

**BEST COAL, INC.
JAGGER MINE / P-3932
REVISION R-1**

**ATTACHMENT IV-C-2
TOPSOIL VARIANCE
APPLICATION**

**SUBMITTED BY:
PERC ENGINEERING CO., INC.
P.O. BOX 1712
JASPER, ALABAMA 35502-1712**

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ABSTRACT

Mining by the surface method has occurred on the Mary Lee Group by pre-law operators in the past in the Mt. Olive area. In most instances where pre-law operators regraded overburden, it was without regard for existing topsoils. Also, even though in many instances pre-law operators didn't revegetate, natural revegetation occurred on sites within and adjacent to the proposed permit with surprising success. This fact contributed to the Regulatory Authority granting topsoil variances to regulated mine sites adjacent to this proposed site (the M S & R Equipment Co., Inc - Merritt Rogers Mine, P-3546, and the Drummond Company, Inc. - Knob Mines, P-3251 and P-344). Revegetation success at these sites are largely due to a consistent Black Creek Group lithology which consists of shale and some sandstone. When mixed during mining, this strata results in a medium which is favorable for both pine tree and ground cover growth. When taking into consideration the fact that a significant amount of area within the proposed revision area has steep slopes, it will be shown in this application that heterogeneous overburden at this site is superior to the native topsoils as a medium for post mine revegetation.

SITE CONSIDERATIONS

The post Revision R-1 Best Coal, Inc. - Jagger Mine site is located in part of Sections 13, 14, 15, 22, 23, & 24, Township 15 South, Range 4 West, Jefferson County Alabama as seen from the Brookside, Alabama USGS 7.5 minute quadrangle. The area added by Revision R-1 will occupy a total of 378 acres. The post Revision R-1 Jagger Mine acreage is 693 acres, of which approximately 627 is either mining area or excess spoil disposal areas.

The attached soil map shows the previously permitted mine site, the area added by Revision R-1, drill hole locations, soil types within and adjacent to the revision area, previously mined areas that lack topsoil, and topsoil and overburden collection sites. Soils present within and adjacent to the proposed revision area are as follows:

<u>Map Symbol</u>	<u>Soil Name</u>
29	Montevallo-Nauvoo association, steep
35	Palmerdale complex, steep
40	Townley - Nauvoo complex, 8 - 15% slopes
39	Sullivan-State complex, 0-2% slopes

LAND USE

The premining land use for mining area within the revision area is undeveloped timberland. The post mining land use for mining area within the proposed revision area is undeveloped lands. Post mining revegetation consists of perennial grasses.

TOPSOIL DESCRIPTIONS

The following descriptions are for soils delineated within the post Revision R-1 Jagger Mine as shown above. Soils information (including soil descriptions) for the permit, revision, and adjacent areas were taken from the "Soil Survey of Jefferson County, Alabama" that was issued in August of 1982. No description is given for soil 39 due to it occupying only a small portion of the permit area.

29 - Montevallo-Nauvoo association, steep

This map unit consists of soils on strongly dissected areas of sandstone and shale plateaus in the northern and western parts of the county. Extensive surface and deep mining of coal occur in this area. The underlying layers of sandstone, siltstone, shale, and coal are nearly level. The ridges are commonly underlain by sandstone, and the side slopes are generally underlain by shale and siltstone. The soils are in a regular pattern that is closely related to landscape

position and underlying parent material. Areas of this map unit are large. Slope ranges from 6 to 55 percent.

Montevallo soils, on the steep sides of ridges, make up about 40 percent of the map unit. Typically, the surface layer is very dark gray shaly silt loam and dark grayish brown shaly silt loam about 6 inches thick. The subsoil is yellowish brown very shaly silt loam about 10 inches thick. The underlying material is weathered siltstone and shale. The slope of Montevallo soils in this map unit is generally more than 15 percent. Nauvoo soils, on ridgetops and ridge sides, make up about 25 percent of most areas. Typically, the surface layer is dark grayish brown fine sandy loam about 6 inches thick. The subsoil is about 36 inches thick. The upper 6 inches is yellowish brown fine sandy loam, and the lower 30 inches is yellowish red clay loam. The underlying material is soft, highly weathered sandstone. The slope of Nauvoo soils in this map unit is generally 6 to 15 percent. The available water capacity is very low for Montevallo soils and moderate for Nauvoo soils. In most years, there are periods in which soil moisture is not adequate for optimum plant growth. These periods are longer for Montevallo soils. Both soils are moderately permeable and have a low shrink-swell potential. Surface runoff is rapid for Montevallo soils and moderately rapid for Nauvoo soils. If these soils do not have a plant cover, sheet and rill erosion is a very severe hazard for Montevallo soils and a severe hazard for Nauvoo soils. The surface layer of both soils is strongly acid to very

strongly acid. Nauvoo soils can be tilled within a wide range in moisture content.

Minor soils in this association are Allen, Docena, Gorgas, Holston, State, Sullivan, and Townley soils. Also some areas have sandstone bedrock outcrop, and a few areas have been surface mined for coal. Allen and Holston soils are on fans, foot slopes, and toe slopes. Docena, State, and Sullivan soils are in depressions, drainageways, and on flood plains. Gorgas soils are on side slopes. Townley soils, the most extensive of the minor soils, are on ridgetops and upper sides of ridges; slope ranges from 10 to 25 percent. These minor soils and Rock outcrop make about 35 percent of the map unit. The soils of this map unit are used primarily for woodland. Many small areas have been altered by surface mining of coal. A few small areas are used for cultivated crops and pasture. Montevallo soils are not suited to cultivated crops, pasture, or hay because of steep slopes, the hazard of erosion, and shallow soil depth. Areas of Nauvoo soils and the minor Townley soils are suited to these uses, but they are limited by slope and the hazard of erosion. Areas of these soils are generally long and narrow, small, and poorly accessible.

The soils of this map unit are suited to woodland use. Suitable species, productivity potential, and management problems are variable.

Montevallo soils are suited to coniferous trees, and the potential productivity is moderate. However, the steep slopes and shallow soil depth are limitations. During wet seasons, windthrow of trees is a moderate hazard. Constructing and maintaining roads for logging, loading areas, and fire lanes is difficult on these soils. Poor harvesting techniques can cause severe erosion.

Nauvoo soils are well suited to coniferous and deciduous trees, and the potential productivity is moderate to high. There are no significant management concerns. These soils are well suited to constructing and maintaining roads for logging, loading areas, and fire lanes. If grading is necessary for loading areas, stockpiling of the surface layer material and respreading it after harvest will help vegetation restoration.

Montevallo soils are not favorable for residential and industrial uses because of steep slopes and shallow soil depth. Septic tank effluent may flow out to the surface because of pressure caused by elevation difference, or it may flow laterally or downslope through rock cracks, and then surface around residential units at a lower elevation. Plant growth is difficult to maintain on the steep, shallow Montevallo soils. Extensive excavation is needed to prepare dwelling sites on these soils, and potential soil loss is severe. Nauvoo soils are favorable for residential and industrial uses, but slope is a limitation. Also, areas of Nauvoo soils and the included Townley soils are generally long and narrow and

are poorly accessible.

The soils of this map unit are suited to most low traffic recreation uses. Nauvoo soils are better suited to most recreation facilities than Montevallo soils.

A few sites are suitable for pond construction. Many areas of Montevallo soils have suitably shaped basins. However, these soils are shallow in depth and have poor reservoir basins. In such basins, excessive seepage may occur through rock cracks and old root channels. Also, suitable soil material for dams is not available.

Surface and subsurface mining of coal is extensive in many areas of these soils. Reclaiming these soils after surface mining operations is difficult because of the remaining steep slopes, the droughty nature of rock spoil, and the wide variation of reaction. Grading and reapplying topsoil will help reduce these problems. Most of the needed topsoil can be stockpiled on site before mining. Montevallo soils are a poor source of topsoil because they are shallow and have steep slopes. A much thicker layer of topsoil can be obtained from some minor soils, primarily Nauvoo, Allen, and Holston soils. The loamy subsoil of these soils can be modified for suitable rooting medium by applying lime and fertilizer and by minimizing tillage.

The Montevallo soils are in capability subclass VIIe and in woodland ordination group 4d. The Nauvoo soils are in capability subclass IVe and in Woodland ordination group 2o.

35-Palmerdale complex, steep

This complex consists of steep, somewhat excessively drained Palmerdale soils and other soils on surface mining spoil piles. The sediment-producing slope and highwalls have convex slopes. The sediment-receiving benches, drainageways, and basins have concave slopes. Slope ranges from 15 to 60 percent in most areas. Areas are 40 to 1,000 or more acres and irregular in shape. The areas of Palmerdale soils and other soils in this complex are so intricately mixed, or so small, that mapping them separately was not practical.

Palmerdale soils and similar soils make up about 70 percent of the map unit. Typically, Palmerdale soils are more than 60 inches thick. The soil is dark gray very shaly silt loam. In places, soils are similar to Palmerdale soils except that they are medium acid to moderately alkaline, or they have slopes of less than 15 percent. Other soils on benches, in drainageways, and in basins make up about 20 percent of the map unit. These soils are more than 60 inches thick. Typically, they have a silt loam surface layer about 10 inches thick. The underlying material is very shaly silt loam. The available water capacity for Palmerdale soils is low. There are lengthy periods in which soil moisture is not

adequate for optimum plant growth. Palmerdale soils are moderately rapidly permeable and have a low shrink-swell potential. These soils are subject to subsidence. Surface runoff is very rapid. The hazard of rill and channel erosion is very severe. The surface layer is strongly acid in Palmerdale soils and medium acid to moderately alkaline in soils similar to Palmerdale soils.

Included in mapping are areas of Montevallo, Nauvoo, and Townley soils. The included soils and areas of escarpments, highwalls, and bedrock outcrop make up about 10 percent of the map unit. The soils are not suited to cultivated crops, pasture, and have because of steep slopes, fragments on the surface, and the droughty nature of the soils. Present land use of these soils is oriented primarily towards reclamation and establishment of trees. Reclaiming Palmerdale soils is difficult because of steep slopes, the hazard of erosion, droughtiness, and the acidity of the soil. In addition, north facing slopes are subject to soil freezing to a depth of several inches and "frost heave" during thawing. Some of the problems of reclamation can be minimized by applying topsoil from other soils and adding lime and fertilizer. The information in table 12 should be used to locate sources of topsoil.

Palmerdale soils are suited to coniferous and deciduous trees; the potential productivity is moderate. Coniferous trees are generally favorable trees establish on these soils. Management concerns include a severe erosion hazard,

a severe equipment use limitation, and a severe seedling mortality rate. Some areas are not accessible because of slope gradients and the location of highwalls. Other soils on benches and toe slopes and in basins and drainageways have a higher potential productivity than Palmerdale soils. The alkaline soils are poorly suited to most trees, especially pines. The soils of this map unit are in capability subclass VII_s and in woodland ordination group 3x.

40 - Townley-Nauvoo complex, 8 to 15 percent slopes

This complex consists of strongly sloping, well drained Townley and Nauvoo soils on ridges and knolls (fig.13). Slopes are convex. Areas are 20 to 100 acres or more and irregular in shape. The areas of Townley and Nauvoo soils in this complex are so intricately mixed, or so small, that mapping them separately was not practical.

Townley soils and similar soils make up about 50 percent of the map unit. Typically, the surface layer of Townley is very dark grayish brown silt loam about 4 inches thick. The subsoil is about 21 inches thick. The upper 3 inches is yellowish brown silt loam, and the lower 18 inches is yellowish red silty clay. The underlying material is consolidated, weathered shale at about 25 inches. In places, soils are similar to Townley soils except that they have a clay loam subsoil or are 40 to 60 inches deep to consolidated shale; some small areas

have slopes of less than 8 percent or more than 15 percent. Nauvoo soils and similar soils make up about 20 percent of the map unit. Typical, the surface layer of Nauvoo soils is very dark grayish brown fine sandy loam about 5 inches thick. The subsoil is about 36 inches thick. The upper 4 inches is yellowish brown fine sandy loam, the next 16 inches is yellowish red clay loam, and the lower 16 inches is red clay loam that has strong brown mottles. The underlying material is weathered sandstone at about 41 inches. In some places, soils are similar to Nauvoo soils except that they have a clay subsoil and are moderately slowly permeable.

The available water capacity is low for Townley soils and moderate for Nauvoo soils. In most years, there are periods in which soil moisture is not adequate for optimum plant growth. Townley soils are slowly permeable and have a moderate shrink-swell potential. Nauvoo soils are moderately permeable and have a low shrink-swell potential. Surface runoff is moderately rapid. If these soils are cultivated, sheet and rill erosion is a severe hazard. Unless limed, the surface layer of either soil is strongly to very strongly acid. Townley soils can be tilled within a medium range in moisture content. Nauvoo soils can be tilled within a wide range in moisture content. Included in mapping are areas of Albertville, Docena, Holston, Montevallo, and Sullivan soils. The included soils

make up about 30 percent of most areas. Docena, Montevallo, and Sullivan soils are contrasting soils, and use and management are different from Townley or Nauvoo soils. These contrasting soils make up about 10 percent of the map unit.

The soils of this map unit are used primarily for woodland. Some areas are used for pasture and hay, and small areas are used for cultivated crops. These soils are suited to cultivated crops. Use of these soils for crops is limited by the strong slope and hazard of erosion. Plant cover is needed at least three-fourths of the time. Terracing contour stripcropping, contour farming, using cover crops, using minimum tillage, returning crop residue to the soil, and establishing grassed waterways help to control erosion. Seedbeds can be prepared by minimum tillage. Additional tillage on Townley soils and eroded areas help to breakup soil aggregates. Irrigation on Townley soils is affected by slow permeability.

The soils of this map unit are well suited to pasture and hay. There are no significant management concerns. Coniferous trees are well suited to these soils. The potential productivity is moderate for Townley soils and high for Nauvoo soils. There are no significant management concerns. These soils have several unfavorable properties for residential uses. Low strength is a severe

limitation for use of the Townley soils and a moderate limitation for use of the Nauvoo soils for septic tank absorption fields. The moderate shrink-swell potential of the Townley soils is a moderate limitation for building sites. In most areas, grading, cutting and filling, and excavating are needed for local roads and streets and dwelling sites. Grading can be minimized by laying out the primary streets along the ridgetops and lateral streets extending toward drainage ways. In areas to be filled, the surface layer should be removed, stockpiled, and respread to provide a good rooting medium for plants.

The-soils of this map unit are suited to most recreation uses. In most areas, grading is needed for preparing a site for intense recreation uses. Before grading, the surface layer should be removed, stockpiled, and respread to provide a good rooting, medium for plants. Numerous sites for ponds exist in this complex. Townley soils are clayey and slowly permeable and have good basins for reservoirs. To minimize the risk of seepage, construction soil material should be sealed off with clay. The soils of this map unit are in capability subclass Vle. The Townley soils are in woodland ordination group 40, and the Nauvoo soils are in woodland ordination group 20.

GEOLOGIC DESCRIPTION

Geologic description of the Jagger permit area was by qualified personnel of PERC Engineering Co., Inc. from drill holes within and adjacent to the revision area and is as follows:

"According to the 'Depositional Settings of the Pottsville Formation in the Black Warrior Basin', the area added by Revision R-1 is structurally located within the Warrior Coal Basin. The strata which underlies and outcrops in this region is similar to the original permit area and is of the Pottsville Formation of the Pennsylvanian Age. The Warrior Basin is the southern most of a series of Pennsylvanian basins of the Appalachian Plateau. The Pottsville Formation in this area consists of thin to thick bedded sandstones, siltstones, shales, clays, and coal seams. Structurally, the Warrior Basin is formed by a large gentle syncline that extends from north-central Mississippi in the west to north-central Alabama in the east. The syncline is tilted southwestward with a regional dip of 30 to 200 feet per mile. Toward the interior of the Warrior Basin, the regional southwest dip of Pottsville strata is modified by a series of three synclines and two anticlines. Of these, the major structures are the Warrior and Coalburg synclines, and the Sequatchie anticline. The fold axes are parallel to the

Appalachian system in a northeast-southwest direction and plunge to the southwest with the regional dip.

