

THE KANSAS DEPARTMENT OF HEALTH AND ENVIRONMENT

BUREAU OF ENVIRONMENTAL REMEDIATION

SURFACE MINING SECTION

PERMIT APPLICATION GUIDANCE DOCUMENT

FOR

SURFACE COAL MINING AND RECLAMATION OPERATIONS

AUTHORITY: K.S.A. 47 et. Seq

March 2003

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SECTION 1

OPERATOR'S PRE APPLICATION MEETING

OPERATOR'S PRE-APPLICATION MEETING OUTLINE

1. One of the first development phases for mining should include meeting with the SMS staff. The first step in exploration is to obtain an exploration permit from the SMS office. A copy of the exploration permit form (for less than 250 tons) is located in Appendix (A). If more than 250 tons will be mined in exploration then the applicant will provide additional information as required by the SMS. Details for exploration permitting can be found in Code of Federal Regulations (30 CFR) 772.12. The exploration permit must be renewed annually by re-application.
 - A. The operator will provide, USGS 7.5 minute Quadrangle maps showing general boundary of the proposed permit, property ownership of surface and subsurface along with property lines should be shown.
 - B. The permit will furnish a Table of Contents that provides the user a concise observation of the permit application format and contents.
 - C. The operator will provide signed Right of Entry for exploration purposes.
 - D. The operator will have an Exploration Permit.
 - 1) Permit for <250 tons.
 - 2) Permit for >250 tons.
 - E. The operator will be responsible for contacting all government agencies that may have a concern with proposed mining activities. A list of agencies is provided to the operator in Appendix (B). Responses are to be submitted to the SMS.
 - F. The operator will collect 'baseline' data.
 - 1) Water data will be collected at sample points agreed to by the SMS, at the Pre-Application meeting, for at least six months prior to the permit application. Parameters to be analyzed are provided in Appendix (C).
 - a) Surface water analysis
 1. Sample points as agreed to by the SMS,
 - a. Upstream
 - b. Downstream
 - b) Ground water analysis
 1. Any data collected prior to proposed permit
 - a. Exploratory data
 - b. Previous mine data

2. Sample points as agreed to by the SMS
 3. A signed affidavit must be obtained from each landowner for any ground water monitoring wells installed outside a permitted mining area. The affidavit will state that the landowner understands they are responsible for plugging any un-reclaimed wells left on their property in accordance with K.S.A. 28-30-7. In lieu of the affidavit, a voluntary bond may be posted for wells outside a permitted area. Bond amounts will be based upon a rate of \$15.00 per linear foot of well installed.
- c) Water User Survey
1. Wells/Cisterns
 2. Ponds/Creeks
 3. Rural water hookups
 4. Points of hauled water
- 2) Geologic data will be collected as directed and agreed to with the SMS during the Pre-Application meeting. A guideline to sampling and analysis is provided to the operator in the section titled 'Baseline Overburden Data Collection Analysis and Interpretation'.
- a) Overburden analysis
- b) Depth of coal seam to be mined
- 3) As directed and agreed to with the SMS during the Pre-Application meeting, a vegetation survey will be conducted. A guideline to sampling is provided to the operator in the 'Kansas Re-vegetation Guidelines'.
- G. As directed and agreed to with the SMS during the Pre-Application meeting, the operator will provide a 'Land' use survey designating the following:
- 1) Residential
 - 2) Farmland: The operator should use the assistance of the County Soil Survey to help determine classification of acreage in the proposed mine permit area.

- a) Prime
 - 1. Crops
 - 2. Pasture
 - 3. Grazingland

- b) Non-prime
 - 1. Crops
 - 2. Pasture
 - 3. Other designated uses:
 - a. Wildlife, Shelter belts, etc.
 - b. Industrial
 - c. Residential/commercial
 - d. Undeveloped
 - e. Water
 - f. Previously Mined

H. The Operator should prepare the permit application in a systematic form. Material should be presented in sequence conforming to the Kansas Administrative Regulations (K.A.R.) in ascending numerical order; i.e., K.A.R. 47-3-42(a)(1), K.A.R. 47-3-42(a)(2), etc. adopting by reference the appropriate CFR. The operator will be provided with a copy of the K.A.R., and the CFR can be obtained at website: www.access.gpo.gov/nara/cfr.

I. The Operator will provide five copies of the permit. The permit should be prefaced with a letter of Transmittal from the coal operator to the SMS. It should present basic information such as location of proposed mine, any peculiarities associated with the proposal, variances which are being requested, and any prime farmland negative determinations for which SMS action is necessary.

J. The Operator will replace any corrected pages in the five permit books.

2. The Operator should be aware of various state fees associated with coal mining.

A. These are as follows:

- 1) Application fee: \$50.00
- 2) Acreage fee: \$60.00/acre, half to be paid at time of submittal of permit application, and half to be paid at time of publication of public notice.
- 3) State per ton fee: \$0.10/ton to be paid quarterly

3. The Surface Mining Section (SMS) will provide guidance to the operator in fulfilling the following requirements of the permit application:
 - A. Variances, as defined by the SMS will be placed at the beginning of the permit application. Guidance to this obligation will be discussed at the pre-application meeting.
 - B. The SMS will discuss with the operator bonding obligations and how to prepare a reclamation plan.
 - C. If the operator is eligible, the SMS will discuss the benefits of the SOAP program with the permittee at the pre-application meeting.
 - D. The SMS will discuss with the operator 'Lands Unsuitable' K.A.R. 47-3-42(4). The operator needs to contact appropriate public agencies concerning various regulation requirements. Guidance of this regulation will be provided at the pre-application meeting.

APPENDIX A



K A N S A S

RODERICK L. BREMBY, SECRETARY

DEPARTMENT OF HEALTH AND ENVIRONMENT

KATHLEEN SEBELIUS, GOVERNOR

MS Use Only

Registration # _____

Date Submitted _____

NOTICE OF INTENT TO EXPLORE (Less than 250 tons)
(K.S.A. 47-7-2 Part 772)

Please submit the following information on or with this document.

1. Name of person seeking to explore:

Name _____ Telephone # _____

Address _____
Street or P.O. Box City County State Zip

2. Name of responsible representative who will be present at and conducting the exploration activities:

Name _____ Telephone # _____

Address _____
Street or P.O. Box City County State Zip

MS Use Only

Registration # _____

Date Submitted _____

3. Precise descriptions and maps of each exploration area, at a scale of 1:24,000 or larger.

4. A statement of the period of intended exploration on the area or each area being considered.

5. Provide descriptions which address each adverse impact as a result from exploration activities and a complete description of practices to abate each impact. Based on the information supplied, when complete, the regulating authority will decide on the need to comply to Chapter 47, Article 9, K.A.R. 47-9-1(b) part 815, Coal Exploration. We will notify you of our findings in a reasonable amount of time.

APPENDIX B

Agencies That May Be Notified Of Permit Applications

Agency	Portions to be Sent	
	CFR	KAR
Division of Water Resources Kansas Board of Agriculture 901 S. Kansas Ave. - 2 nd Floor Topeka, Kansas 66612-1283 (785) 296-3717	780.25	47-3-42 (a)(28)
Kansas Department of Wildlife and Parks Southeast Regional Office 1500 West 7 th Street - Box 777 Chanute, Kansas 66720 (620) 431-0380	780.23 780.25 780.16 780.18	47-3-42 (a)(27) 47-3-42 (a)(28) 47-3-42 (a)(23) 47-3-42 (a)(18)
Kansas Geological Survey 1930 Constant - Campus West University of Kansas Lawrence, Kansas 66045 (785) 864-3965	780.22	47-3-42 (a)(26)
Kansas Water Office 109 SW 9 th Street - Suite 300 Topeka, Kansas 66612-1249 (785) 296-3185		Cover letter & map
Kansas State Historical Society Historic Preservation Department 6425 SW 6 th Ave. Topeka, Kansas 66615-1099 (785) 272-8681		Cover letter & map
State Fire Marshall 700 SW Jackson - Room 600 Topeka, Kansas 66603-3714 (785) 296-3401		Cover letter & map

Kansas Biological Survey
2041 Constant Ave.
University of Kansas
Lawrence, Kansas 66047-2906
(785) 864-7725

Cover letter & map

State Conservation Commission
109 SW 9th, Room 500
Topeka, Kansas 66612-1299
(785) 296-3600

Cover letter & map

Natural Resources Conservation Service
(Send to appropriate county/district,
see NRCS directory)

779.21	47-3-42 (a)(14)
780.23	47-3-42 (a)(27)
780.18	47-3-42 (a)(18)
785.17	47-3-42 (a)(37)

Linn County District Conservationist
431 Spruce Street - Box G
Mound City, Kansas 66056-0606
(620) 795-2317

Cherokee County District Conservationist
206 South Indiana
Columbus, Kansas 66725-1828
(620) 429-3013

Bourbon County District Conservationist
1515 South Judson, Suite B
Fort Scott, Kansas 66701-3467
(620) 223-3170

Crawford County District Conservationist
207 South Summit
Girard, Kansas 66743-1540
(620) 724-8231

Kansas Department of Transportation
Bureau of Design
10th Floor - Docking State Office Building
Topeka, Kansas 66612
(785) 296-3531

Cover letter and map

U.S. Fish & Wildlife Department
Kansas State Office
315 Houston, Suite E
Manhattan, Kansas 66502

Cover letter and map

National Park Service
1709 Jackson Street
Omaha, Nebraska 68102

Cover letter and map

U.S. Army Corp of Engineers
District Engineer
601 E. 12th Street
Kansas City, Missouri 64106

Cover letter and map

NRCS
760 S. Broadway
Salina, Kansas 67401

Cover letter and map

MSHA
PO Box 817
McAlester, OK 74502

Cover letter and map

KDHE - Bureau of Air & Radiation
1000 SW Jackson, Suite 310
Topeka, Kansas 66612-1367

Cover letter and map

KDHE - NPDES
Bureau of Water Quality
1000 SW Jackson, Suite 420
Topeka, Kansas 66612-1367

Cover letter and map

KDHE Legal Division
1000 SW Jackson, Suite 560
Topeka, Kansas 66612-1367

Cover letter and map

Appropriate Rural Water District

Cover letter and map

***see permit for water district affected -
list of districts and addresses are in the SMS office**

Appropriate County Commission

Cover letter and map

Linn County Commission
Linn County Courthouse
Mound City, Kansas 66056

Cherokee County Commission
Cherokee County Courthouse
Columbus, Kansas 66725

Crawford County Commission
Crawford County Courthouse
Girard, Kansas 66743

Bourbon County Commission
Bourbon County Courthouse
Fort Scott, Kansas 66701

Appropriate Municipality

Any affected utilities

APPENDIX C

Parameters to be tested for in the Baseline water data:

Surface Water

pH
Total alkalinity
Total acidity
Total dissolved solids
Total iron
Dissolved iron
Total manganese
Total suspended solids
Sulfate
Flow

Ground Water

pH
Total alkalinity
Total acidity
Total dissolved solids
Total iron
Total manganese
Sulfate
Depth to H₂O in Coal Seam

Samples should be taken monthly. In addition the following should be tested for at least once during the baseline data collection. These additional tests include :

Aluminum
Antimony
Arsenic
Barium
Boron
Cadmium
Dissolved chromium
Total chromium (If pH is greater than 8.5)
Copper
Lead
Nickel
Selenium
Silver
Zinc
Dissolved iron
Chloride
Fluoride
Nitrate
Magnesium
Sodium
Phosphorus

Additional testing may be required based on test results.

SECTION 2

ADMINISTRATIVE INFORMATION

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State of Kansas
Kansas Department of Health and Environment
Surface Mining Section
4033 Parkview Drive
Frontenac, Kansas 66763

**APPLICATION FOR SURFACE COAL MINING AND RECLAMATION
OPERATIONS:**

PART 1 K.A.R. 47-3-42(a)(1): IDENTIFICATION OF INTERESTS

1. Type of Application (check one):

- surface mining
- coal recovery operation
- Revision No. _____ to Permit No. _____
- Renewal No. _____ to Permit No. _____
- Transfer of Permit No. _____
- Acres to be added under Incidental Boundary Revision. _____

2. The applicant is (check one):

- _____ Corporation _____ Partnership
- _____ Single Proprietorship _____ Association
- _____ other Business entity

3. Name of Company, Corporation, Partnership or Individual

Name _____

Address _____

Telephone No. _____

Applicant's Social Security No. _____ (Voluntary)

Federal Employer Identification No. _____

4. Resident agent:

Name _____

Address _____

Telephone No. _____

Applicant's Social Security No. _____ (Voluntary)

Federal Employer Identification No. _____

5. Is the person paying the Abandoned Mine Land Reclamation Fee different from the applicant?

Yes _____ No _____

if yes, provide the following information:

Name _____

Address _____

Telephone No. _____

Payee's Social Security No. _____ (Voluntary)

Federal Employer Identification No. _____

6. Who will be the operator of the proposed permit site: Pursuant to K.A.R. 47-2-75(b)(2) an operator is any person engaged in coal mining who removes or intends to remove more than 250 tons of coal.

Name _____

Is the operator different from the applicant?

Yes _____ No _____

if yes, provide the following information:

Operator's Name _____

Address _____

Telephone No. _____

Operator's Social Security No. _____ (Voluntary)

Federal Employer Identification No. _____

7. Who will extract coal under this proposed permit?

Name _____

Is the extractor different from applicant or operator?

Yes _____ No _____

if yes, provide the following information:

Name _____

Address _____

Telephone No. _____

Social Security No. _____ (Voluntary)

Federal employer identification No. _____

PART 2 K.A.R. 47-3-42 (a)(1): OWNERSHIP AND CONTROL INFORMATION

Ownership and control is evidenced by being the permittee of a surface coal mining operation, or by being the owner of record of 50 percent or more of an entity controlling a surface coal mining operation or by having any relationship which gives direct or indirect authority over an entity controlling a surface coal mining operation.

Ownership and control is presumed if an entity is an officer or director; is an operator of a surface coal mining operation; has the authority to commit the financial or real property assets or working resources of an entity; is the owner of record of ten (10) through fifty (50) percent of an entity; is a general partner of a partnership; owns or controls coal to be mined by another entity and has the right to receive that coal after mining; or has the authority to determine how the surface coal mining operations will be conducted.

For an entity to refute a presumed ownership and control relationship, the entity must demonstrate to the satisfaction of the Department that the entity subject to the presumption does not have the authority directly or indirectly to determine the manner in which the relevant surface coal mining operation is conducted.

1. As **Attachment Part 2 (1)**, list all individuals who qualify under the definition of Ownership as defined above. The list shall include the following information:

Name _____

Address _____

Title of Position _____

Date Position Assumed _____

Telephone No. _____

Social Security No. _____ (Voluntary)

Federal Employer Identification No. _____

MSHA ID No. _____

Relationship to Applicant _____

Percent Ownership _____

Location in Organizational Structure _____

2. As **Attachment Part 2 (2)**, for each surface coal mining and reclamation operation in the United States presently owned or controlled, or owned or controlled within the five (5) years preceding the date of the application by the entity listed in 1 above, provide the following information:

Name _____

Address _____

Name of regulatory authority _____

Identification number _____

Social security No. _____ (Voluntary)

Federal employer identification No. _____

Federal permit No. _____

State permit No. _____

MSHA No. _____

Date of issuance _____

Percent Ownership _____

3. As **Attachment Part 2 (3)**, for each pending surface coal mining application in the United States owned or controlled by the applicant, or by any person who owns or controls the applicant, provide the following information:

Name of Operation _____

Address of Operation _____

Name of regulatory authority _____

Identification number _____

Federal Employer Identification No. _____

MSHA No. _____

Date of issuance of MSHA No. _____

Relationship to Applicant _____

4. As **Attachment Part 2 (4)** for each legal or equitable owner of record of the surface and mineral property to be mined, each holder or record of any leasehold interest in the property to be mined, and any purchaser of record under a real estate contract for the property to be mined, provide the following information:

Name _____

Address _____

Surface Ownership _____, or Sub-surface Ownership _____

5. As **Attachment Part 2 (5)** provide a map and statement of all lands, interest in lands, options or pending bids on interests held or made by the applicant for lands contiguous to the proposed permit area. This information can be held confidential by request of the applicant.

The attachment shall include the following information:

Name/Address _____

Section/Twp/Rge _____

Surface Ownership _____, or Sub-surface Ownership _____

6. As **Attachment Part 2 (6)**, provide a map and statement of all property of owners of record of those lands, both surface and subsurface, included in or contiguous to the proposed permit area on pre-mining land use map or another map, if necessary.

The attachment shall include the following information:

Name/Address _____

Section/Twp/Rge _____

Surface Ownership _____, or Sub-surface Ownership _____

7. List the Mine Safety and Health Administration (MSHA) number(s) for all mine associated structures that require MSHA approval.

STRUCTURE	MSHA #
_____	_____
_____	_____
_____	_____
_____	_____

8. As **Attachment Part 2 (8)**, provide name and address of any purchaser of record under a real estate contract of the property for the proposed permit area. The attachment shall include the following information:

Name _____

Section/Twp/Rge _____

Surface Ownership _____, or Sub-surface Ownership _____

PERMIT VERIFICATION

I, _____
Signature Title Date

hereby submit application # _____ for a permit to mine during a permit term
of _____ years as required by K.A.R. 47-3-42 (a)(5).

Under penalties of perjury I declare that I have examined this application, including
accompanying statements and documents and to the best of my knowledge it is true, and correct
(Signer must be at least a vice president or duly authorized representative).

Name

Firm

Phone Number

Address

State of _____

County of _____

Signed and Sworn to before me on

Notary Public

_____ by _____
Date Person

Signature of Notary

My appointment expires on _____

PART 3 K.A.R. 47-3-42 (a)(2): Violation Information

1. Has the applicant, any subsidiary, affiliate or person controlled by or under common control with the applicant had:

A. A State or Federal coal mining permit suspended or revoked in the five (5) years prior to the date of submission of the application:

Yes _____ No _____

B. A forfeiture of a performance bond, or similar security, under a coal mining permit:

Yes _____ No _____

C. If the response to A. or B. was yes, provide the following information as required by K.A.R. 47-3-42 (a)(2), as **Attachment Part 3 (1C)**:

- 1) Identification number of the permit
- 2) Amount of Bond
- 3) Date of Bond
- 4) Date of permit issuance
- 5) Date of permit suspension or revocation and/or the date of bond forfeiture
 - a) Name of regulatory authority who suspended or revoked the permit and/or forfeited the bond.
 - b) A statement of the reason for the suspension, revocation and/or forfeiture action.
 - c) The current status of the permit and/or bond.

