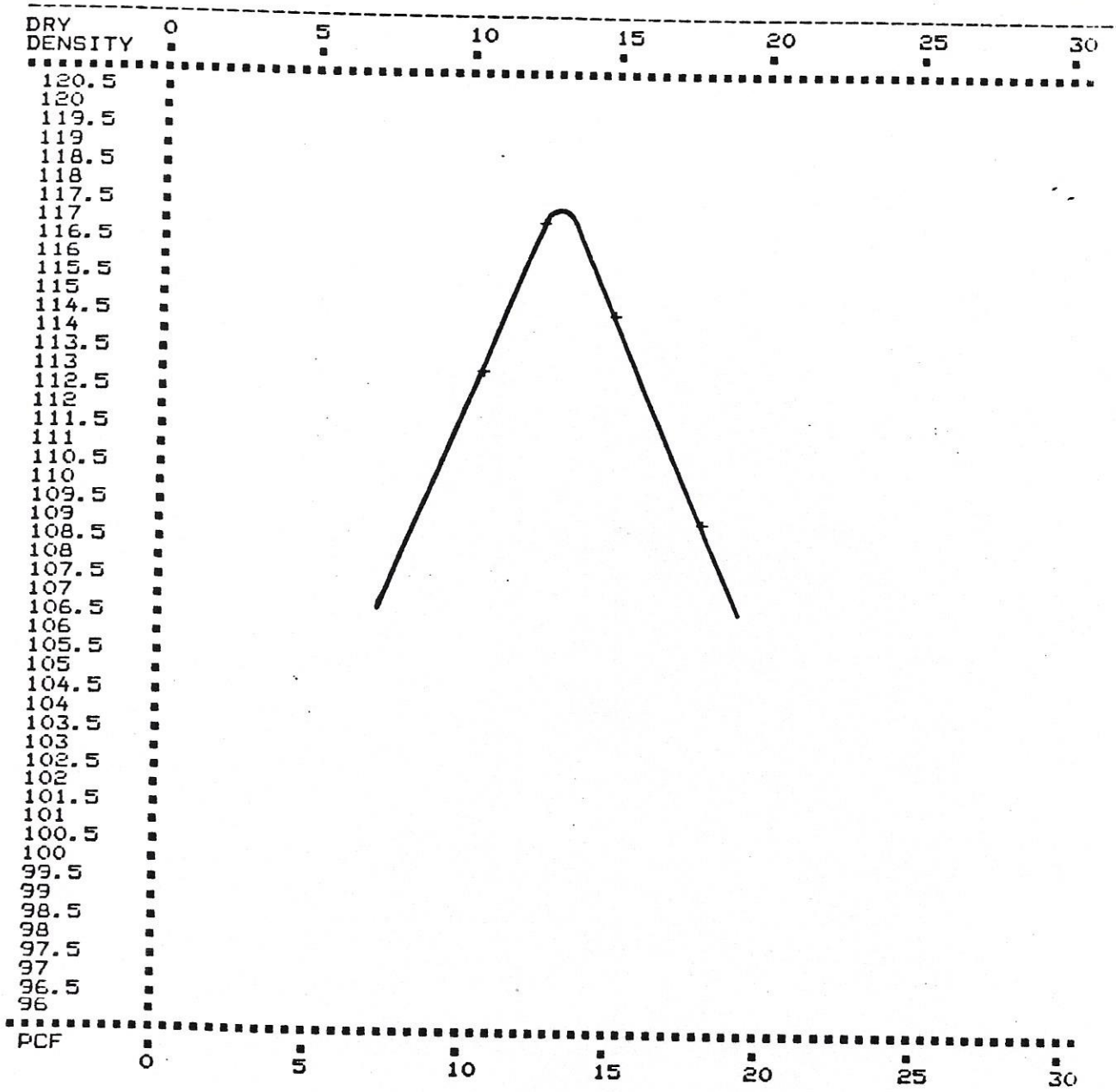
Johnny F. Canfield
Vice-President

JFC/ro

4764 FIRST AVENUE NORTH • BIRMINGHAM, ALABAMA 35222 • (205) 591-4340 • FAX (205) 591-6028

LABORATORY MOISTURE-DENSITY RELATIONSHIP

PROJECT NAME: M.S. & R. (ALTOONA) JOB NUMBER: B6307-001
SAMPLE NO: P-2 BORING: BAG DEPTH: CUMULATIVE #FS-10
DATE: 10-05-1992
SOIL DESCRIPTION: DARK YELLOWISH BROWN SANDY CLAY TEST METHOD: ASTM D698-A



MAXIMUM DRY DENSITY (PCF) 117.5 OPTIMUM MOISTURE (%) 13

GROUND ENGINEERING & TESTING SERVICE, INC.