Locally, the strata which outcrops in the immediate vicinity of the Revision R-1 Area includes shales, sandstones, underclays, and coal seams associated with the Black Creek Coal Group. According to 'Depositional Settings of the Pottsville Formation in the Black Warrior Basin', the Black Creek Coal lies approximately 100 to 300 feet above the 'J' Group and from 40 to 130 feet below the Mary Lee Group. This reference also states that the Black Creek Coal Group exists in a stratigraphic interval from 45 to 160 feet thick. The additional target seams proposed to be recovered as a result of this revision includes the Lick Creek, Jefferson, and Black Creek Seams of the Black Creek Coal Group. None of the above coal seam outcrop within the proposed Revision R-1 Area. As stated above, two excess spoil disposal areas are proposed to be added through this revision to accommodate the 'box' cuts needed to attain an adequate amount of spoil room. The Black Creek Seam occurs between approximately 130 and 240 ft. MSL within the proposed revision area and averages approximately 22 inches thick. At this site, the Jefferson Seam is split into an Upper and Lower Bench. The Lower Bench of the Jefferson coal bed is located an average of 33 feet above the Black Creek Seam and averages approximately 16 inches thick.

The Upper Bench of the Jefferson coal bed is located an average of 8.1 feet above the Lower Bench and averages approximately 13 inches thick. The Lick Creek Seam is located an average of 45 feet above the Upper Bench of the Jefferson coal bed and averages approximately 8 inches thick. Finally, the Lick Creek Seam is located an average of 83 feet below the Ream Seam permitted under the original Jagger Mine. All of the above coal information was taken from site specific drill data.

This site is located on an intermediate plateau whose surface topography has been highly dissected by erosion. Surface elevations of this plateau within the proposed revision area range from approximately 300 to 420 ft. MSL. The surrounding ridges are approximately 140 feet higher than the highest elevation of this plateau and its highest elevation is approximately 140 feet above the adjacent Locust Fork of the Black Warrior River. The overburden above the Black Creek Seam reaches a maximum thickness of approximately 225 ft. within the revision area and consists of, in descending order, unconsolidated surface material approximately 5 ft. thick, followed by an interval of weathered and non-weathered sandstone approximately 15 ft. thick, followed by an interval of interbedded shale and sandstone approximately 10 feet thick, followed by an interval of medium hard gray shale approximately 17 ft. thick,

followed by the Ream Seam which is approximately 6 inches thick, followed by an interval of medium hard gray shale approximately 17 ft. thick, followed by an interval of sandy shale approximately 15 ft. thick, followed by an interval of medium hard gray shale approximately 10 ft. thick, followed by an interval of interbedded shale and sandstone approximately 10 feet thick, followed by an interval of medium hard gray shale approximately 30 ft. thick, followed by the Lick Creek Seam, which is approximately 6 inches thick. The Lick Creek Seam is followed by an interval of medium hard, fine to medium grained sandstone approximately 47 ft. thick, followed by the Upper Bench of the Jefferson Coal Seam, which is approximately 12 inches thick. The Upper Bench of the Jefferson Coal Seam is followed by an interval of sandstone and shale approximately 9 ft. thick, followed by the Lower Bench of the Jefferson Coal Seam, which is approximately 23 inches thick. The Lower Bench of the Jefferson Coal Seam is followed by an interval shale approximately 27 ft. thick, followed by the Black Creek Coal Seam, which is approximately 23 inches thick. The Black Creek Seam is underlain by an interval of interbedded shale and sandstone a minimum of 7 feet thick. The above description is a result of site-specific drilling within the proposed revision area but is typical in nature and the intervals described above may vary in thickness or content depending upon their location within the Revision R-1 Area.

The total sulfur content of the Lick Creek Seam within the Revision R-1 Area was analyzed as 2.34 percent. The total sulfur content of the Upper Bench of the Jefferson Seam within the Revision R-1 Area was analyzed as 1.74 percent. The total sulfur content of the Lower Bench of the Jefferson Seam within the Revision R-1 Area was analyzed as 0.36 percent. The total sulfur content of the Black Creek Seam within the Revision R-1 Area was analyzed as 0.34 percent. As stated above, sulfur analysis was conducted by Energy Technical Services, LLC..

Due to the fact that all overburden at this site does not occupy similar areas, intervals shown in the overburden analyses which are located in the upper portions of the drill logs occupy a smaller volume than intervals which are located closer to the bottom, consequently, their acid-base accounts do not contribute as substantially to the overall chemistry of the overburden. In an attempt to more accurately describe the acid-base potential of the overburden at the Jagger revision R-1 mine area, a spreadsheet which was developed at the Pennsylvania Dept. of Environmental Resources, Bureau of Mining and Reclamation was employed. This spreadsheet not only takes into account the volume occupied by each interval tested, but also the amount of coal lost into the spoil. The results of this method from Drill Holes BCJMOB-9 and

BCJMOB10 and Monitoring sites BCJMMW-6 and BCJMMW-7 (as shown in the attached Volumetric Overburden Calculation Sheets) are favorable: overburden at the Revision R-1 Area of the Jagger Mine contains an average of 10.21 (tons CaCO₃/1000 tons overburden) excess neutralization potential. This excess neutralization potential should be adequate to neutralize any potentially acid forming layers present in the overburden. As evidence of this statement, the adjacent Drummond - Knob Mine No. 2 recovered the same seams as proposed in this revision and the overburden was of sufficient quality as to warrant Bond Release by the Regulatory Authority."

SAMPLING TECHNICS

Drill Holes BCJMOB-9 & BCJMOB10 and Groundwater Monitoring sites BCJMMW-6 & BCJMMW-7 were drilled by personnel of Walker Drilling Service in late October and early November of 2011. The drill used to drill the above sites was a Gardner-Denver GD1500 air rotary drill, utilizing 4 and 3/4 and a 7 and 7/8 inch drill bit. Samples from Drill Holes BCJMOB-9 & BCJMOB10 and Groundwater Monitoring sites BCJMMW-6 & BCJMMW-7 were collected every five ft. or change in lithology by qualified personnel of PERC Engineering Co.,

Inc. and analyzed for pH & neutralization potential by the PERC Engineering Laboratory according to ASTM Standards. Sulfur analysis was conducted by Energy Technical Services, LLC..

Soil and overburden samples were taken at locations in the attached soil map by personnel of PERC Engineering in November of 2011. Three samples of soil number 29 and one sample of sill number 40 were collected along with five samples of heterogeneous overburden from a mined area adjacent to the Jagger permit. Each sample was selected as the most representative of the area in both texture and vegetative cover (which reflects chemical suitability). Samples were taken by digging a cylindrical to slightly conical shaped hole 6-8 inches deep with a spade. All contents of this section are included in the sample. Soil samples taken lack vegetative and other organic cover so they will more accurately reflect topsoil that is cleaned of vegetative cover and stockpiled for soil redistribution. Sieve analysis was conducted on oven-dried samples by PERC Engineering Co., Inc. to determine coarse fragment and soil percentages. Results of this analysis is in Appendix 2. The minus 2mm (or soil) fraction of all samples were then sent to Auburn University Soil Testing Laboratory for the following analyses: Soil fertility, pH, recommendations for post mining revegetation, % sand, silt, and clay, available water capacity, and ppm of

nitrate nitrogen in the soil. Results of this analysis are given in Appendix 3. Note: available water capacity (AWC) conducted by Auburn University Testing Laboratory is determined on only the soil (-2mm) fraction of the sample obtained in the field. To obtain the "Total" available water capacity, the AWC will be added to the available water capacities of the larger coarse fragments as shown in Appendix 4. Senders sample designations listed in Appendix 3 are as follows:

7924 - Soil 29-1	7919 - Overburden #1
7925 - Soil 29-2	7920 - Overburden #2
7926 - Soil 29-3	7921 - Overburden #3
7927 - Soil 40-1	7922 - Overburden #4
	7923 - Overburden #5

OVERBURDEN VS TOPSOIL COMPARISON

Cumulative results from Appendices 2 & 3 are as follows:

	SOIL (AVE.):	OVERBURDEN (AVE.):
pH	4.48	5.74
Fertility ratings for P, K, & Mg:		
Phosphorus	16	70
Potassium	185	227
Magnesium	342	1553

SOIL (AVE.):

OVERBURDEN (AVE.):

Recommendations for Limestone, N, P₂O₅, K₂O:

Limestone (Tons/Acre)	3.13	1.20
N (Lbs./Acre)	60	60
P ₂ O ₅ (Lbs./Acre)	80	22
K ₂ O (Lbs./Acre)	20	-0-
Sulfur (percent)	0.0223	0.0515
Maximum Potential Acidity*	0.6969	1.6094
Neutralizing Potential*	0.5000	4.3600
Acid-Base Account*	-0.1969	+ 2.7506
Percent Organic Matter	1.58	5.58
Nitrate Nitrogen (ppm)	2.50	7.72

	SOIL (AVE.):	OVERBURDEN (AVE.):
Sand Percentage	40.63	50.50
Silt Percentage	24.38	27.00
Clay Percentage	35.00	22.50
Available Water Capacity (In. H ₂ O/In. Soil)	0..1225	0.1180
Course Fragment Percentage	25.65	52.33
Soil Percentage	74.35	47.67
"Total" Available H ₂ O Capacity (in. H ₂ O/in. soil)	0.1111	0..0952
Soil Erodibility Factor "K"	.25	.20

*Tons CaCo3 Equivalent/1000 tons material

The above comparison resulting from physical and chemical analysis conducted on topsoil and overburden samples taken at locations indicated on the attached soils map reveal that overburden at the post Revision R-1 Jagger Mine is equal to or more suitable for sustaining revegetation in a majority of the parameters tested, is the best available to support revegetation, and therefore satisfies the criteria set forth in 880-X-10C-.08-(5).

The pH of the overburden samples were much closer to an optimum pH for the proposed post mining revegetation than the native soil samples. Auburn Soil Testing Laboratory uses a target pH of 6.5 for this type of vegetation as the optimum value. The topsoil samples were analyzed having a median pH of 4.48 S.U., which is classified as "extremely acid" by the USDA Soil Conservation Service while the heterogeneous overburden samples were analyzed having a median pH of 5.74 S.U., which is classified as "medium acid". As a result, the Auburn Soil Testing Laboratory recommends 1.93 tons per acre more lime on native topsoils than on the overburden sampled.

Overburden at the post Revision R-1 Jagger Mine was also shown to be more fertile than the native topsoils. Overburden was rated higher in all three macronutrient categories: magnesium, phosphorus, and potassium. As a result, Auburn University's Soil Testing Laboratory reported that the native topsoils

require an average of 78 lbs/acre additional nutrients.

The acid-base accounts of the two media were close to zero, and neither represented a danger of being forming acid, however, the heterogeneous overburden had a positive acid-base account while the acid-base account of the native topsoils were negative. Also, overburden contained an average of more organic matter and nitrate nitrogen than the native topsoils.

Textural analysis, performed by the PERC Engineering Laboratory revealed that the native topsoil samples contained more soil and less coarse fragments than the overburden samples, as expected. Typically, as soil percentage increases, so does available water capacity, and this is what has occurred during this analysis. The heterogeneous overburden was also found to have a higher percentage of sand than the native topsoil samples in the soil sized material, more silt than the native topsoil samples in the soil sized material, and less clay than the native topsoil in the soil sized material. The result was that the available water capacity of the soil sized material in the soil was greater, but by less than 5 thousandths of an inch of water (0.1225 In. H₂O/In. Soil for the native soil versus 0.1180 In. H₂O/In. Soil for the overburden). Also, when the total available water capacity for both media is calculated as shown in Appendix

4, the total available water capacity of the heterogeneous overburden was very close in value to the total available water capacity of the native topsoils (0.1111 In. H₂O/In. Soil for the native soil versus 0.0952 In. H₂O/In. Soil for the overburden). A difference of less than two hundredths of an inch per inch exists. When considering that the thickness of the revegetation media is only 6 inches, this difference is only 0.0954 inches of water (less than 1/10th of an inch) and is hardly significant. During periods of low or no rainfall, the amount of soil moisture in the root zone of the plants has a direct affect on whether or not the plant survives. However, during drought conditions, *water that is available to plants is most usually found deeper in the root zone than six inches*. It is plant water found much deeper in the root zone that will allow the revegetation to survive. In either case (soil versus overburden), the water utilized by the plants during drought conditions will be from heterogeneous overburden.

It should also be noted that while the native topsoil is essentially completely weathered, many of the coarse fragments in the overburden will eventually break down into soil sized material and increase its' total available water capacity causing the difference in total available water capacity to be less and less as time advances. Virtually all of the differences in water holding capacity between the two media can be attributed to the amount of weathering in each.

Also, as is typical for comparisons between topsoils and overburden materials, regraded topsoils exhibit a greater tendency to erode than regraded overburden, especially in steeper slope areas, due to the fact that 'new' overburden typically contains more coarse fragments which resists rainfall impact and erosion due to overland flow. Many of these coarse fragments will eventually break down into soil sized material, adding to the soil percentage, while 'protecting' the mixture from erosion in the early stages of reclamation in outslope areas where slopes are steeper whereas the native soils are more likely to erode from a lack of coarse fragments and will probably not increase the amount of soil contained in this medium, due to it already being weathered. As shown on the Topsoil Variance Map accompanying this report, a significant amount of soil within the proposed topsoil variance area is: Montevallo-Nauvoo Association, steep. This confirms the steepness of the proposed post R-1 permit area (in many areas), and magnifies the need for the utilization of heterogeneous overburden at this site. As stated earlier, Montevallo-Nauvoo Association has been shown in prior applications to be of poor quality for reclamation.

The above information suggests that the overburden at the Jagger Mine is more suitable for post mining revegetation than the native topsoils and therefore satisfies the criteria set forth in 880-X-10C-.08-(5).

PROPOSED VARIANCE AREA VS. ADJACENT SITE SIMILARITIES

As stated previously, several surface mining operations (including pre-law and regulated sites) exist in the Mt. Olive area. Many of these operations recover coal from the Black Creek Coal Group. Revegetation success at this site is largely due to a consistent Black Creek Group lithology of shale and sandstone, which, when mixed during mining, results in a medium which is favorable for both pine tree and ground cover growth. As proof of the consistency of this overburden, compare descriptions of overburden (both drill hole lithologies and geochemistries, and overburden sample collected) with post mine textural samples collected and submitted for bond release from the Drummond - Knob Mines, which is adjacent and to the north of the proposed mine site. Lithologies from both sources show the presence of sandstone but also shale. The chemistries of the these sites are also very similar. All have low sulfur values, and similar acid-base accounts. In addition, they will also have similar maximum highwall heights, and both areas contain similar soil types (ie, a significant amount of 'Montevallo-Nauvoo Association, steep') which has been shown in prior applications to be of poor quality.

RESULTS AND CONCLUSIONS

The conclusion of all the data represented in this report is that the overburden is physically and chemically superior or equal to the topsoil in a majority of the parameters tested and is therefore the preferred medium in which to conduct revegetation operations. The heterogenous overburden at the Jagger Mine was observed to be similar to or superior to the native topsoils in the following parameters: pH, fertility, liming rate, neutralization potential, acid-base account, organic matter content, nitrate nitrogen content, silt percentage and soil erodibility. The only parameters that the native soils were superior in were: percent sulfur, soil percentage, available water capacity, and total available water capacity. As stated above, virtually all of the differences in water holding capacity between the two media can be attributed to the amount of weathering in each, and while the native topsoil is essentially completely weathered, many of the coarse fragments in the overburden will eventually break down into soil sized material and increase its' total available water capacity. The fact that the topsoil variance area is proposed adjacent to an area with documented revegetation success, with the same seams targeted, where the overburden has been demonstrated as being both physically and chemically similar, suggests that the reclamation success at the post Revision R-1 Jagger Mine will be as successful as the adjacent Drummond Coal - Knob mine site.

REDISTRIBUTION PLAN

The mining method used at the Jagger Mine is a Dozer/Loader operation. Overburden will be rough graded by Caterpillar type dozers. Once overburden has been rough graded, farm-type tractors will be used to disc the overburden to its final contour, decrease compaction, and increase the mechanical breakage of the surface layer. At this time the following criteria will be used to evaluate the textural quality of the graded overburden:

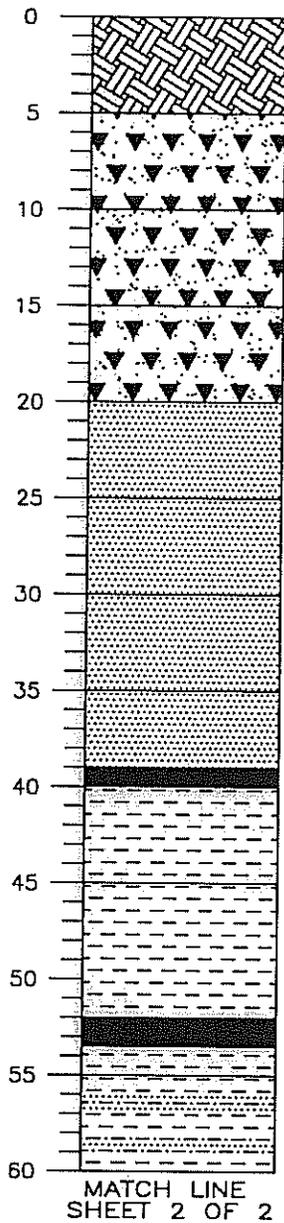
- a) Rocks of a size greater than 10" shall not exceed 10% by weight of the substitute material.
- b) The substitute material shall not contain more than 15% by weight of materials between 10 and 3 inches in size.
- c) The substitute material shall not contain more than 50% by weight of materials between 3 and .75 inches in size.
- d) At least 30% by weight of the substitute material shall be of a size less than 2 millimeters.

