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Some
PROPERTIES
of
144 SOILS
from
THREE INTERMOUNTAIN STATES
by Robert E. Taylor

INTERMOUNTAIN FOREST & RANGE EXPERIMENT STATION
FOREST SERVICE
DEPARTMENT OF AGRICULTURE
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JUNE 1956

The soils data herein reported were obtained as an adjunct to the Vicksburg Infiltration Project. The latter is a cooperative program between the Southern Forest Experiment Station, Forest Service, U. S. Department of Agriculture, and the Waterways Experiment Station, Corps of Engineers, U. S. Army, with headquarters at Vicksburg, Mississippi. The Intermountain Forest and Range Experiment Station assisted in carrying out the soils study by providing field station facilities. Field Party Chief Robert E. Taylor was assisted by D. B. Creeze, R. J. Wood, W. L. Fain, and J. C. Holland.

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SOME PROPERTIES OF 144 SOILS FROM
THREE INTERMOUNTAIN STATES

Robert E. Taylor
Intermountain Forest and Range Experiment Station



From June 1954 to July 1955, the Vicksburg Infiltration Project collected and analyzed soil samples from 144 sites located in southern Idaho, Utah, and the eastern edge of Nevada. This work was done to supply the U. S. Army with information needed for specialized research on military trafficability. The basic data obtained are herein presented because of their interest to soil scientists generally.

Fifty-three soil series are listed alphabetically in table 1. Soils were identified whenever possible from United States Department of Agriculture Soil Survey maps and descriptions. Mr. LeMoyne Wilson, in charge, Utah Soil Survey, gave the author access to available unpublished soil survey data for Utah. Mr. M. A. Fosberg, in charge, Idaho Soil Survey, examined soils at 21 Idaho sites. In spite of these efforts, 45 soils could not be identified as to series and are designated as desert, desert playa, alluvial bottom, mountain valley, or mountain soils in the tables. Nearly all the unidentified soils were in areas that had not been surveyed, though a number were in surveyed areas where they could not be correlated with known series.

The general locations of the sites are shown in figure 1, in which each dot represents a weather station. One to five sites were located within five miles of each weather station. The weather station and sampling site were not always in the same county.

Tables 2 to 4 (one table for each State) characterize individual sample sites and summarize information on soil properties. The published records of the listed weather stations give the approximate longitude, latitude, and climate of the sites. In these tables, "vegetation and land use" refers to the cover type on the site and to any disturbance caused by man, such as cultivation, grazing, or the cutting of hay. Where none of these disturbances had occurred within five years, the site was classed as undisturbed.

No sites were established on recently logged areas but a few sites were on land that was in cultivation in 1954. Areas that were not in cultivation during 1954 but had been cultivated sometime within the five years preceding the study were classed as cultivated previously, now grazed if they were being currently grazed by livestock; and as cultivated previously, now in hay if the cover was being cut for hay.