CIVIL SOFTWARE DESIGN

SEDCAD+ Version 3

M.S.&R. EQUIPMENT, ALTOONA MINE, 10, 24

by

Name: Rob Whitaker

Company Name: FRANK HOLLIS & ASSOCIATES, INC
File Name: C:\SEDCAD3\MSRAMP1

Date: 10-13-1992

Civil Software Design -- SEDCAD+ Version 3.1

Company Name: FRANK HOLLIS & ASSOCIATES, INC
Filename: C:\SEDCAD3\MSRAMP1 User: Rob Whitaker
Date: 10-13-1992 Time: 12:33:30
M.S.&R. Equipment, Altoona Mine, 10, 24
Storm: 5.80 inches, 10 year-24 hour, drn58
Hydrograph Convolution Interval: 0.1 hr

#3711

POND INPUT/OUTPUT TABLE

J1, B1, S1
POND # 001

Drainage Area from J1, B1, S1, SWS(s)1-2: 212.0 acres
Total Contributing Drainage Area: 212.0 acres

DISCHARGE OPTIONS:

	Broad Crested Weir
Riser Diameter (in)	----
Riser Height (ft)	----
Barrel Diameter (in)	----
Barrel Length (ft)	----
Barrel Slope (%)	----
Manning's n of Pipe	----
Spillway Elevation	3.0
Lowest Elevation of Holes	----
# of Holes/Elevation	----
Entrance Loss Coefficient	----
Tailwater Depth (ft)	----
Notch Angle (degrees)	----
Weir Width (ft)	4.0
Siphon Crest Elevation	----
Siphon Tube Diameter (in)	----
Siphon Tube Length (ft)	----
Manning's n of Siphon	----
Siphon Inlet Elevation	----
Siphon Outlet Elevation	----
Emergency Spillway Elevation	----
Crest Length (ft)	----
Z:1 (Left and Right)	-- --
Bottom Width (ft)	----

POND RESULTS:

Sediment Storage* (ac-ft)	Permanent Pool (ac-ft)	Dead Space (%)	Sediment Algorithm
0.00	3.58	15.00	CSTRS

*Sediment Capacity based on NO INPUT

	Runoff Volume (ac-ft)	Peak Discharge (cfs)	Sediment (tons)	Peak Sediment Concentration (mg/l)	Peak Settleable Concentration (ml/l)	24VW (ml/l)	24AA (ml/l)
IN	51.69	132.15	6089.8	211841	135.12	52.56	34.49
OUT	51.69	98.70	969.3	31706	0.47	0.21	0.11

Peak Elevation	Trap Efficiency (%)	Hydrograph Detention Time (hrs)
7.0	84.08	1.07

****

#3711,

Civil Software Design -- SEDCAD+ Version 3.1

Company Name: FRANK HOLLIS & ASSOCIATES, INC
Filename: C:\SEDCAD3\MSRAMP1 User: Rob Whitaker
Date: 10-13-1992 Time: 12:33:30
M.S.&R. Equipment, Altoona Mine, 10, 24
Storm: 5.80 inches, 10 year-24 hour, drn58
Hydrograph Convolution Interval: 0.1 hr

==========
ELEVATION-AREA-CAPACITY-DISCHARGE TABLE
==========

J1, B1, S1
POND # 001

Drainage Area from J1, B1, S1, SWS(s)1-2: 212.0 acres
Total Contributing Drainage Area: 212.0 acres

SW#1: Broad Crested Weir

Elev	Stage (ft)	Area (ac)	Capacity (ac-ft)	Discharge (cfs)	
0.00	0.00	1.05	0.00	0.00	Top of Sediment Storage (0 Stage)
0.50	0.50	1.10	0.54	0.00	
1.00	1.00	1.14	1.10	0.00	
1.50	1.50	1.19	1.68	0.00	
2.00	2.00	1.24	2.29	0.00	
2.50	2.50	1.29	2.92	0.00	
3.00	3.00	1.34	3.58	0.00	Stage of SW#1
3.50	3.50	1.45	4.27	4.37	
4.00	4.00	1.57	5.03	12.35	
4.50	4.50	1.67	5.84	22.68	
5.00	5.00	1.77	6.70	34.93	
5.50	5.50	1.84	7.60	48.81	
6.00	6.00	1.92	8.54	64.16	
6.50	6.50	2.01	9.53	80.85	
7.00	7.00	2.01	10.55	98.70	Peak Stage
7.00	7.00	2.10	10.55	98.78	

****

CIVIL SOFTWARE DESIGN

SEDCAD+ Version 3

M.S.&R. EQUIPMENT, ALTOONA MINE, 50, 6

by

Name: Rob Whitaker

Company Name: FRANK HOLLIS & ASSOCIATES, INC
File Name: C:\SEDCAD3\MSRAMP15

Date: 10-13-1992

Civil Software Design -- SEDCAD+ Version 3.1

Company Name: FRANK HOLLIS & ASSOCIATES, INC
Filename: C:\SEDCAD3\MSRAMP15 User: Rob Whitaker
Date: 10-13-1992 Time: 13:02:58
M.S.&R. Equipment, Altoona Mine, 50, 6
Storm: 5.20 inches, 50 year- 6 hour, SCS 6 Hour
Hydrograph Convolution Interval: 0.1 hr