If this criteria is not met, Best Coal, Inc. shall redisc the overburden and resample. If increasing the mechanical breakage will not enhance the texture of the graded overburden to a satisfactory level, additional soil sized material will be hauled and spread on site or rocks will be recovered from the surface and buried until the above criteria is achieved. The final texture samples taken shall be sent to the Auburn University Soil Laboratory where the following tests shall be conducted: %sand, silt, & clay, textural classification, pH, total sulfur, acid-base account, fertility ratings for phosphorus, potassium, and magnesium,

and amendment recommendations for post mining revegetation for limestone, nitrogen, P_2O and K_2O . Results of this analysis will be used to determine the amount of soil amendments, if any, to be applied to the plant medium. Any toxic forming materials encountered will be removed or covered with 4 feet of non-toxic non-acid forming material. Approved seed mixtures will be planted and hay used as mulch will be blown upon the seeded overburden according to ASMC guidelines. The above reclamation procedures will be conducted by track equipment, where feasible, and all traffic except pond monitoring vehicles and reseeding equipment shall be prohibited from reclaimed areas to reduce compaction. The preceding report suggests that the post mining productivity of the Jagger Mine will be enhanced by the utilization of overburden for a plant growth medium in conjunction with the above stated reclamation procedures.

INTERVAL:

DESCRIPTION:



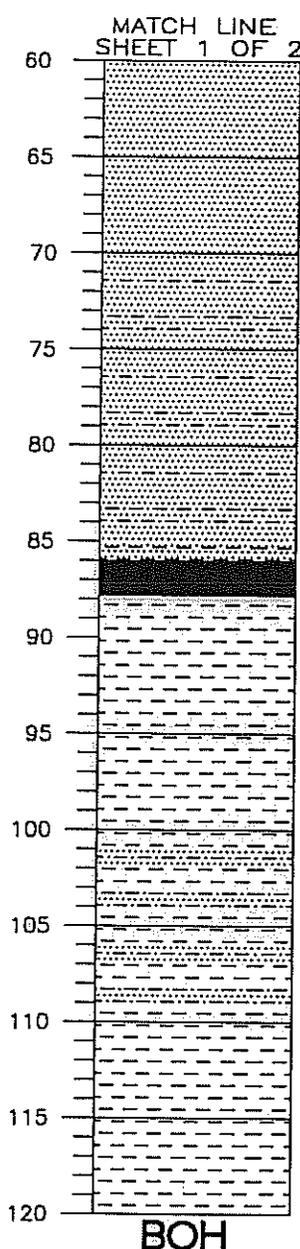
0 - 5	Surface Material, clay, sand, weathered, medium to dark orange,
5 - 10	clay, sand, weathered, medium to dark orange,
10 - 15	clay, sand, weathered, medium to dark orange,
15 - 20	sand, clay, weathered, medium to dark orange,
20 - 25	Sandstone, light to medium gray, soft to medium hard, fine to medium grained
25 - 30	Sandstone, wet, light to medium gray, soft to medium hard, fine to medium grained
30 - 35	Sandstone, wet, light to medium gray, soft to medium hard, fine to medium grained
35 - 39	Sandstone with Shale interbeds, wet, light to medium gray, soft to medium hard, fine to medium grained
39 - 40	Coal - Jefferson Seam, Upper Bench
40 - 45	Shale, wet, light to medium gray, soft to medium hard
45 - 52	Shale, wet, light to medium gray, soft to medium hard
52 - 53.5	Coal - Jefferson Seam, Lower Bench
53.5 - 55	Shale, wet, light to medium gray, medium hard to hard
55 - 60	Shale with Sandstone interbeds, wet, medium to dark gray, medium hard to hard



Best Coal Inc.
Jagger Mine Revision R-1
Lithologic Description for
BCJMMW-6

DRAWN BY: JNG	DATE: 11-9-11
DWG. NAME: BCJMR1LITH	
APPROVED BY: TST	SCALE: 1" = 10' vertical

SHEET 1 OF 2
 DRILL: Gardner-Denver GD1500
 SURFACE ELEVATION: ±298.6 ft. MSL



INTERVAL:

DESCRIPTION:

60 - 65	Sandstone, wet, light to medium gray, medium hard to hard, fine to medium grained
65 - 70	Sandstone, wet, light to medium gray, medium hard to hard, fine to medium grained
70 - 75	Sandstone with Shale interbeds, wet, light to medium gray, medium hard to hard, fine to medium grained
75 - 80	Sandstone with Shale interbeds, wet, light to medium gray, medium hard to hard, fine to medium grained
80 - 86	Sandstone with Shale interbeds, wet, light to medium gray, medium hard to hard, fine to medium grained
86 - 87.8	Coal - Black Creek Seam
87.8 - 95	Shale, wet, light to medium gray, medium hard to hard
95 - 100	Shale, wet, light to medium gray, medium hard to hard
100 - 105	Shale with Sandstone interbeds, wet, medium to dark gray, medium hard to hard, fine to medium grained
105 - 110	Shale with Sandstone interbeds, wet, medium to dark gray, medium hard to hard, fine to medium grained
110 - 115	Shale, wet, medium to dark gray, medium hard to hard
115 - 120	Shale, wet, medium to dark gray, medium hard to hard

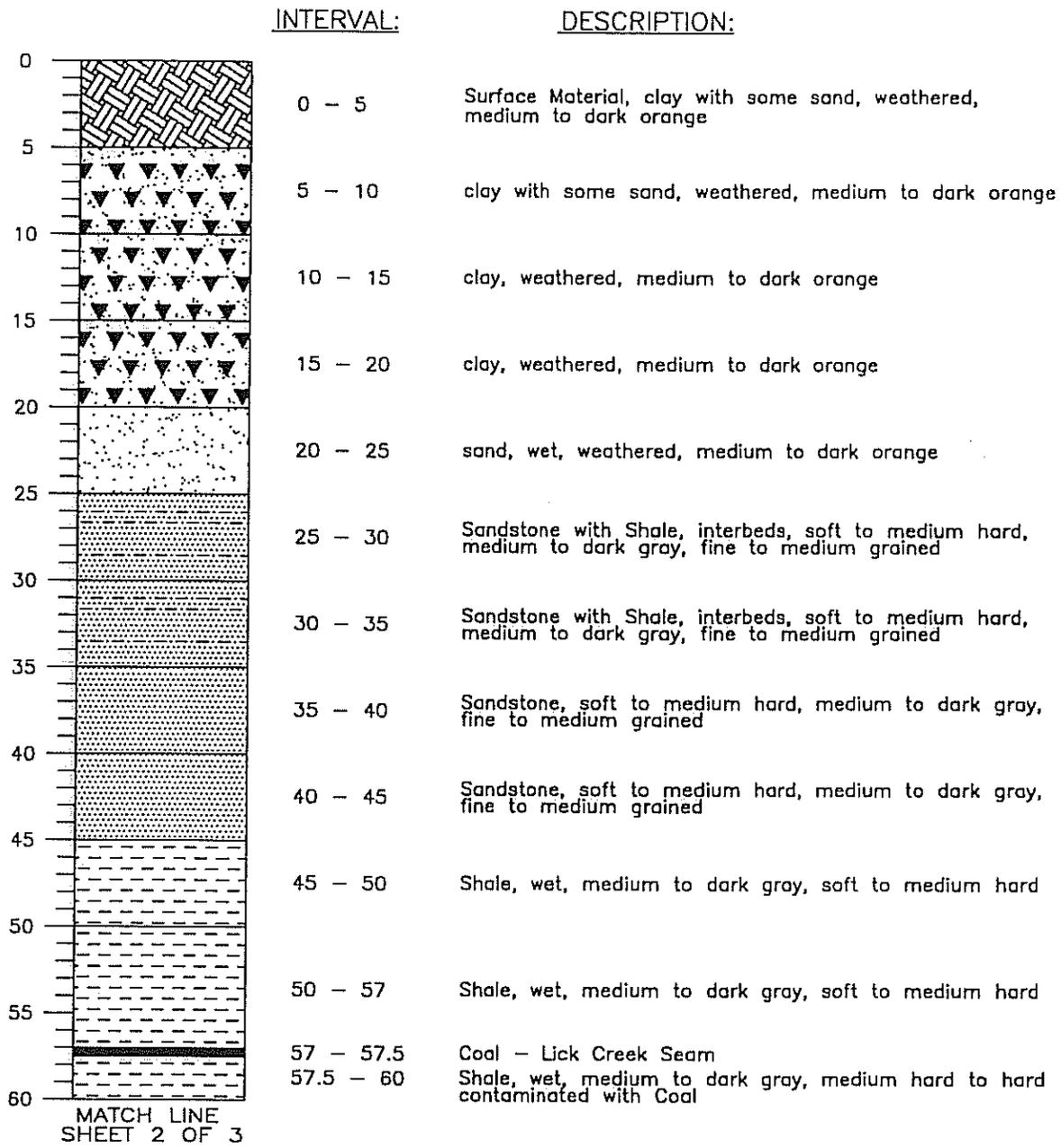


Best Coal Inc.
Jagger Mine Revision R-1
Lithologic Description for
BCJMMW-6

DRAWN BY: JNG	DATE: 11-9-11
DWG. NAME: BCJMR1LITH	
APPROVED BY: TST	SCALE: 1" = 10' vertical

SHEET 2 OF 2
 DRILL: Gardner-Denver GD1500
 SURFACE ELEVATION: ±298.6 ft. MSL

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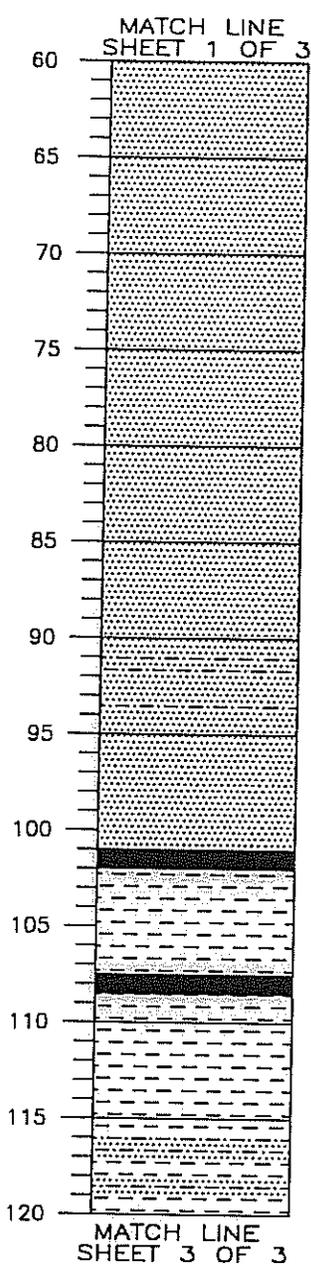
SHEET 1 OF 3
 DRILL: Gardner-Denver GD1500
 SURFACE ELEVATION: ±303.5 ft. MSL



Best Coal Inc.
Jagger Mine Revision R-1
Lithologic Description for
BCJMMW-7

DRAWN BY: JNG	DATE: 11-9-11
DWG. NAME: BCJMR1LTH	
APPROVED BY: TST	SCALE: 1" = 10' vertical

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INTERVAL:

DESCRIPTION:

60 - 65	Sandstone, wet, medium to dark gray, medium hard to hard, fine to medium grained
65 - 70	Sandstone, wet, medium to dark gray, medium hard to hard, fine to medium grained
70 - 75	Sandstone, wet, medium to dark gray, medium hard to hard, fine to medium grained
75 - 80	Sandstone, wet, medium to dark gray, medium hard to hard, fine to medium grained
80 - 85	Sandstone, wet, medium to dark gray, medium hard to hard, fine to medium grained
85 - 90	Sandstone, wet, medium to dark gray, medium hard to hard, fine to medium grained
90 - 95	Sandstone with Shale interbeds, wet, medium to dark gray, medium hard to hard, fine to medium grained
95 - 101	Sandstone, wet, medium to dark gray, medium hard to hard, fine to medium grained
101 - 102	Coal - Jefferson Seam, Upper Bench
102 - 107.5	Shale, wet, medium to dark gray, medium hard to hard
107.5 - 108.5	Coal - Jefferson Seam, Lower Bench
108.5 - 110	Shale, wet, medium to dark gray, medium hard to hard
110 - 115	Shale, wet, medium to dark gray, medium hard to hard
115 - 120	Shale with Sandstone interbeds, wet, medium to dark gray, medium hard to hard

SHEET 2 OF 3

DRILL: Gardner-Denver GD1500

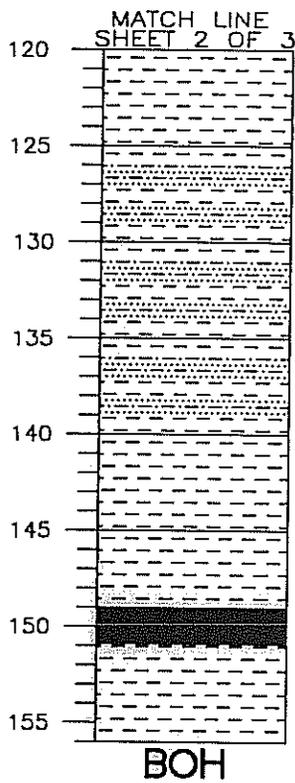
SURFACE ELEVATION: ±303.5 ft. MSL



Best Coal Inc.
Jagger Mine Revision R-1
Lithologic Description for
BCJMMW-7

DRAWN BY: JNG	DATE: 11-9-11
DWG. NAME: BCJMR1LITH	
APPROVED BY: TST	SCALE: 1" = 10' vertical

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INTERVAL:

DESCRIPTION:

