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>>> "Gefferth, John" <JohnGefferth@consolenergy.com> Tuesday, January 20, 2009 11:14 AM >>>
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try this one

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Strata Below the A Seam

The A seam is the lowest mineable seam in the Emery protect. Therefore, very few drill holes have penetrated more than 15-20 feet below this seam. The available information indicates that the interval between the base of the A seam and the bottom of the Ferron is about 60-70 feet thick and is composed mainly of sandstone and sandy siltstone.

V.A.4 I-ZONE ROOF AND FLOOR CHARACTERISTICS

Roof and floor materials of the I zone mine are interbedded sandstones and shales. The 10 feet of section immediately above the I zone coal generally contains several feet of irregularly laminated, light gray, fine-grained quartz sandstone. Dark gray shale is usually in contact with the coal. Pyrite is present occasionally in minor amounts. The floor material is generally dark olive gray, coaly, silty shale. Several feet of light gray fine-grained quartz sandstone with irregular shale laming, burrow structures and coal fragments are typically present within the first 10 feet of section below the coal.

Values of pH in the roof and floor horizons range from 5.0 to 9.1. The acid materials have a net base potential. Most of the strata have alkaline pH. Floor pH is generally higher than that of the roof, with many values greater than 9.0. The high pH values indicate that elements mobile at high pH may be in solution.

Electrical conductivity values are typically below 4.0 mmhos/cm, except in holes nearest the outcrop. Roof materials are more generally sodic. Sodium adsorption ratios range from 1.8 to 28.0. Values exceed 10 in several holes, in both roof and floor intervals. Many ESP (exchangeable sodium percentage) values are above l5. Mine water might have sodium concentrates unsuitable for irrigation use.

Trace element analysis for boron, selenium, fluoride, arsenic, molybdenum, Iron, manganese, lead, zinc and nickel were conducted. Boron (hot-water extractable) concentrations are generally less than 1.0 ppm: but the salty strata have higher boron levels (1.6 to 4.6 ppm). These are near the outcrop of the Ferron and could produce boron in the mine discharge unsuitable for irrigation use. Selenium concentrations are low. Fluoride is present in most holes, and therefore mine water might contain levels unsuitable for irrigation or for livestock. Arsenic (acid-soluble) concentrations exceed 0.1 ppm in all intervals and range to 1.59 ppm. Molybdenum is not a potential problem. Iron (DTPA extractable) concentrations range from 12 to 65 ppm.

Manganese (plant extractable) concentrations are below suspect levels for overburden. Lead is below the suspect level for overburden with pH greater than 6. Zinc (DTPA-extractable) is below the drinking water standards. Nickel (DTPA-extractable) concentrations are less than 0.1 ppm no water standards for nickel have been established.

Additional roof and floor sampling will be taken in the any new areas where full extraction occurs that does not already have analysis. The analysis will consist of the following. pH, pyritic sulfur, sulfate, organic sulfur, total sulfur, total iron, sodium absorption ratio (SAR), acid/base potential, electrical conductivity (EC), total calcium, total magnesium, total potassium, total sodium, total boron, total selenium, total arsenic, total cadmium, total chromium, total lead, total zinc

Table V-I contains chemical analyses for I-Zone strata and adjacent units.

Revised 1/09