

**WARRIOR MET COAL MINING, LLC**

**MINE NO. 4, P-3260, R-40**

**ALABAMA SURFACE MINING COMMISSION  
UNDERGROUND MINING PERMIT APPLICATION**

**P A R T   I I I**

Prepared by:

**MCGEHEE ENGINEERING CORP.**

P. O. Box 3431  
450 19th Street West  
Jasper, Alabama 35502-3431  
Telephone (205) 221-0686

Part III-Operation Plan

A. General Operations Information

1. Describe the type and method of coal mining procedures and major equipment to be used. See original permit.
2. Describe the sequence and timing of increments to be mined (as shown on permit map) over the total life of the permit. The timing of increments is as follows:

<u>Increment No.</u>	<u>Acres</u>	<u>Dates</u>	
		<u>From</u>	<u>To</u>
1.	903.0	Effective Date	60 months after
2.	153.0	Effective Date	60 months after
3.	483.0	Effective Date	60 months after
4.	104.0	Effective Date	60 months after
5.	25.0	Effective Date	60 months after
6.	266.0	Effective Date	60 months after

TOTAL 1934

\* Month depends on date issued

The sequence of mining operations will be generally as follows:

- 1) Construction of Sediment Control Structures
- 2) Site Preparation
- 3) Construction
- 4) Site Reclamation
- 5) Revegetation

3. Attach a narrative explaining the construction modification, use, maintenance, and removal of the following facilities: (780.11)

(a) Coal removal, handling, storage, cleaning and transportation structures and facilities;

None added in Revision R-40

(b) Spoil, coal mine waste and non-coal mine waste removal, handling, storage, transportation and disposal structures and facilities;

See [Attachment III-A-3](#) & [III-B-2-A](#).

(c) Mine facilities; and

See [Attachment III-A-3](#)

(d) Water pollution control facilities.

None added in Revision R-40

**SPOIL, COAL MINE WASTE AND NON-COAL MINE  
WASTE REMOVAL, HANDLING, STORAGE, TRANSPORTATION  
AND DISPOSAL STRUCTURES AND FACILITIES**

**Introduction**

This permit application proposes adding two (2) slurry ponds (G and L) to be used for emergency slurry storage to store fine coal processing waste (slurry) produced at the Warrior Met Coal Mining, No. 4 Mine Prep Plant. The ponds are proposed for emergency use in the event one of the larger impoundments used by Warrior Met Coal Mining is not available. The ponds will be small and not of the size regulated and monitored by MSHA. All fine coal refuse delivery to the emergency slurry ponds will be accomplished by pumping through “drisco” polyethylene pipe.

Additionally, this permit application proposes to add Sediment Basins 018C and 018D that are in series with Basins 018, 018A and 018B. Basin 018C and 018D were constructed and certified under Southland Resources, Inc. P-3837. Basin 018C will assist in treating underground pump discharge.

**COAL MINE WASTE**

See Part III-2-B-A for Slurry Impoundment Construction and Abandonment Specifications

**WATER POLLUTION CONTROL FACILITIES**

Sedimentation basins constructed during mining operations are to collect sediment from the disturbed area during the actual mining phase and during the reclamation and restabilization phase. All basins will be constructed, prior to any disturbance in its respective drainage area, under the supervision of a qualified Registered Professional Engineer or by a qualified person under his direct supervision. Upon completion of construction the basin will then be certified to the Regulatory Authority as having been constructed in accordance with the approved design plan. Areas where embankments are to be built will be cleared and grubbed with the topsoil removed and stockpiled (if required). The basins will be constructed by bringing desirable material in and compacting it in lifts until the construction specifications are met. Drainage structures will be installed as per design plans with any necessary erosion control and/or stabilization procedures such as riprap, concrete, drop structures, energy dissipaters, etc. being implemented as deemed necessary by the project engineer. Upon completion of construction the entire disturbed area will be revegetated in accordance with the approved Reclamation Plan (IV-C-5).

**MODIFICATIONS**

No modification plans are necessary due to the basin(s) being proposed. If during mining operations it is necessary to modify any or all of the sedimentation basins, modification plans will be submitted to the Regulatory Authority for approval. Upon written approval of the modification plans by the Regulatory Authority the basin(s) will be modified in accordance with the approved plans.