GENERAL INPUT TABLE

Specific Gravity: 2.60
Submerged Bulk Specific Gravity: 1.30

Particle Size Distribution(s):

Size (mm)	Topsoil % Finer	Graded Spoil % Finer
3.0000	100.00	100.00
2.0000	99.00	93.00
1.0000	88.00	84.00
0.5000	77.00	72.00
0.3000	67.00	60.00
0.2000	60.00	52.00
0.1000	49.00	44.00
0.0500	38.00	35.00
0.0300	30.00	25.00
0.0200	23.00	19.00
0.0100	20.00	15.00
0.0050	16.00	12.00
0.0030	11.00	5.00
0.0020	3.00	2.00
0.0010	0.00	0.00

#3711

Civil Software Design -- SEDCAD+ Version 3.1

Company Name: FRANK HOLLIS & ASSOCIATES, INC
Filename: C:\SEDCAD3\MSRAMP15 User: Rob Whitaker
Date: 10-13-1992 Time: 13:02:58
M.S.&R. Equipment, Altoona Mine, 50, 6
Storm: 5.20 inches, 50 year- 6 hour, SCS 6 Hour
Hydrograph Convolution Interval: 0.1 hr

SUBWATERSHED/STRUCTURE INPUT/OUTPUT TABLE

-Hydrology-

JBS	SWS	Area (ac)	CN	UHS	Tc (hrs)	K (hrs)	X	Base-Flow (cfs)	Runoff Volume (ac-ft)	Peak Discharge (cfs)
111	1	56.00*	81	F	0.500	0.000	0.000	0.0	14.76	115.18
111	2	156.00	70	S	0.650	0.000	0.000	0.0	28.42	83.26
		Type: Pond Label: POND # 001								
111	Structure	212.00							43.17	
111	Total IN	212.00							43.17	185.93
111	Total OUT								43.17	125.89

SUBWATERSHED/STRUCTURE INPUT/OUTPUT TABLE

-Sedimentology-

SED: Sediment
SCp: Peak Sediment Concentration
SSp: Peak Settleable Concentration
24VW: Volume Weighted Average Settleable Concentration - Peak 24 hours
24AA: Arithmetic Average Settleable Concentration - Peak 24 hours

	JBS	SWS	K	L (ft)	S (%)	CP	Tt (hrs)	PS #	SED (tons)	SCp (mg/l)	SSp (ml/l)	24VW (ml/l)	24AA (ml/l)
M	111	1	0.25	200.0	18.0	0.900	0.000	2	7558.8				
M	111	2	0.28	200.0	30.0	0.005	0.000	1	137.8				
			Type: Pond Label: POND # 001										
	111	Structure							7696.6				
	111	Total IN							7696.6	317747	195.04	74.21	16.07
	111	Total OUT							1554.7	54330	2.94	1.42	0.43

Civil Software Design -- SEDCAD+ Version 3.1

Company Name: FRANK HOLLIS & ASSOCIATES, INC
Filename: C:\SEDCAD3\MSRAMP15 User: Rob Whitaker
Date: 10-13-1992 Time: 13:02:58
M.S.&R. Equipment, Altoona Mine, 50, 6
Storm: 5.20 inches, 50 year- 6 hour, SCS 6 Hour
Hydrograph Convolution Interval: 0.1 hr

POND INPUT/OUTPUT TABLE

J1, B1, S1
POND # 001

Drainage Area from J1, B1, S1, SWS(s)1-2: 212.0 acres
Total Contributing Drainage Area: 212.0 acres

DISCHARGE OPTIONS:

	Broad Crested Weir	Emergency Spillway
Riser Diameter (in)	----	----
Riser Height (ft)	----	----
Barrel Diameter (in)	----	----
Barrel Length (ft)	----	----
Barrel Slope (%)	----	----
Manning's n of Pipe	----	----
Spillway Elevation	3.0	----
Lowest Elevation of Holes	----	----
# of Holes/Elevation	----	----
Entrance Loss Coefficient	----	----
Tailwater Depth (ft)	----	----
Notch Angle (degrees)	----	----
Weir Width (ft)	4.0	----
Siphon Crest Elevation	----	----
Siphon Tube Diameter (in)	----	----
Siphon Tube Length (ft)	----	----
Manning's n of Siphon	----	----
Siphon Inlet Elevation	----	----
Siphon Outlet Elevation	----	----
Emergency Spillway Elevation	----	7.0
Crest Length (ft)	----	20.0
Z:1 (Left and Right)	-- --	2 2
Bottom Width (ft)	----	16.0

