

**FEDERAL REGISTER: 44 FR 64254 (November 6, 1979)**

DEPARTMENT OF THE INTERIOR

AGENCY: Office of Surface Mining Reclamation and Enforcement (OSM)

Abandoned Mine Land Reclamation Program

ACTION: Proposed guidelines for reclamation programs and projects.

**SUMMARY:** Public Law 95-87. The Surface Mining Control and Reclamation Act of 1977 (SMCRA) (30 U.S.C. 1201 *et seq.*) establishes an Abandoned Mine Reclamation Fund and provides the authority to use monies from this fund to reclaim and restore land and water resources adversely effected by past mining. OSM published final rules on October 25, 1978 (43 FR 49932) which established the abandoned mine land reclamation program and procedures for administering Title IV of SMCRA. OSM is today publishing proposed guidelines to assist States, Indian tribes, U.S. Department of Agriculture, and OSM in interpreting and applying the general reclamation requirements for individual programs and projects contained in SMCRA and the regulations. These guidelines are proposed in order to promote uniformity in programs and projects that are carried out by the different entities assigned the responsibility for administering the abandoned mine land programs and to provide a common basis for the conduct of future program and project evaluation activities.

**DATES:** The comment period on the proposed guidelines will extend until January 7, 1980. All written comments must be received at the address given below by 5 p.m. on that date.

Public information meetings to accept comments on the proposed guideline will be held on the following dates:

November 26, 1979 -- Washington, D.C.

November 28, 1979 -- Charleston, West Virginia.

November 29, 1979 -- Knoxville, Tennessee.

December 4, 1979 -- Oklahoma City, Oklahoma.

December 5, 1979 -- Denver, Colorado.

December 7, 1979 -- Indianapolis, Indiana.

**ADDRESSES:** Written comments must be mailed or hand delivered to the Office of Surface Mining, Administrative Records Office, Room 135 South Building, 1951 Constitution Avenue, NW., Washington, D.C. 20240, telephone (202) 343-4228. All comments received will be available for further inspection at the same address.

Public information meetings will be held at the following locations:

Washington, D.C. -- Department of the Interior Auditorium, 18th & C Streets, NW. -- November 26, 1979.

Charleston, West Virginia -- Charleston National Bank, Auditorium, Room 412, Virginia and Capitol Streets -- November 28, 1979.

Knoxville, Tennessee -- Holiday Inn South, located approximately 0.5 mile north of Knoxville Airport on Highway 129 in Alcoa, Tennessee -- November 29, 1979.

Oklahoma City, Oklahoma -- Senate Chamber, State Capitol Building -- December 4, 1979.

Denver Colorado -- Room 269, Post Office Building, 1823 Stout Street -- December 5, 1979.

Indianapolis, Indiana -- S.E. Meeting Room, Indiana War Memorial, 431 North Meridan Street -- December 7, 1979.

**FOR FURTHER INFORMATION CONTACT:** M. Richard Nalbandian, Chief, Division of Reclamation Planning and Standards, Abandoned Mine Land Reclamation, Office of Surface Mining Reclamation and Enforcement, (202) 343-4057.

**SUPPLEMENTAL INFORMATION:**

OSM is publishing proposed guidelines to be considered when developing plans for abandoned mine land programs and projects. These guidelines are published in this Federal Register immediately following this notice. A notice of decision to develop these guidelines was published on August 1, 1979 (44 FR 45316) with a request for public comment on this decision. Seven public comments were received as a result of this public comment request. Six of these commenters

supported OSM's decision to develop guidelines rather than regulations and the seventh commented on a specific area concerning the planting of trees rather than grasses on certain abandoned mine land areas.

The guidelines as proposed vary from the outline published in August in that guideline 3 (Purpose for Which Reclamation is Proposed) and guideline 4 (Selection Process for Considering Reclamation Activities) under the General Areas of Concern have been combined into one guideline titled Selection Criteria. Guideline 12 (Noncoal Projects and Impact Assistance) has been separated into two guidelines titled "Noncoal Project" and "Impact Assistance." Also guideline 11 (Site Characteristics) under Specific Control Parameters has been eliminated and this material has been incorporated into the new Selection Criteria guideline. A new Section A has also been added to the proposed guidelines which contains definitions of terms applicable to the guidelines.

Initial draft guidelines were prepared by the Regional offices of OSM and have been informally reviewed by States, Indian tribes and Federal agencies before the planning group consisting of representatives from States, Indian tribes, OSM, and the U.S. Department of Agriculture developed these proposed guidelines.

## **ENVIRONMENTAL IMPACT STATEMENT**

In connection with the development of these guidelines, OSM has been preparing an environmental impact statement assessing the impacts of various alternatives considered for carrying out the Abandoned Mine Lands Reclamation program. The proposed guidelines are one facet of the program that is assessed in this draft environmental impact statement. The availability of drafts of this statement is being announced through a separate Federal Register notice. The content of the draft environmental impact statement was considered for purposes of reaching decisions on the content of these proposed guidelines. The content of the final environmental impact statement will be carefully considered by officials of OSM and the Department of the Interior before decisions are made on the content of the final guidelines.

## **PUBLIC COMMENT PERIOD**

The comment period on the proposed guidelines will extend until January 7, 1980. All written comments must be received at the address given above by 5 p.m. on that date. Comments received after that hour will not be considered or included in the administrative record for the development of these guidelines.

Comments may also be presented at the public information meetings scheduled on the dates and at the locations given below. OSM cannot insure that written comments received or delivered during the comment period to any other locations than specified above will be considered and included in the administrative record for these guidelines.

Written and oral statements should be as specific as possible. Any and all comments will be appreciated but those most likely to influence decisions on these guidelines will be those that propose specific recommended changes to the wording of the guideline. All proposed changes should be supported with an explanation of the rationale for each recommendations.

## **AVAILABILITY OF COPIES**

Additional copies of the proposed guidelines and a listing of the technical references used to develop the guidelines are available for inspection and may be obtained at the following offices:

OSM Headquarters, Department of the Interior, Room 135, South Building, 1951 Constitution Avenue, NW., Washington, D.C. 20240 (202) 343-4728.

OSM Region I, First Floor, Thomas Hill Building, 950 Kanawha Boulevard, Charleston, WV 25301, (303) 342-8125.

OSM Region II, 530 Gay Street, SW., Suite 500, Knoxville, TN 37902, (615) 637-8060.

OSM Region II, Federal Building and U.S. Courthouse, Room 510, 46 East Ohio Street, Indianapolis, IN 46204, (317) 269-2603.

OSM Region IV, 818 Grand Avenue, Room 501, Kansas City, MO 64116, (816) 374-5162.

OSM Region V, Post Office Building, 1832 Stout Street, Room 270, Denver, CO 80205, (303) 837-5511.  
Public Information Meetings

Public information meetings on the proposed guidelines will be held on the dates and at the locations shown below. All the meetings will begin at 10.00 a.m. local time and continue until all commenters are heard.

November 26, 1979 -- Washington, D.C. -- Department of the Interior Auditorium, 18th & C Streets, NW., Washington, D.C.

November 28, 1979 -- Charleston, WV/ -- Charleston National Bank, Auditorium, Room 412, Virginia and Capitol

Streets, Charleston, WV.

November 29, 1979 -- Knoxville, TN -- Holiday Inn South (located approximately 0.5 mile north of Knoxville Airport), Highway 129, Alcoa, TN.

December 4, 1979 -- Oklahoma City, OK -- Senate Chamber, State Capitol Building, Oklahoma City, OK.

December 5, 1979 -- Denver, CO -- Room 269, Post Office Building, 1823 Stout Street, Denver, CO.

December 7, 1979 -- Indianapolis, IN -- SE. Meeting Room, Indiana War Memorial, 431 North Meridan Street, Indianapolis, IN.

