



RAILROAD COMMISSION OF TEXAS
SURFACE MINING AND RECLAMATION DIVISION

ADVISORY NOTICE

DIRECTIVE ID:
AG-PS-145(b)(5)(G)
REVISION NO.:
EFFECTIVE DATE:
February 15, 2000

SUBJECT: Soil Bank Accounting Procedure

APPROVAL:

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TITLE: Director

I. PURPOSE

This Advisory Notice provides guidance regarding interpretation of the soil bank concept and its application in the assessment of postmine-soil data meeting performance criteria.

Soil banking is an acreage accounting procedure used to compare physical and chemical parameter values of postmine soil to the values of the same parameters derived from the premine-soil baseline. Use of this procedure assists in determining whether or not: (1) postmine-soil indicate that the top four feet (or lesser depth of disturbance) contains acid- and/or toxic-forming materials (§12.386); and where applicable, (2) that the chemical and physical characteristics in the 0 to 1-ft depth increment meet the topsoil substitute criteria (§12.335).

II. REGULATION REFERENCE

Title 16, Texas Administrative Code, §12.145(b)(4), *Soil handling and suitability of topsoil substitutes*, §12.145(b)(5)(G), *Soil-testing plan*; §12.335(e), *Topsoil substitutes and supplements*; §12.386, *Backfilling and Grading: Covering Coal and Acid- and Toxic-Forming Materials*. (Literature Citation A)

III. DEFINITIONS

A. Premine-Soil Baseline

The *premine-soil baseline* consists of chemical and physical data characterizing the native soil series (and other areas disturbed before acquisition by the mining company) within the permit-area boundary. This baseline data is represented by permit-area frequency distributions for pH, acid/base, sand and clay content, electrical conductivity, and other parameters that do not meet statewide criteria. (Literature Citation B)

When the *premine-soil baseline* is developed using more than one soil core per soil series, at least 80 percent of the area within the permit boundary must be represented by the series sampled. If only one core is collected per soil series, the analytical data from all soil series must be included. All native prime farmland soils must be sampled and included in the baseline.

B. Soil Bank

The *soil bank* is the acreage of a site-specific area disturbed or proposed to be disturbed by mining activities as reflected in the approved permit mining plan. The *soil bank* must be located entirely within the premine-soil baseline boundary. The *soil bank* acreage can also be increased to reflect new areas added for mining or permit consolidation, and decreased to exclude areas not mined.

However, an established *soil bank* cannot be decreased in size by the release of land from a Phase III reclamation performance bond.

IV. Calculation of the Parameter-Value Bank Acreage

To calculate the premine *bank acreage* for a particular parameter-value such as pH range 4.0 to 4.4 for the 1 to 4-ft depth increment requires the following: (1) *soil bank* acreage; and (2) the frequency distribution (percent) of premine-soil baseline with pH values between 4.0 and 4.4 in the 1 to 4-ft depth increment.

The parameter-value *bank acreage* is the product of the premine distribution of a particular parameter (in percent) and the *soil bank* (in acres). The following example illustrates calculation of the *bank acreage* for a specific parameter-value range:

The premine-soil baseline indicates that 30 percent of premine soils have pH values between 4.0 and 4.4 in the 1 to 4-ft depth increment. The *soil bank* (the area proposed to be disturbed by mining activities) is 1000 acres. Then,

Bank Acreage = 300 acres [(1000 acres of soil bank)(0.30 of premine soil with pH between 4.0 and 4.4 in the 1 to 4-ft depth)]

This bank acreage is applicable to all examples in this advisory.

V. Soil Banking Accounting Examples

The following examples illustrate the procedure for evaluating the postmine-soil data (**PSD**) to determining whether or not the data demonstrate the approved postmine-soil performance standards have been met.

Example No. 1

PSD indicate that 800 acres have been graded and monitored for pH with 200 acres having pH values ranging between 4.0 and 4.4 in the 1 to 4-ft depth increment. This parameter value range for pH in the 1 to 4-ft depth will be referred hereafter as the **PVR**.

Given:

Premine Soil Baseline: 30 percent of premine soils within the permit boundary have pH values in the PVR.

