Form HQAA

Kentucky Pollutant Discharge Elimination System (KPDES)

High Quality Water Alternatives Analysis

The Anti-degradation Implementation Procedures outlined in 401 KAR 5:030, Section 1(3)(b)5, allows an applicant who does not accept the effluent limitations required by sub-paragraphs 2 and 3 of 5:030, Section 1(2)(b), to demonstrate to the satisfaction of the Environmental and Public Protection Cabinet that no technologically or economically feasible alternatives exist, and that allowing lower water quality is necessary to accommodate important economic or social development in the area in which the water is located. The approval of a POTW's regional facility plan pursuant to 401 KAR 5:006 shall demonstrate compliance with the alternatives analysis and socioeconomic demonstration for a regional facility. This demonstration shall also include this completed form and copies of any engineering reports, economic feasibility studies, or other supporting documentation

I. Permit Information

Facility Name	**Miller Bros. Coal, LLC** **Caney Fork Mine** **KDMRE Permit ID. 860-0473**	KPDES NO.	
Address	**P.O. Box 990; 436 Daniels Creek Road**	County	**Knott**
City, State, Zip Code	**Allen, KY 41601**	Receiving Water Name	**Caney Fork**

II. Alternatives Analysis - For each alternative below, discuss what options were considered and state why these options were not considered feasible.

1. **Discharge to other treatment facilities.** Indicate which treatment works have been considered and provide the reasons why discharge to these works is not feasible.

Alternative treatment works have been investigated, including piping and trucking the discharge to the nearest water treatment plant.

- **It would take approximately $1.6 million (23,760 feet of 24" diameter HDPE pipe at $67/ft.)to run 24" diameter HDPE pipe to the nearest downstream municipal water treatment plant, which is the Wayland Waste Water Treatment Plant in Wayland. The Wayland treatment plant would then require a sedimentation basin to remove the silt before allowing the water to enter their plant.**
- **It would require 15 trucks with a capacity of 5,000 gallons each, working 24 hours a day, to haul the discharge to the Wayland treatment plant. The trucks would cost over $3.5 million ($230,000 per truck), and maintenance and gas would cost over $11,257per day ($20.5 million over the 5-year life of the project), for a total cost of over $23.9 million.**

2. **Use of other discharge locations.** Indicate what other discharge locations have been evaluated, and the reasons why these locations are not feasible.

As an alternative to discharging into Caney Fork, Miller Bros. Coal, LLC, examined diverting drainage and runoff into Terry Branch and Thornsbury Branch, the nearest adjacent drains to the project area. These streams are similar to Caney Fork and the land use in their respective watersheds is similar to that in the Caney Fork watershed. Any discharge into these alternate drains would ultimately discharge into Caney Fork, as would any discharge into Poundmill Branch. Therefore, the use of these alternate drains would not prevent degradation of water quality in Caney Fork. It would cost a minimum of $516,436 (7,708 feet of 24" diameter HDPE pipe at $67/ft.) to pump the discharge into the nearest adjacent tributary.

3. **Water reuse or recycle.** Provide information about opportunities for water reuse or recycle at this facility. If water reuse or recycle is not a feasible alternative at this facility, please indicate the reasons why.

Water does play a key part in mining operations as far as misting/spraying the area to help alleviate airborne coal dust. However, the amount of water required for dust suppression is minimal compared to the discharge generated. Total watershed drainage area for discharge from the five dug-outs is over 234acres, with a peak discharge of over 186,695 gallons per minute. Water used for dust suppression in a day might be 12,000 gallons. Dust suppression is generally only required during dry times when the flow of the surface discharge is low or non-existent. No other water is needed for recycling or reuse with this operation.

A small portion (approximately 139,200 gallons) of the total discharge generated (approximately 2.6 billion gallons) will be used for hydro-seeding when grade work is completed on this project. This will require approximately 47 loads (3000 gallons per load), with a cost of $34,800 ($750/load).

Construction of a lake for recreational purposes was also evaluated as a possible alternative. This would involve acquisition of the land, environmental and engineering surveys, and construction of a dam, at the very least. The estimated cost of this alternative is $6 million.

4. **Alternative process or treatment options.** Indicate what process or treatment options have been evaluated and provide the reasons they were not considered feasible.

Several alternatives to treating water from the project area and discharging it to streams and rivers in the area have been evaluated. These alternatives include construction of a water treatment facility, construction of physical filter barriers, chemical treatment of drainage, and construction of wetlands.

<u>Water Treatment Facility</u> Construction of a small water treatment facility (500,000 gallons per day) on the project site would cost over $ 1.6 million dollars, plus an additional cost of approximately $50,000 for a containment reservoir. This water treatment facility would not be able to manage the large amount of water required at this site (over 186,695 gallons per minute peak discharge). It would require 538 of these small facilities or one large facility (over $860 million) to handle this amount.

<u>Physical Filter Barriers</u> Silt fences and straw bales are designed for use with small discharges, and would not be able to handle the large discharge flow generated nor would they meet requirements of Commonwealth of Kentucky's Surface Mine Regulations as stated in 405 KAR 16:070.

