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Constructed Wetlands Part II: Acid Mine Drainage

This file, "Constructed Wetlands Bibliography, Part II: Acid Mine Drainage" is one section of a seven-part constructed wetlands bibliography on using constructed wetlands for wastewater treatment. The bibliography was compiled by United States Department of Agriculture staff from the Ecological Sciences Division of the Natural Resources Conservation Service, formerly the Soil Conservation Service, and the Water Quality Information Center at the National Agricultural Library. The complete bibliography can be accessed as either a single large (450K) file containing more than 600 citations or in parts organized by topic.

To locate a publication cited in this bibliography, please contact your local, state, or university library. If you are unable to locate a particular publication, your library can contact the National Agricultural Library (see instructions given at the end of this file).

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http://www.nal.usda.gov/Constructed_wetlands_all/index.html

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Constructed Wetlands Part II, Acid Mine Drainage (AMD)

AMD
CATEGORY AMD
SUBCATEGOR

TITLE Achieving compliance with staged, aerobic, constructed wetlands.
AUTHOR Brodie, G.A.
SOURCE Proc. 1991 Annual Mtg. of the ASSMR, Durango, CO.
PUBLISHER
PAGES pp. 151-174
DATE 1991
CALLNUM
ANNOTATION

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CATEGORY AMD
SUBCATEGOR

TITLE Acid mine water treatment in wetlands: an overview of an emergent technology.
AUTHOR Kleinmann, R.L.P. and M.A. Girts.
SOURCE Aqutic Plants for Water Treatment and Resource Recovery.
PUBLISHER Orlando, FL: Magnolia Publishing
PAGES pp. 255-261
DATE 1987
CALLNUM
ANNOTATION The U.S. Bureau of Mines is conducting an inventory of wetlands that treat acid mine water. Preliminary results indicate that the wetlands dominated by emergent species are out-performing the Sphagnum-dominated wetlands and that much of the water treatment is accomplished by other aspects of the wetland, including bacteria, algae, amendments and other plants. Iron and manganese concentrations are reduced after flow through the constructed wetlands.

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CATEGORY AMD
SUBCATEGOR

TITLE An evaluation of mine drainage and surface mine reclamation.
AUTHOR Brodie, G.A., et al.
SOURCE Mine Drainage and Surface Mine Reclamation.
PUBLISHER Washington, DC: U.S. GPO
PAGES
DATE 1988
CALLNUM 156. 61 C49
ANNOTATION

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CATEGORY AMD
SUBCATEGOR

TITLE Bilateral wastewater land treatment research.
AUTHOR Leach, L.E., et al.
SOURCE Water Environment and Technology, Vol. 2, No. 12.
PUBLISHER
PAGES
DATE
CALLNUM TD419 W37
ANNOTATION

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CATEGORY AMD
SUBCATEGOR

TITLE Biochemical treatment of mine drainage through a reedgrass wetland.
AUTHOR Nawrot, J.R. and W.B. Klimstra.
SOURCE Proceedings of the Mining and Reclamation Conference and Expo. Morgantown, WV, WV Univ. Publ. Serv.: No. 2, 1990.
PUBLISHER WV Univ. Publ. Serv.
PAGES pp 353-363
DATE 1990
CALLNUM
ANNOTATION

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CATEGORY AMD
SUBCATEGOR

TITLE Biological treatment of mine water: an update.
AUTHOR Kleinmann, R.L.P. and R. Hedin.
SOURCE Proceedings on the International Symposium on Tailings and Effluent Management, Halifax, August 20-24, 1989.
PUBLISHER New York: Pergamon Press
PAGES pp. 173-179
DATE 1989
CALLNUM
ANNOTATION In general, constructed wetlands treating acidic coal mine drainage improves water quality, although supplementary chemical treatment is usually required to meet effluent limitations. The principal reaction mechanism is believed to be microbially catalyzed oxidation of dissolved iron. Since many metals react with hydrogen sulfide to form virtually insoluble precipitates, the U.S. Bureau of mines has focused on the mechanisms of bacterial conversion of sulfate to hydrogen sulfide.

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CATEGORY AMD
SUBCATEGOR

TITLE Biological treatment of mine water: an update.
AUTHOR Hedin, R. and Kleinmann.
SOURCE U.S. Bureau of Mines, Pittsburg Research Center.
PUBLISHER
PAGES
DATE no date
CALLNUM
ANNOTATION Research by the U.S. Bureau of Mines has focused on the bacterial conversion of sulfate to hydrogen sulfide (an acid-consuming reaction) because many metals react rapidly with hydrogen sulfide to form virtually insoluble precipitates. Bacterial sulfate reduction and the formation of metal sulfides

have been confirmed in constructed wetlands. Research is continuing on how to best route the drainage water through wetlands to optimize the desired biological processes.

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CATEGORY AMD
SUBCATEGOR

TITLE Biology and chemistry of generation, prevention and abatement of acid mine drainage.
AUTHOR Silver, M.
SOURCE Constructed Wetlands for Wastewater Treatment: Municipal, Industrial and Agricultural
PUBLISHER Chelsea, MI: Lewis Publishers, Inc.
PAGES pp. 753-760
DATE 1989
CALLNUM TD 756. 5 C66
ANNOTATION Microbially mediated reactions are presented with their relevance to the generation, prevention, and abatement of acidic drainage. Reactions involved in the solubilization and reprecipitation of polluting metals such as iron, copper, zinc, and aluminum will also be presented.

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CATEGORY AMD
SUBCATEGOR

TITLE Constructed wetlands for acid drainage control in the Tennessee Valley.
AUTHOR Brodie, G.A., et al.
SOURCE Mine Drainage and Surface Mine Reclamation.
PUBLISHER Washington, D.C.: U. S. GPO
PAGES pp 325-331.
DATE 1988
CALLNUM 156. 61 C49
ANNOTATION

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CATEGORY AMD
SUBCATEGOR

TITLE Constructed wetlands for acid drainage control in the Tennessee Valley.
AUTHOR Brodie, G.A., et al.
SOURCE Wetlands: Increasing Our Wetlands Resources.
PUBLISHER Washington: National Wildlife Federation
PAGES pp 173-80.

DATE 1987.
CALLNUM
ANNOTATION

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CATEGORY AMD
SUBCATEGOR

TITLE Constructed wetlands for acid water treatment: an overview of emerging technology.
AUTHOR Hammer, D.A.
SOURCE TVA Resource Center
PUBLISHER
PAGES
DATE 1990, May
CALLNUM
ANNOTATION

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CATEGORY AMD
SUBCATEGOR

TITLE Constructed wetlands for the treatment of acid mine drainage.
AUTHOR Donlan, R.
SOURCE Water Pollution Control Association of Pennsylvania.
PUBLISHER
PAGES
DATE March/April 1989
CALLNUM
ANNOTATION

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CATEGORY AMD
SUBCATEGOR

TITLE Constructed wetlands for the treatment of mine water: course notes.
AUTHOR Kleinmann, R.L.P., R.P. Brooks, B.E. Huntsman and B. Pesavento.
SOURCE Short course at the 1986 Symposium on Surface Mining, Hydrology, Sedimentology, and Reclamation; Lexington, KY.
PUBLISHER
PAGES
DATE 1986
CALLNUM
ANNOTATION

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CATEGORY AMD
SUBCATEGOR

TITLE Constructed wetlands for treatment of acid mine drainage: a preliminary review.
AUTHOR Girts, M.A. and R.L.P. Kleinmann.
SOURCE National Symposium on Surface Mining, Hydrology, Sedimentology, and Reclamation.
PUBLISHER Lexington, KY: Univ. of Kentucky Press
PAGES pp. 165-171
DATE 1986.
CALLNUM TD756.5 G57 1986
ANNOTATION

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CATEGORY AMD
SUBCATEGOR

TITLE Constructed wetlands for treatment of ash pond seepage.
AUTHOR Brodie, G.A., D.A. Hammer and D.A. Tomljanovich.
SOURCE Constructed Wetlands for Wastewater Treatment: Municipal, Industrial and Agricultural.
PUBLISHER Chelsea, MI: Lewis Publishing, Inc.
PAGES pp. 211-219
DATE 1989
CALLNUM TD 756. 5 C66
ANNOTATION Coal processing and coal ash storage frequently results in acid drainage similar to seepage from surface and underground mine areas. Ash pond seepage has concentrations metalic ions similar to acid mine drainage, but the aggreagate flow from many seeps along one ash pond dike may be orders of magnitued greater than individual mine drainage seeps. Constructed wetlands were built to treat ash pond seepage at three different Tennessee Valley coal-fired generating plants.

