KPDES FORM HQAA

Kentucky Pollutant Discharge Elimination System (KPDES)

High Quality Water Alternative Analysis

The Antidegradation 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 subparagraphs 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:	Thoroughbred Mining Co., LLC	**KPDES NO.:**	889-5013
Address:	701 Market Street Suite 721	**County:**	Muhlenberg
City, State, Zip Code:	St. Louis, MO 63101	**Receiving Water Name:**	Unnamed tributary of Little Cyress Creek

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.

The nearest municipal sewage treatment facility is located at Central City. This plant is located approximately 2.4 miles from this project. This plant was not designed for or capable of treating either the type or volumes of water involved with this project. This option would almost certainly create influx problems for the Central City plant resulting in an "over-load" to their system presenting the possibility that by-passes would occur leading to discharges of untreated municipal waste which would create a serious health threat. Routing water to this plant would require a minimum of 12,540 feet of carrier lines, a network of lift and pump stations and obtaining extensive rights of way and easements. Calculating maximum flow at 196 mgd, conservatively estimating line at $20/foot, a single lift station at $2.5 million (based on half from the chart below) ignoring other stated requirements, the minimum cost of this option would greatly exceed $3 million dollars The excavation, grading, and installation of lines for required substations would have detrimental environmental consequences.

TABLE 1 LIFT STATION CONSTRUCTION COSTS

Lift Station	Design Flowrate (MGD)	Construction Costs (1999 $US)
Cost curve data[1]	0.5	$134,467
Cost curve data[1]	1	$246,524
Cost curve data[1]	3	$392,197
Valencia, California[2]	6	$1,390,000
Sunneymead, California[2]	12	$3,320,000
Sunset/Heahfield, California[2]	14	$2,600,000
Springfield, Oregon Terry Street Pumping Station[2]	20	$5,470,000
Detroit, Michigan[2]	750	$128,800,000

Source: [1]Qasim, 1994 and [2] James M. Montgomery Consulting Engineers, 1998.

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The Greenville Sewage Treatment Plant was also considered but its more distant proximity to this project makes it also unfeasible.
Transporting this volume of water by self-contained disposal trucks would also be impractical. Based on a required 25 year, 24 hour storm event calculation, the possible peak discharge from this project could exceed 136,265 gpm.

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

Green River was considered as the only other available discharge location but the required location of the proposed silt structures in relation to the project make this an unfeasible option.

II. Alternatives Analysis - continued

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.

The drainage area for this revised area is 87.91 acres*

*Sediment Structure No. 1 is approximately 42.9 acres
Sediment Structure No. 2 is approximately 45.0 acres

Using water from this project for on site dust suppression and watering of reclaimed areas was considered but the absorption rate does not support land application.

There are no other facilities on site that will need a raw water source.

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

As an alternative treatment option, sand filtration was evaluated but deemed not applicable. Sand filtration is used primarily as a pre-treatment to remove microbial contaminates, not particulate matter, in storm run-off from smaller urban drainage areas. The high sediment volumes involved in a storm event could clog the filtration unit rendering it ineffective. Sand filters do not control storm water and do not prevent downstream bank and channel erosion as proposed structures are designed to do. Also, the operational efficiency of these units in colder climates and freezing conditions has not been thoroughly evaluated. .

Using silt fences and straw bales for sediment control was considered as per BMP's but were determined to be inadequate independent of other measures due to the elevation, grade of the area, and drainage area size.

II. Alternatives Analysis - continued

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

The installation of a sanitary septic system, i.e., septic tank was evaluated but is not an applicable option. Building a system large enough to handle the volume of water would be impractical. Septic systems are design to degrade organic waste and biodegradable material over time by anaerobic digestion. While the source water would most likely contribute some organic material and some needed bacteria, this would be inadequate to decompose the sediment and would work essentially the same as a sediment structure.

Construcing an on-site storm water treatment facility was considered. The volume of discharge and the lift required make this an unfeasible option. Consultation with Beckman Environmental in Cincinnati, OH, a company that specializes in these types of constructions, revealed a recent bid on a project in Columbus, OH involving a lift of 30 feet, a peak discharge of 3800 gpm (compared with 136,265 gpm for this project), a grit removal station, and influent and effluent lines at $2.5 million dollars. Cost to construct a similar facility at this site would the much greater.