Areas that had not been cultivated for five years were classed

15N 955

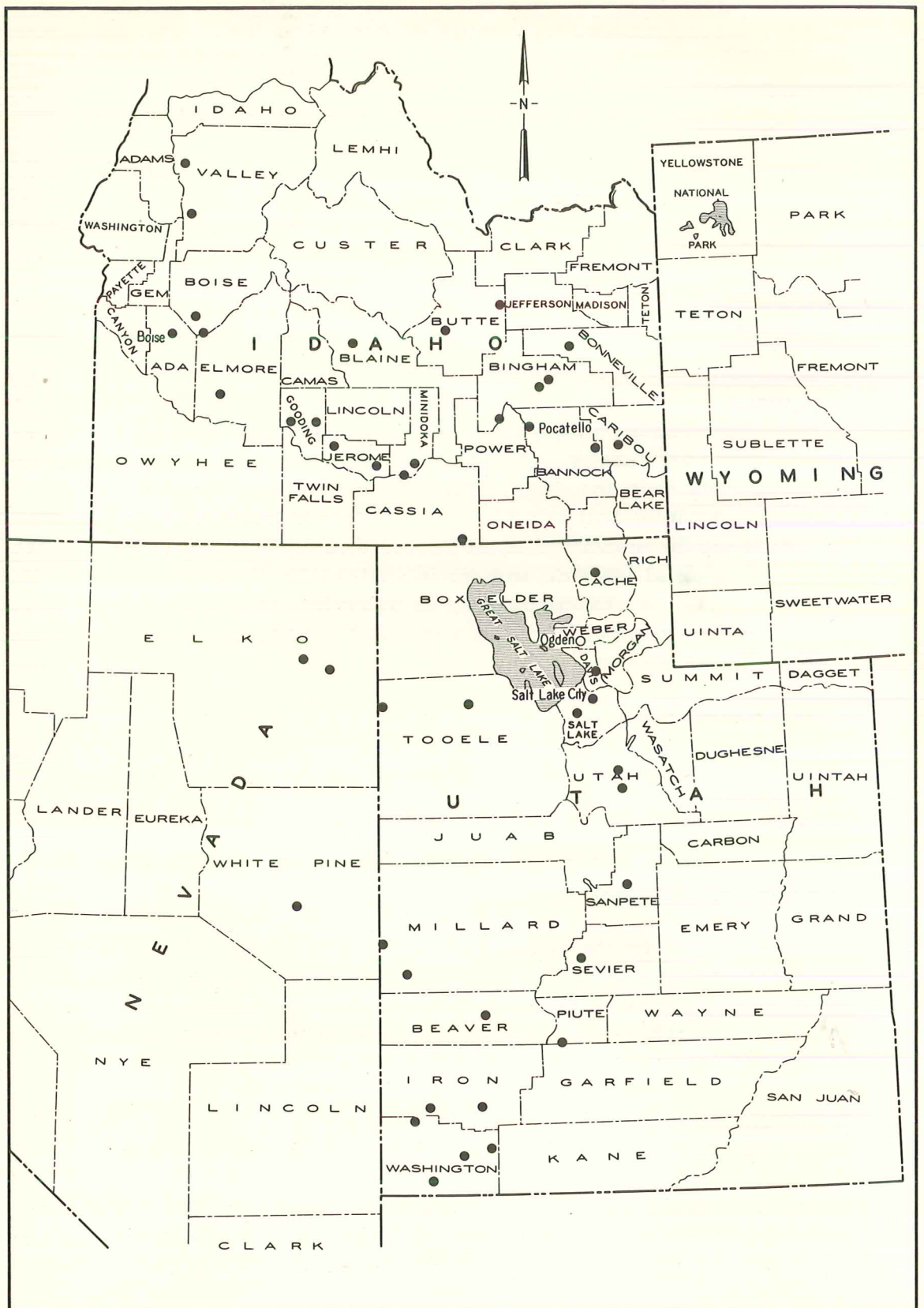


Fig. 1. Location of the sites

Table 1.—List of soil series by states

Series	State	Series	State
Airport	Utah	Minidoka	Idaho
Bannock	Idaho	Moscow	Idaho
Beverly	Idaho	Musinia	Utah
Billings	Utah	Onyx	Idaho
Blackfoot	Idaho	Palisade	Utah
Bracken	Utah	Paul	Idaho
Chilcott	Idaho	Portneuf	Idaho
Churchill	Idaho	Power	Idaho
Conda	Idaho	Redfield	Utah
Declo	Idaho	Red Rock	Utah
Falk	Idaho	Ritzville	Idaho
Farmington	Utah	Rupert	Idaho
Fingal	Idaho	Sagemoor	Idaho
Gila	Utah	Salt Air	Utah
Gooding	Idaho	Salt Lake	Utah
Goose Creek	Idaho	St. George	Utah
Hyrum	Idaho	Sweet	Idaho
Ironton	Utah	Tabiona	Utah
Kilmerque	Idaho	Taylorsville	Utah
Kirkham	Utah	Terminal	Utah
La Verkin	Utah	Timpanogas	Utah
Mannassa	Utah	Tobler	Utah
Mayfield	Utah	Trenton	Utah
McBeth	Utah	View	Idaho
Mellor	Utah	Walla Walla	Idaho
Millard	Utah	Welby	Utah
Millville	Utah		