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CATEGORY AMD
SUBCATEGOR

TITLE Constructed wetlands for treatment of mine water.
AUTHOR Girts, M.A. and R.L.P. Kleinmann.
SOURCE Paper presented at the 1986 Society of Mining Engineers Fall MeetingSt. Louis, MO; Sept. 7-10 1986.
PUBLISHER
PAGES
DATE 1986.
CALLNUM
ANNOTATION

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CATEGORY AMD
SUBCATEGOR

TITLE Constructed wetlands to treat acid mine drainage, 1990 course notes.
AUTHOR Hedin, R.S., R.L.P. Kleinmann and G. Brodie.
SOURCE
PUBLISHER
PAGES 41p.
DATE 1990
CALLNUM
ANNOTATION This paper is not a manual nor a publication, simply an informal framework of observations to help one construct wetlands that treat acid mine water. The paper presents a brief description of: wetland processes which can affect mine drainage chemistry; components of a constructed wetland; sizing a wetland; constructing a wetland; and operation and maintenance of a constructed wetland.

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CATEGORY AMD
SUBCATEGOR

TITLE Constructed wetlands to treat acid mine drainage.
AUTHOR Kleinmann, R.L.P., R.S. Hedin, D. Hyman and G.A. Brodie.
SOURCE Course Manual for a Workshop Presented at the 1990 Natn. Mining Symposium, Knoxville, TN.
PUBLISHER
PAGES
DATE 1990
CALLNUM
ANNOTATION

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CATEGORY AMD
SUBCATEGOR

TITLE Hydrochemical, vegatational, and microbiological effects of a natural and a constructed wetland on the control of acid mine drainage.
AUTHOR Dollhopf, D.J., et al.
SOURCE Final Report 1987-88, rru 8804, pp. 1-52, 1988.
PUBLISHER
PAGES pp 1-52.
DATE 1988
CALLNUM
ANNOTATION

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CATEGORY AMD
SUBCATEGOR

TITLE Impacts of volunteer cattail wetlands on drainage quality from reclaimed mined land in northern West Virginia.
AUTHOR Jamison, E. and H. W. Rauch.
SOURCE Proceedings of the Mining and Reclamation Conference and Expo. Morgantown, WV, WV Univ. Publ. Serv.: No. 2, 1990.
PUBLISHER WV Univ. Publ. Serv.
PAGES pp 349
DATE 1990
CALLNUM
ANNOTATION

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CATEGORY AMD
SUBCATEGOR

TITLE Ion input/output budgets for five wetlands constructed for acid mine drainage.
AUTHOR Wieder, R.K.
SOURCE
PUBLISHER In Press
PAGES
DATE
CALLNUM
ANNOTATION

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CATEGORY AMD
SUBCATEGOR

TITLE Man-made wetlands for acid mine drainage control.
AUTHOR Brodie, G.A., et al.
SOURCE Proceedings of the 8th Annual National Abandoned Mine Land Conference.
PUBLISHER 1986.
PAGES
DATE
CALLNUM
ANNOTATION

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CATEGORY AMD
SUBCATEGOR

TITLE Mine-built ponds economically clear acid mine waters.
AUTHOR Chironis, N.P.
SOURCE Coal Age. 92(1):58-61(1987)
PUBLISHER
PAGES 58-61

DATE 1987
CALLNUM
ANNOTATION

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CATEGORY AMD
SUBCATEGOR

TITLE Passive anoxic alkaline drains to increase effectiveness of wetlands acid drainage systems.
AUTHOR Brodie, G.A., et al.
SOURCE Proc. 12th Annual Natn. Assc. of Abandoned Mine Land Programs Conf., Breckenridge, CO.
PUBLISHER
PAGES pp. 89-102
DATE 1990
CALLNUM
ANNOTATION

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CATEGORY AMD
SUBCATEGOR

TITLE Passive mine drainage treatment systems: a theoretical assessment and experimental evaluation.
AUTHOR Guertin, deF., J.C. Emerick and E.A. Howard.
SOURCE Unpublished report submitted to the Colorado Mined Land Reclamation Division; Cooperative Agreement No. 202-317.
PUBLISHER
PAGES
DATE 1985
CALLNUM
ANNOTATION

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CATEGORY AMD
SUBCATEGOR

TITLE Potential importance of sulfate reduction processes in wetlands constructed to treat mine drainage.
AUTHOR Hedin, R.S., R. Hammack and D. Hyman
SOURCE Constructed Wetlands for Wastewater Treatment: Municipal, Industrial and Agricultural.
PUBLISHER Chelsea, MI: Lewis Publishers, Inc.
PAGES pp. 508-514
DATE 1989
CALLNUM TD 756. 5 C66
ANNOTATION Reduction of sulfate in wetlands constructed to treat acid mine drainage is desirable because hydrogen sulfide readily reacts with dissolved metals, precipitating them as sulfides, and alkalinity neutralizes drainage acidity. This paper presents

factors which affect the importance of sulfide formation in aquatic systems and the theoretical process in constructed wetlands that treat acid mine drainage.

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CATEGORY AMD
SUBCATEGOR

TITLE Processes of iron and manganese retention in laboratory peat microcosms subjected to acid mine drainage.
AUTHOR Henrot, J. and R.K. Wieder.
SOURCE Journal of Environmental Quality. 19(2):312-320
PUBLISHER
PAGES
DATE April/June 1990
CALLNUM QH 540. J6
ANNOTATION

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CATEGORY AMD
SUBCATEGOR

TITLE Soil and water characteristics of a young surface mine wetland.
AUTHOR Cole, C.A. and E.A. Lefebvre.
SOURCE Environmental Management, Vol. 15, No. 3.
PUBLISHER
PAGES pp. 403-410
DATE 1991 May/June
CALLNUM HC79 E5 E5
ANNOTATION

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CATEGORY AMD
SUBCATEGOR

TITLE Staged, aerobic constructed wetlands for acid drainage and stormwater control.
AUTHOR Brodie, G.A.
SOURCE Manual of Short Course Presented at the 34th Annual Mtg. of the Assc. of Engineering Geologists, Chicago, IL.
PUBLISHER
PAGES
DATE 1991
CALLNUM
ANNOTATION

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CATEGORY AMD
SUBCATEGOR

TITLE The acid mine drainage.
AUTHOR Barton, P.
SOURCE Sulfur in the Environment--Part II: Ecological Impacts.
PUBLISHER New York: Wiley
PAGES pp. 314-358
DATE 1978
CALLNUM TD196 S95S84
ANNOTATION

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CATEGORY AMD
SUBCATEGOR

TITLE The use of constructed wetlands in the treatment of acid mine drainage.
AUTHOR Perry, A. and R.P.L. Kleinmann.
SOURCE Natural Resources Forum, Vol. 15, No. 3.
PUBLISHER
PAGES pp. 81
DATE 1991, August
CALLNUM DNAL HC55.N3
ANNOTATION

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CATEGORY AMD
SUBCATEGOR

TITLE Treatment of acid drainage from coal facilities with man-made wetlands.
AUTHOR Brodie, G.A., et al.
SOURCE Aquatic Plants for Water Treatment and Resource Recovery.
PUBLISHER Orlando, Florida: Magnolia
PAGES pp 903-912.
DATE 1987.
CALLNUM DNAL TD475.C65-1986
ANNOTATION A series of shallow impoundments planted with a variety of wetland emergents was constructed to treat acidic drainage emanating from the toe of a fine coal refuse impoundment dike. Flora and fauna within the wetlands (both transplants and invaders) showed rapid growth and expansion. Comparisons between the seeps and final effluent showed substantial reductions in manganese, iron, and suspended solids.

