

SUBJECT: Permitting Guidance for Bioreactors

DATE: December 30, 2013

APPROVAL: Harold Ward – Acting Director *HW*

Permitting Guidance for Bioreactors

Authority

The West Virginia Department of Environmental Protection has authority for the Guidance document as per 38 C.S.R.2.

Introduction

With recent advances in research, the construction and use of bioreactors for treatment of selenium and other parameters has increased. The West Virginia Department of Environmental Protection (DEP) finds that these structures can be successful in reducing the concentrations of the pollutants for which they are designed. The DEP also finds that a procedure is required in the permitting of these bioreactors to ensure compliance with the requirements of 38 C.S.R.2.

Background

A bioreactor is a structure that is designed to mimic the conditions found in a naturally occurring wetland area. Research has shown that naturally occurring microbes that digest selenium, and other parameters, currently exists within a majority of the mining operations; however, the naturally occurring conditions are not conducive to stimulate increased activity. Within a bioreactor, organic medium is installed along with a water distribution method that creates an anaerobic environment along with a readily available carbon source used by the microbes as a source of energy.

Permitting

Prior to construction of a bioreactor, the permittee shall submit an application to the DEP for review and approval. The Regional Permit Supervisor will determine if the proposed activity requires submittal as a revision, modification or Incidental Boundary Revision. The application will include design drawings that accurately reflect the design flow, volume and type of organic material, and flow distribution system.

If the structure is proposed as a "Permanent Impoundment", the permittee must address the requirements of 38 C.S.R.2.5.5. Temporary structures shall include an abandonment plan in accordance with 38 C.S.R.2.5.4.h.

Certification

Upon completion of construction, the structure shall be certified in accordance with 38 C.S.R.2.5.4.d.

**This Guidance is also found in
Series 23 of the I&E Handbook**