Persons wishing to comment at the public meetings on the proposed guidelines should contact the appropriate person listed below. Individual comments at these meetings will be limited to 15 minutes. The meetings will be transcribed. Filing a written statement at the time of giving oral comments would be helpful and facilitate the job of the court reporter. Submission of written statements to the person identified below for these hearings, in advance of the hearing date whenever possible, would greatly assist officials from Federal, State, and tribal agencies who will attend the meetings. Advance submissions will give these officials an opportunity to consider appropriate questions which could be asked to clarify or illicit more specific information from the person commenting. After the public information meetings, the record will remain open for receipt of additional written comments until January 7, 1980.

The public information meetings will continue on the days identified above until all persons scheduled to speak have been heard. Persons in the audience who have not been scheduled to speak and wish to do so will be heard at the end of scheduled speakers. The meetings will end on each day after all people scheduled to comment and persons present in the audience who wish to comment have been heard. Persons not scheduled to comment, but wishing to do so, assume the risk of having the public information meetings adjourned on any given day unless they are present in the audience at the time all scheduled commenters have been heard.

Persons to contact to schedule time on the agenda at any of the specific public information meetings and to deliver advance submissions to are as follows:

Washington -- (202) 343-6786, Ted Ifft, OSM, Room 221, Interior South Building, 1951 Constitution Ave., NW., Washington, D.C. 20240.

Charleston -- (304) 344-9639, Donald Beightol, OSM, First Floor, Thomas Hill Building, 950 Kanawha Boulevard, Charleston, WV 25301.

Knoxville -- (615) 637-8060, George Miller, OSM, 530 Gay Street, SW., Suite 500, Knoxville, TN 37902.

Kansas City -- (816) 374-3069, Donald O'Bryan, OSM, Scarritt Building, Room 503, 818 Grand Avenue, Kansas City; MO 64106.

Denver -- (303) 837-5918, Luther Clemmer, OSM, Post Office Building, Room 270, 1832 Stout Street, Denver, CO 80202.

Indianapolis -- (317) 269-2649, Russell Miller, OSM, Federal Building and U.S. Courthouse, Room 524, 46 East Ohio Street, Indianapolis, IN 46204.

#### DRAFTING INFORMATION

The proposed guidelines were drafted by the Abandoned Mine Land staffs of the five Regional offices of OSM under the direction of Theodore H. Ifft, OSM -- Division of Reclamation Planning and Standards. He can be contacted by phone at (202) 343-6786 or by mail addressed to Office of Surface Mining, Abandoned Mine Lands, Interior South Building, Room 221, 1951 Constitution Ave; NW., Washington, D.C. 20240.

Technical assistance was provided by a planning group composed of representatives from the States, Indian tribes, and USDA.

Note. -- The Department of the Interior has determined that the proposed guidelines are *not* a significant rule under Executive Order 12044.

Dated: November 1, 1979.

Joan M. Davenport, *Assistant Secretary, Energy and Minerals.*

# **ABANDONED MINE LAND (AML) RECLAMATION PROGRAM: PROPOSED GUIDELINES FOR RECLAMATION PROGRAMS AND PROJECTS**

## Contents

### A. Definitions

### B. Program Considerations

1. Land, Water or Mineral Rights Required for Reclamation
  - a. Consent requirements and responsibility
  - b. Written consent versus police power
  - c. Property acquisition
2. Jurisdictional Responsibilities
  - a. Reclamation program legislative requirements
  - b. Environmental evaluation requirements
3. Selection Criteria
  - a. Reclamation site ranking
  - b. Reclamation considerations
  - c. Reclamation extent
  - d. Cooperative efforts
  - e. Joint projects
4. Emergency Projects
  - a. Authority for emergency reclamation
  - b. Emergency project considerations
  - c. Emergency project examples
  - d. Abatement procedures
  - e. Coordination
5. Remining or Secondary Recovery in Conjunction with Reclamation Activities
  - a. Active mining permit requirements
  - b. Resource recovery potential
  - c. Reclamation techniques and methods
  - d. Recovered coal disposition
6. Abandoned Structures
  - a. Abandoned structures and equipment investigation
  - b. Abandoned structures and equipment report
  - c. Ownership rights
7. Borrow and Disposal Areas
  - a. Site selection
  - b. Adverse impacts

## 8. Experimental or Demonstration Practices

- a. Unique aspects
- b. Coordination
- c. Experimental or demonstration practice considerations

## 9. Program and Project Evaluation

- a. General evaluation considerations
- b. Recording requirements
- c. Completed reclamation review
- d. Monitoring

## 10. Maintenance of Reclamation Work

- a. Minimizing maintenance
- b. Maintenance plan content

## 11. Noncoal Projects

- a. Guideline applicability
- b. Planning considerations
- c. Selection priorities

## 12. Impact Assistance

- a. Planning considerations
- b. Priorities for selection
- c. Coordination

## C. Site Considerations

### 1. Mine Drainage

- a. Drainage and associated toxic materials control
  - (1) General considerations
  - (2) At-source control measures
  - (3) Treatment measures

### 2. Active Slides and Slide-Prone Areas

- a. Site selection considerations
- b. Site evaluation factors
- c. Remedial measures

### 3. Erosion and Sedimentation

- a. Erosion and sediment control considerations
- b. Erosion control practices
- c. Sediment trapping practices

### 4. Vegetation

- a. Existing vegetation inventory and evaluation
- b. Vegetation reclamation plan

5. Toxic Materials
  - a. Identification, handling and disposal
    - (1) Spoil materials
    - (2) Refuse piles
6. Hydrologic Balance
  - a. Hydrologic balance restoration
    - (1) Planning considerations
    - (2) Surface water considerations
    - (3) Groundwater considerations
    - (4) Water rights protection
    - (5) Water impoundments
7. Public Health and safety
  - a. Highwall danger
  - c. Mine openings and subsidence
  - d. Radiation emission
  - e. Domestic water supplies
  - f. Surface and underground mine fires
  - g. Hazardous gases and particulates
8. Aesthetic and Visual Values
  - a. Aesthetic evaluation requirements
  - b. Visual degraders
  - c. Aesthetic problem solutions
9. Fish and Wildlife Values
  - a. Determining fish and wildlife values
  - b. Planning considerations
  - c. Coordination with (Landowners)
  - d. Fish and wildlife values
10. Air Quality
  - a. Air quality standards
  - b. Coordination
  - c. Air quality degradation and improvement.

## **A. DEFINITIONS**

1. *Abandoned Property* -- Real and personal property, associated with past mining activities, that has been forsaken or deserted by an owner. This includes real estate, structures, and equipment.

a. *Abandoned Structure* -- Abandoned permanent improvements or fixtures firmly attached to the land and considered as part of the real property. Abandoned structures include but are not limited to coal tipples, coal washers, storage and garding facilities, loading docks, rail spurs, concrete foundations, dams, reservoirs, and bridges. Other items such as crushers, elevators, bins, loaders, conveyors and similar equipment are within this definition if firmly affixed to the land.

b. *Abandoned Equipment* -- Abandoned movable items to affixed to the land. Such items are considered as personal property and include equipment and dismantled machinery not affixed to the land and which could be moved. These items

include but are not limited to shovels, scrapers, tires, machinery parts, trailers, trucks, electrical substations on skids, feeders, and loaders.

c. *Disposal* -- The act of sale, federal utilization, demolition, removal, and the burning and burial of scrap or other debris resulting from abandoned structures and equipment.

2. *Administering Agency* -- The agency that has the responsibility for carrying out a reclamation program or project. This includes OSM for Federal Reclamations OSM for Federal Reclamation Projects; U.S.D.A., Soil Conservation Service for the Rural Abandoned Mine Program; designated State reclamation agencies for projects carried out under an approved State Reclamation Plan; and Indian tribes for projects carried out under an approved Indian Reclamation Plan.