Series Unidentified

Location	State	Number of Sites
Desert	Idaho	7
Desert	Nevada	7
Desert	Utah	10
Desert playa	Utah	1
Alluvial bottom	Idaho	4
Alluvial bottom	Nevada	1
Mountain	Idaho	3
Mountain	Utah	7
Mountain valley	Idaho	1
Mountain valley	Nevada	1
Mountain valley	Utah	3
		<u>45</u>

as lightly grazed if they showed some animal use; as moderately grazed if they were being properly managed for grazing; as heavily grazed if in poor condition; as hay if no grazing was apparent and the cover cut for hay; and as bare if vegetation was negligible.

The soil properties were determined from bulk samples and 2-inch cores taken randomly from a 12 by 18-foot plot at each site. Bulk samples, composited from six locations, were taken from the 0 to 6-inch, 6 to 12-inch, and the 12 to 18-inch layers for determination of mechanical analysis, plasticity constants, and organic matter content. No samples were taken below 18 inches.

Texture class follows the terminology given in the U. S. Department of Agriculture Soil Survey Manual, p. 210.^{1/} The following symbols are used, alone or in combination:

S = sand

Si = silt

C = clay

L = loam

The mechanical composition was determined at the Mississippi Agricultural Experiment Station by a combination sieve and hydrometer method. The separation of medium- from fine-sized particles was based on Bouyoucos hydrometer readings taken only one hour after the suspension was mixed and adjusted to a pH of 9.5 with 0.01N sodium hydroxide. The figures for fine-particle content may thus include a portion of the particles usually classified as fine silt. However, the medium- and fine-sized particles are reported as silt and clay, respectively. The figures are expressed in the table as percent of dry weight.

Organic-matter determinations were made by a modified Walkley rapid-dichromate oxidation method^{2/} at the Mississippi Agricultural

^{1/} Soil Survey staff, U. S. Bureau of Plant Industry, Soils, and Agricultural Engineering.

Soil survey manual. U. S. Dept. Agr. Handbook 18, 503 pp., illus. 1951.

^{2/} Peech, M., Alexander, L. T., Dean, L. A., and Reed, J. F.
Methods of soil analysis for soil-fertility investigations.
U. S. Dept. Agr. Cir. 757, 25 pp. 1947.

Experiment Station and are expressed as percent by weight. The loss-on-ignition method, following modified procedures of the Association of Official Agricultural Chemists,^{3/} was used for samples when the organic matter content was determined as over five percent by the Walkley method.

Stone content was estimated visually in the field for soils having significant proportions of fragments coarser than 2 mm. In some cases, stones of boulder size occurred on the sites. Stone content is expressed as percent of the total volume of soil in each 6-inch layer.

The presence of free carbonates in the soil was tested for each 6-inch depth by the use of 10 percent hydrochloric acid. The reaction is recorded as V, violent; St, strong; Sl, slight effervescence; and N, no reaction.

The pH reaction was determined in the field by use of indicator dyes (U. S. Department of Agriculture Soil Survey Manual, p. 238).

The plasticity constants of the 6 to 12-inch layer were determined by the Soils Laboratory of the Waterways Experiment Station.^{4/} The figures are expressed as moisture content in percent of dry weight.