**MAINTENANCE**

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ATTACHMENT III-A-3**

Semi-monthly inspections of each basin will be made for erosion, instability, proper functioning, etc. until the removal of said basin(s) or until Phase III Bond Release. Minor signs of erosion, instability, improper functioning, etc. will be repaired immediately. Standard anticipated maintenance will include repairing rills and gullies, repairing slope failures, re-seeding areas of failed or scarce vegetation, cleaning out or removing debris obstructing pipes and/or spillways to allow proper functioning, etc. Hazardous conditions observed during inspections will be reported to the Regulatory Authority for further consultation or instructions. All basins will be examined quarterly for weakness, instability, excessive erosion, etc. with maintenance performed as necessary. Formal inspections will be made annually with any reports or modifications being filed with the Regulatory Authority along with a certification that the basin has been maintained in accordance with the approved plans and 880-X-10C-.20 [l(j)] of the Alabama Surface Mining Regulations. Sediment will be removed from the basin when the accumulated sediment exceeds the sediment removal volume as set forth on the approved detailed design plans.

**REMOVAL**

All sedimentation basins constructed during mining operations, not being left as permanent water impoundments, upon completion of mining, reclamation, restabilization and effluent standards compliance, will be removed in the following manner:

Upon written approval from the Regulatory Authority of the basin removal plans, the impoundment will be dewatered in a controlled manner by either pumping or siphoning. Upon successful dewatering, a determination will be made as to the level of retained sediment in the basin. Upon determining the retained sediment level, a permanent 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 the newly constructed channel will be spread and compacted over the previous impoundment (wet area) to prevent erosion and insure restabilization. The newly constructed channel will be of adequate design (width, depth and grade) to cause all surface drainage to travel across this area in sheetflow, minimizing the possibility of erosion. Also, where deemed necessary, hay dams will be strategically located across the width of the channel to retain sediment and slow the water velocity down to a favorable rate. Where anticipated discharge velocities require further attention, energy dissipaters such as rock check dams, concrete flumes, sacrete bags, etc. will be installed or constructed at the exit section of the newly constructed permanent channel. Upon removal of the embankment section, the remaining embankment material will be graded to the approximate original contour. All disturbed areas will be graded in such a manner to insure slope stability, successful restabilization and to minimize erosion. All disturbed areas will be seeded, fertilized and mulched in accordance with the approved Reclamation Plan (IV-C-5). No slope existing or created in the removal of the basin will be left on a grade that may slip or slough.

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8. Is surface mining to be conducted within 500 feet of an underground mine? (780.27, 816.79)  
( ) Yes (XX) No

If yes, describe measures to be used to comply with Section 816.79. Attach a map showing the location and extent of known workings in accordance with 780.14(a) (13).

All shallow old works that previously existed under the proposed slurry ponds have been mined through by surface mining during removal of the Brookwood and Milldale coal seams.

The Blue Creek coal seam has been deep underground mined by the JWR No. 4 mine to some extent under each proposed slurry pond. A search of Warrior Met Coal Mining, LLC mapping revealed mapping of the underground mine and indicates that mining was completed in the area of the proposed impoundments in 1979. See the [Deep Oldworks Map](#) for the extent of the deep underground mining. The Warrior Met Coal Mining, LLC No. 4 Mine is located in excess of 1,500' below the surface at the locations of the proposed slurry ponds. It is highly unlikely that there will be any additional subsidence given the long period of time since the completion of mining.

**B. Engineering Plans.**

All cross sections, maps and plans related to operations, reclamation and structures must comply with Section 780.10. Plans, appropriate calculation and conclusions shall be presented in a clear and logical sequence and shall take into account all applicable factors necessary to evaluate the proposed plan or design.

1. Existing Structures. (780.12, 786.21)

- (a) Describe each existing structure to be used, its location, current condition, approximate dates of construction and evidence (including relevant monitoring data) showing whether or not the structure meets the performance standards of Subchapter K or Subchapter B, whichever is more stringent and demonstrate whether or not the use of existing structures will pose a significant harm to the environment or public health or safety.

Not Applicable

- (b) If an existing structure requires modification or reconstruction to meet the performance standards, attach a compliance plan that includes design specifications, construction schedule, monitoring procedures, and evidence that the risk of harm to the environment or public health or safety is not significant during modification or reconstruction.

