

APPENDIX B

Erosion and Sediment Control Best Management Practices (BMP) Plan

January 2017

OVERVIEW

This Best Management Practices (BMP) plan is a guide for Kentucky Division of Abandoned Mine Lands (DAML) projects. It contains information regarding preventing, reducing and controlling erosion, sediment, and pollutant runoff from Abandoned Mine Land (AML) Reclamation and Acid Mine Drainage (AMD) Abatement project construction sites. The information in this BMP will aid DAML staff and contractors in selecting, installing, and maintaining erosion prevention and sediment control measures during the different stages of construction. This BMP plan, in accordance with DAML Technical Specifications and Standard Drawings, is intended to protect Kentucky's streams from potential water quality impacts resulting from DAML projects.

This general BMP document is to outline the various pollution prevention measures used on AML Reclamation or AMD Abatement Projects. The primary sources of pollutants are solids mobilized during storm events and precipitants from mineralized mine drainage. Other sources of pollutants include oil/fuel/grease from servicing and operating construction equipment, concrete washout water, sanitary wastes, and trash/debris.

EROSION PREVENTION AND SEDIMENT CONTROL MEASURES

Plans for Reclamation and AMD abatement construction projects will include erosion control measures on the planview sheets when possible, and will depict Disturbed Drainage Areas (DDAs) and related information. The construction notes and project description may describe other control measures. The Contractor and Engineer may select an additional BMP for the project as the project changes and construction progresses. Projects that do not have DDAs annotated in the plans will employ the same concepts selecting and implementing this general BMP plan.

Address disturbed areas or sources of sediments by the most effective means in the specific work area. Direct non-storm water discharges to sediment basins/traps or to a filter fence enclosure in a flat vegetated infiltration area or filtered via another approved commercial product. All deep mine and surface impoundment water will be tested and treated, when as necessary, to meet the DAML Water-Treatment and Disposal Technical Specification unless stricter limitations are listed in an existing Total Daily Maximum Load (TMDL) limit.

PERMITS

The DAML shall review each project during project development to determine whether any permits are required to implement the project work. When a permit is required, DAML will make every effort to obtain the permit prior to letting the project for bidding. Permit specific conditions shall trump any standard conditions and/or practices. All permits must be maintained onsite and produced when requested by regulatory authorizes inducing representative of the permitting authority.

Common permits types for DAML projects:

- 401 Water Quality Certification (WQC)
 - Issued by the KY Division of Water
- 402 KY Pollution Discharge Elimination System (KPDES)
 - DAML activities are covered under the AML KPDES General Permit
- 404 US Army Corps of Engineers (USACE)
 - Issued by the US Army Corps of Engineers- Nashville District, Louisville District, or Huntington District (Depending upon major drainage basin)
- KY Stream Construction (Floodplain)
 - Issued by the KY Division of Water
- Local Floodplain Permit
 - Issued by the County/Municipality
- Local Storm Water Construction
 - Issued by the County/Municipality

A) Field Review Walk-Thru:

The DAML will conduct a project review between the Project Engineer, Construction Branch Personnel, Project Design Technician, and Field Office Staff, to review the construction plans and identify any changes needed prior to letting the project for bidding. The group will evaluate the locations and types of site specific BMP and any other erosion prevention and sediment control measures chosen for incorporation into the final design plans.

B) Pre-Bid Conference

DAML will present the project specific BMP and permit requirements/conditions to the potential contractors during the pre-bid conference meeting.

C) Pre-Construction Conference

Prior to the actual beginning of the project, DAML will hold a pre-construction conference between representatives of the DAML, the Contractor, including any Subcontractors, as well as other interested agencies and parties. Items discussed will include the time and sequence for construction, planned methods of operation, payment, and other relevant questions including any permit requirements and the erosion and sediment control plan.

D) Construction Access

This is the first land-disturbing activity. Construction entrances shall be a minimum of twenty (20) feet wide by fifty (50) feet long, measured from the shoulder of the public road, and consist of No. 2 aggregate over a heavy weight non-woven filter fabric base. As soon as construction begins, stabilize bare areas with gravel and temporary mulch and/or vegetation.