#3711

POND RESULTS:

Sediment Storage* (ac-ft)	Permanent Pool (ac-ft)	Dead Space (%)	Sediment Algorithm
0.00	3.58	15.00	CSTRS

*Sediment Capacity based on NO INPUT

	Runoff Volume (ac-ft)	Peak Discharge (cfs)	Sediment (tons)	Peak Sediment Concentration (mg/l)	Peak Settleable Concentration (ml/l)	24VW (ml/l)	24AA (ml/l)
IN	43.17	185.93	7696.6	317747	195.04	74.21	16.07
OUT	43.17	125.89	1554.7	54330	2.94	1.42	0.43

Peak Elevation	Trap Efficiency (%)	Hydrograph Detention Time (hrs)
7.4	79.80	0.94

****

Civil Software Design -- SEDCAD+ Version 3.1

Company Name: FRANK HOLLIS & ASSOCIATES, INC
Filename: C:\SEDCAD3\MSRAMP15 User: Rob Whitaker
Date: 10-13-1992 Time: 13:02:58
M.S.&R. Equipment, Altoona Mine, 50, 6
Storm: 5.20 inches, 50 year- 6 hour, SCS 6 Hour
Hydrograph Convolution Interval: 0.1 hr

#3711

ELEVATION-AREA-CAPACITY-DISCHARGE TABLE

J1, B1, S1
POND # 001

Drainage Area from J1, B1, S1, SWS(s)1-2: 212.0 acres
Total Contributing Drainage Area: 212.0 acres

SW#1: Broad Crested Weir
SW#2: Emergency Spillway

Elev	Stage (ft)	Area (ac)	Capacity (ac-ft)	Discharge (cfs)	
0.00	0.00	1.05	0.00	0.00	Top of Sediment Storage (0 Stage)
0.50	0.50	1.10	0.54	0.00	
1.00	1.00	1.14	1.10	0.00	
1.50	1.50	1.19	1.68	0.00	
2.00	2.00	1.24	2.29	0.00	
2.50	2.50	1.29	2.92	0.00	
3.00	3.00	1.34	3.58	0.00	Stage of SW#1
3.50	3.50	1.45	4.27	4.37	
4.00	4.00	1.57	5.03	12.35	
4.50	4.50	1.67	5.84	22.68	
5.00	5.00	1.77	6.70	34.93	
5.50	5.50	1.84	7.60	48.81	
6.00	6.00	1.92	8.54	64.16	
6.50	6.50	2.01	9.53	80.85	
7.00	7.00	2.10	10.55	98.78	Stage of SW#2
7.42	7.42	2.09	11.46	125.89	Peak Stage
7.50	7.50	2.16	11.62	130.77	
7.60	7.60	2.18	11.84	137.39	
7.70	7.70	2.19	12.05	145.86	
7.80	7.80	2.20	12.27	156.00	
7.90	7.90	2.22	12.49	166.04	
8.00	8.00	2.23	12.72	177.29	

Company Name: M. S. & R. EQUIPMENT COMPANY, INC.
Pit ALTOONA MINE
Pond 001

I certify that the above referenced sedimentation ponds have been designed to meet the requirements of Rules 880-X-10C-.13, .17, .18, and .20 of ASMC Rules for Surface Mine Operations specifically the design, construction, operation, and maintenance requirements and the timetable and plans for removal of the structure, using current prudent engineering practices. The design is covered in Part III B. Specifications and Requirements for Sedimentation Ponds, Sheets 1-5.

Gerald R. Whitaker

Gerald R. Whitaker, P. E. #12539

Date: 10-16-92

ALABAMA REGISTERED No. 12539 PROFESSIONAL ENGINEER GERALD R. WHITAKER

RECEIVED NOV 1992 SURFACE MINING COMMISSION

STATE OF ALABAMA
SURFACE MINING COMMISSION
P. O. BOX 2390 — JASPER, ALABAMA 35502-2390
(205) 221-4130

September 14, 1998

Contract Augering Services, Inc.
P. O. Box 2329
Tuscaloosa, AL 35403

ATTENTION: MR. S. DARRYL BAILEY

RE: P-3711
Altoona Mine

Dear Sir:

Please be advised that the information as submitted is sufficient to qualify pond 001 as a permanent water impoundment.

If you have any questions, please feel free to call.

