ATTACHMENT II-G

SURFACE WATER HYDROLOGY

Surface runoff from the proposed TTJ, LLC. - Berry Mountain Fines Recovery Operation will drain into Calvert Prong. Calvert Prong drains into the Locust Fork of the Black Warrior River. Calvert Prong lies in subwatershed 060 of hydrologic unit code 03160111 as defined by the USDA Soil Conservation Service.

One sediment control structure is proposed for this facility. Basins will be constructed in the location shown on the attached Mine Site Location Map. This sediment basin is permitted under ADEM NPDES Permit Number AL0081876 and all will drain into Calvert Prong .

Locust Fork is publicly owned, perennial, and is classified as "Fish & Wildlife" by Chapter 335-6-11 "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. The use of Calvert Prong is as a public water supply to the city of Oneonta, AL. Chapter 335-6-10 in this reference states the best usage of the 'Public Water Supply' classification is as follows: Source of water supply for drinking or food-processing purposes.

Baseline surface water quality and quantity for Calvert Prong is characterized in this

report by samples taken at downstream Surface Water Monitoring Site TTJBMSW-1 and upstream Surface Water Monitoring Site TTJBMSW-2 as shown on the attached Mine Site Location Map. Both sites have been monitored specifically for baseline data for this report. Downstream Surface Water Monitoring Site TTJBMSW-1 is located at the same site as USGS Surface Water Station 02455250, however no information from this site will be utilized in this report due to the fact that it is 'dated' information. Downstream Surface Water Monitoring Site TTJBMSW-1 has been monitored by the PERC Engineering Laboratory on 7 occasions between 05-03-12 and 12-27-12 while Upstream Surface Water Monitoring Site TTJBMSW-2 has been monitored by the PERC Engineering Laboratory on 7 occasions between 05-01-12 and 12-31-12. All surface water samples collected by the PERC Engineering Laboratory were taken by the 'grab' method. Flowrate measurements collected by the PERC Engineering Laboratory 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 include pH, total iron, total manganese, total suspended solids, specific conductance, sulfates, acidity, and alkalinity. Not every parameter was tested on every occasion. See attached results of analysis.

All parameters mentioned above were plotted vs. stream flow (in CFSM) to characterize water quality in Calvert Prong at different flowrates prior to mining by TTJ, LLC. 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 Site TTJBMSW-1 on Calvert Prong receives runoff from approximately 47.1 square miles. Slope conditions within this watershed range from slight to severe but are mostly severe. Elevations range from approximately 631 ft. MSL at the monitoring site to approximately 1,320 ft. at the drainage divide. 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 1.92% Cropland, 2.78% Pasture and Hay Land, 6.13% Urban Areas, 1.45% Water Bodies, 2.97% Mined Land, and 84.75% Forest Land (and other uses). Previous mining has affected current surface water quality in the form of elevated sulfates.

Classification of all the soil types within such a large watershed area would be both time consuming and prohibitive, therefore the "Hydrologic Assessment, Eastern Coal Province Area 23, Alabama" was utilized to determine the dominant soil associations for this watershed. They are the 'Montevallo-Enders-Townley' association. A description of this dominant group is as follows:

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.

MONTEVALLO SERIES:

In the Montevallo series are shallow and very shallow, excessively drained soils formed in material weathered from 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. These soils are not suited to cultivated crops, because of their shallow root zone, the very low available moisture capacity, and the dominantly steep slopes.

TOWNLEY SERIES:

The Townley series consists of moderately deep, well drained, slowly permeable soils on upland ridgetops and side slopes. They formed in clayey residuum weathered from shale and interbedded sandstone and shale. Water runs off the surface medium to rapidly depending on slope and vegetative cover. Slope ranges from 2 to 45 percent. Horizon description is as follows:

> 0-2 inches; very dark grayish brown silt loam; weak medium granular structure; friable; common ½ inch to 3 inch shale fragments; very strongly acid.
> 2-6 inches; brownish yellow silt loam; weak fine granular structure; friable; common ½ to 3 inches shale fragments; strongly acid.
> 6-9 inches; yellowish red silty clay loam; weak fine subangular blocky structure; friable; common ½ to 3 inch shale fragments; strongly acid.

Townley soils range from .6 - 2.0 in/hr. in permeability. Available water capacity ranges from .08 - .14 in./in. Erodibility factor ranges form .24 - .28 and this hazard is considered moderate to severe. Loblolly pine site index for Townley soils is 70. Townley soils have good potential for wild herbaceous plants, fair potential for hardwood and conifers, and poor potential for grasses and legumes.