<u>Chemical Treatment</u> Chemical treatment of drainage was also considered. The primary treatment required at this site is the removal of sediments, which requires the use of ponds or dugouts to hold the water while the soil and debris settles out. Chemicals may be used to augment this process, but sediment removal is not possible using chemical treatment alone. It would cost at least $1.6 million to treat the entire volume of discharge at this site (over 3.2 billion gallons over five years).

<u>Wetland Construction</u> Constructed wetlands have traditionally been used for biological treatment. However, the discharge generated by this operation will require sedimentation control measures, and wetlands are not effective for treating sediment. Additionally, wetlands used for water treatment would require additional property (approximately 4.7acres), which is not available in this particular project area. It would cost approximately $54,038 to construct these wetlands.

5. **On-site or sub-surface disposal options.** Discuss the potential for on-site or sub-surface disposal. If these options are not feasible, then please indicate the reasons why.

An alternative to surface discharge from the project area is sub-surface disposal. Deep mining has been conducted in the vicinity of the project area. Therefore, the sub-surface disposal of drainage from the project area would present safety concerns for any present deep mining operations, and the cost would be high, due to a lifting station ($218,000), 24" dia. HDPE pipe (~$154,000), and possibly drilling an injection well, which could cost up to $50,000 per well, depending on depth. Injecting this discharge underground would increase the potential of an outcrop blow-out or blow-out from an old adit and would require a UIC Permit. A suitable place to inject, within 0.5 miles of this site, has not been found. In addition to potential safety impacts associated with subsurface disposal, this alternative would reduce the quantity of water available to support downstream aquatic communities.

Another alternative is on-site storage in 50,000-gallon septic tanks, and eventual release into the surrounding area. In order to store the amount of discharge generated at this site in one year, 18,444storage tanks would be required, with a potential cost of over $2.2 billion for the tanks alone. 24" diameter HDPE pipe ($67/foot) would be required to transport the discharge to the tanks, with a cost of over $3.7 million for over 55,331 feet of pipe. This would require the excavation of at least 513 acres of land (451 acres for the tanks and 62 acres for the leach field) to a depth of 15 feet. Because of the amount of sediment in the discharge, the tanks would have to be cleaned out at least once per year, at a cost of approximately $618 million ($6700 per tank per year). After excavation in order to install the tanks and after each cleaning, the extra dirt and sediment would have to be added to the existing hollow fill, or used to create another hollow fill, resulting in greater disruption of the natural contours of the area.

6. **Evaluation of other alternatives to lowering water quality.** Describe any other alternatives that were evaluated and provide the reasons why these alternatives were not feasible.

Other alternatives reviewed were

a) accepting a high water quality requirement, and

b) avoiding the project

Accepting high water quality requirements would create additional burden and cost to this project because larger ponds would have to be built. For the embankment ponds, this means more disturbances in the streams, larger volumes of water stored behind the embankments, and higher construction/removal costs (approximately $15,000 per pond).

Avoiding this project would mean that the advantages of economic development in the Raven community area would not be realized. At a minimum, 30 local jobs would be lost, the tax base would diminish ($98,267 in severance taxes would not be collected), and local businesses would not prosper to the same extent.

III. Socio-economic Demonstration

1. State the positive and beneficial effects of this facility on the existing environment or a public health problem.

Approximately 65.95 acres of this watershed have been previously mined, with the discharge from those activities presently flowing untreated into area streams. Miller Bros. Coal, LLC proposes to build five on-bench dugouts to treat this watershed discharge. The area will be re-graded to prevent additional erosion from the previous logging activities. Following the conclusion of mining, the area will be reclaimed, which will provide an enhanced habitat and environment.

Additionally, recovery of the coal will increase severance tax revenues by over $96,000, which will be returned to the community. This money can be used for environmental protection such as sewage disposal, sanitation, and solid waste disposal, which will have beneficial effects on the existing environment.

2. Describe this facility's effect on the employment of the area.

This mining operation would continue to provide employment for an estimated 30 employees. These mining positions prove to be higher paying jobs than other industries in Knott County, specifically near small communities such as Raven. The average weekly wage in the mining industry is $1,214.35 for Knott County (2006, Kentucky Workforce Development Cabinet). Compared to the average weekly wage for all industries in Knott County ($789.11), this is a clear advantage. Loss of these higher-paying jobs would result in decreased revenue to local businesses that cater to the needs of the employees on a daily basis.

3. Describe how this facility will increase or avoid the decrease of area employment.

The economy in this portion of Knott County is dependent on the Mining Industry. Therefore, this operation will provide for the continuation of 30 higher-wage permanent jobs in the area work force. This means that 0.17% of the total Knott County population will have higher-paying jobs as a result of this operation. This also positively affects as many as 45 employees (0.26% of the total population) in the support industries that will help to supply the material and equipment needed for mining, as well as other services, such as engineering and training. With the current unemployment rate in Knott County at 7.0% (approximately 1,227 people are unemployed out of the total population of 17,536) (2007, Bureau of Labor Statistics), it is likely that a new mine will lead to an increase in employment, but at the very least, it will certainly avoid a decrease in local employment figures.