Sincerely,

J. Michael Harrison

J. Michael Harrison
P.E.

/kb

cc: I & E
Frank Hollis & Assoc.
File

FRANK HOLLIS & ASSOCIATES, INC.
ENGINEERING CONSULTANTS & SURVEYORS
206 3RD AVENUE EAST
ONEONTA, AL 35121
(205) 625-4433

August 19, 1998

Alabama Surface Mining Commission
P. O. Box 2390
Jasper, AL 35501

Attn: J. Michael Harrison

RE: Contract Augering Services, Inc.
P-3711, Altoona Mine
Permanent Impoundment 001 Information

Dear Sir:

Due to the fact that our client is applying for a Phase II Bond Release at the above referenced site, we have been asked to furnish the necessary information to qualify existing impoundment 001 as a permanent water impoundment in accordance with Part 880-X-10C-.20(2)(a)-(g) of the Alabama Surface Mining Commission Rules. Each of the items is addressed in the order of the regulations as follows:

(a) The size and configuration of the impoundment is suitable for a multitude of uses, including recreation, livestock watering, fish and or/or wildlife habitat, flood and erosion control. A recent inspection of the impoundment indicates that no significant changes in the size and configuration have occurred since original certification.

(b) According to representatives of the permittee, all NPDES discharges at this site have been in compliance with effluent limitations. No discharge monitoring report data is available to me at this time. A sample was taken from the pond discharge on February 1, 1997 and on August 18, 1998 by Frank S. Hollis and the water analysis is attached. This observed discharge water qualities will not degrade the quality of receiving water below applicable state and federal quality standards.

(c) The water level was noted to be either slightly above and below the elevation of the principal spillway during annual recertification inspections conducted on May 16, 1994 and February 4, 1997. In addition, I have observed the water level to be at or slightly above the spillway level even during the dry months of late summer and autumn since the pond's construction. The water level is stable and will support the intended use. A copy of the annual recertification reports are attached.

(e) There is no known evidence that the impoundment has caused any diminution of the quality or quantity of water utilized by adjacent or adjoining landowners during the three+ year period it has been in existence. The quality of water observed in pond 001 is such that no significant qualitative impacts should occur to the local surface water and groundwater regimes.

(f) This impoundment will be very well suited for its intended use (recreation).

(g) The original design precipitation event for the spillway system was a 50 year, 6 hour precipitation event for the pond's maximum drainage area during mining.

A failure of the spillway system for this pond occurred during the summer of 1997 due to the presence of a beaver dam constructed in the spillway. The spillway was reconstructed and the pond was certified again on October 7, 1997. A copy of this certification and an an as-built drawing of the spillway is attached.

No modifications are proposed for the pond at this time. The operator will continue to maintain the pond until all bonds have been released. After that time, the landowner will assume all responsibility for maintaining the pond. Good maintenance and conservation practices will be employed by both parties. A copy of a signed statement from the landowner is on file with the Alabama Surface Mining Commission which indicates they want the pond to be left after reclamation.

I certify that all the above statements are true and correct to the best of my knowledge and belief.

Gerald R. Whitaker, P. E. #12539

GRW/vp

FRANK HOLLIS & ASSOCIATES, INC.
206 3RD AVE. EAST
ONEONTA, AL 35121
(205) 625-4433

REPORT OF WATER ANALYSES

SAMPLES RECEIVED FROM:	FRANK HOLLIS	FRANK HOLLIS
DATE RECEIVED:	2-1-97	8-18-97
RESULTS REPORTED TO:	BM	BM
DATE REPORTED:	2-3-97	8-19-97
COMPANY:	CONTRACT AUGERING	CONTRACT AUGERING
PROJECT:	001 POND SAMPLE	001 POND SAMPLE

pH=	6.1 STANDARD UNITS	7.1 STANDARD UNITS
TOTAL FE=	0.36 MG/L	0.28 MG/L
TOTAL MN=	1.70 MG/L	1.7 MG/L
TSS=	1.00 MG/L	11 MG/L
SC=	425	N/A

ANNUAL SEDIMENT CONTROL STRUCTURE RECERTIFICATION REPORT
FOR IMPOUNDMENTS DESIGNED AND BUILT AFTER 1/1/84

COMPANY NAME: CONTRACT AUGERING SERVICES, INC.

PIT NAME: ALTOONA MINE

ASMC PERMIT NO.: P-3711-08-98S
NPDES NO: AL0065722
SECTION, TOWNSHIP, RANGE: Sec. 19, T-12S, R-3E
COUNTY: Blount
BASIN NO: 001
CONSULTING FIRM: Frank Hollis & Associates, Inc.

Based upon the annual impoundment recertification inspection on 2/4/'97 of the above referenced site, which I or personnel under my supervision conducted, I certify that the impoundment has been maintained in accordance with the approved plan and Chapter 800-X-10 of ASMC Rules for Surface Mining Operations.

Except as noted below there are no appearances of instability, structural weakness, or other hazardous conditions. Depth and elevation of impounded water in respect to approved design plans are listed below as is existing storage capacity, any existing or required monitoring procedures and instrumentation, and any other aspect of the structure affecting stability.

