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Consolidation Coal Company
Mid-Continent Region
12755 Olive Boulevard
St. Louis, Missouri 63141
(314) 275-2300

March 18, 1986

Mr. Ferris P. Allgood
State Soil Scientist
USDA - Soil Conservation Service
P.O. Box 11350
Salt Lake City, Utah 84147

RE: Emery Mine
Soil Reconstruction Plans for Prime Farmlands
Draft Modifications per your June 25, 1985 letter

Per our telephone conversation of March 11, 1986, please find attached a draft modifications letter addressed to Mr. James A. Leatherwood concerning your letter of June 25, 1985.

Please review my modifications letter to see if I answered your concerns.

If corrections are needed, please note them on the modifications letter and return. A formal response letter is not necessary.

Sincerely,

John H. Bauer
Soil Scientist

JHB:vms

Attachment

Consolidation Coal Company
Mid-Continent Region
12755 Olive Boulevard
St. Louis, Missouri 63141
(314) 275-2300

March 18, 1986

Mr. James S. Leatherwood
Reclamation Soils Specialist
State of Utah Natural Resources
Oil, Gas and Mining
355 W. North Temple
3 Triad Center, Suite 350
Salt Lake City, UT 84180-1203

DRAFT

RE: Soil Reconstruction Plans for Prime Farmlands
Consolidation Coal Company, Emery Deep Mine, ACT/015/015,
Folder No. 2, Emery County, Utah
Reply to Letter dated February 19, 1986

Please consider the following modifications to our soil reconstructions plans for prime farmlands at our Emery, Utah Mine.

The modifications are sequentially numbered to coincide with Mr. Ferris P. Allgood's letter dated June 25, 1985.

The modifications are as follows:

1) Replace TABLE 8-1, page 8-56 and TABLE 8-3, page 8-60 with pages 14 and 15 photocopied from the Soil Survey Carbon - Emery Area Utah issued December 1970.

2) A revised TABLE 8-6, page 8-69 is attached

3) A revised page 8-71 is attached

4) ??

If additional information is necessary, please feel free to contact me.

Sincerely,

John H. Bauer
Soil Scientist

JHB:vms

cc: Ferris P. Allgood

File ACT/015/015
Folder #2, 4

United States Department of Agriculture

Soil Conservation Service

P. O. Box 11350
Salt Lake City, UT 84147

June 25, 1985

RECEIVED
JUN 27 1985
DIVISION OF OIL GAS & MINING

Susan C. Linner, Reclamation Biologist
Permit Supervisor
State Of Utah Natural Resources
Oil, Gas and Mining
355 W. North Temple
3 Triad Center, Suite 350
Salt Lake City, UT 84180-1203

Dear Ms. Linner:

Mr. Keith Beardall, U.S. Soil Conservation Service, Price, Utah has completed his review of the soil reconstruction plans (submitted by Consolidation Coal Company for prime farmlands within the Emery Deep Mine's permit area) as you requested May 10, 1985.

The comments for your consideration are as follows:

1. The crop yield information shown in Table 8-1, page 8-56 does not show soil slope while information given in Table 8-3, page 8-60 is related to slope. A crop yield is generally related to map units; slope is a part of the map unit.

2. In Table 8-6, page 8-69 the Saltair soil is strongly saline and is rated poor because of salinity. Compare to Table 8-8, page 8-83: Saltair soil is very strongly saline, the available water capacity should be rated as poor or low. The salinity reduces the amount of water available for plant use.

3. On page 8-71, paragraph 3: Saltair soils should also be listed as "poor/unsuitable in one or more horizons because of salinity".

4. Page 8-71 - Any saline soil would have low available water capacity. Available water capacity may be a limiting factor for some of the soils recommended. (See Table 8-8).

We are returning the associated plan for your files. If we can be of further assistance please call on us.