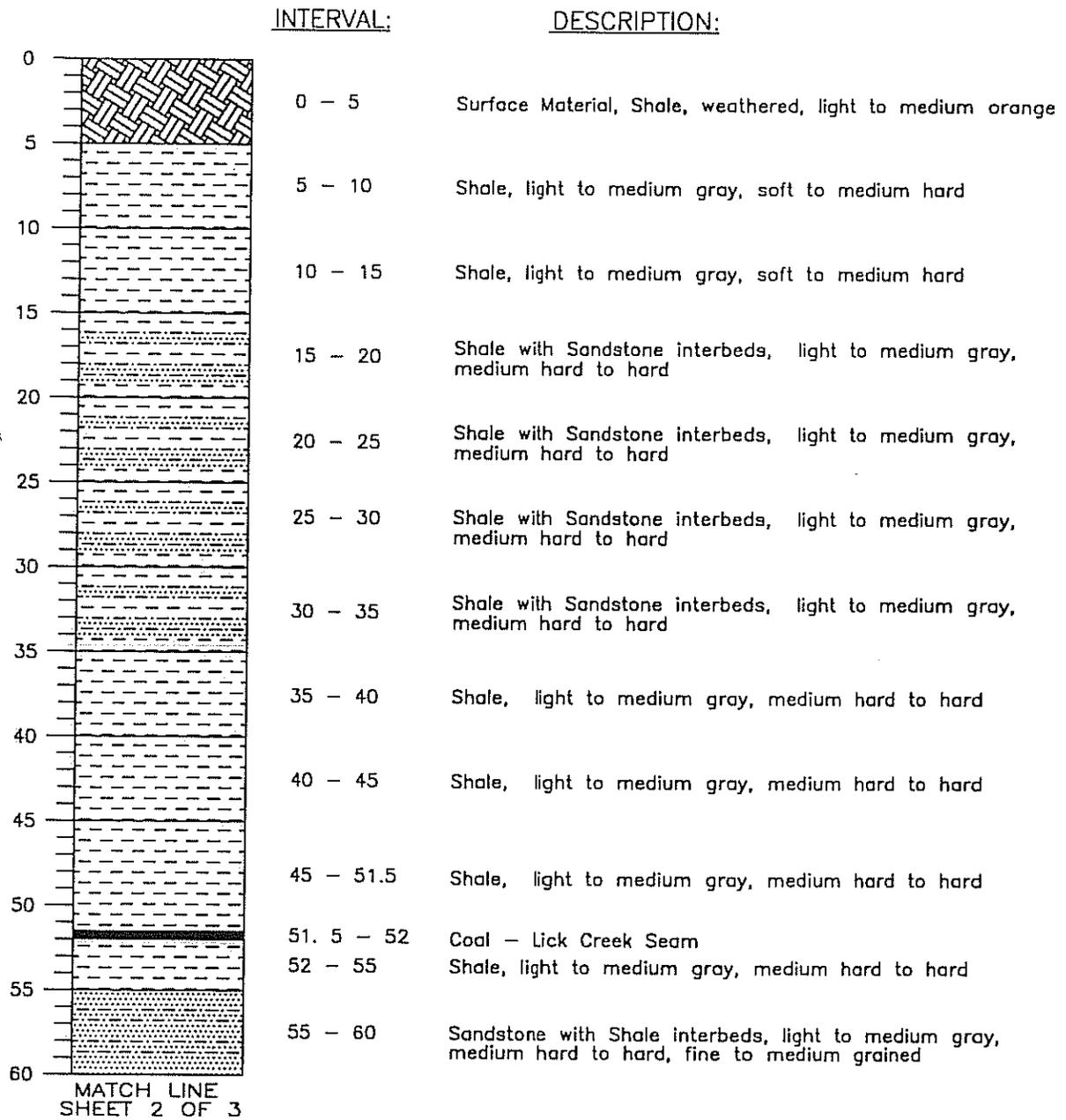
120 - 125	Shale, medium to dark gray, medium hard to hard
125 - 130	Shale with Sandstone interbeds, medium to dark gray, medium hard to hard
130 - 135	Shale with Sandstone interbeds, medium to dark gray, medium hard to hard
135 - 140	Shale with Sandstone interbeds, medium to dark gray, medium hard to hard
140 - 145	Shale, medium to dark gray, medium hard to hard
145 - 149	Shale, medium to dark gray, medium hard to hard
149 - 150.9	Coal - Black Creek Seam
150.9 - 156	Shale, medium to dark gray, medium hard to hard



Best Coal Inc.
Jagger Mine Revision R-1
Lithologic Description for
BCJMMW-7

DRAWN BY: JNG	DATE: 11-9-11
DWG. NAME: BCJMR1LITH	
APPROVED BY: TST	SCALE: 1" = 10' vertical

SHEET 3 OF 3
 DRILL: Gardner-Denver GD1500
 SURFACE ELEVATION: ±303.5 ft. MSL



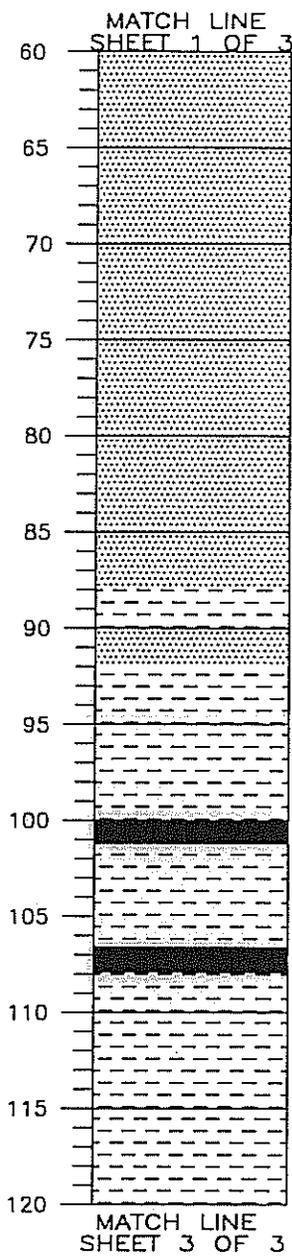
SHEET 1 OF 3
 DRILL: Gardner-Denver GD1500
 SURFACE ELEVATION: ±310.8 ft. MSL



Best Coal Inc.
Jagger Mine Revision R-1
Lithologic Description for
BCJMOB-9

DRAWN BY: JNG	DATE: 11-4-11
DWG. NAME: BCJMR1LITH	
APPROVED BY: TST	SCALE: 1" = 10' vertical

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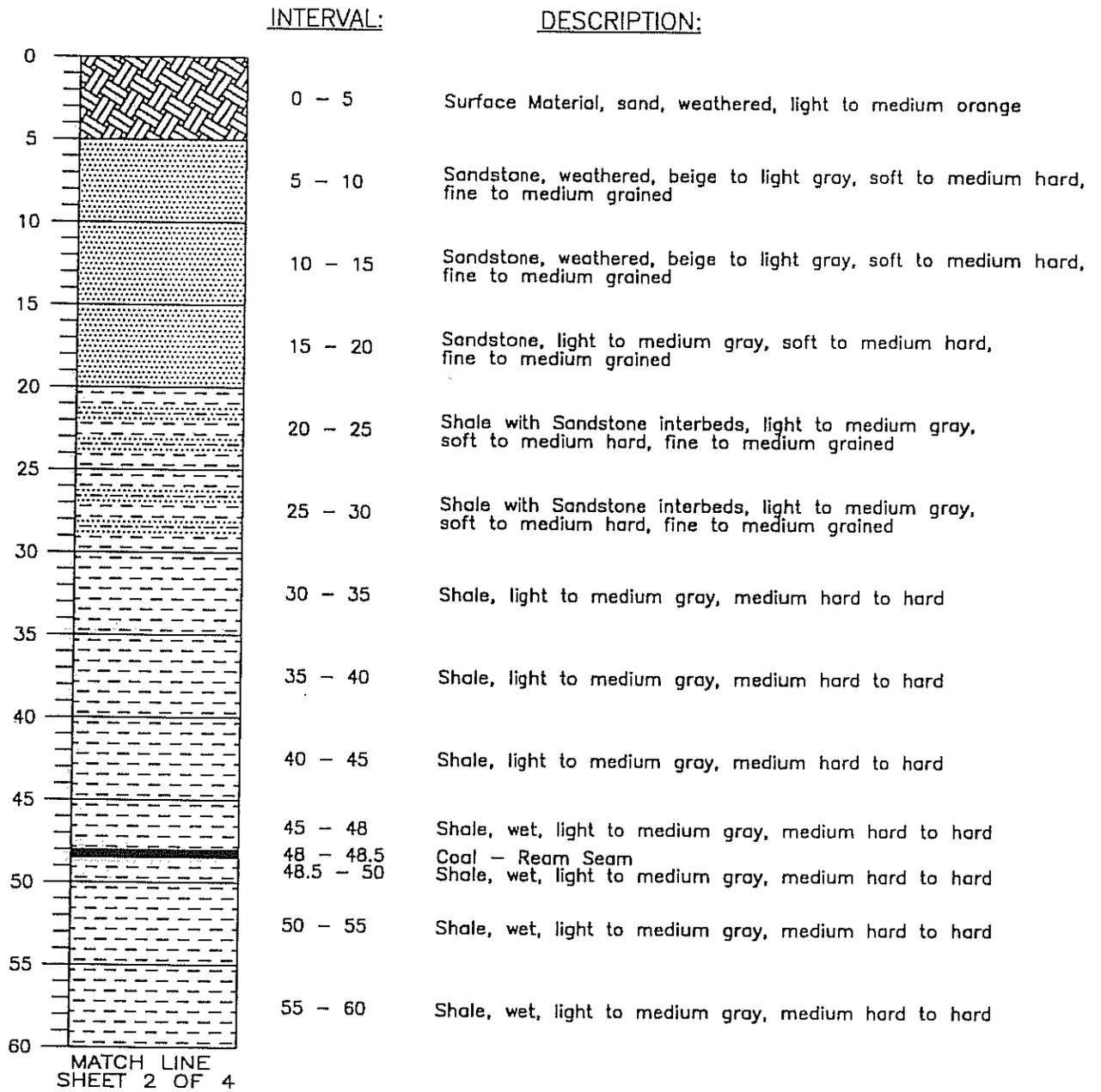
DESCRIPTION:

60 - 65	Sandstone, light to medium gray, medium hard to hard, fine to medium grained
65 - 70	Sandstone, light to medium gray, medium hard to hard, fine to medium grained
70 - 75	Sandstone, light to medium gray, medium hard to hard, fine to medium grained
75 - 80	Sandstone, light to medium gray, medium hard to hard, fine to medium grained
80 - 85	Sandstone, light to medium gray, medium hard to hard, fine to medium grained
85 - 90	Sandstone, light to medium gray, medium hard to hard, fine to medium grained (85 - 88) Shale, light to medium gray, medium hard to hard (88 - 90)
90 - 95	Sandstone, light to medium gray, medium hard to hard, fine to medium grained (90 - 92) Shale, light to medium gray, medium hard to hard (92 - 95)
95 - 100	Shale, light to medium gray, medium hard to hard
100 - 101.2	Coal - Jefferson Seam, Upper Bench
101.2 - 106.6	Shale, light to medium gray, medium hard to hard
106.6 - 107.9	Coal - Jefferson Seam, Lower Bench
107.9 - 110	Shale, light to medium gray, medium hard to hard
110 - 115	Shale, light to medium gray, medium hard to hard
115 - 120	Shale, light to medium gray, medium hard to hard

SHEET 2 OF 3
 DRILL: Gardner-Denver GD1500
 SURFACE ELEVATION: ±310.8 ft. MSL

 <p>PERC ENGINEERING CO., INC. 1808 Highway 79 West Jasper, Alabama 36021 P.O. Box 1713 Jasper, Alabama 36028 (205) 348-6633 Fax (205) 348-6631 Pa</p>	
<p>Best Coal Inc. Jagger Mine Revision R-1 Lithologic Description for BCJMOB-9</p>	
DRAWN BY: JNG DWG. NAME: BCJMR1LITH	DATE: 11-4-11
APPROVED BY: TST	SCALE: 1" = 10' vertical

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SHEET 1 OF 4
 DRILL: Gardner-Denver GD1500
 SURFACE ELEVATION: ±351.1 ft. MSL



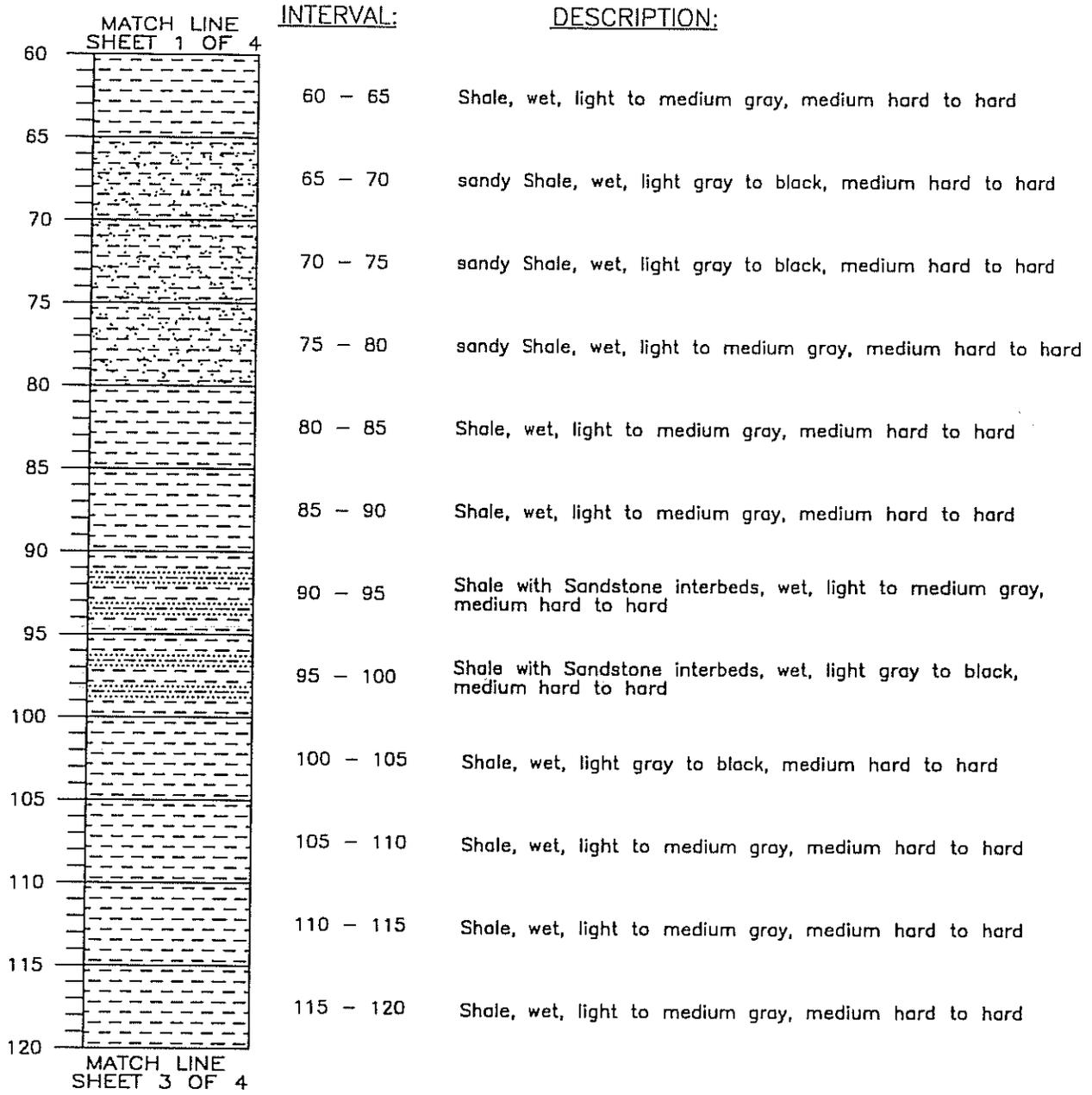
Best Coal Inc.
Jagger Mine Revision R-1
Lithologic Description for
BCJMOB10

DRAWN BY: JNG
 DWG. NAME: BCJMR1LITH

DATE: 11-9-11

APPROVED BY: TST

SCALE: 1" = 10' vertical



MATCH LINE
SHEET 3 OF 4

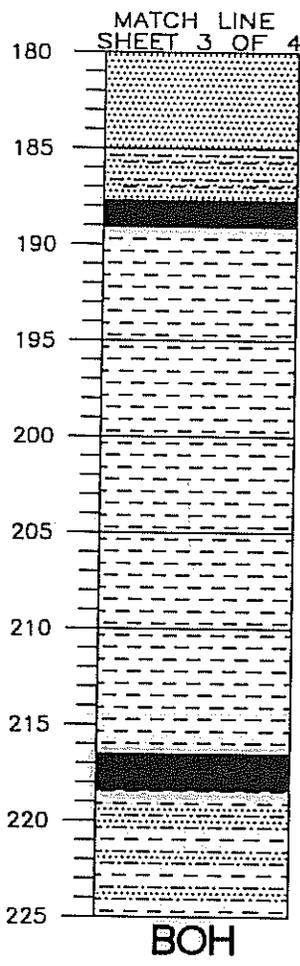


Best Coal Inc.
Jagger Mine Revision R-1
Lithologic Description for
BCJMOB10

DRAWN BY: JNG	DATE: 11-9-11
DWG. NAME: BCJMR1LITH	
APPROVED BY: TST	SCALE: 1" = 10' vertical

SHEET 2 OF 4
 DRILL: Gardner-Denver GD1500
 SURFACE ELEVATION: ±351.1 ft. MSL

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INTERVAL:

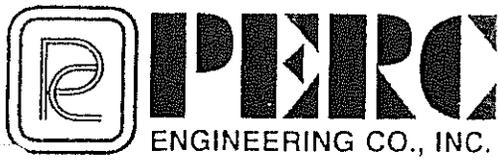
DESCRIPTION:

180 - 185	Sandstone, wet, light to medium gray, medium hard to hard, fine to medium grained
185 - 187.2	Sandstone with Shale interbeds, wet, light to medium gray, medium hard to hard, fine to medium gray
187.2 - 189.1	Coal - Jefferson Seam, Lower Bench
189.1 - 195	Shale, wet, light to medium gray, medium hard to hard
195 - 200	Shale, wet, light to medium gray, medium hard to hard
200 - 205	Shale, wet, light to medium gray, medium hard to hard
205 - 210	Shale, wet, light to medium gray, medium hard to hard
210 - 216.5	Shale, wet, light to medium gray, medium hard to hard
216.5 - 218.4	Coal - Black Creek Seam
218.4 - 225	Shale with Sandstone interbeds, wet, light to medium gray, medium hard to hard

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SHEET 4 OF 4
 DRILL: Gardner-Denver GD1500
 SURFACE ELEVATION: ±351.1 ft. MSL

 <p>PERC ENGINEERING CO. INC. 1408 Highway 78 South, Jasper, Alabama 36021 P.O. Box 1218 Jasper, Alabama 36021 (205) 384-0861 DRW (205) 384-0911 FAX</p>	
<p>Best Coal Inc. Jagger Mine Revision R-1 Lithologic Description for BCJMOB10</p>	
DRAWN BY: JNG DWG. NAME: BCJMR1LUTH	DATE: 11-9-11
APPROVED BY: TST	SCALE: 1" = 10' vertical



Telephone: (205) 384-5553
 Facsimile: (205) 295-3114 - Main Building
 (205) 295-3115 - Water Lab
 Web Address: www.percengineering.com

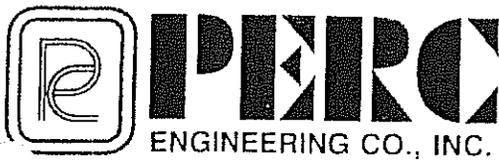
COMPANY NAME: Best Coal, Inc.
 MINE NAME: Jagger Mine
 DRILL HOLE: BCJMMW-6

COLLECTED BY: LG
 DATE COLLECTED: 11-2-2011
 ANALYZED BY: JK, JR
 DATE ANALYZED: 12-7-2011

All analysis is performed according to EPA standards.

