AI 83361

KPDES FORM SDAA

Kentucky Pollutant Discharge Elimination System (KPDES)

Socioeconomic Demonstration and Alternatives Analysis

The Antidegradation Implementation Procedure found in 401 KAR 10:030, Section 1(3) (b) 3 requires KPDES permit applications for new or expanded discharges to waters categorized as "Exceptional or High Quality Waters" to conduct a socioeconomic demonstration and alternatives analysis to justify the necessity of lowering local water quality to accommodate important economic or social development in the area in which the water is located. This demonstration shall include this completed form and copies of any engineering reports, economic feasibility studies, or other supporting documentation

I. Project Information

Facility Name: XINERGY CORP. KY0103324

Location: 2.5 miles North of Big Run Branch County Road Junction with KY. 221

County: Harlan & Leslie

Receiving Waters Impacted: Straight Creek & Middle Fork Kentucky River

II. Socioeconomic Demonstration

1. **Define the boundaries of the affected community:**
(Specify the geographic region the proposed project is expected to affect. Include name all cities, towns, and counties. This geographic region must include the proposed receiving water.)

This proposed project is expected to affect Harlan and Leslie Counties as a whole. The project area includes operations in both counties. Some cities and towns close by in Leslie county are Upper Laurel Fork and Hendrix. Some cities and towns close by in Harlan county are Bailey Creek, Big Laurel, and Smith. Some adjoining counties the proposed project could affect include Bell, Clay, Perry, Knott, and Letcher. The major watersheds affected by this project are Middle Fork Kentucky river (Leslie County), and Straight Creek (Harlan County).

2. **The effect on employment in the affected community:**
(Compare current unemployment rates in the affected community to current state and national unemployment rates. Discuss how the proposed project will positively or negatively impact those rates, including quantifying the number of jobs created and/or continued and the quality of those jobs.)

See attachment

II. Socioeconomic Demonstration- continued

3. The effect on median household income levels in the affected community:
(Compare current median household income levels with projected median household income levels. Discuss how proposed project will positively or negatively impact the median household income in the affected community including the number of households expected to be impacted within the affected community.)

The median household income for Harlan County (2008) is $22,822 per annum. Mining pays an average weekly wage of $1,333 in Harlan County. Some other weekly wages by industry in Harlan County include $1,007 for Professional and Technical Services, $780 for construction, $735 for Wholesale Trade, and $695 for Information.

The median household income for Leslie County (2008) is $21,951 per annum. In Leslie county, mining pays an average weekly wage of $1,316. Some other weekly wages by industry in this county include $639 for Professional and Technical Services, $735 for Transportation and Warehousing, and $572 for Accommodation and Food Services.

The average weekly income for each of the (approximately) 30 mine workers who would be hired would be at least $1,316.Thus the total income would bring an annual increase of at least $ 1,895,040 in purchasing power for the areas close to the project site in Harlan and Leslie counties where the proposed mining would be undertaken.

Generally, Harlan and Leslie Counties as a whole would be positively impacted by the increase in revenues that this proposed project would bring about. Employees would have a more secure place of employment and higher than average income. The families in these 30 households will be economically sustained. Their purchasing power would have a trickle effect in reversing the unemployment trend for other workers in the region of the proposed project.

4. The effect on tax revenues of the affected community:
(Compare current tax revenues of the affected community with the projected increase in tax revenues generated by the proposed project. Discuss the positive and negative social and economic impacts on the affected community by the projected increase.)

See attachment

II. Socioeconomic Demonstration- continued

5. The effect on an existing environmental or public health in affected community:
(Discuss how the proposed project will have a positive or negative impact on an existing environmental or public health.)

As part of the mining and reclamation phase of the proposed project, any pre-existing dumps within the permit area will be eliminated, including removal of any old cars and other non-degradable refuse that might have Been disposed of on the site. These materials will be placed in an approved landfill or other approved disposal area.

The area will be reclaimed following the conclusion of mining. This will provide an enhanced habitat and environment. During reclamation, all permitted areas will be stabilized to prevent erosion. Species indigenous to the area will be planted to establish adequate revegetation and runoff from all regarded areas will be diverted into sediment ponds to prevent sedimentation to nearby streams. Following reclamation, the permit area will be in better condition than existed prior to mining. This will provide a healthier habitat for aquatic species and wildlife leading to a more balanced ecosystem. Additionally, recovery of the coal will increase severance tax revenues: This will be returned to the community. The 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.

6. Discuss any other economic or social benefit to the affected community:
(Discuss any positive or negative impact on the economy of the affected community including direct and or indirect benefits that could occur as a result of the project. Discuss any positive or negative impact on the social benefits to the community including direct and indirect benefits that could occur as a result of the project.)

