## ATTACHMENT II-E
## GEOLOGY

Quality Coal Co., Inc.'s - Sparks Branch Mine No. 2 site is located in Sections 14, 15, 22, and 23, Township 14 South, Range 8 West, Walker County, Alabama as seen from the Jasper, Alabama quadrangle (see Mine Site Location Map).

The proposed mine site will occupy approximately 447 acres of which approximately 432 acres will be mining area. Pre-law mining has occurred at many locations north, south and east of the proposed permit area. Several regulated surface mines are also in the area surrounding the proposed permit area. These mines include the Cherokee Mining - Dixie Mine (ASMC Permit # P-3793), the Quality Coal Co., Inc. - McCollum Mine (ASMC Permit # P-3876), the Uptown Motors, Inc. - McCollum Mine (ASMC Permit # P-3814), and the Quality Coal Co., Inc. - Sparks Branch Mine (ASMC Permit # 3907). An abandoned underground mine is located with in the proposed permit boundary. This pre-law underground mine was operated by the Hillard Coal Co. Additional underground mines, location unknown, exist within the permit and adjacent to the permit area as seen from the Oldworks present in QCS2DH-8. An existing highwall of the Mary Lee Seam is present within the permit area (see Previous Mining Map).

According to 'Depositional Settings of the Pottsville Formation in the Black Warrior Basin', structurally, this site is located within the Warrior Coal Basin. The strata which underlies and outcrops in this region 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 mine site includes sandstones, shales, underclays, and coal seams associated with the Mary Lee Coal Group. According to 'Depositional Settings of the Pottsville Formation in the Black Warrior Basin', the Mary Lee Group lies approximately 40 to 130 feet above the Black Creek Coal Group and from 140 to 400 feet below the Pratt Coal Group.

The target seams at this facility, in descending order, are the New Castle, Mary Lee, and Blue Creek Seams of the Mary Lee Coal Group. The Blue Creek Seam outcrops within the permit area at approximately 360 ft. MSL and averages approximately 15.2 inches thick. The Mary Lee Seam outcrops an average of approximately 12.9 ft. above the Blue Creek Seam and averages approximately 22.2 inches thick. The New Castle Seam outcrops an average of approximately 21 ft. above the Mary Lee Seam and averages 9.9 inches thick. The Jagger Coal Seam of the Mary Lee Group was not identified within the permit boundary during the drilling program.

The overburden above the Blue Creek Seam reaches a maximum thickness of approximately140 ft.

within the proposed permit area. Overburden above the Blue Creek Seam consists of, in descending order, surface material approximately 5 ft. thick, followed by an interval of weathered sand and clay approximately 5 ft. thick, followed by approximately 5 ft. of weathered sandstone and shale, followed by an interval of sandy shale approximately 25 ft. thick, followed by an interval of shale approximately 65 ft. thick, followed by the New Castle Seam. The New Castle Seam is approximately 12 inches thick and is underlain by an interval of shale approximately 4 ft. thick, followed by an interval of sandy shale approximately 15 ft. thick, followed by an interval of shale 0.6 ft. thick, followed by the Mary Lee Seam. The Mary Lee Seam is approximately 24 inches thick and is underlain by an interval of shale approximately 5 ft. thick, followed by an interval of sandy shale 8 ft. thick, followed by the Blue Creek Seam. The Blue Creek Seam is approximately 12 inches thick and is underlain by an interval of sandy shale 4.4 ft. thick. The above description was taken from QCS2MW-2, and is a result of site-specific drilling within the proposed permit area but is typical in nature and the intervals described above may vary in thickness or content depending upon their location within the permit area. It should be noted that the Blue Creek Seam does not exsist within approximately half of the proposed permit as shown on the attached Structure Contour Map.

Information utilized to describe the orientation, lithology, and geochemistry of the Sparks Branch Mine No. 2 and adjacent areas include geochemical analysis sites QCS2MW-2, QCS2MW-4, QCS2DH-6; monitoring wells QCS2MW-1, QCS2MW-3, QCS2MW-5; and exploratory drill holes QCS2DH-8, 15031C, 15010C, 15015C, 15014C, 15031C, 15024C, 15017C, 15036C, 15006C, 13981C, 15128C, 15131C, 15124C, 15130, 15123C, 15034C, 15040C, 15038, 15029C, and 15030C. The exploratory drill holes 15031C, 15010C, 15015C, 15014C, 15031C, 15024C, 15017C, 15036C,

15006C, 13981C, 15128C, 15131C, 15124C, 15130, 15123C, 15034C, 15040C, 15038, 15029C, and 15030C were drilled by Drummond Company, Inc. The only information used was surface elevation, depth to coal and seam thickness. This data was used in creating the Mary Lee and Blue Creek Structure Contour maps.

Drilling indicates there is a normal fault within and adjacent to the permit area. The location and orientation of the fault was determined from exploratory drilling conducted by the Drummond Company. The lateral extent of the fault is not known. The trend of the fault is from the Northwest to the Southeast at approximately N 26° W The displacement of the fault ranges from 40 ft. to 70 ft.

Personnel of PERC Engineering Co., Inc. drilled holes QCS2MW-1, QCS2MW-2, QCS2MW-3, QCS2MW-4, QCS2MW-5, QCS2DH-6, and QCS2DH-8 during August and November 2009 with a Drilltech D40K utilizing a 6 and 3/4 inch drill bit. Samples were collected from drill cuttings by personnel of PERC Engineering Co., Inc. every 5 ft. or change in lithology. Collected samples were cataloged and stored in plastic reclosable bags for later inspection and testing. These samples were transported to the PERC Engineering Laboratory. Lithologic logs were constructed from the drill cuttings by a Geologist. Samples collected from QCS2MW-2, QCS2MW-4, and QCS2DH-6 were utilized for geochemical analysis, including paste pH, total sulfur, and neutralization potential by the PERC Engineering Laboratory and conducted according to ASTM guidelines.

The average total sulfur content of the New Castle Coal Seam within and adjacent to the proposed permit area was analyzed as 1.77 percent. The average total sulfur content of the Mary Lee Coal

Seam within and adjacent to the proposed permit area was analyzed as 0.50 percent. The average total sulfur content of the Blue Creek Seam within and adjacent to the proposed permit area was analyzed as 2.40 percent. The total sulfur was analyzed by SGS.

Information provided in the geochemical analysis revealed that there are four intervals of potentially acid-forming materials present at this site. The four acid forming layers are 106 - 110 and 137.6 - 140.6 in QCS2MW-2, 100 - 105 in QCS2MW-4, and 121.8 - 125 in QCS2DH-6. The intervals from QCS2MW-2 and QCS2DH-6 are adjacent to a coal seam and the samples were found to be contaminated with coal. The interval from QCS2MW-4 is also adjacent to the coal seam and could have been contaminated from the adjacent coal seam, although no coal was observed. Due to the fact that all overburden at this site does not occupy similar areas, intervals shown in the attached results of geochemical analysis 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 Sparks Branch Mine No. 2 site, 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 geochemical analysis sites QCS2MW-2, QCS2MW-4, and QCS2DH-6 is favorable: overburden at the Sparks Branch Mine No. 2 contains 9.93 (tons $CaCO_3$/1000 tons overburden) excess neutralization potential. This excess neutralization potential in the overburden will neutralize any of the acid forming layers described above. Another important consideration is that previous mining on the Mary Lee Coal Group in the surrounding area and throughout Walker

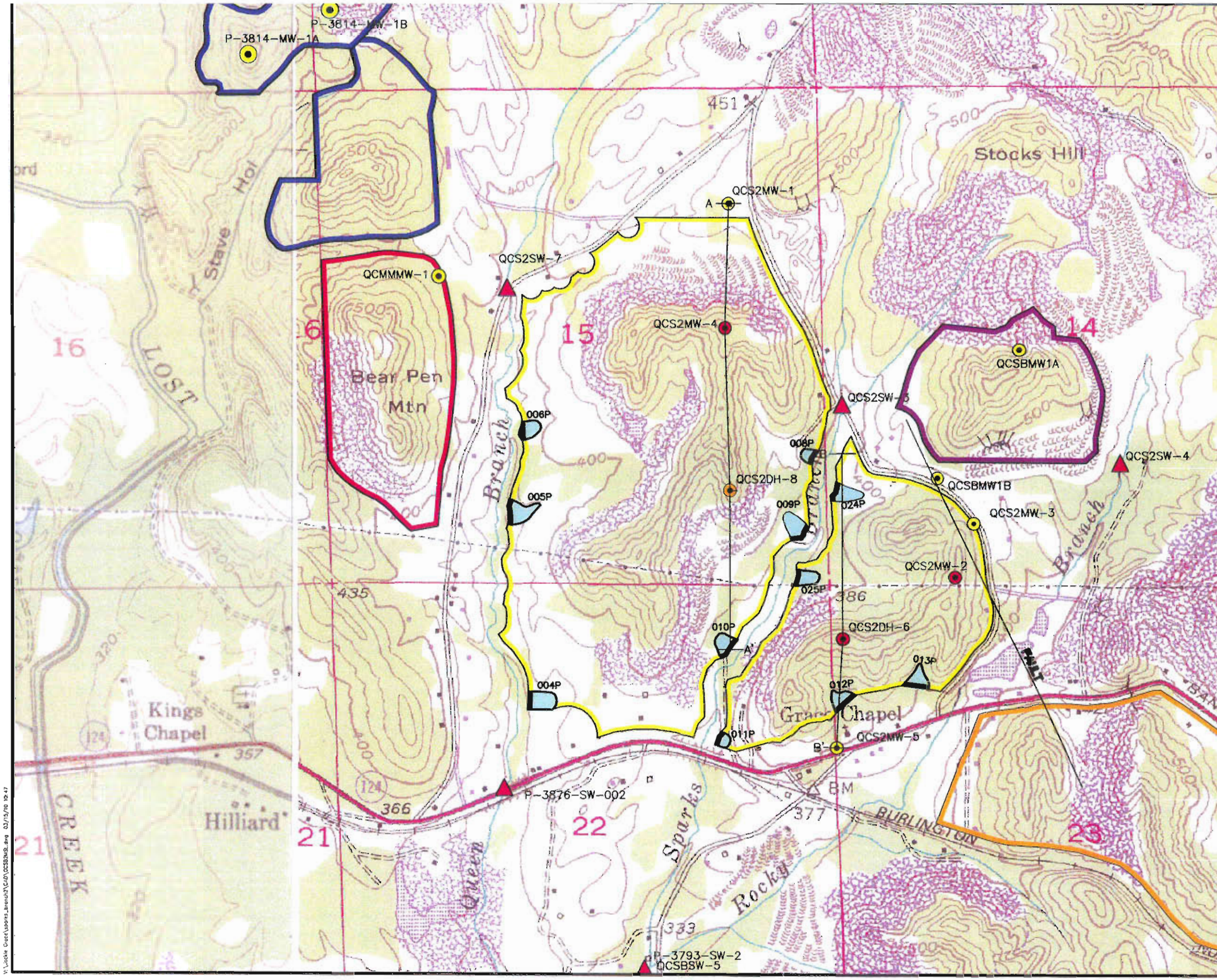
County has illustrated that the mining of this Coal Group has not historically created mine acid drainage problems.

The elevation of all drill holes drilled by PERC Engineering were estimated from the Jasper, Alabama USGS quadrangle. The elevation of the Drummond exploratory holes were determined by survey.

QCS2MW-4, QCS2MW-5, 15031C, 15010C, 15015C, 15014C, 15031C, 15024C, 15017C, 15036C, 15006C, 13981C, 15128C, 15131C, 15124C, 15130, 15123C, 15034C, 15040C, 15038, 15029C, and 15030C were utilized to construct the attached Structure-Contour Maps for the Mary Lee and Blue Creek Seams.

The strike of the Mary Lee Coal Seam within the permit area ranges from approximately N 88° E to N 64° W and the strata dips to the South at approximately 0.82°. The strike and dip of the local strata was determined by utilizing the Structure-Contour Map for the Mary Lee Seam.

Aquifers encountered which could be affected due to mining at this site are discussed in The Determination of Probable Hydrologic Consequences (Part II-H).




# MAP LEGEND

- Proposed Permit Area
- P-3876
- P-3814
- P-3907
- P-3793
- A — A' Fence Diagram
- QCS2MW-1 Graundwater Monitoring Site
- QCS2MW-2 Geochemical Analysis Site
- QCS2DH-8 Exploratory Drill Hole
- QCS2SW-3 Surface Water Monitoring Site

Scale 1" = 1000'

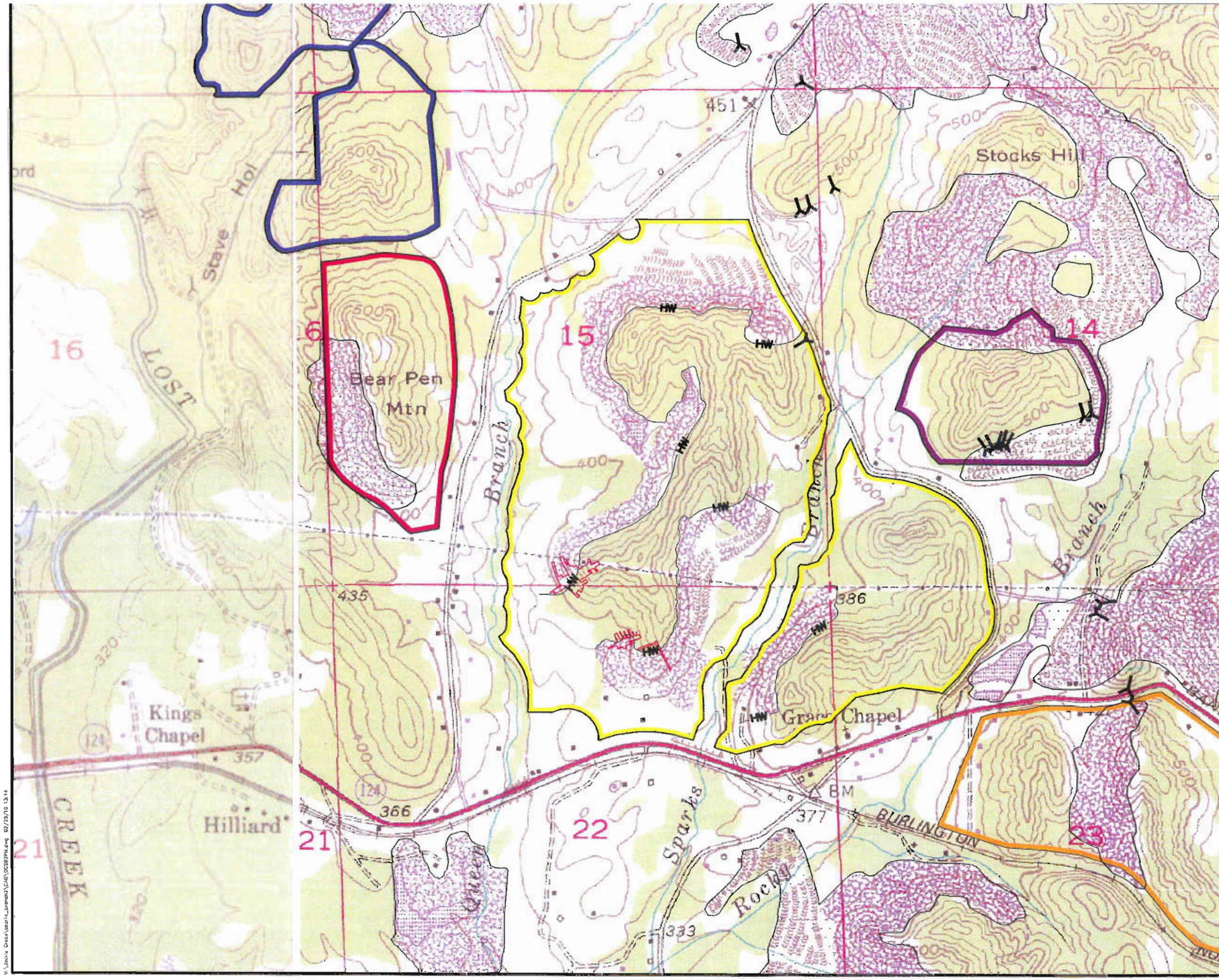
N

Base map taken from the Jasper and Townley, Alabama USGS Quadrangles.