Not Applicable

2. Ponds, impoundments, banks, dams and embankments. (780.25)

- (a) Submit a general plan which complies with Section 780.25 (a)(1) for each proposed sedimentation pond, water impoundment, and coal processing waste bank, dam or embankment to be located within the proposed permit area.

See Attachment III-B-2-A

- (b) Submit detailed design plans, which comply with Sections 780.25(a)(2)(3) and 816.46, for each sedimentation pond to be constructed on the increment you currently propose to mine. If the sediment pond is to remain as a permanent water impoundment, design plans shall also comply with Section 816.49.

See Attachment III-B-2-A

- (c) Submit detailed design plans which comply with Sections 780.25(a) (2&3) and 816.49, for each temporary or permanent water impoundment to be constructed on the increment you currently propose to mine.

See Attachment III-B-2-A

- (d) Submit detailed design plans, which comply with Section 780.25(a) (2&3) and 816.81-816.85, for coal mine waste bank to be constructed on the increment you currently propose to mine.

None Proposed

- (e) Submit detailed plans which comply with Sections 780.25 (a)(2&3) and 816.91-816.93 for each coal mine waste dam and embankment to be constructed on the increment which you currently propose to mine.

None Proposed

3. Diversions [780.29, 816.43, 816.44]

Are diversions of overflow or stream channel diversions proposed?

( ) Yes (XX) No

If yes, complete the following:

- (a) Is the diversion to be permanent? ( ) Yes (XX) No

**GENERAL ENGINEERING PLAN CERTIFICATION STATEMENT**

I, Jeffrey G. Aldridge, a registered professional engineer, hereby certify that the information, cross-sections, data, maps, etc., contained in this general plan in Attachment III-B-2-A is true and correct to the best of my knowledge and belief.

**McGehee Engineering Corp.**

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Jeffrey G. Aldridge, P.E.  
Alabama License Number 33959

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Date

## **ADDENDUM TO THE GENERAL PLAN**

This addendum to the General Plan proposes adding two (2) slurry ponds (G and L) and two (2) sediment basins, (018C & 018D). The slurry ponds will be used for emergency slurry storage to store fine coal processing waste (slurry) produced at the Warrior Met Coal Mining, LLC, No. 4 Mine Prep Plant. The slurry ponds are proposed for emergency use in the event one of the larger impoundments used by JWR is not available. The ponds will be small and not of the size regulated and monitored by MSHA.

### **Slurry Ponds**

Slurry Ponds G and L will be small embankment type structures built in spoil remaining from mining by Southland Resources, Inc. It is estimated that each impoundment will provide approximately one month of slurry disposal. [Detailed design plans for Slurry Ponds G and L](#) are enclosed. The proposed slurry ponds may never be needed or constructed since they are for emergency use only. Upon written approval from ASMC, Slurry Ponds G and L will be constructed (if needed) and certified to ASMC prior to pumping slurry into said impoundments. General design data for proposed Slurry Ponds G and L is enclosed. See the attached data and [Slurry Pond Watershed Map](#) for the slurry pond locations and preliminary hydrologic information. Slurry ponds will be certified to the Regulatory Authority within 90 days of start of construction unless an extension is granted by the Director.

Once the accumulated slurry reaches the slurry storage capacity as outlined on the plan sheet for each pond, the pumping of slurry will be ceased immediately and slurry will then be pumped to another impoundment. Slurry Ponds G and L will be covered with coarse refuse as Rock Dump No. 6 advances and covers the ponds. The ponds will be entirely covered by coarse refuse. Final reclamation will occur as Rock Dump No. 6 is reclaimed.

In the event that the slurry ponds must be abandoned prior to the slurry level reaching its maximum design capacity, the pool area will be dewatered in an environmentally safe manner and will be filled with coarse refuse and completely covered by Rock Dump No. 6. Final reclamation will occur as Rock Dump No. 6 is reclaimed. The entire ponds including embankments and concrete spillways will be covered with covered with Rock Dump No. 6.

Slurry Pond G is not dependent on the construction of Slurry Pond L. The spillway and embankment of Slurry Pond G were designed to function as intended with or without Slurry Pond L being in place.