This project will require supporting jobs as well as mining jobs. Equipment sales and repair, mining/engineering consultants, and fuel/transportation providers will be needed as a result of the mine. The continuation of these jobs, and the taxes collected because of it, will spur community development by the creation of more jobs in Harlan and Leslie Counties as well as other surrounding communities i.e. Perry, Leslie, Letcher, and, Bell County. It will also provide additional revenue to the businesses of the area which are already in existence. There is the potential of 30 direct jobs and 90 indirect jobs created as a result. The increased payment of property taxes will be for the improvement of the county. The additional mining should increase coal severance tax and this would subsequently increase the tax base for both Harlan and Leslie Counties.

After mining is completed, the area will be utilized for outdoor recreation activities. Reclamation has the potential of enhancing the habitat of the local flora and fauna thus increasing Harlan County's allure as a nature tourism hub.

III. Alternative Analysis

1. Pollution prevention measures:
(Discuss the pollution prevention measures evaluated including the feasibility of those measures and the cost. Measures to be addressed include but are not limited to changes in processes, source reductions or substitution with less toxic substances. Indicate which measures are to be implemented.)

The pollution prevention methods to be implemented for this proposed project include keeping gradients and inclines to the active project site as short as possible in order to minimize the amount of drainage going to the active surface mining site, constructing on site diversions to convey water around disturbed areas, constructing by pass diversions to collect or divert water to a receiving stream; that would otherwise flow through the disturbed area.

Other measures would include covering or treating potential contamination producing materials so as to minimize adverse effects on water quality, minimizing the disturbed surface area that is open at one time, and implementing sedimentation controls, routing and segregation or combination of wastewater and mine runoff water to minimize the effect on the quality of the receiving stream i.e. Straight Creek and Middle Fork Kentucky River.

2. The use of best management practices to minimize impacts:
(Discuss the consideration and use of best management practices that will assist in minimizing impacts to water quality from the proposed permitted activity.)

This proposed project would implement the recommended Best Management Practices (BMP) for mining operations in Kentucky. The water and sediment control strategies would be preplanned. The settling ponds would be sized to accommodate a 25-year, 24-hour rain or flood event. To the extent possible, ponds would not be placed in sites with steep topography or in buffer areas.

Existing vegetation would be retained where feasible. About 100-ft naturally vegetated buffer would be provided adjacent to any streams, ditches or drainage consisting of trees, shrubs, and grasses, or other herbaceous species to protect surface water from soil runoff and mining contaminants.

BMP structures would be inspected within 24 hours of each significant rainfall event and corrective action taken, immediately, if erosion or soil runoff is observed. To the extent possible, the runoff will be diverted away from disturbed areas to prevent any adverse effect on water quality as a result of increase in turbidity or total suspended solids)
All denuded areas which are not actively being mined would be vegetated and mulched. Local materials and native plant species would be selected for reclamation.

Sediment from any work that results in exposed earth on slopes leading to wetlands or surface water will be trapped on site. The length and steepness of the slopes on site would be minimized, the runoff velocity would be minimized, and buffers or filter strips would be left between land disturbances and natural waterways.

3. Recycle or reuse of wastewater, waste by-products, or production materials and fluids:
(Discuss the potential recycle or reuse opportunities evaluated including the feasibility of implementation and the costs. Indicate which of, of these opportunities are to be implemented)

Water is an integral aspect in mining operations as far as misting/spraying the area to help alleviate airborne coal dust. Nonetheless, the amount of water required for dust suppression is minimal compared to the discharge generated. The total drainways of all the ponds for this project is 396.97 acres. They would route approximately 786,079 gallons per minute of stormwater. Water used for dust suppression is generally only required during dry time 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 1,303,250 gallons per minute) will be used for hydro-seeding when grade work is completed on this project. This will require approximately 349.6 loads (gallons per load), with a cost of $262,229($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 about $36,800,000.

III. Alternative Analysis - continued

4. Application of water conservation methods:
(Discuss the potential water conservation opportunities evaluated including the feasibility of implementation and the costs. Indicate which of, of these opportunities are to be implemented)

Effective implementation of some aspects of the use of Best Management Practices (BMP) to minimize impacts (as stated previously) would be effective and instrumental in ensuring water conservation. The effective sizing of the settling ponds to accommodate a 25-year, 24-hour rain or flood event would ensure that waste water which overflows are stored. Ponds would be situated at locations which have the requisite gradient to ensure that they function at their optimum. When feasible, run off would be diverted from disturbed areas to ensure that waste water is relatively less contaminated and about 100-ft naturally vegetated butter would be provided adjacent to ditches and drains to.