PERC ENGINEERING CO., INC.

**Quality Coal Co., Inc.**
**Sparks Branch Mine No. 2**
**Mine Site Location Map**

| | | | |
|---|---|---|---|
| DRAWN BY: | JNG | DATE: | 3-12-10 |
| DWG. NAME: | QCSB2MSL | | |
| APPROVED BY: | TST | SCALE: | 1"=1000' |




# MAP LEGEND

- Proposed Permit Area
- P-3876
- P-3814
- P-3907
- P-3793
- Previously Disturbed
- Underground Mine Boundary
- Underground Mine Entry (estimated)
- HW — Existing Highwall

Scale 1" = 1000'

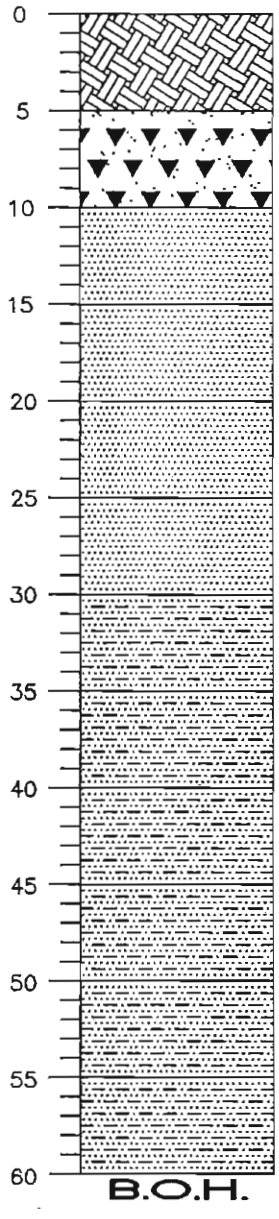
N

Base map taken from the Jasper and Townley, Alabama USGS Quadrangles.

PERC ENGINEERING CO., INC.

**Quality Coal Co., Inc.**
**Sparks Branch Mine No. 2**
**Previous Mining Map**

| | |
|---|---|
| DRAWN BY: JNG<br>DWG. NAME: QCSB2PM | DATE: 2-25-10 |
| APPROVED BY: TST | SCALE: 1"=1000' |




| INTERVAL: | DESCRIPTION: |
|---|---|
| 0 – 5 | No sample |
| 5 – 10 | Weathered, clay, sand, medium to dark orange |
| 10 – 15 | Sandstone, tan to medium gray, fine to coarse grained, soft to medium hard |
| 15 – 20 | Sandstone, light to medium gray, fine to coarse grained, soft to medium hard |
| 20 – 25 | Sandstone, light to medium gray, fine to coarse grained, soft to medium |
| 25 – 30 | Sandstone, light to medium gray, fine to coarse grained soft to medium |
| 30 – 35 | Sandstone with Shale, light to dark gray, soft to medium hard |
| 35 – 40 | Sandstone with Shale, light to dark gray, soft to medium hard |
| 40 – 45 | Sandstone with Shale, light to dark gray, soft to medium hard |
| 45 – 50 | Sandstone with Shale, light to dark gray, soft to medium hard |
| 50 – 55 | Sandstone with Shale, light to dark gray, soft to medium hard |
| 55 – 60 | Sandstone with Shale, light to dark gray, soft to medium hard |

SHEET 1 OF 1
DRILL: DRILLTECH D40K
SURFACE ELEVATION: ±453.00 ft. MSL

PERC ENGINEERING CO., INC.
1408 Highway 78 West Jasper, Alabama 35501
P.O. Box 1712 Jasper, Alabama 35502
(205) 384-8863 Office (205) 384-4411 Fax

**Quality Coal Co., Inc.**
**Sparks Branch Mine No. 2**
**Lithologic Description for**
**QCS2MW-1**

| | |
|---|---|
| DRAWN BY: JNG<br>DWG. NAME: QCSB2LITH | DATE: 11-23-09 |
| APPROVED BY: TST | SCALE: 1" = 10' vertical |

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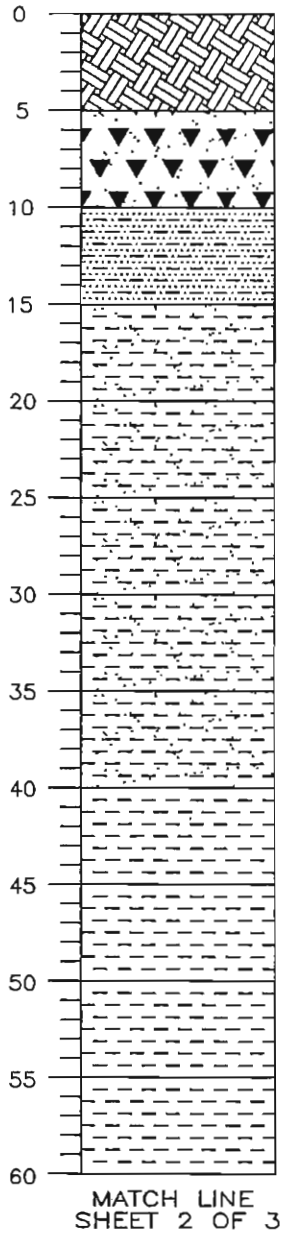


| INTERVAL: | DESCRIPTION: |
|---|---|
| 0 – 5 | Surface Material, clay, sand, light to medium orange, soft |
| 5 – 10 | Weathered sand and clay, light brown to dark orange, soft |
| 10 – 15 | Weathered Sandstone with Shale, light brown to dark orange, soft |
| 15 – 20 | Weathered sandy Shale, light brown, soft |
| 20 – 25 | Weathered sandy Shale, light brown, soft to medium hard |
| 25 – 30 | Sandy Shale, light to medium gray, soft to medium hard |
| 30 – 35 | Sandy Shale, light to dark gray, soft to medium hard |
| 35 – 40 | Sandy Shale, light to dark gray, soft to medium hard |
| 40 – 45 | Shale, light to dark gray, medium hard to hard |
| 45 – 50 | Shale, light to dark gray, medium hard to hard |
| 50 – 55 | Shale, light to dark gray, medium hard to hard |
| 55 – 60 | Shale, light to dark gray, medium hard to hard |

SHEET 1 OF 3
DRILL: DRILLTECH D40K
SURFACE ELEVATION: ±505.00 ft. MSL

PERC ENGINEERING CO., INC.
1806 Highway 78 West Jasper, Alabama 35501
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(205) 384-5810 Office (205) 384-5481 Fax

**Quality Coal Co., Inc.**
**Sparks Branch Mine No. 2**
**Lithologic Description for**
**QCS2MW-2**

| | |
|---|---|
| DRAWN BY: JNG<br>DWG. NAME: QCSB2LITH | DATE: 11-23-09 |
| APPROVED BY: TST | SCALE: 1" = 10' vertical |

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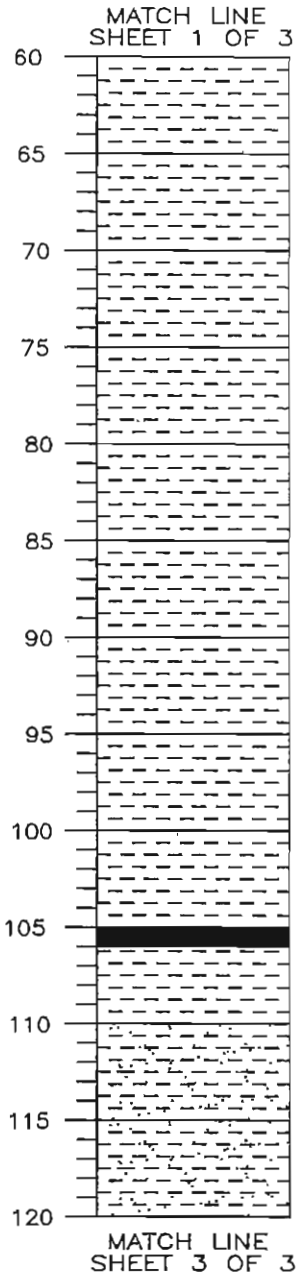


| INTERVAL: | DESCRIPTION: |
|---|---|
| 60 – 65 | Shale, light to dark gray, medium hard to hard |
| 65 – 70 | Shale, light to dark gray, medium hard to hard |
| 70 – 75 | Shale, light to dark gray, medium hard to hard |
| 75 – 80 | Shale, light to dark gray, medium hard to hard |
| 80 – 85 | Shale, light to dark gray, medium hard to hard |
| 85 – 90 | Shale, light to dark gray, medium hard to hard |
| 90 – 95 | Shale, light to dark gray, medium hard to hard |
| 95 – 100 | Shale, light to dark gray, medium hard to hard |
| 100 – 105 | Shale, light to dark gray, medium hard to hard |
| 105 – 106 | New Castle Seam (12 inches) |
| 106 – 110 | Shale, light to dark gray, medium hard to hard (contaminated with coal) |
| 110 – 115 | Sandy Shale, light to dark gray, medium hard to hard |
| 115 – 120 | Sandy Shale, light to dark gray, medium hard to hard |

SHEET 2 OF 3
DRILL: DRILLTECH D40K
SURFACE ELEVATION: ±505.00 ft. MSL

PERC ENGINEERING CO., INC.
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(205) 384-5813 Office (205) 384-6411 Fax

**Quality Coal Co., Inc.**
**Sparks Branch Mine No. 2**
**Lithologic Description for**
**QCS2MW-2**

| | |
|---|---|
| DRAWN BY: JNG<br>DWG. NAME: QCSB2LITH | DATE: 11-23-09 |
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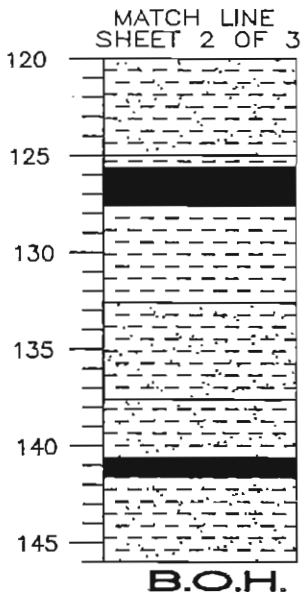


| INTERVAL: | DESCRIPTION: |
|---|---|
| 120 – 125 | Sandy Shale, light to dark gray, medium hard to hard |
| 125 – 125.6 | Shale, light to dark gray, medium hard to hard, contaminated with Coal |
| 125.6 – 127.6 | Mary Lee Seam (24 inches) |
| 127.6 – 132.6 | Shale, light to medium gray, medium hard to hard |
| 132.6 – 137.6 | Sandy Shale, light to medium gray, medium hard to hard |
| 137.6 – 140.6 | Sandy Shale, light to medium gray, medium hard to hard, (contaminated with Coal) |
| 140.6 – 141.6 | Blue Creek Seam (12 inches) |
| 141.6 – 146 | Sandy Shale, light to medium gray, hard |

SHEET 3 OF 3
DRILL: DRILLTECH D40K
SURFACE ELEVATION: ±505.00 ft. MSL

PERC ENGINEERING CO., INC.
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**Quality Coal Co., Inc.**
**Sparks Branch Mine No. 2**
**Lithologic Description for**
**QCS2MW-2**

| | |
|---|---|
| DRAWN BY: JNG<br>DWG. NAME: QCSB2LITH | DATE: 11-23-09 |
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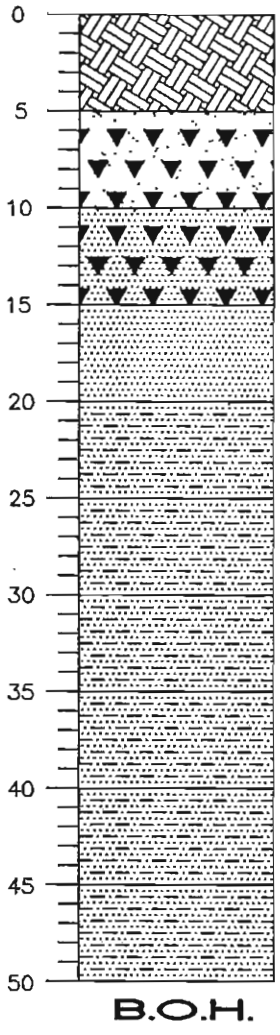


| INTERVAL: | DESCRIPTION: |
|---|---|
| 0 – 5 | Surface Material, clay, dark red |
| 5 – 10 | Weathered, sand, clay, light to medium clay |
| 10 – 15 | Weathered, Sandstone, clay, light orange to light gray, |
| 15 – 20 | Sandstone, light to medium gray, fine grained, soft to medium hard |
| 20 – 25 | Sandstone with Shale, light to medium gray, soft to medium hard |
| 25 – 30 | Sandstone with Shale, light to dark gray, soft to medium hard |
| 30 – 35 | Sandstone with Shale, light to dark gray, soft to medium hard |
| 35 – 40 | Sandstone with Shale, light to dark gray, soft to medium hard |
| 40 – 45 | Sandstone with Shale, light to dark gray, soft to medium hard |
| 45 – 50 | Sandstone with Shale, light to dark gray, soft to medium hard |

SHEET 1 OF 1
DRILL: DRILLTECH D40K
SURFACE ELEVATION: ±439.00 ft. MSL

PERC ENGINEERING CO., INC.