### **Previous Underground Mining**

All shallow old works that previously existed under the proposed slurry ponds have been mined through by surface mining during removal of the Brookwood and Milldale coal seams. The Blue Creek coal seam has been deep underground mined by the JWR No. 4 mine to some extent under each proposed slurry pond. A search of Warrior Met Coal Mining, LLC mapping revealed mapping of the underground mine and indicates that mining was completed in the area of the proposed impoundments in 1979. See the [Deep Oldworks Map](#) for the extent of the deep underground mining. The Warrior Met Coal Mining, LLC No. 4 Mine is located in excess of 1,500' below the surface at the locations of the proposed slurry ponds. It is well accepted that total subsidence from longwall mining occurs within two (2) years of coal extraction. Because coal extraction occurred more than thirty (30) years ago in this immediate area, no adverse effects are anticipated to any of the structures

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due to subsidence. However, the following measures will be implemented during the design, construction and post construction inspections of the proposed slurry impoundments:

1) The embankment foundation area will be investigated to locate openings and zones of high permeability. 2) Precautions will be taken during foundation preparation to ensure any joints or cracks in rock foundations are sealed off, using protective filter. 3) The embankment top of dam crest width will be increased by 3' (minimum 15') to provide increased mass and greater resistance to piping failure. 4) The embankment material will be placed at water contents slightly wet of optimum to increase their ability to deform without cracking. 5) The structure will be monitored bi-monthly by personnel from JWR, to ensure that the impoundment is functioning properly. 6) In the event that subsidence causes damage to the impounding structure, all damage will be repaired immediately. Repairs may consist of the backfilling the settled portion of the structure and the repair to the cracking and the sealing of any seepage cause therein.

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**Sediment Basin 018, 018A, 018B, 018C & 018D**

Sediment Basins 018C & 018D are basins that were constructed and certified under Southland Resources, Inc. P-3837 and are in series with Basins 018, 018A and 018B. Basin 018C will assist in treating underground pump discharge and Basin 018D will receives runoff from the permitted borrow area north of Howell Camp Road. These basins will be used as shared facilities with P-3837 until they are removed from P-3837 permit. They will be maintained in accordance with the plans approved in P-3837. Please see ASMC permit P-3837 for detailed design plans, ASMC approval letters and construction certification letters. Below is the result of recent evaluation of Series Sediment Basins 018, 018A, 018B, 018C and 018D for the worst case watershed conditions that could occur for the JWR permit area. See the attached [Worst Case Watershed Map](#). The attached [Current Condition Watershed Map](#) shows the current watershed condition as 100% reclaimed. Therefore, evaluation for the current condition is not needed. Sediment Basins 018, 018A, 018B, 018C & 018D were modified with Revisions R-3 and R-5 and re-evaluated with Revisions R-7/8 and R-10 for P-3837. Those results are shown below for comparison with the worst condition for R-40 of P-3260. P-3837 has been 100% release with the exception of the basins and a small area previously used for P-3837's office and stockpile areas. See the attached [SEDCAD 4 computer output](#).

Basin	P-3837 Peak Stage R-3	P-3837 Peak Stage R-5	P P-3837 Peak Stage R-7 & R-8	P-3837 Peak Stage R- 10	P-3260 Peak Stage R- 40	R-40 Freeboard (feet)
018	421.68	421.22	421.59	421.65	421.28	1.42
018A	443.12	442.49	442.99	443.08	442.58	2.42
018B	485.47	484.73	485.38	485.47	484.85	1.65
018C	517.27	515.98	517.29	517.38	517.07	2.43
018D	NA	*543.07	*546.09	*546.03	529.33	2.37

\*The original elevations were assumed. R-40 uses actual elevations for basin topography based on a recent sounding of the basin. Sediment storage shown in the SEDCAD 4 computer output is the actual, existing volume based on that recent sounding. This basin was sounded to verify it's volume because it had been mined through and reconstructed several years ago. Evidently some filling with sediment has occurred. The original volumes/configurations for the other basins in this series of basins are valid because those basins have not been mined through.

General design data for Series Basins 018, 018A, 018B, 018C and 018D is enclosed. See the attached data and [Current Condition Watershed Map](#) for the sediment basin location and preliminary hydrologic information. Both Sediment Basin 018C & 018D are proposed as temporary water impoundments. Removal plans and additional data qualifying Sediment Basins 018C & 018D for removal will be submitted and approved by the Regulatory Authority prior to a Phase II bond release.

