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ACT/007/035 File #2

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DIVISION OF
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June 23, 1993 (via FAX 801-359-3940)

Mr. Henry Sauer
Soil Scientist
State of Utah — DNR/UDOGM
Mined Land Reclamation Program
3 Triad Center, Suite 350
Salt Lake City, UT 84180-1203

Re: Proposed Soil Mapping and Sampling Plan for the Sunnyside Cogeneration Associates (SCA) Permit Site

Dear Mr. Sauer:

Subsequent to our telephone conversations today, I am submitting for your review and comment a soil mapping and sampling plan to obtain necessary soils data for the five proposed topsoil (or soil substitute) borrow areas within the SCA permit area. As noted in the previous conversations, all mapping, sampling, and laboratory characterization will be performed in accordance with UDOGM's "Guidelines for Management of Topsoil and Overburden for Underground and Surface Coal Mining" (Leatherwood and Duce, April 1988).

The UDOGM guideline addresses: 1) minimum numbers of sampling locations for nondisturbed natural soil areas as well as disturbed areas; 2) sampling depth intervals at the sampling locations — by horizons for natural soils and by 15 centimeter depth intervals for disturbed areas; and 3) required laboratory analysis parameters and methods. The proposed mapping and sampling plan described below implements these UDOGM specifications for the five potential borrow areas. Each borrow area will be discussed separately.

RECLAMATION BORROW AREA — 22 ACRES

This is a nondisturbed area with natural soils. An Order 1 soil survey will identify and delineate soil series phases throughout the area. Each mapped soil series phase will be described and sampled by natural soil horizon a minimum of one time each at a representative location within the area. Description and sampling will continue below the weathered "C" horizon soil parent material to a depth of approximately 12 feet, or more if suitable material is present. Description and sampling of this lower, slightly weathered material will be done by observable strata if present.

Review of the Soil Conservation Service (SCS) Order 3 Carbon Area Soil Survey, which includes the study area (Jensen and Borchert, 1988), indicates Strych very stony loam, 3 to 15 percent slopes, is present on benches and outwash plains in the Reclamation Borrow Area. This soil formed in glacial outwash and alluvium derived dominantly from sandstone and shale. Although the Strych soil may or may not be present in the Reclamation Borrow Area, the following discussion of Strych is provided in order to preliminarily assess how many samples, at a minimum, might be taken during field sampling.

Typically, the surface layer of Strych is a pinkish gray to light gray very stony loam about 5 inches thick. Although the layer can have as much as 45 percent coarse (rock) fragments (pebbles, cobbles, and stones) and thereby exceeds the suitable level of 30 percent as stated in Table 2 of the UDOGM guideline, the surface layer is suitable for topsoil salvage based on discussions with Mr. Henry Sauer, UDOGM soil scientist.

The next layer in the Strych soil is a light gray and very pale brown very stony loam "Bk" calcic horizon which extends from about 5 to 47 inches in depth. It contains between 35 and 60 percent coarse fragments. This horizon may not be suitable for salvage based on possible high pH and high calcium carbonate percentage based on discussion with Mr. Sauer. It also has a high coarse fragment (rock) content. If proper sampling and lab results support an unsuitable interpretation, perhaps the layer could be specially handled (segregated during salvage) and placed at the bottom of the 4 foot soil reapplication depth during reclamation. This horizon is the most important one in the Strych soil and its thickness and chemistry need to be accurately assessed before a suitability interpretation can be made.

Below the Bk horizon to a depth of 60 inches or more is a very pale brown very cobbly sandy loam "C" horizon with about 45 percent coarse (rock) fragments. Again, this horizon is suitable for salvage even though coarse fragment (rock) content exceeds 30 percent. Below 60 inches, the important issue is the depth before unsuitable paralithic or geologic material is encountered. Perhaps the depth from 5 to 12 feet is suitable and all of this material can be salvaged.

Included with Strych in this map unit, according to SCS, are 15 percent Chupadera fine sandy loam and small areas of weakly developed soils that are similar to Strych but have a cobbly surface layer, Atrac very fine sandy loam, and Hernandez family very fine sandy loam. The Chupadera soil is dissimilar in that only 28 inches or so of soil is present before a sandstone contact is encountered. Chupadera also has a 12 inch "Bk" calcic horizon immediately on top of the sandstone bedrock. The Strych, cobbly surface phase, soil would probably be similar to Strych in suitability. The Atrac soil is entirely suitable throughout its depth and does not have the calcic horizon and only 0 to 15 percent coarse fragments. It is more suitable than Strych. Hernandez family soils are very similar to the very deep Strych, Strych cobbly surface phase, and Atrac soils and also have a calcic horizon.