**Quality Coal Co., Inc.**
**Sparks Branch Mine No. 2**
**Lithologic Description for**
**QCS2MW-3**

| | |
|---|---|
| DRAWN BY: JNG<br>DWG. NAME: QCSB2LITH | DATE: 11-23-09 |
| APPROVED BY: TST | SCALE: 1" = 10' vertical |

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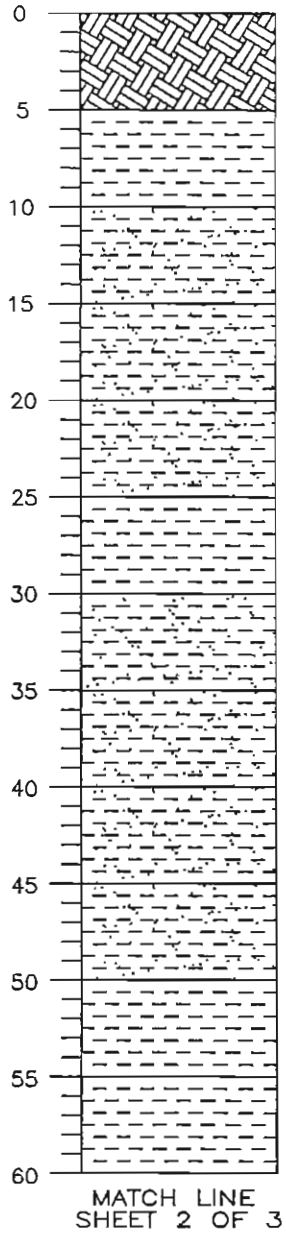


| INTERVAL: | DESCRIPTION: |
|---|---|
| 0 – 5 | Surface Material, sandy Shale, light to medium orange |
| 5 – 10 | Weathered, Shale, light to medium orange |
| 10 – 15 | Weathered sandy Shale, light to medium orange |
| 15 – 20 | Weathered sandy Shale, light to medium orange, medium hard to hard |
| 20 – 25 | Weathered sandy Shale, light to medium orange, hard |
| 25 – 30 | Shale, light to dark gray, medium hard to hard |
| 30 – 35 | Sandy Shale, light to dark gray, medium hard to hard |
| 35 – 40 | Sandy Shale, light to dark gray, medium hard to hard |
| 40 – 45 | Sandy Shale, light to dark gray, soft to medium hard |
| 45 – 50 | Sandy Shale, light to dark gray, soft to medium hard |
| 50 – 55 | Shale, light to dark gray, soft to medium hard |
| 55 – 60 | Shale, light to dark gray, soft to medium hard |

SHEET 1 OF 3
DRILL: DRILLTECH D40K
SURFACE ELEVATION: ±564.00 ft. MSL

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**Quality Coal Co., Inc.**
**Sparks Branch Mine No. 2**
**Lithologic Description for**
**QCSBMW-4**

| | | | |
|---|---|---|---|
| DRAWN BY: | JNG | DATE: | 11-23-09 |
| DWG. NAME: | QCSB2LITH | | |
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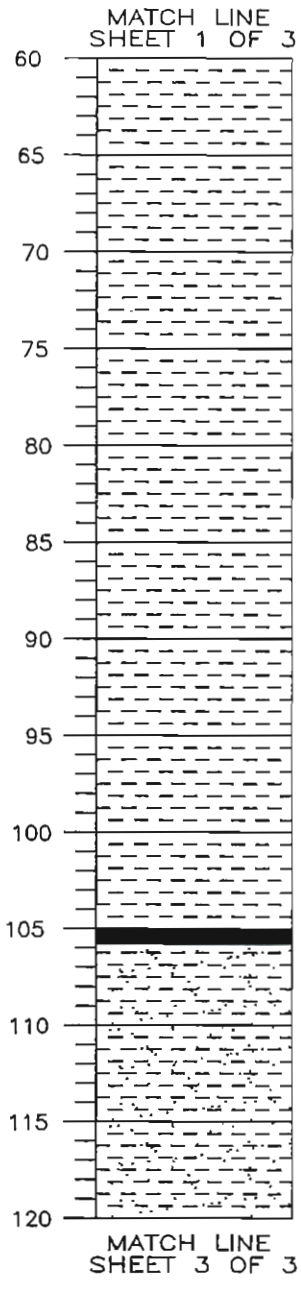


| INTERVAL: | DESCRIPTION: |
|---|---|
| 60 – 65 | Shale, light to dark gray, medium hard to hard |
| 65 – 70 | Shale, light to dark gray, medium hard to hard |
| 70 – 75 | Shale, light to dark gray, medium hard to hard |
| 75 – 80 | Shale, dark gray, hard |
| 80 – 85 | Shale, light to dark gray, hard |
| 85 – 90 | Shale, light to dark gray, hard |
| 90 – 95 | Shale, light to dark gray, medium hard to hard |
| 95 – 100 | Shale, light to dark gray, hard |
| 100 – 105 | Shale, light to dark gray, hard |
| 105 – 105.8 | New Castle Seam (9.6 inches) |
| 105.8 – 110 | Sandy Shale, light to dark gray, medium hard to hard |
| 110 – 115 | Sandy Shale, light to dark gray, hard |
| 115 – 120 | Sandy Shale, light to dark gray, hard |

SHEET 2 OF 3
DRILL: DRILLTECH D40K
SURFACE ELEVATION: ±564.00 ft. MSL

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**Quality Coal Co., Inc.**
**Sparks Branch Mine No. 2**
**Lithologic Description for**
**QCS2MW-4**

| | |
|---|---|
| DRAWN BY: JNG<br>DWG. NAME: QCSB2LITH | DATE: 11-23-09 |
| APPROVED BY: TST | SCALE: 1" = 10' vertical |

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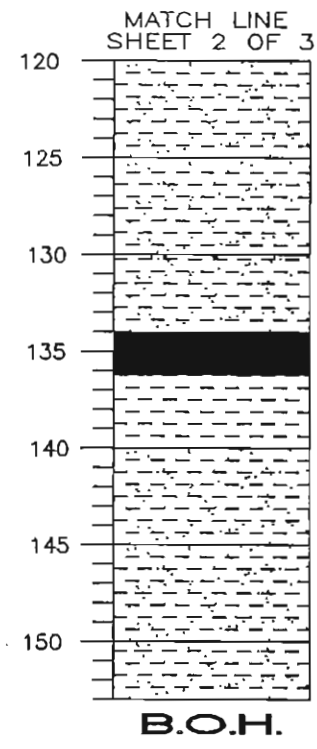


| INTERVAL: | DESCRIPTION: |
|---|---|
| 120 – 125 | Sandy Shale, light to dark gray, hard |
| 125 – 130 | Sandy Shale, light to dark gray, medium hard to hard |
| 130 – 134 | Sandy Shale, light to dark gray, medium hard to hard |
| 134 – 136.2 | Mary Lee Seam (26.4 inches) |
| 136.2 – 140 | Shale, medium to dark gray, medium hard to hard, contaminated with Coal |
| 140 – 145 | Sandy Shale, medium to dark gray, hard |
| 145 – 150 | Sandy Shale, light to medium gray, hard |
| 150 – 153 | Sandy Shale, light to medium gray, hard |

SHEET 3 OF 3
DRILL: DRILLTECH D40K
SURFACE ELEVATION: ±564.00 ft. MSL

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**Quality Coal Co., Inc.**
**Sparks Branch Mine No. 2**
**Lithologic Description for**
**QCS2MW-4**

| | |
|---|---|
| DRAWN BY: JNG<br>DWG. NAME: QCSB2LITH | DATE: 11-23-09 |
| APPROVED BY: TST | SCALE: 1" = 10' vertical |

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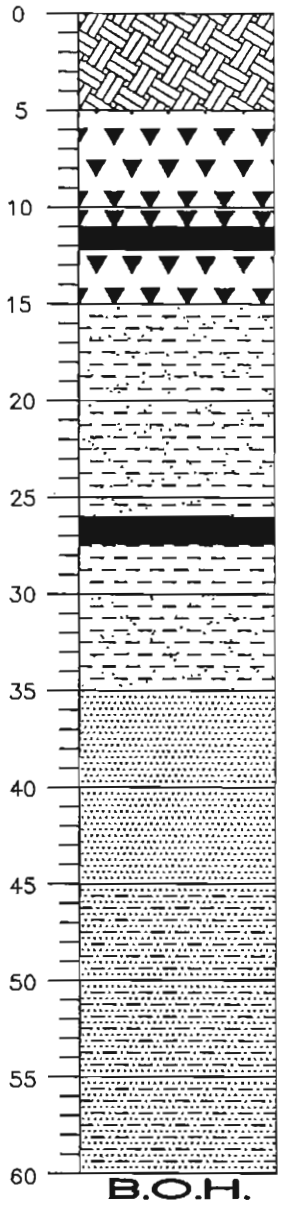


| INTERVAL: | DESCRIPTION: |
|---|---|
| 0 – 5 | Surface material, Shale, clay, weathered, light to medium orange |
| 5 – 10 | Weathered, clay, light to medium orange |
| 10 – 11 | Weathered, clay, light to medium orange |
| 11 – 12.2 | Mary Lee Seam (14.4 inches) |
| 12.2 – 15 | Fire clay, contaminated with Coal |
| 15 – 20 | Sandy Shale, light to medium gray, medium hard to hard |
| 20 – 25 | Sandy Shale, light to medium gray, medium hard to hard |
| 25 – 26 | Sandy Shale, light to medium gray, medium hard to hard |
| 26 – 27.4 | Blue Creek Seam (16.8 inches) |
| 27.4 – 30 | Shale, light to dark gray, medium hard to hard |
| 30 – 35 | Sandy Shale, light to dark gray, medium hard to hard |
| 35 – 40 | Sandstone, light to dark gray, fine, soft to medium hard |
| 40 – 45 | Sandstone, light to dark gray, fine, soft to medium hard |
| 45 – 50 | Sandstone with Shale, light to dark gray, fine, soft to medium hard |
| 50 – 55 | Sandstone with Shale, light to dark gray, medium hard to hard |
| 55 – 60 | Sandstone with Shale, light to dark gray, medium hard to hard |

SHEET 1 OF 1
DRILL: DRILLTECH D40K
SURFACE ELEVATION: ±399.00 ft. MSL

PERC ENGINEERING CO., INC.
1604 Highway 78 West Jasper, Alabama 35501
P.O. Box 1712 Jasper, Alabama 35502
(205) 384-2510 Office (205) 384-4811 Fax

**Quality Coal Co., Inc.**
**Sparks Branch Mine No. 2**
**Lithologic Description for**
**QCS2MW-5**

| | | | |
|---|---|---|---|
| DRAWN BY: | JNG | DATE: | 1–27–10 |
| DWG. NAME: | QCSB2LITH | | |
| APPROVED BY: | TST | SCALE: | 1" = 10' vertical |

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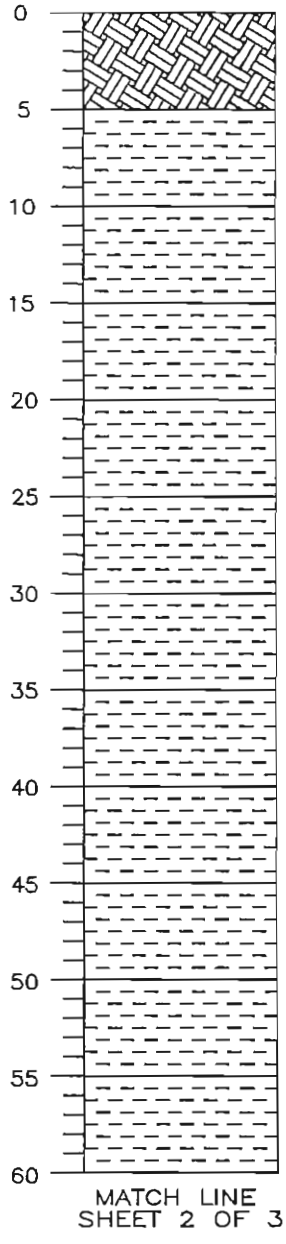


| INTERVAL: | DESCRIPTION: |
|---|---|
| 0 – 5 | Surface Material |
| 5 – 10 | Weathered Shale, light to medium orange, soft |
| 10 – 15 | Weathered Shale, light to medium orange, soft |
| 15 – 20 | Weathered Shale, light to medium orange, soft |
| 20 – 25 | Weathered Shale, light to medium orange, soft |
| 25 – 30 | Weathered Shale, light to medium orange, soft |
| 30 – 35 | Shale, light to medium gray, soft to medium hard |
| 35 – 40 | Shale, light to medium gray, soft to medium hard |
| 40 – 45 | Shale, light to medium gray, soft to medium hard |
| 45 – 50 | Shale, light to medium gray, soft to medium hard |
| 50 – 55 | Shale, light to medium gray, medium hard to hard |
| 55 – 60 | Shale, light to medium gray, medium hard to hard |

SHEET 1 OF 3
DRILL: DRILLTECH D40K
SURFACE ELEVATION: ± 527.00 ft. MSL

PERC ENGINEERING CO., INC.
1604 Highway 78 West Jasper, Alabama 35501
P.O. Box 1712 Jasper, Alabama 35502
(205) 384-8813 Office (205) 384-1411 Fax

**Quality Coal Co., Inc.**
**Sparks Branch Mine No. 2**
**Lithologic Description for**
**QCS2DH-6**

| | |
|---|---|
| DRAWN BY: JNG<br>DWG. NAME: QCSB2LITH | DATE: 11-24-09 |
| APPROVED BY: TST | SCALE: 1" = 10' vertical |

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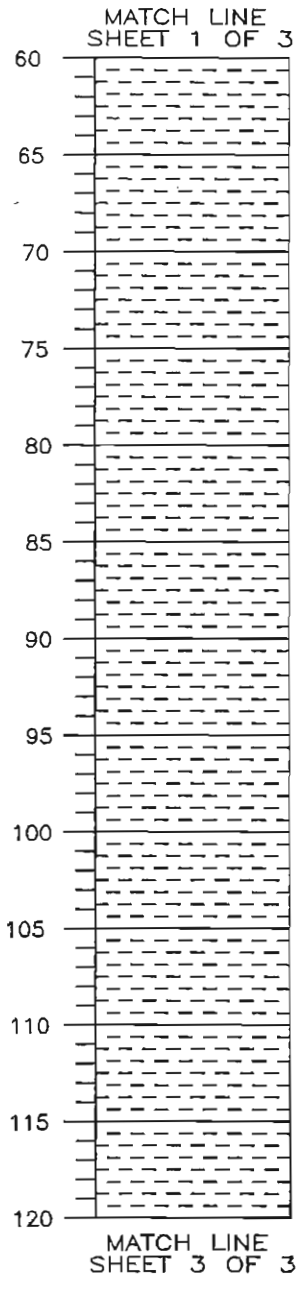


| INTERVAL: | DESCRIPTION: |
|---|---|
| 60 – 65 | Shale, light to medium gray, medium hard to hard |
| 65 – 70 | Shale, light to medium gray, medium hard to hard |
| 70 – 75 | Shale, light to dark gray, medium hard to hard |
| 75 – 80 | Shale, light to dark gray, medium hard to hard |
| 80 – 85 | Shale, light to dark gray, medium hard to hard |
| 85 – 90 | Shale, light to dark gray, medium hard to hard |
| 90 – 95 | Shale, light to dark gray, medium hard to hard |
| 95 – 100 | Shale, light to dark gray, medium hard to hard |
| 100 – 105 | Shale, light to dark gray, medium hard to hard |
| 105 – 110 | Shale, light to dark gray, medium hard to hard |
| 110 – 115 | Shale, light to dark gray, medium hard to hard |
| 115 – 120 | Shale, light to dark gray, medium hard to hard |

SHEET 2 OF 3
DRILL: DRILLTECH D40K
SURFACE ELEVATION: ± 527.00 ft. MSL

PERC ENGINEERING CO., INC.

**Quality Coal Co., Inc.**
**Sparks Branch Mine No. 2**
**Lithologic Description for**
**QCS2DH-6**

| | |
|---|---|
| DRAWN BY: JNG<br>DWG. NAME: QCSB2LITH | DATE: 11-24-09 |
| APPROVED BY: TST | SCALE: 1" = 10' vertical |

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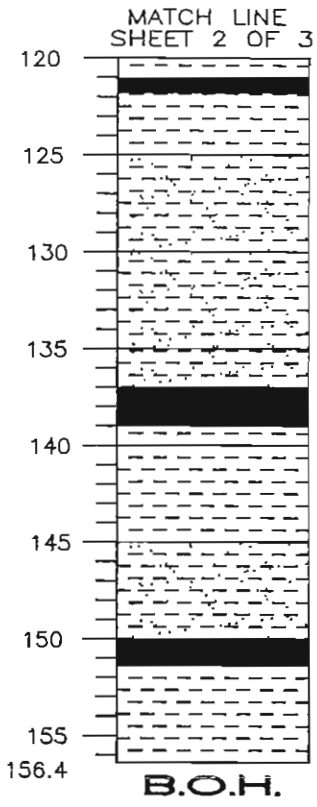


| INTERVAL: | DESCRIPTION: |
|---|---|
| 120 – 121 | Shale, light to dark gray, medium hard to hard |
| 121 – 121.8 | New Castle Seam ( 9.6 inches thick) |
| 121.8 – 125 | Shale, light to dark gray, medium hard to hard, contaminated with Coal (contaminated with coal) |
| 125 – 130 | Sandy Shale, light to dark gray, medium hard to hard |
| 130 – 135 | Sandy Shale, light to dark gray, medium hard to hard |
| 135 – 137 | Sandy Shale, light to dark gray, medium hard to hard |
| 137 – 139 | Mary Lee Seam (24 inches thick) |
| 139 – 140 | Shale, light to dark gray, medium hard to hard, contaminated with Coal |
| 140 – 145 | Shale, light to dark gray, medium hard to hard |
| 145 – 150 | Sandy Shale, light to dark gray, medium hard to hard, contaminated with Coal |
| 150 – 151.4 | Blue Creek Seam (16.8 inches thick) |
| 151.4 – 156.4 | Shale, medium to dark gray, medium hard to hard |

SHEET 3 OF 3
DRILL: DRILLTECH D40K
SURFACE ELEVATION: ± 527.00 ft. MSL

PERC ENGINEERING CO., INC.