INTERVAL	PASTE pH	% SULFUR	MAX. POT. *ACIDITY	NEUT. *POT	A-B *ACCOUNT	ACID FORMING	
0.00	5.00	4.140	0.001	0.031	0.001	-0.030	N
5.00	10.00	3.810	0.001	0.031	0.500	0.469	N
10.00	15.00	4.170	0.001	0.031	0.250	0.219	N
15.00	20.00	4.790	0.001	0.031	0.001	-0.030	N
20.00	25.00	7.340	0.001	0.031	7.750	7.719	N
25.00	30.00	7.230	0.010	0.313	5.750	5.438	N
30.00	35.00	7.400	0.020	0.625	4.750	4.125	N
35.00	39.00	7.550	0.020	0.625	5.000	4.375	N
39.00	40.00 Coal	0.980	0.980	30.625 Coal	COAL	***	***
40.00	45.00	7.630	0.310	9.688	3.500	-6.188	Y
45.00	52.00	7.780	0.120	3.750	5.500	1.750	N
52.00	53.50 Coal	0.590	0.590	18.438 Coal	COAL	***	***
53.50	55.00	7.940	0.390	12.188	6.000	-6.188	Y
55.00	60.00	8.240	0.130	4.063	6.500	2.438	N
60.00	65.00	8.120	0.060	1.875	4.750	2.875	N
65.00	70.00	8.460	0.030	0.938	6.000	5.063	N
70.00	75.00	8.470	0.030	0.938	10.750	9.813	N
75.00	80.00	8.660	0.020	0.625	9.500	8.875	N
80.00	86.00	0.530	0.040	1.250	9.000	7.750	N
86.00	87.80 Coal	0.470	0.470	14.688 Coal	COAL	***	***
87.80	95.00	8.730	0.050	1.563	6.750	5.188	N
**AVERAGE		4.765	0.057	1.785	5.183	3.398	N

*Calculated in tons CaCo3 per 1000 tons of material.
 **Averages do not include coal seam to be mined or intervals below lowest seam.
 ***Not analyzed



Telephone: (205) 384-5553
 Facsimile: (205) 295-3114 - Main Building
 (205) 295-3115 - Water Lab
 Web Address: www.percengineering.com

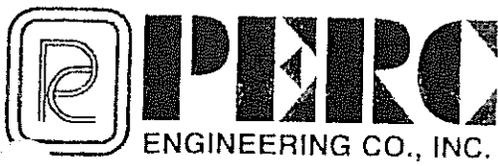
COMPANY NAME: Best Coal, Inc.
 MINE NAME: Jagger Mine
 DRILL HOLE: ECJMMW-7

COLLECTED BY: LG
 DATE COLLECTED: 11-2-2011
 ANALYZED BY: JK, JR
 DATE ANALYZED: 12-1-2011

All analysis is performed according to EPA standards.

INTERVAL	PASTE pH	% SULFUR	MAX. POT. *ACIDITY	NEUT. *POT	A-B *ACCOUNT	ACID FORMING
0.00	5.00	3.810	0.001	0.031	-0.500	N
5.00	10.00	3.380	0.001	0.031	0.250	N
10.00	15.00	3.220	0.001	0.031	-0.500	N
15.00	20.00	3.210	0.001	0.031	0.250	N
20.00	25.00	4.430	0.001	0.031	1.250	N
25.00	30.00	5.670	0.040	1.250	6.250	N
30.00	35.00	6.170	0.090	2.813	7.000	N
35.00	40.00	6.590	0.110	3.438	6.000	N
40.00	45.00	4.910	1.140	35.625	7.750	Y
45.00	50.00	6.450	0.780	24.375	12.750	Y
50.00	57.00	7.030	0.170	5.313	11.000	N
57.00	57.50 Coal	2.760	86.250 Coal		COAL	...
57.50	60.00	7.110	0.470	14.688	5.750	Y
60.00	65.00	7.230	0.170	5.313	10.500	N
65.00	70.00	7.910	0.020	0.625	26.250	N
70.00	75.00	8.130	0.001	0.031	25.000	N
75.00	80.00	8.190	0.070	2.188	9.000	N
80.00	85.00	8.000	0.560	17.500	9.500	Y
85.00	90.00	8.250	0.040	1.250	4.000	N
90.00	95.00	8.370	0.020	0.625	8.750	N
95.00	101.00	8.350	0.040	1.250	6.750	N
101.00	102.00 Coal	2.750	85.938 Coal		COAL	...
102.00	107.50	9.080	0.400	12.500	3.250	Y
107.50	108.50 Coal	0.240	7.500 Coal		COAL	...
108.50	110.00	9.080	0.030	0.938	7.750	N
110.00	115.00	8.980	0.040	1.250	8.000	N
115.00	120.00	9.110	0.090	2.813	8.500	N
120.00	125.00	8.270	0.070	2.188	14.250	N
125.00	130.00	8.560	0.001	0.031	16.500	N
130.00	135.00	8.790	0.020	0.625	13.250	N
135.00	140.00	8.760	0.020	0.625	12.250	N
140.00	145.00	8.900	0.020	0.625	11.750	N
145.00	149.00	8.940	0.010	0.313	11.250	N
149.00	150.90 Coal	0.360	11.250 Coal		COAL	...
150.90	156.00	9.280	0.050	1.563	4.000	N
**AVERAGE		4.216	0.143	4.469	8.686	4.217 N

*Calculated in tons CaCo3 per 1000 tons of material.
 **Averages do not include coal seam to be mined or intervals below lowest seam.
 ***Not analyzed



Telephone: (205) 384-5553
 Facsimile: (205) 295-3114 - Main Building
 (205) 295-3115 - Water Lab
 Web Address: www.percengineering.com

COMPANY NAME: Best Coal, Inc.
 MINE NAME: Jagger Mine
 DRILL HOLE: BCJMOB-9

COLLECTED BY: LG
 DATE COLLECTED: 10-31-2011
 ANALYZED BY: JK, JR
 DATE ANALYZED: 11-28-2011

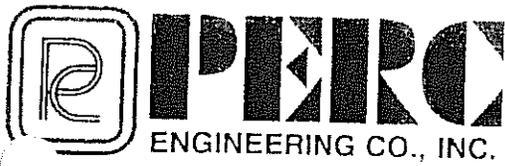
All analysis is performed according to
 EPA standards.

INTERVAL	PASTE pH	% SULFUR	MAX. POT. *ACIDITY	NEUT. *POT	A-B *ACCOUNT	ACID FORMING
0.00	5.00	4.110	0.001	0.031	2.000	1.969 N
5.00	10.00	8.020	0.030	0.938	17.500	16.563 N
10.00	15.00	8.300	0.030	0.938	16.750	15.813 N
15.00	20.00	8.450	0.001	0.031	15.750	15.719 N
20.00	25.00	8.500	0.030	0.938	15.250	14.313 N
25.00	30.00	8.660	0.020	0.625	12.750	12.125 N
30.00	35.00	8.880	0.020	0.625	17.750	17.125 N
35.00	40.00	9.100	0.020	0.625	16.500	15.675 N
40.00	45.00	9.240	0.010	0.313	16.250	15.938 N
45.00	51.50	9.360	0.020	0.625	16.500	15.875 N
51.50	52.00 Coal		2.640	82.500 Coal		COAL ***
52.00	55.00	9.530	0.350	10.938	9.250	-1.688 N
55.00	60.00	9.660	0.090	2.813	13.500	10.688 N
60.00	65.00	9.850	0.020	0.625	13.250	12.625 N
65.00	70.00	10.390	0.001	0.031	15.000	14.969 N
70.00	75.00	9.590	0.001	0.031	28.750	28.719 N
75.00	80.00	10.030	0.001	0.031	23.500	23.469 N
80.00	85.00	10.270	0.001	0.031	12.750	12.719 N
85.00	90.00	9.680	0.001	0.031	18.500	18.469 N
90.00	95.00	9.750	0.001	0.031	38.750	38.719 N
95.00	100.00	9.730	0.001	0.031	25.750	25.719 N
100.00	101.20 Coal		1.440	45.000 Coal		COAL ***
101.20	106.60	9.730	0.320	10.000	8.500	-1.500 N
106.60	107.90 Coal		0.490	15.313 Coal		COAL ***
107.90	110.00	9.450	0.230	7.188	10.250	3.063 N
110.00	115.00	9.500	0.160	5.000	10.500	5.500 N
115.00	120.00	9.210	0.040	1.250	10.500	9.250 N
120.00	123.00	9.490	0.040	1.250	11.500	10.250 N
123.00	125.00	9.080	0.070	2.188	10.500	8.313 N
125.00	130.00	9.140	0.040	1.250	53.750	52.500 N
130.00	135.00	9.380	0.050	1.875	12.750	10.875 N
135.00	140.00	9.080	0.030	0.938	11.250	10.313 N
140.00	141.70	9.160	0.030	0.938	13.000	12.063 N
141.70	143.50 Coal		0.350	10.938 Coal		COAL ***
143.50	150.00	8.640	0.100	3.125	7.250	4.125 N
**AVERAGE		5.573	0.051	1.592	16.681	15.089 N

*Calculated in tons CaCo3 per 1000 tons of material.

**Averages do not include coal seam to be mined or intervals below lowest seam.

***Not analyzed



Telephone: (205) 384-5553
 Facsimile: (205) 295-3114 - Main Building
 (205) 295-3115 - Water Lab
 Web Address: www.percengineering.com

COMPANY NAME: Best Coal, Inc.
 MINE NAME: Jagger Mine
 DRILL HOLE: BCJMOB10

COLLECTED BY: LG
 DATE COLLECTED: 10-31-2011
 ANALYZED BY: JK, JR
 DATE ANALYZED: 11-26-2011

All analysis is performed according to EPA standards.

INTERVAL	PASTE pH	% SULFUR	MAX. POT. *ACIDITY	NEUT. *POT	A-B *ACCOUNT	ACID FORMING
0.00	5.00	5.940	0.001	0.031	1.500	1.469 N
5.00	10.00	7.370	0.001	0.031	3.750	3.719 N
10.00	15.00	7.670	0.001	0.031	11.250	11.219 N
15.00	20.00	7.460	0.010	0.313	4.250	3.938 N
20.00	25.00	7.070	0.320	10.000	9.750	-0.250 N
25.00	30.00	7.400	0.300	9.375	9.500	0.125 N
30.00	35.00	7.660	0.300	9.375	11.000	1.625 N
35.00	40.00	7.500	0.040	1.250	11.750	10.500 N
40.00	45.00	7.430	0.040	1.250	11.500	10.250 N
45.00	48.00	7.220	0.030	0.938	13.500	12.563 N
48.00	48.50 Coal		2.990	93.125 Coal		COAL ...
48.50	50.00	7.020	0.510	15.938	6.250	-9.688 Y
50.00	55.00	8.460	0.120	3.750	8.250	4.500 N
55.00	60.00	8.680	0.130	4.063	7.000	2.938 N
60.00	65.00	8.650	0.080	2.500	14.000	11.500 N
65.00	70.00	8.900	0.040	1.250	9.750	8.500 N
70.00	75.00	8.910	0.040	1.250	14.500	13.250 N
75.00	80.00	8.980	0.030	0.938	8.000	7.063 N
80.00	85.00	9.260	0.050	1.563	9.250	7.688 N
85.00	90.00	9.500	0.001	0.031	6.000	5.969 N
90.00	95.00	9.450	0.020	0.625	12.500	11.875 N
95.00	100.00	9.490	0.020	0.625	18.000	17.375 N
100.00	105.00	9.570	0.020	0.625	20.500	19.875 N
105.00	110.00	9.120	0.010	0.313	14.000	13.688 N
110.00	115.00	9.180	0.020	0.625	12.500	11.875 N
115.00	120.00	9.240	0.020	0.625	12.500	11.875 N
120.00	125.00	9.260	0.010	0.313	12.250	11.938 N
125.00	129.70	9.200	0.020	0.625	14.250	13.625 N
129.70	130.20 Coal		1.610	50.313 Coal		COAL ...
130.20	135.00	9.280	0.160	5.000	10.250	5.250 N
135.00	140.00	9.310	0.010	0.313	10.000	9.688 N
140.00	145.00	9.450	0.040	1.250	16.250	15.000 N
145.00	150.00	9.320	0.010	0.313	13.000	12.688 N
150.00	155.00	9.340	0.001	0.031	15.500	15.469 N
155.00	160.00	9.320	0.040	1.250	19.000	17.750 N
160.00	165.00	9.490	0.001	0.031	14.250	14.219 N
165.00	170.00	9.480	0.020	0.625	10.500	9.875 N
170.00	175.00	9.250	0.001	0.031	14.750	14.719 N
175.00	177.00	9.080	0.010	0.313	14.750	14.438 N
177.00	178.00 Coal		1.800	56.250 Coal		COAL ...
178.00	185.00	9.050	0.180	5.625	14.500	8.875 N
185.00	187.20	8.670	0.110	3.438	5.000	1.563 N
187.20	189.00 Coal		0.130	4.063 Coal		COAL ...
189.00	195.00	9.240	0.320	10.000	10.750	0.750 N
195.00	200.00	8.850	0.310	9.688	11.000	1.313 N
200.00	205.00	8.860	0.070	2.188	13.500	11.313 N
205.00	210.00	8.730	0.001	0.031	12.750	12.719 N
210.00	216.50	8.450	0.030	0.938	10.500	9.563 N
216.50	218.40 Coal		0.160	5.000 Coal		COAL ...
218.40	225.00	8.970	0.030	0.938	12.750	11.813 N
**AVERAGE		7.449	0.074	2.307	11.599	9.292 N

OVERBURDEN ANALYSIS SPREADSHEET

OPERATOR: Best Coal, Inc.

