

**CANE CREEK, LLC
FLAT TOP MINE, P-3882, R-5**

CANE CREEK, LLC.

FLAT TOP MINE, P-3882

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

P A R T I V

Prepared by:

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PART IV - RECLAMATION PLAN

A. Postmining Land Use.

(1) Describe the proposed postmining land use(s) for the permit area. If more than one land use is proposed, show on a map and give acreage for each use. Include comments from the legal owner of record concerning the proposed land use. (780.23, 816.133)

Revision R-5 proposes to add the Undeveloped/ No Current Use (Forestry Reclamation Approach) as an optional post mining land use.

<u>Increment</u>	<u>Area</u>	<u>Land Use</u>
1	548 Acres	Undeveloped/No Current Use (Forestry Reclamation Approach) and/or Undeveloped/No Current Use
	11 Acres	Permanent Water Impoundments (Fish and Wildlife)
	1 Acre	Permanent Access Roads
7	65 Acres	Undeveloped/No Current Use (Forestry Reclamation Approach) and/or Undeveloped/No Current Use
Total Permit Area		625 Acres

See attached [Land Use Map.](#)

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(2) Is the proposed land use different from the current land use? [780.23, 816.133]

(XX) Yes () No

If yes, complete the following:

(a) Is the area zoned for the proposed land use?

(XX)Yes ()No () N/A

(b) Is the proposed use compatible with adjacent land uses and applicable local and state land use policies?

(XX)Yes ()No

(c) Explain the feasibility of the proposed land use as related to land use trends, and explain how the land use will be developed, achieved, and sustained.

See attached [Land use letters](#).

(d) Include letters of commitment from outside parties ensuring the provision of any necessary public facilities and any state and local governmental agencies which have to initiate, implement, approve or authorize the proposed land use.

See attached [Land use letters](#).

(e) Enclose design plans for the proposed post-mining land use, if applicable.

Not Applicable

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B. Grading and Contouring

- (1) Enclose detailed plans with appropriate cross sections or maps which satisfy the requirements of Section 780.18(b)(3&4).

See Reclamation cross-section in original permit.

- (2) Complete the following timetable: [780.18 (b) (1)]

Increment	# months after operation begins	% of increment or permit which will be graded and contoured
1	6.0 months	0%
	12.0 months	5%
	18.0 months	10%
	24.0 months	15%
	30.0 months	30%
	36.0 months	45%
	42.0 months	60%
	48.0 months	75%
	54.0 months	80%
	60.0 months	85%
	66.0 months	100%

Increment	# months after operation begins	% of increment or permit which will be graded and contoured
7	6.0 months	0%
	12.0 months	5%
	18.0 months	10%
	24.0 months	15%
	30.0 months	30%
	36.0 months	45%
	42.0 months	60%
	48.0 months	75%
	54.0 months	80%
	60.0 months	85%
	66.0 months	100%

*NOTE: Grading and contouring overburden shall follow coal removal by no more than 180 days.

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(3) On appropriate map(s), show representative values for the following: (780.18(b)(3), 816.102)
See Attached [Permit Map](#), and Reclamation cross-sections from original permit.

(a) Percent of slope before mining; and

Inc. No. 1

Average Slope – 28.0%

Maximum Slope – 45.0%

Inc. No. 7

Average Slope – 33.0%

Maximum Slope – 40.0%

(b) Proposed post-mining slope including final slope of the highwall(s) in percent.

*Post Mining Slope:

Inc. No. 1 - 28.0%

Inc. No. 7 - 33.0%

Final Highwall Slope - 40.0%

(4) Complete the following:

(a) Is the mining operation to be conducted on a pre-existing (prior to August 3, 1977) highwall?

() Yes (XX) No

(b) Is the operation of such limited slope as to not generate enough material to completely backfill the re-affected or enlarged highwall?

() Yes (XX) No

If Yes, provide analysis to show maximum extent of backfilling possible.

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OVERBURDEN RESTABILIZATION PLAN

Overburden shall be backfilled, compacted, and graded so that the post-mining slope shall approximate the original premine slope of 28.0% for Increment No. 1, and 33.0% for Increment No. 7. The mining method of area mining will be utilized at this proposed mine site. Backfilling, compacting and grading, of the final highwall slope only, will be done using dozers, farm-type tractors will then be used to disc the overburden to its final contour, decrease compaction, and increase the mechanical breakage of the surface layer. The disturbed area, excluding the final highwall slope, will be graded no steeper than the approximate original contour. Rocks 24" in diameter that remain upon the surface, if any, will be hand collected and buried. At this time the following criteria will be used to evaluate the textural quality of the graded overburden:

- a) Rocks of size larger than ten (10") inches shall not exceed ten (10%) percent by volume of the substitute material, and no rocks larger than twenty four (24") inches can be included in the substitute material.
- b) Rocks between three (3") inches and ten (10") inches in size shall not exceed fifteen (15%) percent by volume of the topsoil substitute material.
- c) The substitute material shall not contain more than fifty (50%) percent by volume of materials greater than .75 inches in size.
- d) At least 40% by volume of the substitute material shall be of a size less than 2 millimeters.