**Quality Coal Co., Inc.**
**Sparks Branch Mine No. 2**
**Lithologic Description for**
**QCS2DH-6**

| | |
|---|---|
| DRAWN BY: JNG<br>DWG. NAME: QCSB2LITH | DATE: 11-24-09 |
| APPROVED BY: TST | SCALE: 1" = 10' vertical |

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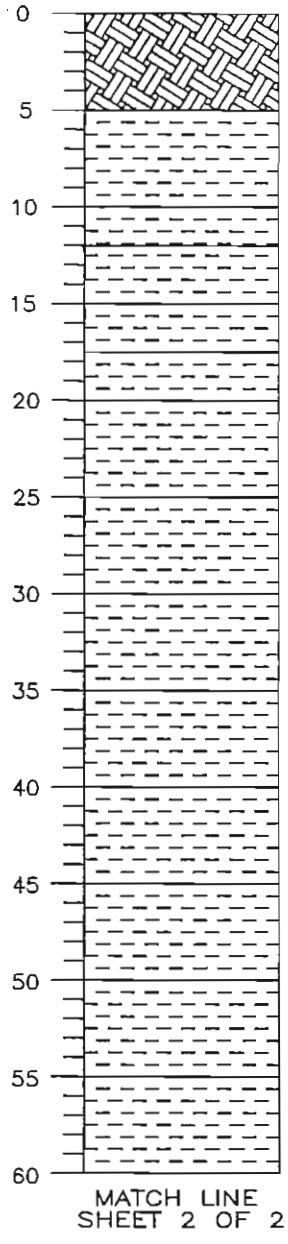


| INTERVAL: | DESCRIPTION: |
|---|---|
| 0 – 5 | Surface Material, sandy Shale, weathered, light to dark orange, soft |
| 5 – 10 | Weathered Shale, light to medium orange, soft |
| 10 – 12 | Weathered, Shale, light orange to light brown, soft |
| 12 – 15 | Gray Shale, Soft |
| 15 – 17.5 | Weathered, Shale, light orange to light brown, soft |
| 17.5 – 20 | Blue Shale, Soft |
| 20 – 25 | Shale, medium to dark gray, medium hard to hard |
| 25 – 30 | Shale, medium to dark gray, medium hard to hard |
| 30 – 35 | Shale, medium to dark gray, medium hard to hard |
| 35 – 40 | Shale, medium to dark gray, medium hard to hard |
| 40 – 45 | Shale, medium to dark gray, medium hard to hard |
| 45 – 50 | Shale, medium to dark gray, medium hard to hard |
| 50 – 55 | Shale, medium to dark gray, medium hard to hard |
| 55 – 60 | Shale, medium to dark gray, medium hard to hard |

SHEET 1 OF 2
DRILL: DRILLTECH D40K
SURFACE ELEVATION: ±498.00 ft. MSL

PERC ENGINEERING CO., INC.
1808 Highway 78 West Jasper, Alabama 35501
P.O. Box 1712 Jasper, Alabama 35502
(205) 384-5383 Office (205) 384-5481 Fax

**Quality Coal Co., Inc.**
**Sparks Branch Mine No. 2**
**Lithologic Description for**
**QCS2DH-8**

| | |
|---|---|
| DRAWN BY: JNG<br>DWG. NAME: QCSB2LITH | DATE: 11-24-09 |
| APPROVED BY: TST | SCALE: 1" = 10' vertical |

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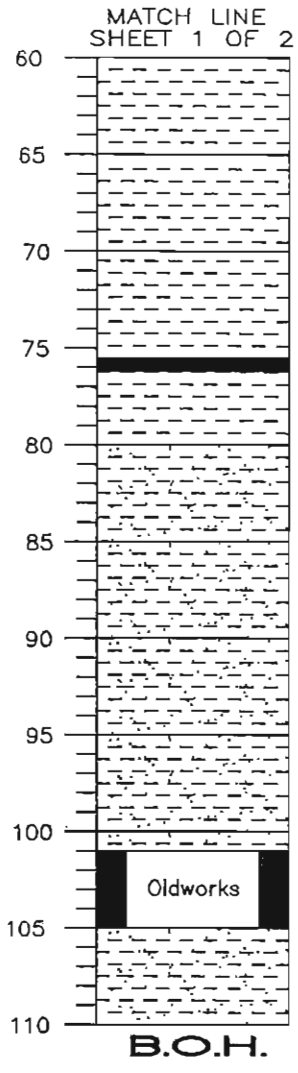


| INTERVAL: | DESCRIPTION: |
|---|---|
| 60 – 65 | Shale, dark gray, medium hard to hard |
| 65 – 70 | Shale, dark gray, medium hard to hard |
| 70 – 75.5 | Shale, dark gray, medium hard to hard |
| 75.5 – 76.2 | New Castle Seam ( 8.4 inches thick) |
| 76.2 – 80 | Shale, light to dark gray, medium hard to hard |
| 80 – 85 | Sandy Shale, light to medium gray, medium hard to hard |
| 85 – 90 | Sandy Shale, light to medium gray, medium hard to hard |
| 90 – 95 | Sandy Shale, light to medium gray, medium hard to hard |
| 95 – 100 | Sandy Shale, light to medium gray, medium hard to hard |
| 100 – 101 | Sandy Shale, light to medium gray, medium hard to hard |
| 101 – 105 | Oldworks (Mary Lee Seam) |
| 105 – 110 | Sandy Shale, light to medium gray, hard |

SHEET 2 OF 2
DRILL: DRILLTECH D40K
SURFACE ELEVATION: ±498.00 ft. MSL

PERC ENGINEERING CO., INC.
1604 Highway 78 West, Jasper, Alabama 35501
P.O. Box 1712 Jasper, Alabama 35502
(205) 384-5863 Office (205) 384-4481 Fax

**Quality Coal Co., Inc.**
**Sparks Branch Mine No. 2**
**Lithologic Description for**
**QCS2DH-8**

| | |
|---|---|
| DRAWN BY: JNG<br>DWG. NAME: QCSB2LITH | DATE: 11-24-09 |
| APPROVED BY: TST | SCALE: 1" = 10' vertical |

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PERC
ENGINEERING CO., INC.

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

COMPANY NAME: Quality Coal Inc.

MINE NAME: Sparks Branch No. 2

DRILL HOLE: QCS2MW-2

COLLECTED BY: JDC

DATE COLLECTED: 11/13/2009

ANALYZED BY: JLR

DATE ANALYZED: 02/01/2010

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 | 4.380 | 0.063 | 1.969 | 0.500 | -1.469 | N |
| 5.00 | 10.00 | 4.570 | 0.076 | 2.375 | 2.500 | 0.125 | N |
| 10.00 | 15.00 | 5.020 | 0.063 | 1.969 | 4.500 | 2.531 | N |
| 15.00 | 20.00 | 6.310 | 0.071 | 2.219 | 8.000 | 5.781 | N |
| 20.00 | 25.00 | 6.790 | 0.098 | 3.063 | 10.250 | 7.188 | N |
| 25.00 | 30.00 | 7.280 | 0.114 | 3.563 | 18.500 | 14.938 | N |
| 30.00 | 35.00 | 7.380 | 0.133 | 4.156 | 19.250 | 15.094 | N |
| 35.00 | 40.00 | 7.510 | 0.132 | 4.125 | 20.000 | 15.875 | N |
| 40.00 | 45.00 | 7.610 | 0.184 | 5.750 | 19.250 | 13.500 | N |
| 45.00 | 50.00 | 7.730 | 0.144 | 4.500 | 19.500 | 15.000 | N |
| 50.00 | 55.00 | 7.710 | 0.282 | 8.813 | 25.000 | 16.188 | N |
| 55.00 | 60.00 | 7.670 | 0.580 | 18.125 | 23.000 | 4.875 | N |
| 60.00 | 65.00 | 7.670 | 0.688 | 21.500 | 24.000 | 2.500 | N |
| 65.00 | 70.00 | 7.710 | 0.759 | 23.719 | 23.500 | -0.219 | N |
| 70.00 | 75.00 | 7.650 | 0.745 | 23.281 | 22.750 | -0.531 | N |
| 75.00 | 80.00 | 7.810 | 0.509 | 15.906 | 23.000 | 7.094 | N |
| 80.00 | 85.00 | 7.970 | 0.306 | 9.563 | 20.250 | 10.688 | N |
| 85.00 | 90.00 | 8.100 | 0.288 | 9.000 | 21.500 | 12.500 | N |
| 90.00 | 95.00 | 7.750 | 0.212 | 6.625 | 20.250 | 13.625 | N |
| 95.00 | 100.00 | 7.860 | 0.184 | 5.750 | 24.000 | 18.250 | N |
| 100.00 | 105.00 | 6.940 | 0.783 | 24.469 | 20.250 | -4.219 | ? |
| 105.00 | 106.00 Coal | | 2.300 | 71.875 Coal | | COAL | *** |
| 106.00 | 110.00 | 7.040 | 0.645 | 20.156 | 13.750 | -6.406 | Y |
| 110.00 | 115.00 | 7.440 | 0.422 | 13.188 | 16.500 | 3.313 | N |
| 115.00 | 120.00 | 7.840 | 0.188 | 5.875 | 19.000 | 13.125 | N |
| 120.00 | 125.00 | 7.960 | 0.248 | 7.750 | 18.000 | 10.250 | N |
| 125.00 | 125.60 | 8.010 | 0.260 | 8.125 | 22.250 | 14.125 | N |
| 125.60 | 127.60 Coal | | 0.565 | 17.656 Coal | | COAL | *** |
| 127.60 | 132.60 | 7.980 | 0.167 | 5.219 | 7.000 | 1.781 | N |
| 132.60 | 137.60 | 8.100 | 0.162 | 5.063 | 6.750 | 1.688 | N |
| 137.60 | 140.60 | 7.850 | 0.365 | 11.406 | 5.250 | -6.156 | Y |
| 140.60 | 141.60 Coal | | 3.660 | 114.375 Coal | | COAL | *** |
| 141.60 | 146.00 | 7.850 | 0.211 | 6.594 | 6.250 | -0.344 | N |
| **AVERAGE | | 5.553 | 0.301 | 9.411 | 16.173 | 6.762 | 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

PERC
ENGINEERING CO., INC.

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

COMPANY NAME: Quality Coal Inc.

MINE NAME: Sparks Branch No. 2

DRILL HOLE: QCS2MW-4

COLLECTED BY: JDC

DATE COLLECTED: 11/09/2009

ANALYZED BY: JLR

DATE ANALYZED: 11/11/2009

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 | 3.910 | 0.032 | 1.000 | 1.250 | 0.250 | N |
| 5.00 | 10.00 | 4.670 | 0.034 | 1.063 | 2.250 | 1.188 | N |
| 10.00 | 15.00 | 6.180 | 0.037 | 1.156 | 3.000 | 1.844 | N |
| 15.00 | 20.00 | 6.670 | 0.031 | 0.969 | 7.000 | 6.031 | N |
| 20.00 | 25.00 | 5.990 | 0.032 | 1.000 | 7.250 | 6.250 | N |
| 25.00 | 30.00 | 7.260 | 0.074 | 2.313 | 7.000 | 4.688 | N |
| 30.00 | 35.00 | 7.620 | 0.096 | 3.000 | 15.250 | 12.250 | N |
| 35.00 | 40.00 | 8.100 | 0.086 | 2.688 | 22.000 | 19.313 | N |
| 40.00 | 45.00 | 8.230 | 0.099 | 3.094 | 16.750 | 13.656 | N |
| 45.00 | 50.00 | 8.380 | 0.093 | 2.906 | 20.500 | 17.594 | N |
| 50.00 | 55.00 | 8.530 | 0.115 | 3.594 | 24.500 | 20.906 | N |
| 55.00 | 60.00 | 8.500 | 0.143 | 4.469 | 73.500 | 69.031 | N |
| 60.00 | 65.00 | 8.540 | 0.289 | 9.031 | 47.500 | 38.469 | N |
| 65.00 | 70.00 | 8.730 | 0.537 | 16.781 | 76.250 | 59.469 | N |
| 70.00 | 75.00 | 8.500 | 0.684 | 21.375 | 20.000 | -1.375 | N |
| 75.00 | 80.00 | 8.480 | 0.299 | 9.344 | 24.500 | 15.156 | N |
| 80.00 | 85.00 | 8.460 | 0.135 | 4.219 | 20.000 | 15.781 | N |
| 85.00 | 90.00 | 8.480 | 0.262 | 8.188 | 18.000 | 9.813 | N |
| 90.00 | 95.00 | 8.590 | 0.155 | 4.844 | 20.500 | 15.656 | N |
| 95.00 | 100.00 | 8.560 | 0.129 | 4.031 | 24.250 | 20.219 | N |
| 100.00 | 105.00 | 8.150 | 0.972 | 30.375 | 20.000 | -10.375 | Y |
| 105.00 | 105.80 Coal | | 1.090 | 34.063 Coal | | COAL | *** |
| 105.80 | 110.00 | 8.240 | 0.193 | 6.031 | 7.250 | 1.219 | N |
| 110.00 | 115.00 | 8.360 | 0.164 | 5.125 | 13.000 | 7.875 | N |
| 115.00 | 120.00 | 8.420 | 0.118 | 3.688 | 16.250 | 12.563 | N |
| 120.00 | 125.00 | 8.310 | 0.099 | 3.094 | 12.250 | 9.156 | N |
| 125.00 | 130.00 | 8.350 | 0.098 | 3.063 | 14.250 | 11.188 | N |
| 130.00 | 134.00 | 8.190 | 0.081 | 2.531 | 15.250 | 12.719 | N |
| 134.00 | 136.20 Coal | | 0.428 | 13.375 Coal | | COAL | *** |
| 136.20 | 140.00 | 8.150 | 0.093 | 2.906 | 9.750 | 6.844 | N |
| 140.00 | 145.00 | 8.150 | 0.126 | 3.938 | 8.000 | 4.063 | N |
| **AVERAGE | | 5.288 | 0.184 | 5.762 | 19.743 | 13.981 | 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

PERC ENGINEERING CO., INC.

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

COMPANY NAME: Quality Coal Inc.