Bulk density and tension analysis were determined from 2-inch cores obtained with the modified San Dimas or drive-type sampler^{5/} when the soil was moist. Cores were taken in duplicate at the 0 to 3-inch, 3 to 6-inch, 6 to 9-inch, and 9 to 12-inch depths and averaged in the table by 6-inch layers. The moisture held by the soil at zero tension (saturation) was determined by weighing the 2-inch cores after they had been soaked in a pan of water. As some water was lost during transfer,

^{3/} Association of Official Agricultural Chemists.

Methods of analysis. Ed. 6, 932 pp., illus. Washington, D. C., 1945.

^{4/} Waterways Experiment Station.

Soils Laboratory manual—Lower Mississippi Valley Division. Section 111, mechanical analysis. U. S. Army, Waterways Experiment Station, 16 pp., illus. 1951.

^{5/} Broadfoot, W. M.

Procedures and equipment for determining soil bulk density. U. S. Forest Service, Southern Forest Expt. Sta. Occas. Paper 135, pp. 2-11, illus. 1954.

and as all pores are usually not filled by this method, these values are frequently less than the theoretical maximum. The 0.06 atm tension values were determined by use of a tension table.^{6/} The tension values are expressed in percent of dry weight.

^{6/} Leamer, R. W., and Shaw, B.

A simple apparatus for measuring non-capillary porosity on an extensive scale. Jour. Amer. Soc. Agron. 33:1003. 1941.

