ATTACHMENT II-H

PROBABLE HYDROLOGIC CONSEQUENCES

(880-X-8E-.6(1)(F))

DETERMINATION OF PROBABLE HYDROLOGIC CONSEQUENCES

(880-X-8E-.6(1)(F))

PHC OF SURFACE MINING ACTIVITIES

The Hydrologic Consequences of surface mining at the proposed Thunder Oaks Mine were determined by site-specific hydrologic and geologic data taken by TASK Engineering Management Inc. from February 18, 2011 through August 23, 2012 as shown in the previous segments of Part II of this permit application.

SURFACE WATER

Surface water quality for the proposed site will consist of minimal overland flow resulting from precipitation events and groundwater discharges. Ten (10) sediment basins are proposed to be constructed prior to any disturbance in the respective basin's sub-watershed. During mining operations, the removal of surface vegetation will result in increased runoff as a result of the loss of the vegetative root zones which aid in surface water capture, evapotranspiration and shallow-surface infiltration. With the construction of approved sediment basins, increased surface water runoff will be contained and will be systematically treated to acceptable limits prior to discharge. The movement and spoilage of overburden materials above the seam and the removal of the coal will result in increased surface water infiltration within the spoil areas and surface water runoff will be further reduced. Groundwater hydraulic heads within the mined spoils will show a tendency to increase and water movement will seep to the natural occurring lowest elevations, i.e. diversions and/or sediment basins. Overburden materials will have a tendency to increase the infiltration rates and groundwater storage. The last undisturbed competent stratum, generally the bottom below the lowest coal seam will provide the most impermeable conduit for ground water movements along the geologic dip of the site strata. As the spoiled overburden materials are graded, the amount of surface water infiltration will decrease as the overburden materials naturally compact, weather and undergo chemical degradation. In the near-term mining will result in increased storage of groundwater and permeability of the mined overburden spoil materials which will result in a slight increase to base-flow surface water quantities. All disturbed areas should be stabilized with vegetation as soon as practical to minimize erosional actions and to increase shallow infiltration, root zone capture and evapotranspiration. Surface water from the proposed mine site will drain into approved sediment basins and into Wolf Branch or Bengis Creek or un-named tributaries of Bengis Creek. Pumping to sediment basins will be required periodically to control water accumulations within the mine pit areas. Once reclamation operations have been completed, surface water runoff will flow naturally to Regulatory Authority approved, properly constructed and maintained sediment basins and with the aid of Regulatory Authority approved, properly constructed and maintained diversions.

Surface water baseline data generated from surface water monitoring sites, SW-1 (upstream), SW-2 (upstream), SW-3 (downstream), SW-4 (downstream) and SW-5 (upstream) collected by TASK Engineering Management Inc. are listed in the table entitled Surface Water Baseline Data (See Hydro-Geo Map for locations of surface water monitoring sites). The sites used to determine flow characteristics as impacted by surface coal mining operations for Bengis Creek will be SW-4. SW-4 has a drainage area of 25.102 square miles. Surface water data taken by TASK Engineering from February 18, 2011 to August 23, 2012 for SW-4 was used to determine the 2-year high, 2-year low and average flow for SW-1 and SW-5 by statistical regression methods. Water quality projections can be found in the Table entitled Surface Water Quality/Quantity Projections shown following in Regression Spreadsheet SW-4 .

Utilizing linear "least squares" regression methods except for pH (which is a direct $\log_{10}$ reading of the pH meter) , the $\log_{10}$ values, of Fe (Iron), Mn (Manganese), TSS (Total Suspended Solids) and SpC (Specific Conductance) were plotted vs. the corresponding $\log_{10}$ value of the flow rate in cfsm (cubic feet per square mile) using Microsoft EXCEL. Values for the square of the multiple correlation coefficient (R2), the intercept (a) also referred to as the constant and the slope (b) also referred to the x coefficient are shown on the Regression Spreadsheet SW-4. The regression line equation [y = (b)x + (a)] or {y = (x coefficient)x + (constant)] is used to predict surface water quality in the receiving stream(s) at specific flow rates prior to commencement of mining operations. These specific flow rates are at the 7Q2 (low flow prediction), average flow prediction, and Q_2 (2-year high flow prediction).