D. For any administrative or judicial proceedings initiated concerning the suspension, revocation, and/or forfeiture provide:

- 1) Date of proceeding
- 2) Type of proceeding
- 3) Location of proceeding, and
- 4) Current status of proceedings

E. If the response to 1.B. was yes, provide as **Attachment Part 3 (1E)**: information on the applicant's present financial condition to provide assurances satisfactory to the Department that forfeiture will not again be necessary.

2. Violation History

A. Provide **Attachment Part 3 (2)(A)** with the following information: A list of all violation notices received by the applicant during the three (3) year period preceding the date of submission of the application, and a list of all outstanding violation notices received prior to the date of the application by any surface coal mining operation that is deemed or presumed to be owned or controlled by either the applicant or any person who is deemed or presumed to own or control the applicant. For each notice of violation (NOV) for which the abatement period has not expired, the applicant shall certify that such notice of violation is in the process of being corrected to the satisfaction of the agency with jurisdiction over the violation, or cessation orders (CO), received prior to the date of the application. The list shall include the following as required by K.A.R. 47-3-42 (a)(2):

Name of Operation _____

Address of Operation _____

Name of regulatory authority _____

Identification No. _____

Federal Employer Identification No. _____

MSHA No. _____

Date of issuance of MSHA No. _____

- 1) Notice of violation number or other identifier
- 2) Date of NOV or CO issuance
- 3) Permit identification number
- 4) MSHA number
- 5) Date of MSHA number issuance
- 6) Name of person to whom NOV or CO was written
- 7) Name of regulatory authority or agency which issued the NOV or CO
- 8) A brief description of the alleged violation
- 9) Current status of violation
- 10) Actions, if any, to abate the alleged violation

- B. For any administrative or judicial proceedings initiated concerning the violation or CO, provide the following:
- 1) Type of proceedings
 - 2) Date of proceedings
 - 3) Location of proceedings
 - 4) Current status of proceedings
 - 5) Actions, if any, to abate the alleged cessation order or violation

PART 4 K.A.R. 47-3-42 (a)(3) Right of Entry Information

Pursuant to K.A.R. 47-3-42 (a)(3), as **Attachment Part 4 (1)** provide the following:

1. A written description of the documents upon which the applicant bases its legal right to enter and begin surface coal mining and reclamation operations in the proposed permit area and state whether that right is the subject of pending litigation. The description shall identify the documents by type and date of execution, identify the specific lands to which the document pertains, and explain the legal rights claimed by the applicant.
2. If the private mineral estate to be mined has been severed from the private surface estate the applicant shall also provide:
 - A. Copies of the conveyance that expressly grants or reserves the right to extract coal by surface mining methods; or
 - B. Documentation that under applicable State law, the applicant has the legal authority to extract the coal by those methods where the conveyance does not expressly grant the right to extract the coal by surface mining methods.

Right of Entry Certification

(I) (We)

(Individual or Individuals)

under penalties of perjury declare on behalf of the applicant,

(Applicant)

that said applicant has valid documents which bestow upon the applicant a legal right to enter and commence surface coal mining and reclamation operations upon lands contained in the proposed permit area, and such legal right is not in any way the subject of pending court litigation.

Dated this _____ day of _____, 20_____.

Signature

Title

State of _____

County of _____

Notary Public

Signed and Sworn to before me on

_____ by _____
Date Person

Signature of Notary

My appointment expires on _____

PART 5 K.A.R. 47-3-42 (a)(4) Status of Unsuitability Claims

1. Does the proposed permit area include:

Areas designated unsuitable for surface coal mining and reclamation operations, or under study for designation in an administrative proceeding as unsuitable for surface coal mining and reclamation operations as stated in K.A.R. 47-3-42 (a)(4):

Yes _____ No _____

2. Does the proposed permit area include:

- a. Lands within boundaries of the National Park System, National Wildlife Refuge System, the National System of Trails, the National Wilderness Preservation System, the Wild and Scenic Rivers System, and National Recreation Areas, etc.:

Yes _____ No _____

- b. National Forest land:

Yes _____ No _____

- c. Any land where mining will adversely affect any publicly-owned park or any places included in the National Register or Historic Places, etc. (per K.A.R. 47-3-42 (a)(31)):

Yes _____ No _____

- d. Any public roads which are to be removed, relocated or temporarily closed:

Yes _____ No _____

Indicate on the pre-mining land use map or other designated map the location of the public roads and attach a copy of the written agreement from the appropriate authority authorizing the relocation, removal or temporary closure. Describe the measures to be used to insure that the interest of the public and land owners affected will be protected.

3. Within the proposed permit area will Surface Coal Mining and Reclamation operations be located:

a. Within 100 feet of the right-of-way line of any public road:

Yes _____ No _____

If yes, as **Attachment Part 5 (C)(1)**, explain proposed procedures for complying with regulation K.A.R. 47-3-42 (a)(4), including request for variance, if relevant. Provide location of public roads on pre-mining land use map or other designated map. Describe the measures to be used to insure that the interest of the public and land owners affected will be protected.

b. Within 300 feet measured horizontally from any occupied dwelling:

Yes _____ No _____

If yes, attach waiver and provide meeting requirements of (K.A.R. 47-3-42):

Yes _____ No _____

c. Within 300 feet measured horizontally of any occupied building, public building, school, church, community of institutional building or public park:

Yes _____ No _____

d. Within 100 feet measured horizontally of a cemetery:

Yes _____ No _____

4. Are valid existing rights claimed for any part of the proposed permit area:

Yes _____ No _____

If yes, provide documentation to substantiate claim as **Attachment Part 5 (D)(1)**

PART 6 **K.A.R. 47-3-42 (a)(5) Permit Term**

As **Attachment Part 6 (1)**, for each phase of the proposed surface coal mining and reclamation operation, provide the anticipated or actual starting and termination date and the anticipated number of acres to be affected over the life of the mine. Designate the boundaries of each phase on the pre-mining land use map or other designated map.

PART 7 **K.A.R. 47-3-42 (a)(6) Permit Insurance**

As **Attachment Part 7 (1)**, a certificate of liability insurance is required prior to permit issuance. The certificate may be submitted with the application or when fee and bond are submitted. Minimum insurance coverage required for bodily injury and for property damage is \$300,000.00 each occurrence, and \$500,000.00 aggregate. The certificate of insurance must include the following information:

- a. Use of explosives
- b. A rider requiring that the insurer notify the SMS whenever substantive changes are made in the policy, including termination and failure to renew
- c. A list of all permits covered by the policy

PART 8 **K.A.R. 47-3-42 (a)(7) Proof of Publication**

As **Attachment Part 8 (1)**, provide a draft copy of proposed newspaper notice, and the name of local newspaper of general circulation in which advertisement of the application will be published. Certificate of publication is to be submitted not later than four weeks after the last date of publication as required by K.A.R. 47-3-42 (a)(7).

PART 9 **K.A.R. 47-3-42 (a)(8) Facilities of Structures used in Common**

The plans of a facility or structure that is to be shared by two or more separately permitted mining operations may be included in one permit application and referenced in the other applications. Each permittee shall bond the facility or structure unless the permittees sharing it agree to another arrangement for assuming their respective responsibilities. If such agreement is reached, then the application shall include a copy of the agreement between or among the parties setting forth the respective bonding responsibilities of each party for the facility or structure. The agreement shall demonstrate to the satisfaction of the SMS that all responsibilities under this chapter for the facility or structure will be met. Include the agreement as **Attachment Part (9)(1)**.

SECTION 3

ENVIRONMENTAL RESOURCE INFORMATION

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PART 10 **K.A.R. 47-3-42 (a)(10) General Resource Requirements**

Provide a summary description of the existing pre-mining environmental resources of the proposed permit area, adjacent area, and the general area of the proposed operation. The summary should state location, acreage, and amount of time estimated to complete mining and reclamation. If the applicant has leases or otherwise controls lands immediately adjacent to the proposed permit area and intends to mine such areas at a time beyond the five year life of the permit and for which subsequent permit applications are intended, then provide a description of the size, sequence and time frame for mining of such future areas. Provide an estimation of the anticipated annual coal production and anticipated total coal production by tonnage once the mine is at full operational capacity.

PART 11 **K.A.R. 47-3-42 (a)(11) General Environmental Resource Information**

The applicant shall provide a description of the nature or lack of cultural and historic resources in the proposed permit area and adjacent area with source information references. Written verification by the Kansas Historical Society, which maintains state and federal registers of sites of historical interest and of areas and sites of probable archeological occurrence, is required.

PART 12 **K.A.R. 47-3-42 (a)(12) Climatological Information**

The applicant shall provide a description of the climate characterization, including seasonal temperature ranges, average precipitation, direction and velocity of prevailing winds, and other weather patterns. The description should include references to information obtained, along with charts and maps showing this information.

PART 13 **K.A.R. 47-3-42 (a)(13) Vegetative Information**

The applicant shall follow the Kansas ‘Re-vegetation Guidelines’ available for review at the Surface Mining Section’s office. The permit application shall contain a map that delineates existing vegetative types and a description of the plant communities within the proposed permit area and within any proposed reference area. The description shall include information adequate to predict the potential for reestablishing re-vegetation. The required map must show sufficient adjacent areas to allow evaluation of vegetation as important habitat for fish and wildlife for those species identified under the Fish and Wildlife Information section of the permit.

PART 14 K.A.R. 47-3-42 (a)(14) Soils Resource Information

Soils information shall include the distribution and general characteristics of the soils as provided in the *Soil Survey* of the county where located and shall conform to the following minimum requirements:

1. A map delineating different soils,
2. Soil identification,
3. Soil description,
4. Present and potential productivity of existing soils,
5. An inventory of the available soils on the proposed permit based on the following requirements for land uses other than cropland:
 - a. A map showing topsoil depths as measured on a minimum 400' x 400' grid;
 - b. A chart showing the weighted average depth of actual field probes compared to the *Soil Survey*;
6. An inventory of available soils based on the following requirements for the land use of cropland prime farmland:
 - a. A map showing topsoil depths as measured on a minimum 400' x 400' grid with subsoil depths recorded at every other probe;
 - b. A chart showing the weighted average depth of actual field probes compared to the *Soil Survey*;

Modifications to this schedule shall be done in consultation with the SMS on a case-by-case basis based on extenuating field circumstances. Additional probes shall be required where deemed necessary to adequately characterize the site.

PART 15 K.A.R. 47-3-3a Application For Mining Permit Maps

1. Cross sections, maps, and plans included in a permit application as required by this section, and as appropriate to each discipline, shall be prepared by or under the direction of, and certified by a qualified, registered, professional engineer, a professional geologist, or a registered surveyor as stated in the Kansas State Board of Technical Professions referenced to the Kansas Statutes Annotated; 74-7001, except as otherwise provided.
2. Each change in a facility or feature that would be caused by the proposed mining operations shall be shown in the maps and plans accompanying the permit application.
3. A color code, or other method approved in writing by the SMS shall be used to indicate critical features of the permit area as follows:
 - a. Green for areas of coal removal;
 - b. Red for the boundary of the land affected, including access roads and haulroads;
 - c. Brown for access roads and haulroads;
 - d. Blue for watercourses, impoundments, drainage ways, and other water areas;
4. A color code, or other method approved in writing by the SMS, shall be used to indicate critical features of any reclamation plan as follows:
 - a. Green for proposed grassland;
 - b. Red for the permit boundaries;
 - c. Brown for any roads to be left through the disturbed area;
 - d. Blue for proposed water impoundment and drainage;
 - e. Yellow for proposed cropland;
 - f. Orange for proposed woodland.

PART 16 K.A.R. 47-3-42 (a)(15) Maps General

The applicant shall include maps showing:

1. All boundaries of lands and names of present owners of record of those lands, both surface and subsurface, included in or contiguous to the proposed permit area.
2. The boundaries of land within the proposed permit area upon which the applicant has the legal right to enter and begin surface mining activities.
3. The boundaries of all areas proposed to be affected over the estimated total life of the proposed surface mining activities, with a description of size, sequence, and timing of the mining of sub-areas for which it is anticipated that additional permits will be sought.
4. The location of all buildings on and within 1,000 feet of the proposed permit area, with identification of the current use of the buildings.
5. The location of surface and subsurface man-made features within, passing through, or passing over the proposed permit area, including, but not limited to major electric transmission lines, pipelines, and agricultural drainage tile fields.
6. The location and boundaries of any proposed reference areas for determining the success of re-vegetation.
7. The location of water supply intakes for current users of surface water flowing into, out of, and within a hydrologic area defined by the regulatory authority, and those surface waters which will receive discharges from affected areas in the proposed permit area.
8. Each public road located in or within 100 feet of the proposed permit area.
9. The boundaries of any public park and locations of any cultural or historical resources listed or eligible for listing in the National Register of Historic Places and known archeological sites within the proposed permit and adjacent areas.
10. Each cemetery that is located in or within 100 feet of the proposed permit area.

11. Any land within the proposed permit area which is within the boundaries of any units of the National System of Trails or the Wild and Scenic Rivers System, including study rivers designated under section 5(a) of the Wild and Scenic Rivers Act.
12. Any public land survey monuments. A certificate is to be completed even if no public land survey monuments were found for the permit area.
13. Any other additional information which may be required by the SMS for detailed review.

PART 17 K.A.R. 47-3-42 (a)(16) Cross Section, Maps, and Plans

The applicant shall include cross section, maps, and plans showing:

1. Elevations and locations of test borings and core samplings.
2. Elevations and locations of monitoring stations used to gather data for water quality and quantity, fish and wildlife, and air quality, if required, in preparation of the application.
3. Nature, depth, and thickness of the coal seams to be mined, and coal or rider seams above the seam to be mined, each stratum of the overburden, and the stratum immediately below the lowest coal seam to be mined.
4. All coal crop lines and strike and dip of the coal to be mined within the proposed permit area, including coal contours and a drawing with the mining block and pit alignment sequence with the surface and coal contours.
5. Location and extent of known workings of active, inactive, or abandoned underground mines, including mine openings to the surface within the proposed permit and adjacent areas.
6. Location and extent of sub-surface water, and direction of movement, if encountered, within the proposed permit or adjacent areas.
7. Location of surface water bodies such as streams, lakes, ponds, springs, constructed or natural drains, and irrigation ditches within the proposed permit and adjacent areas.

8. Location and extent of existing or previously surface-mined areas within the proposed permit area.
9. Location and dimensions of existing areas of spoil waste, and non-coal waste disposal, dams, embankments, other impoundments, and water treatment and air pollution control facilities within the proposed permit area.
10. Location and depth if available, of gas and oil wells within the proposed permit area and water wells in the proposed permit area and adjacent area.
11. Cross sections, maps and plans included in a permit application as required by this section shall be prepared by, or under the direction of, and certified by qualified, registered engineers, registered geologists, or qualified, registered land surveyors, as appropriate to each discipline.

ENGINEERING CERTIFICATION

I hereby certify the engineering design used in preparation of this application, attachments, and supplements was done by me or under my direct supervision.

I further certify to the best of my knowledge all such design is in accordance with all applicable local, state and federal laws, rules and regulations.

Whereas the Reclamation Plan calls for an alternative land use, I also certify the plans to conform to applicable accepted standards for adequate land stability, drainage, vegetative cover, and aesthetic design appropriate for the post-mining use of the site.

Whereas the operation proposes disposal of spoil or waste materials in areas other than mining workings or excavations, I also certify such fills are designed in accordance with recognized professional standards and all applicable laws.

In my professional judgement, the plans and specifications submitted as part of this application describe an operation which will meet all applicable effluent and water quality standards. I certify that I am familiar with all of the plans, specifications, reports, and maps submitted as part of this application and that said plans, etc. are accurate insofar as they represent existing conditions.

Name

Firm

*Kansas Registration Number (Seal)
Signature & Date*

Address

Phone

PUBLIC LAND SURVEY MONUMENTS CERTIFICATION

I hereby certify that the existence of Public Land Survey Monuments, as defined by Kansas Statutes Annotated (58-2011) and referenced to the Minimum Standard Detail Requirements for American Land Title Association/American Congress on Surveying & Mapping, has been researched as follows:

A search of the Public Records of the county or counties for the proposed permit area has been made for the existence of Public Land Survey monuments. Records showing the existence of Public Land Survey monuments within the proposed permit area were: _____ found, _____ not found.

_____ A) A field search for existing monumentation in the proposed permit area was made and none was found.

_____ B) A field search for existing monumentation in the proposed permit area was made and the monuments found. Public Land Survey monuments have been identified by type and location on the Pre-mining Land Use Map and have been referenced to the State Plan Coordinate System, a plan has been provided, in accordance with prudent surveying practices, to replace monumentation disturbed by the mining activities. The proposed replacement plan is included as part of the Reclamation Plan of this permit application.

I further certify the information given above is true and correct to the best of my knowledge and belief.

Name

Firm

*Kansas Registration Number (Seal)
Signature & Date*

Address

Phone

GEOLOGIC INFORMATION CERTIFICATION

I hereby certify that the geologic information used in the preparation of this application, attachments, and supplements was checked by me or was prepared under my direct supervision.

I further certify that all such geologic information contained in the application is in accordance with all applicable local, state, and federal laws, rules, and regulations.

I certify that I am familiar with all plans, maps, cross sections, reports, and logs submitted as part of this application and that said plans, maps, cross sections, reports, and logs are accurate insofar as they represent existing geologic conditions.

Name

Firm

Kansas Registration Number (Seal)
Signature & Date

Address

Phone

PART 18 K.A.R. 47-3-42 (a)(18) Operations Plan General Requirements

Describe the proposed mining operations plan for the permit area in terms of the type and method of coal mining procedures, the mining sequence, the employment of facilities, establishment and maintenance of erosion control facilities, air pollution control facilities, coal storage, cleaning and loading areas, location and placement of topsoil, spoil, coal waste, or other storage facilities.

