

**COMPENSATORY MITIGATION PLAN
PROPOSED LAFFERTY-KACZOR MINE AREA
for
OXFORD MINING COMPANY, LLC.
MILL TOWNSHIP
BELMONT COUNTY, OHIO**

Lafferty-Kaczor Area

December 9, 2011

**Prepared for:
Oxford Mining Company, LLC.
544 Chestnut Street
PO Box 427
Coshocton, Ohio 43812**

Prepared by:



**328 South Erie Street
Massillon, Ohio 44646
(330) 809-0118**

Part 1: Project Information

PROJECT OVERVIEW

Oxford Mining Company, LLC is planning to impact streams and wetlands on the proposed permit area (178.2 acres – preferred alternative) by surface mining operations in order to recover the No. 7 coal seam to meet contractual obligations to deliver coal. The proposed Lafferty-Kaczor mine area still shows signs of impacts from previous strip mining prior to the enactment of SMCRA laws. This area was left unreclaimed and currently consists of highwalls, spoil piles, and pit impoundments. The applicant has estimated that the proposed project would result in the recovery of approximately 254520 tons of coal.

The site lies within Section 35 of Richland Township, 5 of Union Township and 36 of Wheeling Township, in Belmont County, Ohio (See Application/Hydrology Map). The site is located on the Bethesda and St. Clairsville, Ohio 7.5 Minute USGS Quadrangles and lies entirely within the Wheeling Creek watershed.

Construction of the preferred alternative would result in the discharge of approximately 1509 cubic yards of fill material into jurisdictional waters. As a result, the project will cause primary impacts to approximately 4487 linear feet of jurisdictional streams and 0.63 acres of impacts to jurisdictional wetlands. Materials discharged to jurisdictional waters overlie the coal, and include shale and sandstone. The waters associated with this project flow into unnamed tributaries of Wheeling Creek, which is under the jurisdiction of the U.S. Army Corps of Engineers, Huntington District.

Mining of the proposed permit area is developing the Meigs Creek (#9) Coal seam by contour mining using the box cut method, and auger mining using a conventional auger for recovering the coal seam. Dozers, scrapers, loaders and trucks will be used to mine and reclaim this area. The #9 coal is found, ranging in elevation between 1,040 and 1,060 feet msl respectively, as represented by the submitted test holes. Surface water impacts proposed in this application were determined to be unavoidable to economically extract and maximally utilize coal resources on the site (See Impact Determination and Alternatives Analysis). Fill is required for the construction of the staging area, equipment crossing, coal loading, coal extraction, haul road construction, hauling and reclamation. These constructive uses are required for the intended purpose of obtaining and maximizing coal resources. Mining activities are anticipated to begin in July 2012, after issuance of permits, and remain active for approximately five years.

Part II: Avoidance and Minimization

Avoidance

Upon reviewing the locations of streams and wetlands within the project area in relation to the location of coal reserves, the applicant has taken great care to revise the permit area. As a result, approximately 2,507 linear feet of streams have been determined to exist within the original delineation area will be avoided under the preferred alternative. For details concerning each of the surface water resources identified near the permit area please refer to the 404 Alternatives Analysis and Preliminary Jurisdictional Determination Report.

Coal occurs proximal to streams and wetlands, such that impacts are unavoidable without sacrificing coal reserves and spoil storage. It is neither practicable nor environmentally responsible to leave portions of the coal resources on the project site. These un-recovered resources would only serve as potential sources of acid mine drainage and provide a reason to re-affect these lands in the future. Therefore, responsible, maximum utilization of the project site's coal resources requires the filling or mining through of all streams and wetlands

within the permit limits. Minimal Degradation and avoidance alternatives were evaluated as part of the 404 Alternatives Analysis and are incorporated by reference.

Minimization

The final permit limits include impacts to approximately 4,487 feet of impacts to jurisdictional streams (274' ephemeral and 4,213' intermittent) and 0.63 acres of jurisdictional wetlands. These impacts reflect the least environmentally damaging area needed to mine this site efficiently without compromising the general purpose and need associated with this project. It was determined that further minimization of impacts to wetlands and streams on the site would render the project economically unfeasible.

In summary, further avoidance and preferred alternatives impose economic hardships on the applicant and local community and do not result in desirable utilization of mineral resources comparison to the magnitude of environmental impacts and compensatory mitigation measures. Reclamation of the project site and restoration of wetland resources is expected to result in an overall improvement in water quality and watershed health.

Part II: Compensatory Mitigation

Goal and Objectives

The proposed surface mining activity will make a substantial contribution to the coal resources needed to meet the energy demands of the public, thereby maintaining economic viability of an important local employer. The mining activity will also support the local community with jobs, ancillary spending, and state and local tax revenues. Mitigation activities (which include reclamation to contemporary standards) within the project site will improve water quality within the watershed. In addition, the impacts to the 4,487 linear feet and 0.63 acres of jurisdictional waters will be reconstructed/mitigated onsite.

Site Selection

The location of the proposed activity relates to the presence of coal reserves, leasing of mineral rights, and access. As for mitigation of proposed impacts, the operator is required by ODNR-DMRM to restore all intermittent and perennial stream reaches onsite regardless of the potential for success. As such, the operator is not inclined to offer further/alternative mitigation offsite when this is required.