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CATEGORY AMD

SUBCATEGOR

TITLE Treatment of acid mine water by wetlands.
AUTHOR Kleinmann, R.L.P.
SOURCE Control of Acid Mine Drainage
PUBLISHER
PAGES pp 48-51
DATE 1985
CALLNUM
ANNOTATION

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CATEGORY AMD
SUBCATEGOR

TITLE Treatment of coal mine drainage with constructed wetlands.
AUTHOR Hedin, R.S.
SOURCE Constructed wetlands for treatment of agricultural waste.
PUBLISHER The Pennsylvania Academy of Science
PAGES
DATE 1989
CALLNUM
ANNOTATION Coal mine drainage is a common water pollution problem on active and abandoned coal mine sites. Many mining companies and engineering firms have experimented with wetland systems to treat mine drainage. The status of constructed wetland technology is presented with respect to the construction and performance of systems; chemical and biological processes that affect acid mine drainage chemistry within constructed wetlands; and the future of this technology as perceived by the Bureau of Mines.

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CATEGORY AMD
SUBCATEGOR

TITLE Treatment of coal mine drainage with constructed wetlands.
AUTHOR Hedin, R.S. and D.M. Hyman.
SOURCE Biotechnology in minerals and metal processing.
PUBLISHER Littleton, CO: Soc. Min. Eng.
PAGES p. 113-120.
DATE 1989.
CALLNUM
ANNOTATION

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CATEGORY AMD
SUBCATEGOR

TITLE Unpublished results of current research using alkaline beds for increasing constructed wetlands effluent pH.
AUTHOR Brodie, G.A.
SOURCE Unpublished results of current research using alkaline beds for increasing constructed wetlands effluent pH. Project cofunded by the Pennsylvania Electric Company and the Tennessee Valley Authority.
PUBLISHER
PAGES
DATE 1990
CALLNUM
ANNOTATION

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CATEGORY AMD
SUBCATEGOR

TITLE Use of constructed wetlands for the control of acid mine drainage.
AUTHOR Kleinmann, R.L.P.
SOURCE Annual Report and Proceedings--American Mining Congress. Vol. 1987.
PUBLISHER
PAGES
DATE 1987
CALLNUM
ANNOTATION

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CATEGORY AMD
SUBCATEGOR

TITLE Use of constructed wetlands for the control of acid mine drainage.
AUTHOR Kolbash, R.L., and E.R. Murphy.
SOURCE Coal mining technology, economics and policy 1987; session papersfrom the American Mining Congress coal convention, Cincinnati, OH, May 3-6, 1987.
PUBLISHER
PAGES 6p.
DATE 1987
CALLNUM
ANNOTATION

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CATEGORY AMD
SUBCATEGOR

TITLE Use of passive anoxic drains to enhance performance of acid drainage constructed wetlands.
AUTHOR Brodie, G.A., C.R. Britt and H.N. Taylor.

SOURCE Proc. 1991 Natn. Mtg. of the ASSMR, Durango, CO.
PUBLISHER
PAGES pp. 211-228
DATE 1991
CALLNUM
ANNOTATION

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CATEGORY AMD
SUBCATEGOR

TITLE Use of wetlands for treatment of environmental problems in mining: non-coal-mining applications.
AUTHOR Wildeman, T.R. and L.S. Laudon.
SOURCE Constructed Wetlands for Wastewater Treatment: Municipal, Industrial and Agricultural.
PUBLISHER Chelsea, MI: Lewis Publishing, Inc.
PAGES pp. 221-231
DATE 1989
CALLNUM TD 756. 5 C66
ANNOTATION This paper presents a review of the chemistry of metal mine drainages and the differences from coal mine drainages; analyzes the geochemistry of metals removal within wetlands; and summarizes the results in the few pioneer examples. Throughout the paper, arguments are made that effluent from a base- or precious-metal mining operation containing abundant purite will be most difficult for wetland system application.

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CATEGORY AMD
SUBCATEGOR

TITLE Using laboratory mesocosms to evaluate the potential effectiveness of constructed wetlands for acid mine drainage treatment.
AUTHOR Wieder, R.K., M.N. Linton and K.P. Heston.
SOURCE Proceedings of the Mining and Reclamation Conference and Expo. Morgantown, WV, WV Univ. Publ. Serv.: No. 2, 1990.
PUBLISHER WV Univ. Publ. Serv.
PAGES pp 615
DATE 1990
CALLNUM
ANNOTATION

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CATEGORY AMD
SUBCATEGOR

TITLE Utilization of Sphagnum species dominated bog for coal acid

mine drainage abatement.
AUTHOR Huntsman, B.E., J.G. Solch and M.D. Porter.
SOURCE 91st Annual Meeting of the Geological Society of America. Toronto, Ontario.
PUBLISHER
PAGES pp. 322
DATE 1978
CALLNUM
ANNOTATION

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CATEGORY AMD
SUBCATEGOR

TITLE Water pollution mitigation in two national park service units affected by energy and mining activities.
AUTHOR Flora, M., S. Kunkle and D. Kimball.
SOURCE Water Resources related to Mining and Energy-Preparing for the Future.
PUBLISHER Bethesda, MD: Am. Water Resources Assc.
PAGES pp. 231-238
DATE 1987
CALLNUM
ANNOTATION

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CATEGORY AMD
SUBCATEGOR ancillary benefits

TITLE Mine-drainage treatment wetland as habitat for heptofaunal wildlife.
AUTHOR Lacki, M.J., W. Hummer and H.J. Webster.
SOURCE Environmental Management 16 (4). 1992, p163-179.
PUBLISHER
PAGES pp 163-179
DATE 1992
CALLNUM HC 79 ESE5
ANNOTATION

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CATEGORY AMD
SUBCATEGOR case studies--eastern USA

TITLE A survey of constructed wetlands for acid coal mine drainage treatment in the eastern USA.
AUTHOR Wieder, R.K.
SOURCE Wetlands 9 (2). 1989
PUBLISHER
PAGES pp 299-316
DATE 1989
CALLNUM

ANNOTATION

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CATEGORY AMD
SUBCATEGOR case studies--mountain west CO

TITLE Passive treatment technology cleans up Colorado mining waste.
AUTHOR Morea, S., R. Olsen and T. Wildeman.
SOURCE Water Environment and Technology, Vol. 2, No. 12.
PUBLISHER
PAGES pp. 6, 9
DATE 1990, December.
CALLNUM TD419 W37
ANNOTATION

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CATEGORY AMD
SUBCATEGOR case studies--NE USA (MD)

TITLE Constructing treatment wetlands: Maryland's experience.
AUTHOR Bagley, F.L. and A. Lyons.
SOURCE Proceedings of the Mining and Reclamation Conference and Expo. Morgantown, WV, WV Univ. Publ. Serv.: No. 2, 1990.
PUBLISHER WV Univ. Publ. Serv.
PAGES pp 599
DATE 1990
CALLNUM
ANNOTATION

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CATEGORY AMD
SUBCATEGOR case studies--NW USA (MT)

TITLE The Tracy wetlands: a case study of two passive mine drainage treatment systems in Montana.
AUTHOR Hiel, M.T. and F.J. Kerins.
SOURCE Mine Drainage and Surface Mine Reclamation.
PUBLISHER Washington, DC: U.S. GPO
PAGES pp. 352-358.
DATE 1988.
CALLNUM 156. 61 C49
ANNOTATION

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CATEGORY AMD
SUBCATEGOR case studies--SE USA (KY)

TITLE The Kentucky wetlands project: a field study to evaluate

man-made wetlands for acid coal mine drainage treatment.
AUTHOR Wieder, R.K.
SOURCE First report made on Cooperative Agreement GR 896422 between the US Office of Surface Mining, Reclamation and Enforcement and Villanova Univ.
PUBLISHER
PAGES
DATE 1992.
CALLNUM
ANNOTATION

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CATEGORY AMD
SUBCATEGOR case studies--SE USA (TN Valley)

TITLE Engineered wetlands for effective treatment of acid drainage-applications, results, and prospects in the Tennessee Valley.
AUTHOR Brodie, G.A.
SOURCE Proc. 34th Annual Mtg. of the Assc. of Engineering Geologists. Greensburg, PA.
PUBLISHER
PAGES pp. 558-568
DATE 1991
CALLNUM
ANNOTATION

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CATEGORY AMD
SUBCATEGOR case studies--SE USA (WV)

TITLE Windsor Coal Company wetland: an overview.
AUTHOR Kolbash, R.L., and T.L. Romanoski.
SOURCE Constructed Wetlands for Wastewater Treatment: Municipal, Industrial and Agricultural.
PUBLISHER Chelsea, MI: Lewis Publishing, Inc.
PAGES pp.788-792
DATE 1989
CALLNUM TD 756.5 C66
ANNOTATION High operating cost of conventional mine drainage cleanup and the lack of potential bond releases have encouraged the coal industry to consider wetlands for a reclamation alternative. The American Electric Power Service Corporation's Fuel Supply Department is actively involved in the overall reclamation plan for its abandoned Simco Number 4 mine, in which the wetland is an important component. Depending on the success of the Simco Number 4 wetland, the Windsor Coal Company will build a constructed wetland to reuse pile seep waters.