1. Type of Mining - Include a narrative description of the type and method of mining procedures and the proposed engineering techniques. Discussion should include pit alignment, sequence, and approximate width of pits, anticipated annual and total production of coal by tonnage and major equipment to be used. An Operations Plan Map will be included in the Maps Volume of the permit application.
2. Facilities - Explain in narrative the construction, modification, use, maintenance, and removal of the following:
 - a. Dams, embankments, and other impoundments
 - b. Overburden and topsoil handling and storage area and structures.
 - c. Coal removal, handling, storage, cleaning, and transportation areas and structures
 - d. Spoil, coal processing waste, and non-coal waste removal, handling, storage, transportation, and disposal area and structures
 - e. Mine facilities
 - f. Water and air pollution control facilities

PART 19 K.A.R. 47-3-42 (a)(19) Existing Structures

The applicant shall provide a description of each existing structure proposed to be used in connection with or to facilitate the surface coal mining and reclamation operations. The description shall include the following:

1. Location of the structure on the operations map or other designated map
2. Plans of the structure detailing its current, pre-mining condition

3. Approximate dates, beginning and completion for construction of the structure, and for each structure proposed to be modified or reconstructed for use in connection with or to facilitate the surface coal mining and reclamation operations, a compliance plan is required which shall include the following:
 - a. Design specifications for reconstruction or modification of the structure in accordance with K.A.R. 47-3-42 (a)(28) and K.A.R. 47-3-2 (a)(30) for a diversion or impoundment, or other appropriate K.A.R. Section
 - b. A schedule for reconstruction or modification of the structure showing dates for beginning and completing interim steps as well as final reconstruction
 - c. Provisions for monitoring the structure during and after modification to show that the risk of harm to the environment or to public health or safety is not significant during the period of modification or reconstruction.

PART 20 K.A.R. 47-3-42 (a)(20) Blasting Plan

The applicant will provide a description of the Blasting Plan and include:

1. A copy of the proposed blasting schedule(s) and a list of persons to whom the schedule will be distributed for each blasting area described.
2. A copy of the format used to notify persons within one-half ($\frac{1}{2}$) mile of the proposed permit area as to how to obtain a pre-blast survey.
3. A brief description of procedures to be used to perform pre-blast surveys and for distributing copies of the survey reports to owners/residents and the SMS.
4. A copy of the blasting report form.
5. The distance to, and the names and addresses of the owners of, all dwellings or other structures within one-half ($\frac{1}{2}$) mile of the proposed permit area.

6. Will blasting be conducted within one thousand (1,000) feet of any building used as a dwelling, public building, school, church, community building or institutional building outside the permit area?

Yes _____ No _____

7. Will blasting be conducted within one thousand (1,000) feet of any utilities, such as substations, underground cables, or utility poles outside the permit area?

Yes _____ No _____

8. Will blasting be conducted within five hundred (500) feet of an active or abandoned underground mine?

Yes _____ No _____

- a. If the answer to 6., 7., or 8. is YES, a preliminary blast design shall be submitted for approval as described below:
- b. The blast design may be presented as part of the application, or at a time prior to the blasting, but must be pre-approved by the Surface Mining Section.
- c. The blast design shall contain sketches of the drill patterns, delay periods, and decking and shall indicate the type and amount of explosives to be used per hole, critical dimensions, and the location and general description of structures to be protected, as well as a discussion of design factors to be used, which protect the public and meet the applicable air blast, flyrock, and ground vibration standards.
- d. The blast design shall be prepared and signed by a certified blaster.
- e. If the blast design is not included with the application, please state when the design is to be submitted.

9. Include information setting forth the limitations the operator will meet with regard to ground vibration and airblast, the basis for those limitations, and the methods to be applied in controlling the adverse effects of blasting operations.

10. Include a description of any system to be used to monitor the blasting; including the type, capability, and sensitivity of any blast monitoring equipment and proposed procedures and locations of monitoring.
11. Blasting operations within five hundred (500) feet of active underground mines require approval of the SMS and the Federal Mine Safety and Health Administration (MSHA). If blasting operations are expected to occur within five hundred (500) feet of an active underground mine, please include the written approvals of the Department and MSHA, or state when the written approvals will be submitted prior to conducting blasting operations.

PART 21 K.A.R. 47-3-42 (a)(21) Operation Plan: Maps and Plans

The applicant will provide an Operations Plan Map and plans and include:

1. The maps and plans shall show the lands proposed to be affected throughout the operation and any change in the facility or feature to be caused by the proposed operations, if the facility or feature was shown under K.A.R. 47-3-42 (a)(15), Maps General or K.A.R. 47-3-42 (a)(16), Cross Sections, Maps, and Plans.
2. On the proposed area the following will be shown: Buildings, utility corridors and facilities to be used, areas of land to be affected within the proposed permit area, according to the sequence of mining and reclamation. Each area of land for which a performance bond or other guarantee will be posted.
3. Each coal storage, cleaning and loading area
4. Each topsoil, spoil, coal waste, and non-coal waste storage area.
5. Each water diversion, collection, conveyance, treatment, storage, and discharge facility to be used.
6. Each air pollution collection and control facility.
7. Each source of waste and each waste disposal facility in relation or related to coal processing or pollution control.
8. Each facility to be used to protect and enhance fish and wildlife and related environmental values.

9. Each explosive storage and handling facility.
10. Location of each sedimentation pond, permanent water impoundment, coal processing waste bank, and coal processing waste dam and embankment, and fill area for the disposal of excess spoil.

PART 22 K.A.R. 47-3-42 (a)(22) Air Pollution Control Plan

The applicant will provide a description of the Air Pollution Control Plan and include:

1. A plan for fugitive dust control practices.
2. An air quality monitoring program to provide sufficient data to evaluate the effectiveness of the fugitive dust control practices to comply with applicable Federal and State air quality standards.

PART 23 K.A.R. 47-3-42 (a)(23) Fish and Wildlife Plan

The applicant will provide a description of the fish and wildlife resource information for the Permit and adjacent area, and include:

1. Required correspondence with concerned government agencies.
2. A description of the pre-mine condition of the proposed mining disturbance as well as the adjacent areas. A discussion of Threatened and Endangered wildlife that may occur within the various habitats on the permit area.
3. Legible copies of Environmental Field Reviews.
4. Wildlife evaluations of the proposed permit area and a comparison of pre-mine to post-mine habitat values, using the Interspersion Index as provided by the Kansas Department of Wildlife and Parks.
5. Information on habitats of unusually high value for fish and wildlife such as important streams, wetlands, riparian areas, etc.
6. Information on any species or habitats identified through agency consultation as requiring special protection under State or Federal law.

7. An outline of the Protection and Enhancement Plan for wildlife habitat, including a description of how the operator will minimize disturbances and adverse impacts on fish and wildlife and related environmental values, including compliance with Endangered Species Act.
8. A summary of habitat rating and justification. The applicant shall use a field key of the '*Aquatic and terrestrial Wildlife Habitats*', published by the Kansas Department of Wildlife and Parks for this summary.

PART 24 K.A.R. 47-3-42 (a)(24) Reclamation Plan, General Requirements

The applicant will provide a plan for reclamation of the lands within the proposed permit area and include:

1. A detailed timetable for the completion of each major step in the reclamation plan.
2. A detailed estimate of the cost of reclamation of the proposed operations required to be covered by a performance bond with supporting calculations for the estimates.
3. A plan for backfilling, soil stabilization, compacting, and grading, with contour maps or cross sections that show the anticipated final surface configuration of the proposed permit area.
4. A plan for removal, storage, and redistribution of topsoil, subsoil, and other material. A demonstration of the suitability of topsoil substitutes or supplements based upon analysis of the thickness of soil horizons, total depth, texture, percent coarse fragments, and pH and areal extent of the different kinds of soils. The SMS may require other chemical and physical analysis.
5. A plan for re-vegetation shall include:
 - a. Schedule of re-vegetation
 - b. Species and amount per acre of seeds and seedlings to be used
 - c. Methods to be used in planting and seeding
 - d. Mulching techniques
 - e. Irrigation, if appropriate, and pest and disease control measures

- f. Measures proposed to be used to determine the success of re-vegetation
 - g. Soil testing plan for evaluation of the results of topsoil handling and reclamation procedures related to re-vegetation
6. A description of the measures to be used to maximize the use and conservation of the coal resource.
 7. A description of measures to be employed to ensure that all debris, acid-forming and toxic-forming materials and materials constituting a fire hazard are disposed of according to K.A.R. 47-3-42 (a)(33) and a description of the contingency plans which have been developed to preclude sustained combustion of such material.
 8. A description, including cross sections and maps of the measures to be used to seal or manage mine openings, and to plug, case, or manage exploration holes, other bore holes, wells, and other openings within the proposed permit area.
 9. A description of steps to be taken to comply with the requirements of the Clean Air Act and Clean Water Act and other applicable air and water quality laws and regulations and health and safety standards.

PART 25 K.A.R. 47-3-42 (a)(25) Hydrologic Information

In consultation with the SMS, the applicant shall establish a 'Baseline Monitoring Program', to provide the conditions of the pre-existing ground and surface water quantity and quality. The applicant will insure that all water quality analyses performed shall be conducted according the methodology of the 15th edition of "Standard Methods for the Examination of Water and Wastewater," or the methodology in 40 CFR parts 136 and 434 and shall provide evidence of laboratory competence within the State of Kansas. The applicant shall provide a detailed description of where and how samples are collected, handled, and what tests are performed on each parameter sampled for all phases of data collection, i.e., pre-mining, active mining, and post mining.

1. Hydrologic and geologic information for the cumulative impact area (CIA) necessary to assess the probable cumulative hydrologic impact of the proposed operation and all anticipated mining on surface and ground water systems shall be provided to the regulatory authority through appropriate Federal or state agencies or the applicant may gather and submit this information to the SMS as part of the permit application. The applicant may include modeling techniques, interpolation or statistical techniques as part of the permit application, but actual surface and ground water information will be required by the SMS for each site even when such techniques are used. The applicant shall provide enough baseline information to describe the existing hydrologic conditions of the proposed mining area, including:
 - a. Installation and monitoring of ground water wells. Prior to installation of ground water monitoring wells, a signed affidavit must be obtained from each landowner for any ground water monitoring wells installed outside a permitted mining area. The affidavit will state that the landowner understands they are responsible for plugging any un-reclaimed wells left on their property in accordance with K.S.A. 28-30-7. In lieu of the affidavit, a voluntary bond may be posted for wells outside a permitted area. Bond amounts will be based upon a rate of \$15.00 per linear foot of well installed. The location and number of wells will be based upon the pre-mine meeting and consultation with the SMS. The applicant shall provide a detailed description of each well and a location map for each well associated with the mining permit. This description shall include an identification number for the well, the exact location of the well by Public Land Survey and GPS in State Plane Coordinates, who the well was installed by, a description of the geology the well was installed in, how the well was constructed, what diameter the well was bored, depth of the well, the type of fill below the well, thickness of the fill below the well, depth to the top of the screened portion of the well, the thickness of the screened section, type of filter pack around the screened section, type of screen, size of slots in screen, type of seal above the screen section, thickness of seal above the screened section, type of backfill above the plugged section, the thickness of backfill above the plugged section, type of riser pipe, type of surface seal, thickness of surface seal, type of well head protection, ground elevation, and the height of riser above ground.

- b. Ground water information including, but not limited to, maps showing the location and ownership for the permit and adjacent areas of existing wells, springs and other ground water resources, seasonal quality and quantity of ground water, and usage is required. Water quality descriptions shall include at a minimum: Acidity, Alkalinity, pH, sulfate, total dissolved solids (TDS), total iron, total manganese, and other constituents as determined by the initial sampling plan. The initial sampling plan will include the following parameters, sampled one time at each well during the initiation of sampling: aluminum, arsenic, barium, cadmium, total chromium, copper, lead, nickel, selenium, silver, zinc, chloride, fluoride, and nitrate. The baseline sampling plan will be adjusted based on the results of this sampling. Ground water quantity descriptions shall include at a minimum, approximate rates of discharge or usage and depth to the water in the coal seam and each water-bearing stratum above and potentially impacted stratum below the coal seam. The initial permit submittal will include at a minimum six monthly samples of data taken over six consecutive months. However, the coal mining permit will not be issued until a seasonal set of samples of ground water data is included in the permit application presented to the SMS.

- c. The applicant shall provide a detailed description of each baseline surface water monitoring site, a brief explanation of why the site was chosen, and its location on a map, showing its relation to the mining permit. Included within the description will be cross sections of each site, including the site characteristics, i.e., bed and bank morphology, bed slope, pertinent elevations, etc.

- d. Surface water information including maps showing the name, location, ownership, and description of all surface water bodies such as streams, lakes, and impoundments, the location of any discharge into any surface water body in the proposed permit and adjacent areas, and information on surface water quality and quantity sufficient to demonstrate seasonal variation and water usage. The location and number of surface water sampling sites will be based upon the pre-mine meeting and consultation with the SMS. Water quality description shall include at a minimum baseline information on Acidity, Alkalinity, pH, sulfate, total dissolved solids(TDS), total suspended solids (TSS), total iron, total manganese, and other constituents as determined by the initial sampling plan. The initial sampling plan will include the following parameters, sampled one time at each sampling site during the initiation of

sampling: aluminum, arsenic, barium, cadmium, total chromium, copper, lead, nickel, selenium, silver, zinc, chloride, fluoride, and nitrate. The baseline sampling plan will be adjusted based on the results of this sampling. Water quantity descriptions shall include at a minimum, baseline information on seasonal flow rates. The initial permit submittal will include at a minimum six monthly samples of data taken over six consecutive months. However, the coal mining permit will not be issued until a seasonal set of samples of surface water data is included in the permit application presented to the SMS.

- e. The applicant may be required to provide supplemental information based upon drilling, aquifer tests, hydrogeologic analysis of the water-bearing strata, flood flows, geologic chemistry or analysis of other water quality or quantity characteristics.
- f. The applicant shall provide a summary of the analysis of the baseline data including but not limited to a discussion of each parameter tested, how the results were influenced by various precipitation events, and flow characteristics of the permit site.
- g. The applicant shall provide a description of any aquifer properties, including transmissivity and permeability data, and characteristics associated with the mining activities and explain how the mining activities will affect the aquifers. The applicant will provide transmissivity, permeability, and geologic information on the geologic strata between the bottom of the proposed pit and the deep aquifer where water is obtained below the mine site.
- h. The applicant shall list and describe any models used to predict hydrological consequences.
- i. The applicant will provide a water users survey indicating the source of potable water for the permit and surrounding area. The applicant shall identify alternative water source information in case the mining operation causes contamination, diminution, or interruption of any surface or groundwater source within the permit or areas adjacent to the permit used for domestic, agricultural, industrial, or other legitimate purposes. The permit application will contain information on water availability and alternate water sources, including the stability of alternate water sources for existing permit uses and approved post mining land uses.

2. The applicant shall include a determination of the probable hydrologic consequences (PHC) of the proposed operation upon the quality and quantity of surface and ground water under seasonal flow conditions for the proposed permit and adjacent areas. The PHC shall be based on baseline hydrologic, geologic and other information collected for the permit application and may include data statistically representative of the site and include findings on:
 - a. Whether adverse impacts may occur to the hydrologic balance.
 - b. Whether acid-forming or toxic forming materials are present that could result in contamination of surface or ground water supplies.
 - c. Whether the proposed operation may proximately result in contamination, diminution, or interruption of any surface or groundwater source within the permit or areas adjacent to the permit used for domestic, agricultural, industrial, or other legitimate purposes. The protection of deep ground water resources can be shown by providing hydrologic, hydraulic, and geologic information about the geologic strata between the bottom of the coal seam and the deep aquifer.
 - d. The applicant shall identify what impact the proposed operation will have on:
 - 1) Sediment yields from the disturbed area, acidity, TSS, TDS, sulfate, and other important water quality parameters as identified in the baseline monitoring program. Sediment yield will be estimated by performing the latest version of MUSLE or RUSLE calculations on the pre-mine, active mining, and post mining conditions.
 - 2) Flooding or streamflow alteration, ground water and surface water availability.
 - 3) Ground water and surface water availability. The applicant needs to provide pre-mine, active mining, and post mining hydrographs to show what affect the mining will have on the surface water characteristics.
 - 4) The applicant will discuss what impact the proposed operation will have on other characteristics as required by the SMS.

3. The applicant shall include a Hydrologic Reclamation Plan with maps and descriptions, indicating how changes in existing hydrologic conditions will be minimized during mining and reclamation procedures to the proposed mine site and adjacent areas. The plan will meet applicable Federal and State water quality laws and regulations and protect the rights of present water users. The plan shall specifically address potential for adverse hydrologic consequences identified in the PHC and shall include preventive and remedial measures. The plan shall address the following:
 - a. Measures to prevent acid or toxic drainage.
 - b. Measures to prevent additional contributions of suspended solids to stream flow to the extent possible using the best technology currently available.
 - c. Measures to be taken to provide for water treatment facilities when necessary.
 - d. Measures to be taken to control drainage.
 - e. Measures to be taken to restore approximate pre-mining recharge capacity.
 - f. Measures to protect or replace rights of present water users.
 - g. Measures to be taken to address any potential adverse hydrologic consequences identified in the determination of PHC, including preventative and remedial measures.
4. The application shall include a ground water monitoring plan based upon the PHC determination. The plan shall provide for the monitoring of parameters that relate to the suitability of the ground water for current and approved post-mining land uses and for the protection of the hydrologic balance. The plan shall describe sample collections, sample handling, what tests will be performed for each parameter to be monitored, sample frequency, and site location maps. It shall describe how the data will be used to determine the impacts of the operation upon the hydrologic balance. At a minimum TDS, pH, total iron, total manganese, sulfate, water levels, and any other parameter identified in the baseline sampling as needing monitoring shall be monitored in accordance with the approved plan. Data shall be submitted to the SMS at least every three months for each monitoring location until

release of ground water monitoring requirements. The applicant needs to include information on when the wells will be plugged and give a detailed description of how the well plugging will be accomplished. Well plugging shall be in accordance with KDHE requirements for well plugging.