The 2-year low flow was determined using the publication "Low Flow Characteristics of Alabama Streams", Geological Survey Bulletin 117. The regression equation for this hydrologic area is based on low flows projected with a two (2) year recurrence interval and is defined by the equation $7Q_2=0.24\mathrm{x}10^{-4}(G-30)^{1.07}(A)^{0.94}(P-30)^{1.51}$ where G is a site specific recession index number (55) for the hydrologic area as shown on the map accompanying the publication. The value A is the drainage area in square miles and the value P is the mean annual precipitation (58 inches). Based on these values the 2-year low flows have been project for premining, active mining and post mining conditions.

The average flow prediction was determined based on the value of 1.55 cfsm read directly from the map accompanying the publication "A Method of Estimating Average Streamflow and Headwater Limits in U.S. Army Corps of Engineers, Mobile District, Alabama and Adjacent States", Water Resources Investigations Open-File Report 81-59. Based on the map isopach value, average flows have been projected for premining, active mining and post mining conditions.

The 2-year high flow was determined using the publication "Magnitude and Frequency of Floods in Alabama", Water Resources Investigations Report 84-4191. The regression equation for this hydrologic area is based on high flows projected with a two (2) year recurrence interval and is defined by the equation $Q_2 = 182A^{0.706}$, where A is the drainage area in square miles. Based on a drainage area of 5.44 square miles for SW-1 high flows have been projected for premining, active mining and post mining conditions.

Predicted baseline surface water qualities at specific flow rates for premining, active mining and post mining conditions are listed in the following Table entitled "SURFACE WATER QUALITY/QUANTITY PROJECTIONS" showing output from regression spreadsheets.

SURFACE WATER QUALITY/QUANTITY PROJECTIONS

MONITORING SITE:	SW-4	MINING RATIO :	0.0368
DRAINAGE AREA (Sq. Miles) :	25.02	RECESSION INDEX :	32
MINING AREA (Acres):	589	PRECIPITATION :	52

NPDES SURFACE WATER DISCHARGE LIMITS

	pH s.u.	Fe mg/l	Mn mg/l	TSS mg/l	SpC umhos/cm
Mining	6.00	6.00	4.00	70	2000
Post-Mining	6.00	6.00	4.00	70	2000

SURFACE WATER REGRESSION DATA

	pH	Fe	Mn	TSS	SpC
X Coefficients	0.44	0.14	0.06	0.20	-0.08
Constants	6.69	-0.57	-0.34	0.86	1.97

LOW FLOW

Mining Condition	Flow cfsm	pH s.u.	Fe mg/l	Mn mg/l	TSS mg/l	SpC umhos/cm
Pre-Mining	0.00	5.65	0.12	0.23	2	146
Mining	0.00	5.67	0.34	0.37	5	214
Post-Mining	0.00	5.66	0.34	0.37	5	214

AVERAGE FLOW

Mining Condition	Flow cfsm	pH s.u.	Fe mg/l	Mn mg/l	TSS mg/l	SpC umhos/cm
Pre-Mining	1.55	6.77	0.28	0.32	8	90
Mining	1.58	6.75	0.49	0.46	10	160
Post-Mining	1.56	6.75	0.49	0.46	10	160

HIGH FLOW

Mining Condition	Flow cfsm	pH s.u.	Fe mg/l	Mn mg/l	TSS mg/l	SpC umhos/cm
Pre-Mining	70.63	7.51	0.48	0.40	17	66
Mining	71.93	7.46	0.69	0.53	19	137
Post-Mining	71.15	7.46	0.69	0.53	19	137