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CATEGORY AMD
SUBCATEGOR case studies--TVA

TITLE Anoxic limestone drains to enhance performance of aerobic acid drainage treatment wetlands--experiences of the TVA.
AUTHOR Brodie, G.A., C.R. Britt, T.M. Tomaszewski and H.N. Taylor.
SOURCE Constructed Wetlands for Water Quality Improvements.
PUBLISHER Chelsea, MI: Lewis Publisher, Inc
PAGES
DATE 1991
CALLNUM
ANNOTATION

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CATEGORY AMD
SUBCATEGOR case studies--TVA

TITLE Constructed wetlands for treating acid drainage at TVA coal facilities.
AUTHOR Brodie, G.A.
SOURCE Constructed Wetlands in Water Pollution Control.
PUBLISHER Oxford, UK: Pergamon Press
PAGES pp. 461-470
DATE 1990
CALLNUM TD 756. 5 I57
ANNOTATION

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CATEGORY AMD
SUBCATEGOR case studies--TVA

TITLE Constructed wetlands for treating acid drainage at TVA coal facilities.
AUTHOR Brodie, G.A.
SOURCE Proc. Annual Natn. Assc. of Abandoned Mined Lands Prog. Conf., Breckenridge, CO.
PUBLISHER
PAGES pp. 127-143
DATE 1990
CALLNUM
ANNOTATION

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CATEGORY AMD
SUBCATEGOR case studies--TVA

TITLE Constructed wetlands for treating acid drainage at TVA facilities: a progress report.
AUTHOR Tomljanovich, D.A., G.A. Brodie and D.A. Hammer.
SOURCE TVA/ONRED/WRF-88/2

PUBLISHER NTIS Accession No. DE88016102/XAB
PAGES 145p.
DATE 1988
CALLNUM
ANNOTATION

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CATEGORY AMD
SUBCATEGOR case studies--TVA

TITLE Constructed wetlands for treating acid drainage at TVA facilities: status report.
AUTHOR Tomljanovich, D.A., G.A. Brodie and H.N. Taylor.
SOURCE TVA
PUBLISHER Knoxville, TN: Tennessee Valley Authority
PAGES
DATE 1992
CALLNUM
ANNOTATION

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CATEGORY AMD
SUBCATEGOR case studies--TVA

TITLE Staged, aerobic constructed wetlands to treat acid drainage--case history of Fabius impoundment 1 and overview of the TVA's program.
AUTHOR Brodie, G.A.
SOURCE Constructed Wetlands for Water Quality Improvement.
PUBLISHER Chelsea, MI: Lewis Publishers
PAGES
DATE 1991
CALLNUM
ANNOTATION

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CATEGORY AMD
SUBCATEGOR case studies--TVA

TITLE Treatment of acid drainage using constructed wetlands--experience of the Tennessee Valley Authority.
AUTHOR Brodie, G.A.
SOURCE Proceedings 1990 National Symposium of Mining.
PUBLISHER Lexington, KY: Univ. of Kentucky
PAGES pp. 77-83
DATE 1990
CALLNUM
ANNOTATION

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CATEGORY AMD
SUBCATEGOR case studies--TVA, AL

TITLE Treatment of acid drainage with a constructed wetlands at the Tennessee Valley Authority 950 coal mine.
AUTHOR Brodie, G.A., D.A. Hammer and D.A. Tomljanovich.
SOURCE Constructed Wetlands for Wastewater Treatment: Municipal, Industrial and Agricultural.
PUBLISHER Chelsea, MI: Lewis Publisher, Inc.
PAGES pp. 201-209
DATE 1989
CALLNUM TD 756. 5 C66
ANNOTATION A Jackson County Alabama sediment pond that received acid mine drainage was cited for chronic effluent discharges. Because the impoundment had acceptable characteristics (moderate water quality, adequate siting characteristics, and suitable geology and hydrology) a constructed wetland was built to treat acid drainage. The constructed wetland was environmentally effective and cost-beneficial in treating the acidic mine drainage.

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CATEGORY AMD
SUBCATEGOR chemical aspects

TITLE Implication of sulfate-reduction and pyrite formation processes for water quality in a constructed wetland: preliminary observation.
AUTHOR Hedin, R.S., D.M. Hyman and R.W. Hammack.
SOURCE Mine Drainage and Surface Mine Reclamation.
PUBLISHER Washington, D.C.: U.S. GPO
PAGES pp. 382-388.
DATE 1988
CALLNUM 156. 61 C49
ANNOTATION

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CATEGORY AMD
SUBCATEGOR chemical aspects

TITLE Sulfate reduction in freshwater sediments receiving acid mine drainage.
AUTHOR Herlihy, A.T. and A.L. Mills.
SOURCE Applied Environmental Microbiology. 49:179-186
PUBLISHER 1985.
PAGES
DATE
CALLNUM
ANNOTATION

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CATEGORY AMD
SUBCATEGOR chemical aspects

TITLE The importance of sediment sulfate reduction to the sulfate budget of an impoundment receiving acid mine drainage.
AUTHOR Herlihy, A.T., et al.
SOURCE Water Resources Research. 23:287-292.
PUBLISHER
PAGES
DATE 1987
CALLNUM
ANNOTATION

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CATEGORY AMD
SUBCATEGOR chemical aspects

TITLE The use of bacterial sulfate reduction in the treatment of drainage from coal mines.
AUTHOR McIntire, P.E. and H.M. Edenborn.
SOURCE Proceedings of the Mining and Reclamation Conference and Expo. Morgantown, WV, WV Univ. Publ. Serv.: No. 2, 1990.
PUBLISHER WV Univ. Publ. Serv.
PAGES pp 409-415
DATE 1990
CALLNUM
ANNOTATION Bacterial sulfate reduction is a naturally-occurring process in wetlands. An experimental wetland was designed and built to maximize contact between mine drainage and the anaerobic zone of the organic substrate, where sulfate reduction takes place. The sulfate-reducing bacteria effectively precipitate many heavy metals as insoluble sulfides and may be useful in treatment processes designed to improve the water quality of metallic mine drainage.

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CATEGORY AMD
SUBCATEGOR design--construction--operation

TITLE Constructed wetlands for treating acid drainage--practical considerations of design, construction, and operation.
AUTHOR Brodie, G.A.
SOURCE Manual for Workshop Presented at 12th Annual Natn. Assc. of Abandoned Mine Land Programs Conference. Breckenridge, CO.
PUBLISHER
PAGES
DATE 1990
CALLNUM
ANNOTATION

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CATEGORY AMD
SUBCATEGOR design--construction--operation

TITLE Design, construction and operation of staged aerobic wetlands system to treat acid drainage.
AUTHOR Brodie, G.A.
SOURCE Manual of Workshop, Presented at 1991 Annual Mtg. of ASSMR, Durango, CO.
PUBLISHER
PAGES
DATE 1991
CALLNUM
ANNOTATION

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CATEGORY AMD
SUBCATEGOR engineering consideration--sizing--performance

TITLE Sizing and performance of constructed wetlands: case studies.
AUTHOR Hedin, R.S. and R.W. Nairn.
SOURCE Proceedings of the 1990 Mining and Reclamation Conference and Exhibition Volume II, Charlestown, WV, April 23-26, 1990.
PUBLISHER
PAGES pp. 385-392.
DATE 1990
CALLNUM
ANNOTATION The iron removal in three Pennsylvania constructed wetlands that treat acid mine drainage was evaluated. All wetlands were constructed using a mushroom compost substrate and were planted with Typha spp. The performance was evaluated by calculating area-adjusted iron loading and removal as FE (g/day m2).