E) Clearing and Grubbing

Use the following techniques for clearing and grubbing activities:

- 1) Leave areas undisturbed when possible.
- 2) Construct silt basins to provide silt volume for large areas.
- 3) Construct Silt Trap(s) Type A for small areas.
- 4) Construct Type B silt traps for areas with rapid runoff and sediment-laden runoff.
- 5) All silt traps should have a 3:1 flow length to width ratio. Add spreader bars, baffles, or turbidity curtains to maintain the flow path ratio when site conditions require traps sizes smaller than the standard detail dimensions.
- 6) Install geotextile bags and/or rock checks in front of existing drop inlets.
- 7) Construct diversion ditches to catch sheet runoff and carry it to basins or traps or to divert it around areas to be disturbed.
- 8) Maintain brush and/or other barriers to slow and/or divert runoff.
- 9) Construct silt fences/hay bales to catch sheet runoff on short slopes. For longer slopes, multiple rows of silt fence/hay bales may be considered.
- 10) Apply temporarily mulch to area not actively being disturbed or for any area left undisturbed for fourteen (14) days.
- 11) Employ non-standard or innovative methods.

F) Stream Crossings / Work Along Streams

- 1) Temporary low-water stream crossings follow the guidelines included in the DAML Technical Specifications and those established by the KY Division of Water Floodplain Management Section. Removal of a temporary crossing may be required to accommodate large storm events.
- 2) Do not completely block stream flow (even temporary). Instead, utilize some form of pass thru mechanism during all AML projects.
- 3) Work within a stream channel shall not cause flooding of properties upstream, downstream or within the project area or cause downstream water quality degradation.
- 3) Minimize equipment contact time with the stream water by diverting water around equipment working in or along streams.
- 4) No flowing water will interact with any uncured concrete placed in the stream channel.
- 5) Divert all stream water around the work areas in accordance to methods listed in the DAML Stream Protection & Relocation technical specification, AML Standard Details Section 60, and as by the appropriate permit guidelines.
- 6) Temporary out of channel stream diversion must use one of the three approved methods: pipe diversion, sandbag/stone channel diversion, and/or fabric-based channel diversion. Do not construct any temporarily diverted channel on bare, erodible soil. No temporary diversion shall be permanent without a 401, 404, and other appropriate permits.

G) Deep Mine and Surface Water Impoundments

The DAML Resident Inspector will test the mine water from deep mines and surface impoundments on the project area to determine the pH and total iron content. Treat the water until it meets the DAML Water-Treatment and Disposal Technical Specification or an existing TMDL, whichever is stricter, before release through a silt control structure(s).

Monitoring & Recording

The DAML Inspector will maintain a log of the pH and total iron content results prior to releasing and during each release day. Perform a minimum of two (2) tests downstream each day to ensure the maintenance of water quality during release and is not degrading the receiving stream.

Types of structures/facilities include:

- 1) Silt Traps Type A (20'L x 5'W x 2'D min dugout)
- 2) Silt Traps Type B (20'L x 5'W x 2'D min dugout with rock berm)
- 3) Silt Check - Rock checks with filter fabric core lining installed in channels and in front of pipes
- 4) Temporary silt control fence with Class II filter berm
- 5) Sediment collection bags

H) Cut and Fill and Placement of Drainage Structures

Areas at final grade will be seeded and mulched within five (5) days. Soil stock piles and areas that are not at final grade but where construction will cease for a period of fourteen (14) days or longer, shall receive temporary mulch no later than fourteen (14) days from the last construction activity in that area.

Types of structures/facilities include:

- 1) Silt Traps Type B (20'L x 5'W x 2'D min dugout with rock berm)
- 2) Silt Checks - Bags in front of pipes after they are placed
- 3) Channel lining
- 4) Erosion control blanket
- 5) Temporary mulch and/or seeding for areas where construction activities will be ceased for 14 days or more
- 6) Non-standard or innovative methods

I) Temporary Shutdown

Items to be completed prior to shutdown include:

- 1) Clean out behind, repair or replace silt fence and/or hay bales
- 2) Clean out all silt traps

- 3) Apply temporary mulch and track into the soil
- 4) Sow cover crop (weather permitting)

J) Finish Work

- 1) Establish permanent seeding and protection
- 2) Remove non-permanent silt checks from ditches and drains if protected with other BMPs sufficient to control erosion and vegetation is established.
- 3) Remove non-permanent silt traps and basins.
- 4) Remove geotextile silt fence.
- 5) Planting trees and/or shrubs where they are included in the project.
- 6) Clean out behind, repair, and/or replace bale silt barriers
- 7) Clean out all permanent silt traps and basins

K) Post-Construction

The Contractor shall assume responsibility for all workmanship and materials for a period of one year from the date of final payment, as directed by the Contract Documents. Any work found to be defective due to failure to comply with the provisions and intent of the Contract Documents shall be corrected at the Contractor's expense. Problems determined not to be created by the landowner or due to the Contractor will be addressed by the DAML for a period of up to three years, pending available funding.