All predicted baseline analyses are within NPDES discharge limits. The NPDES maximum and average discharge quality limitations as set forth by ADEM for Thunder Oaks Mine are as follows: The pH limit range is between 6.0 – 9.0 s.u.; TSS maximum limit is 70 mg/l and the maximum average limit is 35 mg/l; Fe maximum limit is 6.0 mg/l and the maximum average limit is 3.0 mg/l; Mn maximum limit is 4.0 mg/l and the maximum average is 2.0 mg/l. As shown from regression methods and spreadsheet, the water quality is predicted to be well within ADEM limits.

With the commencement of mining operations and construction of the proposed sediment basins, total daily discharge from the mine area will result in an increase in flow duration as the sediment basins retain drainage flows and a decrease in peak discharges as the decanting systems of the sediment basins control the outflow of this drainage at slower incremental rates.

The long-term effects of mining indicate that surface water quality and quantity at Wolf Branch and Bengis Creek will be negligible if proper drainage controls are implemented. The regression analyses show minimal impacts on the surface water regime as a result of mining operations. With the commencement of mining operations, the removal of site vegetation and the corresponding ground disturbance, suspended solids in discharges leaving the mine permit area will increase slightly above premining conditions. Sedimentation levels will increase initially with the removal of vegetation and surface runoff will allow the transport of find-grained sediment in surface runoff. The quantity of sediment leaving disturbed areas will be reduced by sediment basins constructed prior to any mining disturbance. With the grading of mine spoils in the reclamation process and the increase in infiltration rates, discharge suspended solids will begin to decrease toward normal premining levels. With proper drainage controls, i.e. sediment basins and diversion ditches, the total suspended solids level will decline to below pre-mine values after completion of reclamation.

GROUNDWATER

The local groundwater has been impacted by the presence of the Sand Mountain Syncline and vertical inclination and orientation of the Uppercliff #1, Uppercliff #2 and Uppercliff #3 Coal seams result in increasing groundwater elevations that follow the trends of the surrounding strata geology. (See Hydro-Geo Map).

A well inventory has been conducted by TASK Engineering Management Inc. utilizing interviews and samples, (where landowner permission was given) on all occupied dwellings within one-half mile of the proposed permit boundary. The inventory revealed that there are two hundred (200) residences located within one-half (1/2) mile of the mine site. Of these residences forty-one (41) have wells. More specifically, resident IDs 1, 2, 8, 13, 14, 15, 21, 23, 24, 28, 31, 32, 33, 38, 48, 49, 55, 60, 63, 64, 66, 67, 70, 71, 72, 80, 83, 84, 107, 108, 161, 167, 169, 174, 175, 186, 198, 198B, 199, 201 and 202 have wells. Of these, nine (9) residences do not have public water, resident IDs 10, 80, 84, 172, 173, 174, 198, 198B and 199. Residence 167 (Billy G. Turner) has public water but uses his well for household water. All of the ten (10) residences using wells for household water have been sampled and analyzed. No resident had a usable spring and all other wells that were usable were used for garden irrigation and/or livestock. Six (6) wells were capped with the pumps in place and were not accessible and one (1) well had been filled in and was not accessible. Six (6) residences refused sampling, nine (9) residences were vacant with five (5) of these vacant residences uninhabitable, two (2) residences had burned and have not been rebuilt and two (2) residences were destroyed by the tornado of April 27, 2011 and have not been rebuilt. The residents' primary water source, along with all other residences within the half-mile radius is obtained from the Northeast Alabama Water District.

In the event it is determined that mining operations by Carbon Oak, Inc. have resulted in the contamination, diminution or interruption of the hydrologic balance to a degree such as to impair the quality and/or quantity of water production of a local well that is being utilized by a landowner, one of the following methods of replacing the landowner's domestic supply will be implemented:

1.) A new well will be drilled and cased to penetrate adequate water producing strata to a depth at least below the bottom of coal elevation of the lowest coal seam mined at the site.