- a. If the applicant can demonstrate by use of the PHC and other available information, that a particular water-bearing stratum in the proposed permit and adjacent areas is not one which serves as an aquifer which significantly ensures the hydrologic balance within the cumulative impact area, then monitoring of that stratum may be waived by the regulatory authority.
5. The application shall include a surface water monitoring plan based upon the PHC determination. The plan shall provide for the monitoring of parameters that relate to the suitability of the surface water for current and approved post-mining land uses and for the protection of the hydrologic balance. The plan shall describe sample collections, sample handling, what test will be performed for each parameter to be monitored, sample frequency, and site location maps. It shall describe how the data may be used to determine the impacts of the operation upon the hydrologic balance. At a minimum, TDS, TSS, pH, total iron, total manganese, sulfate, flow, and any other parameter identified in the baseline sampling as needing monitoring shall be monitored in accordance with the approved plan. Data shall be submitted to the SMS at least every three months for each monitoring location.
 6. For point-source discharge, monitoring shall be conducted as required by the National Pollutant Discharge Elimination System (NPDES) permitting authority. Monitoring reports shall be submitted to the SMS at least every three months for each monitoring location. The applicant shall provide the following information:
 - a. Has an NPDES permit been applied for?
Yes _____ No _____
 - b. Has a NPDES permit been obtained?
Yes _____ No _____

- c. If yes give permit number and date issued, the expiration date, and the number of the discharge points for the proposed area. A coal mining permit will not be issued until a NPDES permit is included in the permit application.
 - d. The SMS is requesting that monitoring and reporting be on the basis of grab samples.
 - e. List the name and addresses of the laboratories which will perform the effluent and ground water sampling analyses.
7. The applicant shall provide a detailed plan outlining how surface water quality will be assessed prior to Phase III Bond Release. The plan shall describe sample collections, sampling handling, what test will be performed for each parameter to be monitored, sample frequency, and site location maps. At a minimum, the applicant shall be required to submit surface water quality and quantity from each surface water site on permit and up-stream and down stream in the receiving system. At a minimum this information will be collected four times over a six month period to determine seasonal and flow characteristics.

PART 26 K.A.R. 47-3-42 (a)(26) Geologic Information

The applicant must follow the Kansas Guidance Document for Baseline Overburden Data Collection Analysis and Interpretation available for review at the Surface Mining Section's office.

1. Each application shall include geological information in sufficient detail to assist in determining:
 - a. The probable hydrologic consequences of the operation upon the quality and quantity of surface and ground water in the permit and adjacent areas, including the extent to which surface- and ground-water monitoring is necessary;
 - b. All potentially acid- or toxic-forming strata, down to and including the stratum immediately below the lowest coal seam to be mined; and
 - c. Whether reclamation can be accomplished and whether the proposed operation has been designed to prevent material damage to the hydrologic balance outside the permit area.

2. Geologic information shall include, at a minimum the following:
 - a. A description of the geology of the proposed permit and adjacent areas down to and including the deeper of either the stratum immediately below the lowest coal seam to be mined or any aquifer below the lowest coal seam to be mined which may be adversely impacted by mining.
 - b. Analyses of samples collected from test borings; drill cores; or fresh unweathered, uncontaminated samples from rock outcrops from the permit area. The analyses of the geologic core samples will result in the following:
 - 1) Logs showing the lithologic characteristics including the physical properties and thickness of each stratum;
 - 2) Chemical analyses to identify those strata that may contain acid- or toxic forming or alkalinity- producing materials and to determine their content; and
 - 3) Chemical analyses of the coal seam for acid- or toxic-forming materials, including sulfur and pyritic sulfur.
3. If determined necessary, the SMS may require the collection, analysis and description of geologic information in addition to that required in this section.

PART 27 K.A.R. 47-3-42 (a)(27) Reclamation Plan Land Use Information

The applicant will provide a narrative of the condition, capability, and productivity of the land within the proposed permit area, including:

1. A map and narrative of the uses of the land existing at the time of filing of the proposed permit. If the pre-mining use of the land was changed within 5 years before the anticipated beginning operations date, the historic use of the land shall also be described.
2. A narrative of land capability and productivity before mining to support a variety of uses, giving consideration to soil characteristics, topography, vegetative cover, and hydrology. Productivity of the proposed area before mining should be expressed as average yield from lands obtained under high levels of management.

3. The applicant shall state whether the proposed permit area has been previously mined, and if so provide information on type of mining, dates of past mining, and use of land preceding mining.
4. A narrative of a detailed description of the proposed use following reclamation, including a discussion of the utility and capacity of the land to support alternative uses. This description shall explain:
 - a. How the proposed post mining land use is to be achieved.
 - b. If the proposed land use is different than the pre-mining land use, the applicant will provide all materials needed for approval of the alternative use. The proposed surface mining activities consistent with surface owner plans and applicable State and local land use plans and programs.
 - c. The description will be accompanied by a copy of the comments concerning the proposed use by the legal or equitable owner of record of the surface of the proposed permit area and the State and local government agencies which would have to initiate, implement, approve, or authorize the proposed use of the land following reclamation.

PART 28 K.A.R. 47-3-42 (a)(28) Reclamation Plan: Ponds, Impoundments, Banks, Dams, and Embankments

The applicant shall follow the ‘Engineering Guidelines for Ponds, Impoundments, Banks, Dams, Embankments, Diversions, and Road Systems’ available for review at the Surface Mining Section’s office. The application will include a general plan and a detailed design plan for each proposed siltation structure, water impoundment, coal processing waste bank, coal mine waste refuse pile, or coal processing waste impounding structure or embankment, within the proposed permit area.

Each plan shall be prepared by, or under the direction of, and certified by a qualified, and Kansas registered (licensed), professional engineer, geologist, and/or surveyor, as appropriate to each discipline.

PART 29 **K.A.R. 47-3-42 (a)(28) Reclamation Plan: Surface Mining Near Underground Mining**

If the proposed surface mining activities will be within 500 feet of an abandoned or active underground mine, the applicant shall provide details as to how the proposed surface mining activities will result in improved resource recovery, abatement of water pollution, or elimination of hazards to the health and safety of the public. The applicant shall further provide a plan detailing the nature, timing and sequence of the proposed surface mining. Before surface mining closer than 500 feet to an underground mine, the applicant must gain joint approval from the SMS, MSHA, and any State agencies responsible for the safety of underground mine workers.

PART 30 **K.A.R. 47-3-42 (a)(31) Protection of Public Parks and Historic Places**

The proposed plan shall describe for any publicly owned park or any place listed on the National Register of Historic Places, that may be adversely affected by the proposed operation, measures to be used:

1. To prevent adverse impacts.
2. Explain if valid existing rights exist or joint agency approval is to be obtained to minimize adverse impacts.
3. The SMS may require the applicant to protect historic or archeological properties through appropriate mitigation and treatment measure before those properties are affected by the mining operation.

PART 31 **K.A.R 47-3-42 (a)(32) Relocation of Use of Public Roads**

If the proposed surface mining activities are within 100 feet of the right-of-way line of any public road, except where mine access or haul roads join that right-of-way, or the public road is being relocated, then the applicant shall describe, with appropriate maps and cross-sections, the measures to be used to ensure that the interests of the public and landowners affected are protected.

PART 32 K.A.R. 47-3-42 (a)(33) Disposal of Excess Spoil

The applicant shall provide a description, including appropriate maps and cross section drawings, of the proposed disposal site and design of the spoil disposal structures. Except for the disposal of excess spoil on pre existing benches, each plan shall describe the results of a geotechnical investigation of the proposed disposal sites and include the following:

1. The character of the bedrock and any adverse geologic conditions in the disposal area.
2. A survey identifying all springs, seepage, and ground water flow observed or anticipated during wet periods in the area of the disposal site.
3. A survey of the potential effects of subsidence of the subsurface strata due to past and future mining operations.
4. A technical description of the rock materials to be utilized in the construction of those disposal structures containing rock chimney cores or underlain by a rock drainage blanket.
5. A stability analysis including but not limited to strength parameters, pore pressures and long-term seepage conditions. These data shall be accompanied by a description of all engineering design assumptions and calculations and the alternatives considered in selecting the specific design specifications and methods.
6. If rock-toe buttresses are required the application shall include engineering specifications utilized in the design.

PART 33 K.A.R. 47-3-42 (a)(36) Experimental Practices Mining

Experimental practices may be undertaken if they are approved by the SMS and if they are incorporated in a permit or permit revision. An application for an experimental practice shall contain descriptions, maps, plans, and data which show the following:

1. The nature of the experimental practice including a description of the performance standards for which variances are requested, the duration of the experimental practice, and any special monitoring which will be conducted.

2. How the use of experimental practice encourages advances in mining and reclamation technology or allows a post-mining land use for industrial, commercial, residential, or public use (including recreational facilities) on an experimental basis.
3. Experimental practice shall demonstrate that it:
 - a. It is potentially more or at least as environmentally protective, during and after mining operations, as would otherwise be required.
 - b. It will not reduce the protection afforded public health and safety below what would otherwise be required.
4. The applicant shall conduct monitoring of the effects of the experimental practice. The monitoring program shall ensure the collection, analysis and reporting of reliable data that are sufficient to enable the SMS and the Director to:
 - a. Evaluate the effectiveness of the experimental practice
 - b. Identify, at the earliest possible time, potential risk to the environment and public health and safety which may be caused by the experimental practice during and after mining.
5. The applicant shall comply with the public notice requirements.
6. No application for experimental practice shall be approved until the SMS first finds in writing and the Director then concurs that:
 - a. The use of experimental practice encourages advances in mining and reclamation technology or allows a post-mining land use on an experimental basis.
 - b. The experimental practice is potentially more or at least as environmentally protective, during and after mining operations, as would otherwise be required.
 - c. The experimental practice will not reduce the protection afforded public health and safety below what would otherwise be required.

- d. Experimental practices granting variances from the special environmental protection performance standards applicable to prime farmlands shall be approved only after consultation with NRCS.
- e. Each person undertaking an experimental practice shall conduct the periodic monitoring, recording and reporting program set forth in the application, and shall satisfy such additional requirements as the SMS or the Director may impose to ensure protection of the public health and safety and the environment.
- f. Each experimental practice shall be reviewed by the SMS at a frequency set forth in the approved permit, but no less frequently than every 2 ½ years. After review the SMS may require such reasonable modifications of the experimental practice as are necessary to ensure that the activities fully protect the environment and the public health and safety.
- g. Revisions or modifications to an experimental practice shall be processed and approved by the SMS. Any revisions which propose significant alterations in the experimental practice shall at a minimum be subject to notice, hearing, and public participation.

PART 34 K.A.R. 47-3-42 (a)(37) Prime Farmland

All permit applications shall include the results of a reconnaissance inspection of the proposed permit area to indicate whether prime farmland exists. Information from the inspection shall include the following:

1. *Applicability*: This section applies to any person who conducts or intends to conduct surface coal mining and reclamation operations on prime farmlands historically used for cropland. This section does not apply to:
 - a. Lands on which surface coal mining and reclamation operations are conducted pursuant to any permit issued prior to August 3, 1977; or
 - b. Lands on which surface coal mining and reclamation operations are conducted pursuant to any renewal or revision of a permit issued prior to August 3, 1977; or
 - c. Lands included in any existing surface coal mining operations for which a permit was issued for all or any part thereof prior to August 3, 1977, provided that:

- 1) Such lands are part of a single continuous surface coal mining operation begun under a permit issued before August 3, 1977; and
 - 2) The permittee had a legal right to mine the lands prior to August 3, 1977, through ownership, contract or lease but not including an option to buy, lease, or contract; and
 - 3) The lands contain part of a continuous recoverable coal seam that was being mined in a single continuous mining pit (or multiple pits if the lands are proven to be part of a single continuous surface coal mining operation) begun under a permit issued prior to August 3, 1977.
- d. For purposes of this section:
- 1) "Renewal" of a permit shall mean a decision by the SMS to extend the time by which the permittee may complete mining within the boundaries of the original permit, and "revision" of the permit shall mean a decision by the SMS to allow changes in the method of mining operations within the original permit area, or the decision of the SMS to allow incidental boundary changes to the original permit;
 - 2) A pit shall be deemed to be a single continuous mining pit even if portions of the pit are crossed by a road, pipeline, railroad, or power line or similar crossing;
 - 3) A single continuous surface coal mining operation is presumed to consist only of a single continuous mining pit under a permit issued prior to August 3, 1977, but may include non-contiguous parcels if the operator can prove by clear and convincing evidence that, prior to August 3, 1977, the non-contiguous parcels were part of a single permitted operation. For the purposes of this paragraph, clear and convincing evidence includes, but is not limited to, contracts, leases, deeds or other properly executed legal documents (not including options) that specifically treat physically separate parcels as one surface coal mining operation.

2. *Application contents - Reconnaissance inspection*

- a. All permit applications, whether or not prime farmland is present, shall include the results of a reconnaissance inspection of the proposed permit area to indicate whether prime farmland exists. The SMS in consultation with the NRCS shall determine the nature and extent of the required reconnaissance inspection.
- b. If the reconnaissance inspection establishes that no land within the proposed permit area is prime farmland historically used for cropland, the applicant shall submit a statement that no prime farmland is present. The statement shall identify the basis upon which such a conclusion was reached.
- c. If the reconnaissance inspection indicates that land within the proposed permit area may be prime farmland historically used for cropland, the applicant shall determine if a soil survey exists for those lands and whether soil mapping units in the permit area have been designated as prime farmland. If no soil survey exists, the applicant shall have a soil survey made of the lands within the permit area which the reconnaissance inspection indicates could be prime farmland. Soil surveys of the detail used by the NRCS for operational conservation planning shall be used to identify and locate prime farmland soils.
 - 1) If the soil survey indicates that no prime farmland soils are present within the proposed permit area, paragraph (2)(b) of this section shall apply.
 - 2) If the soil survey indicates that prime farmland soils are present within the proposed permit area, paragraph (c) of this section shall apply.

3. *Application contents - Prime farmland* - All permit applications for areas in which prime farmland has been identified within the proposed permit area shall include the following:

- a. A soil survey of the permit area according to the standards of the National Cooperative Soil Survey and in accordance with the procedures set forth in U.S. Department of Agriculture Handbooks 436 "Soil Taxonomy", "Soil survey Manual". The NRCS establishes the standards of the National Cooperative soil Survey and maintains a National Soils Handbook which gives current acceptable procedures for conducting soil surveys. This National Soils Handbook is available for review at area and State NRCS offices.
 - 1) USDA Handbooks 436 and 18 are incorporated by reference as they exist on the date of adoption of this Section. These can be located as outlined in 30 CFR 785.17(c)(1)(I).
 - 2) The soil survey shall include a description of soil mapping units and a representative soil profile as determined by the NRCS, including, but not limited to, soil-horizon depths, pH, and the range of soil densities for each prime farmland soil unit within the permit area. Other representative soil-profile descriptions from the locality, prepared according to the standards of the National Cooperative Soil Survey, may be used if their use is approved by the State Conservationist, NRCS. The SMS may request the operator to provide information on other physical and chemical soil properties as needed to make a determination that the operator has the technological capability to restore the prime farmland within the permit area to the soil reconstruction standards of K.A.R. 47-9-1(g).
- b. A plan for soil reconstruction, replacement, and stabilization for the purpose of establishing the technological capability of the mine operator to comply with the requirements of K.A.R. 47-9-1(g).
- c. Scientific data such as agricultural-school studies, for areas with comparable soils, climate, and management that demonstrate that the proposed method of reclamation including the use of soil mixtures or substitutes, if any, will achieve, within a reasonable time, levels of yield equivalent to, or higher than, those of nonmined prime farmland in the surrounding area.
- d. The productivity prior to mining, including the average yield of food, fiber, forage, or wood products obtained under a high level of management.

4. *Consultation with Secretary of Agriculture.*

- a. The Secretary of Agriculture has responsibilities with respect to prime farmland soils and has assigned the prime farmland responsibilities arising under the Act to the Chief of the NRCS. The NRCS shall carry out consultation and review through the State Conservationist located in each State.
- b. The State Conservationist shall provide to the SMS a list of prime farmland soils, their location, physical and chemical characteristics, crop yields, and associated data necessary to support adequate prime farmland soil descriptions.
- c. The State Conservationist shall assist the SMS in describing the nature and extent of the reconnaissance inspection required in paragraph (1)(b) of this section.
- d. Before any permit is issued for areas that include prime farmland, the regulatory authority shall consult with the State Conservationist. The State conservationist shall provide for the review of, and comment on, the proposed method of soil reconstruction in the plan submitted. If the State Conservationist considers those methods to be inadequate, he or she shall suggest revisions to the SMS which result in more complete and adequate reconstruction.

5. *Issuance of permit.* A permit for the mining and reclamation of prime farmland may be granted by the SMS, if it first finds, in writing, upon the basis of a complete application, that:

- a. The approved proposed post-mining land use of these prime farmlands will be cropland;
- b. The permit incorporates as specific conditions the contents of the plan submitted under paragraph (c) of this section, after consideration of any revisions to that plan suggested by the State Conservationist under paragraph (4)(d) of this section;
- c. The applicant has the technological capability to restore the prime farmland, within a reasonable time, to equivalent or higher levels of yield as non-mined prime farmland in the surrounding area under the equivalent levels of management.

- d. The proposed operations will be conducted in compliance with the requirements of K.A.R. 47-9-1(g) and other environmental protection performance and reclamation standards for mining and reclamation of prime farmland.
 - e. The aggregate total prime farmland acreage shall not be decreased from that which existed prior to mining. Water bodies, if any, that are constructed during mining and reclamation operations must be located within the post-reclamation non-prime farmland portions of the permit area. The creation of any such water bodies must be approved by the SMS and the consent of all affected property owners within the permit area must be obtained.
6. *Bond Release.* Standards for the success and statistically valid sampling techniques for measuring re-vegetation success shall be based on the KDHE Re-vegetation Guideline document in effect at the time of permit issuance.
7. *Definitions:*
- a. Per KSA 49-403(p), the term "prime farmland" shall have the same meaning as that previously prescribed by the federal secretary of agriculture on the basis of such factors as moisture availability, temperature regime, chemical balance, permeability, surface layer composition, susceptibility to flooding and erosion characteristics, and which historically have been used for intensive agricultural purposes, and as published in the federal register.
 - b. Per K.A.R. 47-2-75(b), the term "cropland" means land used for the production of adapted crops for harvest, alone or in a rotation with grasses and legumes, and includes row crops, small grain crops, hay crops, nursery crops, orchard crops, and other similar specialty crops.
 - c. Per K.A.R. 47-2-75(b), the phrase "historically used for cropland" means (a) lands that have been used for cropland for any 5 years or more out of the 10 years immediately preceding the acquisition, including purchase, lease, or option, of the land for the purpose of conducting or allowing through resale, lease or option the conduct of surface coal mining and reclamation operations; (b) lands that the regulatory authority determines, on the basis of additional cropland history of the surrounding lands and the lands under consideration, that the permit area is clearly cropland but falls outside the specific 5-years-

in-10 criterion, in which case the regulations for prime farmland may be applied to include more years of cropland history only to increase the prime farmland acreage to be preserved; or (c) lands that would likely have been used as cropland for any 5 out of the last 10 years, immediately preceding such acquisition but for the same fact of ownership or control of the land unrelated to the productivity of the land.