PERMIT NO: P-3932/Revision R-1 DRILL HOLE BCJMMW-7

COUNTY: Jefferson TOWNSHIP:

THRESHOLD SULFUR NP FIZZ
VALUES: 0 0.00 0

CLAY	CL	3450
SHALE	SH	3700
SILTSTONE	ST	3750 ALK ADD(Ins/ac CaCO3):
SANDSTONE	SS	3670 COAL SEAMS:
LIMESTONE	LS	3670 STATE PLANE ZONE:
COAL	CO	1800 FEET (NORTH/SOUTH):
CARBONLITI	CB	2580 FEET (EAST/WEST):
OTHER	OT	3670 SURFACE ELEV. (FT):

BOTTOM DEPTH (FT)	THICKNESS FEET	ROCK TYPE	FIZZ RATING	SULFUR %	NP	DEFICIENCY /EXCESS	ACREAGE	UNIT WT TONS/AC-FT	FRACTION SPOILED	TONS MPA	TONS NP	NET NP (TONS)	TONS OF OVERBURDEN
5.00	5.00	OT	0	0.00	-0.50	-0.53	2.61	3670	1.00	1.50	0.00	-1.50	47973
10.00	5.00	OT	0	0.00	0.25	0.22	5.23	3670	1.00	3.00	23.99	20.99	95945
15.00	5.00	OT	0	0.00	-0.50	-0.53	7.84	3670	1.00	4.50	0.00	-4.50	143918
20.00	5.00	OT	0	0.00	0.25	0.22	10.46	3670	1.00	6.00	47.97	41.96	191891
25.00	5.00	OT	0	0.00	1.25	1.22	13.07	3670	1.00	7.50	299.83	292.33	239863
30.00	5.00	SS	0	0.04	6.25	5.00	15.69	3670	1.00	359.79	1798.97	1439.18	287836
35.00	5.00	SS	0	0.09	7.00	4.19	18.30	3670	1.00	944.46	2350.66	1406.20	335809
40.00	5.00	SS	0	0.11	6.00	2.56	20.91	3670	1.00	1319.25	2302.69	983.44	383781
45.00	5.00	SS	0	1.14	7.75	-27.88	23.53	3670	1.00	15381.24	3346.09	-12035.14	431754
50.00	5.00	SH	0	0.76	12.75	-11.63	26.14	3700	1.00	11788.92	6166.51	-5622.41	483648
57.00	7.00	SH	0	0.17	11.00	5.69	29.88	3700	1.00	4100.73	8490.93	4390.19	771902
57.50	0.50	CO	----	2.76	----	-86.25	30.06	1800	0.33	770.14	0.00	-770.14	8929
60.00	2.50	SH	0	0.47	5.75	-8.94	31.37	3700	1.00	4262.15	1668.59	-2593.56	290109
65.00	5.00	SS	0	0.17	10.50	5.19	33.99	3670	1.00	3313.11	8548.27	3235.16	623646
70.00	5.00	SS	3	0.02	25.25	25.63	36.60	3670	1.00	419.76	17629.95	17210.19	671617
75.00	5.00	SS	3	0.00	25.00	24.97	39.21	3670	1.00	22.49	17989.75	17967.26	719590
80.00	5.00	SS	0	0.07	9.00	6.81	41.83	3670	1.00	1679.04	6908.06	5229.02	767563
85.00	5.00	SS	0	0.56	9.50	-8.00	44.44	3670	1.00	14271.87	7747.59	-6524.28	815535
90.00	5.00	SS	0	0.04	4.00	2.75	47.06	3670	1.00	1079.38	3454.03	2374.65	863508
95.00	5.00	SS	0	0.02	8.75	8.13	49.67	3670	1.00	509.68	7975.45	7405.78	911481
101.00	5.00	SS	0	0.04	6.75	5.50	52.81	3670	1.00	1453.57	7849.29	6395.72	1162857
102.00	1.00	CO	----	2.75	----	-85.94	53.33	1800	0.17	1369.47	0.00	-1369.47	15936
107.50	5.50	SH	0	0.40	3.25	-9.25	56.21	3700	1.00	14297.65	3717.44	-10580.41	1143828
108.50	1.00	CO	----	0.24	----	-7.50	56.73	1800	0.17	127.13	0.00	-127.13	16951
110.00	1.50	SH	0	0.03	7.75	6.81	57.51	3700	1.00	299.26	2473.66	2174.60	319208
115.00	5.00	SH	0	0.04	8.00	6.75	60.13	3700	1.00	1390.49	8889.13	7508.64	1112391
120.00	5.00	SH	0	0.09	8.50	5.69	62.74	3700	1.00	3264.62	9866.42	6601.80	1160755
125.00	5.00	SH	0	0.07	14.25	12.06	65.36	3700	1.00	2644.95	17229.96	14585.01	1209120
130.00	5.00	SH	0	0.09	16.50	16.47	67.97	3700	1.00	39.30	20748.50	20709.21	1257485
135.00	5.00	SH	0	0.02	13.25	12.63	70.59	3700	1.00	816.16	17302.51	16486.35	1305850
140.00	5.00	SH	0	0.02	12.25	11.63	73.20	3700	1.00	846.38	16589.13	15742.75	1354215
145.00	5.00	SH	0	0.02	11.75	11.13	75.82	3700	1.00	676.61	16480.31	15603.70	1402580
149.00	4.00	SH	0	0.01	11.25	10.94	77.91	3700	1.00	360.32	12971.44	12611.12	1153017
150.00	1.00	CO	----	0.36	----	-11.25	78.90	1800	0.09	266.23	0.00	-266.23	23665

TOTAL OVERBURDEN VOL.(ACRE-FT):	5909	TOTAL (TONS):	88356.84	228677.33	140520.49	21724234
PERCENT SANDSTONE:	37%	TOTAL (TONS/THOUSAND):	4.0672	10.5356	6.47	
NP/MPA RATIO:	2.59					
TONS/ACRE REQUIRED (1:1):	1781	EXCESS				

OVERBURDEN ANALYSIS SPREADSHEET

OPERATOR: Best Coal, Inc.

PERMIT NO: P-3932/Revision R-1

COUNTY: Jefferson

DRILL HOLE: BCJMOB-9

TOWNSHIP:

THRESHOLD SULFUR NP FIZZ
VALUES: 0 0.00 0

CLAY	CL	3450	
SHALE	SH	3700	
SILTSTONE	ST	3750	ALK ADD(lbs/ac CaCO3):
SANDSTONE	SS	3670	COAL SEAMS:
LIMESTONE	LS	3670	STATE PLANE ZONE:
COAL	CO	1800	FEET (NORTH/SOUTH):
CARBONOLITI	CB	2580	FEET (EAST/WEST):
OTHER	OT	3670	SURFACE ELEV. (FT):

BOTTOM DEPTH (FT)	THICKNESS FEET	ROCK TYPE	FIZZ RATING	SULFUR %	NP	DEFICIENCY /EXCESS	ACREAGE	UNIT WT TONS/AC-FT	FRACTION SPOILED	TONS MPA	TONS NP	NET NP (TONS)	TONS OF OVERBURDEN
5.00	5.00	SH	0	0.00	2.00	1.97	4.88	3700	1.00	2.82	180.49	177.67	90244
10.00	5.00	SH	0	0.03	17.50	16.56	9.76	3700	1.00	169.21	3158.54	2989.33	180488
15.00	5.00	SH	0	0.03	16.75	15.81	14.63	3700	1.00	253.81	4534.76	4280.95	270732
20.00	5.00	SH	0	0.00	15.75	15.72	19.51	3700	1.00	11.28	5685.37	5674.09	360976
25.00	5.00	SH	0	0.03	15.25	14.31	2.00	3700	1.00	34.69	564.25	529.56	37000
30.00	5.00	SH	0	0.02	12.75	12.13	29.27	3700	1.00	338.41	6903.66	6565.24	541463
35.00	5.00	SH	0	0.02	17.75	17.13	34.15	3700	1.00	394.82	11212.80	10817.99	631707
40.00	5.00	SH	0	0.02	16.50	15.88	39.02	3700	1.00	451.22	11912.20	11460.98	721951
45.00	5.00	SH	0	0.01	16.25	15.94	43.90	3700	1.00	253.81	13198.17	12944.36	812195
51.50	6.50	SH	0	0.02	16.50	15.88	50.24	3700	1.00	755.23	19938.04	19182.81	1208366
52.00	0.50	CO	---	2.64	---	-82.50	50.73	1800	0.33	1243.05	0.00	-1243.05	15067
55.00	3.00	SH	0	0.35	9.25	-1.69	53.66	3700	1.00	6514.48	5509.39	-1005.09	595610
60.00	5.00	SS	0	0.09	13.50	10.69	58.54	3670	1.00	3021.04	14500.98	11479.94	1074146
65.00	5.00	SS	0	0.02	13.25	12.63	63.41	3670	1.00	727.29	15418.48	14691.19	1163659
70.00	5.00	SS	0	0.00	15.00	15.00	68.29	3670	1.00	0.00	18797.56	18797.56	1253171
75.00	5.00	SS	3	0.00	28.75	28.75	73.17	3670	1.00	0.00	38602.13	38602.13	1342683
80.00	5.00	SS	1	0.00	23.50	23.50	78.05	3670	1.00	0.00	33656.59	33656.59	1432195
85.00	5.00	SS	0	0.00	12.75	12.75	82.93	3670	1.00	0.00	19401.77	19401.77	1521707
90.00	5.00	OT	1	0.00	18.50	18.50	87.80	3670	1.00	0.00	29807.56	29807.56	1611220
95.00	5.00	OT	3	0.00	38.75	38.75	92.68	3670	1.00	0.00	65903.35	65903.35	1700732
100.00	5.00	SH	0	0.00	25.75	25.75	97.56	3700	1.00	0.00	46475.61	46475.61	1804878
101.20	1.20	CO	---	1.44	---	-45.00	98.73	1800	0.14	1343.54	0.00	-1343.54	29856
106.60	5.40	SH	0	0.32	8.50	-1.50	104.00	3700	1.00	20779.20	17662.32	-3116.88	2077920
107.90	1.30	CO	---	0.49	---	-15.31	105.27	1800	0.13	490.35	0.00	-490.35	32023
110.00	2.10	SH	0	0.23	10.25	3.06	107.32	3700	1.00	5993.32	8547.00	2553.68	833854
115.00	5.00	SH	0	0.16	10.50	5.50	112.20	3700	1.00	10378.05	21793.90	11415.85	2075610
120.00	5.00	SH	0	0.04	10.50	9.25	117.07	3700	1.00	2707.32	22741.46	20034.15	2165854
123.00	3.00	SH	0	0.04	11.50	10.25	120.00	3700	1.00	1665.00	15318.00	13653.00	1332000
125.00	2.00	SH	0	0.07	10.50	8.31	121.95	3700	1.00	1974.09	9475.61	7501.52	902439
130.00	5.00	SH	3	0.04	53.75	52.50	126.83	3700	1.00	2932.93	126115.85	123182.93	2346341
135.00	5.00	SS	0	0.06	12.75	10.88	131.71	3670	1.00	4531.55	30814.57	26283.02	2416829
140.00	5.00	SS	0	0.03	11.25	10.31	136.59	3670	1.00	2349.70	28196.34	25846.65	2506341
141.70	1.70	SH	0	0.03	13.00	12.06	138.24	3700	1.00	815.21	11304.20	10489.00	869554
143.50	1.80	CO	---	0.35	---	-10.94	140.00	1800	0.09	446.51	0.00	-446.51	40824

TOTAL OVERBURDEN VOL.(ACRE-FT):	9799	TOTAL (TONS):	70577.91	657330.94	586753.03	35999635
PERCENT SANDSTONE:	35%	TOTAL (TONS/THOUSAND):	1.9605	18.2594	16.30	
NP/MPA RATIO:	9.31					
TONS/ACRE REQUIRED (1:1):	4191 EXCESS					

OVERBURDEN ANALYSIS SPREADSHEET

OPERATOR: Best Coal, Inc.

PERMIT NO: P-3932/Revision R-1

COUNTY: Jefferson

DRILL HOLE: BCJMMW-6

TOWNSHIP:

THRESHOLD Sulfur NP FIZZ
VALUES: 0 0.00 0

CLAY CI 3450
SHALE SH 3700
SILTSTONE ST 3750 ALK ADD(Ins/ac CaCO3):
SANDSTONE SS 3670 COAL SEAMS:
LIMESTONE LS 3670 STATE PLANE ZONE:
COAL CO 1800 FEET (NORTH/SOUTH):
CARBONOLITE CB 2580 FEET (EAST/WEST):
OTHER OT 3670 SURFACE ELEV. (FT):

BOTTOM DEPTH (FT)	THICKNESS FEET	ROCK TYPE	FIZZ RATING	SULFUR %	NP	DEFICIENCY /EXCESS	ACREAGE	UNIT WT TONS/AC-FT	FRACTION SPOILED	TONS MPA	TONS NP	NET NP (TONS)	TONS OF OVERBURDEN
5.00	5.00	OT	0	0.00	0.00	-0.03	0.02	3670	1.00	4.60	0.00	-4.60	147239
10.00	5.00	OT	0	0.00	0.50	0.47	16.05	3670	1.00	9.20	147.24	138.04	294478
15.00	5.00	OT	0	0.00	0.25	0.22	24.07	3670	1.00	13.80	110.43	96.63	441717
20.00	5.00	OT	0	0.00	0.00	-0.03	32.10	3670	1.00	18.40	0.00	-18.40	588956
25.00	5.00	SS	0	0.00	7.75	7.72	40.12	3670	1.00	23.01	5705.51	5682.50	736194
30.00	5.00	SS	0	0.01	5.75	5.44	48.14	3670	1.00	276.07	5079.74	4803.67	883433
35.00	5.00	SS	0	0.02	4.75	4.13	56.17	3670	1.00	644.17	4895.69	4251.52	1030672
39.00	4.00	SS	0	0.02	5.00	4.38	62.59	3670	1.00	574.23	4593.85	4019.62	918771
40.00	1.00	CO	----	0.98	----	-30.63	64.19	1800	0.17	589.52	0.00	-589.52	19250
45.00	5.00	SH	0	0.31	3.50	-6.19	72.22	3700	1.00	12942.33	4675.94	-8266.39	1335982
52.00	7.00	SH	0	0.12	5.50	1.75	83.45	3700	1.00	8104.96	11097.27	3782.31	2161323
53.50	1.50	CO	---	0.59	---	-18.44	85.86	1800	0.11	474.89	0.00	-474.89	25757
55.00	1.50	SH	0	0.39	6.00	-6.19	88.26	3700	1.00	5970.17	2939.16	-3031.01	489860
60.00	5.00	SH	0	0.13	6.50	2.44	96.29	3700	1.00	7236.57	11578.51	4341.94	1781310
65.00	5.00	SS	0	0.06	4.75	2.88	104.31	3670	1.00	3588.95	9092.00	5503.05	1914106
70.00	5.00	SS	0	0.03	6.00	5.06	112.33	3670	1.00	1932.51	12368.07	10435.56	2061345
75.00	5.00	SS	0	0.03	10.75	8.81	120.38	3670	1.00	2070.55	23742.27	21671.72	2208583
80.00	5.00	SS	0	0.02	9.50	6.88	128.38	3670	1.00	1472.39	22380.31	20907.92	2355822
85.00	6.00	SS	0	0.04	9.00	7.75	138.01	3670	1.00	3798.76	27351.10	23552.33	3039011
87.80	1.80	CO	---	0.47	---	-14.69	140.90	1800	0.09	620.22	0.00	-620.22	42226

TOTAL OVERBURDEN VOL.(ACRE-FT):	6136	TOTAL (TONS):	50365.31	148547.10	96181.79	22476035
PERCENT SANDSTONE:	67%	TOTAL (TONS/THOUSAND):	2.2408	6.5201	4.28	
NP/MPA RATIO:	2.91					
TONS/ACRE REQUIRED (1:1):	683 EXCESS					

OVERBURDEN ANALYSIS SPREADSHEET

OPERATOR: Best Coal, Inc.

