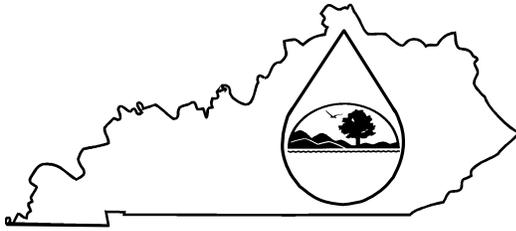


US EPA ARCHIVE DOCUMENT

# KPDES FORM SDAA



## Kentucky Pollutant Discharge Elimination System (KPDES)

### Socioeconomic Demonstration and Alternatives Analysis

#### I. Project Information

Facility Name: Xinergy Corp. KDNR No. 807-0363 A2

Location: Mine #5

County: Bell

Receiving Waters Impacted: Ben Howard Branch of Straight Creek of Cumberland 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.)

The proposed project is a combination of area and contour/highwall surface mining operation (KDNR Permit No. 807-0363 A2). The project will be recovering coal reserves from the Hazard 8, Hazard 9, Hazard 9A, Hazard 9B, Hazard 9 Rider, Hazard 10, and Hazard 11 coal seams. The site is located approximately 2.8 miles northeast of the junction of KY 2011 and KY 221 in Bell County within the Balkan/Wallins 7.5 minute quadrangle. The nearest community is Tacky Town, KY, which is approximately 1.8 miles southeast of the project site. All discharge would enter into tributaries of Ben Howard Branch of Straight Creek of the Cumberland River. The proposed project area is located in the Ben Howard Branch HUC# 05130101150080.

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

The economy in this portion of Bell County is dependent upon the mining industry. This operation will provide for the continuation of 27 higher-wage jobs in the area work force. This also positively affects as many as 41 employees 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. The 2009 unemployment rate for Bell County is estimated at 12.1%, which is higher than the Kentucky average (10.5%), as well as the average for the entire United States (9.7%). See the table below for additional employment data for Bell County.

Bell County, KY Employment Data	
Labor Force	10,014
Percent Unemployment	12.1%
Total Unemployed	1,211
% of Labor Force Employed by this Project	0.27%
% of Labor Force Affected by this Project	0.41%

2009 Workforce Kentucky

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With the current unemployment rates in this county, it is likely that a new mine will at the very least avoid an increase in unemployment rates by directly supplying 27 continuing jobs and indirectly affecting as many as 41 employees in the support industries.

### 3. The effect on median household income levels in the affected community:

This mining operation would provide employment for an estimated 27 employees. These mining positions prove to be higher paying jobs than other industries in Bell County. This also positively affects as many as 41 employees 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. See the table below for income data for this county.

Bell County	Wages
All Industries	\$655.00
Mining	\$1,060.00

2009 Workforce Kentucky

The average weekly wage in the mining industry is approximately 61.7% higher compared to the average weekly wage for all industries in Bell County. 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.

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

Recovery of the Hazard 8, Hazard 9, Hazard 9A, Hazard 9B, Hazard 9 Rider, Hazard 10, and Hazard 11 coal seams will produce approximately 236,300 tons of coal over the five year life of the project. This will generate over \$663,500 in severance taxes, of which the surrounding counties will receive a total of over \$99,500 (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. The effect on an existing environmental or public health in affected community:

Recovery of the coal will increase severance tax revenues by over \$663,500 over the life of the project, approximately \$99,500 of which will be returned to the surrounding counties. 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 and public health.

Portions of this area in Bell County have been previously disturbed by mining, logging, gas/oil well construction/transmission, and road construction. Xinergy Corp. proposes the use of one existing embankment pond and construction of 6 on-bench dug-out structures as part of the mining operation. Twenty-five dug-outs are also currently in existence on previously permitted portions of the project. In addition, the area will be re-graded to prevent additional erosion from the previous activities in the watershed. Following the conclusion of mining, the area will be reclaimed, which will provide an enhanced habitat and environment.

## **6. Discuss any other economic or social benefit to the affected community:**

This project will not only provide employment at a higher-than-average weekly wage, but will create additional revenue for the existing businesses in and around Bell County. The additional revenue for the local businesses and the severance tax dollars generated by this project (\$663,500) 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.

The facility will continue to provide employment to an estimated 27 workers during the life of the operation. The project will also help to provide as many as 41 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.

Following remediation of the site, it is possible that there will be an increase of local flora and fauna; both of which could increase local tourism.

Area and contour/highwall surface mining is the most efficient and economical plan for recovery of the coal associated with this project. This allows for maximum removal of coal reserves and increasing the amount of tax dollars that contribute to the state and local economy.

## **III. Alternative Analysis**

### **1. Pollution prevention measures:**

Several alternatives were evaluated for prevention of water pollution in this project area. Evaluated alternatives include:

- Avoidance of the project (short-term)

Avoiding this project would mean that the advantages of economic development in the Bell County community area would not be realized. At a minimum, 27 local jobs would be lost, the tax base would diminish (\$663,500 in taxes would not be collected), and local businesses would not prosper to the same extent.