3. *Daylighting* -- A term to define the surface mining procedure for exposing an underground mined area to remove all of the remaining mineral underlying the surface.

4. *Emergency* -- A sudden danger or impairment that presents a high probability of substantial physical harm to the health, safety, or general welfare of people before the danger can be abated under normal program procedures.

5. *Restoration of the Hydrologic Balance* -- The stabilization and maintenance of the relationship between the quality and quantity of water inflow to water outflow from an abandoned mine land site. This relationship should consider water storage within the hydrologic unit as it now exists or may have existed and measures needed to reduce or eliminate pollution to receiving surface and subsurface waters.

6. *Toxic-Forming Materials* -- Earth materials or wastes resulting from mining operations which, if acted upon by air, water, weathering, or microbiological processes are likely to produce chemical or physical conditions in soils or water that are substantially detrimental to the biota or water use.

## **B. PROGRAM CONSIDERATIONS**

### *1. Land, Water or Mineral Rights Required for Reclamation*

a. In addition to the rights of entries required by 30 CFR 877, other consents required by the specific type of reclamation program should be obtained. In water limited areas reclamation programs that propose to restore water quality or quantity should not be undertaken until the appropriate water right consents are obtained. Consent of the owner and/or lessee of mineral rights should also be obtained if the reclamation work disturbs a mineral seam. All necessary consents should be obtained for a time period sufficient to carry reclamation to completion. The administering agency has the responsibility to assure that no reclamation work is carried out without such consents.

b. Written consent from the owner of record and lessee or his authorized agent should be the preferred means for obtaining agreements to enter lands in order to carry out reclamation work. Entry by use of police power is restricted to those reclamation projects that will protect public health and safety as authorized under Section 403(1), 403(2), 409(c) and 410 of the Act and should only be undertaken after due care and deliberation has exhausted all possibilities of obtaining written consents.

c. Acquisition of property to secure the necessary rights to carry out reclamation work may be undertaken only under the specific conditions enumerated in Sections 407 and 409 of the Act and Part 879 of the Abandoned Mine Land Reclamation Program's Final Rules.

### *2. Jurisdictional Responsibilities*

a. The administering agency should consider how existing legislative requirements will impact its program, such as treaties, Federal laws, executive Orders, State laws, Tribal laws, local laws, ordinances, and Regional commission requirements. Timely coordination with the various agencies charged with implementing these requirements is necessary. Among the Federal laws to consider are --

Bald Eagle Protection Act, as amended (16 U.S.C., 661 et seq.);

Clean Air Act, as amended (42 U.S.C. 7401 et seq.);

Clean Water Act of 1977, as amended (33 U.S.C. 1151 et seq.);

Endangered Species Act of 1973, as amended (16 U.S.C. 1531 et seq.);

Federal Coal Mine Health and Safety Act of 1969, as amended (30 U.S.C. 721 et seq.);

The Federal Metal and Nonmetallic Mine Safety Act (30 U.S.C. 721 et seq.);

Fish and Wildlife Coordination Act, as amended (16 U.S.C. 661 et seq.);  
Migratory Bird Treaty Act, as amended (16 U.S.C. 703 et seq.);  
Mineral Leasing Act of 1970, as amended (30 U.S.C. 181 et seq.);  
Mining and Minerals Policy Act of 1970 (16 U.S.C. 21a);  
National Environmental Policy Act of 1969, as amended (42 U.S.C. 4321 et seq.);  
National Historic Preservation Act of 1966, as amended (16 U.S.C. 470 et seq.);  
Refuse Act 1899 (33 U.S.C. 407);  
Safe Drinking Water Act, as amended (42 U.S.C. 7401 et seq.);  
Solid Waste Disposal Act (42 U.S.C. 3251-3259);  
Surface Mining Control and Reclamation Act of 1977 (30 U.S.C. 1201 et seq.); and  
Wild and Scenic Rivers Act, as amended (16 U.S.C. 1274 et seq.).

b. Many of the numerous environmental concerns associated with reclaiming abandoned mine lands will be identified and resolved when a thorough effort is given to the environmental assessment or evaluation that is required for every proposed AML reclamation project except for emergencies under Section 410. The objective of each administering agency should be to do a thorough environmental analysis for each reclamation project.

### 3. *Selection Criteria*

a. Procedures for selecting sites to carry out reclamation activities should incorporate relative weighting factors to rank the proposed sites. These procedures should give higher weights to the priorities of the Act (as outlined in Section 403 of the Act and 30 CFR 874.13) in descending order of their listing. In addition to weights assigned according to priorities, other factors including but not limited to those listed in 30 CFR 874.14 should be considered. Negative weights should be given to adverse impacts resulting from the proposed project.

(1) Preference should be given to reclamation projects that --

- (a) Obtain (landowners) consent to participate in post reclamation maintenance activities of the area.
- (b) Provide multiple benefits to the (landowners), and
- (c) Provide off-site public benefits.

b. The administering agency should consider the following items in determining whether a site should be reclaimed:

(1) The lands proposed for reclamation must be eligible as defined by Sections 404 and 409 of the Act.

(2) The proposed project should utilize available funds in an effective manner. Projects which require continuous maintenance and/or operating costs should be undertaken only if a commitment exists to bear these indefinite costs.

(3) Problems associated with the site can be abated by utilizing proven technology to prevent or minimize future adverse effects.

(4) Site characteristics, including disturbed and surrounding soil material, and subsurface geologic and hydrologic conditions are compatible with the proposed reclamation plan and consistent with the planned post reclamation land use. Site characteristics to be investigated include but are not limited to --

- (a) Percent and length of slope.
- (b) Amount of coarse fragments.
- (c) Soils pH.
- (d) Toxic substance occurrence.
- (e) Depth to water table, and
- (f) Potential for soil slippage.

(5) Reclamation can be carried out in such a manner as to minimize maintenance to achieve a self-sustaining reclamation solution. Self-sustaining implies a degree of reclamation which is stable and self-renewing under the prevailing environment and land-use conditions.

(6) If the project area is to be remined in the foreseeable future, reclamation should only be considered where the offsite adverse impacts from the affected area are so severe as to cause significant damage to public health and safety or to the environment if not abated before remining takes place.

(7) Abatement of subsidence due to abandoned underground mines should only be considered in an emergency or extreme danger situation. Reclamation activities should include all the necessary steps to abate or eliminate the emergency or extreme danger condition. Structures should only be moved as a last resort with the approval of the head of the administering agency.

(8) Abatement or control of abandoned coal mine fires should only be considered where the problems associated with the fire have created or have the potential to create an emergency or extreme danger situation. Reclamation activities should include all necessary steps to abate or eliminate the emergency or extreme danger condition.

(9) Land use conditions should be evaluated as part of the project planning process. This evaluations should consider the following items:

(a) Reclamation activities can be planned in a manner that is compatible with the proposed land use of the reclaimed land as intended by the (landowners). Post-reclamation land use should be compatible with surrounding land uses, comply with local, State, tribal, and Federal requirements, and be acceptable to the community involved' Applicants for reclamation assistance should be consulted to arrive at the land use selected. The planning process should also include documentation of the impacts of the items.

(b) Post-reclamation land use should result in protecting and possibly improving the natural resource base of the area, enhance the quality of the environment, protect people, and improve the quality of life.

(10) Aesthetic values should be evaluated as part of the project planning process. This evaluation should include but not be limited to an analysis of --

(a) The adversity and/or desirability of the visual impact.

(b) The viewing audience, and

(c) The proximity to public facilities and other high use areas.

c. Reclamation Extent -- The amount of reclamation performed on a site depends upon the priority assigned, availability of funding, and available technology for, restoring the site.