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CATEGORY AMD
SUBCATEGOR engineering considerations

TITLE Effectiveness of wetlands constructed with different types of organic matter for acid coal mine drainage amd treatment
AUTHOR Wieder, R.K., M.N. Linton and S.T. Starr.
SOURCE Bulletin of Ecological Society of America 71(2SUPPL.) 1990. 368
PUBLISHER
PAGES
DATE 1990
CALLNUM 410.9 EC7
ANNOTATION

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CATEGORY AMD
SUBCATEGOR engineering considerations--design

TITLE Wetland design for mining operations.
AUTHOR Wildeman, T.R., J. Gusek and G.A. Brodie.
SOURCE Manual for a Short Course Presented at the 8th Natn. Mtg. ASSMR. Durango, CO.
PUBLISHER
PAGES
DATE 1991
CALLNUM
ANNOTATION

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CATEGORY AMD
SUBCATEGOR engineering considerations--design--construction

TITLE Design and construction of a research site for passive mine drainage treatment in Idaho Springs, Colorado.
AUTHOR Howard, E. A., J. C. Emerick and T. R. Wildeman.
SOURCE Constructed Wetlands for Wastewater Treatment: Municipal, Industrial and Agricultural
PUBLISHER Chelsea, MI: Lewis Publishers, Inc.
PAGES pp. 761-764
DATE 1989
CALLNUM TD 756. 5 C66
ANNOTATION Only a few wetlands have been constructed to treat noncoal mine drainage at the higher elevations of Colorado. A demonstration treatment system was built at the Big Five Tunnel to determine the fate of metals. Other objectives of the study were to determine vegetation survival with exposure to elevated metals in a mountain climate, to study function and distribution of bacteria in the system, and to identify appropriate organic substrates and plant species.

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CATEGORY AMD
SUBCATEGOR engineering considerations--design--operation

TITLE Design and use of wetlands for renovation of drainage from coal mines.
AUTHOR Fennessy, S. and W.J. Mitsch.
SOURCE Ecological Engineering: An Introduction to Ecotechnology.
PUBLISHER
PAGES
DATE in press
CALLNUM

ANNOTATION

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CATEGORY AMD
SUBCATEGOR engineering considerations--design--sizing--pollutant remova

TITLE Wetland sizing, design, and treatment effectiveness for coal mine drainage.
AUTHOR Kepler, D.A.
SOURCE Proceedings of the Mining and Reclamation Conference and Expo. Morgantown, WV, WV Univ. Publ. Serv.: No. 2, 1990.
PUBLISHER WV Univ. Publ. Serv.
PAGES pp 403-408
DATE 1990
CALLNUM
ANNOTATION

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CATEGORY AMD
SUBCATEGOR engineering considerations--design--substrate

TITLE An evaluation of substrate types in constructed wetlands acid drainage treatment systems.
AUTHOR Brodie, G.A., et al.
SOURCE Mine Drainage and Surface Mine Reclamation.
PUBLISHER Washington: U. S. GPO
PAGES pp. 389-398.
DATE 1988.
CALLNUM 156. 61 C49
ANNOTATION

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CATEGORY AMD
SUBCATEGOR engineering considerations--design--substrate

TITLE Preliminary results of an experiment to assess the effect of substrate type on treatment of acid drainage using constructed wetlands.
AUTHOR Tomljanovich, D.A., et al.
SOURCE NTIS # DE88-016102
PUBLISHER
PAGES
DATE 1988
CALLNUM
ANNOTATION

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CATEGORY AMD
SUBCATEGOR engineering--pollutant removal, Fe

TITLE Iron loading, efficiency and sizing in a constructed wetland receiving mine drainage.
AUTHOR Stark, L.R., S.E. Stevens, Jr., H.J. Webster and W.R. Wenerick.
SOURCE Proceedings of the Mining and Reclamation Conference and Expo., Morgantown, WV. WVU Publ. Serv.: No. 2, P393-401
PUBLISHER WV Univ. Publications Service
PAGES pp 393-401
DATE 1990
CALLNUM
ANNOTATION

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CATEGORY AMD
SUBCATEGOR engineering/design considerations--economic modelling

TITLE Designing wetlands for controlling coal mine drainage: An economic modelling approach.
AUTHOR Baker, K.A., M.S. Fennessy and W.J. Mitsch.
SOURCE Ecological Economics, Vol. 3, No. 1.
PUBLISHER
PAGES pp. 1-24
DATE 1991, March
CALLNUM QH 540 E26
ANNOTATION

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CATEGORY AMD
SUBCATEGOR microbial aspects

TITLE Bacteriological tests from the constructed wetlands of the big five tunnel, Idaho Springs, Colorado.
AUTHOR Batal, W., L.S. Laudon, T.R. Wileman and N. Mohdnoordin.
SOURCE Constructed Wetlands for Wastewater Treatment: Municipal, Industrial and Agricultural.
PUBLISHER Chelsea, MI: Lewis Publishing, Inc.
PAGES pp. 550-557
DATE 1989
CALLNUM TD 756. 5 C66
ANNOTATION Acid mine drainage originates from the metabolic activity of iron-oxidizing bacteria. Wetlands are a potential treatment for small flows of acid mine drainage waters. This paper presents the occurrence, depth, and position of bacteria in the Big Five Tunnel, a precious metal mine, wetland pilot system located at Idaho Springs Colorado.

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CATEGORY AMD
SUBCATEGOR microbiological aspects

TITLE Isolation and culture of a manganese-oxidizing bacterium from a man-made cattail wetland.
AUTHOR Vail, W.J., S. Wilson and R.K. Reiley.
SOURCE Mine Drainage and Surface Mine Reclamation. Vol. 1.
PUBLISHER
PAGES
DATE 1988
CALLNUM 156. 61 C49
ANNOTATION

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CATEGORY AMD
SUBCATEGOR pathogens/vectors/pests

TITLE Control of army worm, Simyra henrici (Lepidoptera: Noctuidae), on cattail plantings in acid drainage treatment wetlands at Widows Creek steam-electric plant.
AUTHOR Snoddy, E.L., et al.
SOURCE Constructed Wetlands for Wastewater Treatment: Municipal, Industrial and Agricultural.
PUBLISHER Chelsea, MI: Lewis Publishing, Inc.
PAGES pp 808-811
DATE 1989
CALLNUM TD 756. 5 C66
ANNOTATION Due to the monocultural nature of the macrophytes used in constructed wetlands, some plants are subject to damage by lepidopterous insect pests, mainly the armyworm complex. Measures for controlling army worms in constructed wetlands treating acid waters are presented in this paper.

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CATEGORY AMD
SUBCATEGOR plants

TITLE A low-cost, low-maintenance treatment system for acid mine drainage using Sphagnum moss and limestone.
AUTHOR Kleinmann, R.L.P.
SOURCE Symposium on Surface Mining, Hydrology, Sedimentology and Reclamation.
PUBLISHER Lexington, KY: University of Kentucky
PAGES
DATE 1983
CALLNUM
ANNOTATION

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CATEGORY AMD
SUBCATEGOR plants

TITLE Tolerance of three wetland plant species to acid mine drainage: a greenhouse study.

AUTHOR Wenerick, W.R., S.E. Stevens, Jr., H.J. Webster, L.R. Stark and E. DeVeau.
SOURCE Constructed Wetlands for Wastewater Treatment: Municipal, Industrial and Agricultural.
PUBLISHER Chelsea, MI: Lewis Publishing, Inc.
PAGES pp. 801-807
DATE 1989
CALLNUM TD 756. 5 C66
ANNOTATION Tolerance of wetland plants to acid mine drainage is not well understood. The purpose of the authors' investigation was to determine the tolerance levels of three wetland plants to acid mine drainage under semicontrolled conditions in a greenhouse simulation study.