OTHER CONTROL MEASURES

L) Solid Materials

No solid materials, including rock and building materials, shall be discharged into waters of the U.S. except as authorized by the Clean Water Act (CWA) Section 401 and Section 404 permits.

M) Waste Materials

Collect and store waste materials that may leach pollutants (paint and paint containers, caulk tubes, oil/grease containers, liquids of any kind, soluble materials, etc.) in appropriate covered waste containers. Remove waste containers from the project site frequently as to not allow wastes to become a source of pollution. Instruct all personnel regarding the correct procedure for waste disposal and dispose of wastes in accordance with appropriate regulations.

N) Hazardous Waste

Manage and dispose of hazardous waste materials in the manner specified by local or state regulation. Notify the Resident Inspector if there are any hazardous wastes generated, and provide a plan for the management and disposal of such materials. Instruct site personnel with regard to proper storage and handling of hazardous wastes when required and use the practices to reduce the risks associated with all hazardous materials. Keep products in original containers

unless they are not re-sealable with the original labels and material safety data sheets (MSDS) will be reviewed and retained.

O) Spill Prevention

Use good housekeeping and material management practices to reduce the risk of spills or other exposure of materials and substances to the weather and/or runoff. Manufacturers' recommended methods for spill cleanup will be maintained on site and readily available upon request. Make personnel aware of procedures and the location of the information and cleanup supplies. Equipment and materials will include as appropriate, brooms, dust pans, mops, rags, gloves, oil absorbents, sand, sawdust, and plastic and metal trash containers.

Clean up all spills immediately after discovery. Keep the spill area well ventilated. Personnel will wear appropriate protective clothing to prevent injury from contact with a hazardous substance. Report spills of toxic or hazardous material to the appropriate state/local agency as required by KRS 224 and applicable federal law. Wastes from spill cleanup will be disposed of in accordance with appropriate regulations. The spill prevention plan will be adjusted, as needed, to prevent spills from reoccurring and improve spill response and cleanup.

P) Petroleum Products

Monitor vehicles and equipment fueled and maintained on site for leaks, and receive regular preventative maintenance to reduce the chance of leakage. Protect petroleum products onsite will be stored in tightly sealed, clearly labeled containers from exposure to weather. The CONTRACTOR shall not have a total of over 1,300 gallons of petroleum products on site at any given time.

Q) Fertilizers

Store fertilizers in a covered area away from water. Transfer the contents of any partially used bag of fertilizer to a sealable plastic bin to avoid spills. Once applied, work into the soil and apply mulch to limit exposure to storm water.

R) Concrete Truck Washout

Concrete truck mixers and chutes will not be washed on pavement, near storm drain inlets, or within seventy (75) feet of any ditch, stream, wetland, lake, or sinkhole. Where possible, discharge excess concrete and wash water to areas prepared for pouring new concrete, flat areas to be paved that are away from ditches or drainage system features, or other locations that will not drain off site. Where this approach is not possible, excavate a shallow earthen washbasin away from ditches to receive the wash water.

INSPECTIONS

Use inspection and maintenance practices to maintain erosion and sediment controls:

- 1) The Contractor and DAML Resident Inspector will inspect all erosion prevention and sediment control measures at least once each week and following any rain of 0.1 inch or more.
- 2) The DAML Resident Inspector will record the silt control inspections by in their daily report.
- 3) Silt fences/hay bales will be inspected for bypassing, overtopping, undercutting, depth of sediment, tears, and to ensure attachment to secure posts.
- 4) Inspect silt traps and basins for depth of sediment, and built-up sediment and clean out when it reaches 50% of the design capacity and at the end of the job.
- 5) Inspect diversion dikes and berms and promptly repaired any breaches. Repair areas that are eroding or scouring and re-seeded / mulched as needed.
- 6) Inspect temporary and permanent seeding and mulching for bare spots, washouts, and healthy growth. Repair bare or eroded areas as needed.
- 7) Inspect all material storage and equipment servicing areas that involve the management of bulk liquids fuels and bulk solids weekly for conditions that represent a release or possible release of pollutants to the environment.

MAINTENANCE

Maintain all measures in good working order; initiate corrective actions within twenty-four (24) hours of being reported and completed with five (5) days, address critical failures immediately unless site conditions are too dangerous. Remove Built-up sediment from behind the silt fence/hay bales before it has reached halfway up the height of the fence.

ENFORCEMENT

At all times, representatives from DAML and enforcement agencies will have access to the project site. The ENGINEER reserves right to stop work until erosion prevention and sediment control problems are addressed to his/her satisfaction.