(1) Consideration should be given to eliminating all the problems associated with an abandoned mine site as long as the available solutions to the problem are cost-effective. All the lower priority, cost-effective problems should be included in the reclamation plan when contracting for the elimination of the high priority problem. Factors that should be considered in determining the amount of reclamation to be done at a site include but are not limited to --

(a) Area of the affected land and water.

(b) Uniformity of the (problems) over the entire site.

(c) Proposed land use of the area.

(d) Funds available versus cost of reclamation.

(e) Off-site benefits.

(f) On-site benefits.

(g) Landowner participation.

(h) The necessity of coming back on the site later for additional reclamation work.

(i) Multiple land use benefits.

(j) Cost effectiveness of the proposed work, and

(k) The possibility of remining.

(2) The administering agency should determine the minimum reclamation needed to make the site environmentally suitable. The administering agency should confer with the (landowners) and, if possible without incurring additional costs above the required for the minimum reclamation needed, accommodate the (landowners) desires.

d. Cooperative Efforts.

(1) agreements should be initiated, if possible, for all reclamation projects between the administering agency and the (landowners). If an agreement is unattainable or the (landowners) does not want to participate in the reclamation project, then "entry and consent to reclaim" procedures which are established in 30 CFR 877.13 may be followed or it may be desirable to take no reclamation action at all.

(2) a maintenance agreement between the administering agency and the (landowners) may be incorporated as part of the reclamation plan to insure the continued success of the reclamation project. An estimated cost of operation and maintenance activities as well as the financial and administrative responsibilities should be identified in any agreement between the administering agency and the (landowners).

e. Joint Projects -- To meet the goals and objectives of reclamation projects joint undertakings between the administering agency and the (landowners) or other agencies may be desirable. The possibility exists for these type projects to extend the amount of the reclamation work above and beyond minimal reclamation activities needed to satisfy the top priorities of the act.

4. *Emergency Projects*

a. Authority for Emergency Reclamation.

(1) Authorities and requirements for rights of entry to carry out emergency reclamation projects are contained in Section 410 of the act and Part 877.14 of the Abandoned Mine Land Reclamation Program's Final Rules.

b. Emergency Project Considerations.

(1) Emergencies are differentiated from extreme danger (Priority 1) projects by careful interpretation of the phrases "sudden danger" and "high probability of substantial physical harm" in the definition of "emergency" contained in 30 CFR 872.5.

(2) Once it has been determined that an emergency exists on lands eligible for reclamation under the Act, all agencies should act expeditiously to restore, abate, control, prevent or otherwise eliminate the emergency situation by removing the threat to the health, safety, or general welfare of the people involved.

(3) Justification for emergency action must be based on whether immediate action is crucial to eliminate the danger of harm to *persons* and that no other person or agency will expeditiously act to eliminate the emergency situation. The time element referenced by the phrase "before the danger can be abated under normal program operation procedures" means that the danger is so imminent that time is not available for normal project contractual and budget procedures.

(4) Unnecessary of indiscriminate application of emergency procedures will only serve to frustrate normal program operations and place OSM in a reactionary posture.

c. Project Examples -- The following list is used to illustrate examples of *sudden* situations having a high probability of *substantial* physical harm to the health, safety, and general welfare of *people*:

(1) Subsidence suddenly occurring near populated areas.

(2) Deep mine water "blow-outs" near populated or high used public areas.

(3) Slides caused by movement of spoil material or mass movement due to drainage or seepage from abandoned coal mines threatening to destroy homes and businesses or block roads and stream channels.

(4) Potential failure of unstable coal refuse impoundments or abandoned sediment control structures caused by unusual precipitation events significantly imperiling downstream populated areas.

(5) Mine fires that impair the health or safety of residents in populated areas.

d. Abatement Procedures.

(1) Reclamation procedures are project specific and often cannot be determined or implemented until after on-site inspection and evaluation of the --

(a) Nature of the emergency,

(b) Number of people affected,

(c) Resources available, and

(d) Existing time constrains.

(2) Emergency reclamation procedures need not resemble final reclamation products. The objective of emergency reclamation is not to fully reclaim the area but to stabilize the problem and eliminate the danger to public health, safety, and welfare.

(3) The primary objective of emergency reclamation is to fully correct the emergency problem so that a reoccurrence of the problem is unlikely.

e. Coordination.

(1) OSM and the State or Indian reclamation agency should coordinate all efforts on emergency projects so that the assessment of the emergency situation and the determination of eligibility can be accomplished in an expeditious manner.

(2) Agencies that provide emergency services such as the fire department, police, utilities, ambulance, and Red Cross should be contacted to determine what services they have available and can commit in order to abate the emergency situation.

(3) If construction is necessary, local, State, and tribal agencies should be contacted to identify qualified contractors and/or technical experts that can provide immediate assistance to abate the emergency situation.

5. *Remining or Secondary Recovery in Conjunction with Reclamation Activities*

a. In the process of reclaiming land containing recoverable coal, the administering agency should make a determination as to whether the coal recovery activity is exempt from Title V regulations under provisions of Section 528 of the Act. If the determination is made that reclamation activities are not exempt from Title V, the administering agency should see that all permits required under this title are obtained before reclamation activities are carried out.

b. Prior to conducting reclamation activities on land containing coal refuse piles, coal waste impoundments, or abandoned mine workings the following activities should be accomplished by the administering agency:

(1) A written determination should be made as to whether coal within a refuse pile, impoundment, or abandoned working is economical to mine during the reclamation project. The primary purpose of reclamation should be to abate environmental harm.

(2) In making its determination, the administering agency should --

(a) Perform a mineral content analysis of the coal refuse or waste to enable determination of the economic feasibility of remining,

(b) Identify any coal preparation, washing, and loading operations located within reasonable proximity of the site,

(c) Consider the feasibility of reentering the site to mine a seam of coal other than that which has been previously mined,

(d) Identify persons with the capability of performing any re-mining or other coal recovery operation believed to be feasible, and

(e) Make a written statement as to its findings on the potential for resource recovery and how this resource recovery can be incorporated into the reclamation project.

c. Many acceptable techniques for the reclamation of land containing coal refuse piles, coal waste impoundments, or abandoned mine workings are available. If the mineral estate under the area to be reclaimed contains other coal seams that are currently uneconomical to mine, reclamation activities should be carried out so that they do not preclude this coal from being mined in the future. Methods of reclaiming land containing coal refuse or waste and abandoned workings include --

(1) Removing the coal refuse or coal waste to an environmentally acceptable site;

(2) Burying the refuse or waste, layering the refuse material and sealing it with clay or other impervious material to prevent water infiltration and contamination, revegetating the disposal area, and diverting water from the reclaimed area;

(3) Treating the refuse pile in-place by --

(a) Diverting water around the coal refuse and/or waste,

(b) Collecting and conveying drainage from the refuse pile for disposition in an approved water pollution control facility,

(c) Treating the refuse with lime or using other material to prevent acid or other toxic drainage, or

(d) Any combination of the above treatments.

- (4) Opening old underground mine workings to reclaim the area;
- (5) Sealing underground mine entries to preclude polluted water discharges; or
- (6) Other appropriate methods.

d. Where the refuse pile, impoundment, or abandoned mine working contains recoverable coal, the administering agency may recover the coal as set forth below:

- (1) Coal may be temporarily stored on site for later sale and removal by the mineral owner within the time frame of the reclamation project,
- (2) If authorized by the owner of the mineral estate, the contractor performing reclamation may remove and sell the coal, thereby reducing the cost of reclamation,
- (3) After notice to the owner of the mineral rights, the reclamation contractor may be required to remove and sell the coal, placing the receipts in escrow for the mineral owner, with the contractor collecting an appropriate fee for coal removed, or
- (4) Other appropriate combinations of processing, collection and royalty payments.