- Additional Levels of Separation

Further prevention could include covering or treating of chemically reactive materials, reducing the disturbed surface area at any one time, or the separation of normal storm runoff and active site runoff.

- Preventive Design

Preventive design could include creating only moderate gradients and inclines to slow down runoff or diverting waterways and drainage. With these methods, the amount and frequency of flow through active mining sites can be minimized. All of the water that does leave the site will be treated with a system of sediment and treatment ponds. Each will store any runoff leaving the site and provide an adequate time to settle the sediment. As necessary and practicable, flocculants and chemicals will be added to treat the water if higher levels of certain chemicals and compounds are observed.

## **2. The use of best management practices to minimize impacts:**

Such BMPs could include creating only moderate gradients and inclines to slow down runoff and diverting waterways and drainage. With these methods, the amount and frequency of flow through active mining sites can be minimized. All the water that does leave the site will be treated with a system of sediment and treatment ponds. Each will store any runoff leaving the site and provide an adequate time to settle the sediment. As necessary and practicable, flocculants and chemicals will be added to treat the water if higher levels of certain chemicals and compounds are observed.

Additionally, an undisturbed natural barrier could be maintained throughout mining at the lowest disturbed elevation and extend from the out slope. This vegetative buffer could serve the function of improving water quality by the collection of sediment and the reduction of erosion.

With the conclusion of mining, the area will be reclaimed. Any affected streams will be stabilized and restored, and a riparian buffer will be established. These rehabilitated streams will curb sedimentation and provide a habitat for aquatic species and wildlife. Until final bond release, various sediment and treatment ponds will remain. Discharge will be treated as necessary and practicable to ensure that the water leaving the permit is within water quality standards.

## **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 these opportunities are to be implemented)

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. Water used for dust suppression in a day on a large surface mine would be less than 12,000 gallons, compared to the estimated 2.6 million gallons leaving the site during the life of the project. Dust suppression is generally only required during dry times when the flow of the surface discharge is low or non-existent.

A small portion (approximately 208,000 gallons) of the total discharge generated (approximately 2.6 million gallons) will be used for hydro-seeding when grade work is completed on this project. This will require approximately 70 loads (3000 gallons per load) with a cost of over \$52,000 (\$750/load).

The 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 \$2 million.

Coal mining is not a water dependent operation, so recycling or reuse of water would not be beneficial.

#### 4. Application of water conservation methods:

Water collected in sediment ponds before being discharged will be used for dust suppression as is practicable and necessary. While only a small fraction of total discharge, reusing this water will prevent possible withdrawals of other natural streams and wells.

When practicable, the proposed project will reuse discharges containing high concentrations of solids for irrigation to reclaimed land.

Upon closing of the site, the water required for remediation (including hydroseeding) may also be provided by on-site detained water, if practicable. Reusing this water will prevent possible withdrawals of other natural streams and wells.

Mining is not a water dependent operation, so conservation of water is not a major concern for mining operations.

#### 5. Alternative or enhanced treatment technology:

Several alternatives for 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, 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. This water treatment facility would not be able to manage the large amount of water required at this site (over 98,600 gallons per minute peak discharge). It would require 284 of these small facilities or one large facility (over \$4.5 million) to handle this amount.

Physical Filter Barriers Silt fences and straw bales are designed for use with small discharges. They 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 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 more than \$128,800 to treat the entire volume of discharge at this site (over 2.6 million 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 measures, and wetlands are not effective for treating sediment. Additionally, wetlands used for water treatment would require additional property (approximately 7.2 acres), which is not available in this particular project area. It would cost approximately \$66,400 to construct these wetlands.

## **6. Improved operation and maintenance of existing treatment systems:**

Xinergy Corp. proposes the use of one existing embankment pond and construction of 6 on-bench dug-out structures as part of the mining operation. Twenty-five dug-outs are also currently in existence on previously permitted portions of the project.

Pumping or trucking the runoff to the nearest wastewater treatment plant will require significant changes to the Harlan Wastewater Treatment Plant approximately 8.5 miles away. This plant cannot receive sediment-laden water and would have to construct a sediment basin to serve a similar function to on-site sediment ponds.

## **7. Seasonal or controlled discharge options:**

The proposal for this project would include the construction of sediment ponds to ensure controlled release of generated runoff under optimal conditions. The sediment ponds reduce the velocity of storm water, thus enhancing sedimentation and reducing its deposition within the stream. In this way, a controlled volume and quality of water is released in order to refrain from overwhelming the natural system. The ponds are designed for a 25-year, 24 hour storm event.

Additionally, the construction of a lake for physical detention of the water and later recreational purposes was 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 \$2 million.

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, 4,038 storage tanks would be required, with a potential cost of over \$4.8 million 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 \$811,700 for over 12,115 feet of pipe. This would require the excavation of at least 100 acres of land (99 acres for the tanks and 1 acre for the leach field) to a depth of 15 feet. The tanks would have to be cleaned out at least once per year due to the amount of sediment in the discharge at a cost of approximately \$1.4 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.