No alternate sites were considered in the following analysis because the selected site provides economical recovery of coal, an opportunity to reclaim abandoned mine lands, and because there is no reason to believe that an alternate site would result in decreased impacts to water quality. The proposed site also has the benefit of being located in an area of Belmont County with a relatively low population density.

A total of ten (10) jurisdictional streams and four (4) jurisdictional wetlands are proposed to be permitted under the preferred alternative for a total of 4,487 linear feet of stream impacts and 0.63 acres of wetland impacts. All impacted streams will be replaced/reconstructed at a 1:1 ratio in their approximate locations during the reclamation process. Impacted wetlands will be replaced at a minimum mitigation ratio of 1.5:1 for a total 0.945 acres of wetlands. The mitigation wetland will be placed within the buffer zone of Stream 9 upon reconstruction. In addition, the protection of upland riparian areas (buffer zones) will help compensate for temporal impacts and contribute to the likelihood of success.

Easements and Encumbrances

Research has been completed by Oxford Mining Company, LLC. to identify all easements and encumbrances associated within the permit area. No known easements and/or encumbrances have been identified within the Lafferty-Kaczor Mining Area that has the potential to jeopardize the potential success of the mitigation to be completed onsite.

Baseline Information

Approximately 56% of the project site has been used in previous mining operations. No portions of the proposed permit area have been used historically as residential areas. Currently, the land use of the proposed permit area (178.2 acres total) is undeveloped and pastureland. A majority of the undeveloped area and riparian areas are comprised of woodland and scrub/shrub vegetation. Surface waters identified within the project site are shown on the Application and Hydrology map and Wetland and Stream map included with the Jurisdictional Determination Report. In total, 8,727 linear feet of streams and 1.83 acres of jurisdictional wetlands were delineated within the permit area. These resources exhibited moderate chemical, physical and biological function.

Mitigation Work Plan

MINING PROCESS

Mining is anticipated to begin July 2012 and will likely end sometime in 2017. The anticipated direction of mining and where mining will begin and terminate is illustrated on the Application/Hydrology Map. Generally, an average of 36 acres will be mined each year. Reclamation (rough grading – including stream and wetland reconstruction) will follow behind mining when there is no longer a need to disturb an area. Therefore, some reclamation activity (backfilling, grading, seeding and mulching) may occur before the coal recovery is complete.

DRAINAGE CONTROLS

The first protective measure to occur at the proposed mine site is drainage control. All drainage from the proposed mine site will be directed by diversion ditches to constructed sediment basins. To protect downstream water quality during construction of ponds and diversion ditches, work will be conducted during favorable weather conditions. Stabilization, seeding, and mulching will be conducted as soon as possible after construction is complete. Where possible, run-off from off-site areas will be prevented from flowing across disturbed areas. Silt fences, straw bales, and if necessary, sumps will be utilized to trap sediment during construction.

For detailed information concerning the sediment ponds proposed for the project please refer to the attached Engineering Design Sheets included with this permit application.

The sediment ponds will trap sediment resulting from mining and reclamation activities; thus, reducing sedimentation and pH impacts while maintaining water quality standards in the Wheeling Creek River watersheds. Pond construction will begin upon issuance of the permit (likely July 2012).

Sediment Ponds

Four sediment ponds are required in order to trap sediment resulting from construction and refuse disposal activities. The pond is located so to allow the minimum distance necessary to maintain fall from the perimeter

diversion ditches. Some of these diversion ditches are quite long and have been designed and located as such in order to minimize impacts to other streams in the area.

Diversion Ditches

Temporary diversion ditches (TDDs) are used to direct mine runoff to sediment ponds. TDDs are generally constructed with a slight grade uphill starting at each pond, thereby allowing runoff to flow naturally to the ponds. The most practicable location for TDDs is at the lowest point on the permit area, which may require TDDs to be located within stream buffer zones. Diversion ditches may also be utilized during reclamation to direct runoff to sediment ponds until vegetation is established.

HAUL ROADS

Haul roads are necessary to transport topsoil and overburden to spoil piles and transport extracted coal off-site. Haul road modification and construction is expected to take several weeks, beginning in July 2012 and will continue throughout the mining process as needed to accommodate the changing site conditions.

TOPSOIL AND OVERBURDEN REMOVAL AND STORAGE

The first step in the actual mining process is the removal and storage of topsoil. Topsoil will be stored in the areas indicated on the Application and Hydrology Map (Figure 2). The topsoil will be used in reclamation. Soil stockpiles will be seeded with a cover crop to prevent erosion and leaching of soil nutrients.

After the topsoil has been removed, the overburden will be removed. Overburden will be deposited proximal to the active mining area and will be redistributed upon reclamation. Topsoil and overburden will be stored separately. Approximately 3,973,460 tons of overburden will be handled by the proposed project. Removal of topsoil and overburden will commence after sediment ponds are constructed beginning in July 2012 and continue through the end of active mining.

COAL EXTRACTION

The operator is planning to impact the area by surface mining and conventional auger operations in order to recover the No. 9 coal seam on the 178.2 acre project site to meet market demands. The applicant has estimated that the proposed project would result in the recovery of approximately 254520 tons of coal.