Ferris Allgood

FERRIS P. ALLGOOD
State Soil Scientist
801-524-5050

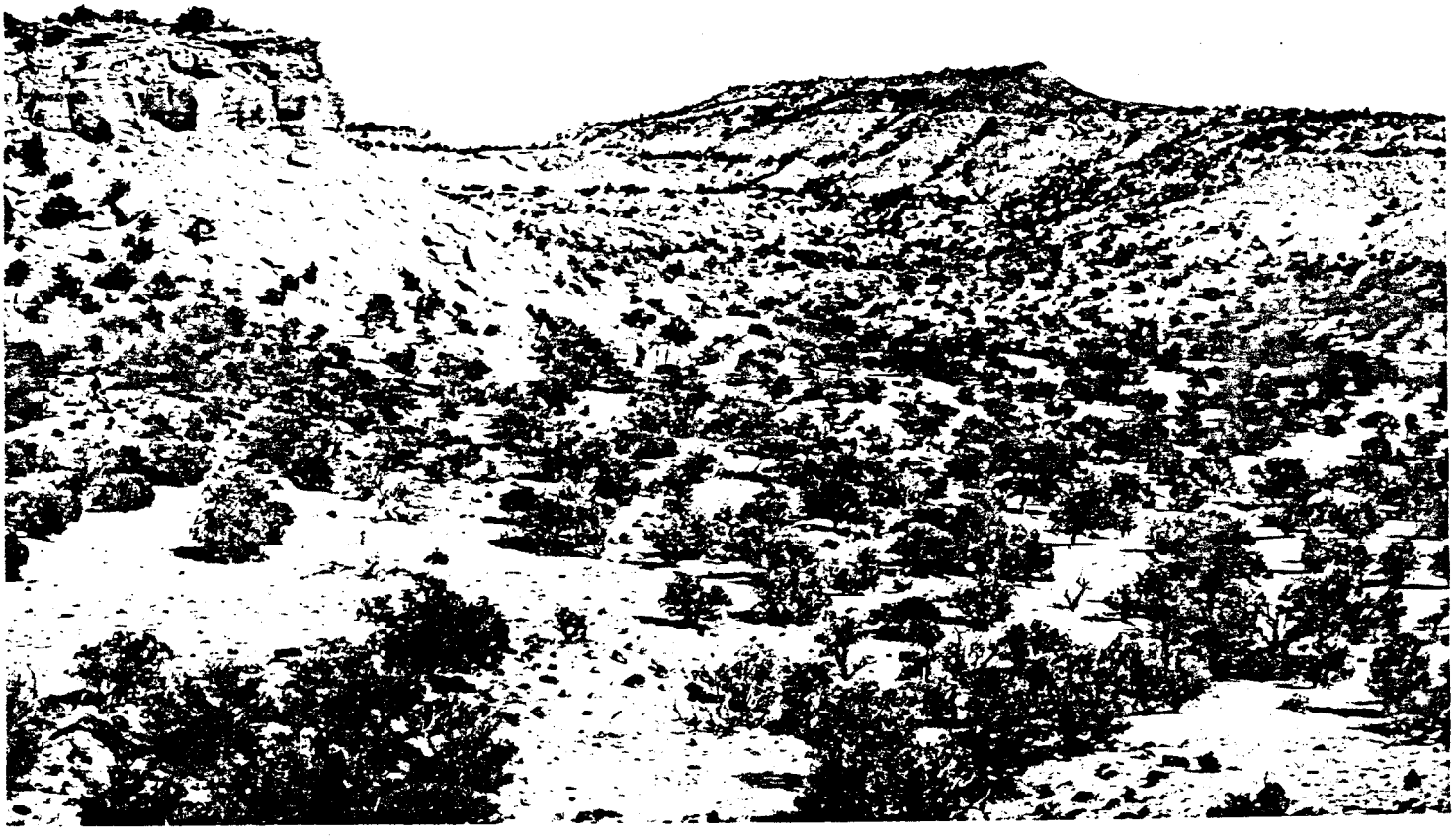
Frank Holt
STATE Conservationist

The Soil Conservation Service is an agency of the Department of Agriculture

Issued December 1970

SOIL SURVEY

Carbon-Emery Area, Utah



Photocopied to Replace
- Table 8-1, page 8-56
- Table 8-3, page 8-60

Mr.Leatherwood letter of 3/18/86

UNITED STATES DEPARTMENT OF AGRICULTURE
Soil Conservation Service
and
UNITED STATES DEPARTMENT OF THE INTERIOR
Bureau of Land Management
In cooperation with
UTAH AGRICULTURAL EXPERIMENT STATION

Major fieldwork for this soil survey was done in the period 1957–61. Soil names and descriptions were approved in 1965. Unless otherwise indicated, statements in the publication refer to conditions in the survey area in 1961. This survey was made cooperatively by the Soil Conservation Service, the Bureau of Land Management, and the Utah Agricultural Experiment Station as a part of the technical assistance furnished to the Price River Watershed, San Rafael, and Green River Soil Conservation Districts.