2.) Provide a connection for the residence to an existing municipal water supply.

3.) Any other method which will replace the landowner's groundwater supply that is agreeable to both the user and the operator.

If it is proven that surface coal mining operations at a specific site has disrupted the domestic water supply of any well, the operator will provide, within twenty-four (24) hours, a temporary replacement of the said domestic water supply until a permanent alternative source has been implemented by the methods stated above. Permanent replacement of the said domestic water supply will be accomplished as timely as supply availability and drilling and/or replacement operations will allow.

See Well Inventory and Hydro-Geo Map.

No known seeps, springs were noted within the permit area during site investigations.

Groundwater was encountered during the drilling of monitoring wells at the site, accumulating immediately after drilling operations were completed and groundwater is expected to accumulate in the mine excavations. The upper Pottsville formation consists of relatively unconsolidated sands and weathered sandstones, making an excellent medium for the formation of "perched" water tables and groundwater is generally contained in poorly connected fracture systems and bedding planes. Onsite groundwater quality is expected to decrease slightly with the increased mineralization due to groundwater coming in contact with the Pottsville unweathered materials during mining disturbance. In direct relation groundwater quantity is expected to increase significantly due to additional fracturing of overburden strata and the voids created by mining. The lower hydraulic head produced in removal of mining strata will result in groundwater movement at the boundary of the permit toward the mine site with lower ground water elevations created by mining disturbance. Permeability and storage within the mined areas should begin to increase as regrading and revegetation in conjunction with chemical breakdown and weathering of mined strata materials take place. With increased permeability and storage, groundwater levels will gradually approach premining levels and groundwater resources outside the mined area are not likely to be affected. It is also unlikely that deeper groundwater sources will be affected due to the Underwood Sandstone Interval beneath the lowest (Uppercliff #3) coal seam and the expected low permeabilities of the strata beneath the clay horizon. The parameters most likely to be affected are increases in iron, manganese and total dissolved solids. Since the groundwater system at this site is atypical Pottsville strata of northeast Alabama and is a poorly connected fracture systems and bedding planes, it is highly unlikely that groundwater quality in areas adjacent to the proposed permit will suffer significant degradation.

Groundwater quality in the disturbed mine area will decrease in the formation of increased dissolved solids, total iron and total manganese as stored groundwater in the mine spoils will be in direct contact with the unconsolidated upper Pottsville materials and unweathered overburden strata. Overburden analyses given in Exhibit 2.4 OVERBURDEN ANALYSIS SPREADSHEETS of this permit application show that the neutralization potential and potential acidity of the spoil materials result in alkaline acid-base accounts for each overburden sample sequence. A summary of the data generated by the overburden analyses generated the following results:

Drill Hole ID	Percent Sulfur	Neutralization Potential	Acid-Base Account	Tons/Acre Excess CaCO3
MW-1/OB-1	0.0379	8.4052	7.2220	1050
MW-2/OB-2	0.0459	12.3590	10.9255	1683
MW-3/OB-3	0.0570	14.3467	12.5654	2725

During overburden mining processes, spoil materials will be well mixed and individual stratum will be combined resulting in the few thin zones of potentially acidic material generally associated with the coal seam(s) and stratum immediately above the coal seam(s) to be buried and mixed with alkaline materials capable of neutralizing any acidic overburden layers. With the presence of excess alkaline overburden materials at this site, the only preventive or remedial measures necessary will be the handling of the coal stockpile and immediate open pit areas. Coal stockpiles will be created by constructing a pad made of compacted clay and/or shale of acceptable permeability of required thickness to carry the weight of loading and transportation equipment. Coal stockpiles will be constructed on graded areas with a mild slope that will provide adequate drainage and minimize contamination of water and will be located in such a manner to divert excess drainage away for stockpile areas. When the stockpile area is no longer necessary, it will be reclaimed by removing the accumulated coal pad by truck, covering the pad area with four (4) feet of the best available non-toxic, non-combustible material and revegetating in accordance with the approved Reclamation Plan (Part IV-C-5). The pit bottom consists of stratum layers of dark hard shale and hard gray sandstone (See Geologic Cross-Sections and drill logs.) According to overburden sample analyses, there are no major potential acid-forming material within the permit boundary. The coal seam(s) and the immediate strata above the coal seam(s) is the most consistent acid-forming materials and the mixing of the overburden material will neutralize these acid forming materials after the removal of coal from the pit areas. Coal handling and coal stockpile areas should be considered for their acid-forming potential in the day to day mining operations.