PART 35 K.A.R. 47-3-42 (a)(41) In Situ Processing Activities

This section applies to any person who conducts or intends to conduct surface coal mining and reclamation operations utilizing in situ processing activities.

1. The applicant shall provide information including the following:
 - a. Delineation of proposed holes and wells and production zone for approval by the SMS.
 - b. A plan for treatment, confinement or disposal of all acid-forming, toxic-forming or radioactive gases, solids, or liquids constituting a fire, health, safety, or environmental hazard caused by the mining and recovery process.
 - c. Plans for monitoring surface and ground water and air quality, as required by the SMS.
 - 1) A written description of how the applicant will comply with all other applicable requirements.

SECTION 4

BASELINE OVERBURDEN DATA COLLECTION

ANALYSIS AND INTERPRETATION

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I. Introduction

The collection, analysis, interpretation and utilization of baseline overburden data is required by the following regulations:

Authority : K.S.A. 49-401 et.seq.

Referenced : PL 95 - 87 ; July 1995 30 CFR's

K.A.R. Chapter 47 Article 3

47-3-2(c)(2) Soil Resources Information
47-3-42(a)(1) Reclamation Plan General Requirements
47-3-2(c)(2) Geologic Information
47-3-2(c)(2) Hydrologic Protection

K. A. R. Chapter 47 Article 9

47-9-1(c)(6) Topsoil and Subsoil
47-9-1(c)(7) Hydrologic - Balance Protection
47-9-1(c)(30) Disposal of Non-coal Mine Wastes
47-9-1(c)(36) Backfilling and Grading: General Requirements
47-9-1(c)(47) Roads: General
47-9-1(f)(3) Auger Mining: Hydrologic Balance
47-9-1(f)(5) Auger Mining: Backfilling and Grading
47-9-1(g)(3) Soil Removal and Stockpiling
47-9-1(g)(4) Soil Replacement

Through these regulations, the data must be collected, analyzed, interpreted and then utilized to develop mining and reclamation plans. The mining industry is urged to work closely with the SMS staff in the design and implementation of the various phases in this process. The most effective mining and reclamation plans are site specific.

II. Objectives

The first goal of this document is to give general guidance to the mining industry on the various aspects which should be assayed during the permitting process. The second goal is to develop better communications with all interested parties which will hopefully evolve into future goals for baseline overburden collection, analysis, interpretation and utilization.

III. Process

The applicant should meet with the SMS office to discuss the exploration program and conceptual baseline overburden collection plans. The applicant is urged to use exploratory drilling logs to develop the baseline overburden collection program. The applicant should use this document to design the conceptual baseline overburden collection and analysis program and then utilize the data to locate and identify overburden which may cause problems in the reclamation of surface and subsurface environmental resources.

IV. General Guidelines

A. Site Identification

The applicant should identify all drilling locations on a map and/or aerial photo at a scale of 1:24000 or larger. The use of an aerial photo will allow access problems to be evaluated. This map may also be utilized to locate surface water sampling sites and water well locations.

B. Suggested Core Hole Densities

The applicant should collect, at a minimum, three cores for each developed mining area. This will allow the applicant to utilize triangulation to develop regional physical, structural and chemical characteristics. The following table outlines suggested core densities in regards to proposed developed acreages.

0 - 120	3 cores
120 - 240	4 cores
240 - 390	5 cores
390 - 640	6 cores
> 640	1 core for each additional 160 acres

C. Core Hole Drilling

1. Suggested Sampling Procedures

The applicant should sample each lithologic unit, 12 inches or greater, starting at the soil salvage depth down to and including the strata below the lowest coal seam to be mined. Geologic logs from past mining operations indicate that some of the units may be less than 12 inches in thickness (i.e., limestones, black shales, and sandstones).

The applicant should consider sampling units less than 12 inches if specific handling problems may occur in the mining operations. The applicant must obtain sufficient volumes of each lithologic unit to satisfy the testing program and split program. The applicant should not composite lithologic units greater than 5 feet in thickness (i.e. , if a lithologic unit is 8 feet, then composite the upper 4 feet and the lower 4 feet to make two samples of that unit). The goal of the baseline overburden data collection program is to obtain useful data for interpretation purposes. The applicant is urged to discuss sample intervals with the SMS staff before and after core drilling.

2. Geologic Logs and Descriptions

- a. The applicant must have detailed geologic logs and descriptions. This information is vital in the interpretation of baseline overburden data. The log sheet should include such items as:

- 1) Date, time and weather
- 2) Equipment utilized
- 3) Drilling firm
- 4) Driller's name
- 5) Drill logger's name
- 6) Drilling agents utilize
- 7) Drill hole location: Quarter, Quarter, Section, Township and Range or Latitude/Longitude by GPS
- 8) Core diagram with depths
- 9) Ground elevation

- b. The core hole description should include such items as:
- 1) Identifying each lithologic unit and subunits according to geologic work conducted by the Kansas Geological Survey. The Kansas coal fields have been mapped and logged so that published information and proper nomenclature should be utilized. The applicant is urged to contact the Kansas Geological Survey for regional and site specific information⁽²⁾
 - 2) Identify physical and chemical characteristics⁽³⁾
 - a) Color (Munsell)
 - b) Hardness (Mohs scale)
 - c) Streak
 - d) Grain size, shape and sorting
 - e) Mineralogy
 - f) Fractures
 - g) Concretions, nodules, fossils, etc.
 - h) Fizz (CaCO₃ content)
 - i) Bedding planes
 - j) Sulfide mineral crystallization, distribution and morphology
 - k) Note if water is encountered
 - l) Permeability
 - 3) **All geologic logging and descriptions must be supervised by a qualified geologist licensed by the State of Kansas.**

3. Drilling Agents

The use of drilling agents must be carefully considered. If water is utilized, an analysis of the drilling water source will be required (See Appendix C). Many drilling fluids and joint lubricants may contain elements which could contaminate the core samples⁽⁴⁾. The type and quantities of drilling and joint lubricants should be noted on the geologic logs. The applicant will submit all available information, on drilling fluids and joint lubricants utilized, in the permit application. Additional testing of the drilling fluids may be required by the SMS.

D. Supplemental Data

The applicant may be required to submit supplemental data. The supplemental data may be obtained by drill cuttings and /or high wall samples. The applicant should use as general guidance the methodologies outlined in the document, "Field and Laboratory Methods Applicable to Overburden Minesoils"⁽³⁾, to collect the supplemental data.

E. Sample Preparation

The applicant should prepare samples according to procedures outlined "Advisory ID AG-RP-145". All soil/overburden material collected as representing one sample, should be air dried on plastic trays or other non-metallic surfaces. Large clods are broken with a blunt wooden object to sizes acceptable to a Chipmunk crusher.

1. Air-dry material is weighed and then ground as follows:
 - a. Air-dried samples of large volume are ground in a Chipmunk crusher with plates set at a distance of ¼ inch.
 - b. Air-dried samples of small volume are ground directly into a rotary hammer/flailer-type grinder.
2. The ground material is passed through a 2-mm stainless-steel sieve.
3. If the material passing through a 2-mm sieve is clayey, (if a moistened sample forms a ribbon when worked between the thumb and forefinger), then the material that remains on the 2-mm sieve (particles in the size range of < ¼ inch to 2-mm) are again passed through a Chipmunk crusher and sieved through a 2-mm sieve.

4. The material remaining on the 2-mm sieve, (particles in the size range of $\frac{1}{4}$ inch to 2-mm), are weighed. The Percent Coarse Fraction is calculated according to the following formula:
5. Percent Coarse Fraction =
$$\frac{\text{(Weight material less than } \frac{1}{4} \text{ inch to 2-mm)}}{\text{Total weight of air-dry sample}} \times 100$$
6. All material passing through a 2-mm sieve is repeatedly passed through a splitter until a manageable volume of material is obtained. Samples for analysis are drawn from this volume.

V. Quality Control

As mentioned in the previous section, the applicant must develop a quality control testing program. The quality control of overburden analysis is crucial to the credibility of the data produced⁽¹⁾. The applicant should, as general guidance, have one out of every three cores analyzed by the selected testing lab and a quality control lab. The entire core intervals should be analyzed to determine if differences in data exist. The quality control program should be site specific and carefully designed by the applicant to achieve the desired results. The data obtained by both labs must be thoroughly discussed in the permit application and anomalies investigated.

VI. Qualifications

The applicant should submit all applicable lab certifications, qualifications and internal quality control programs in the permit application. The lab technician(s) responsible for producing the data should be listed for future consultation by the applicant and the SMS office.

VII. Suggested Test Parameters and Procedures

The applicant should develop a parameter testing and procedures plan through meetings with the SMS office. The suggested test parameters and procedures listed in Appendix A should be utilized to develop the conceptual plans. The parameters listed are suggested because of their importance in developing an environmentally sound mining and reclamation operations plan. **The SMS may request additional testing, once the permit application has been submitted.** The applicant is urged to implement intense literature reviews and data interpretation to develop the most effective mining and reclamation programs.

VIII. Data Interpretation and Reclamation Planning

The final step in baseline overburden processes is the interpretation of the data to develop mining and reclamation programs. The applicant should use all resources available to interpret the data. The applicant should utilize the information in Appendix B on Land Uses and Various interpretation guidance to develop mining and reclamation planning. The information provided in the tables is general guidance developed through literature reviews of current and past mining and reclamation interpretation schemes. The goal of the data interpretation is to develop site specific mining and reclamation plans through thorough discussions and review to obtain logical sound conclusions for the foundation of the permit application. The mining of a national resource such as coal can be achieved in most instances in an environmentally sound and economically feasible manner.

APPENDIX A

SUGGESTED TEST PARAMETERS AND PROCEDURES

1. Parameter: Ph

A. Procedures

- 1) USDA Handbook 60, Method (2), page 84, and Method (21a) page 102.
- 2) SSSA Book Series: 5 part 3, page 487-488.
- 3) EPA 600/2-78-054, "Field and Laboratory Methods Applicable to Overburden and Minesoils", Method (3.2.2) page 45 - 47.
- 4) CRC Press, Reclamation of Surface-Mined Lands Hossner, Method III, Page 59.

NOTE: All samples should be analyzed by a saturated paste made from 10 mesh (U.S. Standard) or smaller material. The paste should be equilibrated for 16 - 24 hours. The pH should be measured with a pH meter equipped with glass indicating and reference electrodes. Changes to the various methods may be needed to do various interferences. All methods used must be described with the data.

B. Reported form/units:

Standard units (0-14)

2. Parameter: Electrical conductivity (EC)

A. Procedures

- 1) USDA Handbook 60, Method (2), page 84, Method (3a), page 84 and Method (4b) page 89.
- 2) SSSA Book Series: 5 (part 1), Physical and Mineralogical Methods, page 994 - 1004.
- 3) EPA 600/2-78-054 "Field and Laboratory Methods Applicable to Overburden and Minesoils", Method (3.2.18) page 91 - 95.

- 4) CRC Press, Reclamation of Surface-Mined Lands Hossner, Method III, Page 58- 59.

NOTE: All samples should be analyzed using a saturated paste extract made from 10 mesh (U. S. Standard) or smaller material. If the results are questionable, paste should be equilibrated for 16 - 24 hours. All methodologies must be reported with the data.

B. Reported form/units:

- 1) dS/m at 25 degrees Celsius or
- 2) mmhos/cm at 25 degrees Celsius.

3. Parameter: Soluble Na, Ca, and Mg

A. Procedures

- 1) USDA Handbook 60, Method (2), page 84 and Method (3a), page 84.
- 2) SSSA Book Series 5, (part 3), Chemical Methods page 1210 - 1214.
- 3) EPA 600/2-78-054 “Field and Laboratory Methods Applicable to Overburden and Minesoils”, Method (3.2.19) page 95 - 99.
- 4) CRC Press, Reclamation of Surface-Mined Lands Hossner, Method IV, Page 59-61.

NOTE: All samples should be extracted from saturated paste made from 10 mesh (U. S. Standard) or smaller material. If the results of the above procedures are questionable, the paste should be equilibrated for 16 - 24 hours. All samples should be analyzed by an AA or ICP unit.

B. Reported form/units:

For Na, Ca, Mg - milliequivalent/liter

4. Parameter: Sodium absorption ratio (SAR)

A. Procedures

- 1) USDA Handbook 60, calculations on page 26.
- 2) EPA 600/2-78-054 “Field and Laboratory Methods Applicable to Overburden and Minesoils”, Method (3.2.19) page 95 - 99, utilize the equation on page 99.

$$\text{SAR} = \text{Na}^+ / \sqrt{(\text{Ca}^{++} + \text{Mg}^{++} / 2)}$$

B. Reported form/units:

SAR

5. Parameter: Particle size analysis and texture

A. Procedure:

- 1) SSSA Book Series 5, (part 1) Physical and Mineralogical Methods, page 383 - 409.
- 2) EPA 600/2-78-054 “Field and Laboratory Methods Applicable to Overburden and Minesoils”, Method (3.2.19) page 95 - 99.

B. Reported form/units:

- 1) (%) percent: sand, silt and clay.
- 2) USDA Textural classification.

6. Parameter: Exchangeable Sodium Percentage (ESP)(only if SAR>12

A. Procedures:

- 1) SSSA Book Series 5, (part 3), Chemical Methods, page 1209.
- 2) CRC Press, Reclamation of Surface-Mined Lands Hossner, Method IV, Page 61- 64.

B. Reported form/units:

$$\frac{\text{ESP} = (\text{Na (Exchangeable + soluble)} - \text{Na (soluble)})}{\text{Cation Exchange capacity}} \times 100$$

7. Parameter: Base Saturation %

A. Procedure:

SSSA Book Series: 5 (part 3), Chemical Methods, page 427- 431.

NOTE: Run only if material is to be used as a soil material replacement.

B. Reported form/units:

Ca, Mg, K, Na: milliequivalent/100 grams

8. Parameter: Saturation percentage

A. Procedure

1) USDA Handbook 60, Method (27A) or (27b) page 107.

2) SSSA Book Series: 5 (part 3), Chemical Methods, page 427 - 431.

B. Reported form/units:

percentage (%)

9. Parameter: Boron

A. Procedure

1) SSSA Book Series: 5 part 3, page 610-611

2) CRC Press, Reclamation of Surface-Mined Lands Hossner, Method IV, Page 72-74.

B. Reported form/units:

ppm - B

10. Parameter: AB-DTPA- Cu, Zn, Ni, Mn, Pb, Mo

A. Procedure:

SSSA Book Series: 5 (part 3), Chemical Methods, page 756 and various locations, (Analysis by AA or ICP).

NOTE: This parameter is not necessary unless results found in the Total Element content analysis are problematic.

B. Reported form/units:

ppm - Cu, Zn, Ni, Mn, Pb, Mo

11. Parameter: Acid Base Balance

A. Procedure:

- 1) Potential Acidity/Forms of Sulfur: EPA-600/2-78-054, Field and Laboratory Methods Applicable to Overburden and Minesoils”, Method (3.2.6) with noted revisions on the following page, from Dr. Dollhopf, 1993, Bozeman, MT.
- 2) NP, Modified Method: Journal of Environmental Quality, “Neutralization Potential of Overburden Samples Containing Siderite” , Skousen et. al. Vol. 26: page 673-681.

NOTE: This procedure is similar to the above EPA method, except for the addition of the following steps after boiling and the subsequent titration:
1. Add 5 ml 30% H₂O₂; 2. Boil an additional 1-minute; and 3. Cool and titrate to pH 7. Add more H₂O₂ and re-titrate if necessary.

B. Reported form/units:

- 1) Neutralization Potential - as tons CaCO₃/1000 tons
- 2) Exchangeable acidity meq/100g (if pH < 5.5 or neg NP)
- 3) Sulfur forms: Total Sulfur %
Sulfates %
Organic Sulfur %
Pyritic Sulfur %

4) Residual sulfur fraction (organic-S) - as %

5) Carbon forms: Total inorganic carbon

12. Parameter: Total Element Content: Cd, Cu, Mn, Ni, Pb, Zn, Mo

A. Procedure:

1) SSSA Book Series: 5 (part 3), Chemical Methods, various methodologies described throughout the text.

2) CRC Press, Reclamation of Surface-Mined Lands Hossner, Method III, Page 74 - 75.

B. Reported form/units:

ppm - Cd, Cu, Mn, Ni, Pb, Zn, Mo

NOTE: If Total values are problematic then an AB-DTPA must be performed on the sample.

13. Parameter: Exchangeable Acidity (if pH<5.5):

A. Procedure:

CRC Press, Vol. 1 "Reclamation of Surface-Mined Lands", Hossner, Method VI pages 64 - 65.

B. Reported form/units:

Meq/1000g

14. Parameter: Exchangeable Aluminum (if pH< 4.5 or > 8.4):

A. Procedure:

SSSA Book Series: 5 part 3, page 526.

