LOUISIANA DEPARTMENT OF NATURAL RESOURCES
OFFICE OF CONSERVATION

INJECTION AND MINING DIVISION

TECHNICAL GUIDELINES FOR SURFACE MINING PERMIT APPLICATION

General Instructions

These technical guidelines require the use of La. R.S. 30:901, et seq., the *Louisiana Surface Mining and Reclamation Act*, (Act), LAC 43:XV, the *Louisiana Surface Mining Regulations*, (LSMR), and the PHC guidance document *Handbook of Geologic and Hydrologic Data Requirements* in order to fully understand the permit application requirements. Information on format, general information on maps and drawings, and other general requirements may be found in LSMR §1907. Sections applicable to the given item are referenced on the application form.

These technical guidelines contain the following sections:

Hydrologic Balance
- Surface Water
- Ground Water

Soil Resources
- Topsoil
- Remaining Overburden
- Topsoil Substitution
- Minesoil Monitoring Plan

Right to Mine

Mining Plan

Fish and Wildlife Plan

Performance Bond

General Requirements

Hydrologic Balance

These technical guidelines should be followed in concert with the Louisiana Surface Mining Regulations while preparing the hydrologic balance portion of the permit application.

Surface Water

1. Submit a determination of probable hydrologic consequences (PHC) based on a complete analysis of the impacts of mining on surface-water quality and quantity. Refer to the probable hydrologic consequences guidance document *Handbook of Geologic and Hydrologic Data Requirements*.

2. Assess the impact of ground-water discharge on surface-water quality.

3. Provide an accurate description of the premining and postmining hydrologic condition of receiving streams using site-specific seasonal flow variation data. Include seasonal variations in low, average and peak discharges for streams in the permit and adjacent areas.

4. Provide sufficient surface-water quality and quantity data to distinguish between mining impacts, natural fluctuations, and impacts resulting from other activities not related to the mining operation.

5. Surface-water quality and quantity must be monitored before mining activities commence, during mining operations, and through final bond release of the permit area. This includes submission of Monthly Surface Water Test Reports for each monitoring station for at least 12 months (see PHC guidance document) prior to the initiation of construction and mining activities in each drainage basin. If toxic materials are present in any concentration sufficient to indicate significant possibilities of environmental damage or pollution, additional representative samples should be taken at all pertinent locations.

6. Provide estimates of existing soil loss and sediment yields for watersheds in the permit area, and relate these estimates to an assessment of postmining geomorphic and hydrologic conditions.

7. All plans for sediment and drainage control structures must be submitted to and approved by the Office prior to construction. This includes, but is not limited to, all impoundments (sedimentation ponds, treatment cells, etc.) and diversions. When using the SEDCAD model, the permittee must provide the following: detailed watershed maps (showing the topography, drainage area, branches, junctions and structures), stage-area discharge relationships for each spillway, emergency spillway, riser barrel, barrel spillway, trickle tube, etc. For each subwatershed for each SEDCAD run the following information shall be provided: area, curve number (CN), time of concentration (TC), selected land use, erosivity factor (K), length slope factor (L), cover management factor (C), supplemental practice factor (P) and the rainfall-erosivity factor (R), as well as sufficient particle size distributions for each reclaimed soil type. Pond size shall be calculated using an average annual R value of no less than 350.

8. Postmining contour maps must be at a scale large enough to determine drainage patterns and runoff characteristics needed to demonstrate that final slopes will achieve approximate original contour.

9. Indicate erosional stability of the longer and steeper slopes shown on postmining topography maps. This will demonstrate whether sediment in the streamflow leaving the permit area will be increased following mining.

10. Demonstrate that the restored stream channels will be stable.

11. All pertinent site-specific baseline information must be provided as a part of the application.

Ground Water

1. Submit a determination of probable hydrologic consequences (PHC) based on a complete analysis of the impacts of mining on ground-water quality and quantity. Refer to the probable hydrologic consequences guidance document *Handbook of Geologic and Hydrologic Data Requirements*. This will include studies of changes in

transmissivity, storage coefficient, and physical properties and mineralogical characteristics that affect the rate or amount of chemical solution.

