Form HQAA

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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** **Frasure Branch Surface Mine** **KDMRE Permit ID. 836-0321 Am. #1**	KPDES NO.	KY0046281
Address	**P.O. Box 990; 436 Daniels Creek Road**	County	**Floyd**
City, State, Zip Code	**Allen, KY 41601**	Receiving Water Name	**Hamilton Branch**

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 $4.4 million (66,000 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 Southern Water and Sewer District in Allen. The Allen treatment plant would then require a sedimentation basin to remove the silt before allowing the water to enter their plant.**
- **It would require 24 trucks with a capacity of 5,000 gallons each, working 24 hours a day, to haul the discharge to the Allen treatment plant. The trucks would cost over $5.5 million ($230,000 per truck), and maintenance and gas would cost over $18,011per day ($32.8 million over the 5-year life of the project), for a total cost of over $38.3 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 Hamilton Branch, Miller Bros. Coal, LLC, examined diverting drainage and runoff into the Left Fork of Frasure Branch and Wolfpen Branch, the nearest adjacent drains to the project area. These streams are similar to Hamilton Branch and the land use in their respective watersheds is similar to that in the Hamilton Branch watershed. Any discharge into these alternate drains would ultimately discharge into Mud Creek, as would any discharge into Akers Branch. Therefore, the use of these alternate drains would not prevent degradation of water quality in Mud Creek. It would cost a minimum of $1.4 million (21,120 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 three dug-outs is over 40.12 acres, with a peak discharge of over 34,941 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 60 loads (3000 gallons per load), with a cost of $45,128 ($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 $5.4 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 34,941 gallons per minute peak discharge). It would require 101 of these small facilities or one large facility (over $161 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 $1.3 million to treat the entire volume of discharge at this site (over 2.5 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 1 acres), which is not available in this particular project area. It would cost approximately $23,000 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, 11,389 storage tanks would be required, with a potential cost of over $1.3 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 $2.2 million for over 34,168 feet of pipe. This would require the excavation of at least 332 acres of land (278 acres for the tanks and 54 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 $381 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 Grethel community area would not be realized. At a minimum, 30 local jobs would be lost, the tax base would diminish ($1,671,908 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 114 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 one embankment pond 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 $250,000, 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 Floyd County, specifically near small communities such as Grethel. The average weekly wage in the mining industry is $969.20 for Floyd County (2006, Kentucky Workforce Development Cabinet). Compared to the average weekly wage for all industries in Floyd County ($596.59), 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 Floyd County is dependent on the Mining Industry. Therefore, this operation will provide for the continuation of 40 higher-wage permanent jobs in the area work force. This means that 0.0009% of the total Floyd County population will have higher-paying jobs as a result of this operation. This also positively affects as many as 60 employees (0.001% 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 Floyd County at 6.5% (approximately 2,748 people are unemployed out of the total population of 42,282) (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 Floyd 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 Hamilton Branch, will produce over 716,942 tons of coal. This will generate over $1,671,908 in severance taxes, of which the surrounding counties will receive a total of over $250,786 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 60 more jobs in the surrounding communities, such as Grethel in Floyd 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 40 workers will be employed by the project. Thus, 40 households will be directly affected by the operation. These households will, in turn, affect at least 60 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 40 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 $969.20 for Floyd County. The average weekly wage for all industries is $596.59 in Floyd County.

Additionally, many other households will be impacted by the increased business for local retailers and their employees in Floyd County. Engineering services and fuel and transportation providers will be needed, particularly around small communities such as Grethel. 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/auger 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 (114 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 Hamilton Branch watershed (114 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 $969.20 in Floyd County (versus all other industry wages of $596.59 on average) but will create additional revenue for the existing businesses in and around Floyd County. The additional revenue for the local businesses and the severance tax dollars generated by this project (over $250,786), 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 Grethel.

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 40 workers during the life of the operation. The project will also help to provide as many as 60 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.

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Signature:		**Date:**	1-18-08