

TO:	Permitting and I&E Personnel
SUBJECT:	SWROA Modeling, Runoff Monitoring, and Data Recording
DATE:	November 24, 2015 <i>hdk</i>
APPROVAL:	Harold D. Ward, Acting Director

Surface Water Runoff Analysis (SWROA) requirements were codified in the West Virginia Surface Mining Reclamation Regulations (38-CSR2-5.6, et seq.) and became effective June 1, 2003. At its inception, SWROA was effectively applied to existing permits and became a routine design requirement for future permits. Nevertheless, some confusion still exists relating to hydrologic modeling, runoff monitoring, data collection, field reporting, and termination aspects of this rule. The purpose of this policy is to provide clarification for permits containing SWROA designs.

Evaluation Point Siting Requirements

Any evaluation point (EP) chosen for hydrologic modeling shall be located so that pre-mining, during-mining, and post-mining peak flow volumes can be compared at a common location. To comply with the “no-net increase” SWROA requirement, calculated during-mining and post-mining peak flow volumes cannot exceed those of the pre-mining condition. Also, EP locations must be as close as practical to the permitted acreage while being located upstream of any critical structures such as, houses, buildings, stream constrictions/encroachments, etc.

SWROA pre-mining modeling should consider existing ground cover conditions at the time of permit issuance. Hydrologic analyses for the pre-mining condition must rely on realistic curve number and hydrologic soil group (HSG) assumptions applicable to actual on-ground conditions. HSG assumptions shall be substantiated by using the United States Department of Agriculture – Natural Resources Conservation Service – Web Soil Survey, as follows:

<http://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm>.

Failure to account for available sheet flow can exaggerate peak flows from pre-mining areas and result in reduced SWROA protection. Therefore, all pre-mining flow calculations should assume sheet flow conditions of three hundred feet (300 ft.) at the onset of the hydraulic flow path through any component watershed, unless otherwise documented.

SWROA Design Storm

The minimum SWROA design storm is a 25 year/24 hour precipitation event. The SWROA design storm is based upon the design standard applied to the most immediate hydraulic structure upstream of each EP within the associated watershed area. Typically, this will result in a 25 year/24 hour event to base SWROA designs upon, but occasionally a 100 year/24 hour design standard may apply. Other instances triggering the 100 year/24 hour SWROA design requirement would be the presence of occupied dwellings or significant stream constrictions/encroachments located upstream of an EP.

Runoff Monitoring Plan and Data Collection (U-3)

The intent of a site-specific runoff monitoring plan for a permit is to accumulate rainfall/runoff data for precipitation events of 1 year/24 hour or greater until the permit meets phase II release requirements. The runoff monitoring location(s) chosen by the permittee should be easily accessible and be representative of component watersheds within the permit boundaries where mining disturbance is expected to result. Rainfall and flow measurement methodologies should be adequately detailed in Item U-3.

Any permit having an approved SWROA with an incomplete or missing U-3 monitoring plan that fails to fulfill the above mentioned goals will require a permit revision to incorporate an acceptable monitoring plan.

The permittee is required to record daily precipitation and report monthly. Additionally, peak runoff resulting from any precipitation event of 1 year/24 hour or greater, must be measured at the designated location(s) identified in Item U-3 and be recorded. All recorded data, including rainfall data, shall be reported to the Secretary on a monthly basis in the format specified by Item U-3 of the approved permit.

Inspection of Drainage/Sediment Structures and Reporting on Integrity/Function

Any precipitation event of 1 year/24 hour or greater, based upon the permittee's designated rain gauge in Item U-3, will require the permittee to conduct a permit-wide inspection to evaluate all constructed drainage/sediment structures. Such inspection should verify that the structures remain structurally intact and can still function as intended. A report is to be submitted to the Secretary addressing such findings. Present rule language allows 48 hours before a report has to be submitted to the Secretary.

Reporting is to be in written format so that a tangible record can be included in the permit file. Reporting to the inspector via email will be deemed acceptable; a telephone call to the inspector is also acceptable provided that timely follow-up (within one week) is submitted in written form.

Implementation/Termination of SWROA Requirements

All permits are required to have approved SWROA designs prior to any on-ground disturbance, unless otherwise exempted. For permits less than 50 acres, SWROA may be exempted on a case-by-case basis, if adequately justified and approved in a permit revision. Further, haulroads, loadouts, and ventilation facilities are excluded from any SWROA requirements. If a SWROA exemption is granted for any permit, all aspects of the SWROA rule are waived, including U-3 rainfall/runoff monitoring.

When a permit becomes Phase II eligible and complete drainage structure removal occurs, the SWROA runoff monitoring plan (U-3) can be terminated. At this time, recording of rainfall and resulting runoff responses will no longer be required. The permittee should submit a letter to the inspector addressing proposed SWROA termination for a permit.