4. Describe the industrial or commercial benefits to the community, including the creation of jobs, the raising of additional revenues, the creation of new or additional tax bases.

This mine facility will provide jobs in communities in this portion of Knott County and help prevent the loss of jobs when an existing area facility closes or moves to another area. Recovery of the coal, located along Caney Fork, will produce over 280,000 tons of coal. This will generate over $655,000 in severance taxes, of which the surrounding counties will receive a total of over $98,267 dollars (15 percent). Additional revenue will be given to local businesses, generated through increased employment to handle support services catering to the mining operation directly and to the needs of the employees on a daily basis. Local income taxes, property taxes, and sales taxes will also add to revenue brought in by the mining facility.

5. Describe any other economic or social benefits to the community.

This facility will not only provide mining jobs but will also provide jobs that help support the mining industry. Equipment salesmen and repairmen, mining and engineering consultants, and fuel and transportation providers will be needed as a result of the mine. The creation of as many as 45 more jobs in the surrounding communities, such as Raven in Knott County, will spur community development, thus creating even more employment opportunities in the local area.

The increased payment of property taxes will benefit schools so that they have funding to purchase better equipment, improve their facilities, and increase salaries for the teachers. In addition, the increased tax payments will provide additional money for government services to better serve the local area citizens.

These monies will be returned to the community, providing funds to help establish alternative industries for additional local employment opportunities, as well as providing funding for public safety, environmental protection, public transportation, vocational training, local health/recreational/ educational facilities, social services, industrial/economic development, workforce training, and the secondary wood industry. Property values increase when land is active. Therefore, when mining is being conducted, the land has an increased value requiring increased property taxes to be paid in to the city operating fund.

III. Socio-economic Demonstration – continued

	Yes	No
6. Will this project be likely to change median household income in the county?	☒	☐
7. Will this project likely change the market value of taxable property in the county?	☒	☐
8. Will this project increase or decrease revenues in the county?	☒	☐
9. Will any public buildings be affected by this system?	☐	☒

10. How many households will be *economically* or *socially* impacted by this project?

It is estimated that 30 workers will be employed by the project. Thus, 30 households will be directly affected by the operation. These households will, in turn, affect at least 45 additional households of local business owners and their employees by purchasing goods and services in the area.

11. How will those households (if any) be *economically* or *socially* impacted?
(For example, through creation of jobs, educational opportunities, or other social or economic benefits)

The households of the estimated 30 facility employees will be positively impacted by the higher-than-average income that these mining jobs will provide. The average weekly wage in the mining industry is $1,214.35 for Knott County. The average weekly wage for all industries is $789.11 in Knott County.

Additionally, many other households will be impacted by the increased business for local retailers and their employees in Knott County. Engineering services and fuel and transportation providers will be needed, particularly around small communities such as Raven. The employees of these support businesses will be positively impacted, with a more secure place of employment due to the increased revenue given by the mining industry.

	Yes	No
12. Does this project replace any other methods of sewage treatment to existing facilities? If so, describe how.	☐	☒

The proposed project is a mixed surface mining/deep mining operation. There are no existing sewage waste water discharges that this project could replace.

	Yes	No
13. Does this project treat any existing sources of pollution more effectively? If so, describe how.	☒	☐

Some of the discharge proposed in this application amendment will be in areas that have been mined before (65.95 acres). Any runoff from these drainage areas into area streams will now be treated by the proposed sediment control structures.

III. Socio-Economic Demonstration - continued

	Yes	No
14. Does this project eliminate any other sources of discharge or pollutants? If so, describe how.	☒	☐

Some areas of the Caney Fork watershed (65.95 acres) have been previously mined. With the re-mining proposed in this project, runoff pollution will be eliminated through reclamation instead of the current uncontrolled runoff into area streams.

15. How will the increase in production levels positively affect the socio-economic condition of the area?

The increase in production levels is not only providing jobs for this operation at a higher-than-average weekly mining wage of $1,214.35 in Knott County (versus all other industry wages of $789.11 on average) but will create additional revenue for the existing businesses in and around Knott County. The additional revenue for the local businesses and the severance tax dollars generated by this project (over $98,267), will provide the local government increased benefits in public safety (law enforcement, fire protection, ambulance services) and also aid industrial and economic development in the surrounding communities such as Raven.

16. How will the increase in operational efficiency positively affect the socio-economic condition of the area?

The facility will continue to provide employment to an estimated 30 workers during the life of the operation. The project will also help to provide as many as 45 additional jobs in other sectors of the economy, such as engineering, fuel, and transportation. Therefore, the proposed mining operations positively affect the local economy more than other industries. Using a combination of surface mining and deep mining methods of coal extraction is the most efficient and economical plan for this particular site. This allows for maximum removal of coal reserves, increasing the amount of tax dollars that contribute to the state and local economy.

IV Certification: I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Name and Title:	Gene Campbell Vice President	**Telephone No.:**	(606) 874-9003
Signature:	Gene Campbell	**Date:**	1-18-08