## 6. *Abandoned Structures*

### a. Abandoned Structures and Equipment Investigation

(1) The administering agency should perform an on-site investigation of the abandoned structures or equipment. The landowner and/or the owner of the structures or equipment should be contacted and offered the opportunity to participate in the investigation.

(2) Every effort should be made to encourage the recovery of any possible salvage value from the abandoned structures and equipment by disposing of it prior to the initiation of any reclamation project.

(3) The investigation should include the following --

- (a) Record the type, quantity, and apparent condition of all abandoned structures or equipment.
- (b) Consider the alternatives of having the structures or equipment remain on or be removed from the site.
- (c) Consider the age, structural soundness, visual quality, historical significance, affect on existing and/or proposed reclamation activities, and land uses in the area.
- (d) If removal of an abandoned structure is unnecessary, the soundness of the structure should be evaluated in relation to public health, safety, general welfare and the post-reclamation use. Evaluation of complex structures should be performed by a qualified expert who should provide written recommendations and cost estimates for any modifications needed to achieve the post-reclamation use.

### b. Abandoned Structures and Equipment Report.

(1) After completion of the one-site investigation, a report should be prepared by the administering agency. The report should include --

- (a) A description of the type, quantity, and condition of all abandoned structures or equipment on the site to be reclaimed;
- (b) A discussion of the considerations relating to the disposal or retention of all abandoned structures or equipment;
- (c) A discussion concerning the recommended methods of disposal of abandoned structures or equipment in accordance with local, State, tribal and Federal laws;
- (d) A discussion concerning how the abandoned structures or equipment left on-site may affect other portions of the area to be reclaimed;
- (e) If a determination is made to retain the structures or equipment, recommended methods should be included to preserve the structure or equipment. Structural abandoned after August 3, 1977, are not eligible for reclamation funding; and
- (f) If a determination can made of the ownership of the abandoned structures or equipment, an analysis should be developed of the impact of the proposed reclamation activities on these owners.

c. Based on the investigation and report, the administering agency is responsible for determining the disposition of the abandoned structures or equipment.

#### 7. *Borrow and Disposal Areas*

a. The borrow and disposal areas created by reclamation activities should be subject to and conducted in accordance with applicable local, State, tribal, or Federal reclamation requirements. Borrow and disposal areas should be located on the site of the reclamation project if possible. Offsite borrow and disposal areas should be utilized only when no on-site area is available and it is necessary to --

- (1) Protect the health and safety of the public,
- (2) Provide an area more suitable for reclamation and less prone to constitute a hazard in itself,
- (3) Produce an improve land use, or
- (4) Protect the environment.

b. Adverse impacts on the selected areas should be minimized by --

- (1) Disturbing the smallest possible area;
- (2) Providing adequate drainage, dust, and erosion control measures;
- (3) Protecting visual esthetics;
- (4) Protecting fish and wildlife values;
- (5) Protecting the health and the safety of the community and the public; and
- (6) Reclaiming the borrow and disposal area after termination of the project.

#### 8. *Experimental or Demonstration Practices*

a. Experimental or demonstration practices, as authorized by Sections 403(4) and 405(f)(5) of the Act, should be considered only after review of other research efforts and "State of the Art" information reveals that the proposed experimental or demonstration practices have not been successfully demonstrated or proven in past reclamation efforts or previous research.

b. Coordination of experimental and demonstration practices with other State, tribal or Federal agencies interested in the practices is the responsibility of the administering agency.

c. The selection of an experimental or demonstration practice should be based on the following factors:

(1) The practice will be more cost-effective, or more effective in the overall abatement of the specific AML (problems), than present practices.

(2) The result will meet environmental, health, and mine safety standards and other applicable State, tribal, and Federal laws.

(3) The practice has not been applied to the particular problem under similar conditions.

(4) The practice has a good probability of succeeding with minimum or no adverse effects to public health and safety or the environment.

(5) Anticipated construction time and monitoring period are of such reasonable length that the results will be useful during the life of the AML program.

(6) Proposed experimental or demonstration practices should have broad application so as to benefit reclamation techniques within the State and be of interest to other areas, States, Indian tribes or regions. Funding priority should be based on the benefits which could be derived, extent of applicability, and consistency with State and Indian Reclamation Programs, where applicable.

(7) The results of the practice will be consistent with existing and/or planned surrounding land uses.

(8) Thorough records of all experimental or demonstration type projects can be kept and results or consensus will be published and made available to interested parties.

(9) Emphasis should be given to those experimental and demonstration practices which address high priority problems as specified in Section 403(1) and 403(2) of the Act.

## *9. Program and Project Evaluation*

a. General Evaluation Considerations -- Title IV reclamation activities are to be evaluated on a continuing basis to determine the effectiveness of the program/project in reclaiming abandoned lands. Project evaluation measures the success or failure of the applied reclamation while program evaluation determines the effectiveness of the program, purposes, regulations, and procedures in achieving the objectives of the Act. Evaluation efforts include, but are not limited to, recording progress (accomplishments) and making onsite reviews before, during, and after reclamation.

b. Recording Requirements -- The administering agency should be responsible for measuring, recording, and reporting the physical benefits of reclamation projects. Benefits recorded should include but are not limited to --

- (1) Number of acres restored;
- (2) Number of health or safety hazards eliminated;
- (3) Population protected from subsidence, air pollution, mine fires, water pollution, or other hazards;
- (4) Miles of stream improved or protected;
- (5) Acres of fish or wildlife habitat restored; and
- (6) Aesthetic value improved (acres).

### c. Completed Reclamation Review

(1) At least 5 percent but not less than 1 completed reclamation site under each program (Office of Surface Mining, State, Indian, and Rural Abandoned Mine Program) should be reviewed annually by the administering agency. This review should be carried out by persons who were not directly involved in the planning or installation of the site. The purpose of the review is to evaluate the effectiveness of the completed reclamation including the cost-effectiveness by type of reclamation. Questions to be addressed in the review should include:

- (a) Were existing program policies and procedures followed?
- (b) Were the objectives of the reclamation accomplished?
- (c) Were the planned benefits actually obtained? If not, why?

(d) Does the completed reclamation meet contract or program specifications? Do the practices serve the intended purpose? and

- (e) Are the completed reclamation activities adequately maintained?

(2) Each administering agency should utilize appropriate analytical procedures to estimate program efficiency and effectiveness.

(d) Monitoring -- All reclamation activities should be monitored over time to document benefits or results. Sufficient monitoring of reclamation activities is required to insure that the success of the reclamation measures can be evaluated or compared to the planned benefits.

## *10. Maintenance of Reclamation Work*

a. Reclamation should be done in a manner to minimize all maintenance.

b. Where continuing responsibility is unavoidable, maintenance requirements for a site should be identified and established during the planning and design stages. These requirements must be technically and economically feasible and should be developed in cooperation with the (landowners) and/or appropriate agencies through formal agreement. Maintenance plans should include but are not limited to --

- (1) Periodic maintenance requirements of the site;
- (2) Establishment of a periodic inspection schedule by qualified personnel;
- (3) Technical assistance to the landowner, as needed; and
- (4) Funding for periodic maintenance (remedial work or applications for long-term vegetation solutions).

## *11. Noncoal Projects*

a. Noncoal reclamation projects should be treated under these guidelines except for those applicable to Sections 403(4), (5), and (6) of the Act.

b. Planning for reclamation of noncoal projects can commence prior to completion of reclamation of all coal projects.

c. Priorities given to noncoal projects shall be determined in the same manner as coal projects; however, reclamation may not proceed until coal problems have been resolved, except by special request of the Governor or Tribal Chairman, pursuant to section 409(c) of the Act.