PERMIT NO: P-3932/Revision R-1 DRILL HOLE: BCJMOB10

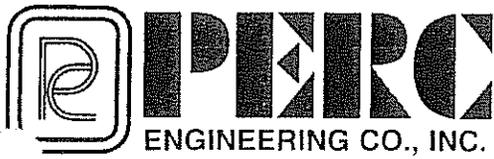
COUNTY: Jefferson TOWNSHIP:

THRESHOLD SULFUR NP FIZZ
VALUES: 0 0.00 0

CLAY CL 3450
SHALES SH 3700
SILTSTONE ST 3750 ALK ADD(tns/ac CaCO3):
SANDSTONE SS 3670 COAL SEAMS:
LIMESTONE LS 3670 STATE PLANE ZONE:
COAL CO 1800 FEET (NORTH/SOUTH):
CARBONOLITE CB 2580 FEET (EAST/WEST):
OTHER OT 3670 SURFACE ELEV. (FT)

BOTTOM DEPTH (FT)	THICKNESS FEET	ROCK TYPE	FIZZ RATING	SULFUR %	NP	DEFICIENCY /EXCESS	ACREAGE	UNIT WT TONS/AC-FT	FRACTION SPOILED	TONS MPA	TONS NP	NET NP (TONS)	TONS OF OVERBURDEN
5.00	5.00	OT	0	0.00	1.50	1.47	3.46	3670	1.00	1.98	95.15	93.17	83435
10.00	5.00	SS	0	0.00	3.75	3.72	6.91	3670	1.00	3.96	475.76	471.00	126870
15.00	5.00	SS	0	0.00	11.25	11.22	10.37	3670	1.00	5.95	2140.94	2134.99	190306
20.00	5.00	SS	0	0.01	4.25	3.94	13.03	3670	1.00	79.29	1070.40	999.10	253741
25.00	5.00	SH	0	0.32	9.75	-0.25	17.20	3700	1.00	3197.69	3117.75	-79.94	319769
30.00	5.00	SH	0	0.30	9.50	0.13	20.74	3700	1.00	3597.40	3645.36	47.97	383723
35.00	5.00	SH	0	0.30	11.00	1.63	24.20	3700	1.00	4196.97	4924.44	727.47	447676
40.00	5.00	SH	0	0.04	11.75	10.50	27.66	3700	1.00	639.54	6011.65	5372.12	511630
45.00	5.00	SH	0	0.04	11.50	10.25	31.11	3700	1.00	719.46	6619.21	5899.73	575584
48.00	3.00	SH	0	0.03	13.50	12.56	33.19	3700	1.00	345.35	4973.04	4627.69	368374
48.50	0.50	CO	----	2.90	----	-93.13	33.53	1800	0.33	936.72	0.00	-936.72	10059
50.00	1.50	SH	0	0.51	6.25	-9.69	34.57	3700	1.00	3057.79	1199.13	-1858.66	191861
55.00	5.00	SH	0	0.12	8.25	4.50	38.03	3700	1.00	2638.09	5803.80	3165.71	703491
60.00	5.00	SH	0	0.13	7.00	2.94	41.48	3700	1.00	3117.75	5372.12	2254.37	767445
65.00	5.00	SH	0	0.08	14.00	11.50	44.54	3700	1.00	2078.50	11639.58	9561.09	831399
70.00	5.00	SH	0	0.04	9.75	8.50	48.40	3700	1.00	1119.19	8729.69	7610.50	895353
75.00	5.00	SH	0	0.04	14.50	13.25	51.85	3700	1.00	1199.13	13909.84	12710.81	959306
80.00	5.00	SH	0	0.03	8.00	7.06	55.31	3700	1.00	959.31	8186.08	7226.77	1023260
85.00	5.00	SH	0	0.05	9.25	7.69	58.77	3700	1.00	1698.77	10056.73	8357.96	1087214
90.00	5.00	SH	0	0.00	6.00	5.97	62.23	3700	1.00	35.97	6907.01	6871.03	1151168
95.00	5.00	SH	0	0.02	12.50	11.88	65.68	3700	1.00	759.45	15189.02	14429.57	1215121
100.00	5.00	SH	0	0.02	18.00	17.38	69.14	3700	1.00	709.42	23023.35	22223.93	1279750
105.00	5.00	SH	0	0.02	20.50	19.88	72.60	3700	1.00	839.39	27532.09	26692.70	1343029
110.00	5.00	SH	0	0.01	14.00	13.69	76.05	3700	1.00	439.69	19697.76	19258.07	1406983
115.00	5.00	SH	0	0.02	12.50	11.88	79.51	3700	1.00	919.34	18386.70	17467.37	1470936
120.00	5.00	SH	0	0.02	12.50	11.88	82.97	3700	1.00	959.31	19185.13	18226.82	1534050
125.00	5.00	SH	0	0.01	12.25	11.94	86.42	3700	1.00	499.64	19585.84	19086.20	1598844
129.70	4.70	SH	0	0.02	14.25	13.63	89.67	3700	1.00	974.84	22221.77	21247.14	1559423
130.20	0.50	CO	----	1.61	----	-50.31	90.02	1800	0.33	1358.59	0.00	-1358.59	27003
135.00	4.80	SS	0	0.16	10.25	5.25	93.34	3670	1.00	8221.20	16853.47	8632.26	1844241
140.00	5.00	SS	0	0.01	10.00	9.69	96.79	3670	1.00	555.06	17761.86	17206.80	1776186
145.00	5.00	SS	0	0.04	18.25	15.00	100.25	3670	1.00	2299.53	29893.84	27594.32	1839621
150.00	5.00	SS	0	0.01	13.00	12.69	103.71	3670	1.00	594.71	24739.73	24145.03	1903056
155.00	5.00	SS	0	0.00	15.50	15.47	107.17	3670	1.00	61.45	30480.62	30419.17	1966492
160.00	5.00	SS	0	0.04	19.00	17.75	110.62	3670	1.00	2537.41	38568.61	36031.20	2029927
165.00	5.00	SS	0	0.00	14.25	14.22	114.08	3670	1.00	65.42	29830.41	29764.99	2093362
170.00	5.00	SS	0	0.02	10.50	9.88	117.54	3670	1.00	1348.00	22646.37	21298.37	2156797
175.00	5.00	SS	0	0.00	14.75	14.72	120.99	3670	1.00	88.38	32748.43	32679.05	2220232
177.00	2.00	SS	0	0.01	14.75	14.44	122.38	3670	1.00	280.70	13249.08	12968.38	898243
178.00	1.00	CO	----	1.80	----	-56.25	123.07	1800	0.17	2075.94	0.00	-2075.94	36906
185.00	7.00	SS	0	0.18	14.50	8.88	127.51	3670	1.00	18483.43	47646.19	29162.75	3265944
187.20	2.20	SS	0	0.11	5.00	1.56	129.43	3670	1.00	3592.21	5225.03	1632.82	1045006
189.00	1.80	CO	----	0.13	----	-4.08	130.67	1800	0.09	159.10	0.00	-159.10	39163
195.00	6.00	SH	0	0.32	10.75	0.75	134.82	3700	1.00	29930.36	32175.13	2244.78	2993036
200.00	5.00	SH	0	0.31	11.00	1.31	138.28	3700	1.00	24782.08	28139.65	3357.57	2558150
205.00	5.00	SH	0	0.07	13.50	11.31	141.74	3700	1.00	5735.85	35398.40	29662.55	2622104
210.00	5.00	SH	0	0.00	12.75	12.72	145.19	3700	1.00	83.94	34247.24	34163.30	2886058
216.50	6.50	SH	0	0.03	10.50	9.56	149.69	3700	1.00	3374.96	37799.55	34424.59	3599957
218.40	1.90	CO	----	0.16	----	-5.00	151.00	1800	0.09	226.45	0.00	-226.45	45290

TOTAL OVERBURDEN VOL.(ACRE-FT):	16242	TOTAL (TONS):	141655.46	747112.05	605456.59	59736736
PERCENT SANDSTONE:	39%	TOTAL (TONS/THOUSAND):	2.3713	12.5067	10.14	
NP/MPA RATIO:	5.27					
TONS/ACRE REQUIRED (1:1):	4010 EXCESS					



Telephone: (205) 384-5553
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 (205) 295-3115 - Water Lab
 Web Address: www.percengineering.com

COMPANY NAME: Best Coal, Inc.

DATE SAMPLED: 11/10/2011

MINE NAME: Jagger Mine R-1

DATE ANALYZED: 11/15/2011

SOIL / OVERBURDEN: Soil 29.1

ANALYZED BY: JRK

SAMPLE WEIGHT: 4194.0
 (GRAMS)

LAB ID: 7924

TOPSOIL VARIANCE SIEVE ANALYSIS

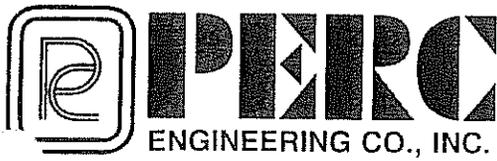
SIEVE NUMBER	WT. SIEVE + SAMPLE (GRAMS)	WT. SIEVE (GRAMS)	WT. SAMPLE RETAINED (GRAMS)	PERCENT RETAINED	CUMULATIVE PERCENT RETAINED	PERCENT PASSING
1"	144.1	100.0	44.1	1.05	1.05	98.95
1/2"	531.6	100.0	431.6	10.29	11.34	88.66
1/4"	1050.1	100.0	950.1	22.65	33.99	66.01
3/16"	455.0	100.0	355.0	8.46	42.45	57.55
2 MM	607.6	100.0	507.6	12.10	54.55	45.45
SOIL	2005.6	100.0	1905.6	45.45	100.00	0.00

% OF SAMPLE THAT IS
 COARSE FRAGMENTS :

54.55

% OF SAMPLE THAT IS
 SOIL :

45.45



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COMPANY NAME: Best Coal, Inc.

DATE SAMPLED: 11/10/2011

MINE NAME: Jagger Mine R-1

DATE ANALYZED: 11/15/2011

SOIL / OVERBURDEN: Soil 29.2

ANALYZED BY: JRK

SAMPLE WEIGHT: 3593.6
 (GRAMS)

LAB ID: 7925

TOPSOIL VARIANCE SIEVE ANALYSIS

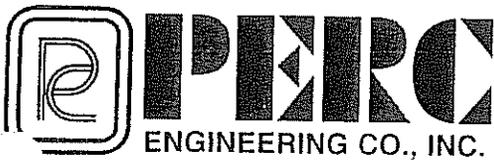
SIEVE NUMBER	WT. SIEVE + SAMPLE (GRAMS)	WT. SIEVE (GRAMS)	WT. SAMPLE RETAINED (GRAMS)	PERCENT RETAINED	CUMULATIVE PERCENT RETAINED	PERCENT PASSING
1"	100.0	100.0	0.0	0.00	0.00	100.00
1/2"	224.9	100.0	124.9	3.48	3.48	96.52
1/4"	336.7	100.0	236.7	6.59	10.07	89.93
3/16"	225.2	100.0	125.2	3.48	13.55	86.45
2 MM	303.8	100.0	203.8	5.67	19.22	80.78
SOIL	3003.0	100.0	2903.0	80.78	100.00	0.00

% OF SAMPLE THAT IS
 COARSE FRAGMENTS :

19.22

% OF SAMPLE THAT IS
 SOIL :

80.78



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COMPANY NAME: Best Coal, Inc.

DATE SAMPLED: 11/10/2011

MINE NAME: Jagger Mine R-1

DATE ANALYZED: 11/15/2011

SOIL / OVERBURDEN: Soil 29.3

ANALYZED BY: JRK

SAMPLE WEIGHT: 3970.4
 (GRAMS)

LAB ID: 7926

TOPSOIL VARIANCE SIEVE ANALYSIS

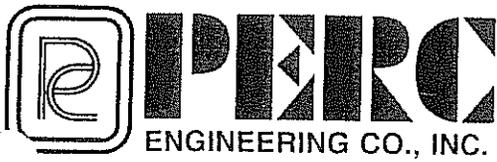
SIEVE NUMBER	WT. SIEVE + SAMPLE (GRAMS)	WT. SIEVE (GRAMS)	WT. SAMPLE RETAINED (GRAMS)	PERCENT RETAINED	CUMULATIVE PERCENT RETAINED	PERCENT PASSING
1"	100.0	100.0	0.0	0.00	0.00	100.00
1/2"	138.5	100.0	38.5	0.97	0.97	99.03
1/4"	207.7	100.0	107.7	2.71	3.68	96.32
3/16"	166.0	100.0	66.0	1.66	5.34	94.66
2 MM	250.1	100.0	150.1	3.78	9.12	90.88
SOIL	3708.1	100.0	3608.1	90.88	100.00	0.00

% OF SAMPLE THAT IS
 COARSE FRAGMENTS :

9.12

% OF SAMPLE THAT IS
 SOIL :

90.88



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 Web Address: www.percengineering.com

COMPANY NAME: Best Coal, Inc.

DATE SAMPLED: 11/10/2011

MINE NAME: Jagger Mine R-1

DATE ANALYZED: 11/15/2011

SOIL / OVERBURDEN: Soil 40.1

ANALYZED BY: JRK

SAMPLE WEIGHT: 3842.4
 (GRAMS)

LAB ID: 7927

TOPSOIL VARIANCE SIEVE ANALYSIS

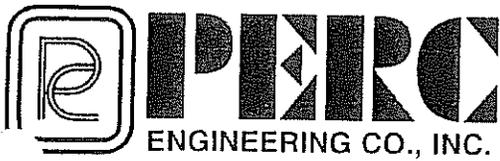
SIEVE NUMBER	WT. SIEVE + SAMPLE (GRAMS)	WT. SIEVE (GRAMS)	WT. SAMPLE RETAINED (GRAMS)	PERCENT RETAINED	CUMULATIVE PERCENT RETAINED	PERCENT PASSING
1"	356.7	100.0	256.7	6.68	6.68	93.32
1/2"	219.1	100.0	119.1	3.10	9.78	90.22
1/4"	307.9	100.0	207.9	5.41	15.19	84.81
3/16"	151.9	100.0	51.9	1.35	16.54	83.46
2 MM	223.5	100.0	123.5	3.21	19.75	80.25
SOIL	3183.3	100.0	3083.3	80.25	100.00	0.00

% OF SAMPLE THAT IS
 COARSE FRAGMENTS :

19.75

% OF SAMPLE THAT IS
 SOIL :

80.25



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COMPANY NAME: Best Coal, Inc.

DATE SAMPLED: 11/10/2011

MINE NAME: Jagger Mine R-1

DATE ANALYZED: 11/15/2011

SOIL / OVERBURDEN: OB-1

ANALYZED BY: JRK

SAMPLE WEIGHT: 3542.4
 (GRAMS)

LAB ID: 7919

TOPSOIL VARIANCE SIEVE ANALYSIS

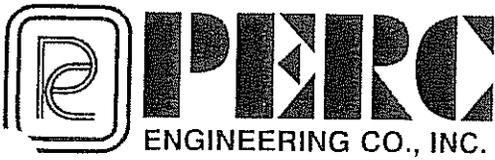
SIEVE NUMBER	WT. SIEVE + SAMPLE (GRAMS)	WT. SIEVE (GRAMS)	WT. SAMPLE RETAINED (GRAMS)	PERCENT RETAINED	CUMULATIVE PERCENT RETAINED	PERCENT PASSING
1"	314.3	100.0	214.3	6.81	6.81	93.19
1/2"	604.7	100.0	504.7	14.25	21.06	78.94
1/4"	626.1	100.0	526.1	14.85	35.91	64.09
3/16"	290.4	100.0	190.4	5.38	41.29	58.71
2 MM	462.0	100.0	362.0	10.22	51.51	48.49
SOIL	1817.7	100.0	1717.7	48.49	100.00	0.00

% OF SAMPLE THAT IS
 COARSE FRAGMENTS :

51.51

% OF SAMPLE THAT IS
 SOIL :

48.49



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COMPANY NAME: Best Coal, Inc.

DATE SAMPLED: 11/10/2011

MINE NAME: Jagger Mine R-1

DATE ANALYZED: 11/15/2011

SOIL / OVERBURDEN: OB-2

ANALYZED BY: JRK

SAMPLE WEIGHT: 4129.2
 (GRAMS)

LAB ID: 7920

TOPSOIL VARIANCE SIEVE ANALYSIS

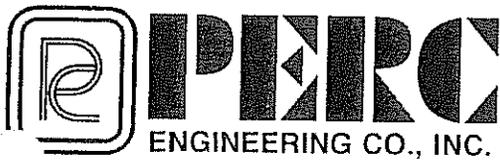
SIEVE NUMBER	WT. SIEVE + SAMPLE (GRAMS)	WT. SIEVE (GRAMS)	WT. SAMPLE RETAINED (GRAMS)	PERCENT RETAINED	CUMULATIVE PERCENT RETAINED	PERCENT PASSING
1"	431.4	100.0	331.4	8.03	8.03	91.97
1/2"	613.8	100.0	513.8	12.44	20.47	79.53
1/4"	658.3	100.0	558.3	13.52	33.99	66.01
3/16"	355.6	100.0	255.6	6.19	40.18	59.82
2 MM	580.4	100.0	480.4	11.63	51.81	48.19
SOIL	2089.9	100.0	1989.9	48.19	100.00	0.00

% OF SAMPLE THAT IS
 COARSE FRAGMENTS :

51.81

% OF SAMPLE THAT IS
 SOIL :

48.19



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COMPANY NAME: Best Coal, Inc.