If these criteria cannot be met, the Applicant shall redisc the overburden and resample. If increasing the mechanical breakage will not enhance the graded overburden to a satisfactory level, additional soil will be hauled and spread on site until the above criteria is achieved.

Stabilization of the Final High wall material shall be achieved by the planting of warm or cool season perennials as outlined in Part IV-C-5 of the permit application. Re-stabilization shall be achieved as outlined in Section 816.06 if necessary.

SPECIAL NOTES ON FORESTRY RECLAMATION APPROACH AREAS:

1. The particle size requirements listed in the above overburden re-stabilization plan will not apply to areas utilizing FRA.
2. Successful FRA implementation requires low compaction grading. Grading and contouring will be minimal to avoid excess compaction, only what is required to achieve slope stability and maintain the required OAK slopes.
3. Areas that have been heavily compacted by heavy equipment during the grading process may be ripped with a single shank dozer to loosen the compacted areas. Ripping should be done when the ground is dry. If ripping is required on sloped areas, ripping shall be done along the contour to minimize erosion.

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C. Revegetation

- (1) Outline procedures for soil testing required to determine type and amount of soil amendments to be applied and to evaluate results of topsoil handling and replacement. (780.18, 816.25)

Topsoil or Topsoil Substitution Material will be sampled systematically and sent to the Auburn University Testing Laboratory, for analyses to determine type and amount of soil amendments necessary to maintain vegetative growth.

The chemical analyses will consist of the following parameters: pH, % Sulfur, Phosphorus, Potassium, Magnesium, Calcium, Alkalinity, NO₃-N, and Recommendations for the amounts of Limestone, Nitrogen, P₂O₅, and K₂O to be added to the soil.

The physical analyses will consist of the following parameters: % Sand, % Silt, % Clay, Textural Classification, and Available Water Capacity.

- (2) Are selected overburden materials to be used as a supplement or substitute for topsoil?

(XX) Yes. () No.

[Attachment IV-C-2 Modification.](#)

If yes, provide results of analyses, trials, and tests required under Section 816.22(e). (779.21)

[Attachment IV-C-2 Modification.](#)

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(3) Are commercial or introduced species to be used?

() Yes (XX) No

If yes, give a narrative with supporting references which show that the species meet the requirements of Section 816.112. [780.18, 816.112]

(4) Is the area to be reclaimed for fish and wildlife habitat?

(XX) Yes. () No.

If yes, list the species of plants to be used with a brief description of how they meet the criteria of Section 816.97(d)(6). [780.18(b)(5 & 6), 816.97(d)(6)]

1. During the reclamation process the disturbed area will be regraded in such a manner as to create numerous small water holding depressions approximately 1/4 acres in size of maximum depth of 2 feet to enhance the area for fish and wildlife.
2. At the proposed mine site, all sediment basins, except Basins 011 and 007C, are proposed as permanent water impoundments. Basin 008 was temporary and has been mined through.
3. Various herbaceous species including, but not limited to, Browntop Millet, Kobe and Sericea Lespedeza, Hairy Vetch, Ryegrass and Wheat may be planted in scattered and random locations to provide food and cover for wildlife that closely resemble pre-mining condition. These plants will be added in addition to the vegetation proposed in Part IV of this permit application.
4. As determined by the post mining land use, all reclaimed areas greater than fifty (50) acres will be broken up by vegetation types to provide maximum variation of vegetation.

The proposed post mining land use for the majority of the permit area will be Undeveloped/No Current Use. In this instance, areas along drainage courses, areas along the permit boundary and areas around the proposed water holding depressions to be left in the regrading process may be planted with trees and shrubs, such as willow, loblolly pine, honeysuckle, sawtooth oak, etc., to increase diversity of food and cover for wildlife.

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(5) Complete the following schedules for each increment or sub-area of the permit area.
[780.18(b)(5)]

**VEGETATION SCHEDULE
Undeveloped / No Current Use**

Increment 1

Permanent Vegetation

Species	Planting Rate	Planting Methods	Planting Dates	Areas to be Planted
SPRING PLANTING				
Common Bermuda Grass (Hulled)	10 lbs/Ac.	Broad Cast	April	Entire Disturbed Area
Kobe Sericea (Hulled)	35 lbs/Ac.	" "	April	" " "
*Brown Top Millett	10 lbs/Ac.	" "	April	" " "
Kentucky 31 Fescue	50 lbs/Ac.	" "	April	" " "
FALL PLANTING				
Kentucky 31 Fescue	50 lbs/Ac.	Broad Cast	Oct.	Entire Disturbed Area
Kobe Sericea (Unhulled)	35 lbs/Ac.	" "	Oct.	" " "
Crimson Clover	15 lbs/Ac.	" "	Oct.	" " "
Yuche Arrow- leaf Clover	10 lbs/Ac.	" "	Oct.	" " "

April or Oct. group will be planted, depending upon when grading is completed.