2. Provide estimates of postmining impacts to ground-water quality for the mine area and adjacent areas downgradient.

3. Specifically assess the effect of reduced recharge during mining on water levels and water uses at domestic wells downgradient of the permit area.

4. Provide specific information about the availability and quality of potential sources of replacement water if any existing domestic wells in the permit or adjacent area are to be contaminated, diminished or interrupted as a result of the proposed mining operation.

5. The ground-water monitoring plan should include an assessment of the hydrologic and geologic characteristics of the project area including aquifers, aquifer recharge/discharge areas, permeabilities, flow directions, gradients, quantities and existing water quality.

6. New monitoring wells must be installed to provide sufficient data to evaluate the effects of mining on ground-water quality and quantity. Monitoring is required both inside and outside of the mine plan area for aquifers that are important to the hydrologic balance. This includes submission of Monthly Ground Water Test Reports for each monitoring well for at least 12 months prior to the initiation of mining activities. Ground-water quality and quantity must be monitored before mining activities commence, during mining operations, and through final bond release of the permit area. If toxic materials are present in any concentration sufficient to indicate significant possibilities of environmental damage or pollution, additional representative samples should be taken at all pertinent locations.

7. All pertinent site-specific baseline information must be provided as a part of the application.

Soil Resources

These technical guidelines should be followed in concert with the Louisiana Surface Mining Regulations while preparing the soil resources portion of the permit application.

Soil reconstruction in the permit area must involve one of the following procedures: (1) topsoil salvage on all disturbed land, (2) salvage of the oxidized overburden, **provided** the resulting medium is found to be equal to or more suitable for sustaining vegetation than the available topsoil, or (3) selective handling of specific overburden spoil through the development of a complete and carefully designed spoil substitution evaluation program.

Topsoil

1. Topsoil samples shall be taken to a depth of four feet by means of a tube sampler or other suitable apparatus. Minimum acceptable recovery constitutes 75 percent of the interval sampled. Topsoil samples shall be analyzed for the following parameters:

Texture
pH
Net Acidity and Alkalinity
Acid Base Account
Sulfur - Pyritic and Organic Sulfate, Pyritic Sulfur
CEC
Exchangeable Acidity
Neutralization Potential
SAR
EC
Total Potential Acidity
Calcium Carbonate Equivalent

Exchangeable K, Ca, Mg, Na, Al, and Fe
Base Saturation
Saturation Percentage
Phosphorus
Trace Elements Cd, Cu, Mn, Mo, Ni, Pb, Se, As, B
Organic Matter

2. Describe procedures for data collection, analytical procedures used, and statistical analyses for the various areas containing differing soils and productivity levels.

Remaining Overburden

1. A minimum of one sample shall be taken from each major lithologic stratum from the base of the topsoil, as defined above, to a depth of one foot below the lowest coal seam to be mined. Any layer thinner than five inches need not be separately sampled. The samples collected from each stratum may be composited to represent an interval not to exceed 10 feet in length and identified as to its depth interval from the surface. Any individual stratum greater than five inches in thickness and less than 10 feet in thickness may have one composite sample taken. All lignite/coal rider seams (less than two feet thick) shall be sampled separately and included as part of the overburden analysis. Samples may be taken from continuous cores or other suitable methods with a minimum acceptable recovery of 75 percent. The following analyses shall be conducted for the composite sample:

Texture
pH
net Acidity and Alkalinity
Acid Base Account
Sulfur - Pyritic and Organic Sulfate, Pyritic Sulfur
CEC
Exchangeable Acidity
Neutralization Potential
SAR
EC
Total Potential Acidity
Calcium Carbonate Equivalent
Exchangeable K, Ca, Mg, Na, Al, and Fe
Base Saturation
Saturation Percentage
Phosphorus
Trace Elements Cd, Cu, Mn, Mo, Ni, Pb, Se, As, B

2. Overburden cores shall be taken, at a minimum of 1,000-foot centers, down the long axis of the mining block. Core data and geophysical logging data shall be utilized in overburden characterization studies. These studies must include the development of fence diagrams, structure contour maps, and isopach maps of suitable versus unsuitable overburden materials. Indicate the three-dimensional extent and intensity of potential acid- and/or toxic-forming strata.