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CATEGORY AMD
SUBCATEGOR policy institutional aspects

TITLE Fiscal year 1989 report (Kentucky Water Resources Research Institute).
AUTHOR Barfield, B.J. and R.R. Huffsey.
SOURCE NTIS PB91-104315/AS
PUBLISHER
PAGES 21p.
DATE 1990, July
CALLNUM
ANNOTATION

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CATEGORY AMD
SUBCATEGOR pollutant removal

TITLE Performance data on Typha and Sphagnum wetlands constructed to treat coal mine drainage.
AUTHOR Girts, M.A., R.L.P. Kleinmann and P.M. Erickson.
SOURCE Eighth Annual Surface Mine Drainage Task Force Symposium; Morgantown, WV
PUBLISHER
PAGES
DATE 1987
CALLNUM
ANNOTATION

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CATEGORY AMD
SUBCATEGOR pollutant removal

TITLE Role of dissimilatory sulfate reduction in wetlands constructed for acid coal mine drainage treatment.

AUTHOR Taddeo, F.J.
SOURCE Master's thesis, Villanova U., Dept. Biology
PUBLISHER
PAGES
DATE 1991
CALLNUM
ANNOTATION

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CATEGORY AMD
SUBCATEGOR pollutant removal, Al--plants, sphagnum

TITLE Aluminum retention in a man-made Sphagnum wetland.
AUTHOR Wieder, R.K., et al.
SOURCE Wat. Air Soil Poll. 37(1988):177-196.
PUBLISHER
PAGES pp 117-196
DATE 1988
CALLNUM TD172 W36
ANNOTATION

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CATEGORY AMD
SUBCATEGOR pollutant removal, Co,Ni,Cu,As,Zn,Cd,Cr,Pb

TITLE Effects of mine effluent on uptake of Co, Ni, Cu, As, Zn, Cd, Cr, Pb by aquatic macrophytes.
AUTHOR Mudroch, A.
SOURCE Hydrobiologia 64 (3) pp. 233-231
PUBLISHER
PAGES pp 233-231.
DATE 1979
CALLNUM 410 H992
ANNOTATION

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CATEGORY AMD
SUBCATEGOR pollutant removal, Fe

TITLE Iron retention in wetlands created for acid coal mine drainage and treatment: short-term responses to a major precipitation event.
AUTHOR Wieder, R.K.
SOURCE 76th Annual Ecological Society of America Meeting, San Antonio, TX, August 3-8, 1991, Bulletin of the Ecological Society of America 72 (2 suppl.). 1991
PUBLISHER
PAGES 288-289
DATE 1991
CALLNUM
ANNOTATION

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CATEGORY AMD
SUBCATEGOR pollutant removal, Fe

TITLE Wetland treatment of coal mine drainage: controlled studies of iron retention in model wetland systems.
AUTHOR Henrot, J., et al.
SOURCE Constructed Wetlands for Wastewater Treatment: Municipal, Industrial and Agricultural.
PUBLISHER Chelsea, MI: Lewis Publishing, Inc.
PAGES pp. 793-800
DATE 1989
CALLNUM TD 756. 5 C66
ANNOTATION For evaluating the process involved in chemical modifications of mine drainage wetland systems, smaller scale laboratory studies may be more useful than field monitoring of constructed wetlands. This paper presents the results of a laboratory pilot study in which replicate model wetland systems were subjected to inputs of water at uniform flow rates but differing iron concentrations.

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CATEGORY AMD
SUBCATEGOR pollutant removal, Fe, Mn

TITLE Manganese and iron encrustation of green algae living in acid mine drainage.
AUTHOR Stevens, S.E., Jr., K. Dionis and L.R. Stark.
SOURCE Constructed Wetlands for Wastewater Treatment: Municipal, Industrial and Agricultural.
PUBLISHER Chelsea, MI: Lewis Publishing, Inc.
PAGES pp. 765-773
DATE 1989
CALLNUM TD 756. 5 C66
ANNOTATION Filamentous algae species are known to tolerate acid mine drainage resulting from coal companies. The authors have observed encrustation that are rust colored or colored dark brown on filamentous algae. If there is significant accumulation of encrustation, then these filamentous algae may play a role in water quality improvements.

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CATEGORY AMD
SUBCATEGOR pollutant removal, Fe, Mn

TITLE Removal of iron and manganese from water by sphagnum moss.

AUTHOR Burris, J.E., D.W. Gerber and L.E. McHeron.
SOURCE Treatment of Mine Drainage by Wetlands.
PUBLISHER University Park, PA: Pennsylvania State Univ.
PAGES pp. 1-13
DATE 1984
CALLNUM
ANNOTATION

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CATEGORY AMD
SUBCATEGOR pollutant removal, Fe, Mn

TITLE Simulated Typha wetlands applied to removal of iron and manganese from acid mine drainage.
AUTHOR Calabrese, J.P., et al.
SOURCE Proceedings of the Mining and Reclamation Conference and Expo. Morgantown, WV, WV Univ. Publ. Serv.: No. 2, 1990.
PUBLISHER WV Univ. Publ. Serv.
PAGES pp 351
DATE 1990
CALLNUM
ANNOTATION

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CATEGORY AMD
SUBCATEGOR pollutant removal, Fe,Al,Mn,Ca,Mg

TITLE Laboratory mesocosm studies of Fe, Al, Mn, Ca, and Mg dynamics in wetlands exposed to synthetic acid coal mine drainage.
AUTHOR Wieder, R.K., M.N. Linton and K.P. Heston.
SOURCE Water, Air and Soil Pollution. WAPLAC. 51 (1/2);181-196
PUBLISHER
PAGES pp. 181-196
DATE 1990, May
CALLNUM
ANNOTATION

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CATEGORY AMD
SUBCATEGOR pollutant removal, Fe,Mn

TITLE Long-term removal and retention of iron and manganese from acidic mine drainage.
AUTHOR Brooks, R.P., et al.
SOURCE Long-Term Removal and Retention of Iron and Manganese from Acidic Mine Drainage.
PUBLISHER Washington: Bureau of Mines
PAGES
DATE 1990.
CALLNUM

ANNOTATION

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CATEGORY AMD
SUBCATEGOR pollutant removal, metals

TITLE Adsorption compared with sulfide precipitation as metal removal processes from acid mine drainage in a constructed wetland.
AUTHOR Machemer, S.D. and T.R. Wildeman.
SOURCE Journal of Contaminated Hydrology Vol. 9, No. 1/2, P115-131, 1992.
PUBLISHER
PAGES pp 115-131
DATE 1992
CALLNUM TD 426. J68
ANNOTATION

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CATEGORY AMD
SUBCATEGOR pollutant removal, metals

TITLE Metal removal efficiencies from acid mine drainage in the big five wetland.
AUTHOR Wildeman, T.R., et al.
SOURCE Proceedings of the Mining and Reclamation Conference and Expo. Morgantown, WV, WV Univ. Publ. Serv.: No. 2, 1990.
PUBLISHER WV Univ. Publ. Serv.
PAGES pp 417-424
DATE 1990
CALLNUM
ANNOTATION

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CATEGORY AMD
SUBCATEGOR pollutant removal, metals

TITLE Metal removal in Sphagnum-dominated wetlands: experience with a man-made wetland system.
AUTHOR Wieder, R.K., G.E. Lang and A.E. Whitehouse.
SOURCE Wetlands and water Management of mined lands: proceedings of a conference. October 23-24, 1985. The Penn. State Univ.
PUBLISHER University Park, PA: Penn State Univ.
PAGES pp 353-364.
DATE 1985?
CALLNUM DNAL QH541.5.M3W46-1985
ANNOTATION

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CATEGORY AMD
SUBCATEGOR pollutant removal, metals

TITLE Metal speciation and inmobilization reactions affecting the true efficiency of artificial wetlands to treat acid mine drainage.
AUTHOR Karathanasis, A.D. and Y.L. Thompson.
SOURCE US Geological Survey, Report No. RR-175, USGS/G-1564-02.
PUBLISHER
PAGES
DATE 1990.
CALLNUM
ANNOTATION

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CATEGORY AMD
SUBCATEGOR pollutant removal, metals--plants, sphagnum

TITLE Metal cation binding to Sphagnum peat and sawdust: relation to wetland treatment of metal-polluted waters.
AUTHOR Weider, R.K.
SOURCE Water, Air, and Soil Pollution, Vol. 53, No. 3/4.
PUBLISHER
PAGES pp. 391-400
DATE 1990, October
CALLNUM
ANNOTATION

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CATEGORY AMD
SUBCATEGOR pollutant removal, Mn

TITLE Treatment of manganese from mining seep using packed columns.
AUTHOR Gordon, J.A. and J.L. Burr.
SOURCE Journal of Environmental Engineering. 115(2)
PUBLISHER
PAGES
DATE 1989
CALLNUM 290. 9 aM3Ps (EE)
ANNOTATION

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CATEGORY AMD
SUBCATEGOR pollutant removal, Ni, Cu

TITLE Use of wetlands to remove nickel and copper from mine drainage.
AUTHOR Eger, P. and K. Lapakko.
SOURCE Constructed Wetlands for Wastewater Treatment: Municipal, Industrial and Agricultural.