The possibility of using old mined out underground works was considered as a disposal option but was deemed as potentially dangerous due to the uncertainty of the remaining structures and the possibility of a "blow-out" or leakage could occur causing both a public safety and environmental threat.

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

Foregoing the entire operation as an alternate to lowering water quality was evaluated. This action would have negative economical impacts as the 450 anticipated permanent jobs directly related to this endeavor and the resulting $27 million dollars in collective annual salaries, other indirectly related jobs and revenues including severance tax estimated at $2.7 million annually would not occur.

Underground mining techniques must be used to maximize the recovery of the coal reserves. This surface area must be distributed to allow the portals to be "faced-up" to most efficiently access the reserves. On site water treatments including sediment ponds, silt fences and hay bales were considered. Sediment ponds will be used to retain the water for an acceptable amount of time to allow the solids to settle effectively. Silt fences and straw bales can be used in lower elevations where run-off may not flow to a sediment structure but are not adequate exclusively.

III. Socioeconomic Demonstration

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

Some of the watersheds to be impacted by this project are of a poor nature due to extensive previous mining, associated haul roads, belt lines and other mining associated activities. Once mitigation begins, the stream banks will be stabilized to prevent erosion, species indigenous to the area will be planted to establish an adequate riparian zone and stream channels will be rehabilitated to curb sedimentation. After reclamation, the area will be converted to a wildlife management area with some pastureland. This will provide a healthier habitat for aquatic species and wildlife leading to a more balanced ecosystem.

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

The portal area is located in Central City, population 5787. However the mine and power plant are considered to be The Thoroughbred Community. The Thoroughbred Community consists of the following Kentucky Counties: Butler, Caldwell, Christian, Crittenden, Daviess, Hancock, Henderson, Hopkins, Logan, Lyon, McLean, Muhlenburg, Ohio, Todd, Trigg, Union, and Webster. This project is expected to result in 450 permanent positions with more than 80% being residents of the Thoroughbred Community Additionally, as a result of the power plant and the mine operations activity, an additional 633 indirect and induced job-years annually are estimated to be generated.

Unemployment Rates-Muhlenburg			
Year	U.S.	KY	Muhlenberg Co.
1990	6.3	5.9	8.7
1991	7.3	7.5	12.5
1992	7.4	6.9	12.5
1993	6.5	6.2	11
1994	5.5	5.4	9.5
1995	5.6	5.4	8.6
1996	5.4	5.6	8.5
1997	4.7	5.4	8.8
1998	4.3	4.6	7.4
1999	4.2	4.5	8.3
2000	4	4.1	6.5
2001	4.7	5.4	10.1
2002	5.8	5.6	8.6
2003	6	6.2	8.7
2004	5.5	5.3	7.3

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

This project will increase and avoid the decrease of the area's employment with the addition of the permanent direct jobs that will be added and with the indirect jobs created by the project. In September 2006, there were 10,740 people unemployed and seeking employment in the 17 county Thoroughbred community. The direct and indirect jobs provided by this project could reduce this number by as much as 10%. This project is expected to have a 30 year life. The jobs created by this project are long term and will impact the local employment for many years.

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.

Total expenditures related to operations of the mine are expected to result in an estimated $31 million within the Commonwealth, $24 million in the 17-county Thoroughbred Community and $9 million in Muhlenburg County. Of the $31 million spent within the Commonwealth, approximately $11 million annually will be spent on locally provided goods and services within Kentucky including an estimated $6 million annually to be spent within the 17-county Thoroughbred Community and $4 million within Muhlenburg County. Coal is taxed at 4.5% per ton of which 50% is slated to be returned to the county of origin.. Based on the projections of 66 million tons recovery, this project will contribute approximately $89 million in severance taxes during the life of the project. These monies are used for local education, health services, judicial services and infrastructure projects.

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

Direct and Indirect Economic Impacts on the 17-County Thoroughbred Community 2002-2035

(Milllions, except Job-Years)

	Direct	Indirect & Induced	Total	Multiplier
Spending	$1,917	$707	$2,624	1.37
Job-years	15,558	22,499	38,057	2.45
Income	$1,049	$577	$1,627	1.55

Direct and Indirect Economic Impacts on Muhlenburg County 2002-2035

(Millions, except Job-Years)

	Direct	Indirect & Induced	Total	Multiplier
Spending	$575	$129	$704	1.22
Job-years	4,927	4,986	9,914	2.01
Income	$349	$110	$460	1.32

Every dollar the project pays in wages will produce an estimated additional 74 cents of income in the Commonwealth of Kentucky including 55 cents in the 17-county Thoroughbred Community and 32 cents in Muhlenburg County.

