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Technical Analysis and Findings

Utah Coal Regulatory Program

PID: C0410002
TaskID: 4448
Mine Name: SUFCO MINE
Title: WASTE ROCK DISPOSAL SITE SUBSOIL PILE AS-BUILT

Operation Plan

Topsoil and Subsoil

Analysis:

Three new portals accessing the West Lease and were approved with Task #3548 in 2010. The construction of concrete access tunnels to lessen the grade of the entry to Portal #1 (West Lease Beltline portal) and Portal #2 (West Lease Main Haulage portal) was conditionally approved with Task 3780. A commitment stated in the West Lease portal construction application cover letter, dated March 21, 2011, was to provide suitability analysis for the excavated soil which would support placement in either the subsoil stockpile or the waste rock pile at the waste rock site.

The subsoil as-built information was provided in 2013 and reviewed as task 4372 (May 16, 2013), followed by Task 4395 (September 13, 2013), and finally as task 4448 (December 3, 2013). The waste rock as-built (West Lease Portal development) information received on November 13, 2013, is now recommended for approval.

Topsoil Removal and Storage

The narrative in Chapter 2 pp. 2-11 through pp.2-22 is a mixture of conjecture and documented soil volumes. The Division understands that several small topsoil stockpiles have been segregated and protected (Vol. 1 Section 2.3.1.1 and 2.3.1.4 and Vol. 3 Sec. 3.1.6). They are as follows:

Waste rock site stockpiles (Vol 3, Map 4):	
mine site subsoil stockpile	11,364 yd3
waste rock site combined topsoil 1A and 1B mine	465 yd3
waste rock topsoil pile #2	161 yd3
waste rock topsoil pile #3	138 yd3
waste rock fenced sediment pond topsoil pile	635 yd3
Lift #4 stockpile	1,847 yd3
Mine site stockpiles	
sediment pond	1,200 yd3
substation no. 1	224 yd3
substation no. 2	118 yd3
overflow pond	1,488 yd3
Link Canyon	38 yd3

A table added to WRDS p. 3-5 indicates that there is 11,260 cy of subsoil stored in a stockpile at the waste rock site for use at the mine site, corresponding with the volume listed on page 2-18. Analysis dated August 11, 2011 (six Comp samples) and analysis dated December 20, 2012 (three subsoil pile samples) document the suitability of this topsoil. These analyses have been added to Appendix 2-3.

Unfortunately, the requested Total Sulfur AB (acid base) and T.S. ABP (acid base potential) analysis which is missing from the Gob pile analysis dated July 8, 2010 could not be produced at this late date (see cover letter dated November 13, 2013). Had the analyses been provided in a more timely manner by the Permittee, the possibility of recovering said information would have been much more likely.

The subsoil laboratory analysis and Gob analysis dated Aug. 11, 2011 and Dec 12, 2013 indicate that potassium is available in minute quantities in these clay loam subsoils. Since potassium is a plant macro-nutrient, plants growing on this subsoil pile should be evaluated for potassium deficiency (small dots arranged on the leaf edges, dry, scorched leaf edges, irregular chlorosis) and the augmentation of the subsoil with a potassium rich amendment should be discussed. Potassium may become more available over time, as the subsoil minerals weather.

The MRP identifies 2,160 yd3 of subsoil stored in the substation bin wall and 5,300 yd3 of road base and 11,364 yd3 subsoil stored at the waste rock site that is available for use as subsoil at the mine site (Section 2.3.1.4 on page 1-12). That is a total of 18,824 yd3 of suitable subsoil available for final reclamation of the 17.4 acre East Spring Canyon facilities pad site, as listed in MRP, Sec. 116. (This amounts to approximately 8 inches of subsoil cover.) Volume 1, Chapter 2, page 2-21 has been updated with this information.

At the East Spring Canyon mine site, topsoil is stored at the substation stockpile (27yd3), and at the sediment pond (1,200 yd3 , Section 2.3.1.4). The overflow pond construction in 2009 generated an additional 1,488 yd3 (Sec. 2.3.1.1, p. 18). (As builts for the overflow pond stockpile are under review as Task #4393.) Substitute topsoil is also located in restored (seeded) slopes at the mine site (pp. 2-10 and 2-23). More specifically, the interim seeded slopes above the parking lot and portals will be used as substitute topsoil (personal communication with Mike Davis, November 24, 2009.)

The waste rock as-built amendment states that there are five topsoil stockpiles at the Waste Rock site. They are Topsoil Pile 1A, 1B, new topsoil stockpiles 2 & 3, and the sediment pond topsoil stockpile.

Final reclamation grading of the mine site is described in Section 5.4.2.2 and Appendix 2-4. Cut/Fill estimates are presented in Appendix 2-5. Approximately 74,000 yd3 will be moved.

pburton