Other options are available to conserve waste water quality. They include using reverse osmosis filtration systems, a system of thickeners and vacuum cleaners among others. These alternative options are not practical because they require extra costs, additional site disturbance, power lines, and increased operating costs. The average cost for a reverse osmosis plant capable of handling 2500 gallons per minute is $2.9 million. This cost is not practical for this proposed project.

5 **Alternative or enhanced treatment technology:**
(Compare feasibility and costs of proposed treatment with the feasibility and costs of alternative or enhanced treatment technologies that may result in more complete pollutant removal. Describe each candidate technology including the efficiency and reliability in pollutant removal and the capital and operational costs to implement those candidate technologies. Justify the selection of the proposed treatment technology).

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 filter barriers, chemical treatment or drainage, and construction of wetlands.

Water Treatment Facility 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. The short life of the proposed operation (only five years) and the large amount of water to be treated (over 63,245 gallons per minute (would require 182 of these small facilities or one large facility (over $291million) to handle this amount.) makes the high cost of construction unrealistic.

Physical Filter Barriers Silt fences and straw bales 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.

Chemical Treatment Chemical treatment of drainage was also considered. The primary treatment required at this site is the removal of sediments, which would require the use of ponds or dugouts to hold the water while the soil and debris settle out. Chemicals may be used to augment this process, but sediment removal is not possible using chemical treatment alone. It would cost at least $13 million to treat the entire column of discharge at this site (over 26 billion gallons over five years).

Wetland Construction Constructed wetlands have traditionally been used for biological treatment. However, the discharge generated by this operation will require sedimentation control measured, and wetlands are not effective for treating sediment. Additionally, wetlands used for water treatment would require additional property.

III. Alternative Analysis - continued

6. Improved operation and maintenance of existing treatment systems:
(Discuss improvements in the operation and maintenance of any available existing treatment system that could accept the wastewater. Compare the feasibility and costs of improving an existing system with the feasibility and cost of the proposed treatment system.)

The stormwater will pass through a dugout pond prior to discharge. This will allow settling to occur so that lowering of water quality will be minimized based on applicable regulations concerning discharges from the project site. It is not feasible to store the water on-site, dispose of it below the surface, or construct a treatment facility for a short-term project. Accepting higher water quality standards would create additional burden and cost to this project. In order to lower the effluent limits 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 is not a viable option as the advantages to the economic development of Harlan County would not be realized. Jobs would be lost, the tax base would diminish, and local business would not prosper. In Harlan County, mining jobs consist 7.9% of the total employment and makes up110.6% of county wages. The 30 jobs lost would be approximately 0.24% of the total work force in the mining industry in Harlan county. Therefore, if this project does not materialize the loss of the 30 jobs would drive the economy down by $2,986,080 by loss of revenue. This value is reflective of that of Leslie County. These figures for Harlan county are representative of Leslie county with respect to the ratio in which hiring would be made in each county.

7. Seasonal or controlled discharge options:
(Discuss the potential of retaining generated wastewaters for controlled releases under optimal conditions, i.e. during periods when the receiving water has greater assimilative capacity. Compare the feasibility and cost of such a management technique with the feasibility and cost of the proposed treatment system.)

This project proposes to construct sediment ponds to ensure controlled release of generated wastewater under optimal conditions. The capacity of the physical, chemical and biological processes to assimilate is interconnected and based on the features of the streamscape (the stream, flood plain, and riparian zone). Even though the removal of natural features i.e. vegetative cover may compromise the abilities of Stream Assimilative Processes, the constructions of the sediment ponds mitigate the impact. The ponds retard the velocity of the stormwater thus enhancing sediment filtering and reducing its deposition. The settling ponds would be sized to accommodate a 25-year, 24-hour rain or flood event and where feasible, would not be placed in sites with steep topography or in buffer areas.

III. Alternative Analysis - continued

8 Land application or infiltration or disposal via an Underground Injection Control Well
(Discuss the potential of utilizing a spray field or an Underground Injection Control Well for shallow or deep well disposal. Compare the feasibility and costs of such treatment techniques with the feasibility and costs of .proposed treatment system.)

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 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 the 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, 9,371 storage tanks would be required, with a potential cost of over 1.1 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 $1.8 million for over 28,113 feet of pipe. This would require the excavation of at least 266 acres of land (299 acres for the tanks and 37 acres for the leach field) to a depth of 15 feet. Due to 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 $313 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, resulting in greater disruption of the natural contours of the area.

9. Discharge to other treatment systems
(Discuss the availability of either public or private treatments systems with sufficient hydrologic capacity and sophistication to treat the wastewaters generated by this project. Compare the feasibility and costs of such options with the feasibility and costs of the proposed treatment system.)