Geologic investigations of the area indicate alternating sequences of sandstone and shale with sandstone streaks and minor amounts of bituminous coal and underclay.

All surface drainage from the proposed areas drain into Bluff or Horn Creeks.

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**GENERAL DESIGN DATA**

<b>SEDIMENT BASIN</b>	<b>LOCATION</b>	<b>DRAINAGE AREA</b>
018D	SW/SE Sec. 35, T19S, R8W	155
018C	SW/SW Sec. 36, T19S, R8W and NW/NW Sec. 1, T20S, R8W	223
018B	SE/SE, Sec. 35, T19S, R8W	307
018A	NW/SE, SW/SE Sec. 35, T19S, R8W	507
018	NW/SE, NE/SW Sec. 35, T 19 S, R 8 W	556

<b>SLURRY POND</b>	<b>LOCATION</b>	<b>DRAINAGE AREA</b>
G	SW/NW of Sec. 2, T20S, R8W	19
L	NW/NW & SW/NW of Sec. 2, T20S, R8W NE/NE of Sec. 3, T20S, R8W	8

All impoundments are located in Tuscaloosa County, Alabama on the Brookwood U.S.G.S. Quadrangle.

See the attached [Slurry Pond Watershed Map](#), [Sediment Basins 018, 018A, 018B, 018C and 018D Current Condition Watershed Map](#) and [Sediment Basins 018, 018A, 018B, 018C and 018D Worst Case Watershed Map](#).

**SPECIFICATIONS FOR COAL PROCESSING WASTE IMPOUNDMENTS  
IMPOUNDING LESS THAN 20 AC-FT OR LESS THAN 20 FEET HIGH**

The embankment for coal processing waste will be designed and constructed using the following as minimum criteria:

**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 1 horizontal to 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 brush.
- 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 in ASTM. Coal processing waste will not be used in the construction of dams and embankments.
- 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 1.5 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 10 Year - 24 Hour or a 25 Year - 6 Hour precipitation event (whichever is greater). The design embankment height for permanent impoundments will be a minimum of one (1) foot above the maximum water level anticipated from a 10 Year - 24 Hour or a 25 Year - 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 can not be achieved, additional design and construction specifications will be submitted in the detailed design plans.

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- J) The embankment and 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 10 Year - 24 Hour precipitation event. The combination primary and secondary (emergency) spillway system will be designed to safely carry the anticipated peak runoff from a 25 Year - 6 Hour precipitation event. When waste impoundments 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 50 Year - 24 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 that the spillway can not be constructed in natural ground the spillway will be lined with riprap, concrete, asphalt or durable 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) Waste impoundments 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 waste impoundments 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 waste impoundment by a qualified registered professional 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 having been constructed in accordance with the approved detailed design plans.

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- B) Waste impoundments 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) Waste impoundments will be examined quarterly for structural 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- 10C- .20 of the Alabama Surface Mining Regulations.
- E) Slurry pumping will cease when the accumulated slurry reaches the maximum allowable slurry volume as set forth in the detailed design plans.

#### **4. SLURRY IMPOUNDMENT REMOVAL REQUIREMENTS**

Slurry pumping will be ceased when the slurry elevation reaches the design elevation set forth in the detailed design plans. The impoundments will be covered with coarse refuse as Rock Dumps 4 and 6 advance and cover the impoundment areas. The impoundments will then be considered eliminated and will be a part of Rock Dump No. 6. The area will receive final reclamation during reclamation of Rock Dump No. 6.