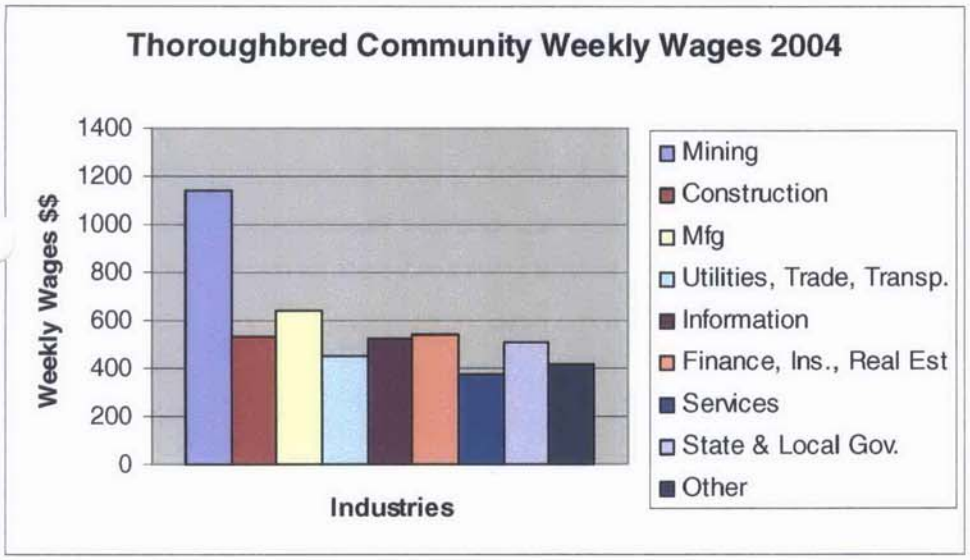
III. Socioeconomic Demonstration - continued

	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? **>450**

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

This project will permanently (+30 Years) employ approximately 450 residents providing jobs and benefits estimated at approximately $80,000/year. According to data gathered by KY Coal Facts, the average weekly earnings for a western Kentucky miner in 2004 was $1,142.81. U.S. Census Bureau shows than in 2000, less than 10% of residents in this 17 county area had Bachelor's degrees or higher. In 2005, the median income for a 4 year college graduate was $54,800. The wages paid by this project are not seen in other industries in the seventeen county area:



Included in this package are wages, health and dental insurances as well as disability and retirement compensation. Indirect employment is expected to provide an additional 600+ jobs in mining related industries. These indirect jobs are expected to pay approximately $26,000/year. This is an annual employment salary of over $51 million dollars. This influx of monies affords these households the ability to maintain or enhance their economic status and provides opportunities for improved social welfare afforded by these earnings.

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

'he residents in this area are served by a municipal sewage treatment facility.

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

Sediment control from extensive prior mining will be improved. Existing over growth will be removed and channelization of receiving stream due to excessive silting will be improved.
Several access roads exist within the project area that currently lack any form of sediment control. Implementation of this project will improve this.

III. Socioeconomic Demonstration - continued

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

Prior to the start of this project, the mine site will be cleaned and all garbage material will be disposed of.

15. How will the increase in production levels positively affect the socioeconomic condition of the area?

This project will remove approximately 66 million tons of coal over approximately 35 years that would not have been recovered or made available to the market otherwise. This will result in continued employment for approximately 450 people, aid in development and maintenance of indirect jobs and will increase the amount of money the area receives in personal and severance taxes. These monies are used for local education, health services, judicial services and infrastructure projects.

16. How will the increase in operational efficiency positively affect the socioeconomic condition of the area?

The increase in operational efficiency will in turn increase the production levels leading to increased new employment opportunities in the area, maintenance of existing employment, development and maintenance of indirect jobs and increase in the amount of personal and severance tax the area receives.

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:	X Dianna Tickner	**Date:**	11/01/2006