DATE SAMPLED: 11/10/2011

MINE NAME: Jagger Mine R-1

DATE ANALYZED: 11/15/2011

SOIL / OVERBURDEN: OB-3

ANALYZED BY: JRK

SAMPLE WEIGHT: 4986.9
 (GRAMS)

LAB ID: 7921

TOPSOIL VARIANCE SIEVE ANALYSIS

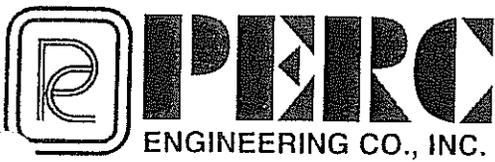
SIEVE NUMBER	WT. SIEVE + SAMPLE (GRAMS)	WT. SIEVE (GRAMS)	WT. SAMPLE RETAINED (GRAMS)	PERCENT RETAINED	CUMULATIVE PERCENT RETAINED	PERCENT PASSING
1"	240.1	100.0	140.1	2.81	2.81	97.19
1/2"	633.5	100.0	533.5	10.70	13.51	86.49
1/4"	1251.7	100.0	1151.7	23.09	36.60	63.40
3/16"	515.3	100.0	415.3	8.33	44.93	55.07
2 MM	967.2	100.0	867.2	17.39	62.32	37.68
SOIL	1979.1	100.0	1879.1	37.68	100.00	0.00

% OF SAMPLE THAT IS
 COARSE FRAGMENTS :

62.32

% OF SAMPLE THAT IS
 SOIL :

37.68



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COMPANY NAME: Best Coal, Inc.

DATE SAMPLED: 11/10/2011

MINE NAME: Jagger Mine R-1

DATE ANALYZED: 11/15/2011

SOIL / OVERBURDEN: OB-4

ANALYZED BY: JRK

SAMPLE WEIGHT: 4250.2
 (GRAMS)

LAB ID: 7922

TOPSOIL VARIANCE SIEVE ANALYSIS

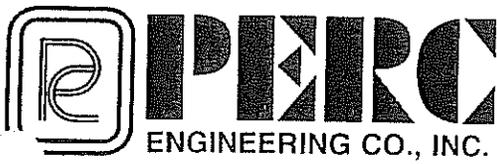
SIEVE NUMBER	WT. SIEVE + SAMPLE (GRAMS)	WT. SIEVE (GRAMS)	WT. SAMPLE RETAINED (GRAMS)	PERCENT RETAINED	CUMULATIVE PERCENT RETAINED	PERCENT PASSING
1"	310.3	100.0	210.3	4.95	4.95	95.05
1/2"	468.6	100.0	368.6	8.67	13.62	86.38
1/4"	572.2	100.0	472.2	11.11	24.73	75.27
3/16"	348.8	100.0	248.8	5.85	30.58	69.42
2 MM	493.4	100.0	393.4	9.26	39.84	60.16
SOIL	2656.9	100.0	2556.9	60.16	100.00	0.00

% OF SAMPLE THAT IS
 COARSE FRAGMENTS :

39.84

% OF SAMPLE THAT IS
 SOIL :

60.16



Telephone: (205) 384-5553
 Facsimile: (205) 295-3114 - Main Building
 (205) 295-3115 - Water Lab
 Web Address: www.percengineering.com

COMPANY NAME: Best Coal, Inc.

DATE SAMPLED: 11/10/2011

MINE NAME: Jagger Mine R-1

DATE ANALYZED: 11/15/2011

SOIL / OVERBURDEN: OB-5

ANALYZED BY: JRK

SAMPLE WEIGHT: 4413.2
 (GRAMS)

LAB ID: 7923

TOPSOIL VARIANCE SIEVE ANALYSIS

SIEVE NUMBER	WT. SIEVE + SAMPLE (GRAMS)	WT. SIEVE (GRAMS)	WT. SAMPLE RETAINED (GRAMS)	PERCENT RETAINED	CUMULATIVE PERCENT RETAINED	PERCENT PASSING
1"	375.2	100.0	275.2	6.24	6.24	93.76
1/2"	884.7	100.0	784.7	17.78	24.02	75.98
1/4"	870.9	100.0	770.9	17.47	41.49	58.51
3/16"	333.9	100.0	233.9	5.30	46.79	53.21
2 MM	556.8	100.0	456.8	10.35	57.14	42.86
SOIL	1991.7	100.0	1891.7	42.86	100.00	0.00

% OF SAMPLE THAT IS
 COARSE FRAGMENTS :

57.14

% OF SAMPLE THAT IS
 SOIL :

42.86



Report on Soil Test
Auburn University Soil Testing Laboratory
 Auburn University, AL 36849-5411



Perc Engineering Corp Inc
 P O Box 1712
 Jasper, AL 35502

County: Jefferson
 District: I

SOIL TEST RESULTS										RECOMMENDATIONS			
LAB No.	Test Date	Sample Designation	Crop	Soil Group	pH**	Phosphorus	Potassium	Magnesium	Calcium	LIME-STONE	N	P ₂ O ₅	K ₂ O
						P***	K***	Mg***	Ca***				
						Pounds/Acre							
03330	11/18/11	Best Coal P O 18970 7919 See Comment 1 See Comment 2	Revegetation	4	5.4	H 104	H 270	H 2225	H 3895	3.0	60	0	0
03331	11/18/11	7920 See Comment 1 See Comment 2	Revegetation	4	5.2	H 79	H 219	H 1658	H 1236	1.5	60	0	0
03332	11/18/11	7921 See Comment 2	Revegetation	4	6.0	L 36	H 208	H 1385	H 1663	0.0	60	50	0
03333	11/18/11	7922 See Comment 1 See Comment 2	Revegetation	4	5.3	H 101	H 192	H 961	H 1500	1.5	60	0	0
03334	11/18/11	7923 See Comment 2	Revegetation	4	6.8	L 31	H 244	H 1535	H 1546	0.0	60	60	0
03335	11/18/11	7924 See Comment 1 See Comment 2	Revegetation	4	4.5	M 46	M 124	H 328	H 505	2.0	60	40	40
03336	11/18/11	7925 See Comment 1 See Comment 2	Revegetation	4	4.0	VL 14	H 234	H 407	H 741	4.5	60	80	0

* 1. Sandy soil (CEC < 4.6 cmol_ckg⁻¹)
 * 2. Loams and Light clays (CEC = 4.6-9.0 cmol_ckg⁻¹)
 * 3. Clays and soils high in organic matter (CEC > 9.0 cmol_ckg⁻¹)
 * 4. Clays of the Blackbelt (CEC > 9.0 cmol_ckg⁻¹)
 ** 7.4 or higher - Alkaline ----- 6.6-7.3 - Neutral ----- 6.5 or lower - Acid ----- 5.5 or lower - Strong Acid
 *** Extractable nutrients in pounds per acre
 If soil group = 1, 2 or 3, Method of Analysis = Mehlich-1. If soil group = 4, Method of Analysis = Miss/Lancaster.

Approved by: *Aileen Huluka*



Report on Soil Test
Auburn University Soil Testing Laboratory
 Auburn University, AL 36849-5411



Perc Engineering Corp Inc
 P O Box 1712
 Jasper, AL 35502

County: Jefferson
 District: 1

SOIL TEST RESULTS										RECOMMENDATIONS			
LAB No.	Test Date	Sample Designation	Crop	Soil Group	pH**	Phosphorus	Potassium	Magnesium	Calcium	LIME-STONE	N	P ₂ O ₅	K ₂ O
						P***	K***	Mg***	Ca***				
Pounds/Acre										Tons/Acre	Pounds/Acre		
03337	11/18/11	7926 See Comment 1 See Comment 2	Revegetation	4	5.0	VL 3	M 151	H 270	H 520	2.0	60	100	40
03338	11/18/11	7927 See Comment 1 See Comment 2	Revegetation	4	4.4	VL 0	H 232	H 362	H 674	4.0	60	100	0

Comment No.1: Soil acidity (low pH) can be corrected with either dolomitic or calcitic lime.

Comment No.2: For perennial winter grass pasture, apply N, P, and K as recommended by September 1. Repeat N application in February. If grass is to be cut for hay, in February apply up to 40 pounds N and 35 pounds K₂O per ton of anticipated hay yield.

The number of samples processed in this report is: 9

For further information call your county agent: (205) 879-6964

* 1. Sandy soil (CEC < 4.6 cmol.kg⁻¹)

* 3. Clays and soils high in organic matter (CEC > 9.0 cmol.kg⁻¹)

* 2. Loams and Light clays (CEC = 4.6-9.0 cmol.kg⁻¹)

* 4. Clays of the Blackbelt (CEC > 9.0 cmol.kg⁻¹)

** 7.4 or higher - Alkaline ----- 6.6-7.3 - Neutral ----- 6.5 or lower - Acid ----- 5.5 or lower - Strong Acid

*** Extractable nutrients in pounds per acre

If soil group = 1, 2 or 3, Method of Analysis = Mehlich-1. If soil group = 4, Method of Analysis = Miss/Lancaster.

Approved by: *Aaron Hulube*



Mine Analysis Report

Auburn University

Soil Testing Lab



Perc Engineering Co., Inc.
 PO Box 1712
 Jasper, AL 35502

ALFA Agricultural Service & Research Building
 961 S. Donahue Dr.
 Auburn University, Auburn, AL 36849-5411
 Phone (334)844-3958
 SoilLab@auburn.edu

Mine Name and Location: Best Coal Inc Jagger Mine Revision R-1

Special Analysis #: 12.G0031-G0034

PO #: 18970

Lab I.D.	Sample I.D.	S	OM	NO ₃ -N	Neutralizing Potential	Particle Size			Textural Class	H ₂ O avail. cm/cm
						%	%	%		
3335	7924	0.0122	1.3	4.8	<1.0	57.50	22.50	20.00	sandy clay loam	0.11
3336	7925	0.0229	1.5	1.2	<1.0	15.00	35.00	50.00	clay	0.15
3337	7926	0.0256	2.1	3.1	<1.0	57.50	22.50	20.00	sandy clay loam	0.11
3338	7927	0.0283	1.4	0.9	<1.0	32.50	17.50	50.00	clay	0.12

DATE: 12-16-11



Mine Analysis Report

Auburn University

Soil Testing Lab



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 Jasper, AL 35502

ALFA Agricultural Service & Research Building
 961 S. Donahue Dr.
 Auburn University, Auburn, AL 36849-5411
 Phone (334)844-3958
 SoilLab@auburn.edu

Mine Name and Location: Best Coal Inc., Jagger Mine, Revision R-1 Special Analysis #: 12.G0026-G0030 PO #: 18970

Lab I.D.	Sample I.D.	OM %	NO ₃ -N ppm	Neutralizing Potential Tons CaCO ₃ /1000 Tons material	max pot. acid.	Soil Texture			H ₂ O avail. cm ³ /cm ³
						% Sand	% Silt	% Clay	
3330	7919	14.8	22.3	8.4	2.33	57.50	25.00	17.50	sandy loam 0.110
3331	7920	3.6	7.5	3.8	1.50	36.25	36.25	27.50	clay loam 0.140
3332	7921	4.1	1.6	3.6	1.41	56.25	21.25	22.50	sandy clay loam 0.110
3333	7922	2.9	5.2	2.6	0.90	52.50	25.00	22.50	sandy clay loam 0.110
3334	7923	2.5	2.0	3.4	1.91	50.00	27.50	22.50	sandy clay loam 0.120

MULTIPLE SULFUR ANALYSES

Lab I.D.	Sample I.D.	% 1st	% 2nd	% 3rd	% 4th	% Ave
3330	7919	0.0701	0.0747	0.0739	0.0792	0.0745
3331	7920	0.0474	0.0389	0.0616	0.0440	0.0480
3332	7921	0.0579	0.0382	0.0434	0.0416	0.0453
3333	7922	0.0300	0.0230	0.0233	0.0387	0.0288
3334	7923	0.0614	0.0578	0.0656	0.0595	0.0611

DATE: 12-16-11

Determination of the "Total Available Water Capacity."

Note: Soil & Overburden percentages taken from Appendix 2

SOILS (AVE):

SAMPLE NUMBER	PERCENT OF SAMPLE			
	<u>1"</u>	<u>½"</u>	<u>¼"</u>	<u>2mm</u>
Soil 29-1	1.05	10.29	22.65	20.56
Soil 29-2	0.00	3.48	6.59	9.15
Soil 29-3	0.00	0.97	2.71	5.44
Soil 40-1	6.68	3.10	5.41	4.56
AVE:	1.93	4.45	9.34	9.93

$$1.93\% \times .0389 \text{ in./in.} = .0008$$

$$4.45\% \times .0492 \text{ in./in.} = .0022$$

$$9.34\% \times .0603 \text{ in./in.} = .0056$$

$$9.93\% \times .1149 \text{ in./in.} = .0114$$

< 2mm average from Appendix 2: 74.35

Average available water capacity of < 2mm from Appendix 3 = .1225

$$74.35\% \times .1225 \text{ in./in.} = .0911$$

Ave. TAWC for soils = .1111 in./in.

OVERBURDEN (AVE.):

SAMPLE NUMBER	PERCENT OF SAMPLE			
	<u>1"</u>	<u>½"</u>	<u>¼"</u>	<u>2mm</u>
OB-1	6.81	14.25	14.85	15.60
OB-2	8.03	12.44	13.52	17.82
OB-3	2.81	10.70	23.09	25.72
OB-4	4.95	8.67	11.11	15.11
OB-5	6.24	17.78	17.47	15.65
AVE:	5.57	12.77	16.01	17.98

$$\begin{aligned}
 5.57\% \times .0389 \text{ in./in.} &= .0022 \\
 12.77\% \times .0492 \text{ in./in.} &= .0063 \\
 16.01\% \times .0603 \text{ in./in.} &= .0097 \\
 17.98\% \times .1149 \text{ in./in.} &= .0207
 \end{aligned}$$

< 2mm average from Appendix 2 = 47.67

Average available water capacity of < 2mm from Appendix 3 = .1180

$$47.67\% \times .1180 \text{ in./in.} = .0563$$

Ave. TAWC for overburden = .0952 in./in.

*Available water capacity values (in./in.) were obtained from Table 1 "A Method of Comparing Soil Materials for Plant Available Water" which was supplied by the Regulatory Authority.



Exhibit 1: Picture of Overburden Sampling site showing texture of overburden.



Exhibit 2: Another picture of Overburden Sampling site showing texture of overburden.



Exhibit 3: Picture of reclamation at an adjacent mine site showing revegetation success utilizing Black Creek overburden as a plant media.



Exhibit 4: Another picture of reclamation at an adjacent mine site showing revegetation success utilizing Black Creek overburden as a plant media

CERTIFICATION STATEMENT:

The preceding geologic information submitted in the Topsoil Variance Application prepared for Best Coal, Inc. at the Jagger Mine under Revision R-1 was by a qualified professional and I hereby certify that it is true and correct to the best of my knowledge or belief.

Date: _____

TIMOTHY S. THOMAS
PROFESSIONAL ENGINEER
LICENSE NO. 18830

OVERBURDEN RESTABILIZATION PLAN

All overburden shall be backfilled, compacted, and graded so that the post mining slope shall approximate the pre-mining slope (See Attachment IV-B-3) and in a timely manner (See Part IV-B-2). Overburden will be rough graded by Caterpillar type dozers. Once overburden has been rough graded, farm-type tractors will be used to disc the overburden to its final contour, decrease compaction, and increase the mechanical breakage of the surface layer. Rocks 24" in diameter that remain upon the surface, if any, will be collected and buried. At this time the following criteria will be used to evaluate the textural quality of the graded overburden:

- a) Rocks of a size greater than 10" shall not exceed 10% by weight of the substitute material.
- b) The substitute material shall not contain more than 15% by weight of materials between 10 and 3 inches in size.
- c) The substitute material shall not contain more than 50% by weight of materials between 3 and .75 inches in size.
- d) At least 30% by weight of the substitute material shall be of a size less than 2 millimeters.

If this criteria is not met, Best Coal, Inc. shall redisc the overburden and resample. If increasing the mechanical breakage will not enhance the graded overburden to a satisfactory level, rocks will be collected from the surface and buried and/or additional soil sized material will be hauled and spread on site until the above criteria is achieved.

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)

Once the texture criteria for final graded overburden has been met as outlined on Attachment IV-C-2, the final texture samples taken shall be sent to the Auburn University Soil Testing Laboratory where the following tests shall be conducted: % sand, silt, & clay, textural classification, pH, total sulfur, acid-base account, fertility ratings for phosphorus, potassium, and magnesium, and amendment recommendations for post mining revegetation for limestone, nitrogen, P_2O_5 and K_2O . Results of this analysis will be used to determine the amount of soil amendments, if any, to be applied to the plant medium and will be submitted to the Regulatory Authority for review.

Sampling frequency shall be 1 sample/20 acres. Overburden sampling for these areas shall be identical to the guidelines set forth in the "Sampling Technics" section of Attachment IV-C-2. .

- (2) Are selected overburden materials to be used as a supplement or substitute for topsoil?
(X) Yes () No

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

See Topsoil Variance Application (Attachment IV-C-2)