The following steps shall be taken to abandon Slurry Impoundments G and L in the event mining is stopped and the rock dump does not advance far enough to cover the impoundments:

- A) Each slurry impoundment will be reclaimed when slurry accumulates to the design allowable slurry volume or when mining is completed, whichever comes first. Reclamation of each slurry impoundment will take place as follows:
- B) The slurry discharge pipe will be disconnected and removed from the site.
- C) In the event that the slurry impoundment must be abandoned prior to the slurry level reaching its maximum design capacity, the embankment will be breached down to an elevation two feet above the existing slurry level, constructing a new spillway channel adequate to carry the anticipated flows. The impoundment will then be dewatered in an environmentally safe manner such as pumping, siphoning, etc.
- D) After abandonment and/or successfully dewatering of the slurry impoundment, a composite sample will be taken of the final slurry surface. Said sample will be transported to a laboratory where the sample will be analyzed for paste pH, total sulfur and neutralization potential. Using these three parameters, the acid-base account will be calculated for sample. If the results show the material to be acid forming then lime will be administered on the impoundment for 2 feet of depth. After the lime has been applied, a working surface (using existing spoil or coarse refuse) will be constructed on the impoundment that will permit equipment travel and provide for positive drainage. All spoil material slopes on the

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impoundment shall have a maximum and minimum grade of 5 percent and 1 percent, respectively.

- E) All spoil or refuse fill shall be spread in one (1) foot maximum layers with a minimum compaction of 90 percent of its maximum dry density as determined by the standard proctor compaction test. The thickness of the working surface will be no more than is necessary to support equipment that will be working upon the impoundment surface.
- F) Including the completion of the above mentioned working surface, the final limed slurry surface will be covered with a minimum of four (4) feet of the best available non-toxic, noncombustible and non-acid forming material. The area will then be reclaimed and revegetated in accordance with the approved reclamation plan.

**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 1 horizontal to 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 brush.
- 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 in 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 1.5 and a minimum seismic safety factor of 1.2, 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 both temporary and permanent impoundments will be a minimum of one (1) foot above the maximum water level anticipated from a 10 Year - 24 Hour or a 25 Year - 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 can not be

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achieved, additional design and construction specifications will be submitted in the Detailed Basin Design Plans.

J) The embankment and 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 10 Year - 24 Hour precipitation event. The combination primary and secondary (emergency) spillway system will be designed to safely carry the anticipated peak runoff from a 25 Year - 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 50 Year - 24 Hour precipitation event.

B) Channel linings, for secondary (emergency) spillways will be a trapezoidal open channel constructed in consolidated, nonerodible material and planted with a mixture of both annual and perennial grasses being predominantly fescue and bermuda. In the event that the spillway can not be constructed in consolidated, nonerodible material the spillway will be lined with riprap, concrete, asphalt or durable 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 riprap, 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 riprap, 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 professional 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 having been constructed in accordance with the approved detailed design plans.

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

### **3. INSPECTION, MAINTENANCE AND CERTIFICATION REQUIREMENTS**

C) Sediment basins will be examined quarterly for structural weakness, instability, erosion, slope failure, or other hazardous conditions.

D) If during the above described periodic inspections, it is determined that there exists signs of structural weakness, instability, erosion, slope failure, improper functioning, or other hazardous conditions, these will be repaired immediately.

E) Standard anticipated maintenance will include repairing rills and gullies, repairing slope failures, re-seeding areas of failed or scarce vegetation, cleaning out or removing debris obstructing pipes and/or spillways to allow proper functioning, etc. Standard maintenance discovered during the above described periodic inspections will be performed immediately. Hazardous conditions observed during inspections will be reported immediately to the Regulatory Authority for further consultation or instructions.

F) 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.

G) 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-10C-.20[1(j)] of the Alabama Surface Mining Regulations.

### **4. BASIN REMOVAL REQUIREMENTS**

A) Upon completion of mining, reclamation, restabilization 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 restabilization. The newly constructed channel will be of adequate width (minimum 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 2 Horizontal to 1 Vertical to provide for safety and access for future water users.

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ATTACHMENT III-B-2-a**

**TYPICAL DRAWINGS FOR EMBANKMENT TYPE BASIN**

**Typical Pond Plan View**

**Typical Embankment Cross Section**

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ATTACHMENT III-B-2-a**

5. Transportation Facilities (780.33, 780.37)

An existing ancillary road to Sediment Basin 018D was added and an existing ancillary road to Sediment Basins 008, 009, 012 and 012A was shown as remaining after deletion of permit area.

a) Describe the measures to be taken to ensure the interest of the public and landowners affected are protected if disturbance within 100 feet of the right-of-way or relocation of a public road is proposed.

(1) Appropriate warning signs will be posted along the road right-of-way a minimum of five (500') hundred feet from the entrance of the proposed disturbance.