Perhaps 6 or more samples will be collected throughout the possible 12 foot depth of the Strych soil profile, plus lower material, at each representative sample location. One or two sample locations will be sampled at a minimum for Strych if it is present and dominant in the Reclamation Borrow Area. If Strych is not present, or other soils(s) are dominant in the area, then they will be described and sampled a minimum of one or two times each. Dissimilar soil inclusions, as present, will also be described and sampled a minimum of one time each. As noted above, the Chupadera soil, if present, is dissimilar and would be sampled a minimum of one time. It has 3 major soil horizons. Any rock outcrop, if present, will be delineated during mapping regardless of how small each delineation may be. Similar soil inclusions with similar salvage depths may or may not be individually sampled depending on site-specific conditions. In summary, approximately 15 samples, taken from three sample locations, will be collected within the Reclamation Borrow Area.

INDUSTRIAL BORROW AREA 3 – 3.6 ACRES

This area is immediately adjacent to the north of the Reclamation Borrow Area and is a natural area of Strych soil where undisturbed. According to discussions with Henry Sauer, soil and lower material has been previously salvaged along approximately 300 feet adjacent to the road on the west side of the area. Perhaps as much as 15 feet of material has been previously removed. The description and sampling will be concentrated in the approximate 1.6 acre area that has not been salvaged. Both mapping and sampling methods will be similar to those conducted in the Reclamation Borrow Area. It is anticipated that Strych or a similar soil will be described and sampled a minimum of one time at a representative location and a total of about six samples taken. The description and sampling will continue to a depth of 12 feet, if possible. If dissimilar soils are present, each soil will also be described and sampled a minimum of one time at a representative location.

INDUSTRIAL BORROW AREA 1 – 4.6 ACRES

This area is northeast of the Coarse Refuse Lifts Area on the west side of the west slurry cell. It is a natural area with native soils, except apparently, there has been some disturbance. A portion of the soil material across part or all of the area has been previously salvaged. A small topsoil pile is present on the area and some parts show subsoil ("B" horizon) or subsurface ("C" horizon) material at the surface, indicating previous salvage.

SCS indicates Strych very stony loam, 3 to 30 percent slopes, is present on the area. The area will be mapped and sampled in a similar fashion to the two previous areas described above. Approximately six samples will be taken at a representative location of Strych or a similar soil. If dissimilar soils are present, each soil will also be described and sampled a minimum of one time at a representative location. The description and sampling will continue to a depth of 8.5 feet or more, if possible.

COARSE REFUSE LIFTS AREA – 16.2 ACRES

This is a disturbed area where approximately 2 feet of coarse soil or soil substitute material was applied about one year ago over coaly refuse spoil material. The reapplication material has quite a few rock fragments and sand material in it, but is considered to be uniform based on discussion with Henry Sauer. A minimum of three locations on the coarse refuse lifts area will be described and sampled by spade and hand auger. Samples will be collected at each sampling location by 15 centimeter depth intervals to a depth of approximately 2 feet. A total of 24 samples will be taken from this area.

SUB-AREA THREE – 10.8 ACRES

The East Slurry Cell embankment is labeled Sub-Area three and is a disturbed area where about 2 feet of soil or soil substitute material was emplaced over spoil 20 years ago. It will be described and sampled at 4 locations by 15 centimeter depth intervals to the spoil interface. Based on discussions with Henry Sauer, there is a thin, approximate one-inch thick possible iron silicate layer at the soil/spoil interface. This interface can have medium acid reaction and

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somewhat high salinity. Mr. Sauer has asked that this layer be sampled, assuming sufficient material can be collected. A total of about 20 samples will be collected from Sub-Area Three. If sufficient suitable topsoil or soil substitute material is available from the four previous areas, Sub-Area Three may not be sampled at this time based on discussions with Eckhoff, Watson and Preator Engineering (EWP).

In summary, a minimum total of about 71 samples will be described and collected across the potential borrow areas, assuming Sub-Area Three is sampled. If you have any comments or suggested revisions to this mapping and sampling plan, please contact myself of Jim Comas at the Sunnyside Power Plan or the Days Inn in Price, Utah. Field work will start on Thursday, June 24 and continue until finished. Ms. Jessica Smith of EWP is checking on the possibility of leaving the backhoe pits open for your review sometime during the week of June 28—July 2, 1993.

Sincerely,

ACZ Inc.

for Lee A. Bell

Jim Nyenhuis
Certified Professional Soil Scientist/Soil Classifier
ARCPACS 2753

JN:cmc

cc: Jessica Smith/EWP
Tom Leidich/ACZ