#### 12. *Impact Assistance*

a. Impact assistance should be for the purpose of alleviating the effects on communities impacted by coal development. Planning impact assistance can begin prior to physical completion of all coal and noncoal projects.

b. Funding assistance priorities for communities impacted by coal development should be determined according to the following sequence:

(1) *Priority A* -- Areas suffering or expected to suffer housing shortages and inadequate public facilities and services and a result of coal mine development where such conditions are expected to pose a threat the public health, safety and general welfare.

(2) *Priority B* -- Repair, replace or enhance public facilities in communities where facilities have been adversely affected or are inadequate as a result of coal mine development.

c. Planning for impact assistance and coordination with other agencies should be implemented in accordance with local, State, tribal, and Federal requirements.

### **C. SITE CONSIDERATIONS**

#### 1. *Mine Drainage*

a. The administering agency should consider the following factors in minimizing or controlling mine drainage and toxic materials:

(1) General considerations.

(a) Impounded waters containing toxic materials should be treated to minimize the environmental degradation that may result from the release of this impounded water during reclamation activities.

(b) Proven technology should be used to minimize or control mine drainage. At-source control measures are preferred over long-term treatment methods because it is a permanent solution that does not require continual maintenance costs.

(2) At-Source Control Measures.

(a) Mine sealing including grout curtains and slurry trenching. Factors to be considered are --

1 Mine sealing should not be considered where the potential exists to develop high hydrostatic heads.

2 Accessibility of the area including any mine openings; and

3 Integrity of the surrounding geologic formations.

(b) Infiltration control and water diversion. Factors to be considered are --

1 Topography,

2 Control of surface water,

3 Effects on ground water, and

4 Control of water passage through openings.

(c) Daylighting -- Factors to be considered are:

1 Depth of overburden; and

2 Marketability of mineral seam.

(3) Treatment Measures.

(a) Secondary treatment of mine drainage can be carried out by the addition of neutralizing agents. Permanent treatment facilities should be designed to minimize operation and maintenance costs and should only be considered if there is no other means to abate the mine drainage problems.

(b) If the administering agency determines that there is not other means to abate the mine drainage problems and they elect to construct or continue to maintain existing facilities they should obtain written assurance that the treatment facilities will be maintained after appropriations for the abandoned mine land program ceases.

(c) Since tertiary treatment to control mine drainage problems and toxic materials is expensive, the only method that should be given serious consideration is neutralization.

## 2. *Active Slides and Slide-Prone Areas*

a. The administering agency has the responsibility to assure that the most feasible and current technology is used to reclaim (stabilize) slides or slide prone areas. The selection process for reclamation work on slides or slide prone areas will follow the criteria contained in the Program Consideration guideline No. 3 (Selection Criteria).

b. Factors that should be considered in the evaluation of slides or slide-prone areas include but are not limited to --

(1) Topography.

(a) Contour map.

1 Land form.

2 Anomalous patterns (jumbled, scarps, bulges).

(b) Surface drainage.

1 Ponding of surface water (may be infiltrating into active slides, spoil material or other slide-prone areas).

2 Surface drainage into active slides.

(c) Profiles of slope (sketches).

1 Correlate with geology (Item (2) below).

2 Correlate with contour map (Item (1)(a) above).

(d) Note rate of topographic changes by time.

(2) Geology.

(a) Formations at site.

1 Sequence of formations.

2 Spoil.

a Texture.

b Soil rock ratios.

c Permeability.

d Engineering properties of spoil or rocks.

3 Soil characteristics.

b Structure.

1 Stratification.

2 Strike and dip of bedding or foliation.

a Changes in strike and dip.

b Relation to slope and slide.

3 Strike and dip of joints with relation to slope.

4 Faults.

(c) Weathering.

1 Depth.

2 Character (chemical, mechanical).

(3) Ground Water.

(a) Piezometric levels within slide.

1 Relation to surrounding slide.

2 Water pressure.

(b) Ground surface indications of subsurface water.

1 Springs.

2 Seeps and dump areas.

3 Adits.

4 Auger holes.

5 Drill holes.

(4) Slide monitoring for design information.

(5) Other factors.

(a) Timber coverage of/and removal from the original slope.

(b) Area, volume, and thickness of spoil materials.

(c) Parent material of spoil.

(d) Fragmentation (size and shape) of spoil materials.

(e) Proximity to other slides.

(6) Vegetative cover.

(a) Percent of vegetative cover.

(b) Nature of root system.

(7) Human disturbances not related to mining.

(a) Undercutting of toe.

(b) Undercutting of the dip slope.

(c) Upslope disturbances.

(d) Existing structures and utility lines.

(8) U.S. Geological Survey slide-prone maps, U.S. Department of Agriculture soil maps, and other related data.

c. Reclamation and stabilization may be obtained by use of mechanical strengthening, changing shape and/or angle of slope, and dewatering or removing the slide material. Consideration on a site specific basis should be given but not limited to the following measures:

(1) Mechanical strengthening.

(a) Pilings (driven vertically).

(b) Restraining structures.

(c) Buttresses.

(d) Berms.

(e) Gabions.

(f) Other retaining walls.

(g) Vibration stabilization.

(h) Compaction.

(2) Changing shape of slope by reshaping.

- (a) Terracing.
- (b) Slope reduction.
- (c) Removing all or part of slide material.
- (3) Dewatering.
  - (a) Diversion of surface waters.
  - (b) Internal drainage.
    - 1 Horizontal drains.
      - a perforated pipes.
      - b Driven adits.
    - 2 French type drainage systems.
    - 3 Diverting water from underground works -- daylighting.
    - 4 Drilled wells.
    - 5 Electrokinetic stabilization.
  - (c) Revegetation (evapotranspiration).

### 3. *Erosion and Sedimentation*

a. The administering agency should consider the following objectives relative to controlling erosion and sediment in their reclamation planning efforts:

(1) Erosion and sediment control measures should be designed to --

- (a) Reduce erosion rates to allowable levels;
- (b) Reduce water pollution from sediment, acid drainage, and other toxic materials to acceptable levels;
- (c) Stabilize mined lands and spoil piles;
- (d) Protect water resources; and
- (e) Provide conditions suitable for the planned land use.

(2) Reclamation should include adequate treatment and management to maintain the soil resource within soil loss limits. Additional treatment may be necessary to improve the quality of the environment so as to minimize environmental degradation.

(3) Allowable sheet and rill erosion rates should be related to the properties of the reconstructed soil resulting from reclamation. Information relative to allowable soil loss limits may be obtained from local USDA, Soil Conservation Service Offices.

(4) Land disturbing activities should be planned well in advance to --

- (a) Expose the least amount of land at one time.
- (b) Expose the more hazardous areas for the shortest time and during the season when extreme rainfall is least likely to occur,
- (c) Complete activities so revegetation can take place at the most advantageous time of year,
- (d) Control foot and vehicular traffic until vegetation is established, and
- (e) Schedule permanent practice installation to provide for minimum maintenance in accordance with the needs of the specific site.

b. Erosion Control Practices.

(1) Vegetation.

(a) Temporary vegetation should be used to provide protection during a delay in construction activities, to protect stockpiles of soil materials for a short time, or to provide temporary cover until conditions are right to establish permanent

vegetation. Temporary vegetation may be used alone or in combination with a mulch in accordance with the needs of the site.

(b) Permanent vegetation should be established as soon as final grading is complete. Locally adapted species and procedures should be used. The species should be appropriate for soil conditions, climate, treatment, nutrient maintenance, and planned land use. Soil amendments should be included and provisions made for additional nutrient placement to insure a successful ground cover. Mulches should be used where necessary to obtain adequate cover for stabilization and provide protection during establishment.