MINE NAME: Sparks Branch No. 2

DRILL HOLE: QCS2DH-6

COLLECTED BY: JDC

DATE COLLECTED: 11/13/2009

ANALYZED BY: JLR

DATE ANALYZED: 02/08/2010

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 | 4.080 | 0.017 | 0.531 | 0.001 | -0.530 | N |
| 5.00 | 10.00 | 4.140 | 0.020 | 0.625 | 0.500 | -0.125 | N |
| 10.00 | 15.00 | 4.860 | 0.021 | 0.656 | 2.000 | 1.344 | N |
| 15.00 | 20.00 | 4.930 | 0.021 | 0.656 | 3.250 | 2.594 | N |
| 20.00 | 25.00 | 4.640 | 0.018 | 0.563 | 3.500 | 2.938 | N |
| 25.00 | 30.00 | 4.930 | 0.014 | 0.438 | 3.500 | 3.063 | N |
| 30.00 | 35.00 | 7.220 | 0.076 | 2.375 | 13.000 | 10.625 | N |
| 35.00 | 40.00 | 7.400 | 0.084 | 2.625 | 16.500 | 13.875 | N |
| 40.00 | 45.00 | 7.560 | 0.087 | 2.719 | 17.500 | 14.781 | N |
| 45.00 | 50.00 | 7.500 | 0.119 | 3.719 | 18.250 | 14.531 | N |
| 50.00 | 55.00 | 7.850 | 0.107 | 3.344 | 18.750 | 15.406 | N |
| 55.00 | 60.00 | 7.790 | 0.159 | 4.969 | 18.750 | 13.781 | N |
| 60.00 | 65.00 | 8.090 | 0.096 | 3.000 | 18.750 | 15.750 | N |
| 65.00 | 70.00 | 7.980 | 0.169 | 5.281 | 20.000 | 14.719 | N |
| 70.00 | 75.00 | 7.820 | 0.511 | 15.969 | 22.250 | 6.281 | N |
| 75.00 | 80.00 | 7.700 | 0.734 | 22.938 | 21.250 | -1.688 | N |
| 80.00 | 85.00 | 7.920 | 0.582 | 18.188 | 22.500 | 4.313 | N |
| 85.00 | 90.00 | 8.270 | 0.271 | 8.469 | 23.750 | 15.281 | N |
| 90.00 | 95.00 | 8.240 | 0.286 | 8.938 | 18.750 | 9.813 | N |
| 95.00 | 100.00 | 8.320 | 0.158 | 4.938 | 20.000 | 15.063 | N |
| 100.00 | 105.00 | 8.280 | 0.236 | 7.375 | 21.750 | 14.375 | N |
| 105.00 | 110.00 | 8.170 | 0.172 | 5.375 | 22.500 | 17.125 | N |
| 110.00 | 115.00 | 7.790 | 0.315 | 9.844 | 21.250 | 11.406 | N |
| 115.00 | 120.00 | 6.890 | 0.730 | 22.813 | 19.750 | -3.063 | N |
| 120.00 | 121.00 | 6.740 | 0.687 | 21.469 | 19.250 | -2.219 | N |
| 121.00 | 121.80 Coal | | 1.910 | 59.688 Coal | | COAL | *** |
| 121.80 | 125.00 | 6.010 | 0.693 | 21.656 | 8.500 | -13.156 | Y |
| 125.00 | 130.00 | 7.870 | 0.069 | 2.156 | 16.250 | 14.094 | N |
| 130.00 | 135.00 | 8.230 | 0.041 | 1.281 | 16.250 | 14.969 | N |
| 135.00 | 137.00 | 8.090 | 0.073 | 2.281 | 12.750 | 10.469 | N |
| 137.00 | 139.00 Coal | | 0.511 | 15.969 Coal | | COAL | *** |
| 139.00 | 140.00 | 8.380 | 0.110 | 3.438 | 11.750 | 8.313 | N |
| 140.00 | 145.00 | 8.370 | 0.094 | 2.938 | 6.250 | 3.313 | N |
| 145.00 | 150.00 | 8.270 | 0.049 | 1.531 | 6.250 | 4.719 | N |
| 150.00 | 151.40 Coal | | 1.130 | 35.313 Coal | | COAL | *** |
| 151.40 | 156.40 | 8.400 | 0.091 | 2.844 | 5.000 | 2.156 | N |
| **AVERAGE | | 5.147 | 0.196 | 6.138 | 14.282 | 8.144 | 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

P.O. Box 1712 • Jasper, Alabama 35502 • 1606 Highway 78 West • Jasper, Alabama 35501

Quality Coal
Sparks Branch 2

QC 52 MW-2

SGS

Date Received: 02/05/2010
Sampled By: Submitted Samples

**Analysis Summary Report**

| Sample Ident | Client ID | % Sulfur, AD |
|---|---|---|
| 1014833-001 | 0-5 | 0.063 |
| 1014833-002 | 5-10 | 0.076 |
| 1014833-003 | 10-15 | 0.063 |
| 1014833-004 | 15-20 | 0.071 |
| 1014833-005 | 20-25 | 0.098 |
| 1014833-006 | 25-30 | 0.114 |
| 1014833-007 | 30-35 | 0.133 |
| 1014833-008 | 35-10 | 0.132 |
| 1014833-009 | 40-45 | 0.184 |
| 1014833-010 | 45-50 | 0.144 |
| 1014833-011 | 50-55 | 0.282 |
| 1014833-012 | 55-60 | 0.580 |
| 1014833-013 | 60-65 | 0.688 |
| 1014833-014 | 65-70 | 0.759 |
| 1014833-015 | 70-75 | 0.745 |
| 1014833-016 | 75-80 | 0.509 |
| 1014833-017 | 80-85 | 0.306 |
| 1014833-018 | 85-90 | 0.288 |
| 1014833-019 | 90-95 | 0.212 |
| 1014833-020 | 95-100 | 0.184 |
| 1014833-021 | 100-105 | 0.783 |
| 1014833-022 | 105-106 | 2.300 |
| 1014833-023 | 106-110 | 0.645 |
| 1014833-024 | 110-115 | 0.422 |
| 1014833-025 | 115-120 | 0.188 |
| 1014833-026 | 120-125 | 0.248 |
| 1014833-027 | 125-125.6 | 0.260 |
| 1014833-028 | 125.6-127.6 | 0.565 |
| 1014833-029 | 127.6-132.6 | 0.167 |
| 1014833-030 | 132.6-137.6 | 0.162 |
| 1014833-031 | 137.6-140.6 | 0.365 |
| 1014833-032 | 140.6-141.6 | 3.66 |
| 1014833-033 | 141.6-146 | 0.211 |

Respectfully Submitted,

SGS North America, Inc.

Kentucky Coal
Sparks Branch #2

QC52 MW-4

SGS

Date Received: 01/21/2010
Sampled By: Submitted Samples

**Analysis Summary Report**

| Sample Ident | Client ID | % Sulfur, AD |
|---|---|---|
| 1014577-001 | 0-5 | 0.032 |
| 1014577-002 | 5-10 | 0.034 |
| 1014577-003 | 10-15 | 0.037 |
| 1014577-004 | 15-20 | 0.031 |
| 1014577-005 | 20-25 | 0.032 |
| 1014577-006 | 25-30 | 0.074 |
| 1014577-007 | 30-35 | 0.096 |
| 1014577-008 | 35-40 | 0.086 |
| 1014577-009 | 40-45 | 0.099 |
| 1014577-010 | 45-50 | 0.093 |
| 1014577-011 | 50-55 | 0.115 |
| 1014577-012 | 55-60 | 0.143 |
| 1014577-013 | 60-65 | 0.289 |
| 1014577-014 | 65-70 | 0.537 |
| 1014577-015 | 70-75 | 0.684 |
| 1014577-016 | 75-80 | 0.299 |
| 1014577-017 | 80-85 | 0.135 |
| 1014577-018 | 85-90 | 0.262 |
| 1014577-019 | 90-95 | 0.155 |
| 1014577-020 | 95-100 | 0.129 |
| 1014577-021 | 100-105 | 0.972 |
| 1014577-022 | 105-105.8 | 1.090 |
| 1014577-023 | 105.8-110 | 0.193 |
| 1014577-024 | 110-115 | 0.164 |
| 1014577-025 | 115-120 | 0.118 |
| 1014577-026 | 120-125 | 0.099 |
| 1014577-027 | 125-130 | 0.098 |
| 1014577-028 | 130-134 | 0.081 |
| 1014577-029 | 134-136.2 | 0.428 |
| 1014577-030 | 136.2-140 | 0.093 |
| 1014577-031 | 140-145 | 0.126 |

Respectfully Submitted,

SGS North America, Inc.

Quality Coal
Sparks Branch 2
DH-6

SGS

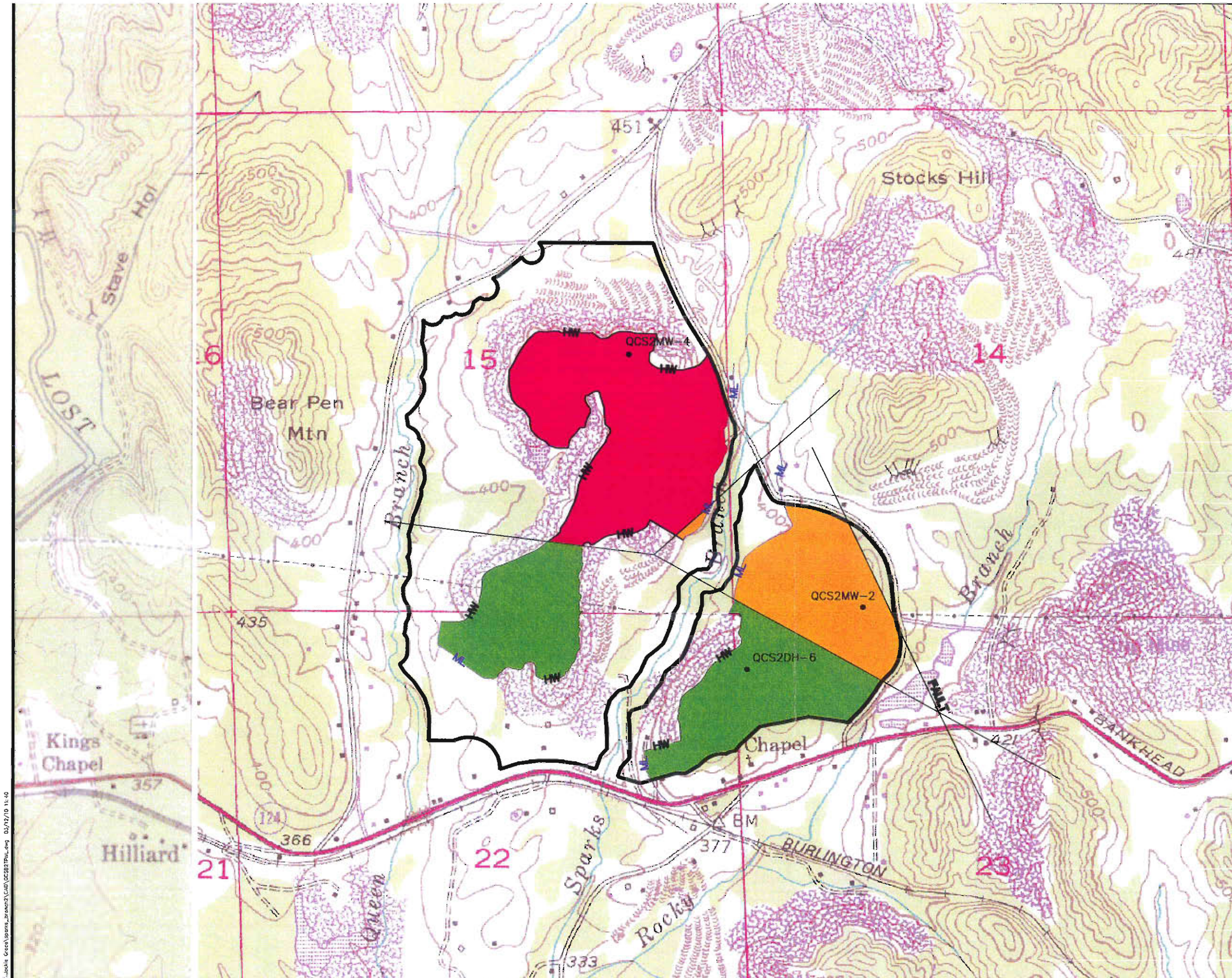
Date Received: 02/18/2010
Sampled By: Submitted Samples

**Analysis Summary Report**

| Sample Ident | Client ID | % Sulfur, AD |
|---|---|---|
| 1015049-001 | QCS2-DH-6 145-150 | 0.049 |
| 1015049-002 | QCS2 - DH-6 150-151.4 | 1.130 |
| 1015049-003 | QCS2-DH-6 151.4-156.4 | 0.091 |
| 1015049-004 | QCS2-DH-6 0-5 | 0.017 |
| 1015049-005 | QCS2-DH-6 5-10 | 0.020 |
| 1015049-006 | QCS2-DH-6 10-15 | 0.021 |
| 1015049-007 | QCS2-DH-6 15-20 | 0.021 |
| 1015049-008 | QCS2-DH-6 20-25 | 0.018 |
| 1015049-009 | QCS2-DH-6 25-30 | 0.014 |
| 1015049-010 | QCS2-DH-6 30-35 | 0.076 |
| 1015049-011 | QCS2-DH-6 35-40 | 0.084 |
| 1015049-012 | QCS2-DH-6 40-45 | 0.087 |
| 1015049-013 | QCS2-DH-6 45-50 | 0.119 |
| 1015049-014 | QCS2-DH-6 50-55 | 0.107 |
| 1015049-015 | QCS2-DH-6 55-60 | 0.159 |
| 1015049-016 | QCS2-DH-6 60-65 | 0.096 |
| 1015049-017 | QCS2-DH-6 65-70 | 0.169 |
| 1015049-018 | QCS2-DH-6 70-75 | 0.511 |
| 1015049-019 | QCS2-DH-6 75-80 | 0.734 |
| 1015049-020 | QCS2-DH-6 80-85 | 0.582 |
| 1015049-021 | QCS2-DH-6 85-90 | 0.271 |
| 1015049-022 | QCS2-DH-6 90-95 | 0.286 |
| 1015049-023 | QCS2-DH-6 95-100 | 0.158 |
| 1015049-024 | QCS2-DH-6 100-105 | 0.236 |
| 1015049-025 | QCS2-DH-6 105-110 | 0.172 |
| 1015049-026 | QCS2-DH-6 110-115 | 0.315 |
| 1015049-027 | QCS2-DH-6 115-120 | 0.730 |
| 1015049-028 | QCS2-DH-6 120-121 | 0.687 |
| 1015049-029 | QCS2-DH-6 121-121.8 | 1.910 |
| 1015049-030 | QCS2-DH-6 121.8-125 | 0.693 |
| 1015049-031 | QCS2-DH-6 125-130 | 0.069 |
| 1015049-032 | QCS2-DH-6 130-135 | 0.041 |
| 1015049-033 | QCS2-DH-6 135-137 | 0.073 |
| 1015049-034 | QCS2-DH-6 137-139 | 0.511 |
| 1015049-035 | QCS2-DH-6 139-140 | 0.11 |
| 1015049-036 | QCS2-DH-6 140-145 | 0.094 |

Respectfully Submitted,

SGS North America, Inc.