Mining of the proposed permit area is developing the Meigs Creek (#9) Coal seams by contour mining using the box cut method, and auger mining using a conventional auger miner for the coal seam. Dozers, scrapers, loaders and trucks will be used to mine and reclaim this area. The #9 coal is found, ranging in elevation between 1,040 and 1,160 feet msl, as represented by the submitted test holes. These minerals will be mined using area surface and auger mining methods. As the coal is exposed by removal of overburden, it will be loaded in mine trucks for transportation to processing and loading areas.

IMPACTS TO WATERS

Impacts to waters will not occur until it is necessary to complete specific mining activities. Diversion ditches, haul roads and modifications to the sediment pond will be completed as they are needed to maintain water quality and drainage control in the working mine area. The direction of mining and where mining will begin and terminate is illustrated on the Application/Hydrology Map. The mining activity is expected to last up to five years, although the rate of mining will be determined by coal market activity. Reclamation will follow behind mining when there is no longer a need to disturb an area. Therefore, reclamation activity (backfilling, grading, seeding and mulching) may occur in phases before the coal recovery is complete. Because of this, impacts to water, and as a result, mitigation, will likely occur in phases as well.

STREAM RECONSTRUCTION

Under the preferred alternative ten intermittent streams are proposed to sustain impacts. Descriptions of these streams are available in the General Descriptions of the Aquatic Environment Directly Affect and the Impact Summary tables. Upon completion of mining, the area will be reclaimed and new channels will be constructed. All streams will be reconstructed in its approximate original location and will be designed in accordance with natural stream channel design principles. The final highwall has been moved below the springs supplying stream 9 (see Application and Hydrology Map). By doing this, the hydrologic source and associated functions for more than 1500 linear feet of stream 9 (onsite and offsite) will be protected and will be present upon the completion of mining (see Application and Hydrology Map). In addition, the protection of upland riparian areas (buffer zones) will help compensate for temporal impacts and contribute to the likelihood of mitigation success. For species lists and plans for riparian areas please refer to Appendix A of this document.

For detailed information concerning the design and specifications of the mitigation areas, please refer to the Engineering Sheets included with this document.

For more information concerning the site reclamation plan, please refer to the SMCRA Mining Permit.

Ephemeral Streams

The 274 linear feet of ephemeral stream loss will be mitigated/reconstructed at a 1:1 ratio in their approximate original locations during the reclamation process. The streams will be designed using natural stream channel design techniques and will be constructed to ensure channel dimensions and stability.

BMP's shall be implemented during construction/mining. BMP's include but are not limited to: silt fences, diversion ditches, sediment ponds, straw bales, check dams, limiting vegetation removal, bank shaping, mulching and seeding, reforestation, and the prohibition of use or storage of toxic or hazardous materials within the construction area. Construction activities should to the maximum extent possible be conducted during low flow conditions. All disturbed areas shall be seeded and mulched to minimize erosion. Appropriate bank protection measures shall be installed in channel or on barred areas requiring erosion control including but not limited to native grasses and forbs, shrubs, trees, and other acceptable clean non-contaminated material.

Post mining topography will be restored such that the final contours will protect against erosion and the formation of new ephemeral channels. The entire reclamation area will be regraded, seeded and mulched in phases as mining progresses onsite. The timing of these events will ultimately protect against the degradation of receiving streams.

All stream channels will be reclaimed to the grades indicated on the profile of each stream and/or on the Engineering Design Sheets, and will be constructed following the Natural Channel Design.

- **All streams directly impacted by mining and reclamation activities will be reconstructed in accordance with Natural Channel Design methods.**
- **Stream reconstruction will be completed following final grading and prior to resoiling as indicated above.**

The proposed stream channel is based on natural stream channel designed. These channels have been designed so that the riprap in the channel stabilizes the channel and provides sediment control. Each channel has been designed to safely pass a 100 Year/ 6 Hour storm event to eliminate the possibility of flooding. The riprap used in the rock channels will be of a durable non-toxic nature. Once the channel has been roughed in, the material will be compacted so as to provide for as much impermeability as possible.

For detailed information concerning the design and specifications of the mitigation areas, please refer to the Engineering Sheets included with this application package.

WETLAND RECONSTRUCTION

The impacts to jurisdictional wetlands (0.63 acres) will be mitigated at a ratio of 1.5:1. Upon completion of the project, a total of 0.945 acres of wetland will be constructed within the buffer zone of stream 9. The mitigation project will borrow from the hydrologic balance of stream 9 to power the additional acreage. Please refer to the Application and Hydrology Map and the associated Engineering Sheets for details concerning the location and design of the wetland mitigation.