Movement of groundwater (above and in the coal seam) within the proposed permit area is controlled by differences in the hydraulic head and the relative dip of the strata. Typical of the Pottsville formation, the groundwater encountered in the exploration drill holes and the groundwater monitoring wells was typically the result of "perched" water tables that are recharged through precipitation events in conjunction with the relative porosity of the unconsolidated sands and highly weathered sandstones of the upper Pottsville Formation. From the best available data provided by the exploratory drilling, it appears that the movement of groundwater will trend along the dip axis to the south/southwest where not impacted by the open pit areas. During the drilling of exploratory holes and ground water monitoring wells, no stratagraphic units were encountered that produced ground water in usable quantities.

1.) ADVERSE IMPACTS TO THE HYDROLOGIC BALANCE

All predictions based on hydrologic and geologic data compiled by TASK Engineering Management Inc. indicate that the proposed surface coal mine at this site will not cause any adverse impact to the hydrologic balance. Surface drainage from the site will consist of minimal overland flows occurring in direct response to rainfall and groundwater discharge. Offsite drainage will be treated by Regulatory Agency approved sediment control facilities located within the permit area.

Groundwater quantity is expected to increase significantly due to the disturbance of intact stratum of the Pottsville formations and the corresponding increase of voids and surface areas created by the blasting and mining operations.

Surface water and groundwater leaving the mine area will be mineralized as a result of contact with unweathered rock material in the mining spoils. Dissolved solids, iron and manganese will increase in surface water drainage and groundwater with the permit area. Groundwater quality will decrease slightly in the form of increased mineralization and lower pH. While there may be some diminution of on-site groundwater and surface water, the proper construction and maintenance of Regulatory Approved diversions and sediment basins along with properly scheduled reclamation operations will produce no significant effects on the hydrologic regime are anticipated.

2.) ACID-FORMING OR TOXIC-FORMING MATERIALS

Chemical analysis of the overburden materials indicate an excess neutralizing potential of the overburden materials at the proposed mine site. OB-1 showed the layers sampled from 0 to 5' and from 5 to 10' to be mildly acidic. OB-2 showed the Uppercliff #3 seam from 97'6" to 100'6" to be moderately acidic. OB-3 indicated the Uppercliff #3 from 134'6" to 137'5" to be moderately acidic. (See Exhibit 2.4 OVERBURDEN ANALYSIS SPREADSHEETS for overburden chemical analyses.) The coal seam(s) will be removed in the mining process and there will be sufficient alkaline materials in the overburden to neutralize any potential acidic zones.

The relative acidity of the coal seam(s) will make it necessary to maintain the construction and maintenance of the coal stockpile areas and the open pit areas in the vicinity of the coal seam to properly control drainage that may come into contact with coal and/or coal waste materials. Additionally, care should be taken when removing overburden immediately above the coal seams as well as the coal seams to isolate any potentially acidic materials and blend with recognized alkaline materials from this testing data.

3.) CONTAMINATION, DIMINUTION OR INTERRUPTION OF WATER SOURCE

There are no domestic, agricultural, industrial or other uses of the surface and/or groundwater within the proposed permit area or adjacent area. The use of the water impoundments of the proposed sediment basins within the permit site are fish and wildlife.