(2) Appropriate advertisements, informing the public and affected landowners, will be run in the local newspaper prior to any disturbance within the one hundred (100') feet setback of or the relocation of any public road right-of-way.

(3) All safety requirements of the appropriate Federal, State, County, or Local governments, concerning public health and safety, will be followed.

(4) In areas where disturbance is proposed within one hundred (100') feet of the road right-of-way, earthen berms, guard rails, or barricades will be constructed as necessary to prevent accidental entrance into the mine area and to prevent safety hazards.

(b) Describe any unique design, feature, or structure which is necessary for the road to meet the performance standards of Subchapter K using any necessary maps, plans, or cross-sections.

**[See Attachment III-B-5](#)**

(c) Describe, in detail, the measures to be taken during construction, maintenance and use of the transportation facilities to prevent damage to fish and wildlife and their habitat; public and private property; and erosion, siltation, and pollution of water.

Silt fences, hay filter dams, dust control on roads, vegetation, diversion ditches and other prudent practices will be utilized in controlling runoff. Cut and fill slopes created by road construction shall be grassed to insure stabilization and prevent erosion.

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ATTACHMENT III-B-5**

**SPECIFICATION FOR THE CONSTRUCTION, MAINTENANCE AND RECLAMATION OF  
ANCILLARY ROADS**

1. To the extent possible, roads will be located on ridges or on the most stable available slopes to prevent or minimize erosion, downstream sedimentation and flooding in an effort to prevent adverse effects to fish, wildlife and related environmental values.
2. To the extent possible, roads will be located above sediment basins to be constructed for the mining operation in an effort to control or prevent additional contributions of suspended solids to stream flow or runoff outside the permit area and to comply with State and Federal water quality standards applicable to receiving waters and avoid the alteration of the normal flow of water in streambeds of drainage channels while preventing or controlling damage to public or private property. Where it is not possible or is impractical to locate roads in this manner, sediment control devices such as silt fencing, hay bale check dams and rock filter check dams will be used as necessary to maintain water quality.
3. Prior to construction, the roadway will be cleared, grubbed and will have the topsoil removed. The clearing limits will be kept to the minimum necessary to accommodate the roadbed and associated ditch construction.
4. Roads will be constructed of suitable compacted subgrade material and will have a minimum width of ten feet and a maximum width necessary to accommodate the largest equipment traveling the road.
5. No sustained grades will exceed ten percent unless deemed necessary, in which case appropriate sediment control facilities will be constructed. If grades in excess of fifteen percent are required, cross drains, ditch relief drains and road drainways will be located at a minimum distance of three hundred feet.
6. Roads will be constructed so as to have adequate drainage utilizing ditches, cross drains and ditch relief drains. Roads will not be located in the channel of an intermittent or perennial stream unless specifically approved by the Alabama Surface Mining Commission.
7. Routine maintenance will be required to assure that the road continually meets performance standards and will consist of periodic grading, resurfacing, dust suppression and maintenance of sediment control facilities. Dust suppression will consist of the application of water, chemical binders and/or other dust suppressants. No oil will be utilized in this process. Spot seeding, fertilizing and mulching will be performed as necessary to improve vegetative cover on roadway slopes. A road damaged by a catastrophic event shall be repaired as soon as practicable after the damage has occurred.
8. Roads not to be retained as part of the post mine land use shall be reclaimed in accordance with the approved reclamation plan for this permit as soon as practicable after they are no longer needed as part of the mining and reclamation operation, using the following procedures:
  - A. The road will be closed to traffic.
  - B. All bridges, culverts and other drainage structures not approved as part of the post

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mine land use will be removed.

- C. All road surfacing materials that are not compatible with the post mine land use or revegetation requirements will be properly disposed of on-site or removed from the site for reuse.
- D. Roadway cut and fill slopes shall be regraded and reshaped to be compatible with the post mine land use and to compliment the natural drainage pattern of the surrounding terrain.
- E. The natural drainage patterns shall be protected from surface runoff and erosion utilizing the installation of dikes and/or cross drains as necessary.
- F. The roadbed shall be ripped or scarified as necessary, the topsoil or substitute or approved growing medium shall be replaced and revegetated in accordance with the approved reclamation plan for this permit.

10. The following drawings illustrate [typical roadbed configurations for ancillary roads.](#)