Either enlarged or reduced copies of the soil map in this publication can be made by commercial photographers, or can be purchased on individual order from the Cartographic Division, Soil Conservation Service, USDA, Washington, D.C. 20250.

HOW TO USE THIS SOIL SURVEY

THIS SOIL SURVEY of the Carbon-Emery Area, Utah, contains information that can be applied in managing farms and ranches; in selecting sites for roads, ponds, buildings, or other structures; and in judging the value of tracts of land for agriculture, industry, or recreation.

All the soils of the Carbon-Emery Area are shown on the detailed map at the back of this soil survey. This map consists of many sheets that are made from aerial photographs. Each sheet is numbered to correspond with numbers shown on the Index to Map Sheets.

On each sheet of the detailed map, soil areas are outlined and are identified by symbol. All areas marked with the same symbol are the same kind of soil. The soil symbol is inside the area if there is enough room; otherwise, it is outside and a pointer shows where the symbol belongs.

Finding and Using Information

The "Guide to Mapping Units" can be used to find information in the survey. This guide lists all the soils of the county in alphabetic order by map symbol. It shows the page where each kind of soil is described, and also the page for the capability unit and range site in which the soil has been placed.

Interpretations not included in the text can be developed by using the soil map and information in the text to group soils according to their limitations for a particular use. Translucent material then can be used as an overlay over the soil map and colored to show soils that have the same limitation or suitability. For example, soils that have a slight limitation for a given use can be colored green, those with a moderate limitation can be colored yellow, and those with a severe limitation can be colored red.

Farmers and ranchers can learn about use and management of the soils in the section describing the soils and in the discussions of the capability units and range sites.

Game managers, sportsmen, and others concerned with wildlife will find information about soils and wildlife in the section "Use of the Soils for Wildlife."

Engineers and builders will find, under "Engineering Properties and Behavior of Soils," tables that show the estimated engineering properties of the soils and the effect of these properties on engineering practices and structures.

Scientists and others can read about how the soils were formed and how they are classified in the section "Formation and Classification of Soils."

Newcomers to the Carbon-Emery Area may be especially interested in the section "General Soil Map," where broad patterns of the soils are described. They may also be interested in the section "Additional Facts About the Carbon-Emery Area."

Cover picture: **Castle Valley extremely rocky very fine sandy loam, 0 to 20 percent slopes, eroded. Steep rocky slopes in the background are not suitable for livestock grazing but are used by wildlife. Semi-Desert Stony Hills (Pinon-Juniper) range site.**

U.S. GOVERNMENT PRINTING OFFICE: 1970

Photocopied to Replace
- Table 8-1, page 8-56
- Table 8-3, page 8-60
Mr.Leatherwood letter of 3/18/86

For sale by the Superintendent of Documents, U.S. Government Printing Office
Washington, D.C. 20402

CAPABILITY UNIT VIIIw-4 (NONIRRIGATED)

This capability unit consists of the land type Riverwash, which is gravelly and cobbly. Areas of this land type are subject to damaging overflows and do not support the growth of plants. Their main use is for wildlife habitat.

CAPABILITY UNIT VIIIw-8 (NONIRRIGATED)

This capability unit consists of deep, poorly drained, very strongly saline, fine textured and moderately fine textured soils that generally have a crust of salt ½ to 1 inch thick on the surface. These soils are in the Cache, Libbings, and Saltair series.

Because of their high content of salt, these soils have no known farm use. Plants cannot grow on them. Experience indicates that reclaiming these soils for use as salt meadow pasture is economically not feasible.

CAPABILITY UNIT VIIIs-3 (NONIRRIGATED)

This capability unit consists only of bare, steep ledges of Rock land on which plants do not grow. The only use is for wildlife habitat, water supply, and esthetic purposes.