## MAP LEGEND

- Proposed Permit Area
- Overburden represented by QCS2MW-4
- Overburden represented by QCS2MW-2
- Overburden represented by QCS2DH-6
- ML — Mary Lee Seam Outcrop
- HW — Highwall

Scale 1" = 1000'

N

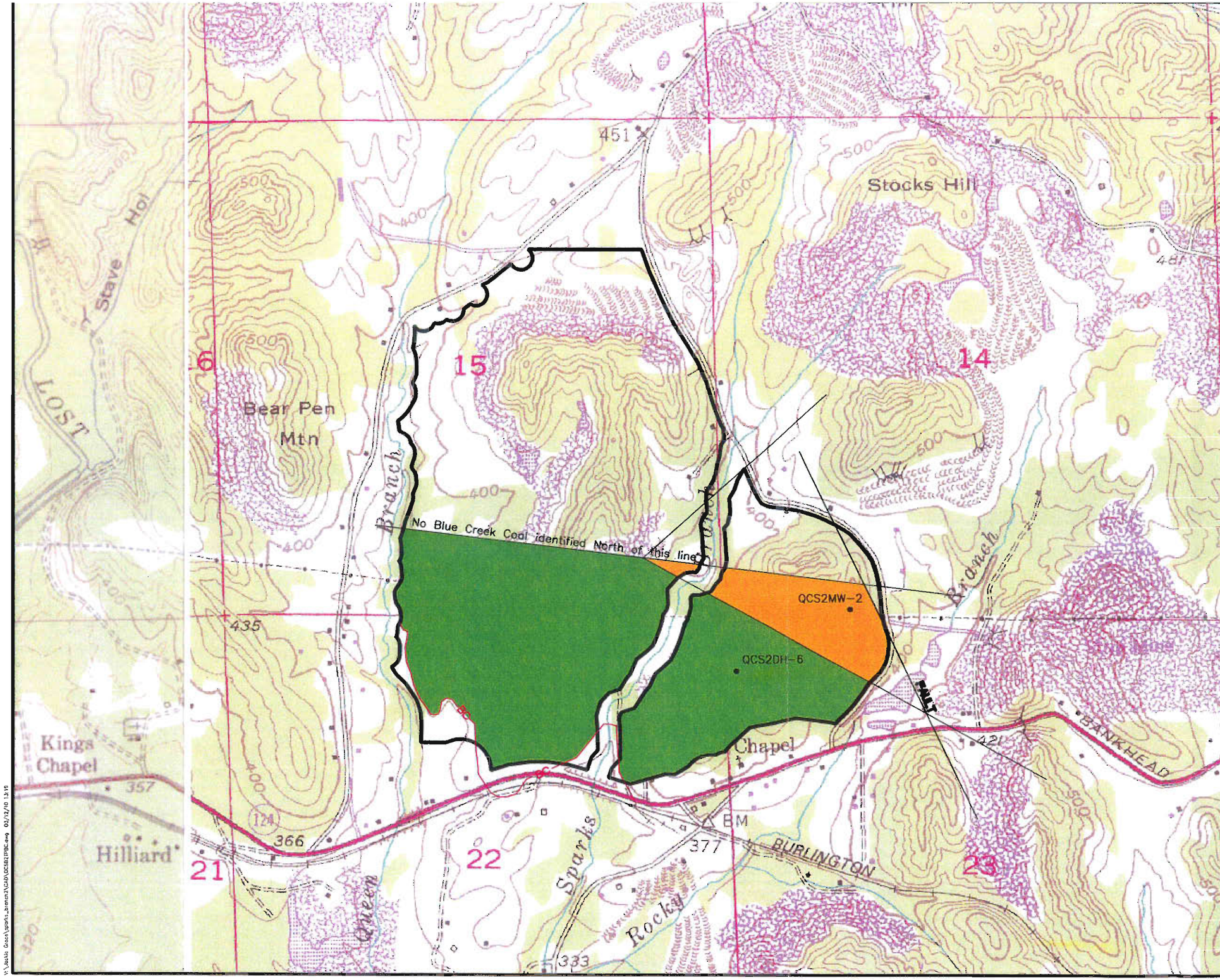
Note: Base map taken from the Jasper, Alabama and Townley, Alabama USGS Quadrangle.

PERC ENGINEERING CO., INC.

**Quality Coal Co., Inc.**
**Sparks Branch Mine No. 2**
**Theiseen Polygon Map**
**Mary Lee Seam**

| | | | |
|---|---|---|---|
| DRAWN BY: | JNG | DATE: | 3-12-10 |
| DWG. NAME: | QCSB2TPML | | |
| APPROVED BY: | TST | SCALE: | 1"=1000' |

Y:\Jackie Green\sparks_branch2\CAD\QCSB2TPML.dwg 03/12/10 11:40




# MAP LEGEND

- Proposed Permit Area
- Overburden represented by QCS2DH-6
- Overburden represented by QCS2MW-2
- BC — Blue Creek Seam Outcrop

Scale: 1" = 1000'

N

*Note: Base map taken from the Jasper, Alabama and Townley, Alabama USGS Quadrangle.*

PERC ENGINEERING CO., INC.

**Quality Coal Co., Inc.**
**Sparks Branch Mine No. 2**
**Theiseen Polygon Map**
**Blue Creek Seam**

| | | | |
|---|---|---|---|
| DRAWN BY: | JNG | DATE: | 3-12-10 |
| DWG. NAME: | QCSB2TPBC | | |
| APPROVED BY: | TST | SCALE: | 1"=1000' |

OVERBURDEN ANALYSIS SPREADSHEET

OPERATOR **Quality Coal Co., Inc.**

PERMIT NO: DRILL HOLE: **QCS2MW-2**

COUNTY: **Walker** TOWNSHIP:

| THRESHOLI | SULFUR | NP | FIZZ |
|---|---|---|---|
| VALUES: | 0 | 0.00 | 0 |

| | | | |
|---|---|---|---|
| CLAY | CL | 3450 | |
| SHALE | 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): |
| CARBONOLIT | 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 | CL | 0 | 0.06 | 0.50 | -1.47 | 1.66 | 3450 | 1.00 | 56.29 | 14.30 | -41.99 | 28592 |
| 10.00 | 5.00 | CL | 0 | 0.08 | 2.50 | 0.13 | 3.32 | 3450 | 1.00 | 135.81 | 142.96 | 7.15 | 57185 |
| 15.00 | 5.00 | SS | 0 | 0.06 | 4.50 | 2.53 | 4.97 | 3670 | 1.00 | 179.64 | 410.61 | 230.97 | 91247 |
| 20.00 | 5.00 | SH | 0 | 0.07 | 8.00 | 5.78 | 6.63 | 3700 | 1.00 | 272.14 | 981.25 | 709.11 | 122657 |
| 25.00 | 5.00 | SH | 0 | 0.10 | 10.25 | 7.19 | 8.29 | 3700 | 1.00 | 469.55 | 1571.54 | 1101.99 | 153321 |
| 30.00 | 5.00 | SH | 0 | 0.11 | 18.50 | 14.94 | 9.95 | 3700 | 1.00 | 655.45 | 3403.72 | 2748.28 | 183985 |
| 35.00 | 5.00 | SH | 0 | 0.13 | 19.25 | 15.09 | 11.60 | 3700 | 1.00 | 892.14 | 4132.00 | 3239.86 | 214649 |
| 40.00 | 5.00 | SH | 0 | 0.13 | 20.00 | 15.88 | 13.26 | 3700 | 1.00 | 1011.92 | 4906.27 | 3894.35 | 245313 |
| 45.00 | 5.00 | SH | 0 | 0.18 | 19.25 | 13.50 | 14.92 | 3700 | 1.00 | 1586.87 | 5312.57 | 3725.70 | 275978 |
| 50.00 | 5.00 | SH | 0 | 0.14 | 19.50 | 15.00 | 16.58 | 3700 | 1.00 | 1379.89 | 5979.52 | 4599.63 | 306642 |
| 55.00 | 5.00 | SH | 0 | 0.28 | 25.00 | 16.19 | 18.23 | 3700 | 1.00 | 2972.51 | 8432.65 | 5460.14 | 337306 |
| 60.00 | 5.00 | SH | 0 | 0.58 | 23.00 | 4.88 | 19.89 | 3700 | 1.00 | 6669.46 | 8463.32 | 1793.85 | 367970 |
| 65.00 | 5.00 | SH | 0 | 0.69 | 24.00 | 2.50 | 21.55 | 3700 | 1.00 | 8570.64 | 9567.23 | 996.59 | 398634 |
| 70.00 | 5.00 | SH | 0 | 0.76 | 23.50 | -0.22 | 23.21 | 3700 | 1.00 | 10182.43 | 10088.52 | -93.91 | 429299 |
| 75.00 | 5.00 | SH | 0 | 0.75 | 22.75 | -0.53 | 24.86 | 3700 | 1.00 | 10708.51 | 10464.15 | -244.36 | 459963 |
| 80.00 | 5.00 | SH | 0 | 0.51 | 23.00 | 7.09 | 26.52 | 3700 | 1.00 | 7804.04 | 11284.42 | 3480.38 | 490627 |
| 85.00 | 5.00 | SH | 0 | 0.31 | 20.25 | 10.69 | 28.18 | 3700 | 1.00 | 4984.85 | 10556.15 | 5571.30 | 521291 |
| 90.00 | 5.00 | SH | 0 | 0.29 | 21.50 | 12.50 | 29.84 | 3700 | 1.00 | 4967.60 | 11867.04 | 6899.44 | 551955 |
| 95.00 | 5.00 | SH | 0 | 0.21 | 20.25 | 13.63 | 31.49 | 3700 | 1.00 | 3859.85 | 11798.05 | 7938.19 | 582620 |
| 100.00 | 5.00 | SH | 0 | 0.18 | 24.00 | 18.25 | 33.15 | 3700 | 1.00 | 3526.38 | 14718.81 | 11192.43 | 613284 |
| 105.00 | 5.00 | SH | 0 | 0.78 | 20.25 | -4.22 | 34.81 | 3700 | 1.00 | 15756.60 | 13039.94 | -2716.66 | 643948 |
| 106.00 | 1.00 | CO | | 2.30 | 0.00 | -71.88 | 35.14 | 1800 | 0.17 | 754.66 | 0.00 | -754.66 | 10500 |
| 110.00 | 4.00 | SH | 0 | 0.65 | 13.75 | -6.41 | 36.47 | 3700 | 1.00 | 10878.12 | 7420.73 | -3457.39 | 539690 |
| 115.00 | 5.00 | SH | 0 | 0.42 | 16.50 | 3.31 | 38.12 | 3700 | 1.00 | 9300.83 | 11637.06 | 2336.23 | 705276 |
| 120.00 | 5.00 | SH | 0 | 0.19 | 19.00 | 13.13 | 39.78 | 3700 | 1.00 | 4323.65 | 13982.87 | 9659.22 | 735940 |
| 125.00 | 5.00 | SH | 0 | 0.25 | 18.00 | 10.25 | 41.44 | 3700 | 1.00 | 5941.19 | 13798.88 | 7857.70 | 766605 |
| 125.60 | 0.60 | SH | 0 | 0.26 | 22.25 | 14.13 | 41.64 | 3700 | 1.00 | 751.03 | 2056.66 | 1305.63 | 92434 |
| 127.60 | 2.00 | CO | | 0.57 | 0.00 | -17.66 | 42.30 | 1800 | 0.08 | 223.97 | 0.00 | -223.97 | 12685 |
| 132.60 | 5.00 | SH | 0 | 0.17 | 7.00 | 1.78 | 27.06 | 3700 | 1.00 | 2612.86 | 3504.68 | 891.81 | 500668 |
| 137.60 | 5.00 | SH | 0 | 0.16 | 6.75 | 1.69 | 28.08 | 3700 | 1.00 | 2630.21 | 3506.94 | 876.74 | 519547 |
| 140.60 | 3.00 | SH | 0 | 0.37 | 5.25 | -6.16 | 28.70 | 3700 | 1.00 | 3633.17 | 1672.25 | -1960.92 | 318525 |
| 141.60 | 1.00 | CO | | 3.66 | 0.00 | -114.38 | 28.90 | 1800 | 0.17 | 991.23 | 0.00 | -991.23 | 8667 |

| | | | | | | |
|---|---|---|---|---|---|---|
| TOTAL OVERBURDEN VOL.(ACRE-FT): | 3062 | | TOTAL (TONS): | 128683.47 | 204715.08 | 76031.60 | 11287001 |
| PERCENT SANDSTONE: | 1% | | TOTAL (TONS/THOUSAND): | 11.4010 | 18.1372 | 6.74 | |
| NP/MPA RATIO: | 1.59 | | | | | | |
| TONS/ACRE REQUIRED (1:1): | 2631 | EXCESS | | | | | |

OVERBURDEN ANALYSIS SPREADSHEET

OPERATOR **Quality Coal Co., Inc.**

PERMIT NO: DRILL HOLE: **QCS2MW-4**

COUNTY: **Walker** TOWNSHIP:

| THRESHOLI | SULFUR | NP | FIZZ |
|---|---|---|---|
| VALUES: | 0 | 0.00 | 0 |

| | | | |
|---|---|---|---|
| CLAY | CL | 3450 | |
| SHALE | 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): |
| CARBONOLIT | 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 | 0.03 | 1.25 | 0.25 | 2.86 | 3700 | 1.00 | 52.97 | 66.22 | 13.24 | 52974 |
| 10.00 | 5.00 | SH | 0 | 0.03 | 2.25 | 1.19 | 5.73 | 3700 | 1.00 | 112.57 | 238.38 | 125.81 | 105947 |
| 15.00 | 5.00 | SH | 0 | 0.04 | 3.00 | 1.84 | 8.59 | 3700 | 1.00 | 183.75 | 476.76 | 293.01 | 158921 |
| 20.00 | 5.00 | SH | 0 | 0.03 | 7.00 | 6.03 | 11.45 | 3700 | 1.00 | 205.27 | 1483.26 | 1277.99 | 211894 |
| 25.00 | 5.00 | SH | 0 | 0.03 | 7.25 | 6.25 | 14.32 | 3700 | 1.00 | 264.87 | 1920.29 | 1655.42 | 264868 |
| 30.00 | 5.00 | SH | 0 | 0.07 | 7.00 | 4.69 | 17.18 | 3700 | 1.00 | 735.01 | 2224.89 | 1489.88 | 317841 |
| 35.00 | 5.00 | SH | 0 | 0.10 | 15.25 | 12.25 | 20.04 | 3700 | 1.00 | 1112.44 | 5654.93 | 4542.48 | 370815 |
| 40.00 | 5.00 | SH | 0 | 0.09 | 22.00 | 19.31 | 22.91 | 3700 | 1.00 | 1138.93 | 9323.35 | 8184.42 | 423789 |
| 45.00 | 5.00 | SH | 0 | 0.10 | 16.75 | 13.66 | 25.77 | 3700 | 1.00 | 1474.98 | 7985.77 | 6510.78 | 476762 |
| 50.00 | 5.00 | SH | 0 | 0.09 | 20.50 | 17.59 | 28.63 | 3700 | 1.00 | 1539.54 | 10859.58 | 9320.04 | 529736 |
| 55.00 | 5.00 | SH | 0 | 0.12 | 24.50 | 20.91 | 31.50 | 3700 | 1.00 | 2094.11 | 14276.38 | 12182.27 | 582709 |
| 60.00 | 5.00 | SH | 1 | 0.14 | 73.50 | 69.03 | 34.36 | 3700 | 1.00 | 2840.71 | 46722.69 | 43881.98 | 635683 |
| 65.00 | 5.00 | SH | 1 | 0.29 | 47.50 | 38.47 | 37.22 | 3700 | 1.00 | 6219.43 | 32711.18 | 26491.75 | 688656 |
| 70.00 | 5.00 | SH | 1 | 0.54 | 76.25 | 59.47 | 40.09 | 3700 | 1.00 | 12445.48 | 56549.28 | 44103.81 | 741630 |
| 75.00 | 5.00 | SH | 0 | 0.68 | 20.00 | -1.38 | 42.95 | 3700 | 1.00 | 16984.65 | 15892.07 | -1092.58 | 794604 |
| 80.00 | 5.00 | SH | 0 | 0.30 | 24.50 | 15.16 | 45.81 | 3700 | 1.00 | 7919.55 | 20765.64 | 12846.09 | 847577 |
| 85.00 | 5.00 | SH | 0 | 0.14 | 20.00 | 15.78 | 48.68 | 3700 | 1.00 | 3799.20 | 18011.01 | 14211.82 | 900551 |
| 90.00 | 5.00 | SH | 0 | 0.26 | 18.00 | 9.81 | 51.54 | 3700 | 1.00 | 7806.98 | 17163.44 | 9356.46 | 953524 |
| 95.00 | 5.00 | SH | 0 | 0.16 | 20.50 | 15.66 | 54.41 | 3700 | 1.00 | 4875.22 | 20633.20 | 15757.98 | 1006498 |
| 100.00 | 5.00 | SH | 0 | 0.13 | 24.25 | 20.22 | 57.27 | 3700 | 1.00 | 4270.99 | 25692.18 | 21421.19 | 1059471 |
| 105.00 | 5.00 | SH | 0 | 0.97 | 20.00 | -10.38 | 60.13 | 3700 | 1.00 | 33790.51 | 22248.90 | -11541.62 | 1112445 |
| 105.80 | 0.80 | CO | | 1.09 | 0.00 | -34.06 | 60.59 | 1800 | 0.21 | 619.15 | 0.00 | -619.15 | 18177 |
| 110.00 | 4.20 | SH | 0 | 0.19 | 7.25 | 1.22 | 63.00 | 3700 | 1.00 | 5904.30 | 7097.40 | 1193.10 | 978952 |
| 115.00 | 5.00 | SH | 0 | 0.16 | 13.00 | 7.88 | 65.86 | 3700 | 1.00 | 6244.26 | 15839.10 | 9594.84 | 1218392 |
| 120.00 | 5.00 | SH | 0 | 0.12 | 16.25 | 12.56 | 68.72 | 3700 | 1.00 | 4688.16 | 20659.69 | 15971.53 | 1271366 |
| 125.00 | 5.00 | SH | 0 | 0.10 | 12.25 | 9.16 | 71.59 | 3700 | 1.00 | 4097.17 | 16223.16 | 12125.98 | 1324339 |
| 130.00 | 5.00 | SH | 0 | 0.10 | 14.25 | 11.19 | 74.45 | 3700 | 1.00 | 4218.02 | 19626.71 | 15408.69 | 1377313 |
| 134.00 | 4.00 | SH | 0 | 0.08 | 15.25 | 12.72 | 76.74 | 3700 | 1.00 | 2874.88 | 17320.24 | 14445.36 | 1135753 |
| 136.20 | 2.20 | CO | | 0.43 | 0.00 | -13.38 | 78.00 | 1800 | 0.08 | 312.94 | 0.00 | -312.94 | 23398 |
| | | | | | | | | | TOTAL (TONS): | 138826.06 | 427665.68 | 288839.62 | 19584583 |
| | | | | | | | | | TOTAL (TONS/THOUSAND): | 7.0885 | 21.8369 | 14.75 | |

TOTAL OVERBURDEN VOL.(ACRE-FT): 5305

PERCENT SANDSTONE: 0%

NP/MPA RATIO: 3.08

TONS/ACRE REQUIRED (1:1): 3703 EXCESS

OVERBURDEN ANALYSIS SPREADSHEET

OPERATOR **Quality Coal Co., Inc.**

PERMIT NO: DRILL HOLE: QCS2DH-6

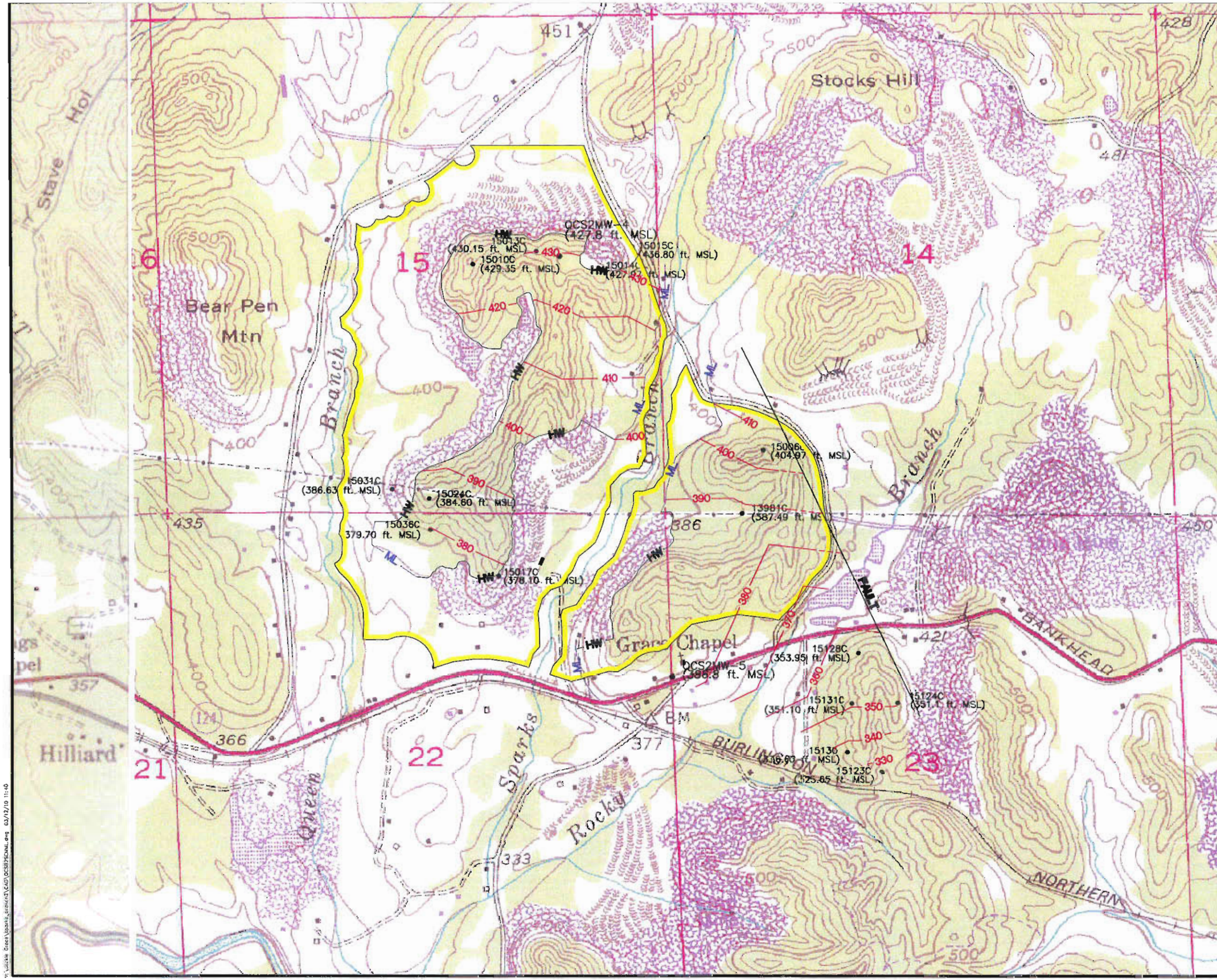
COUNTY: **Walker** TOWNSHIP:

| THRESHOLD VALUES: | SULFUR | NP | FIZZ |
|---|---|---|---|
| | 0 | 0.00 | 0 |

| | | | |
|---|---|---|---|
| CLAY | CL | 3450 | |
| SHALE | SH | 3700 | |
| SILTSTONE | ST | 3750 | ALK ADD(lns/ac CaCO3): |
| SANDSTONE | SS | 3670 | COAL SEAMS: |
| LIMESTONE | LS | 3670 | STATE PLANE ZONE: |
| COAL | CO | 1800 | FEET (NORTH/SOUTH): |
| CARBONOLIT | 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 | 0.02 | 0.00 | -0.53 | 5.94 | 3670 | 1.00 | 57.95 | 0.11 | -57.84 | 109082 |
| 10.00 | 5.00 | SH | 0 | 0.02 | 0.50 | -0.13 | 11.89 | 3700 | 1.00 | 137.47 | 109.97 | -27.49 | 219947 |
| 15.00 | 5.00 | SH | 0 | 0.02 | 2.00 | 1.34 | 17.83 | 3700 | 1.00 | 216.51 | 659.84 | 443.33 | 329921 |
| 20.00 | 5.00 | SH | 0 | 0.02 | 3.25 | 2.59 | 23.78 | 3700 | 1.00 | 288.68 | 1429.66 | 1140.98 | 439894 |
| 25.00 | 5.00 | SH | 0 | 0.02 | 3.50 | 2.94 | 29.72 | 3700 | 1.00 | 309.30 | 1924.54 | 1615.24 | 549868 |
| 30.00 | 5.00 | SH | 0 | 0.01 | 3.50 | 3.06 | 35.67 | 3700 | 1.00 | 288.68 | 2309.45 | 2020.76 | 659841 |
| 35.00 | 5.00 | SH | 0 | 0.08 | 13.00 | 10.63 | 41.61 | 3700 | 1.00 | 1828.31 | 10007.60 | 8179.29 | 769815 |
| 40.00 | 5.00 | SH | 0 | 0.08 | 16.50 | 13.88 | 47.56 | 3700 | 1.00 | 2309.45 | 14516.51 | 12207.07 | 879789 |
| 45.00 | 5.00 | SH | 0 | 0.09 | 17.50 | 14.78 | 53.50 | 3700 | 1.00 | 2690.92 | 17320.84 | 14629.92 | 989762 |
| 50.00 | 5.00 | SH | 0 | 0.12 | 18.25 | 14.53 | 59.45 | 3700 | 1.00 | 4089.64 | 20070.18 | 15980.54 | 1099736 |
| 55.00 | 5.00 | SH | 0 | 0.11 | 18.75 | 15.41 | 65.39 | 3700 | 1.00 | 4044.97 | 22682.05 | 18637.09 | 1209709 |
| 60.00 | 5.00 | SH | 0 | 0.16 | 18.75 | 13.78 | 71.33 | 3700 | 1.00 | 6557.17 | 24744.06 | 18186.88 | 1319683 |
| 65.00 | 5.00 | SH | 0 | 0.10 | 18.75 | 15.75 | 77.28 | 3700 | 1.00 | 4288.97 | 26806.06 | 22517.09 | 1429657 |
| 70.00 | 5.00 | SH | 0 | 0.17 | 20.00 | 14.72 | 83.22 | 3700 | 1.00 | 8131.17 | 30792.60 | 22661.43 | 1539630 |
| 75.00 | 5.00 | SH | 0 | 0.51 | 22.25 | 6.28 | 89.17 | 3700 | 1.00 | 26342.11 | 36703.68 | 10361.57 | 1649604 |
| 80.00 | 5.00 | SH | 0 | 0.73 | 21.25 | -1.69 | 95.11 | 3700 | 1.00 | 40360.30 | 37391.02 | -2969.29 | 1759577 |
| 85.00 | 5.00 | SH | 0 | 0.58 | 22.50 | 4.31 | 101.06 | 3700 | 1.00 | 34002.46 | 42064.89 | 8062.44 | 1869551 |
| 90.00 | 5.00 | SH | 0 | 0.27 | 23.75 | 15.28 | 107.00 | 3700 | 1.00 | 16764.10 | 47013.71 | 30249.61 | 1979524 |
| 95.00 | 5.00 | SH | 0 | 0.29 | 18.75 | 9.81 | 112.95 | 3700 | 1.00 | 18674.89 | 39178.09 | 20503.20 | 2089498 |
| 100.00 | 5.00 | SH | 0 | 0.16 | 20.00 | 15.06 | 118.89 | 3700 | 1.00 | 10859.89 | 43989.43 | 33129.54 | 2199472 |
| 105.00 | 5.00 | SH | 0 | 0.24 | 21.75 | 14.38 | 124.83 | 3700 | 1.00 | 17032.16 | 50230.43 | 33198.27 | 2309445 |
| 110.00 | 5.00 | SH | 0 | 0.17 | 22.50 | 17.13 | 130.78 | 3700 | 1.00 | 13004.38 | 54436.92 | 41432.55 | 2419419 |
| 115.00 | 5.00 | SH | 0 | 0.32 | 21.25 | 11.41 | 136.72 | 3700 | 1.00 | 24898.71 | 53749.59 | 28850.88 | 2529392 |
| 120.00 | 5.00 | SH | 0 | 0.73 | 19.75 | -3.06 | 142.67 | 3700 | 1.00 | 60210.54 | 52127.48 | -8083.06 | 2639366 |
| 121.00 | 1.00 | SH | 0 | 0.69 | 19.25 | -2.22 | 143.86 | 3700 | 1.00 | 11427.22 | 10246.24 | -1180.98 | 532272 |
| 121.80 | 0.80 | CO | | 1.91 | 0.00 | -59.69 | 144.81 | 1800 | 0.09 | 1151.28 | 0.00 | -1151.28 | 19288 |
| 125.00 | 3.20 | SH | 0 | 0.69 | 8.50 | -13.16 | 148.61 | 3700 | 1.00 | 38105.85 | 14956.41 | -23149.44 | 1759577 |
| 130.00 | 5.00 | SH | 0 | 0.07 | 16.25 | 14.09 | 154.56 | 3700 | 1.00 | 6165.39 | 46463.84 | 40298.44 | 2859313 |
| 135.00 | 5.00 | SH | 0 | 0.04 | 16.25 | 14.97 | 160.50 | 3700 | 1.00 | 3804.40 | 48250.91 | 44446.51 | 2969287 |
| 137.00 | 2.00 | SH | 0 | 0.07 | 12.75 | 10.47 | 162.88 | 3700 | 1.00 | 2749.61 | 15367.71 | 12618.09 | 1205310 |
| 139.00 | 2.00 | CO | | 0.51 | 0.00 | -15.97 | 165.26 | 1800 | 0.08 | 791.66 | 0.00 | -791.66 | 49575 |
| 140.00 | 1.00 | SH | 0 | 0.11 | 11.75 | 8.31 | 166.45 | 3700 | 1.00 | 2116.99 | 7236.26 | 5119.27 | 615852 |
| 145.00 | 5.00 | SH | 0 | 0.09 | 6.25 | 3.31 | 172.39 | 3700 | 1.00 | 9368.37 | 19932.71 | 10564.34 | 3189234 |
| 150.00 | 5.00 | SH | 0 | 0.05 | 6.25 | 4.72 | 178.34 | 3700 | 1.00 | 5051.91 | 20620.05 | 15568.13 | 3299207 |
| 151.40 | 1.40 | CO | | 1.13 | 0.00 | -35.31 | 180.00 | 1800 | 0.12 | 1906.11 | 0.00 | -1906.11 | 53978 |

| | | | | | | |
|---|---|---|---|---|---|---|
| TOTAL OVERBURDEN VOL.(ACRE-FT): | 13426 | TOTAL (TONS): | 380027.50 | 813332.81 | 433305.31 | 49544077 |
| PERCENT SANDSTONE: | 0% | TOTAL (TONS/THOUSAND): | 7.6705 | 16.4163 | 8.75 | |
| NP/MPA RATIO: | 2.14 | | | | | |
| TONS/ACRE REQUIRED (1:1): | 2407 EXCESS | | | | | |




## MAP LEGEND

- Proposed Permit Area
- Fault
- 380 — Structure Contour (Bottom of Mary Lee Seam) (dashed where inferred)
- ML — Mary Lee Seam Outcrop
- HW — Highwall
- 15123C (325.65 ft. MSL) • Coal Elevation Data Point (Bottom of Mary Lee Seam)