* Brown Top Millet is the only temporary vegetation and will be used only when needed.

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**VEGETATION SCHEDULE
Undeveloped / No/ Current Use (Forestry Reclamation Approach)**

Increment 1

Permanent Vegetation

FALL PLANTING

Tree Species	Planting(1) Rate	Planting Methods	Planting Dates	Planting Planted	Areas to be
Pine Seedlings	Varies/acre	Manual	Winter		Entire disturbed area
Eastern Redbud	Varies/acre	Manual	Winter		Entire disturbed area
Saw-tooth Oak	Varies/acre	Manual	Winter		Entire disturbed area
Northern Red Oak	Varies/acre	Manual	Winter		Entire disturbed area
Southern Red Oak	Varies/acre	Manual	Winter		Entire disturbed area

(1) – The total tree seedlings to be planted will be a minimum of 622 seedlings per acre. The planting rate of each species will vary.

Ground Cover Species	Planting Rate	Planting Methods	Planting Dates	Planting Planted	Areas to be
*Kentucky 31 Fescue	As needed to control erosion	Broad Cast	Oct.		Areas with erosion
*Crimson Clover	As needed to control erosion	" "	Oct.		" " "
*Yuche Arrow-leaf Clover	As needed to control erosion	" "	Oct.		" " "

* These vegetations will only be planted if necessary to control erosion.

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**VEGETATION SCHEDULE
Undeveloped / No Current Use**

Increment 7

Permanent Vegetation

Species	Planting Rate	Planting Methods	Planting Dates	Areas to be Planted
SPRING PLANTING				
Common Bermuda Grass (Hulled)	10 lbs/Ac.	Broad Cast	April	Entire Disturbed Area
Kobe Sericea (Hulled)	35 lbs/Ac.	" "	April	" " "
*Brown Top Millett	10 lbs/Ac.	" "	April	" " "
Kentucky 31 Fescue	50 lbs/Ac.	" "	April	" " "
 FALL PLANTING				
Kentucky 31 Fescue	50 lbs/Ac.	Broad Cast	Oct.	Entire Disturbed Area
Kobe Sericea (Unhulled)	35 lbs/Ac.	" "	Oct.	" " "
Crimson Clover	15 lbs/Ac.	" "	Oct.	" " "
Yuche Arrow- leaf Clover	10 lbs/Ac.	" "	Oct.	" " "

April or Oct. group will be planted, depending upon when grading is completed.

* Brown Top Millet is the only temporary vegetation and will be used only when needed.

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**VEGETATION SCHEDULE
Undeveloped / No/ Current Use (Forestry Reclamation Approach)**

Increment 7

Permanent Vegetation

FALL PLANTING

Tree Species	Planting(1) Rate	Planting Methods	Planting Dates	Planting Planted	Areas to be
Pine Seedlings	Varies/acre	Manual	Winter		Entire disturbed area
Eastern Redbud	Varies/acre	Manual	Winter		Entire disturbed area
Saw-tooth Oak	Varies/acre	Manual	Winter		Entire disturbed area
Northern Red Oak	Varies/acre	Manual	Winter		Entire disturbed area
Southern Red Oak	Varies/acre	Manual	Winter		Entire disturbed area

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*Yuche Arrow-leaf Clover	As needed to control erosion	" "	Oct.		" " "

* These vegetations will only be planted if necessary to control erosion.

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- (6) Describe, in detail, proposed husbandry practices to be used.
[780.18(b)(5),805.13(b)(3)]

Husbandry practices will include, but are not limited to, seeding spot areas to increase cover and the addition of proper nutrients. Suitable mulch shall be used on all regraded and topsoiled areas to control erosion, promote germination of seeds and increase the moisture retention capacity of the soil. A minimum of 1 1/2 tons per acre and a maximum of 3 tons per acre of hay will be used as mulch.

- (7) Describe, in detail, the measures and sampling methods to be used to determine and demonstrate the productive capacity of reconstructed prime farmland. [780.18, 816.116]

The method to be utilized to determine degree of revegetation success will be systematic sampling of the area to accurately depict success of the program. Site surveys will be further qualified by survey of existing aerial photography, if necessary. Sampling of the appropriate area will be at a minimum of the one (1) percent level with a higher level utilized if necessary.

The systematic sampling shall consist of randomly selecting 1 sampling site per 5 reclaimed acres. Each site shall be located on a topographic map and field traversed (paced with compass). Sample shall then be taken at each randomly located area.

In addition to the above mentioned method of determining the success of ground cover, "Productivity of revegetation" will be determined in accordance with ASMC Technical Manual #1 (Approved Statistical Analysis and Sampling Techniques for Determining Revegetation Success on Surface Mined Lands in Alabama).