4.) **OPERATIONAL IMPACTS**

A. SEDIMENT YIELD FROM DISTURBED AREAS

The Universal Soil Loss Equation (A=R K LS CP) was used to predict possible effects of the proposed operation on sediment yield. The USLE equation is taken from "Applied Hydrology and Sedimentology for Disturbed Areas" by B.J. Barfield, R.C. Warner and C.T. Haan. The Universal Soil Loss Equation is dependent on the erosive actions of rainfall (R), the soil erodibility (K), length slope factor (LS), degree of soil cover (C) and conservation practices (P). The values of R and CP are estimated for the area using tables and figures in Chapter 5 of "Applied Hydrology and Sedimentology for Disturbed Areas". The values of LS are determined from increment cad layouts and surface models as developed by Carlson Software, Inc. using the hydrologic module – universal soil loss. The values for K – estimated for the area using "Soil Survey for DeKalb County, Alabama".

The Universal Soil Loss Equation calculates the approximate soil load from a given area (acres) that will erode from soil disturbances that will enter the receiving stream. The equation assumes that 100% of generated sediment will be deposited off-site and that no sediment will be deposited on-site during erosional events. Diversions and sediment basins are to be constructed on the outer perimeter of the permit area to control runoff and sediment leaving the permit area. To account for treatment of runoff and sediment by constructed diversions and sediment basins, the total soil loss has been reduced by a factor of 90% (basin trap efficiency) to more accurately predict the actual amount of sediment leaving the permit area. The basin trap efficiency is not applied to the USLE calculations before mining and the calculations for five (5) years after reclamation revegetation. The following table summarizes the predicted sediment yields for each increment of the proposed permit. The listed values will be somewhat high during the operation stages since some vegetative cover will remain on each increment as mining operations progress and with proper reclamation schedules, the actual area of each increment exposed to erosion will be limited. The efficient construction and operation of diversions and sediment basins will efficiently trap the predicted sediment load produced in the mining operations and following the practice of leaving the naturally occurring vegetation on the proposed increment sites, no adverse impacts on sediment yield are predicted. The outslopes of each diversion and sediment basin should be stabilized and vegetated as soon as practical after construction to control drainage and sediment not subject to control and treatment by the mine drainage facilities.

Universal Soil Loss Equation (A= R K LS CP) * Basin Trap Efficiency

A = COMPUTED SOIL LOSS IN TONS/ACRE PER YEAR * BASIN TRAP EFFICIENCY

The basin trap efficiency is not applied to the periods 'Before Mining' and '5 years after revegetation'.

UNIVERSAL SOIL LOSS DATA

Increment No.	Basin Trap Efficiency	Time Period	R	K	Ls	Cp	A
1	90%						
		Pre-Mining	300	0.30	0.49	0.500	22.05
		Mining	300	0.24	0.49	0.900	3.18
		Post-Mining:					
		2 Mos After Reveg	300	0.30	0.49	0.140	0.62
		12 Mos After Reveg	300	0.30	0.49	0.050	0.22
		5 Years After Reveg	300	0.30	0.49	0.009	0.40
2	90%						
		Pre-Mining	300	0.30	0.60	0.500	27.00
		Mining	300	0.24	0.60	0.900	3.89
		Post-Mining:					
		2 Mos After Reveg	300	0.30	0.60	0.140	0.76
		12 Mos After Reveg	300	0.30	0.60	0.050	0.27
		5 Years After Reveg	300	0.30	0.60	0.009	0.48
3	90%						
		Pre-Mining	300	0.30	1.02	0.500	45.90
		Mining	300	0.24	1.02	0.900	6.60
		Post-Mining:					
		2 Mos After Reveg	300	0.30	1.02	0.140	1.28
		12 Mos After Reveg	300	0.30	1.02	0.050	0.46
		5 Years After Reveg	300	0.30	1.02	0.009	0.83
4	90%						
		Pre-Mining	300	0.30	0.90	0.500	40.50
		Mining	300	0.24	0.90	0.900	5.83
		Post-Mining:					
		2 Mos After Reveg	300	0.30	0.90	0.140	1.13
		12 Mos After Reveg	300	0.30	0.90	0.050	0.41
		5 Years After Reveg	300	0.30	0.90	0.009	0.73
5	90%						
		Pre-Mining	300	0.30	0.61	0.500	27.45
		Mining	300	0.24	0.61	0.900	3.95
		Post-Mining:					
		2 Mos After Reveg	300	0.30	0.61	0.140	0.78
		12 Mos After Reveg	300	0.30	0.61	0.050	0.28
		5 Years After Reveg	300	0.30	0.61	0.009	0.49

