

ATTACHMENT II-G
SURFACE WATER HYDROLOGY

All surface runoff from the proposed Global Met Coal Corp - Black Creek Mine drains into Crooked Creek, an unnamed tributary to Crooked Creek, the Locust Fork of the Black Warrior River, and an unnamed tributary to the Locust Fork of the Black Warrior River. The unnamed tributary to Crooked Creek drains into Crooked Creek, and Crooked Creek and the unnamed tributary to the Locust Fork of the Black Warrior River drain to into the Locust Fork of the Black Warrior River. All the receiving streams (at the location of the mine site) lie in subwatershed 120 of hydrologic unit code 03160111 as defined by the USDA Soil Conservation Service.

Ten sediment basins are proposed for this site. Basins 001P, 002P, 003P, 004P, 006P, 007P, and 008P will drain into Crooked Creek, basin 014P drains into the unnamed tributary to Crooked Creek, basin 012P drains into the Locust Fork of the Black Warrior River, and basin 010P drains into the unnamed tributary to the Locust Fork of the Black Warrior River. These sediment basins are permitted under ADEM NPDES Permit Number AL00@@@@. All sediment basins are proposed as permanent water impoundments, fish and wildlife habitats.

The use of the unnamed tributaries to Crooked Creek and the Locust Fork of the Black Warrior River, if any legitimate use exists, is to support the local wildlife or contribute to the quality and quantity of the above mentioned receiving streams. The use of Crooked Creek and the Locust Fork of the Black Warrior River where Crooked Creek intersects Locust Fork is classified as 'Fish and Wildlife' as stated in Chapter 335-6-11 of "Water Use Classifications For Interstate and Intrastate Waters" as taken from the Water Quality Program at ADEM. According to Chapter 335-6-10 of the same reference, the best usage of this classification is fishing, the propagation of fish, aquatic life, and wildlife, and any other usage except utilization as a supply for drinking or food processing, or for swimming and water contact sports.

Baseline surface water quality and quantity for the Locust Fork of the Black Warrior River will be characterized in this report by samples taken at Downstream Surface Water Monitoring Sites BCJMSW-4 and P3546SW1, and Upstream Surface Water Monitoring Site P3913SW3. The locations of these Surface Water Monitoring Sites are shown on the attached Mine Site Location Map. In addition, miscellaneous surface water sampling was performed on Crooked Creek at Downstream Surface Water Monitoring Site GMCBCSW1 and Upstream Surface Water Monitoring Site GMCBCSW2. As shown on the attached Mine Site Location Map, Surface Water Monitoring Sites BCJMSW-4 and P3546SW1 are both located at the same site. Both sites were monitored

for baseline and performance monitoring for their respective permits, site BSJMSW-4 for the adjacent Best Coal - Jagger Mine and site P3546SW1 for the adjacent M.S.&R. - Merritt Rogers Mine. Upstream Surface Water Monitoring Site P3913SW3 was monitored for performance monitoring for the P-3913 permit, and Surface Water Monitoring Sites GMCBCSW1 and GMCBCSW2 were monitored for baseline information specifically for the proposed Black Creek Mine.

For this report, downstream Surface Water Monitoring Site BSJMSW-4 was sampled on 21 occasions between the dates 11-15-07 and 07-10-12 and downstream Surface Water Monitoring Site P3546SW1 was sampled on 27 occasions by the PERC Engineering Laboratory between the dates 09-13-04 and 11-11-11. Upstream Surface Water Monitoring Site P3913SW3 was sampled on five occasions by the PERC Engineering Laboratory between the dates 02-09-12 and 07-13-12. Downstream Surface Water Monitoring Site GMCBCSW1 and Upstream Surface Water Monitoring Site GMCBCSW2 were sampled on five occasions by the PERC Engineering Laboratory between the dates 01-31-12 and 07-13-12.