Inspections Notes:

Water Elevation: 975.08'

Average Depth: 6'

Maximum Depth: 12.5'

Existing Storage Capacity: 8.0 ac. Ft. @ elev. 975.0'

Gerald R. Whitaker, P.E. #12539

DATE: 2/5/'97

ANNUAL SEDIMENT CONTROL STRUCTURE RECERTIFICATION REPORT
FOR IMPOUNDMENTS DESIGNED AND BUILT AFTER 1/1/84

COMPANY NAME: CONTRACT AUGERING SERVICES, INC.

PIT NAME: ALTOONA MINE

ASMC PERMIT NO.: P-3711-08-98S
NPDES NO: AL0065722
SECTION, TOWNSHIP, RANGE: Section 19, T-12S, R-3E
COUNTY: Blount
BASIN NO: 001
CONSULTING FIRM: Frank Hollis & Associates, Inc.

Based upon the annual impoundment recertification inspection on 5/16/'94 of the above referenced site, which I or personnel under my supervision conducted, I certify that the impoundment has been maintained in accordance with the approved plan and Chapter 800-X-10 of ASMC Rules for Surface Mining Operations.

Except as noted below there are no appearances of instability, structural weakness, or other hazardous conditions. Depth and elevation of impounded water in respect to approved design plans are listed below as is existing storage capacity, any existing or required monitoring procedures and instrumentation, and any other aspect of the structure affecting stability.

Inspections Notes:

Water Elevation: 975.5'

Average Depth: 6'

Maximum Depth: 10.5'

Existing Storage Capacity: 8.0 ac. ft. @ elev. 975.0'

Gerald R. Whitaker, P.E. #12539

DATE: 5/17/'94

ALABAMA REGISTERED No. 12539 PROFESSIONAL ENGINEER GERALD R. WHITAKER

AUG 1998 RECEIVED SURFACE MINING COMMISSION

SEDIMENT CONTROL STRUCTURE CERTIFICATION

COMPANY NAME: CONTRACT AUGERING SERVICES, INC.

PIT NAME: ALTOONA MINE

ASMC PERMIT NO.: P-3711

NPDES NO.: AL0065722

SECTION, TOWNSHIP, RANGE: Sec. 19, T-12S, R-3E

COUNTY: Blount

BASIN(S) NO.: 001

CONSULTING FIRM: FRANK HOLLIS & ASSOCIATES, INC.

BASED ON THE POST-CONSTRUCTION INSPECTION OF (DATE) 9/30/97

OF THE ABOVE REFERENCED SITE, WHICH I OR PERSONNEL UNDER MY SUPERVISION CONDUCTED, I CERTIFY THAT EACH BASIN AND ITS STRUCTURES HAVE BEEN PROPERLY CONSTRUCTED AND ARE BUILT TO MEET THE MINIMUM REQUIREMENTS OF THE CONSTRUCTION PLANS OR REVISION APPROVED FOR THE ABOVE REFERENCED ASMC PERMIT APPLICATION. EXCEPTIONS TO PLAN, IF ANY, ARE SUMMARIZED BELOW OR SHOWN ON ATTACHED SHEET.

1) This certification is for reconstruction of dam after failure caused by obstruction of primary spillway by beaver activity. The fact that this pond existed and performed satisfactorily for more than 4 years indicates that no other structural deficiency contributed to the failure.

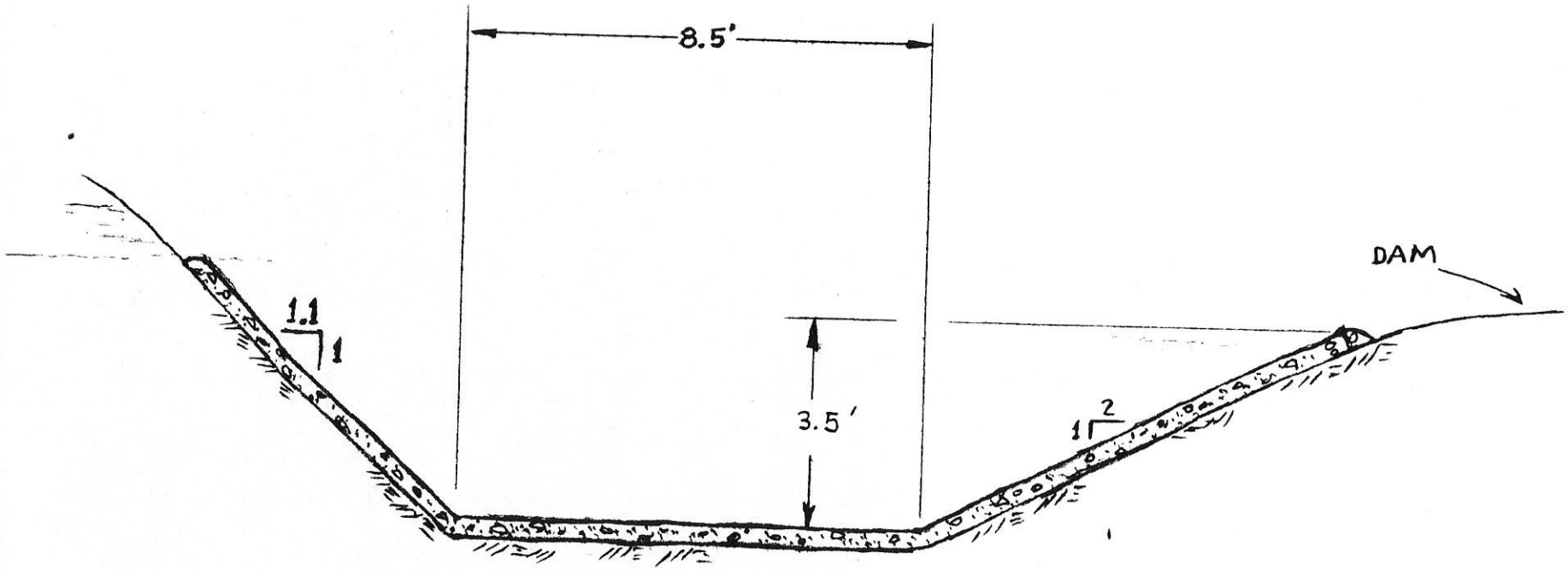
2) Reconstructed spillway is comprised of a trapezoidal concrete lined channel with a bottom width of 8.5 feet and depth of 4.0 feet. This channel has a much greater flow capacity than the original design.