CAPABILITY UNIT VIIIs-7 (NONIRRIGATED)

This capability unit consists of rough, broken, and nearly bare areas of Badland and of a Bunderson soil. These areas have little potential for the production of plants and are sources of silt carried by runoff.

Small areas are used for a limited amount of grazing. The areas are used mainly, however, as a habitat for wildlife, for water supply, and for esthetic purposes.

Estimated yields

Table 1 gives the estimated average acre yields of the principal crops and pasture grown on irrigated soils under two levels of management. These yields are estimated on the basis of records obtained from farmers for the specific soils, on field observations of soil scientists, and on data compiled by economists of the Colorado River Storage Project. If no information was available for a particular soil, the estimates were made on the basis of yields on a similar soil. Only soils that are suitable for the crops and pasture specified are listed in table 1. In a given year, yields may be considerably higher or lower than the estimated average.

Under both levels of management, yields are based on a generalized crop rotation consisting of 5 years of a legume, 2 years of row crops, and 2 years of small grain. This rotation or a variation of it is used in most of the survey area. The kinds of row crops to be grown depend on the expected supply of irrigation water. Oats or barley normally are grown as a nurse crop to new seedings of alfalfa.

The yields in columns A are those that can be expected under average, or common, management. Under common management, phosphorus fertilizer is applied sparingly or not at all; nitrogen is seldom used. Most of the available animal manure is spread. Sugar beets generally are fertilized with phosphorus and nitrogen.

Under common management, water-control structures generally are inadequate, and water is applied without enough regard to proper length of run or to the timely needs of crops. Pastures are not clipped, rotation grazing is not practiced, and no commercial fertilizer is applied. In some instances droppings are scattered, but generally they are not.

The yields in columns B are those expected over a period of years under a moderately high level of management. This management provides that phosphorus fertilizer is applied when new seedings of alfalfa are being established and again after 2 or 3 years. Nitrogen fertilizer is used on row crops after the first year out of alfalfa and occasionally on small grains, unless animal manure is available. All available animal manure is spread. Tillage is reduced to essential, timely operations to avoid traffic pans or compacting the soil. In addition, operators use control structures for handling irrigation water, use proper lengths of runs that are adapted to soil conditions, and apply water in the quantity that satisfies crop requirements.

Under a moderately high level of management, irrigated pastures generally contain about 50 percent alfalfa and 50 percent grass. Regardless of the amount of alfalfa, fewer animals die of bloat when rotation grazing is used than when it is not used. Alfalfa is allowed to mature to the hay stage before animals graze it, and then animals are concentrated so that all the forage is consumed within a few days.

Pastures that are rotated, and in which alfalfa is the primary source of forage, should be grazed about 6 days and then rested for 28 to 40 days to allow for the regrowth of plants. The length of the regrowth period is about the same as the interval between hay cuttings. Six paddocks, or grazing units, generally are well suited to rotation grazing. This is the minimum number of paddocks that can be used if irrigation water is applied about every 14 days. This number allows for an irrigation immediately after grazing is finished and again 6 to 7 days before the next grazing so that the soil is dry when grazed.

At the stocking rate of 20 cows per acre, 6 days are needed to harvest efficiently the forage in a 5-acre pasture. Pastures grazed at this rate seldom need to be mowed for weed control oftener than every other year. Droppings are spread each year.

From 40 to 50 pounds of available nitrogen fertilizer are applied before growth starts each spring. Phosphorus fertilizer is applied every 2 or 3 years.

The length and warmth of the growing season at Green River allows farmers to have a greater variety of crops and larger yields than are feasible in the other parts of the survey area. For this reason, the soils at Green River are designated "extended season" phases to separate them from their counterparts in Castle Valley. For example, at Green River three full crops of alfalfa are obtained, and corn matures and is harvested for grain. In Castle Valley, on the other hand, alfalfa produces only two full crops and part of a third, and corn does not mature for grain. The frost-free period in Green River is 140 to 160 days, and the average temperature in summer is 76° F. In Castle Valley, the frost-free season is 110 to 130 days, and the average temperature in summer is 66° F.

The amount of soluble salts or alkali in the soil determines the kinds of crops that can be grown, and it affects crop yields.

Photocopied to Replace
- Table 8-1, page 8-56
- Table 8-3, page 8-60
Mr.Leatherwood letter of 3/18/86