Scale 1" = 1000'

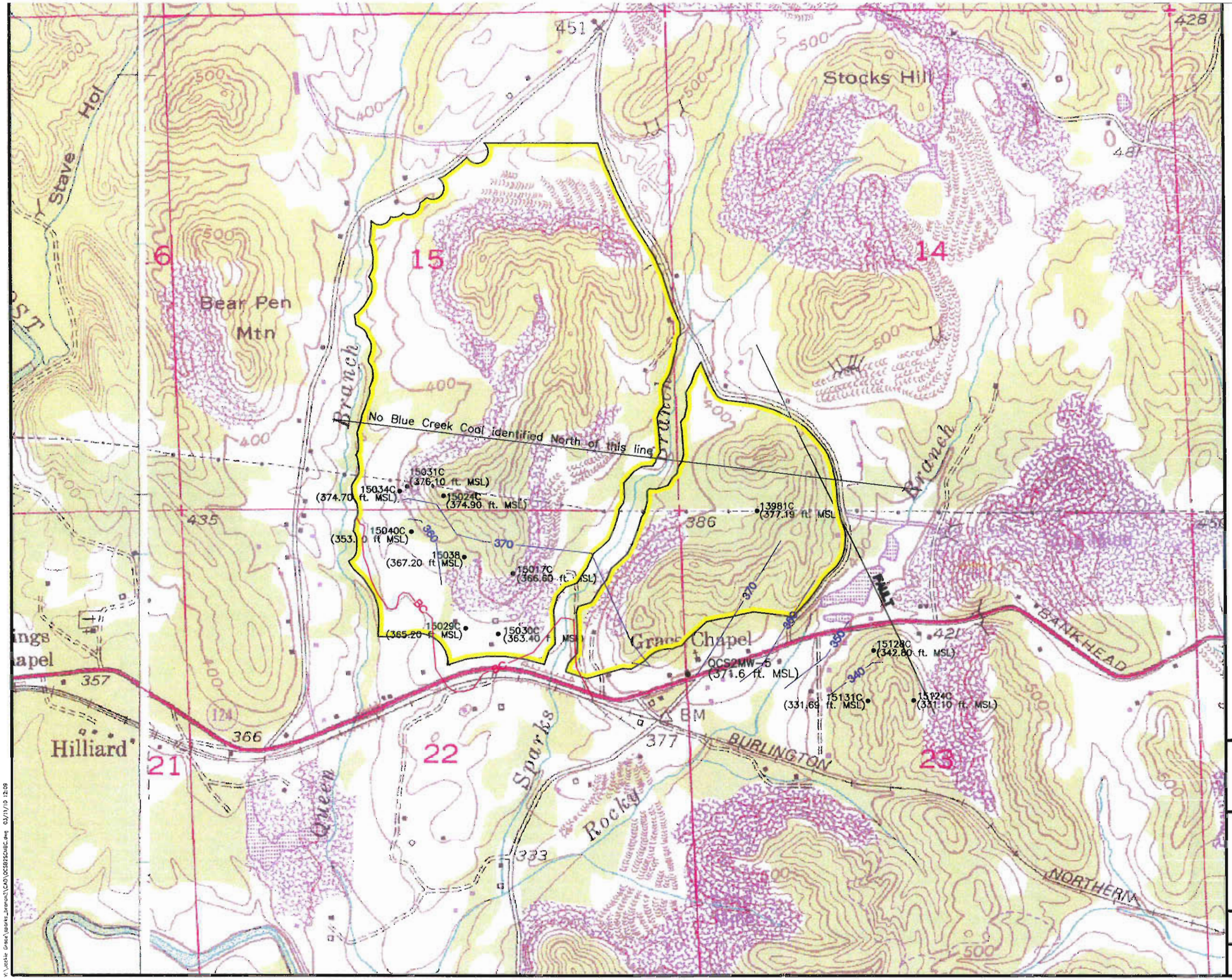
N

Note: Base map taken from the Jasper, Alabama and Townley, Alabama USGS Quadrangle.

PERC ENGINEERING CO., INC.

**Quality Coal Co., Inc.**
**Sparks Branch Mine No. 2**
**Structure Contour Map**
**Mary Lee Seam**

| | | | |
|---|---|---|---|
| DRAWN BY: | JNG | DATE: | 3-12-10 |
| DWG. NAME: | QCSB2SCMML | | |
| APPROVED BY: | TST | SCALE: | 1"=1000' |




## MAP LEGEND

- Proposed Permit Area
- Fault
- 360 — Coal Seam Elevation Line (Bottom of Blue Creek Seam) (dashed where inferred)
- BC — Outcrop of Blue Creek Seam
- (331.69 ft. MSL) 15131C • Coal Seam Elevation Data Point (Bottom of Blue Creek Seam)

Scale 1" = 1000'

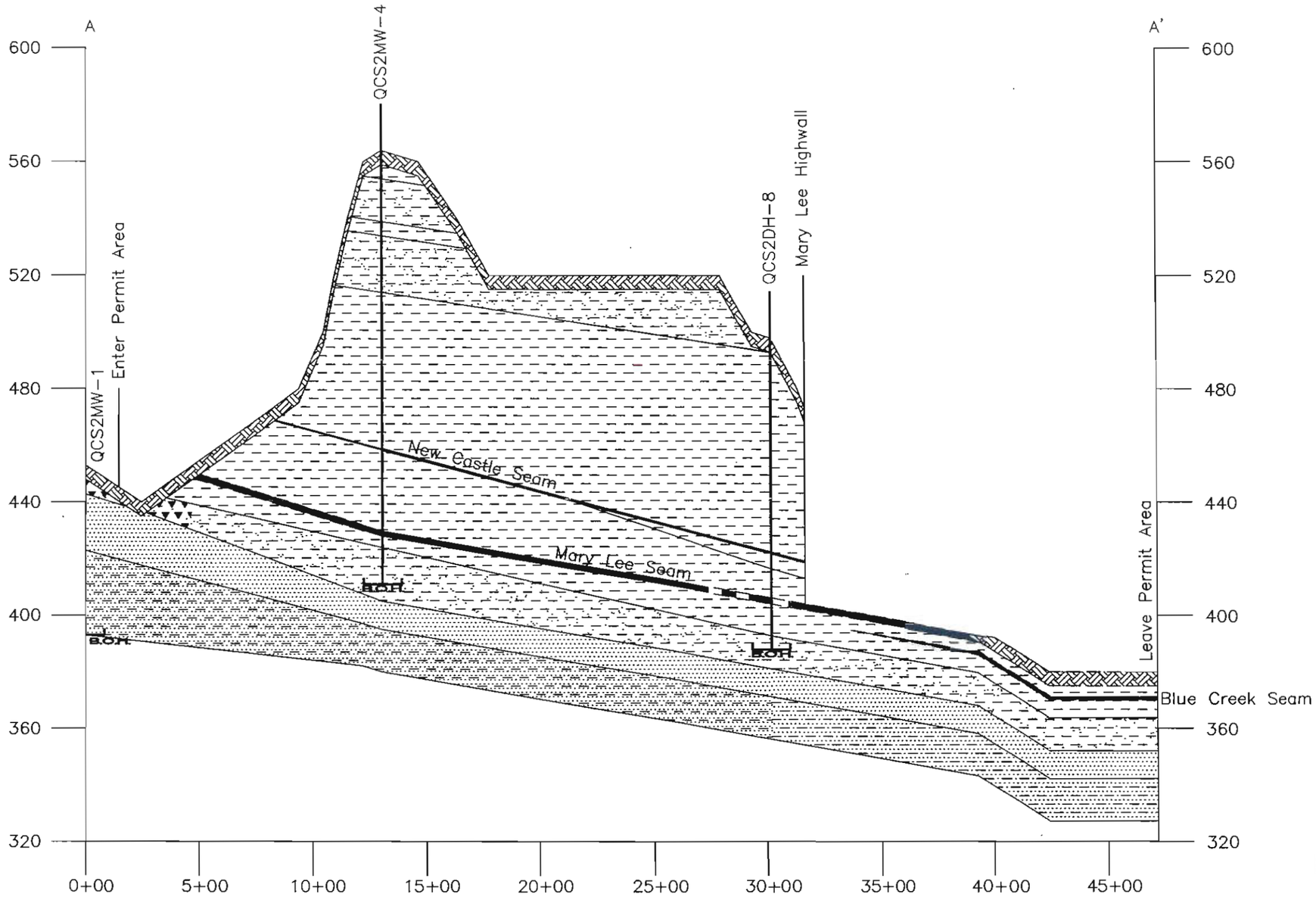
N

Note: Base map taken from the Jasper, Alabama and Townley, Alabama USGS Quadrangle.

PERC ENGINEERING CO., INC.

**Quality Coal Co., Inc.**
**Sparks Branch Mine No. 2**
**Structure Contour Map**
**Blue Creek Seam**

| | | | |
|---|---|---|---|
| DRAWN BY: | JNG | DATE: | 3-11-10 |
| DWG. NAME: | QCSB2SCMBC | | |
| APPROVED BY: | TST | SCALE: | 1"=1000' |




LEGEND

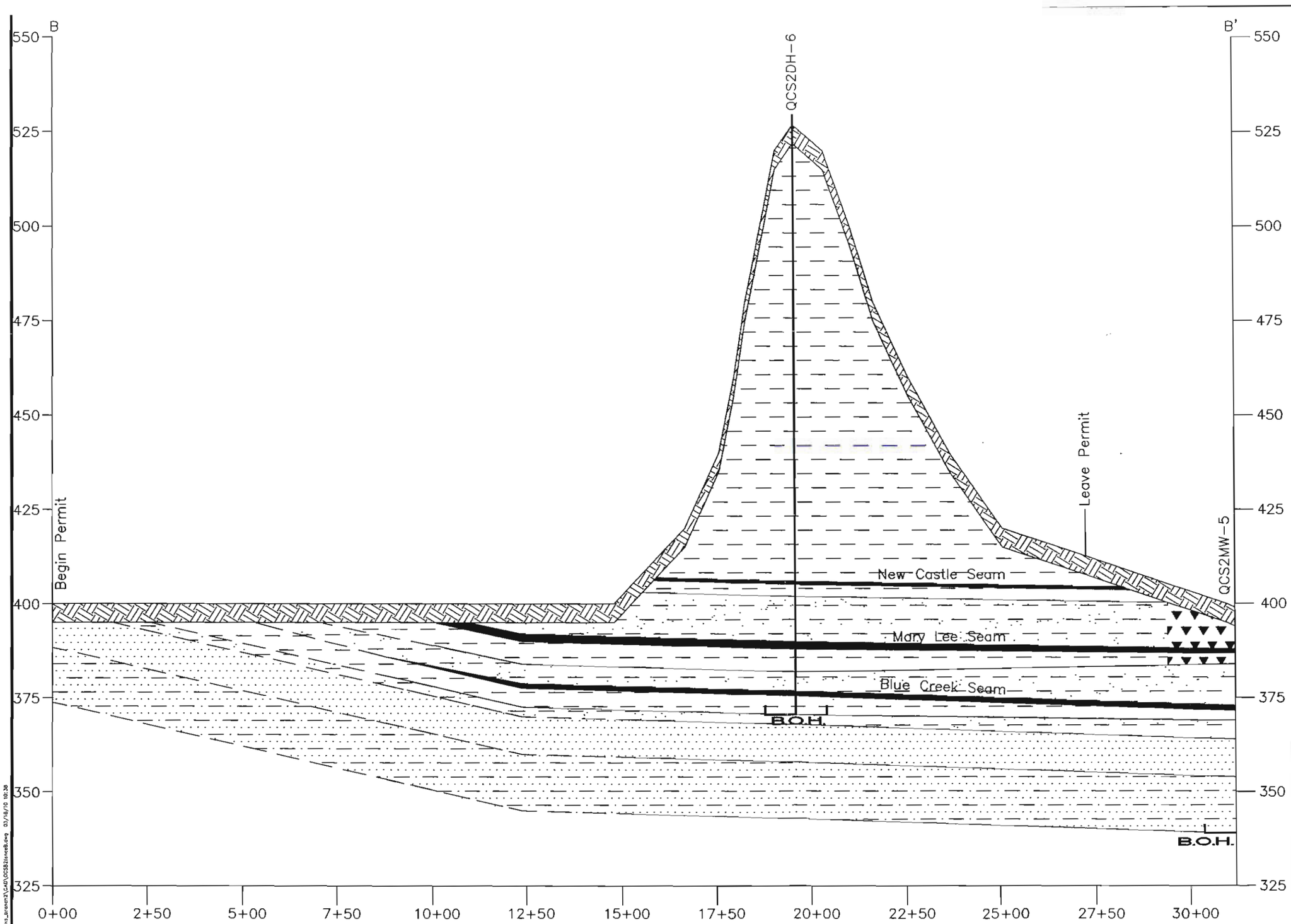
- Coal
- Sandstone
- Surface Material
- Clay
- Shale
- Sandy Shale
- Sandstone with Shale
- BOH — Bottom of Hole

PERC ENGINEERING CO., INC.

**Quality Coal Co., Inc.**
**Sparks Branch Mine No. 2**
**Generalized Fence Diagram A - A'**

| | |
|---|---|
| DRAWN BY: JNG<br>DWG. NAME: QCSB2fenceA | DATE: 3-17-10 |
| APPROVED BY: TST | SCALE: as noted |

V:\Apple Grove\sparks_branch2\CAD\QCSB2fenceA.dwg 03/17/10 16:46




PERC ENGINEERING CO., INC.

**Quality Coal Co., Inc.**
**Sparks Branch Mine No. 2**
**Generalized Fence Diagram B - B'**

| | |
|---|---|
| DRAWN BY: JNG<br>DWG. NAME: QCSB2fenceB | DATE: 3-18-10 |
| APPROVED BY: TST | SCALE: as noted |

| Mary Lee Seam | | | |
|---|---|---|---|
| Drill hole | Surface Elev | seam thickness(ft) | elev of btm of seam |
| 15131C | 489.6 | 1.9 | 351.1 |
| 13981C | 420 | 2.01 | 387.49 |
| 15006C | 515 | 2.33 | 404.97 |
| 15010C | 567.2 | 2.35 | 429.35 |
| 15013C | 552.4 | 2.35 | 430.15 |
| 15014C | 563.6 | 2.33 | 427.97 |
| 15015C | 479.6 | 2.3 | 436.8 |
| 15017C | 448.3 | 0.9 | 378.1 |
| 15024C | 505.2 | 0.6 | 384.6 |
| 15031C | 412.8 | 0.8 | 386.63 |
| 15130 | 374 | 1.8 | 336.6 |
| 15036C | 428.1 | 2.4 | 379.7 |
| 15123C | 420 | 2.15 | 325.65 |
| 15124C | 500.5 | 1.8 | 351.1 |
| 15128C | 462.1 | 2.15 | 353.95 |

| Blue Creek Seam | | |
|---|---|---|
| Drill hole | Surface Elev | Elev of btm of seam |
| 15038 | 392 | 367.2 |
| 13981C | 420 | 377.19 |
| 15017C | 448.3 | 366.6 |
| 15024C | 505.2 | 374.9 |
| 15029C | 374 | 365.2 |
| 15030C | 374 | 363.4 |
| 15031C | 412 | 376.1 |
| 15034C | 402.7 | 374.7 |
| 15040C | 395 | 353.6 |
| 15124C | 500.5 | 331.1 |
| 15128C | 462.1 | 342.8 |
| 15131C | 489.6 | 331.69 |