3. Establish a plan for the burial or treatment of acid- and toxic-forming materials which are encountered during mining operations. All acid- and toxic-forming material shall be covered, during reclamation, with a minimum of four feet of the most suitable nontoxic and noncombustible material.

Topsoil Substitution

1. Develop a complete and carefully designed topsoil substitution evaluation program. The end product of any minesoil construction must result in a landscape capable of supporting the potential uses of the premine environment.

2. Provide an accurate description of the overburden within the permit area based on overburden coring and/or geophysical logging.

3. Describe native soils in the permit area based on the Natural Resources Conservation Service's most recent mapping which will be used to provide site-specific soils data on potential productivity and capability.

4. Provide a detailed plan of overburden handling methods to be used for proper disposal of potential acid- or toxic-forming material and reconstruction of acceptable minesoils where topsoil substitution is proposed. Topsoil salvage must take place in those areas where spoil substitution cannot be justified. Acceptable minesoil means equal to or more suitable for sustaining revegetation than is the available topsoil and the substitute material is the best available to support revegetation.

5. Demonstrate that the proposed substitute material will achieve the premining productivity of the permit area.

6. Specify how reclamation productivity will be measured.

Minesoil Monitoring Plan

For soil reconstruction involving topsoil substitution, the following Minesoil Monitoring Plan must be implemented to verify that the characteristics of the constructed minesoils compare with the predicted minesoil characteristics.

1. Sampling intervals are to be based on 20-acre grids, with four samples per 20 acres.

2. Samples may be composited for analysis purposes at 0-6 inches (or reflective of the "A" soil horizon), 6-18 inches and 18-48 inches with Munsell colors evaluated at time of collection.

3. An analytical minesoil quality control program must be established. Analytical parameters shall include: particle size distribution, CEC, EC, pH or saturated extract, saturation percentage, and total N and NO^3-N on samples having 25 percent clay. Randomly select one-third (minimum) of samples which are weakly or noneffervescent and run total sulfur (Leco or Fisher furnace). Where results are 0.1 percent total sulfur, carry out full acid base balance (Askenasy and Severson, in print). Sample preparation techniques must be appropriate, clearly defined, and consistently applied to all samples.

4. Except where premine soils fall outside the below listed parameter values, any sample value found outside the parameter suitability levels described in the following list will require offset holes at appropriate distances in cardinal directions from original locations. Such additional samples shall be collected and analyzed for:

   a. particle size distribution: clay content 40% and sand content 85% (loamy sand on textural triangle)
   b. cation exchange capacity: 3.5meq/100gm
   c. electrical conductivity: 4mmhos/cm
   d. pH: 4.8 to 8.4
   e. saturation percentage: 85% to 25%
   f. acid base balance: -5 tons CaCO3/acre furrow slice or 0.1% pyritic sulfur on sl or finer textured samples and 0.5% on sand and loamy sand material

5. Initial minesoil samples will be collected prior to seeding, followed by yearly samples of each mining area. Results of the initial sampling will be reported semi-annually, and yearly sampling results will be reported during the first quarter of the following year. Maps showing sample locations must be submitted with sample results. Sampling must continue annually through final bond release.

6. Samples shall be sealed in a non-reactive type material and transported to the appropriate laboratory as soon as possible for analysis. Methods used in obtaining and testing samples shall follow standard methods such as those listed in Appendix A of these guidelines.

7. A lithologic log of the borehole shall be provided along with the samples, with the sampled intervals clearly marked on it.

8. All radioactive properties and materials found in samples shall be reported.

Right to Mine

1. Provide a description of the documents used to prove a legal right to enter and begin surface mining activities in the permit area. The description shall identify those documents by type and date of execution, identify the specific lands to which the document pertains, and explain the legal rights claimed.

2. Identify all uncontrolled properties in the permit area as of the date of application submittal. The legal right to enter and begin surface mining activities must be acquired prior to entering and/or disturbing the land. Supply proofs of the right to mine additional land as they are acquired.

Mining Plan

1. Describe the coal resources of the permit area. Include information on thickness and depth of coal, maximum overburden thickness, BTU content, coal to overburden ratios, economic limits to coal recovery, surface acres to be disturbed, and tons of coal in place.