PUBLISHER Chelsea, MI: Lewis Publishing, Inc.
PAGES pp. 780-787
DATE 1989
CALLNUM TD 756. 5 C66
ANNOTATION Drainage from a northeastern Minnesota mine had increased the levels of nickel, copper, cobalt, and zinc concentrations in nearby receiving waters. Reduced concentration levels might be achieved though a series of passive, low cost, and low maintenance procedures combining infiltration reduction, alkaline treatment, and wetland treatment. Although previous work has demonstrated peat effectiveness in removing trace metals from mine drainage, an actual treatment system has not been built.

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CATEGORY AMD
SUBCATEGOR pollutant removal, Pb

TITLE Removing lead from wastewater using zeolite.
AUTHOR Groffman, A., S. Peterson and D. Brookins.
SOURCE Water Environment and Technology Vol. 4, No. 5, P54-59, May 1992.
PUBLISHER
PAGES pp 54-59
DATE 1992
CALLNUM TD419 W37
ANNOTATION

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CATEGORY AMD
SUBCATEGOR pollutant removal--Fe, Mn

TITLE Behavior of iron and manganese in the sediment of a wetland subjected to acidic mine drainage.
AUTHOR Tarutis, W.J.
SOURCE MS thesis, Pennsylvania State U., University Park, PA.
PUBLISHER
PAGES
DATE 1989
CALLNUM
ANNOTATION

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CATEGORY AMD
SUBCATEGOR proceedings/abstracts/bibliographies

TITLE Constructed wetlands on mined lands (1985-1990): a literature search conducted for the members of ASSMR.
AUTHOR _____.

SOURCE
PUBLISHER
PAGES 56p.
DATE 1990, December
CALLNUM
ANNOTATION

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CATEGORY AMD
SUBCATEGOR proceedings/abstracts/bibliographies

TITLE Proceedings of the 1990 mining and reclamation conference and exhibition, 2 vols.
AUTHOR Skousen, J., J. Sencindiver and D. Samuel, eds.
SOURCE April 23-26, 1990, Charleston, WV.
PUBLISHER Morgantown, WV: West Virginia University
PAGES 615p.
DATE 1990
CALLNUM
ANNOTATION

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CATEGORY AMD
SUBCATEGOR proceedings/abstracts/bibliographies

TITLE Treatment of mine drainage by wetlands: Proceedings of a conference.
AUTHOR Burris, J.E., Ed.
SOURCE
PUBLISHER University Park, PA: Penn. State Univ.
PAGES 49p.
DATE 1984
CALLNUM
ANNOTATION

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CATEGORY AMD
SUBCATEGOR wildlife

TITLE Effect of reclamation technique on mammal communities inhabiting wetlands on mined lands in east-central Ohio.
AUTHOR Lacki, M.J., J.W. Hummer and H.J. Webster.
SOURCE Ohio Journal of Science, Vol. 91, No. 4
PUBLISHER
PAGES pp. 154-158
DATE 1991, September
CALLNUM
ANNOTATION

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NOTE: THE FOLLOWING CITATIONS ARE AN UPDATE, AS OF OCTOBER 24, 1995 TO THE ORIGINAL DOCUMENT AND THEREFORE ARE IN A DIFFERENT FORMAT.

1 NAL Call No.: S591.55.K4S64
A new concept in treating wastewater--constructed wetlands.
Karathanasis, A. D.
Soil science news and views-Cooperative Extension Service and University of Kentucky, College of Agriculture, Department of Agronomy, Lexington, Ky. : The Department. 1991. v. 12 (3) 3 p.

Descriptors: waste water treatment; wetlands; biological treatment; construction; costs; mine spoil; agricultural wastes; kentucky

2 NAL Call No.: TD420.A1P7
Case studies of wetland filtration of mine waste water in constructed and naturally occurring systems in Northern Australia.
Noller, B. N.; Woods, P. H.; Ross, B. J.
Water science and technology: a journal of the International Association on Water Pollution Research and Control v.29, p.257-265. (1994).
In the series analytic: Wetlands systems in water pollution control / edited by H.J. Bavor and D.S. Mitchell. Australia.

Descriptors: wetlands; filtration; waste water; drainage water; mined land; mine spoil; metals; metal ions; removal; northern territory; constructed wetlands; artificial wetlands

3 NAL Call No.: QH540.J6
Processes of iron and manganese retention in laboratory peat microsomes subjected to acid mine drainage.
Henrot, J.; Wieder, R. K.
Journal of environmental quality v.19, p.312-320. (1990).
Includes references.

Descriptors: peat; acid mine drainage; iron; manganese; retention; binding; iron oxides; exchangeable cations; microbial activities; ph; temperature; solubilization; reduction; acid deposition; constructed wetlands; complexation; photoreduction

Abstract: Despite increasing use of constructed wetlands for treatment of metal-enriched acid coal mine drainage (AMD), the biotic and abiotic mechanisms of metal retention in such wetlands are poorly understood. The present study was conducted to evaluate the processes responsible for Fe and Mn retention in peat and the effects of microbial activity, pH temperature, and metal concentration in AMD on these processes. Experimental units consisted in 30 g (wet wt.) of fresh Sphagnum peat, which was repeatedly flushed with synthetic AMD at pH 3.5. Of the four major processes of metal cation retention in peat (cation exchange, complexation with peat organic precipitation as oxides, and precipitation as sulfides), Fe oxidation and Fe binding on peat organics were predominant, with Fe oxides and organically bound Fe making up, respectively, 62 and 22% of the total Fe in the peat at the end of the experiment. Whereas Fe complexation was a finite process, reaching saturation at 12 mg Fe g-1 dry peat, Fe-oxide concentration in peat increased steadily throughout the experiment. At pH 3.5, Fe-oxide precipitation was depressed by the addition of an antiseptic (formaldehyde) to AMD, suggesting that the process was microbially mediated. Iron oxide

precipitation was higher at pH 5.5 than 3.5 and less depressed at pH 5.5 than 3.5 by the presence of formaldehyde in AMD. The efficiency of peat to remove Fe from AMD was diminished at low temperature (< 15 degrees C) and high Fe concentration in AMD (> 100 mg L-1). Manganese retention in peat was small compared with that of Fe, and Mn was retained in peat almost exclusively as exchangeable Mn2+. Retention of Fe2+ in peat was not affected by the presence of Mn2+ in AMD. Iron oxides that had accumulated in peat subjected to AMD were not readily resolubilized by any of three processes investigated: photoreduction, microbial FE(III) reduction under reducing conditions, and exposure to simulated acid precipitation. These findings suggest that constructed wetlands may be an appropriate technology to remove Fe from AMD with low soluble Fe concentration, but are inadequate for treating drainage waters rich in soluble Mn.

4 NAL Call No.: TD796.5.C58
The roles of spent mushroom substrate for the mitigation of coal mine drainage.
Stark, L. R.; Williams, F. M.
Compost science and utilization v.2, p.84-94. (1994).
Includes references.