B. Reported form/units:

Exchangeable Al Meq/100g

APPENDIX B

DATA INTERPRETATION TABLE 1

Suitability of Overburden Materials for Use as Reconstructed Rootzone Materials for
Minesoils: Row Crops / Forage Production

Parameter	Good	Fair	Poor to Unsuitable - A Mitigation Plan May be Needed
Ph	5.0 - 8.0	8.0 - 8.4 4.5 - 5.0	> 8.4 < 4.5
CEC meq/100gm			< 4
USDA Texture	all others	SICL SI, LS	C, SIC SC, S
EC	0 - 4	4 - 8	> 8
K-Factor	< 0.35	> 0.35	
SAR	0 - 4	4 - 10	> 10
ESP		8 - 12	> 12
Saturation			> 85%
Available water capacity	> .1	0.5 - .10	< .05
Coarse fragments			
3 - 10"	< 15 %	15 % - 35 %	> 35 %
10"	< 3 %	3 % - 10 %	> 10 %
Acid Base Balance			
Pyritic Sulfur			> 0.5 %
Total Sulfur			> 0.5 %
Neutralization Potential: Potential Acidity (ratio) (based on total sulfur)			< 2 : 1
B (Hot Water)			> 5.0 ppm
Mn (AB-DTPA)			> 60 ppm
Cu (AB-DTPA)			> 40 ppm
Ni (AB-DTPA)			> 1.0 ppm
Zn (AB-DTPA)			> 40 ppm
Pb (AB-DTPA)			> 10 ppm
Mo (AB-DTPA)			> 0.5 ppm

DATA INTERPRETATION TABLE 2

Suitability of Overburden Materials for Use as Reconstructed Rootzone Materials for
Minesoils: Wildlife/Woodland Land Uses

Parameter	Good	Fair	Poor to Unsuitable - A Mitigation Plan May be Needed
pH	5.6 - 7.8	7.8 - 8.4 4.5 - 5.6	> 8.4 < 4.5
USDA Texture	all others	SICL, SI, C SIC, SC, LS	
K-Factor	< 0.35	> 0.35	
SAR	0 - 4	4 - 10	> 10
ESP		8 - 12	> 12
Acid Base Balance			
Pyritic Sulfur			> 0.5 %
Total Sulfur			> 0.5 %
Neutralization Potential: Potential Acidity (ratio) (based on total sulfur)			< 2 : 1
B (Hot Water)			> 5.0 ppm
Mn (AB-DTPA)			> 60 ppm
Cu (AB-DTPA)			> 40 ppm
Ni (AB-DTPA)			> 1.0 ppm
Zn (AB-DTPA)			> 40 ppm
Pb (AB-DTPA)			> 10 ppm
Mo (AB-DTPA)			> 0.5 ppm

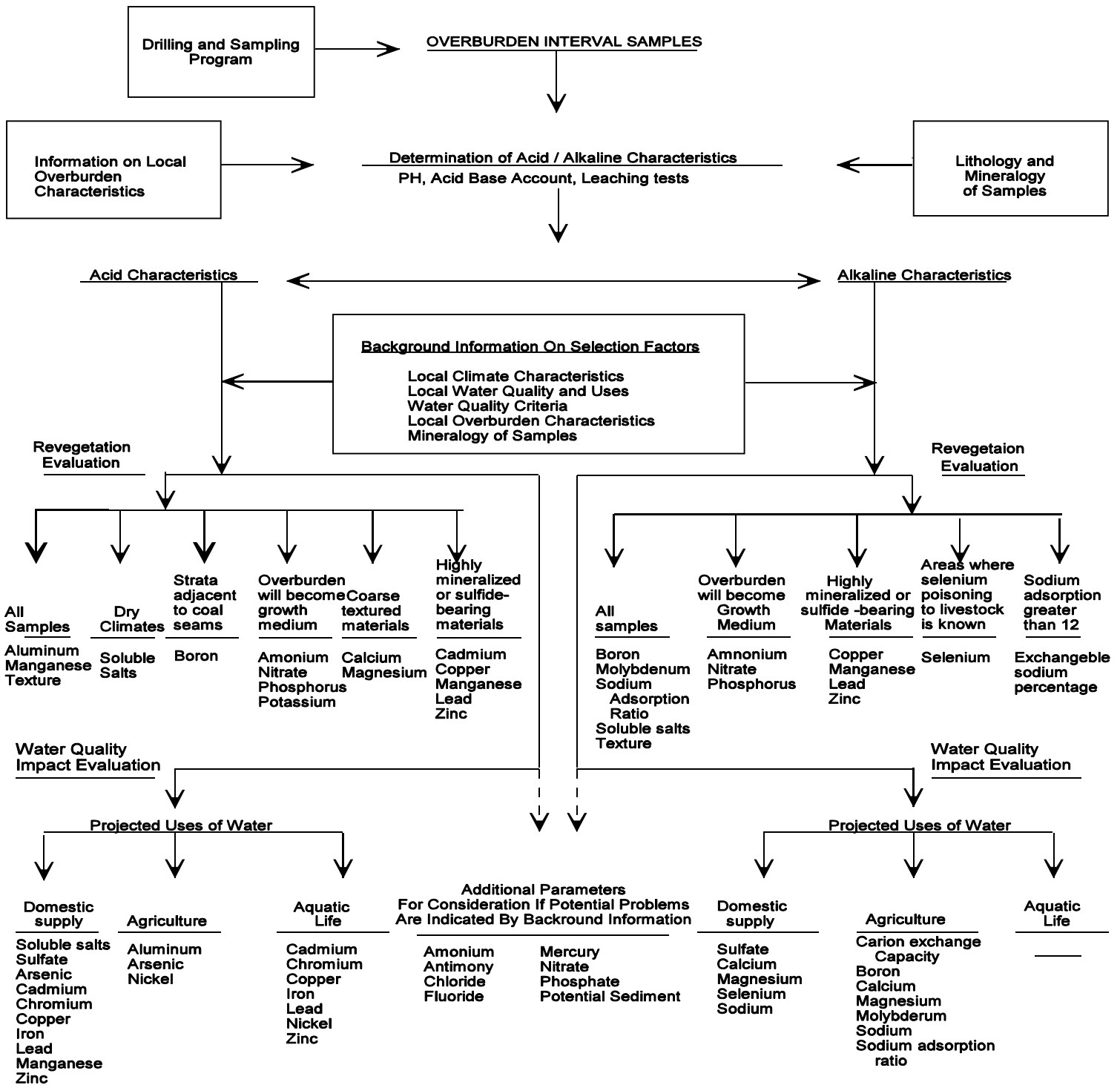
DATA INTERPRETATION TABLE 3

Suitability of Overburden Materials for Use as Reconstructed Rootzone Materials for Minesoils

USING TOTAL ELEMENT CONTENT PROCEDURE

Parameter	Poor to Unsited - A Mitigation Plan May be Needed
Mn	> 3000 ppm
Cu	> 100 ppm
Cr	> 1000 ppm
Cd	> 0.7 ppm
Ni	> 500 ppm
Zn	> 300 ppm
Pb	> 200 ppm
Mo	> 5 ppm

SELECTION PROCESS FOR OVERBURDEN EVALUATION PARAMETERS



Note: Parameters commonly associated with one chemical environment may in some cases occur at significant levels in the other, and they should be investigated if such a situation is indicated by background information.

Figure 1

APPENDIX C

SUGGESTED DRILLING WATER ANALYSIS

1. Parameter: pH
 - A. Procedure:

Standard Methods (16th Edition), Method (423) page 429 - 437
 - B. Reported form/units:

Standard units
2. Parameter: Conductivity
 - A. Procedure:

Standard Methods (16th Edition), Method (205) page 76 - 80
 - B. Reported form/units:

mmhos/cm at 25 degrees Celsius
3. Parameter: Acidity
 - A. Procedure:

Standard Methods (16th Edition), Method (402) page 259 - 269
 - B. Reported form/units:

mg/liter CaCO₃ at pH
4. Parameter: Alkalinity
 - A. Procedure:

Standard Methods (16th Edition), Method (403) page 269 - 273
 - B. Reported form/units:

mg/liter CaCO₃ at pH
5. Parameter: Sulfate
 - A. Procedure:

Standard Methods (16th Edition), Method (426 C) page 467 - 468
 - B. Reported form/units:

mg/liter sulfate

6. Parameter: Total Dissolved Solids
 - A. Procedure:

Standard Methods (16th Edition), Method (209 B) page 95 - 96
 - B. Reported from/units:

mg/liter

7. Parameter: Total Aluminum
 - A. Procedure:

Standard Methods (16th Edition), Method (306 A) page 183
 - B. Reported form/units:

ppm - Al

8. Parameter: Total Cadmium
 - A. Procedure:

Standard Methods (16th Edition), Method (310 A.) page 194
 - B. Reported form/units:

ppm - Cd

9. Parameter: Total Calcium
 - A. Procedure:

Standard Methods (16th Edition), Method (311 A.) page 196
 - B. Reported form/units:

ppm - Ca

10. Parameter: Total Copper
 - A. Procedure:

Standard Methods (16th Edition), Method (313 A.) page 205
 - B. Reported form/units:

ppm - Cu

11. Parameter: Total Iron
 - A. Procedure:

Standard Methods (16th Edition), Method (315 A.) page 215
 - B. Reported form/units:

ppm - Fe
12. Parameter: Total Lead
 - A. Procedure:

Standard Methods (16th Edition), Method (316 A.) page 221
 - B. Reported form/units:

ppm - Pb
13. Parameter: Total Magnesium
 - A. Procedure:

Standard Methods (16th Edition), Method (318 A.) page 226
 - B. Reported form/units:

ppm - Mg
14. Parameter: Total Manganese
 - A. Procedure:

Standard Methods (16th Edition), Method (319 A.) page 229
 - B. Reported form/units:

ppm - Mn
15. Parameter: Total Nickel
 - A. Procedure:

Standard Methods (16th Edition), Method (321 A.) page 234
 - B. Reported form/units:

ppm - Ni

16. Parameter: Total Selenium
- A. Procedure:
Standard Methods (16th Edition), Method (323 A.) page 238
- B. Reported form/units:
ppm - Se
17. Parameter: Total Sodium
- A. Procedure:
Standard Methods (16th Edition), Method (325 A.) page 246
- B. Reported form/units:
ppm - Na
18. Parameter: Total Zinc
- A. Procedure:
Standard Methods (16th Edition), Method (328 A.) page 254
- B. Reported form/units:
ppm - Zn
19. Parameter: Total Molybdenum
- A. Procedure:
Standard Methods (16th Edition), Method (303 C.) page 162 - 164
- B. Reported form/units:
ppm - Mo
20. Parameter: Boron
- A. Procedure:
Standard Methods (16th Edition), Method (404) page 274 - 278
- B. Reported form/units:
ppm - Boron

APPENDIX D

FOOTNOTES

1. Western Soils and Overburden Task Force Group, (Soils and Overburden group: ASSMR).
2. United State Geological Survey: Lawrence, Kansas
3. EPA 600/2-78-054 “Field and Laboratory Methods Applicable to Overburden and Minesoils”.
4. Montana Agricultural Experiment Station “Non-Contaminating Drill Grease for Overburden Sampling”.

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SECTION 5
ENGINEERING

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I. Introduction

The engineering design during active mining and in the reclamation plan of ponds, impoundments, banks, dams, embankments, diversions, and ENG 2 road systems is required by the following regulations:

Authority: K.S.A. 49 - 401 et.seq.

Referenced: PL 95 -87; July 1995 30 CFR's

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- 47-3-2(c)(2) Soil Resources Information
- 47-3-2(c)(2) (b)(7) Reclamation Plan General Requirements
- 47-3-2(c)(2) Geologic Information
- 47-3-2(c)(2) Hydrologic Protection

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- 47-3-42(a)(14) Soil resource information
- 47-3-42(a)(18) Operation plan: general requirements
- 47-3-42(a)(24) Reclamation plan: general requirements
- 47-3-42(a)(25) Hydrologic information
- 47-3-42(a)(26) Geologic information
- 47-3-42(a)(28) Siltation structures, impoundments, banks, dams, and embankments
- 47-3-42(a)(30) Diversions
- 47-3-42(a)(33) Disposal of excess spoil
- 47-3-42(a)(34) Road systems

Through these regulations, the data must be collected, analyzed, interpreted and then utilized to develop mining and reclamation plans. The mining industry is urged to work closely with the SMS staff in the design and implementation of the various phases in this process. The most effective mining and reclamation plans are site specific.

II. Objectives

The first goal of this document is to give general guidance to the mining industry on the various aspects which should be assayed during the permitting process. The second goal is to develop better communications with all interested parties which will hopefully evolve into future goals for engineering practices concerning siltation structures, ponds, impoundments, banks, dams, embankments, diversions, and road systems.

III. K.A.R. 47-3-42 (a)(28) Reclamation Plan

Siltation structures, impoundments, banks, dams, and embankments: The applicant will include a general plan and a detailed design plan for each proposed siltation structure, water impoundment, coal processing waste bank, coal mine waste refuse pile, or coal processing waste impounding structure or embankment, within the proposed permit area.

A. Plan Preparation: Each plan shall be prepared by, or under the direction of, and certified by a qualified, and Kansas registered (licensed), professional engineer, geologist, and/or surveyor, as appropriate to each discipline. Section III, C. has specifics and details concerning designs. In general, each plan shall contain the following:

1. A description, map, and cross-sections of the structure and its location.
2. Preliminary hydrologic and geologic information required to assess the hydrologic impact of the structure.
3. A survey describing the potential effect on the structure from subsidence of the subsurface strata resulting from past underground mining, if applicable.
4. A detailed design plan for any structure, approved by the SMS in writing, before construction of a structure begins.
5. Include any geotechnical investigation, design, and construction requirements for the structure.
6. Describe the operation and maintenance requirements for each structure.
7. Describe the timetable and plans to remove each structure, if appropriate.
8. Include watershed maps for all structures proposed under this regulation.

B. Geotechnical Investigation: A geotechnical investigation of any proposed dams or embankment foundations shall be made to determine the structural competence of the foundation. The geotechnical investigation shall be planned and supervised by an engineer or engineering geologist and shall include the following:

1. The number, location, and depth of borings and test holes shall be determined using current prudent engineering practices for the size of the dam or embankment, quantity of material to be impounded, and subsurface conditions.
2. The character of the overburden and bedrock, the proposed abutment sites, and any adverse geotechnical conditions shall be considered.
3. All seepages, springs, and ground water flow observed or anticipated in the area of the proposed dam or embankment shall be identified on each plan.
4. The possibility of mudflows, or other landslides into the proposed structures, shall be considered.
5. Each dam or embankment associated with an impoundment shall include a slope and seismic stability analysis including but not limited to strength parameters, pore pressures, phreatic surfaces, saturated and/or submerged zones, and long-term seepage conditions. This requirement shall also include the side slopes on incised and final pit impoundments to insure their stability. The plan shall also contain a description of each engineering design assumptions and calculations with a discussion of each alternative considered in selecting the specific design parameters and construction methods. All analyses shall be performed with the appropriate slope stability method(s) commonly used within the United States (i.e. Bishop Simplified Method, Spencer-Wright Method, Sarma Method, etc.). The methods, along with the parameters used, shall be noted in the application. Software such as SB-Slope, Galena, etc. is acceptable for use in performing stability analysis.

C. Engineering Design Criteria: Criteria for the structures covered under this section of the regulations are as follows:

1. General
 - a. The design of the outlets (primary and emergency) shall include an analysis of the downstream channels, and/or other drainage structures, receiving the discharge flows to verify if the additional quantities can be safely handled and will not cause erosion, damage, or flooding hazards. If there are no existing channels or other structures to handle the discharges, the applicant shall explain in detail (with supporting analysis) how the environment is not to be adversely impacted, or shall

provide designs for appropriate new structures and channels to adequately handle the flows. Downstream improvements shall be made to accommodate any additional flows created by the project. All analyses shall include appropriate hydrologic and hydraulic calculations, cross-sections, profiles, erosion protection designs, and other pertinent information.

- b. The application shall include design information and explanation of construction methods that will be used to achieve the required earthwork compaction and minimization of seepage to insure the structural integrity and usefulness will be maintained in accordance with the proposed designs. Some design and construction considerations which are to be addressed include engineered pond linings, cutoff trenches, drainage filter diaphragm, anti-seep collars, etc.
- c. The structures shall be designed using normally accepted practices and procedures such as those contained in design guides published by the EPA, MSHA, Bureau of Reclamation, NRCS, Corps of Engineers, and/or OSM. At a minimum, for dams meeting the Class B or C criteria in the latest release of the USDA, NRCS Technical Release No. 60, designs shall comply with the “Minimum Emergency Spillway Hydrologic Criteria,” table in TR-60. Designs may be prepared using SMS approved professional civil design software such as SEDCAD, SurvCadd, AutoCAD, etc.
- d. The applicant shall investigate and explain the effects of a 100- year, 6-hour event on the designs to insure there will be no damage upstream or downstream of the site. All designs within a National Flood Insurance Program (NFIP) designated floodplain shall consider the effect of the project on the 100-year Base Flood Elevation.
- e. The structure designs shall insure there is no adverse impact(s) or significant changes to the runoff water flow quantities, water elevations, velocities, or water courses entering or leaving the site.
- f. All designs shall comply with the Kansas Levee Law KSA 24-126 and the Obstructions in Streams Act, KSA 82a-301 to 305a, and KSA 24-105.

- g. Cross-sections and profiles shall be provided for all impoundments, spillways, and pipe outlets along with detailed design drawings showing all erosion control protection for the structures.
 - h. If information contained in the application reveals site conditions which indicate there is a potential for significant damage from flooding hazards, or there is a potential for significant erosion damage, the SMS may require structures to be designed to handle greater events. Although not always required for minimum design criteria by the regulations, the SMS recommends all permanent impoundment outlet structures and channels be designed to handle a minimum 50-year 6-hour event to insure serviceability and minimal maintenance requirements for the applicant, as well as the landowners.
 - i. Any structures meeting the size or other criteria of 30 CFR 77.216 of this title shall be designed and approved by MSHA prior to being reviewed for approval by the SMS. A structure meeting the 30 CFR 77.216 criteria can:
 - 1) Impound water, sediment, or slurry to an elevation of five feet or more above the upstream toe of the structure and can have a storage volume of 20 acre-feet or more; or,
 - 2) Impound water, sediment, or slurry to an elevation of twenty feet or more above the upstream toe of the structure; or,
 - 3) As determined by the MSHA District Manager, present a hazard to coal miners.
 - j. The SMS considers an impoundment, or any portion thereof, incised when the normal pool water level is at or below the surrounding ground level, where any storm detention storage is at or below the surrounding ground level, or where flows from runoff volumes which exceed the capacity of the impoundment can only discharge directly onto the surrounding ground level or floodplain.
2. Sedimentation, Surface, and Groundwater Control
- a. The SMS will not accept CN numbers for existing, disturbed, or reclaimed areas which cannot be supported by vegetation studies. In general, the SMS has determined the lowest acceptable CN number for

existing pasture to be 82. For disturbed and unvegetated areas, CN numbers of less than 90 will not be accepted without sufficient supporting documentation and/or adequate provisions to reduce runoff.