If any of the wetland invasive species included on Table 1 of the ORAM Long Form are found to be present within the wetland mitigation area the applicant will take a course of action to prevent the spread of the species. These species include:

<i>Lythrum salicaria</i>	Purple Loosestrife
<i>Myriophyllum spicatum</i>	Eurasian Water Milfoil
<i>Najas minor</i>	Lesser Naiad
<i>Phalaris arundinacea</i>	Reed Canary Grass
<i>Phragmites australis</i>	Common Reed Grass
<i>Potamogeton crispus</i>	Curly Pondweed
<i>Ranunculus ficaria</i>	Lesser Celandine
<i>Rhamnus frangula</i>	Glossy Buckthorn
<i>Typha angustifolia</i>	Narrow Leaf Cattail
<i>Typha xglauca</i>	Hybrid Cattail

During the monitoring period, if an invasion is detected, an abatement plan will be developed specific to the species in question and level of infestation. The plan will be submitted to the Ohio EPA for review and approval such that the plan can be implemented in a timely fashion. With regard to each species, abatement actions will adhere to the manual and chemical control measures listed within the Invasive Plants of Ohio and Plant Conservation Alliance Factsheets. The manual and chemical measures that have the potential to be implemented all include the removal of plants by hand (for small populations) and the application of herbicides approved for use in aquatic habitats (for larger populations). Please refer to the attached Invasive Plants of Ohio and Plant Conservation Alliance Factsheets for more information concerning recommended control measures for individual species.

REVEGETATION PLAN

The planting plan as addressed in Appendix A of this document will be used for the replanting of the buffer zones and around the constructed wetland areas. The wetland mitigation areas will have a minimum width of 50 feet of tree planting around the perimeter of the wetland mitigation areas as shown on the plan views. Supplemental seeding with wetland species will minimize the potential for invasive species encroachment and dominance. The monitoring period should allow for the establishment of natural wetland vegetation.

The following list is comprised of suitable native, non-invasive wetland species the applicant will select from when performing the supplemental planting of the hydric soils within the wetland mitigation areas. The list contains nine (9) separate species of which the operator will select from.

<i>Table 1 – Wetland Mitigation Planting List</i>	
Common Name	Scientific Name
Palustrine Emergent Vegetation	
Sweet Flag	<i>Acorus calamus</i>
Fowl Bluegrass	<i>Poa palustris</i>
Sneezeweed	<i>Helenium autumnale</i>
Rice Cutgrass	<i>Leersia oryzoides</i>
Swamp Milkweed	<i>Asclepias incarnate</i>
Prairie Cordgrass	<i>Spartina pectinata</i>
Arrow Arum	<i>Peltandra virginica</i>
Rough Bluegrass	<i>Poa trivialis</i>
Blue Vervain	<i>Verbena hastata</i>

Normal planting practices will be used (i.e. seedling planting, hand planting) for each of the listed species. Soil amendments will be added per the result of the hydric soil test. Soil samples will be taken at several locations prior to resoiling the wetland mitigation areas. Success of revegetation will adhere to ODNR, Division of Mineral Resources Management requirements; the reconstructed wetlands will be monitored annually for vegetative success, any areas deemed unsatisfactory during annual monitoring will be revegetated per the planting plan.

RIPARIAN ENHANCEMENT/REVEGETATION

Tree and shrub vegetation will be planted within the buffer zones, where the existing riparian tree and shrub vegetation is removed or disturbed by mining. This includes the riparian areas associated with the newly created wetland areas and rock lined Simmons channels. Grasses planted within the buffer zone will hang into the water and provide nutrients and cover for aquatic life. Trees and shrubs planted within the riparian zone will shade certain areas of the stream and create varying microclimates. As these grasses, trees and shrubs mature, their roots will infiltrate the stream bank to create additional habitats. Trees and shrubs will be planted at a rate of 600 trees per acre and at a minimum width 50 feet on either side of the stream where any disturbance within the buffer zone has occurred.

Trees not immediately adjacent to the disturbed areas will function to improve water quality via stormwater management, filtration, wildlife habitat, and contaminant sequestration. The planting plan as addressed in Appendix A of this document will be used for the replanting of the buffer zones as well as the entire reclaimed area. Success of revegetation, including buffer zones will adhere to ODNR, Division of Mineral Resources Management requirements.

Determination of Credits

WETLAND IMPACTS

Within the delineation area a total of 6 jurisdictional wetlands were identified totaling 1.83 acres. Four (4) of these wetlands will be impacted as a result of the preferred alternative for a total of 0.63 acres. These impacts will be mitigated at a ratio of 1.5:1. Upon completion of the project, a total of 0.945 acres of wetland will be constructed. Please refer to the Application and Hydrology Map and the associated Engineering Sheets for details concerning the location and design of the wetland mitigation.

<i>Table 2 - Wetlands within delineation area avoided under minimal degradation alternative.</i>				
Wetland Name	Impacted Area	Wetland Type	ORAM Score	ORAM Category
Wetland A	0.40	PEM	47	2
Wetland B	0.00	PEM	17	1
Wetland C	0.06	PEM	27	1
Wetland D	0.11	PEM	25	1
Wetland E	0.00	PEM	46	2
Wetland F	0.06	PEM	37	2
Total	0.63			

STREAM IMPACTS

Detailed descriptions of the streams and the proposed impacts are provided in Table 2 and the Wetland and Stream Impact/Avoidance Summary Tables. Also refer to the General Descriptions of the Aquatic Environment Directly Affected and the Preliminary Jurisdictional Determination Report for detailed information concerning the impacted streams. All impacted stream lengths are to be mitigated by the creation of new streams (identified with the same name) in the approximate original location.