Table 2. Idaho soil series: site descriptions and soil properties

Soil series	Site number	Weather station and county	Vegetation and land use	Topo-graphic position, slope and elevation in feet	Depths sam-pled inches	Texture class	Mechanical analysis by weight percent			Organic matter by weight percent	Stone con-tent, by volume percent	Soil reaction	Plasticity con-stant by weight percent			Bulk density grams per cc.	Soil moisture by weight, percent		
							Sand	Silt	Clay				Liq-uid limit	Plas-tic limit	Plas-ticity index		Satu-ration	At-mosphere tension	
Bannock	36	Pocatello, Bannock	Alfalfa, cultivated previously, now in hay	Terrace level 4,440	0-6 SiL 6-12 SiL 12-18 SiL		23 18 14	55 57 59	22 25 27	1.65 .86 .78	0 0 0	St. St. V	8.0 8.0 8.2	26	21	5	1.57 1.56 ---	25.9 25.8 ---	22.5 23.4 ---
Bannock	45	Blackfoot, Bingham	Grasses, moderately grazed	Terrace level 4,550	0-6 L 6-12 L 12-18 L		41 36 35	41 47 47	18 17 18	2.47 1.15 .62	0 0 0	St. V V	8.0 8.0 8.2	22	19	3	1.44 1.60 ---	29.6 23.6 ---	25.6 20.7 ---
Bannock	47	Idaho Falls Airport, Bonneville	Alfalfa, cultivated previously, now in hay	Terrace level 4,700	0-6 L 6-12 L 12-18 L		33 45 39	48 40 42	19 15 19	1.33 .86 .70	0 0 0	St. St. St.	8.2 8.2 8.2	24	18	6	1.54 1.68 ---	25.4 21.0 ---	22.6 19.3 ---
Bannock	49	Idaho Falls 6 N.E. Bonneville	Alfalfa-clover, hay	Terrace level 4,840	0-6 SL 6-12 SL 12-18 SL		68 70 62	20 19 22	12 11 16	1.25 .78 .78	0 0 0	St. St. V	8.4 8.2 8.4	34	19	15	1.47 1.56 ---	28.0 24.4 ---	22.5 20.8 ---
Beverly	46	Blackfoot, Bingham	Grasses, lightly grazed	Terrace level 4,550	0-6 L 6-12 L 12-18 SL		48 51 59	34 34 28	18 15 13	1.77 .86 .70	0 0 0	St. St. St.	8.0 8.0 8.2	Non-plastic			1.42 1.60 ---	30.5 23.2 ---	27.6 21.3 ---
Blackfoot	44	Blackfoot, Bingham	Grasses and grass-like plants, moderately grazed	Bottom level 4,540	0-6 LS 6-12 LS 12-18 LS		79 85 86	17 9 9	4 6 5	.95 .78 .55	0 0 0	St. St. St.	8.6 8.2 8.0	Non-plastic			1.41 1.60 ---	33.4 22.9 ---	28.3 15.9 ---
Chilcote	67	Mountain Home, Elmore	Sagebrush-grasses, lightly grazed	Upland 1 percent 3,200	0-6 CL 6-12 C 12-18 CL		21 18 39	43 38 33	36 44 28	1.77 1.55 .86	0 0 0	N N N	8.0 8.0 8.0	47	24	23	1.36 1.28 ---	33.8 39.2 ---	26.9 31.5 ---
Chilcote	75	Boise, Ada	Sagebrush-grasses, lightly grazed	Upland 2 percent 2,850	0-6 SiL 6-12 SiL 12-18 SiCL		13 14 11	62 60 55	25 26 34	1.77 .95 .95	0 0 0	N N N	8.2 8.2 8.2	28	20	8	1.39 1.41 ---	30.7 31.4 ---	25.1 27.8 ---
