	U.S. DEPARTMENT OF THE INTERIOR OFFICE OF SURFACE MINING RECLAMATION AND ENFORCEMENT DIRECTIVES SYSTEM	Subject Number: TSR - 10 Transmittal Number: 874 Date: 07

Subject: Use of Wetland Treatment Systems for Coal Mine Drainage

Approval: Kathy Karpan | **Title:** Director

1. PURPOSE. This directive establishes guidelines for the use of wetlands to treat acid or ferruginous discharges from surface coal mining and reclamation operations.

2. SUMMARY OF CHANGES. This directive has been revised and shortened in keeping with the directive reduction objectives of the National Performance Review and to correct minor inaccuracies and inconsistencies in the original version. There are no substantive changes.

3. DEFINITIONS.

Wetland treatment system. A passive biological effluent treatment system consisting of a shallow depression or impoundment or series of such depressions or impoundments designed and constructed to support hydrophytic vegetation for the purpose of removing dissolved metals and otherwise improving discharge quality.

Ferruginous discharge. An iron containing discharge.

4. POLICY/PROCEDURES.

a. Background.

Wetland treatment systems have sometimes proven useful in the treatment of acid or ferruginous discharges from mining operations, but their effectiveness is highly dependent on ambient temperature, circulation patterns, water depth, discharge characteristics, and maintenance of controlled inflow volumes and velocities. Although maintenance requirements are far less frequent and intensive than most chemical or other conventional treatment systems, wetland treatment systems are not maintenance-free. They have a finite capacity and may require periodic rehabilitation for effective operation.

Sections 515(b)(10) and 516(b)(9) of the Surface Mining Control and Reclamation Act of 1977 (SMCRA or the Act) and 30 CFR 816.41 and 817.41 require that surface coal mining and reclamation operations be conducted to minimize disturbances to the prevailing hydrologic balance and to the quality and quantity of water in surface and ground water systems both during and after mining and during reclamation. In addition, section 510(b) of the Act and 30 CFR 773.15(c)(2) and (5) prohibit the regulatory authority from approving a permit application unless the applicant has demonstrated that reclamation can be

accomplished and that the proposed operation has been designed to prevent material damage to the hydrologic balance outside the permit area.

The regulations at 30 CFR 816/817.41(a) specify that "mining and reclamation practices that minimize water pollution and changes in flow shall be used in preference to water treatment." Consistent with this approach, 30 CFR 816/817.41(b), (d), and (f) emphasize that groundwater and surface water quality must be protected by handling earth materials and runoff in a manner that minimizes the formation of acidic or toxic drainage. However, when treatment is unavoidable, 30 CFR 816/817.42 specifies that discharges must be made in compliance with applicable State and Federal water quality laws, regulations, and effluent limitations. Because of the operational limitations set forth in the first paragraph of this section, wetland treatment systems cannot reliably meet these requirements under all conditions.

b. Policy.

(1) Wetland treatment systems may not be approved in lieu of proper handling of overburden and isolation of acid or toxic-forming materials.

(2) Since neither SMCRA nor the Federal regulations place limitations on the methodology used to treat acid or ferruginous discharges, OSM will neither promote nor discourage the use of constructed wetlands for treatment of mine drainage.

(3) To ensure that mine discharges meet all applicable laws and regulations, any wetland treatment system used to treat acid or ferruginous discharges during excavation, coal removal, or backfilling must be supported by an operable chemical or other conventional treatment system that is capable of consistent operation under variable conditions and which can respond or be adjusted to respond rapidly to changes in discharge volume or quality. The permit must include a monitoring plan that will enable the prompt activation of chemical or other treatment in the event that the wetland system does not adequately treat the discharge.

(4) Wetland treatment systems installed to treat discharges from backfilled and regraded areas need not be supported by operable conventional treatment systems, provided the permittee demonstrates that sudden changes in discharge volume or quality are unlikely. However, the permit must include a design for such a system, and the permittee must construct the wetland system in a manner that preserves his or her ability to immediately install down-gradient effluent detention and conventional treatment facilities should the wetland system fail to achieve its purpose.

(5) In accordance with 30 CFR 816.97(f) and 817.97(f) and OSM's wetlands protection policy (45 FR 49872-49874, July 25, 1980), treatment systems must avoid the use or degradation of natural wetlands unless the applicant gains the approval of the appropriate agencies in accordance with all State and Federal requirements concerning wetlands protection. If the permittee gains approval for the use of natural wetlands, any required conventional treatment systems must be located down-gradient from the outlet of wetland treatment systems to facilitate treatment and minimize chemical disruption of the wetland.

(6) Unless wetland retention is compatible with the approved postmining land use, the reclamation plan must include a plan for wetland removal and reclamation consistent with the approved postmining land use and the requirements governing the disposal of acid and toxic-forming materials.

c. Bond Release Considerations.

(1) General Principle. Section 519(c)(3) of SMCRA and 30 CFR 800.40(c)(3) provide that no bond may be fully released until all reclamation requirements of the Act and the permit are fully met. For the reasons set forth in Part 4.a.of this directive, this requirement precludes the approval of applications for final bond release that rely on the use of wetland treatment systems for permanent control of acid mine drainage.

(2) Exception. When the influent to a wetland treatment system would not cause a violation of State or Federal water quality laws or regulations if discharged directly, final bond release may be appropriate if the wetland treatment structure is approved as a permanent impoundment and is compatible with the postmining land use.

d. Effect on Approved State Regulatory Programs.

Unless a State program contains approved statutes, regulations, or policies specifically addressing wetland treatment systems, OSM will adhere to this directive's interpretations of SMCRA and its implementing Federal regulations when conducting oversight of a State's implementation of the corresponding provisions of its approved regulatory program. Any interpretation of a State program to allow final bond release under conditions contrary to Part 4.c.of this directive would render that program less stringent than SMCRA and less effective than the Federal regulations.

5. REPORTING REQUIREMENTS. None.

6. REFERENCES.

a. OSM Statement of Policy, "Floodplain Management and Wetlands Protection" (45 FR 49872-74, July 25, 1980).

b. Executive Order 11990, "Protection of Wetlands," May 24, 1977.

7. EFFECT ON OTHER DOCUMENTS. Supersedes Directive TSR-10, "Use of Wetland Treatment Systems for Coal Mine Drainage," dated September 8, 1988.

8. EFFECTIVE DATE. Upon issuance.

9. CONTACT. Chief, Technology Development Staff, (202) 208-2866.

10. KEYWORDS. Acid mine drainage, bond release, oversight, permit applications, discharge, State regulatory programs, treatment systems, wetlands.