<i>Table 3 - Streams within delineation area impacted by preferred alternative.</i>			
Ephemeral & Intermittent Streams			
Stream Name	Length Impacted	Flow Regime	HHEI Score
1	377	Intermittent	50
2	35	Intermittent	38
3	204	Intermittent	24
4	223	Ephemeral	14
5	0	Ephemeral	28
5	0	Intermittent	28
6	14	Ephemeral	37
6	96	Intermittent	47
7	22	Ephemeral	37
7	367	Intermittent	37
7A	76	Ephemeral	24
8	258	Intermittent	31
9	2,204	Intermittent	37,58
10	0	Intermittent	19
11	0	Ephemeral	15
12	0	Intermittent	26
13	0	Intermittent	26
14	0	Ephemeral	25
14	316	Intermittent	25
15	15	Ephemeral	26
15	280	Intermittent	26
	4,487	Total Length of Delineated Streams Impacted	

IMPOUNDMENTS IMPACTS

Four (4) jurisdictional impoundments were identified onsite. Refer to the Application/Hydrology Map for locations of the resources. These impoundments will be removed upon completion of mining.

Maintenance Plan

Site maintenance and management during mining and post mining during the monitoring period will be conducted by Oxford Mining Company, LLC.and/or subcontractors. Specifications for any necessary repairs will be developed as needed for the site. The need for maintenance of mitigation areas within the five year monitoring period will be determined during the annual field visits. Each mitigation area will be evaluated annually for the tree planting mortality, grazing and the presence invasive plants. Maintenance activities related

to these issues will be developed and scheduled as needed to ensure the long term success of the mitigation areas. In the specific case that the mitigation planting is mowed, the party responsible for mowing mitigation plantings would be in violation of the SMCRA permit for interrupting activities on a mine site. In addition, the party would also be in violation of the environmental covenant placed on the mitigation area and held by the Ohio EPA. Upon identifying the party responsible for this type of vandalism, the Ohio EPA would have the authority to levee enforcement actions at that time.

Site Protection Instrument

The applicant currently is working with the landowners to secure environmental covenants for the mitigation areas associated with the Lafferty-Kaczor Mining Area. Each mitigation area will be protected in perpetuity using an environmental covenant with language borrowed from the Ohio EPA general covenant document. Meetings with the landowners have been scheduled and dialogue concerning the matter is underway. This process is time consuming as details of the agreement must first be conveyed to the landowner before the decision making process can proceed. Upon completion of the agreements, each covenant will be recorded and submitted to the Ohio EPA to be added to the permit package. Please refer to the draft covenant for language pertaining to each environmental covenant to be secured as part of the Lafferty-Kaczor Mining area.

Oxford Mining Company, LLC. will be responsible for success of the mitigation areas during the monitoring period. Long-term maintenance of the site will be the responsibility of each property owner and enforcement of any infractions on the protected area will be the responsibility of the Ohio EPA. The covenant will protect the reconstructed portion of each reconstructed resource and a 50-foot buffer on either side of stream (100 feet total around streams and 50 feet radius around mitigated wetlands). This area will serve as the total area placed under protection.

Performance Standards

Performance standards for the mitigation area will be to attain the quality equal to or greater than the pre-mining conditions. Performance of the wetland mitigation area will be evaluated by functional assessment including completion of a VIBI for the wetland. The VIBI will be used as a quantitative tool to measure the performance of the reconstructed wetland. For this monitoring the biologist will follow the methodologies listed in the Integrated Wetland Assessment Program: Part 9: Field Manual for the Vegetation Index of Biotic Integrity for Wetlands v. 1.3. This method serves to provide an assessment of the vegetative diversity of the mitigation wetland and the annual improvement during the monitoring period. Biologists will provide their professional opinion of the reconstructed wetland functions as they relate to the pre-mining conditions. The goal of the mitigated wetlands is to achieve Category 2 status based upon the three anti-degradation categories (Category 1, 2, 3) listed in Ohio Administrative Code (OAC Rule 3745-1-54) by the end of the five year monitoring period.

Reconstructed stream channel will be monitored annually for stability and an annual assessment of aquatic function will be determined. The HHEI will be used as a hydrogeomorphic-based measure of stream performance to document recover of stream functions associated with substrate, bankfull width and pool depth. The goal of mitigated stream is to achieve a Class 2 stream classification based on the results of evaluation methods used during the monitoring period. Please refer to the Lafferty-Kaczor Mining Area

Biological and Chemical Sampling Plan for more details concerning stream monitoring methods to be implemented post mining.

Monitoring Requirements

Stream Monitoring Methodology

The objective of stream monitoring is to ascertain whether restored or enhanced channels are meeting the criteria to replace lost functions. Several permanent sampling points on-site will be selected for specific monitoring activities. Sample point locations will be permanently marked in the field. The entire length of the stream will also be evaluated to look for any areas of concern.