2. Summarize the expected coal market, duration of mine operation, anticipated annual and total coal production.

3. Describe specific mining procedures and equipment to be used for coal extraction. Include details concerning pre-stripping (i.e., structure relocation or demolition, road relocation, oil and gas well plugging, timber harvesting, etc.), overburden removal and coal mining operations.

4. Describe the planned mining sequence. All changes to the planned mining sequence must be approved prior to commencing work.

5. Provide a detailed air pollution control plan describing techniques for fugitive dust control.

6. Provide a detailed water pollution control plan. All water draining from disturbed areas must be impounded in sedimentation ponds. Submit all plans, cross-sections and profiles for design, handling and use of the following pollution control facilities: stream channel diversions, sediment control measures, sedimentation ponds, discharge structures, and permanent and temporary impoundments. All plans for water pollution control facilities must be submitted to and approved by the Office prior to construction.

Fish and Wildlife Plan

1. Describe the fish and wildlife resources of the permit area.

2. Discuss those surface mining activities which may have adverse impacts on the fish and wildlife resources.

3. Identify reclamation and land use objectives which will minimize adverse mining impacts and enhance environmental values. Include proposed locations for fish and wildlife habitats.

4. Develop an environmental monitoring plan for the fish and wildlife habitats. Specify how successful habitat restoration will be measured.

Performance Bond

1. Submit a performance bond prior to commencement of any surface coal mining and reclamation operations. The amount, duration, form, conditions and terms of the performance bond is to be based upon detailed

operational mining and reclamation proposals. Detailed cost estimates regarding revegetation, haulroads and access roads, ponds and diversions, topsoiling, grading spoil, removal of facilities, and administration costs must be included in bond calculations.

2. Specific bond proposals, revisions and bond amounts must be approved by the Office prior to disturbing any surface acreage, or extending mining operations.

General Requirements

All information requested in this application should be regarded as the minimum required. The application should contain any other information which is pertinent to the situation or setting. This includes all general reference material and background studies, (soil taxonomy references, hydrology model references, soils studies by consultants, cultural/archaeological studies, fish and wildlife studies, etc.) conducted as part of the environmental investigation. All baseline materials, (drill/lithology logs, electric logs, etc.), which were used to make determinations stated in the application narrative must be included as part of the complete application. Further information may also be requested by the Office.

Upon receipt of the application by the Office, it will be reviewed for completeness with respect to the *Louisiana Surface Mining Control and Reclamation Act*, the *Louisiana Surface Mining Regulations*, and these technical guidelines. When the complete application is on file with the Surface Mining Section, the applicant shall publish the required notice and make all required distributions as set forth in the surface mining regulations.

LOUISIANA DEPARTMENT OF NATURAL RESOURCES
OFFICE OF CONSERVATION

INJECTION AND MINING DIVISION

APPLICATION FOR SURFACE MINING OPERATION AND RECLAMATION PERMIT

All information provided in response to items listed herein should be as complete as possible. File 20 copies with the Office of Conservation, Injection and Mining Division, 617 N. Third St., Baton Rouge, LA 70802 or make proper filing in accordance with Louisiana Surface Mining Regulations §1907.

No later than 30 days prior to the filing of an application, an applicant shall meet with Office of Conservation personnel for a pre-application conference and shall make available to the Office a draft of all materials to be filed in connection with the application.

I. General Information

A. Name

1. Applicant_____

   Mining operation _____

   Permanent mailing address _____

   City, State, Zip _____

   Telephone (_____)_____

2. Name, address, and telephone number of person or persons authorized to act for applicant during consideration of this application: (attorneys, engineering firms, mining superintendent, etc.).

   _____

   _____

   _____

   _____

B. Type of permit application: Original, Revision, Renewal

_____

_____

C. Product to be mined:

_____

_____

D. Type and method of mining operation: (open pit, strip mine, etc.)

_____

E. Location

1. Parish or parishes

_____

_____

_____

2. Give a general description of the location of the proposed mining area with respect to cities, streets, highways, churches, schools, water courses, landmarks, etc.

_____

_____

_____

I, (name) _____, (title) _____
state that I have knowledge of the facts set forth above and that the same are true to the best of my knowledge and belief.