All surface water samples were collected by the PERC Engineering Laboratory and taken by the 'grab' method. Flowrate measurements at the monitoring site were taken according to ASTM D3858 "Standard Practice for Open Channel

Flow Measurement of Water by Velocity - Area Method" or other equally valid methods. All samples analyzed by the PERC Engineering Laboratory are according to ASTM standards. Parameters tested on all occasions include pH, total iron, total manganese, total suspended solids, specific conductance, sulfates, acidity, and alkalinity. **See attached analysis.**

All parameters mentioned above were plotted vs. stream flow (in CFSM) to characterize water quality in Cane Creek at different flowrates prior to mining by Global Met Coal Corp. at this proposed facility. Baseline conditions at the 7Q2, Average, and 2 yr. flowrates are given in the Determination of the Probable Hydrologic Consequences (Attachment II-H).

Surface Water Monitoring Sites BCJMSW-4 and P3546SW1 drain approximately 863 square miles. Slope conditions within this large watershed range from slight to severe but are mostly moderate. The pre-mine landuse within this watershed was estimated utilizing information provided by the State of Alabama Soil and Water Conservation Committee's "Alabama Watershed Statistics - 2007" and consists of approximately 2% Cropland, 3% Pasture and Hay Land, 13% Urban Areas, 1% Water Bodies, 3% Mined Land, and 78% Forest Land (and other uses). The previous disturbance in this watershed is from both pre-law and regulated coal mining. This previous disturbance has affected current surface water quality in the Locust Fork of the Black Warrior

River in the form of elevated sulfates, alkalinity, conductivity, and to a lesser extent, mineralization. Mining of this proposed facility is likely to decrease the pH, increase mineralization, and increase conductivity, TSS, and sulfate values as described in the Determination of the Probable Hydrologic Consequences.

A topsoil variance is proposed for this facility.

Classification of all soils on a specific basis within these watershed areas would be prohibitive, therefore, the "Hydrologic Assessment, Eastern Coal Province Area 23, Alabama" was utilized in obtaining the soil associations for these watersheds. The dominant group is the Montevallo-Enders-Townley Association.

MONTEVALLO SERIES:

In the Montevallo series are shallow and very shallow, excessively drained soils formed from weathered shale. The soils are on narrow, sloping ridgetops and on moderately steep or steep hillsides of the Southern Appalachian Plateau. The following describes a representative profile:

0 to 6 inches, yellowish-brown shaly silt loam.

6 to 22 inches, yellowish-brown shaly silty clay loam; 75 to 90 percent is fragments of shale.

22 inches +, light olive-brown, highly fractured, level, thin-bedded, fissile shale.

The texture of the underlying material ranges from loam to silty clay loam, and

in most places it is yellowish brown. Fragments of shale make up 50 to 90 percent of the profile. These soils are very strongly acid, and their natural fertility and content of organic matter are low. Water enters these soils at a moderate to slow rate; it moves at a moderate to rapid rate through the profile. The root zone is shallow, and the available moisture capacity is very low.

ENDERS SERIES:

Soils of the Enders series are moderately deep and deep, well drained, and gently sloping to moderately steep. They formed in material weathered from interbedded shale and sandstone. These soils are on ridgetops on the Southern Appalachian Plateau and are also on some of the side slopes. The following describes a representative profile:

0 to 5 inches: brown, very friable loam.

5 to 40 inches: red, firm silty clay; has some yellowish-brown mottles in lower part; blocky structure

40 to 52 inches: mottled red and brown, firm silty clay

52 inches + : level-bedded shale

These soils are very strongly acid. Their content of organic matter and their natural fertility are low. Crops grown on these soils make good response to lime and fertilizer. Water enters the soils readily and moves through the profile at a moderate to slow rate. The available moisture capacity is moderate to low. The root zone is moderately deep.

TOWNLEY SERIES:

In the Townley series are shallow and moderately deep, well-drained soils of the Southern Appalachian Plateau. The soils are gently sloping and are on ridgetops and moderately steep side slopes. The following describes a representative profile:

0 to 5 inches, brown loam.

5 to 20 inches, red silty clay mottled with brown in the lower part.

20 to 26 inches, brown silty clay with red and brown mottles.

26 inches + , level-bedded shale.

These soils are very strongly acid, and their natural fertility and content of organic matter are low. Infiltration and permeability are moderate to slow. The available moisture capacity is low; plants may be damaged by lack of water during even a short period of drought. The root zone is shallow.