Photographs of the station locations will be taken during monitoring sampling. Monitoring will take place once in early spring during high flow conditions and again in late summer during low flow conditions. Parameters to be monitored within the relocated channel include the following:

- HHEI data will be taken at each monitoring point.
- Cross-sectional measurements will be taken.
- Along the length of the restoration reaches, riparian corridor plantings will be checked for abundance by performing stem counts of planted and volunteer trees.

Data collected during sampling periods will be compiled into an annual report to be provided to the ACOE and Ohio EPA by December 31 of each of the monitoring years. These reports will provide information on habitat development and will include data results for the HHEI and cross-sectional measurements. They will also include a photographic documentation of the restored reaches from fixed positions, as well as discussion on whether the stream is meeting the design goals.

In addition, the reports will also include results from that year's Biological and Chemical Sampling Plan. For more information as to where and when the sampling stations will be sampled, please refer to the Biological and Chemical Sampling Plan included with this application package.

Wetland Monitoring Methodology

Initiation of Monitoring: Wetland monitoring will begin the first growing season following the construction of the mitigated wetland. Notice of the completion of the mining operation will be given to the Ohio EPA and to the U.S. Army Corps of Engineers.

Oxford Mining Company, LLC. personnel (or experienced consultant) will monitor the restored wetland annually starting the first growing season following the construction of the mitigated wetland. This monitoring effort will continue for a period of five years. In addition, Ohio Department of Natural Resources, Division of Mineral Resource Management Inspectors will conduct monitoring of the completed restored wetland on a regular basis until final bond release is obtained. Final bond release is usually obtained five (5) years following any major repair or seeding completed within a specific area.

During the first year of monitoring, the permit will be delineated for the presence of streams and wetlands. This delineation will be verified by the Army Corps of Engineers. The performance standards for the mitigation area will be to attain Category 2 status by the end of the five year monitoring period regardless of the initial score of the wetland. Performance will be evaluated by functional assessment including completion of a VIBI for the wetland. The VIBI will be used as a quantitative tool to measure the performance of the reconstructed wetland. For this monitoring the biologist will follow the methodologies listed in the Integrated Wetland

Assessment Program: Part 9: Field Manual for the Vegetation Index of Biotic Integrity for Wetlands v. 1.3. This method serves to provide an assessment of the vegetative diversity of the mitigation wetland and the annual improvement during the monitoring period. Biologists will provide their professional opinion of the reconstructed wetland functions as they relate to the pre-mining conditions.

Monitoring Reports

An annual monitoring report, including evaluation forms (VIBI, HHEI and HMFBI) and site photographs, will be submitted to the U. S. Army Corps of Engineers and Ohio EPA prior to December 31st of each monitoring year to fulfill permit conditions. The report will detail yearly performance of the stream and wetland mitigation areas. Riparian plantings will also be subject to a 5-year monitoring period, in which understory growth and coverage will be monitored. In lieu of monitoring the survivorship of planted trees, success of riparian areas and buffer zones will be based on the number of living trees within the protected area. This will include all volunteer trees growing at the time of monitoring. The riparian area will be planted at a rate of 600 trees per acre. Traditionally a survivorship of 80% has been required for tree plantings. Therefore, our target will be 480 living trees per acre within the protected buffer zone area. Necessary steps for removal of exotic vegetation or additional seeding/planting will be considered following site inspections as stated within the Site Protection and Maintenance section of this document.

Monitoring reports will also include results from that year's Biological and Chemical Sampling Plan. Each year according to the sampling plan, the sites listed in the plan will be monitored. The results of those samples will be referenced against the baseline data in order to evaluate the status of site conditions and their influence on downstream sample locations. This will continue through the monitoring of the mitigated resources during the 5-year monitoring period. For more information as to where and when the sampling stations will be sampled, please refer to the Biological and Chemical Sampling Plan included with this application package.

VIBI forms evaluation forms will be completed during monitoring years 3 and 5 for the wetland mitigation area. In addition, HHEI forms will be completed during years 1, 3, and 5 of the monitoring period. At the end of the five-year monitoring period, stream mitigation areas should meet or exceed its proposed categorizations. If, at the end of the 5-year monitoring period, the Corps and/or Ohio EPA determine that the mitigation areas have not met the proposed categorizations, the applicant will coordinate with the agency to determine what action should be taken to further enhance the mitigation areas.

During years 1, 3, and 5 the monitoring report will include plan views and cross sections of the as-built mitigation areas including the location and types of plantings. As built drawings for the wetland mitigation areas will include a typical cross section through the short axis and a second through the long axis to illustrate the basin slopes, normal water depth, high water depth, and other notable features.

An annual monitoring report will be submitted to the U. S. Army Corps of Engineers and the Ohio EPA to fulfill permit conditions. The report will detail yearly performance of the mitigation site and include the following elements.

- **Location:** coordinates, maps
- **Stream/Wetland Classification Category**
- **Wetland Acreage**
- **Stream Length**
- **Assessment Methods**
- **Existing Hydrology:** water sources, hydroperiod, historical hydrology - if applicable, drainage area, results of water quality analysis - if applicable
- **Existing Vegetation:** list of species onsite, species density, general age/health of vegetation, native/non-native/invasive status, map showing plant communities
- **Existing Soils:** soil classification, results of soil analysis - if applicable
- **Existing Wildlife Usage:** presence of habitat for common and threatened/endangered species
- **Historic and Current Land Use**
- **Current Land Owner**
- **Watershed Information:** impairment status, description of watershed land uses, size/width of natural buffers, overall description of surrounding habitat, relative amount of aquatic resource area the mitigation site represents within the local watershed.