Signature_____ Date _____
(Applicant)

Approved _____ Date _____
(Office of Conservation)

II. Administrative Information

A. Identification of Interests §2305

1. applicant's organization (corporation, partnership, single proprietorship, association or other business entity)
2. applicant information (name, address, telephone number, social security number [voluntary], employer identification number) of:
    a. applicant
    b. applicant's resident agent
    c. person who will pay abandoned mine land reclamation fee
3. for each person who owns or controls the applicant:
    a. name, address, social security number [voluntary], employer identification number
    b. ownership or control relationship to applicant, including percentage of ownership and location in organizational structure
    c. title of position, date position assumed, date of departure from position
    d. names and identifying numbers of surface coal mining and reclamation operations owned or controlled within the five years preceding date of application
    e. application number and regulatory authority for other pending surface coal mining operation permit applications in other states
4. for any surface coal mining operation owned or controlled by either the applicant or any person who owns or controls the applicant:
    a. name, address, employer identification number, federal or state permit number, MSHA number, date of issuance of MSHA number, and regulatory authority
    b. ownership or control relationship to applicant, including percentage of ownership and location in organizational structure
5. name and address of each legal or equitable owner of record, each holder of record of any leasehold interest, and any purchaser of record under a real estate contract of the surface and mineral property to be mined
6. name and address of each owner of record of all property contiguous to proposed permit area
7. MSHA identification numbers for all mine-associated structures that require MSHA approval
8. statement of all lands, interest in lands, options or pending bids on interests held or made by the applicant for lands contiguous to the area described in the permit application
9. following application approval, statement of updates, corrections, or no change to information previously submitted

B. Compliance Information §2307

1. statement whether applicant, any subsidiary, affiliate or persons controlled by or under common control with the applicant has had a federal or state mining permit suspended or revoked in the last five years, or forfeited any mining bond or similarly security
2. statements of the facts involved:
    a. identification number and date of issuance of the permit or date and amount of bond or similar security
    b. identification of authority taking action and stated reasons for that action
    c. current status of the permit, bond or similar security involved
    d. date, location and type of any administrative or judicial proceeding initiated
    e. status of any proceeding initiated
3. list of all violation notices received during the three-year period preceding application date for any violation pertaining to air or water environmental protection at any surface coal mining operation; list of all unabated cessation orders and unabated air and water quality violation notices received prior to the date of the application by any surface coal mining and reclamation operation owned or controlled by the applicant or any person who owns or controls the applicant:
    a. federal or state permit number, MSHA number, date of issuance, name of person issued violation, name of regulatory authority

b. description of violation
c. date, location and type of any administrative or judicial proceedings
d. status of proceedings
e. action taken to abate violation

4. following application approval, statement of updates, corrections, or no change to information previously submitted

C. Right of Entry and Operation Information §2309

1. description of all documents conveying rights (surface and subsurface) to enter and begin surface mining activities in the permit area and whether right is subject of pending litigation:
   a. type and date of execution
   b. identify specific lands covered
   c. explain legal rights claimed
2. where the private mineral estate is severed from the private surface estate:
   a. copy of written consent of surface owner to extraction of coal by surface mining methods, or
   b. copy of conveyance document granting or reserving right to extract coal by surface mining methods, or
   c. other documentation of legal authority to extract coal by these methods
3. for those tracts within the permit area where the applicant does not have the right to mine at the time of application filing, the applicant must meet the requirements of §910.E of the Act.

D. Relationship to Areas Designated Unsuitable for Mining §2311

1. statement whether permit area is within an area designated unsuitable for surface mining activities or is under study for such designation
2. waiver from owner of occupied dwelling within 300 feet of surface mining activities

E. Permit Term Information §2313

1. anticipated or actual starting and termination dates and anticipated number of acres to be affected for each phase of the surface mining activities over the total life of the mine
2. for permit terms exceeding five years:
   a. full and complete information for the specified longer term
   b. written confirmation that longer term is needed to allow applicant to obtain necessary financing of equipment and opening of operation

F. Personal Injury and Property Damage Insurance Information §2315

1. certificate of liability insurance or evidence that self-insurance requirements (§4309) are met

G. Identification of Other Licenses and Permits §2317

1. type of permit or license
2. name and address of issuing authority
3. identification number of application, permit or license