## **8. Land application or infiltration or disposal via an Underground Injection Control Well**

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 lifting stations (\$218,000 each), 24" dia. HDPE pipe (~\$3.7 million), 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, 4,038 storage tanks would be required, with a potential cost of over \$4.8 million 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 \$811,700 for over 12,115 feet of pipe. This would require the excavation of at least 100 acres of land (99 acres for the tanks and 1 acre for the

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## **9. Discharge to other treatment systems**

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

- It would take approximately \$3 million (44,670 feet of 24” diameter HDPE pipe at \$67/ft.) to run 24” diameter HDPE pipe to the nearest municipal water treatment plant, which is the Harlan Wastewater Treatment Plant approximately 8.5 miles away. The Harlan Wastewater Treatment Plant would then require a sedimentation basin to remove the silt before allowing the water to enter their plant.
- It would require 2 trucks with a capacity of 5,000 gallons each, working 24 hours a day, to haul the discharge to the Harlan Wastewater Treatment Plant. The trucks would cost over \$460,000 (\$230,000 per truck), and maintenance and gas would cost over \$1,500 per day (\$2.7 million over the 5-year life of the project), for a total cost of over \$3.2 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.

<b>Name and Title:</b>	John Ledington, Attorney-In-Fact	<b>Telephone No.:</b>	606-337-5393
<b>Signature:</b>		<b>Date:</b>	4/19/10

POWER OF ATTORNEY

STATE OF TENNESSEE )  
COUNTY OF KNOX )

KNOW ALL MEN BY THESE PRESENTS, that Xinerger, Corp., a Tennessee corporation (the "Corporation"), pursuant to the authorization of its Board of Directors, by and through its President & CEO, Jon E. Nix, hereby makes, constitutes and appoints John Ledington of the Commonwealth of Kentucky in his capacity as an employee and Chief Mining Engineer of the Corporation, its true and lawful attorney in fact, for it, and in its name, place and stead, to execute any and all documents, including but not limited to, reports, applications, and permits, which are necessary and in the ordinary course of business in the Corporation's dealings with the United States Department of Labor, Mining Safety and Health Administration; the Commonwealth of Kentucky, Environmental and Public Protection Cabinet, Department for Natural Resources; and any and all other regulatory offices, federal and state, that the Corporation may conduct business with in the course of its coal mining activities in the Commonwealth of Kentucky.

Xinerger, Corp., by and through its President & CEO, Jon E. Nix, hereby grants to said attorney in fact the full power and authority to perform all acts to be done in and about the premises as herein described, as the President & CEO could do personally on behalf of the Corporation, if personally present.

All rights, powers and authority of said attorney in fact to exercise any and all the rights and powers herein granted shall commence and be in full force and effect as of the date of execution hereof and such rights, powers, and authority shall remain in full force and effect thereafter until such time as Xinerger, Corp. revokes such appointment.

Giving and granting unto John Ledington, full power and authority to do and perform all and every act and thing whatsoever requisite and necessary to be done to carry out the intents and purposes as the President & CEO might do on behalf of the Corporation, if personally present. Xinerger, Corp., by and through its President & CEO, Jon E. Nix, hereby ratifies and confirms all that Xinerger, Corp. shall lawfully do or cause to be done by virtue of these presents.

PROVIDED, however, that all business transacted hereunder for Xinerger, Corp. or for its account shall be transacted in its name, and that all endorsements and instruments executed by its said attorney in fact for the purpose of carrying out the foregoing powers shall contain Xinerger, Corp.'s name, followed by that of its said attorney in fact and the designation "attorney in fact"

IN WITNESS WHEREOF, I have hereinto set my hand, this 10th day of July, 2008.

Xinerger, Corp.

By:   
Jon E. Nix, President & CEO

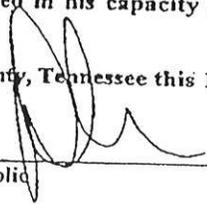
STATE OF TENNESSEE )  
COUNTY OF KNOX )

Personally appeared before me, the undersigned authority, Notary Public in and for said County and State, Jon E. Nix, President & CEO of the within named bargainer, with whom I am personally acquainted, who acknowledged himself to be the President & CEO of Xinerger, Corp., a Tennessee corporation, the within named bargainer, and who, upon oath, acknowledged that he executed the within Power of Attorney, with full authority from the Corporation, for the purposes therein contained in his capacity as President & CEO on behalf of the Corporation.

WITNESS my hand and official seal at office in Knox County, Tennessee this 10th day of July, 2008.



My Commission Expires

  
Notary Public

I, hereby certify that this is a true and exact copy of the original.  
Date: 4/19/10  
Notary Public \_\_\_\_\_ Date  
State in Which Commissioned: Kentucky  
My Commission Expires: 10/17/10