The monitoring sites referred to in the above paragraphs may be additional to those listed in the Lafferty-Kaczor Mining Area Biological and Chemical Sampling Plan. Reports associated with that document will be included as part of the mitigation monitoring report. These reports will include a separate section specific to the sample locations and methodology listed therein.

STREAM MONITORING

The objective of stream monitoring is to ascertain whether restored or enhanced channels are meeting the criteria to replace lost functions. Several permanent sampling points on-site will be selected for specific monitoring activities. Sample point locations will be permanently marked in the field. The entire length of the stream will also be evaluated to look for any areas of concern.

Photographs of the station locations will be taken during monitoring sampling. Monitoring will take place once in early spring during high flow conditions and again in late summer during low flow conditions. Parameters to be monitored within the relocated channel include the following:

- HHEI data will be taken at each monitoring point.
- As-Built Drawings of each stream will be completed during years 1, 3 and 5
- Along the length of the restoration reaches, riparian plantings will be counted for success.

Data collected during sampling periods will be compiled into an annual report to be provided to the COE and Ohio EPA by December 31 of each of the monitoring years. These reports will provide information on habitat development and will include data results for the HHEI and cross-sectional measurements. They will also include a photographic documentation of the restored reaches from fixed positions, as well as discussion on whether

the stream is meeting the design goals. Please refer to the Lafferty-Kaczor Mining Area Biological and Chemical Sampling Plan for more details concerning stream monitoring efforts post mining.

During the fifth year of monitoring, the permit area will be delineated for the presence of streams and wetlands. This delineation will be conducted in accordance with the United States Army Corps of Engineers 1987 Wetland Delineation Manual and will be verified by the USACE.

WETLAND MONITORING

Initiation of Monitoring: Wetland monitoring will begin the first growing season following the construction of the mitigated wetland. Notice of the completion of the mining operation will be given to the Ohio EPA and to the U.S. Army Corps of Engineers.

Oxford Mining Company, LLC. personnel (or experienced consultant) will monitor the restored wetland annually starting the first growing season following the construction of the mitigated wetland. This monitoring effort will continue for a period of five years. In addition, Ohio Department of Natural Resources, Division of Mineral Resource Management Inspectors will conduct monitoring of the completed restored wetland on a regular basis until final bond release is obtained. Final bond release is usually obtained five (5) years following any major repair or seeding completed within a specific area.

As stated earlier, the performance standards for the mitigation area will be to attain Category 2 status based on the score of the final VIBI assessment to be completed during the fifth year of mitigation monitoring regardless of the initial score of the wetland.

Long-Term Management Plan

Site maintenance and management during mining and post mining during the monitoring period will be conducted by Oxford Mining Company, LLC. and/or subcontractors. Specifications for any necessary repairs will be developed as needed for the site. The need for maintenance of mitigation areas within the five year monitoring period will be determined during the annual field visits. Each mitigation area will be evaluated annually for the tree planting mortality, grazing and the presence invasive plants. Maintenance activities related to these issues will be developed and scheduled as needed to ensure the long term success of the mitigation areas. In the specific case that the mitigation planting is mowed, the party responsible for mowing mitigation plantings would be in violation of the SMCRA permit for interrupting activities on a mine site. In addition, the party would also be in violation of the environmental covenant placed on the mitigation area and held by the Ohio EPA. Upon identifying the party responsible for this type of vandalism, the Ohio EPA would have the authority to levy enforcement actions at that time.

Adaptive Management Plan

As a condition for the Lafferty-Kaczor Individual 401 permit, the Ohio Environmental Protection Agency has requested that a biological and chemical sampling plan and an adaptive management plan (AMP) be developed. Please refer to the Lafferty-Kaczor Mining Area Biological and Chemical Sampling Plan for details concerning the timeline, methodology, and locations of the sampling regime. In addition, please refer to the Lafferty-Kaczor Mining Area Adaptive Management Plan included with this submittal for details concerning degradation trigger levels to be evaluated during mining as well during the mitigation monitoring period.

Financial Assurances

Oxford Mining Company, LLC. is a publicly traded company that operates in Ohio and Kentucky and employs more than 400 employees. With more than 25 years in operation, Oxford Mining Company, LLC. possesses extensive experience mining and reclaiming sites such as the Shuman Mining Area. In fact they have recently received awards for the reclamation performed at the Jockey Hollow Mining area and numerous compliments for the stream mitigation performed at the Beagle Club Mining area.

Oxford Mining Company, LLC. controls more than 93 million tons of coal reserves and is in good standing with the Ohio Department of Natural Resources having never defaulted on bond or the reclamation of an issued permit. As such, the company has adequate resources to ensure the success of all mitigation required under this permit for the Lafferty-Kaczor Mining Area.