Churchill	26	Conda, Caribou	Grasses-weeds, lightly grazed	Upland 1 percent 6,200	0-6 L 6-12 L 12-18 L		34 48 43	42 40 47	24 12 10	5.24 2.23 1.88	0 0 0	V V V	9.0 9.2 9.2	Non-plastic			.96 1.18 ---	64.3 45.2 ---	54.7 37.2 ---
Conda	25	Conda, Caribou	Grasses-weeds, lightly grazed	Upland 3 percent 6,200	0-6 L 6-12 L 12-18 L		37 33 35	46 47 45	17 20 20	4.90 4.90 3.96	5 5 5	V V V	8.8 8.8 8.8	37	32	5	1.13 1.15 ---	48.0 47.9 ---	39.8 41.0 ---
Declo	37	Aberdeen, Bingham	Sagebrush-grasses, lightly grazed	Terrace 1 percent 4,410	0-6 SiL 6-12 SiL 12-18 SiL		34 23 16	51 55 61	15 22 23	1.45 1.05 .78	0 0 0	St. St. V	8.2 9.0 9.0	26	19	7	1.41 1.32 ---	31.0 37.8 ---	27.6 32.3 ---
Declo	38	Aberdeen, Bingham	Alfalfa, cultivated previously, now in hay	Terrace level 4,420	0-6 SiL 6-12 L 12-18 SiL		24 30 26	51 48 52	25 22 22	1.65 1.45 .78	0 0 0	N St. V	7.8 7.8 8.0	29	19	10	1.43 1.54 ---	31.2 26.1 ---	27.6 23.8 ---
Falk	76	Boise, Ada	Grasses, moderately grazed	Bottom level 2,835	0-6 SiL 6-12 SiL 12-18 L		24 29 32	56 52 49	20 19 19	2.75 1.33 1.05	5 5 5	N N N	8.2 8.2 8.2	25	20	5	1.36 1.52 ---	36.1 27.0 ---	30.9 24.6 ---
Fingal	41	Springfield, Bingham	Grasses, greasewood, lightly grazed	Terrace 1 percent 4,350	0-6 SL 6-12 SL 12-18 SL		57 62 54	29 27 31	14 11 15	1.15 .46 .46	0 0 0	V V V	8.6 8.4 8.2	--	15	--	1.62 1.70 ---	21.5 20.2 ---	18.5 16.8 ---
Fingal	43	Blackfoot, Bingham	Grasses, moderately grazed	Bottom 1 percent 4,550	0-6 LS 6-12 SL 12-18 SL		78 72 73	17 23 20	5 5 7	.70 .70 .62	0 0 0	St. St. St.	9.2 9.2 9.4	Non-plastic			1.46 1.64 ---	30.5 21.3 ---	15.9 17.4 ---
Gooding	61	Gooding Airport, Gooding	Grasses-weeds, lightly grazed	Terrace 1 percent 3,550	0-6 SCL 6-12 L 12-18 L		52 46 47	26 33 33	22 21 20	2.08 1.65 1.05	2 2 30	N N St.	8.2 8.2 8.2	25	15	10	1.56 1.72 ---	25.4 19.8 ---	20.4 17.2 ---
Gooding	62	Gooding Airport, Gooding	Grasses, lightly grazed	Terrace 1 percent 3,600	0-6 LS 6-12 S 12-18 LS		77 91 85	17 6 9	6 3 6	.70 .32 .38	0 0 0	N N N	7.8 8.0 8.0	Non-plastic			1.52 1.52 ---	25.8 25.8 ---	11.0 10.1 ---
Goose Creek	86	Burley Airport, Cassia	Grasses, lightly grazed	Terrace level 4,100	0-6 CL 6-12 CL 12-18 SiCL		28 25 16	41 44 47	31 31 37	2.47 2.47 2.47	0 0 0	N N N	8.2 8.2 8.2	38	24	14	1.09 1.22 ---	50.0 41.8 ---	37.8 34.5 ---
Hyrum	31	Bancroft, Caribou	Grain, cultivated	Upland 2 percent 5,400	0-6 CL 6-12 CL 12-18 CL		22 21 21	51 50 45	27 29 34	2.35 1.33 1.05	5 5 5	N N N	-- -- --	32	18	14	1.28 1.50 ---	37.9 27.0 ---	31.5 25.0 ---