Descriptors: mushroom compost; substrates; coal mined land; drainage; wetlands; waste water treatment; biological treatment; waste utilization; appalachian states of usa; constructed wetlands; mine water treatment

5 NAL Call No.: TD420.A1P7
Using decomposition kinetics to model the removal of mine water pollutants in constructed wetlands.
Tarutis, W. J. Jr.; Unz, R. F.
Water science and technology:a journal of of the International Association on Water Pollution Research and Control v.29, p.219-226. (1994).
In the series analytic: Wetlands systems in water pollution control / edited by H.J. Bavor and D.S. Mitchell. Australia.

Descriptors: wetlands; ferrous ions; removal; pollutants; mine spoil; mined land; drainage water; decomposition; organic compounds; biological treatment; mathematical models; anaerobic conditions; artificial wetlands

6 NAL Call No.: TD420.A1P7
Wetland treatment for trace metal removal from mine drainage: the importance of aerobic and anaerobic processes.
Eger, P.
Water science and technology: a journal of the International Association on Water Pollution Research and Control v.29, p.249-256. (1994).
In the series analytic: Wetlands systems in water pollution control / edited by H.J. Bavor and D.S. Mitchell. Australia.

Descriptors: wetlands; metals; metal ions; removal; drainage water; mine spoil; mined land; nickel; drainage; aerobiosis; anaerobic-conditions; minnesota; constructed wetlands; artificial wetlands; acid mine drainage

7 NAL Call No.: TD756.5.G57-1986
Constructed wetlands for treatment of acid mine drainage : a preliminary review.
Girts, M. A.
[Morgantown, WV? : West Virginia University?, 1986?] p. 165-171.
Caption title. University of Kentucky, Lexington, Kentucky, December 8-11,

1986.

Descriptor: Constructed wetlands

8 NAL Call No.: TD756.5.B76-1987
Constructed wetlands for acid drainage control in the Tennessee Valley.
Brodie, G. A.
[Chattanooga, Tenn.? : Tennessee Valley Authority?, 1987?] 1 v. (unpaged).
Caption title.

Descriptor: Constructed wetlands

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DOCUMENT DELIVERY SERVICE -- Submit a separate completed interlibrary loan form for each article required. Indicate willingness to pay charges on the form and compliance with copyright law or include a statement that the article is for "research purposes only." Requests are not processed without these statements. Please read copyright notice below.

CHARGES:

* Photocopy, hard copy of microfilm and microfiche - $5.00 for the first 10 pages or fraction copied from a single article or publication. $3.00 for each additional 10 pages or fraction.

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BILLING - Charges include postage and handling, and are subjectto change. Invoices are issued quarterly by the National Technical Information Service (NTIS), 5285 Port Royal Road, Springfield, VA 22161. Establishing a deposit account with NTIS is encouraged. DO NOT SEND PREPAYMENT.

Send Requests to:
USDA, National Agricultural Library
Document Delivery Services Branch, ILL, PhotoLab
10301 Baltimore Blvd., NAL Bldg.
Beltsville, Maryland 20705-2351
Contact the Head, Document Delivery Services Branch in writing or by calling (301) 504-5755 with questions or comments about this policy.

3) DOCUMENT DELIVERY SERVICES AVAILABLE TO FOREIGN LIBRARIES, INFORMATION CENTERS AND COMMERCIAL ORGANIZATIONS.

The National Agricultural Library (NAL) accepts requests from libraries and other organizations in accordance with the national and international interlibrary loan code and guidelines.

In its national role, NAL supplies copies of agricultural materials not found elsewhere. Filling requests for materials readily available from other sources diverts NAL's resources and diminishes its ability to serve as a national source for agricultural and agriculturally related materials. Therefore, NAL is viewed as a library of last resort.
Submit requests to major university libraries, national or provincial institutions or network sources prior to sending requests to NAL. If the needed publications are not available from these sources, submit requests to NAL with a statement indicating their non-availability.

AGLINET -- Requesters in countries with an AGLINET library are encouraged to make full use of that library and its networking capabilities. As an AGLINET participant, NAL provides free document delivery service for materials published in the United States to other AGLINET participants.

REQUESTS -- Submit requests on the American Library Association (ALA) or the International Federation of Library Associations and Institutions (IFLA) interlibrary loan form or via electronic mail

or telefacsimile (see over for more details). Include the complete name of the person authorizing the request on each form; the standard bibliographic source which lists the title as owned by NAL; and the call number if the citation is from an NAL database(CAIN/AGRICOLA, "Bibliography of Agriculture", or the NAL catalog).

DOCUMENT DELIVERY SERVICE -- Submit a separate completed interlibrary loan form for each article requested. Indicate willingness to pay charges on the form, and compliance with copyright law or include a statement that the article is for "research purposes only". Requests cannot be processed without these statements. Please read copyright notice below.

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BILLING - Charges include postage and handling, and are subject to change. Invoices are issued quarterly by the National Technical Information Service (NTIS), 5285 Port Royal Road, Springfield, VA 22161. Establishing deposit account with NTIS is encouraged. Annual billing is available to foreign institutions on request by contacting NAL at the address below. DO NOT SEND PREPAYMENT.

Send Requests to:
USDA, National Agricultural Library
Document Delivery Services Branch, ILL, PhotoLab
10301 Baltimore Blvd., NAL Bldg.
Beltsville, Maryland 20705-2351

Contact the Head, Document Delivery Services Branch at (301) 504-5755 with questions or comments about this policy.

ELECTRONIC MAIL ACCESS FOR INTERLIBRARY LOAN (ILL) REQUESTS

February 1995

The National Agricultural Library (NAL), Document Delivery Services Branch accepts ILL requests from libraries via several electronic services. All requests must comply with established routing and referral policies and procedures A sample format for ILL requests is printed below along with a list of the required data/format elements.

ELECTRONIC MAIL - (Sample form below)

SYSTEM	ADDRESS CODE

INTERNET. . . . . LENDING@NALUSDA.GOV
OCLC . . . . . NAL's symbol AGL need only be entered once, but it must be the last entry.

SAMPLE ELECTRONIC MAIL REQUEST

```
| AG University/NAL    ILLRQ 231     1/10/95     NEED BY:  2/15/95
|
| Interlibrary Loan Department
| Heartland, IA  56789
| Agriculture
|
| Dr. Smith   Faculty   Ag School
|
| Canadian Journal of Soil Science 1988 v 68(1): 17-27
| DeJong, R.  Comparison of two soil-water models under semi-arid growing
| conditions
|
| Ver:  AGRICOLA     Remarks:  Not available at AU or in region.
| NAL CA:  56.8 C162  Auth:  C. Johnson      CCL     Maxcost: $15.00
|
| Ariel IP = 111.222.333.444.555 Or Fax To 123-456-7890
|
|
```

TELEFACSIMILE - Telephone number is 301-504-5675. NAL accepts ILL requests via telefacsimile. Requests should be created on standard ILL forms and then faxed to NAL. NAL fills requests via FAX as an alternative to postal delivery at no additional cost. If you want articles delivered via fax, include your fax number on your request. NAL will send up to 30 pages per article via fax. If the article length exceeds 30 pages NAL will ship the material via postal service. All requests are processed within our normal timeframes (no RUSH service).

ARIEL - IP Address is 198.202.222.162. NAL fills ILL requests via ARIEL when an ARIEL address is included in the request. NAL treats ARIEL as an alternative delivery mechanism, it does not provide expedited services for these requests. NAL will send up to 30 pages per article via Ariel. If the article length exceeds 30 pages or cannot be scanned reliably, NAL will deliver the material via fax or postal service.

REQUIRED DATA ELEMENTS/FORMAT

1. Borrower's address must be in block format with at least two blank lines above and below so form may be used in window envelopes.
2. Provide complete citation including verification, etc. and NAL call number if available.
3. Provide authorizing official's name (request will be rejected if not included).
4. Include statement of copyright compliance (if applicable) and willingness to pay NAL charges.

Please read copyright notice below.

Return to Constructed Wetlands Bibliography

Return to the Water Quality Information Center at the National Agricultural Library.
Last update: April 27, 1998
The URL of this page is http://www.nal.usda.gov/wqic/Constructed_Wetlands_all/cwamd.html

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J. R. Makuch /USDA-ARS-NAL-WQIC/ jmakuch@nal.usda.gov