APPENDIX A
Buffer Zone Planting Plan

The species and amounts of seed per acre to be used are listed below. The seeding mixture that is to be used for permanent vegetation planting will consist of at least two(2) grasses and two(2) legumes from the following lists, at the recommended rates per acre, depending on the season, site suitability, soil analysis, availability, landowner requests and mixture selection. The mixture rates (pounds per acre) listed below are for use in this mixture. The total rate applied on all areas will range between 40 to 46 pounds per acre.

<u>Grasses</u>	<u>SEEDING RATE (lbs/Ac.)</u>
Weeping Lovegrass	2-3
Orchard Grass	5
Redtop	2-4
Perennial Ryegrass	5-10
Timothy	2-4

<u>LEGUMES</u>	<u>SEEDING RATE (lbs/Ac.)</u>
Alfalfa *	10 - 15
Alsike Clover	4
Red Clover (Mammoth)	8 - 10
Ladino Clover	4 - 6
Kobe Lespedeza	5 - 8
Appalow Lespedeza	10 - 20
Birdsfoot Trefoil	5 - 8

Alfalfa will not be planted in riparian areas and other areas where tree planting is proposed.

The target crop for the grazingland and cropland on this permit area will be hay. The operator will meet the required yields for this crop, for the year(s) required by the Division of Mineral Resources Management. This seed mixture will be used to re-seed all of the land uses on this permit area.

**Buffer Zones will be planted as indicated above
PLUS
Riparian Vegetation will be planted as indicated below**

Riparian tree and shrub vegetation will be planted on those areas, within the Buffer Zones, where the existing riparian tree and shrub vegetation is removed or disturbed by mining (See the Buffer Zone Variance Request, Item III b), submitted as an Addendum to Part 3, Item E (4), for a description of those areas where riparian tree and shrub vegetation presently exists), as well as along the banks of permanent ponds (excluding embankments) located in buffer zones. The areas to be planted, with riparian vegetation, will have a minimum width of two and one-half times the existing stream channel width on both sides of the stream channel. The riparian tree and shrub vegetation to be planted on this area will consist of at least four (4) hardwoods and shrubs and at least one (1) conifer from the following lists.

If seedlings or cuttings are used these trees and shrubs will be planted at a maximum spacing of ten (10) feet between the rows, and a staggered ten (10) foot spacing between the trees and shrubs. These trees and shrubs may be direct seeded with the grasses and legumes listed above, bare root seedlings, or cuttings may also be planted. Seedlings may be planted by hand or by machine.

Seedling Tree and Shrub Species for Hand or Machine Planting

HARDWOOD AND SHRUBS

Red Maple (<u>Acer rubra</u>)	*American Sycamore (<u>Plantanus occidentalis</u>)
*White Oak (<u>Quercus alba</u>)	*River Birch (<u>Betula nigra</u>)
Sugar Maple (<u>Acer saccharum</u>)	*Banks Willow (<u>Salix cottetti</u>)
Sweetgum (<u>Liquidamber styracifula</u>)	*Purple - Osier Willow (<u>Salix purpurea</u>)
Tuliptree (<u>Liriodendron tulipifera</u>)	*Black Willow (<u>Salix nigra</u>)
Red Oak (<u>Quercus rubra</u>)	*Buttonbush (<u>Cephalanthis occidental</u>)
Pin Oak (<u>Quercus palustris</u>)	*Cottonwood (<u>Populus spp.</u>)
Bidtooth Aspen (<u>Populus grandidentata</u>)	Indegobush (<u>Amorpha fruitcosa</u>)
Black Chokecherry (<u>Aronia melancarpa</u>)	Bicolor Lespedeza (<u>Lespedeza bicolor</u>)
Silky Dogwood (<u>Cornus amomum</u>)	Bristly Locust (<u>Robinia hispidus</u>)
Gray Dogwood (<u>Cornus racemose</u>)	American Crabapple (<u>Malus spp.</u>)

* Species do best when planted on lower slopes or along streams. These species are suitable for use as dormant woody cuttings, stakes, or posts (except for White Oak and River Birch)

CONIFERS

Eastern White Pine (<u>Pinus strobus</u>)	Virginia Pine (<u>Pinus virginiana</u>)
Red Pine (<u>Pinus resinosa</u>)	Austrian Pine (<u>Pinus nigra</u>)
Norway Spruce (<u>Picea abies</u>)	

Tree and Shrub Species for Hand Planting via Cuttings

Black Willow (<u>Salix nigra</u>)	White Willow (<u>Salix alba</u>)
Sandbar Willow (<u>Salix interior</u>)	Eastern Cottonwood (<u>Populus deltoides</u>)
Eastern Sycamore (<u>Plantanus occidentalis</u>)	Box Elder (<u>Acer negundo</u>)

Direct Seeding Tree and Shrub Species

	<u>Seeding Rate</u> (lbs/Ac.)	<u>Stratification</u> (days)	<u>Scarification</u> (minutes)
Shrubs			
Bristly Locust	1	none	30
Silky Dogwood	1 - 2	30	none
Bicolor Lespedeza	0.5 - 1	none	25
Indigobush	1	none	30
Trees			
Black Locust	1 - 3	none	30
*Virginia Pine	0.25 - 0.5	20	none

* Pine seed may require repellent to discourage rodent or avian damage