- b. For soil loss and sediment volume calculations, the minimum acceptable cover and management practice coefficients (CP Factor) are:

<u>Cover</u>	<u>CP</u>
Disturbed & Un-vegetated	0.70
Undisturbed or Full Re-vegetated	0.01

- c. The application shall include a Soil Particle Size distribution to substantiate the particle sizes used for soil loss and sediment volume calculations. The application shall also state the source of the size distribution and explain why it is valid for the proposed permit area. Unless the applicant has a qualified laboratory perform soil particle size analyses for the permit area, the NRCS shall be considered the only acceptable source of soils information for the application.
- d. Designs for sediment traps and ponds shall include an explanation of how the accumulation of sediment in the structures will be managed to insure continued water quality.
- e. Soil Loss and Sediment Load Determinations:
- 1) The latest versions of RUSLE (Ver. 1.06) or MUSLE shall be used for soil loss prediction needed to determine sediment loads from ponds used for sediment and water quality control. Software which uses these methods (such as Sedimott II, SEDCAD, etc.) is acceptable for use. The unmodified USLE method is not considered suitable for mining, construction, and reclaimed lands to predict sediment loading and water quality from single storm events. The applicant shall furnish copies of all sedimentation calculations with the application, along with a justification for the method(s) used.
 - 2) The unmodified USLE method is acceptable for use in estimating total sediment storage requirements for impoundments. The applicant shall furnish copies of all sedimentation calculations with the application, along with a justification for the method(s) used.

- f. For coal waste disposal structures, in addition to the above, the applicant shall:
- 1) Minimize the adverse effects of leachate and surface water runoff on surface and ground water quality. For a disposal area which contains springs, natural or manmade water courses, wet weather seeps, etc., the design shall include diversions and underdrains as necessary to control erosion, prevent water infiltration into the disposal facility, and ensure stability.
 - 2) Uncontrolled surface drainage shall not be diverted over the outslope of the coal waste disposal structure. It shall be diverted into stabilized diversion channels.
 - 3) Coal mine waste shall not have a detrimental effect on downstream water quality or the environment due to acid mine drainage (AMD), or acid seepage. Design considerations to control AMD shall be included in the application. If there is a potential for the coal waste disposal structure to produce AMD, the submitted design of the structure shall include provisions to insure the waste material is: isolated from either air and/or ground water; provided with sufficient neutralization material to treat any acid, will be otherwise prevented from producing acid; or any acid produced will be neutralized without the need for permanent treatment facilities. Acceptable methods for control of potential AMD production includes, but is not limited to, adequate applications of neutralizing materials, impervious geotextile or membrane liners, designed clay cover liners, or permanent submergence of the waste materials well below the ground water table. Any calculations for neutralization or treatment for potential AMD shall be based on Acid Base Accounting utilizing the Potential Acidity for the Total Sulfur percentage in the waste material.

3. Impoundments

- a. permanent submergence of the waste materials well below the ground water table. Any calculations for neutralization or treatment for potential AMD shall be based on Acid Base Accounting utilizing the Potential Acidity for the Total Sulfur percentage in the waste material.

- b. The SMS will not accept any permanent impoundment designs with a proposed time to fill which exceeds two years when considering evaporation, seepage, and other water losses.
- c. For permanent impoundments, at a minimum, a coefficient of permeability K_p of one (1) gallon per day per square foot (the nominal permeability for clay) shall be used to calculate the potential seepage rates for impoundment justification water balances.
- d. For permanent impoundments, where the coefficient of permeability K_p of the material in which the impoundment is to be constructed is greater than one (1) gallon per day per square foot (the nominal permeability for clay), where the applicant cannot show the seepage rate will not compromise the suitability for the intended post-mine land use, the applicant shall prepare and submit a detailed plan for lining, or otherwise modifying, the structure to reduce the potential seepage rate to levels acceptable to the SMS.
- e. The application shall include sufficient documentation (including tests results by a qualified laboratory) to support the coefficient of permeability K_p of the material(s), in which the impoundment is to be constructed, or with which it is to be lined.
- f. Non-incised impoundments designed without a pipe principal spillway shall have a non-erodible pilot channel to carry normal low flows in addition to an appropriately sized emergency spillway. Emergency and/or pilot channel spillways shall only be permitted in the abutments of a dam or embankment.
- g. Spillway Stage-Capacity Determinations:
 - 1) Generally recognized and appropriate methods and models shall be used to calculate stage-capacity discharges for both principal and emergency spillways when flood routing dams for hydrologic, sediment control, and/or, water quality calculations. Documentation and calculations supporting and justifying the designs shall be included in the application.
 - 2) Channel type emergency spillway stage-capacity data shall be calculated using the backwater curve methods as recommended and used by the NRCS.

- 3) Broad-crested weir formulas shall only be acceptable for use in spillways where the head-over-weir crest length ratio is 0.1 to 2.0; the upstream slope at the weir control section is 2:1 or steeper; the downstream slope of the weir control section is 1:1 or steeper; the side slopes at the weir control section are 2:1 or steeper; the weir control crest length is less than 10 percent of the channel length in which the control section is placed; the height of the weir is less than 25 percent of the channel depth in which it is located; and the bottom slope of the discharge channel in which the weir is located is 2 percent or less.
- 4) Other principal and emergency spillway configuration designs, such as overfall, flume, side-channel, drop inlet, sharp-crested weirs, ogee, etc., will be approved by the SMS with appropriate stage-capacity calculation methods.
- 5) Software which uses generally recognized and acceptable methods (such as Sedimott II, SEDCAD, etc.) is acceptable for use in spillway design and stage-capacity determinations.

4. Detailed Design Criteria

a. Shape and Configuration

- 1) For safe ingress and egress of permanent impoundments, the minimum side slopes acceptable shall be 4 horizontal to 1 vertical to a minimum depth of 5 feet below normal pool water elevation. Slope stability shall dictate slopes below that level. For temporary impoundments, at least 30 percent of the bank area shall have slopes of 3:1 or flatter. No vertical highwalls shall be permitted within 10 feet below the normal pool water elevation of any impoundments.
- 2) The criteria for freeboard for structures shall be as follows:
 - a) For structures regulated only by the SMS, the minimum freeboard, with a fetch length less than 660 feet and with a height of 10 feet or less, shall be 2 feet.

- b) For structures regulated only by the SMS, the minimum freeboard for structures above 10 feet, and with a fetch longer than 660 feet, shall be 2 feet plus 10% of the dam height more than 10 feet, or plus sufficient height to prevent overtopping by wave action, whichever is greater.
 - c) The minimum freeboard for all structures also regulated by other agencies shall conform to the requirements of the other regulating agencies (i.e., KDA-DWR, MSHA, etc.). For cases where the other agency freeboards are less than the SMS requirements, the minimum SMS freeboard requirement shall apply.
- 3) The minimum acceptable top width of a dam or berm shall be 10 feet for stability, access, and maintenance purposes.
 - 4) Permanent final pit impoundments to be used for fish habitat shall be designed to have a minimum depth of 10 feet over at least 40 percent of the surface area at Bond Release. Other permanent ponds and impoundments to be used for fish habitat shall be designed to have a minimum depth of 10 feet over at least 10 percent of the surface area at Bond release.
 - 5) Bench marks shall be provided for future verification of the as-built elevations of the structures. Bench marks shall be located within a reasonable proximity to the structures and the location and elevation shall be shown on the plans.
- 6) Stability and Seismic
 - a) Structures meeting MSHA requirements shall be designed to have a minimum safety factor of 1.5 for normal pool steady state seepage saturation conditions, and a minimum seismic safety factor of at least 1.2.
 - b) Structures not meeting the MSHA requirements shall be designed to have a minimum safety factor of 1.5 for normal pool steady state seepage saturation conditions, and a minimum seismic safety factor of at least 1.2.

- c) The application shall indicate the method(s) used to evaluate and determine the static and seismic stability safety factors.
 - d) For coal waste disposal facilities, the structure shall be designed to maintain a minimum long-term static safety factor of 1.5 and have stable abutment and foundations under all conditions of construction.
 - e) For impoundments meeting the NRCS Class B or C criteria for dams in TR-60, or criteria in 30 CFR 77.216, the application shall contain sufficient evidence of on-site and laboratory foundation and construction materials testing to verify the design requirements used for stability.
- 7) So that impoundments comply with approximate-original-contour (AOC) criteria, slopes to within 50 horizontal feet of the normal permanent pool elevation of impoundments shall not be steeper than the steepest slope on the permitted area prior to mining. However, in no case shall the slopes exceed 4 horizontal to 1 vertical.
- 8) Minimum design criteria and considerations for permanent ponds and impoundment shall be in accordance with the latest edition of the United States Department of Agriculture (USDA), NRCS Agricultural Handbook #590, Ponds - Planning, Design, and Construction.
- 9) Coal mine waste refuse piles:
- a) The final configuration of the refuse pile shall be suitable for the approved post-mining land use. Terraces may be constructed on the outslope of the pile if needed to control surface drainage or conservation of soil and soil moisture. The maximum slopes for the piles shall not exceed the maximum pre-mine land slope for the permit area unless The final configuration of the refuse pile shall be suitable for the approved post-mining land use. Terraces may be constructed on the outslope of the pile if needed to control surface drainage or conservation of soil and soil moisture. The maximum slopes for the piles shall not exceed the maximum pre-mine land slope for the permit area unless

- b) No permanent impoundments shall be permitted on a completed refuse pile. Small depressions may be allowed for land use considerations, if they are not incompatible with the stability of the pile, and if presence of water infiltration into and through the coal waste materials will not result in acid production or the potential for AMD and/or acid seepage.

5. Erosion Protection

- a. All rock structures proposed for erosion control shall be designed in accordance with a recognized method for sizing the rock such as EPA, Corps of Engineers, SEDCAD, OSM, NRCS, Bureau of Reclamation, etc. The design method(s) used shall be stated in the application.
- b. All rock erosion control structures shall be designed with some type of filter all around the rock to prevent infiltration of surrounding earth and soils into and through the rock. Filters may include filter type geotextiles, or properly placed and sized granular material filters.
- c. For all locations where vegetation may be acceptable for erosion protection, the application shall state how erosion is to be controlled until permanent vegetation has been established.
- d. Bare earth (erodible) spillways for temporary or permanent impoundments will not be acceptable.
- e. The inlets and outlets for all pipe and culvert spillways shall be protected from erosion. Appropriate designs for the erosion protection (such as plunge pools, rock aprons, manufactured end sections, etc.) shall be included in the application.

6. Precipitation Event Design Criteria and Flood Routing

- a. All impoundments not meeting MSHA criteria shall be designed to handle a minimum 25-year 6-hour event.
- b. Sediment traps and other sediment control structures which are not intended to impound water and which are intended to be maintained during the life of the permit shall be designed to handle a minimum 10-year 24-hour event.

- c. Impoundments meeting MSHA criteria shall be designed to handle a minimum 100-year 6-hour event.
- d. The application shall include a detailed schematic of the flood routing used for the hydrologic and hydraulic analysis of the impoundments, along with a copy of the flood routing runs used for the designs for each structure.
- e. Structures shall be flood routed and designed for the “worse case” disturbance scenario, which usually is at the time of maximum disturbance/minimum re-vegetation in the watershed. For permanent impoundments with a during-mining normal pool water elevation and a different post-mining water elevation, flood routing shall be run for both cases.
- f. For impoundments which are intended to rely primarily on storage to control runoff, those meeting MSHA 77.216 criteria, and NRCS Class B or C criteria in TR-60, shall be designed to control the runoff from at least the 6-hour Probable Maximum Precipitation (PMP) event. Other impoundments shall be designed to control the runoff from at least the 100-year 6-hour event.
- g. Diversions around coal waste disposal facilities shall be designed to safely handle the minimum 100-year 6-hour event.
- h. For coal waste disposal structures, in addition to the above the applicant shall:
 - 1) For an impounding structure constructed of, or impounding, coal mine waste, at least 90 percent of the water stored during the design precipitation event shall be removed within the 10-day period following the design precipitation event.
 - 2) Impoundments constructed of coal mine waste, or intended to impound coal mine waste that meet MSHA 77.216 criteria, and NRCS Class B or C criteria in TR-60, shall be designed to control the runoff from at least the 6-hour Probable Maximum Precipitation (PMP) event. Other impoundments shall be designed to control the runoff from at least the 100-year 6-hour event.

- i. Only the Type II rainfall distribution shall be used for runoff calculations.
- j. Only medium and fast Unit Hydrograph Shapes shall be acceptable for use in runoff/sedimentation calculations.
- k. Flood routing for KDA-DWR regulated structures shall be in accordance with KDA requirements.
- l. The Rational Method, NRCS TP-149, Commons, Corps of Engineers HEC-RAS, NRCS TR-55, or TR-55 emulators are acceptable methods for calculation of hydrograph peaks and runoff volume. The applicant shall use a method appropriate for the size, terrain, and vegetation, of the watershed. The application shall state which method(s) was used.

7. Underdrains

- a. Any existing springs, seeps, or areas of wet weather seepage of sufficient quantity, and in a location, which cannot be diverted away from or around the structure, and which could compromise the stability of the structure, could adversely affect water quality, or result in erosion, shall be diverted through underdrains.
- b. Any seeps which cannot be diverted on the surface shall be monitored for at least 9 months to determine seasonal fluctuations in quantity and quality. Underdrains shall be designed to handle flow quantities at least 50 percent greater than the maximum observed flow rate.
- c. Underdrains shall be constructed of durable rock, pipe, or geotextiles and designed using current, prudent engineering practices. Rock underdrains shall be constructed of durable rock from non-acid/non-toxic forming strata such as crushed limestone, sand and gravel, natural sand, dolomite, limestone, or other durable rock, which does not slake in water, or degrade to soil materials. Sandstone shall not be acceptable for underdrain use.
- d. Perforated pipe used in underdrains shall be corrosion resistant and have characteristics for long-term maintenance free life. Acceptable materials include HDPE and PVC. Corrugated metal pipe is not acceptable.

- e. Designs for geotextile and/or granular material underdrains and blanket drains shall include sufficient information to indicate the size of the filtering materials is adequate to control and prevent movement of embankment materials through the drains. The information shall include a particle size analysis of the embankment or dam material as well as for the granular and/or geotextile filter material in the drain.

IV. K.A.R. 47-3-42 (a)(28) Diversions:

Any diversions in the proposed mining or reclamation plan shall adhere to the following requirements:

A. Definitions for use in preparation of an application

1. A *perennial stream* is any stream with defined bed and banks which generally flows continuously during all of the calendar year as a result of both ground water discharge and surface runoff. Perennial streams are identified on USGS maps by solid blue lines.
2. *Ephemeral streams* are defined as any watercourse with defined bed and banks, a drainage area of less than 1 square mile, and which flows only in direct response to precipitation events in the immediate watershed and/or in response to the melting of snow or ice. The channel bottom is always above the local water table.
3. *Intermittent streams* are defined as any stream, or reach of stream, with defined bed and banks, a) a drainage area of at least one square mile and/or, b) that is below the local water table for at least some part of the year and obtains its flow from both surface runoff and ground water discharge. Intermittent streams identified on USGS maps are noted by blue dashed lines with three dots between the dashes.
4. *Miscellaneous flows* are defined as all flows except for perennial and intermittent streams, and they may include ground-water discharges and flows from ephemeral streams.
5. Any watercourse with defined bed and banks is defined as a *stream* by Kansas Department of Agriculture, Division of Water Resources (KDA-DWR). Modifications or changes to any stream which has a drainage area over 160 acres is also regulated by the KDA-DWR.

B. General Design Criteria

1. All Diversions

- a. Any flow from undisturbed or reclaimed areas after meeting the criteria of K.A.R. 47-3-42(a)(28) for siltation structure removal, may be diverted from disturbed areas by means of temporary or permanent diversions. All diversions shall be designed to minimize adverse impacts to the hydrologic balance within the permit and adjacent areas, to prevent material damage outside the permit area and to assure the safety of the public.
- b. Diversions shall not be used to divert water into underground mines.
- c. Diversions and their accompanying structures shall be designed, located, constructed, maintained and used to; be stable, provide protection against flooding and resultant damage to life and property, prevent additional contributions of Total Suspended Solids (TSS) to streamflow outside the permit area, and comply with all applicable local, State, and Federal laws and regulations.
- d. Each plan shall be prepared by, or under the direction of, and certified by a qualified, and Kansas registered (licensed), professional engineer, geologist, and/or surveyor, as appropriate to each discipline. Design and construction of all stream channel diversions shall be certified by a qualified registered professional engineer.
- e. Design and permitting criteria are different for permanent and temporary diversions. Specific differences and details are noted herein.
- f. The SMS may specify design criteria for diversions of perennial and intermittent streams and diversions of miscellaneous flows to meet the requirements of this section. Specific differences and details are noted herein.
- g. Diversions may be approved by the SMS after making the finding relating to stream buffer zones that the diversion will not adversely affect water quantity and quality and related environmental resources of the stream.

- h. The design capacity of channels for all diversions shall be at least equal to the capacity of the unmodified watercourse immediately upstream and downstream from the diversion.

2. Temporary Diversions

Temporary diversions shall be removed when no longer needed. The land disturbed by the removal shall be restored in accordance with this part. Before removal, downstream water-treatment facilities previously protected by the diversion shall be modified or removed as necessary to prevent overtopping or failure of the facilities. The operator is still required to maintain water-treatment facilities.

3. Permanent Diversions

- a. A permanent diversion or a stream channel reclaimed after the removal of a temporary diversion shall be designed and constructed so as to restore, or closely approximate, the pre-mining characteristics of the original stream channel morphology. Items to be considered shall include restoring the natural riparian vegetation to promote the recovery and the enhancement of the aquatic habitat, construction of pools, riffles, gravel or rock channel sections, etc.
- b. All fills within a Federal Emergency Management Administration (FEMA) National Flood Insurance Program (NFIP) designated floodplain shall be considered permanent diversions by the applicant and they shall be designed accordingly.

C. Detailed Engineering Design Criteria: for the structures covered under this section of the regulations.

1. Overall Design Considerations

a. All Diversions

- 1) The design of the outlets for all diversions shall include an analysis of the downstream channels, and/or other drainage structures, receiving the discharge flows to verify the additional quantities can be safely handled and will not cause erosion, damage, or flooding hazards. If there are no existing channels or other structures to handle the discharges, the applicant shall explain in detail (with

supporting analysis) how the environment is not to be adversely impacted, or shall provide designs for appropriate new structures and channels to adequately handle the flows. Downstream improvements shall be made to accommodate any additional flows created by the project. All analyses shall include appropriate hydrologic and hydraulic calculations, cross-sections, profiles, erosion protection designs, and other pertinent information.