(2) Mulches may also be used for temporary erosion control, and in some cases, mulches such as gravel, stone, and concrete blocks may be used for permanent protection. Mulching materials may include, but are not limited to, straw, hay, wood chips, bark, shells, hulls, stone, jute mesh, synthetic fabrics and materials, plastic netting, and asphalt materials.

(3) In many cases, a combination of vegetation and structural measures are needed for adequate erosion control. Structural measures are used to divert foreign runoff, reduce slope length, and to provide for an effective runoff disposal system. Some of the more common practices used include, but are not limited to, diversions, terraces, grassed and lined waterways, underground outlets, subsurface drains and grade stabilization structures.

(4) If temporary structural measures are needed for erosion protection during establishment of permanent practices, especially vegetation, temporary terraces and outlets may be used. Provisions should be made to remove the temporary measures and stabilize the area when they are no longer needed.

c. Sediment Trapping Practices.

(1) If it is impractical to achieve the desired reduction in sediment yield by erosion control practices, either during the establishment period or permanently, sediment control practices should be used to achieve the desired results.

(2) Sediment control measures include, but are not limited to, measures such as filter strips, sediment traps and sediment basins. These measures should be stabilized and maintained during their planned life.

(3) Permanent sediment basins should be maintained and the sediment removed promptly when it accumulates to the design level. Sediment removed should be disposed of in a manner that prevents environmental degradation. The use of permanent sediment basins should be minimized because of the continuing maintenance responsibility.

#### 4. Vegetation

a. The administering agency should complete an inventory and evaluation of existing vegetation and site conditions prior to developing the Reclamation Plan. Land use determinations should be made after consideration of various alternatives. Wherever possible, multiple uses should be adopted and become a part of the plan. The permanent vegetation selected to cover the reclaimed mine land should --

(1) Be compatible with the site characteristics and the intended land use of the reclaimed land and surrounding land use, and

(2) Provide adequate soil cover to control erosion along with other supporting practices.

b. Developing the Vegetation Portion of the Reclamation Plan.

(1) In areas where only a change in vegetation is needed, the topography and soil should be suitable for establishment of vegetation. A change in plant species may be required due to inadequate or undesirable vegetation.

(a) The planned vegetation should be compatible with the chosen land use.

1 Vegetative protection should be established as expeditiously as practical. Temporary vegetation should be used on highly erosive areas until permanent vegetation can be planted. Temporary vegetation should consist of an easily established fast-growing grass-type annual.

2 The permanent species selected should be adapted to the site and be compatible with the planned land use.

3 The establishment and maintenance of vegetation should be in accordance with locally accepted and adopted technology.

(b) Erosion and sediment control structures should be installed as necessary to protect the area from excessive erosion and sedimentation during the vegetation establishment period.

(c) Vegetation management practices should be applied to insure a permanent stand of vegetation to meet the objectives of the planned land use and control erosion.

(d) During the establishment period, the newly planted area should be protected from excessive use, especially livestock grazing.

(2) In areas where changes in topography and vegetation are needed --

(a) Changes in topography should be made to improve aesthetic aspects of the site, permit establishment of desirable vegetative cover, and make the topography compatible with the planned land use;

(b) Existing vegetation should be selectively destroyed when necessary; and

(c) Permanent vegetation should be established in accordance with 4.b.(1) above.

(3) In areas where the present spoil material is unsuited for vegetation because of unfavorable soil conditions --

(a) Spoil material should be covered or replaced with material that will support the desired vegetation,

(b) Permanent vegetation should be established in accordance with 4.b.(1) above.

(c) Where altering the site to support vegetation is impractical --

1 Confine runoff and sediment to the immediate area, or

2 Intercept and treat the sediment and runoff to an acceptable level of quality before discharging off-site.

##### 5. Toxic Materials

a. The administering agency should consider the following items in the identification, handling, and disposal of toxic materials:

(1) Spoil materials.

(a) Sampling and analysis.

1 Sampling -- Where data are insufficient or nonexistent for spoil, characterization of toxic materials by the use of vertical core samples or other suitable deep-sampling procedures should be undertaken.

2 Analysis -- The following chemical and physical analyses should be considered. These analyses should use acceptable analytical procedures:

a pH (paste).

b SMP Buffer (test pH of solution prior to weathering).

c Net acidity or alkalinity, or potential acidity.

d Total sulfur (sulfate and sulfite).

e Electrical conductivity (mmhos/cm).

f N,K,P and USDA texture class when material is to be used as postmining plant growth media.

g Other analyses -- When extreme pH values are encountered, i.e., pH 5.5 or less and 8.5 or greater, other analyses may be required (e.g., Na, Mg, Ca, various trace elements)

pH 5.5 or less -- Possible Parameters:

Available and Total

Fe

Mn

Al

Cr

Cu

Pb

Zn

Ni

Co

pH 8.5 or greater -- Possible Parameters:

SAR Value

B

Se

Mo

*h* Visual and/or microscopic identification of potential toxic forming minerals.

3 Development of critical toxic element limits.

*a* The administering agency should consult with agencies that have responsibility for establishing toxic levels and consider these limits in their reclamation planning efforts.

(b) The administering agency should consider the following items in their planning efforts relative to projects containing toxic materials:

*1* Site preparation.

*a* Containment -- segregation of toxic materials.

*b* Grading and backfilling.

*c* Scarification.

*d* Utilizing appropriate growing medium -- actual topsoil vs. suitable overburden material.

*e* Selecting soil amendments -- Including, but not limited to, chemical fertilizers, lime, gypsum, mulches, and sludge.

2 Runoff water management.

*a* Sediment control.

*b* Soluble toxic element control.

*c* Water management control.

3 Vegetation (per Site Consideration guideline No. 4).

4 Designate needed monitoring and maintenance.

(2) Refuse piles.

(a) Sampling (Same as parameters used for spoil, (1)(a) *1* above).

2 Analysis (Same as parameters used for spoil-(1)(a) *2* above).

3 Criteria of critical toxic element limits (Same as parameters used for spoil, (1)(a) *3* above).

(b) The administering agency should consider the following items in their planning efforts relative to projects containing refuse piles:

*1* Grading and reshaping.

2 Refuse isolation.

*a* Seal with compacted clay and other suitable material.

*b* Cover with suitable growing medium.

*c* Placement of refuse in sealed pits or embankments.

3 Refuse removal from stream channels.

4 Runoff water management.

5 Treatment of growing medium with soil amendments.

6 Designate needed monitoring and maintenance.

## 6. Hydrologic Balance

*a.* The administering agency, responsible for the program or project, should consider the following factors related to the restoration of the hydrologic balance:

(1) Planning considerations.

(a) Type of restoration needed for the hydrologic balance should be evaluated considering technical and economical constraints.

(b) Areas needing restoration should be identified.

(c) The relationship of anticipated restoration activities to the off-site hydrologic system should be investigated.

(d) All applicable local, State, tribal, or Federal requirements should be incorporated into the reclamation plan.

(e) Post-reclamation land-use of the site and land-use of the surrounding area should be considered in the planning process.

(2) Surface water considerations.

(a) Restoration and protection of surface drainage --

*1 Should insure erosional and ecological stability considering but not limited to stream gradient, fish and wildlife habitat, longitudinal profile, and type of reconstruction materials.*

*2 Should insure compatibility with geomorphic and ecologic characteristics of adjoining undisturbed surface drainage.*

*3 Should be utilized, as appropriate, as a source of ground water recharge.*

*4 Should insure that downstream flooding is minimized.*

(b) The reconstructed flood plain should be stable considering all relevant factors including the geomorphic and vegetative characteristics of the area.

(c) Overland flow drainage systems should be reclaimed so as to be compatible with both the longitudinal profile of the drainage area and the receiving stream characteristics.