It would cost approximately $1,190,400(79,200 feet of 24" diameter HDPE pipe at $67/ft.) to run 24" diameter HPDE pipe to the nearest downstream municipal water treatment plant, which is the Pineville Treatment Plant in Pineville. The Pineville treatment plant would then require a sedimentation basin to remove the silt before allowing the water to enter their plant.

It would require over 239 trucks with a capacity of 5,000 gallons each working 24 hours a day, to haul the discharge to the Pineville treatment plant. The trucks would cost over $ 54.9 million ($230,000 per truck), and the maintenance and gas would cost over $179,364 per day ($20.5 million over the 5-year life of the project), for a total cost of over $ 382.3 million.

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:		**Telephone No.:**	( ) -
Signature:		**Date:**	

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Name and Title:	John Ledington, Attorney-in-fact	**Telephone No.:**	(606) 337-5393
Signature:	John Ledington	**Date:**	10-28-09

Attachment II 2

II. Socioeconomic Demonstration

2. *The effect on employment in the affected community:*

(Compare current unemployment rates in the affected community to current state and national unemployment rates. Discuss how the proposed project will positively or negatively impact those rates, including quantifying the number of jobs created and/or continued and the quality of those jobs.)

The current unemployment rate in Harlan County is 12.3%. The state wide rate is 11.1% and the national rate stands at 9.7%. The change in Harlan County's unemployment rate has increased by 2.7% from June 2008-June 2009. This increase is comparative to a statewide change of 4.6% and a national change of 4.0%. Recent trends still reflect a continuing increase in unemployment. Harlan County reflects an increase of 1.1% compared to a statewide increase of 0.6% and a national increase of 0.6%; from May 2009-June 2009.

The current unemployment rate in Leslie County is 13.7%. The state wide rate is 11.1% and the national rate stands at 9.7%. The change in Leslie County's unemployment rate has increased by 4.5% from June 2008-June 2009. This increase is comparative to a statewide change of 4.6% and a national change of 4.0%. Recent trends still reflect a continuing increase in unemployment. Leslie County reflects an increase of 1.1% compared to a statewide increase of 0.6% and a national increase of 0.6%; from May 2009-June 2009

All rates are sourced from the Kentucky Office of Employment and Training, Research and statistics Branch; Referenced from June 2009 data.

The proposed project will positively impact the unemployment rates stated. About 30 workers will be hired because of this project. This is exclusive of indirect jobs provided for additional workers who would be hired.

Attachment II 4

Socioeconomic Demonstration continued.

4. ***The effect on tax revenues of the affected community:***

   (Compare current tax revenues of the affected community with the projected increase in tax revenues generated by the proposed project. Discuss the positive and negative social and economic impacts on the affected community by the projected increase.)

The Counties permits local taxation on real estate, finished goods, motor vehicles and other tangible properties. The taxes are levied per $100 valuation. The rates are as follows for Harlan County $0.1280 for real estate, $0.1500 for motor vehicles and $ 0.4500 for other tangible property. For Leslie County they are $0.1220 for Real Estate, $0.05 for Finished Goods, and $ 0.45 for Motor Vehicles, as well as other Tangible Personal Property

The proposed project will utilize the use of this selected class of property and this will be additional money for government services to better serve the citizens. Schools will benefit because the increased property taxes would ensure better equipments, facilities and better pays for teachers.

In Harlan County, coal severance tax breaks down as follows: For an average of $ 490,345,623 gross value of severed coal, there is a tax of about $20,462,020 and for an average of $46,190,318 gross value of processing there is a total tax receipt of $22,320,091. The total estimated tonnage for this job is 1,877,908. The gross monetary value is $108,918,664 for this quantity. For an average of $108,918, 664, there is a tax of $ 4,496,474.

The Local Government Economic Development Finance Authority (LGEDP) established by KRS 42.4588- within the Kentucky Economic Development Finance Authority (KEDFA) - provides grants of coal severance and processing tax revenues to coal producing Counties. Through this, a percentage of the revenues (in the form of severance taxes) from the mining industry are returned to the respective Counties, with mining projects, to fund the establishment of alternative interests. This amount totals approximately $674,471(being 15% severance tax). The entities in both Harlan and Leslie Counties which would benefit include public safety, environmental protection, Workforce training, health/recreational facilities, public transportation, vocational training, social services, industrial and economic development, workforce training and secondary wood industry.

In Leslie County, the coal severance tax breaks down as follows: For an average of $ 209,067,105 gross value of severed coal, there is a tax of about $9,407,300 and for an average of $32,430,316 gross value of processing there is a total tax receipt of $10,866,581. The approximate revenue from the severance tax from this mining project is about $12,172. Approximately 15% of this amount would be allocated to Harlan County's tax base. This will further provide more capital for more developmental projects to serve to improve livelihood in the county.