3) No skimmer board was provided due to the degree of reclamation at the site.

4) Final inspection by Frank S. Hollis, L.S. #9323.

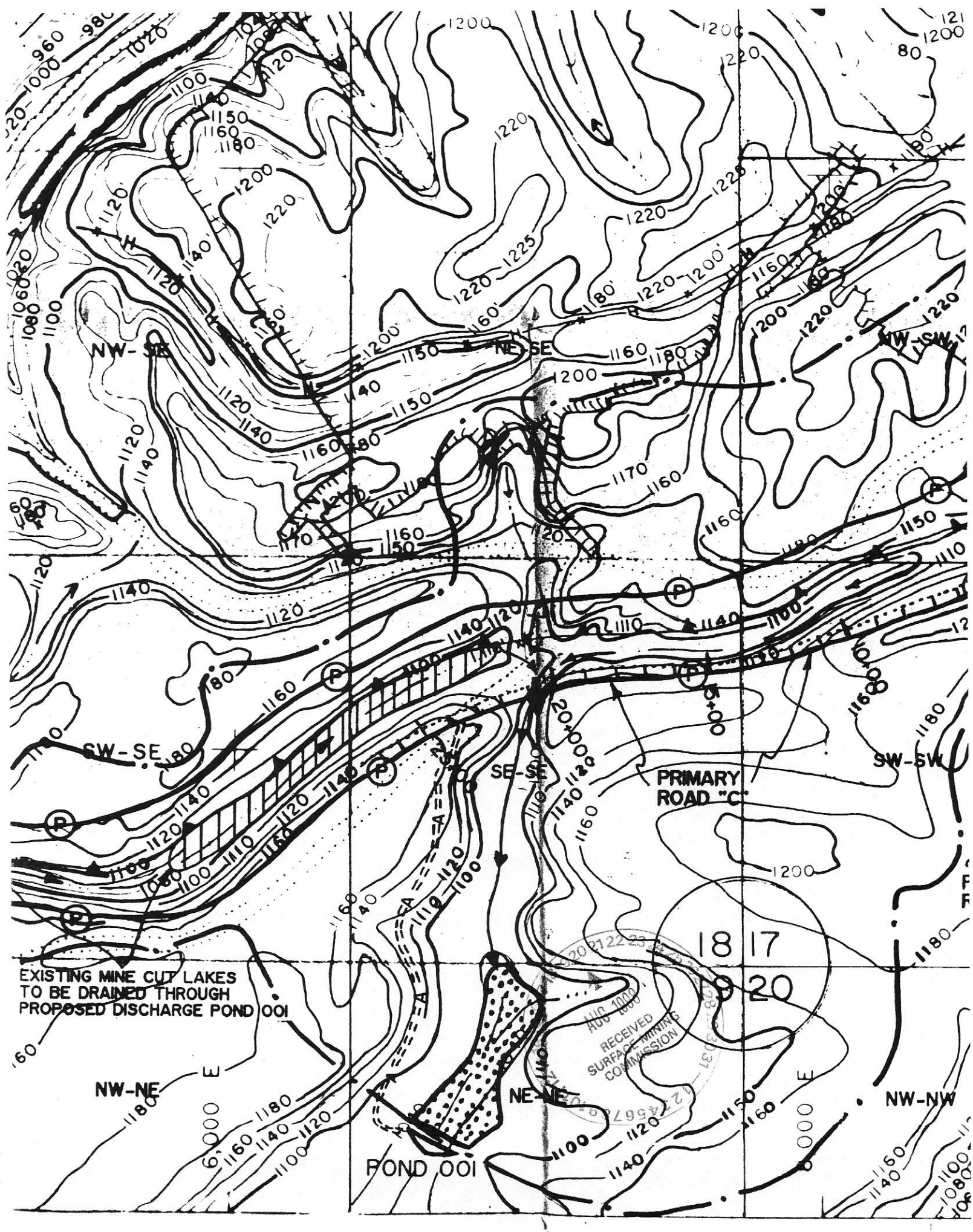
GERALD R. WHITAKER, P.E. #12539

DATE: 10/7/97



SPILLWAY CROSS-SECTION
THROUGH CONTROL SECTION
SCALE: 1" = 3'

CONTRACT AUGERING SERVICES, INC
P-3711 POND 001


NW-SE
NE-SE
SW-SE
SE-SE
SW-SW
NW-NE
NE-NE
NW-NW
PRIMARY ROAD "C"
EXISTING MINE CUT LAKES TO BE DRAINED THROUGH PROPOSED DISCHARGE POND 001
POND 001
18 17
19 20
RECEIVED
SURFACE MINING
COMMISSION

Gary, Davis & Edward B. Robbins
911 2nd Ave. East
Oneonta, Alabama 35121

February 3, 1997

Milton McCarthy
ASMC
P. O. Box 2390
Jasper, Al 35502

RE: Thundermountain Lodge & Preserve, LLC
P-3711, Altoona Mine Area

Dear Mr. McCarthy:

Mr. Frank Hollis with Andros Mining Co., Inc. Requested that I contact your office concerning the status of our operation plan for the above named preserve in Blount County. We have now implemented the approved plans and have completed all fencing and enclosures. We also now have the management plan in operation.

We understand Andros Mining Co., Inc. has requested a release of Increments 2, 4 and 6 which involves property located inside the above named preserve. The present vegetation on these named increments is acceptable to us as the owner and we assume 100% responsibility for any additional reclamation that we deem necessary to initiate the planned preserve area, ie. ponds, roads, etc.

If any additional information is needed from us please contact either myself or Mr. Hollis.

Sincerely,

Gary Robbins,
Managing Member
Thundermountain Lodge & Preserve, LLC
GR/sm

xc: File

GARY, DAVIS & EDWARD B. ROBBINS
911 2ND AVE. E.
ONEONTA, ALABAMA 35121

March 17, 1997

Alabama Surface Mining Commission
P. O. Box 2390
Jasper, Al 35501

Attn: J. Michael Harrison

RE: Contract Augering Service, Inc.
P-3711, Altoona Mine
Permanent Water Impoundment 001