- 2) The application shall include design information and explanation of construction methods that will be used to achieve the required earthwork compaction and minimization of seepage minimized to insure the structural integrity and usefulness will be maintained in accordance with the proposed diversion designs. Some design and construction considerations which are expected to be addressed include engineered linings, cutoff trenches, erosion protection, maintainability, etc.
- 3) The structures shall be designed using normally accepted practices and procedures such as those contained in design guides published by the EPA, MSHA, Bureau of Reclamation, NRCS, Corps of Engineers, and/or OSM. Designs may be prepared using professional civil design software such as SEDCAD, SurvCadd, AutoCAD, etc.
- 4) The structure designs shall insure there is no adverse impact(s) or significant changes to the runoff water flow quantities, water elevations, velocities, or water courses entering or leaving the site.
- 5) All designs shall comply with the Kansas Levee Law KSA 24-126 and the Obstructions in Streams Act, KSA 82a-301 to 305a, and KSA 24-105.
- 6) Cross-sections and profiles shall be provided for all diversions, transition sections, grade changes, spillways, and pipe outlets, along with detailed design drawings showing all erosion control protection for the structures.
- 7) Culverts or other obstructions in diversions shall be designed to carry the peak design event without causing overtopping, flooding, or erosion damage. Complete designs for all obstructions (including provisions for erosion control) shall be included in the application.

8) To reduce the number of channel, culvert, erosion control structures, and/or diversion designs, the applicant may want to consider preparing some typical designs which can be used over a range of situations and then identifying which designs are to be used where. For example, waterways may be designed for drainage areas in increments of 50 acres (i.e., Type A for 0 to 50 acres, Type B for 50 to 100 acres, Type C for 100 to 150 acres, etc.)

b. Temporary Diversions

Temporary diversions should be designed to handle a precipitation event which the structure may realistically be expected to handle over the anticipated life of the structure. If information contained in the application reveals site conditions which indicate there is a potential for significant damage from flooding hazards, or there is a potential for significant erosion damage, the SMS may require structures to be designed to handle greater events.

c. Permanent Diversions

If information contained in the application reveals site conditions which indicate there is a potential for significant damage from flooding hazards, or there is a potential for significant erosion damage, the SMS may require structures to be designed to handle greater events.

2. Sedimentation and Runoff Control for All Diversions

- a. The SMS will not accept CN numbers for existing, disturbed, or reclaimed areas which cannot be supported by vegetation studies. In general, the SMS considers the lowest acceptable CN number for existing pasture areas to be 82. For disturbed and un-vegetated areas, CN numbers of less than 90 will not be accepted without sufficient supporting documentation and/or adequate provisions to reduce runoff.
- b. For soil loss and sediment volume calculations, the minimum acceptable cover and management practice coefficients (CP Factor) are:

<u>Cover</u>	<u>CP</u>
Disturbed & Un-vegetated	0.70
Undisturbed or Full Revegetated	0.01

- c. The application shall include a Soil Particle Size distribution to substantiate the particle sizes used for soil loss and sediment volume calculations. The application shall also state the source of the size distribution and explain why it is valid for the proposed permit area. Unless the applicant has a qualified laboratory perform soil particle size analyses for the permit area, the NRCS shall be considered the only acceptable source of soils information for the application.
- d. Designs for diversions to be used for sediment control shall include an explanation of how the accumulation of sediment in the structures will be managed to insure continued serviceability and maintenance of water quality.
- e. Complete design information shall be provided for swales, or overflow areas, which are to be used to carry flows in excess of culvert capacity across roads. Design information shall include a cross-section, plan, and profile information in addition to capacity information.
- f. Acceptable permanent erosion control methods include properly designed rock linings, checks, check dams, aprons, plunge pools, and downdrop channels; geotextile erosion control fabrics and blankets; mulch for temporary use; suitable vegetation with an adequate cover; and/or other permanent channel linings.
- g. Hay bale dikes will not be considered acceptable for use to control erosion. At best, and only when properly installed, hay bale dikes are only suitable for sediment control. Silt fence will only be acceptable for sediment control, unless the design and installation of the silt fence can be shown to control channel flows adequately to reduce erosion until the permanent erosion control can be established.
- h. Soil Loss and Sediment Load Determinations:
 - 1) The latest versions of RUSLE (Ver. 1.06) or MUSLE shall be used for soil loss prediction needed to determine sediment loads from ponds used for sediment and water quality control. Software which uses these methods (such as Sedimott II, SEDCAD, etc.) is acceptable for use. The unmodified USLE method is not considered suitable for mining, construction, and reclaimed lands to predict sediment loading and water quality from single storm events. The applicant shall furnish copies of all sedimentation calculations with the application, along with a justification for the method(s) used.

- 2) The unmodified USLE method is acceptable for use in estimating total sediment storage requirements for impoundments. The applicant shall furnish copies of all sedimentation calculations with the application, along with a justification for the method(s) used.

3. Detailed Design Criteria

a. Shape and Configuration

1) All Diversions

- a) The minimum freeboard for all structures regulated by agencies in addition to the SMS shall conform to the requirements of the regulating agencies (i.e., KDA-DWR, MSHA, etc.). However, in the case where other agency freeboard is less than the SMS freeboard requirement, the minimum SMS freeboard shall be required.
- b) Bench marks shall be provided for future verification of the as-built elevations of the structures. Bench marks shall be located within a reasonable proximity to the structures and the location and elevation shall be shown on the plans.
- c) Flow and Grade Transitions
 - (1) A transition in a diversion shall be any change in channel configuration, bottom grade line, water surface grade line elevation, hydraulic energy grade line, and/or a change to or from undisturbed channel sections.
 - (2) All transitions shall be designed to maintain and carry the design peak flow safely from one channel section to the next without causing erosion damage.
 - (3) All erosion control structures shall have inlet and outlet transition sections suitably sized for the flow velocity and depth in those areas.

2) Temporary Diversions

- a) The minimum freeboard shall be 6 inches above the design peak runoff for all temporary diversions for miscellaneous flows.
- b) The minimum acceptable top width for a temporary diversion berm shall be 6 feet.

3) Permanent Diversions

- a) The minimum freeboard for all permanent diversions shall be a minimum of 2 feet above the design peak runoff.
- b) So that permanent waterways and diversions comply with approximate-original-contour (AOC) criteria, slopes to the floodplain of the diversion(s) shall not be steeper than the steepest slope on the permitted area prior to mining. However, in no case shall the slopes exceed 4 horizontal to 1 vertical.
- c) The minimum acceptable top width of a permanent diversion berm shall be 10 feet for access and maintenance purposes.
- d) For large stream permanent relocations or diversions, the configuration shall be as follows:
 - (1) The sides slopes of the main channel (i.e. 2-year event pilot channel) for large stream diversions shall not be steeper than 2:1 and the applicant shall provide information on how the stability of such slopes will be maintained. The applicant shall also provide a means to cross the main channel which is traversable by vehicles consistent with the intended land use.
 - (2) The applicant shall provide a floodplain along and either side of the main (pilot) channel to safely carry a minimum 100-year 6-hour event.
 - (3) Transitions sections shall be provided at the upstream and downstream ends of the diversion to safely direct the 100-year 6-hour event from and back into the existing channel sections.

b. Erosion Protection

1) All Diversions

- a) All rock structures proposed for erosion control shall be designed in accordance with a recognized method for sizing the rock and channels such as EPA, Corps of Engineers, SEDCAD, Simons/OSM, PADER, NRCS, OSM, Bureau of Reclamation, or other SMS approved method. The design method(s) used shall be stated in the application.
- b) All rock erosion control structures shall be designed with some type of filter around the rock to prevent infiltration of surrounding earth and soils into and through the rock. Filters may include geotextiles or properly placed and sized granular filter materials such as sand and gravel.
- c) For all locations where vegetation may be acceptable for erosion protection, the application shall state how erosion is to be controlled until permanent vegetation has been established.
- d) All vegetated channels shall be designed to safely and adequately handle the required flows for both short and long vegetation conditions.

2) Temporary Diversions

Bare earth channels for temporary diversions intended to exist for more than a year will not be acceptable.

3) Permanent Diversions

Except for terraces on areas cultivated for crops, or the bottoms of perennial and intermittent stream diversions, bare earth channels for permanent diversions will not be acceptable.

c. Precipitation Event Design Criteria and Flood Routing

1) All Diversions

- a) The application shall include a detailed schematic of the flood routing used for the hydrologic and hydraulic analysis of the impoundments, along with a copy of the flood routing runs used for the designs for each structure.
- b) Structures shall be flood routed and designed for the “worse case” disturbance scenario, which usually occurs at the time of maximum disturbance/minimum revegetation in the watershed.
- c) Floodplain fills in NFIP designated floodplains, and/or KSA-DAR regulated streams, shall be designed considering there is an equal fill on the opposite side of the stream, and so that the floodplain restrictions has no adverse impact (a $1 \pm$ foot change) in the 100-year Base Flood Elevation.
- d) For trapezoidal swale spillways across the road to handle flows in excess of culvert capacity, the elevation-capacity data for the swales shall be calculated using the back-water curve method similar to that used by the NRCS. Broad - crested weir formulas will not be considered suitable for such spillways.
- e) Only the Type II rainfall distribution shall be used for runoff calculations.
- f) Only medium and fast Unit Hydrograph Shapes shall be acceptable for use in runoff calculations.
- g) Flood routing for KDA-DWR regulated structures shall be in accordance with KDA requirement.
- h) The Rational Method, NRCS TP-149, Commons, Corps of Engineers HEC-RAS, NRCS TR-55, or TR-55 emulators are acceptable methods for calculation of hydrograph peaks and runoff volume. The applicant shall use a method appropriate for the size and terrain of the watershed and state in the application which method(s) was used.

2) Temporary Diversions

- a) Temporary diversions shall be designed so that the combination of channel, bank and floodplain configuration is adequate to pass safely the peak runoff of a minimum 10-year, 6-hour precipitation event.
- b) Temporary diversions for *miscellaneous* flows shall be designed so that a combination of channel, and floodplain configuration is adequate to pass safely the peak runoff of a minimum 2-year 6-hour precipitation event.
- c) Sediment traps and other sediment control structures which are not designed to impound water and which are intended to be maintained during the life of the permit, and then be removed, shall be designed to handle a minimum 10-year 24-hour event.
- d) For diversions of *perennial* and *intermittent streams*, temporary diversions shall be designed to adequately pass the peak runoff from a minimum 10-year 6-hour event, or an event equal to the capacity of the unmodified watercourse immediately upstream and downstream from the diversion, whichever is largest.

3) Permanent Diversions

- a) Permanent stream channel diversions shall be designed with a combination main channel and floodplain, with the main channel designed to carry the 2-year 6-hour event and the floodplain designed to carry the remainder of the flow.
- b) Permanent diversions shall be designed so that the combination of channel, bank and floodplain configuration is adequate to pass safely the peak runoff of a minimum 100-year, 6-hour precipitation event.
- c) Permanent diversions for *miscellaneous* flows shall be designed so that a combination of channel, and floodplain configuration is adequate to pass safely the peak runoff of a minimum 10-year 6-hour precipitation event.

- d) For permanent diversions, the applicant shall investigate and explain the effects of a minimum 100-year, 6-hour event on the designs to insure there will be no damage upstream or downstream of the site. All diversion designs within a National Flood Insurance Program (NFIP) designated floodplain shall consider the effect of the project on the 100 year Base Flood Elevation.
- e) To insure serviceability and minimal maintenance requirements for the applicant as well as the landowners, the SMS recommends all permanent diversions be designed to handle a minimum 50-year 6-hour event.
- f) Permanent diversions of *perennial* and *intermittent streams* shall be designed to adequately pass the peak runoff from a minimum 100-year 6-hour precipitation event, or an event equal to the capacity of the unmodified watercourse immediately upstream and downstream from the diversion, whichever is largest.

V. K.A.R. 47-3-42 (a)(34) Road Systems:

Any roads, and road systems, in the proposed operations or reclamation plan shall adhere to the following requirements:

A. General Requirements

- 1. The plans and drawings for each primary road shall be prepared by, or under the direction of, and certified by a qualified and Kansas registered (licensed), professional engineer, geologist, and/or surveyor, as appropriate to each discipline, with experience in the design and construction.
- 2. Each application for a surface coal mining and reclamation permit shall submit plans and drawings for each road, to be constructed, used, or maintained within the proposed permit area.
 - a. A map with appropriate cross sections, design drawings and specifications for road widths, gradients, surfacing materials, cuts, fill embankments, culverts, bridges, drainage ditches, low-water crossings, and drainage structures.

- b. The drawings and specifications of each proposed road which is located in the channel of an intermittent or perennial stream, as necessary for approval of the road by the SMS.
 - c. The drawings and specifications for each proposed ford of perennial or intermittent streams which is to be used as a temporary route, as necessary for approval of the ford by the SMS.
 - d. A description of measures to be taken to obtain approval of the SMS for alteration or relocation of a natural stream channel for construction and use of the proposed road(s).
 - e. Complete drawings and specifications for each crossing of perennial or intermittent stream channels. Since the SMS considers such crossings to be diversions under Section 780.29, such structures shall be designed under the requirements of Section 780.29.
 - f. Describe the plans to remove and reclaim each road that would not be retained under an approved post-mining land use, and the schedule for this removal and reclamation.
- B. Engineering Design Criteria: for the facilities covered under this section of the regulations.
- 1. General
 - a. The structures shall be designed using normally accepted practices and procedures such as those contained in design guides published by the EPA, MSHA, Bureau of Reclamation, NRCS, Corps of Engineers, and/or OSM. Designs may be prepared using professional civil design software such as SEDCAD, SurvCadd, AutoCAD, etc.
 - b. The applicant shall investigate and explain the effects of a minimum 100-year, 6-hour event on the designs to insure there will be no damage upstream or downstream of the site. All road fill designs within a National Flood Insurance Program (NFIP) designated floodplain shall consider the effect of the project on the 100-year Base Flood Elevation.
 - c. All road fill and stream crossing designs shall comply with the Kansas Levee Law KSA 24-126 and the Obstructions in Streams Act, KSA 82a-301 to 305a, and KSA 24-105.

- d. Cross-sections and profiles shall be provided for all culverts, floodplain fills, and/or stream obstructions required for construction and operation of each road, along with detailed design drawings showing all erosion control protection for the structures. Culverts or other obstructions in diversions shall be designed to carry the peak design event without causing overtopping, flooding, or erosion damage. Complete designs for all obstructions (including provisions for erosion control) shall be included in the application.
- e. To insure serviceability and minimal maintenance requirements for the applicant as well as the landowners, the SMS recommends all permanent diversions of miscellaneous associated with roads be designed to handle a minimum 50-year 6-hour event. Temporary diversions should be designed to handle a precipitation event which the structure may realistically be expected to handle over the anticipated life of the structure, or a minimum 10-year 6-hour event. If information contained in the application reveals site conditions which indicate there is a potential for significant damage from flooding hazards, or there is a potential for significant erosion damage, the SMS may require structures to be designed to handle greater events.

2. Detailed Design Criteria

- a. Shape and Configuration
 - 1) Bench marks shall be provided for future verification of the as-built elevations of the structures.
 - 2) The size and configuration of the road ditches shall be determined by flood routing the drainage area(s) serviced by the ditches. Consideration shall be given for siltation collecting in the ditches from runoff and/or grading.
 - 3) The configuration of the road system shall be in compliance with MSHA requirements. The roads shall have widths, grades, and horizontal and vertical alignments suitable for the size, number, and travel speeds of the vehicles using the roads.

- 4) So that roads which are to be left after bond release comply with approximate-original-contour (AOC) criteria, excavated or embankment slopes within 25 feet of the edge of the road(s) shall not be steeper than the steepest slope on the permitted area prior to mining, or in no case steeper than 4 horizontal to 1 vertical.

b. Erosion Protection

- 1) All rock structures proposed for erosion control shall be designed in accordance with a recognized method for sizing the rock such as EPA, Corps of Engineers, SEDCAD, OSM NRCS, OSM, Bureau of Reclamation, etc. The design method(s) used shall be stated in the application.
- 2) All rock erosion control structures shall be designed with some type of filter around the rock to prevent infiltration of surrounding earth and soils into and through the rock. Filters may include geotextiles or properly placed and sized granular filter materials such as sand and gravel.
- 3) For all locations where vegetation may be acceptable for erosion protection, the application shall state how erosion is to be controlled until permanent vegetation has been established.
- 4) Bare earth channels for temporary diversions intended to exist for more than a year, or for permanent diversions, will not be acceptable.

c. Precipitation Event Design Criteria and Sediment Control

- 1) Any drainage diversions, floodplain fills, or obstructions of drainage, resulting from the road system construction shall be designed in accordance with K.A.R. 47-3-42 (a)(28) Diversions.
- 2) The application shall include a detailed explanation of how runoff from the road system is to be handled to control sediment and erosion. Sediment traps and other sediment control structures which are not intended to impound water, and which are intended to be maintained during the life of the permit, shall be designed to handle a minimum 10-year 24-hour event.

- 3) For trapezoidal swale spillways across the road to handle flows in excess of culvert capacity, the elevation-capacity data for the swales shall be calculated using the back-water curve method similar to that used by the NRCS. Broad- crested weir formulas are not suitable for such spillways.
- d. Road Embankment Stability
- 1) Each embankment associated with a road shall include a slope and seismic stability analysis including but not limited to strength parameters, pore pressures, phreatic surfaces, saturated and/or submerged zones, and long-term seepage conditions. The plan shall also contain a description of each engineering design assumptions and calculations with a discussion of each alternative considered in selecting the specific design parameters and construction methods. All analyses shall be performed with the appropriate slope stability method(s) commonly used within the United States (i.e. Bishop Simplified Method, Spencer-Wright Method, Sarma Method, etc.). The methods, along with the parameters used, shall be noted in the application. Software such as SB-Slope, Galena, etc. is acceptable for use in performing stability analysis.
 - 2) All seepages, springs, and ground water flow observed or anticipated in the area of the road embankment shall be identified on each plan.
 - 3) The possibility of landslides caused by the proposed road embankment shall be considered.
 - 4) If requested by the applicant, the SMS may establish engineering design standards for primary road embankments through the State program approval process, in lieu of engineering tests, to establish compliance with the minimum static safety factor of 1.3 for road embankments.