(d) Where the above cannot be achieved, consideration should be given to long-term, self-maintaining erosion control measures which will enhance stream and flood plain stability.

(3) Groundwater considerations.

(a) The relationship of the reestablished water table to the reclaimed land surface should be evaluated.

(b) The desirability for recharging groundwater should be evaluated considering the underlying aquifers, backfill materials and the presence of acid and toxic materials.

(c) Unsuitable material should be identified and isolated between impervious layers of earth so as not to contaminate the re-established water table.

(d) Restoration of groundwater included as part of the reclamation plan should not diminish or degrade water leaving the site that may affect downstream water users.

(e) Water impoundments should be designed and constructed in accordance with applicable local, State, tribal, or Federal requirements and should not adversely affect the restoration of the hydrologic balance.

## 7. Public Health and Safety

### a. Insect/Vermin Vectors.

(1) Garbage, debris, or other wastes disposed of in abandoned mine sites ("dumps") in close proximity to residences pose a health hazard from flies, rats, and other disease vectors. Prior to reclamation of these "dumps", consideration should be given to the following factors.

(a) Unsanitary "dumps" on abandoned mine sites should be evaluated as secondary effects of past mining practices.

(b) The presence of a dump on an abandoned mine site should not be considered as the primary public health or safety criteria for which reclamation is proposed.

(c) Those sites with dumps may receive earlier funding than other projects in the same priority classification.

(2) Prior to any reclamation work on "dumps" located on abandoned mine sites, the local, State and/or Tribal agency should be contacted for proper disposal techniques and encouraged to abate the problem under other existing authorities.

b. Highwall Danger.

(1) Highwall characteristics that create a significant danger to public health or safety might include --

- (a) Sloughing or slipping to cause significant harm to residences or business or blocking roads as stream channels, or
- (b) Locations where public use of the area above the highwall poses physical danger.

(2) Appropriate reclamation techniques to control public health and safety problems associated with highwalls that should be considered include --

- (a) Reducing the highwall,
- (b) Backfilling and regrading the highwall to a safe and stable slope, or
- (c) Providing an appropriate physical barrier to limit accessibility.

c. Mine Openings and Subsidence.

(1) The administering agency should consider the following items when planning for subsidence control projects:

(a) Exploratory drilling to determine the extent of potential subsidence should be accomplished prior to all subsidence work (except in emergencies).

(b) Preference should be given to conducting subsidence control in populated areas or rural areas with high public use.

(c) Identification of potential subsidence areas should be made available to all local, State, and tribal land use planning agencies.

(2) Restricting entry to mine openings should be accomplished by physical barriers. For emergencies, fencing may be appropriate to immediately alleviate the danger to public health and safety.

(3) Only proven technology for subsidence and mine opening control should be employed.

d. Radiation Emission -- Where radiation might be a potential public health or safety problem, the primary consideration should be to assure proper coordination with other agencies concerned with radioactive waste management prior to reclamation activity. At a minimum the following agencies should be consulted; U.S. Environmental Protection Agency, Nuclear Regulatory Commission, National Council on Radiation Protection, State Nuclear Regulatory Agency (if any), State Health Department, and Tribal Environmental Office (if any).

e. Domestic Water Supplies.

(1) Specific reclamation control measures designed to protect or restore domestic water supplies are site specific in nature. Control strategies are dependent on variety of variables including but not limited to --

- (a) The number of people affected,
- (b) The type of (pollutants),
- (c) The concentration of (pollutants),
- (d) The technology available to control the pollution, and
- (e) The cost to control the pollution.

(2) If at all possible, expenditure of Title IV funds to clean-up or restore domestic water supplies should be restricted to at-source control methodologies.

f. Surface and Underground Mine Fires.

(1) Only fires associated with abandoned mines can be controlled or extinguished with funds within the context of Title IV of the Act. Virgin coal outcrop fires cannot be addressed.

(2) Prior to initiating extinguishment efforts, geologic investigations should be carried out to determine the amount of remaining combustible material and to delineate the extent of the existing fire.

g. Hazardous Gases and Particulates.

(1) The introduction of toxic gases such as CO, CO<sub>2</sub>, CH<sub>4</sub>, SO<sub>2</sub>, H<sub>2</sub>S, NH<sub>3</sub>, HC and particulates can adversely affect health, visibility, and inhibit plant growth.

(2) Specific control procedures will vary with the site. Treatment measures should take into consideration local physiographic and atmospheric conditions.

(3) The expertise and data that can be provided by local, State, and tribal air pollution control agencies should be considered.

(4) Only proven technology for controlling hazardous gases and particulates resulting from past mining practices should be employed.

#### 8. *Aesthetic and Visual Values*

a. The administering agency should conduct an aesthetic evaluation which should include but not be limited to --

(1) The adversity and/or desirability of the visual impact; and components of this evaluation include --

- (a) Viewing distance,
- (b) Disparity of land forms,
- (c) Disparity of textures, and
- (d) Color contrasts -- seasonal variations.

(2) The viewing audience; this includes --

- (a) Number of observers, and
- (b) Nature of viewing audience and their expectations.

(3) Proximity to public facilities and other high use areas; this includes --

- (a) Transportation facilities,
- (b) Parks and recreation areas,
- (c) Public forests,
- (d) Urban areas, and
- (e) Tourist attractions.

b. Reclamation activities should include landscaping techniques to visually improve the project area and should address the following visual degraders:

- (1) Highwalls,
- (2) Bare, eroding soils/spoil,
- (3) Discolored water,
- (4) Haul roads,
- (5) Off-site sedimentation,
- (6) Deep mine openings,
- (7) Refuse piles,
- (8) Abandoned structures,
- (9) Slurry ponds and sediment basins,
- (10) Stockpile areas,
- (11) Abandoned mining equipment and debris,
- (12) Garbage and refuse dumps,
- (13) Open pits, and
- (14) Deforestation.

c. Most solutions for aesthetic problems should involve movement of material and the planting of vegetation. The strategic placement of screening materials and vegetation and the determination of which plant species have the necessary

combinations of form, texture, color, size, and adaptability to the growing conditions will be a key step in the reclamation planning. Guidelines and standards to evaluate visual resources have been developed by agencies, including the U.S. Forest Service, U.S. Soil Conservation Service, U.S. Bureau of Land Management, National Park Service and the Heritage Conservation and Recreation Service, and may be adapted for use in evaluating and planning visual solutions on abandoned mine land projects. Some solutions for aesthetic problems may include --

- (1) Revegetation with screening trees and shrubs, herbaceous plants, and combinations thereof;
- (2) Off-site screening;
- (3) Reduction and/or reshaping of outcrops;
- (4) Stream restoration;
- (5) Disposal of abandoned mining and processing equipment and debris; and
- (6) Reshaping and revegetation of bare eroded areas.

#### *9. Fish and Wildlife Values*

a. The administering agency should review information provided by the conservation and land management agencies having responsibilities for fish and wildlife or their habitats to determine the pre-reclamation fish and wildlife values of each abandoned mine land project. The administering agency should then determine the fish and wildlife values for each project.

b. The administering agency should incorporate fish and wildlife values into project reclamation plans, where appropriate.

c. The selected reclamation plan should be discussed with the landowners/or users before reclamation begins.

d. The administering agency should insure that all fish and wildlife measures contained in the selected plan are implemented and encourage the (landowners) to maintain them at or above the planned fish and wildlife values.

#### *10. Air Quality*

a. All reclamation activities should be conducted in accordance with applicable local, State, tribal, or Federal air quality standards.

b. Local, State, tribal, or Federal air quality officials should be contacted prior to reclamation planning activities for requirements concerning air quality permit procedures, applicable standards, and possible control measures.

c. Long-term air quality improvements which will result from reclamation should have priority over possible short-term air quality degradation caused by reclamation construction.