Dear Mr. Harrison:

I, Gary Robbins, owner, hereby request pond 001 to remain as a permanent water impoundment to be used as recreational purposes. We also agree to assume 100% responsibility for sound future maintenance of this impoundment.

Sincerely,

Gary Robbins
Managing Member
Thundermountain Lodge & Preserve, LLC

GR/vp

STATE OF ALABAMA
SURFACE MINING COMMISSION
P. O. BOX 2390 — JASPER, ALABAMA 35502-2390
(205) 221-4130

August 24, 1998

Frank Hollis & Associates, Inc.
206 3rd. Avenue East
Oneonta, AL 35121

ATTENTION: MR. FRANK HOLLIS

RE: P-3711
Altoona Mine

Dear Sir:

The permanent water impoundment information as submitted cannot be approved at this time. A field visit has discovered a large tree across the spillway. The tree is to be removed as soon as possible. Also, the tail ditch section at the exit point has a large hole next to and under the spillway. A load of class II rip-rap, sandstone or limestone, is needed to stabilize this area.

As soon as this work has been completed, please notify us by letter so the plans can be approved.

If you have any questions, please feel free to call.

Sincerely,

J. Michael Harrison

J. Michael Harrison
P.E.

/kb

cc: I & E
Contract Augering Services, Inc.
File

FRANK HOLLIS & ASSOCIATES, INC.
ENGINEERING CONSULTANTS & LAND SURVEYORS

August 28, 1998

Michael Harrison
ASMC
P.O. Box 2390
Jasper, Al 35502

RE: P-3711
Altoona Mine

Dear Sir:

I am in receipt of your letter dated August 24, 1998 outlining the discrepancies which needed to be handled concerning the permanent water impoundment plans for the Altoona Mine, P-3711. As you requested I am informing you by letter that as of this date all items listed have now been taken care of.

Please contact me if any additional information is needed in order to approve said plans.

Sincerely,

Frank S. Hollis

FSH/sm

xc: File

[redacted] 206 3RD AVENUE EAST • ONEONTA, ALABAMA • 35121 • (205) 625-4433