H. Identification of Location of Public Office for Filing of Application §2319

1. name and address of public office where application is filed for public inspection

I. Newspaper Advertisement and Proof of Publication §2321

1. copy of newspaper advertisement of application and proof of publication for four consecutive weeks

III. Environmental Resources Information - description of premining environmental resources that may be affected by surface mining activities

A.	General Environmental Resources Information	§2505
B.	Description of Hydrology and Geology	§2507
C.	Geology Description	§2509
D.	Ground-water Information	§2511
E.	Surface-water Information	§2513
F.	Supplemental Information	§2515
G.	Baseline Cumulative Impact Area Information	§2517
H.	Modeling	§2519
I.	Alternative Water Source Information	§2521
J.	Probable Hydrologic Consequences Determination	§2523
K.	Cumulative Hydrologic Impact Assessment	§2525
L.	Climatological Information	§2527
M.	Vegetation Information	§2529
N.	Soil Resources Information	§2531
O.	Land-use Information	§2533
P.	Cross-sections, Maps and Plans	§2535, 2537
Q.	Prime Farmland Investigation	§2539

IV. Operation Plan - description of mining operations to be conducted during the life of the mine

A.	General Requirements	§2703
B.	Existing Structures	§2705
C.	Blasting	§2707
D.	Maps and Plans	§2709
E.	Air Pollution Control Plan	§2711
F.	Fish and Wildlife Plan	§2713

V. Reclamation Plan - description of land reclamation to be conducted during the life of the mine

A.	General Requirements	§2715
B.	Protection of Hydrologic Balance	§2717
C.	Ground-water Monitoring Plan	§2719
D.	Surface-water Monitoring Plan	§2721
E.	Post-mining Land Uses	§2723
F.	Ponds, Impoundments, Banks Dams and Embankments	§2725
G.	Diversions	§2729
H.	Protection of Public Parks and Historic Places	§2731
I.	Relocation or Use of Public Roads	§2733
J.	Disposal of Excess Spoil	§2735
K.	Road Systems	§2737
L.	Support Facilities	§2739

Appendix A

Water Analysis References

American Society for Testing and Materials, 1975, Part 31; "Water and Atmospheric Analysis", Annual Book of ASTM Standards, Philadelphia, American Society for Testing and Materials.

American Public Health Association, American Water Works Association, and Water Pollution Control Federation, 1975, Standard Methods for the Examination of Water and Wastewater, 14th edition: New York, American Public Health Association.

Brown, Eugene; M.W. Skougstad; and M.J. Fishman, 1970, Methods for Collection and Analysis of Water Samples for Dissolved Minerals and Gases: Techniques of Water Resources Investigations of the U.S. Geological Survey, Book 5, Chapter A1, Washington D.C., Superintendent of Documents, U.S. Government Printing Office.

Environmental Protection Agency, 1974, Methods for Chemical Analysis of Water and Wastes: Methods Development and Quality Assurance Research Laboratory, national Environmental Research Center, Cincinnati, Ohio, (EPA-625/6-74-003.)

Soil Analysis References

Black, Charles (Editor), Part I: "Physical and Mineralogical Properties", Part II: "Chemical and Microbiological Properties", Methods of Soil Analysis, American Society of Agronomy and American Society for Testing and Materials, Agronomy Series No. 9.

Smith, M.R. and A.A. Sobek, Physical and Chemical Properties of Overburdens, Spoils, Wastes, and New Soils, West Virginia University, Morgantown, and Argonne National Laboratory, Argonne, Illinois, 1978-ASA-CSSA-SSSA.

Smith, M.R. and J.R. Freeman, Update on Overburden Characteristics, Division of Plant Sciences, West Virginia University, Mining Congress Journal 64: pp. 27-31, 1978.

U.S. Department of Agriculture, Soil Conservation Service, "Soil Survey Laboratory Methods and Procedures for Collecting Soil Samples", U.S. Government Printing Office, Washington, D.C. 20402, (#0107-0298), 1972.

U.S. Environmental Protection Agency, Field and Laboratory Methods Applicable to Overburdens and Minesoils, EPA-600/2-78-054, March 1978.