B. ACIDITY, TSS, TDS, Fe, Mn & pH vs SEASONAL FLOW RATES

1.) Acidity:

Chemical overburden analyses indicated that the Neutralization Potential of the overburden is higher than the Maximum Potential Acidity. Based on these findings acidity should not have any onsite and/or offsite adverse effects.

2.) Suspended and Dissolved Solids:

Suspended solids will increase in direct proportion to rainfall and corresponding runoff. Seasonal maximum rainfall and runoff will occur during the winter and spring. Sediment basins and diversions that will retain all settleable solids, maintain surface skimmers and/or subsurface drainage to control floating solids and provide adequate detention volume and solids storage to minimize the discharge of mine drainage with high suspended and dissolved solid concentrations will be constructed after approval by the Regulatory Authority.

3.) Fe, Mn and pH:

Surface and groundwater occurring at the proposed site will be more mineralized by contact with unweathered overburden materials. Contact with the coal seam, the strata immediately above and/or below the coal seam and with coal refuse materials will result in a decrease in pH and a corresponding increase in iron and manganese concentrations. In the event the pit areas are flooded and require pumping to existing diversions and/or sediment basins, surface water quality could deteriorate and require chemical treatment. Comingling overburden materials in the mining and reclamation processes will naturally neutralize acidity and corresponding pH values. Timely grading and reclamation operations of mined/disturbed areas will minimize contamination to the surface and groundwater systems.

4.) Flooding and Stream Flow Alterations:

In the mining process, eleven (11) sediment basins will be constructed to control surface drainage from the proposed permit site. All sediment basins shall be approved by the Regulatory Authority prior to construction and shall be designed with adequate storm detention volume to accommodate flooding conditions within their respective watersheds. During periods of peak discharge, emergency spillways and/or decanting systems will be designed and functional for all sediment basins, and surface water discharges to off-site streams and/or tributaries will increase in flow duration and decrease in peak discharge rates due to the storm detention volumes of the respective sediment basins.

5.) Groundwater and Surface Water Availability

Based on predictions developed for this permit site, it is unlikely that surface mining activities will have any adverse impacts that will result in the contamination, diminution or interruption of groundwater and/or surface water sources outside the proposed permit area. Because of the existence and extent of the Pottsville Formation within the mine site and adjacent properties, no substantial source of dependable groundwater exists in this area. In the event that mining operations preclude the use of groundwater, an alternative water source (Northeast Alabama Water District) is available.

Surface water in the proposed mine site and adjacent properties will not show any adverse effects due to mining operations and its use should not be impaired.

Probable Hydrologic Consequences Certification Statement:

I, Jerry W. Williams, a Registered Professional Engineer, hereby certify that the Determination of Probable Hydrologic Consequences was prepared by TASK Engineering Management Inc., under my direct supervision, and that the information submitted in this document is correct and accurate to the best of my knowledge and belief.

TASK Engineering Management Inc.

Jerry W. Williams

Jerry W. Williams, P.E.

04-19-2013

Date

Alabama Reg. No. 12739