Postmine-Soil Data in the PVR: 200 acres and all acid/base value are greater than 0 tons/1000 tons of material.

Then:

Bank Acreage for the area monitored = 240 acres [(800 ac)(0.30)]

Banking Acreage Balance for the area monitored = 40 acres (240 ac - 200 ac)

The difference between the premine pH acreage allocation based on the area monitored (240 acres) and the postmine acreage (200 acres) with pH values in the PVR is equal to or greater than zero acres. Therefore, a technical finding can be made that the PSD for the referenced 800 acres do not indicate the presence of acid-forming materials (AFM) because the premine acreage allocation for the PVR has not been exceeded. Note that a complete assessment concerning the presence or absence of AFM is based on two parameters: pH and acid/base. (Literature Citation C)

Example No. 2

Case 1

An operator submits annual soil monitoring data for 800 acres in accordance with the soil-testing plan.

Given:

Postmine-Soil Data in the PVR: 275 acres with the acid/base values for the 800 acres tested greater than 0 ton/1000 tons of material.

Then:

Bank Acreage for the area monitored = 240 acres $[(800 \text{ ac})(0.30)]$

Banking Acreage Balance for the area monitored = -35 acres $(240 \text{ ac} - 275 \text{ ac})$

The difference between the premine acreage allocation based on the area monitored (240 acres) and the PSD within this PVR (275 acres) is less than zero acres. Therefore, a technical finding cannot be made that the PSD for the referenced 800 acres do not indicate the presence of AFM because the premine acreage allocation for this PVR has been exceeded, even though the banking acreage balance for the soil bank reflects a 25-acre balance $(300 \text{ ac} - 275 \text{ ac})$.

Case 2

An operator requests Phase I bond release on 500 acres within the referenced 800 acres. The 500 acres contain 115 acres in the PVR. Phase I bond release requires a demonstration that postmine soils meet performance criteria (absence of AFM/TFM conditions).

Then:

Bank Acreage for Phase I Bond Area = 150 acres $[(500 \text{ ac})(0.30)]$

Postmine-Soil Data = 115 acres

Bank Acreage Balance for Phase I Bond Area = 35 acres $(150 \text{ ac} - 115 \text{ ac})$

The difference between the premine acreage allocation based on 500 acres in the Phase I bond release application, and the PSD in the PVR is equal to or greater than zero acres. Therefore, a technical finding can be made that the PSD for the referenced 500 acres do not indicate the presence of AFM.

Case 3

The operator requests Phase I bond release on an additional 60 acres within the 800 acres monitored. The 60 acres contain 25 acres with pH values in the PVR. Note that for the 60 acres the percent with pH values in the PVR is 42 percent $[(25 \text{ ac}/60 \text{ ac})(100)]$, which exceeds the premine percentage of 30 percent for this parameter. When this occurs, the area requested for bond release (i.e., the 60 acres) can be combined with the acreage that has already received Phase I bond release (i.e., 500 acres) and then the aggregate area (i.e., 560 acres) evaluated for suitability.

Then:

Bank Acreage for Total Phase I Bond Area = 168 acres $[(560 \text{ ac})(0.30)]$

Postmine-Soil Data = 140 acres $(115 \text{ ac} + 25 \text{ ac})$

Bank Acreage Balance Total Phase I Bond Area = 28 acres $(168 \text{ ac} - 140 \text{ ac})$

The difference between the premine acreage allocation based on 560 acres and the PSD in the

PVR is equal or greater than zero acres. Therefore, a technical finding can be made that the PSD do not indicate the presence of AFM in the referenced 60 acres.

VI. LITERATURE REFERENCE

- A. Coal Mining Regulations. Title 16, Texas Administrative Code (TAC). Chapter 12.
- B. Correspondence Document - Technical Release SA-1, Acid forming materials (AFM) identification. SMRD, October 25, 1988. (Quantitative definition of AFM)
- C. Correspondence Document – Technical Release SA-2, Materials suitable for placement in the top four feet of leveled minespoil including topsoil substitutes, SMRD, October 31, 1988. (Statewide criteria for soil and overburden monitoring parameters)