(Continued)

Table 2. Idaho soil series: site descriptions and soil properties (continued)

Soil series	Site number	Weather station and county	Vegetation and land use	Topographic position, slope and elevation in feet	Depths sampled inches	Texture class	Mechanical analysis by weight percent			Organic matter by weight percent	Stone content, by volume percent	Soil reaction		Plasticity constants by weight, percent			Bulk density grams per cc.	Soil moisture by weight, percent	
							Sand	Silt	Clay			Free carbonates	pH	Liquid limit	Plastic limit	Plasticity index		Saturation	Atmosphere tension
Kilmerque (Like)	70	Idaho City 13 SW, Boise	Ponderosa pine, undisturbed	Upland 10 percent 5,000	0-6 SL 6-12 SL 12-18 SL		55 51 65	28 30 21	17 19 14	3.27 1.05 .70	5 15 30	N N N	7.6 7.4 7.6	--	14	--	1.61 1.79 ---	21.7 16.2 ---	18.4 14.7 ---
Minidoka	65	Bliss, Gooding	Grasses, moderately grazed	Upland level 3,100	0-6 SL 6-12 L 12-18 L		55 44 42	30 39 32	15 17 26	1.65 1.25 .38	0 0 0	SL St. V	8.2 8.4 8.8	28	21	7	1.47 1.44 ---	28.4 30.5 ---	24.2 26.7 ---
Minidoka	81	Hazelton, Jerome	Grain, cultivated	Upland level 4,060	0-6 SiL 6-12 SiL 12-18 SiL		19 18 16	55 56 59	26 26 25	1.88 1.55 1.25	0 0 0	St. SL SL	8.0 8.4 8.2	29	20	9	1.19 1.31 ---	44.7 34.9 ---	32.4 27.5 ---
Moscow (Like)	71	Idaho City 13 SW, Boise	Ponderosa pine, undisturbed	Upland 30 percent 4,500	0-6 SL 6-12 SL 12-18 SL		69 65 75	21 24 15	10 11 10	2.23 .38 .32	10 15 30	N N N	7.4 7.6 7.6	Non-plastic			1.62 1.66 ---	18.9 21.0 ---	14.5 12.4 ---
Moscow (Like)	88	Cascade 1 NW, Valley	Lodgepole pine, undisturbed	Upland 30 percent 5,200	0-6 SL 6-12 SL 12-18 SL		58 70 73	28 20 17	14 10 10	2.47 .62 .46	5 10 15	N N N	7.0 6.6 6.6	Non-plastic			1.34 1.52 ---	34.8 26.9 ---	23.9 17.0 ---
Onyx	32	Pocatello, Bannock	Grasses-sagebrush, moderately grazed	Terrace 5 percent 4,500	0-6 SiL 6-12 L 12-18 SiL		21 37 23	65 43 59	14 20 18	2.08 1.25 .95	5 5 8	St. St. V	8.0 8.8 8.8	23	21	2	1.30 1.32 ---	38.9 38.5 ---	34.5 33.8 ---
Paul	48	Idaho Falls 6 NE, Bonneville	Grasses-alfalfa, cultivated previously, now lightly grazed	Terrace level 4,800	0-6 SiCL 6-12 SiCL 12-18 L		18 19 33	48 50 42	34 31 25	3.13 1.98 1.25	0 0 0	V V V	8.2 8.2 8.8	34	19	15	1.36 1.38 ---	35.0 35.3 ---	26.7 28.9 ---
Paul	83	Rupert, Minidoka	Alfalfa, cultivated previously, now moderately grazed	Terrace level 4,200	0-6 SiCL 6-12 CL 12-18 SiC		20 27 14	51 44 43	29 29 43	1.88 1.25 1.15	0 0 0	N SL N	8.0 8.0 8.0	32	17	15	1.49 1.56 ---	27.6 25.0 ---	23.6 22.9 ---
Paul	85	Rupert, Minidoka	Grasses-weeds, lightly grazed	Terrace 2 percent 4,150	0-6 S 6-12 SL 12-18 L		89 53 51	6 38 34	5 9 15	.62 .25 .25	0 0 0	N N N	8.2 8.2 8.2	Non-plastic			1.56 1.57 ---	23.4 22.5 ---	11.4 9.4 ---
Portneuf	34	Pocatello, Bannock	Grasses, hay	Terrace level 4,440	0-6 SiL 6-12 SiL 12-18 SiL		18 15 16	67 66 61	15 19 23	1.45 1.45 1.25	0 0 0	SL St. V	8.0 8.2 8.2	30	26	4	1.14 1.34 ---	46.6 35.5 ---	36.0 29.8 ---
Portneuf	35	Pocatello, Bannock	Grasses-sagebrush, cultivated previously, now lightly grazed	Upland 1 percent 4,480	0-6 SiL 6-12 SiL 12-18 SiL		25 21 17	60 64 73	15 15 10	1.65 1.05 .95	0 0 0	St. St. St.	8.2 8.4 8.4	24	22	2	1.28 1.18 ---	39.7 46.8 ---	32.9 40.0 ---
Portneuf	50	Idaho Falls Airport, Bonneville	Grasses, undisturbed	Upland level 4,730	0-6 SiL 6-12 SiL 12-18 SiL		36 35 24	56 50 61	8 15 15	1.25 .78 .62	0 0 0	St. St. V	8.2 8.2 8.2	24	22	2	1.48 1.47 ---	32.2 31.9 ---	28.0 28.0 ---
Portneuf	51	Idaho Falls Airport, Bonneville	Grasses-yellow brush, undisturbed	Upland level 4,760	0-6 SiL 6-12 SiL 12-18 SiL		20 13 14	62 67 71	18 20 15	1.77 1.15 .32	0 0 0	SL SL St.	8.6 8.6 8.6	31	23	8	1.43 1.32 ---	34.3 39.8 ---	29.5 35.2 ---
Portneuf	52	A.E.C. Reactor Station, Bingham	Sagebrush-grasses, lightly grazed	Upland level 4,950	0-6 CL 6-12 CL 12-18 CL		21 23 26	50 44 47	29 33 27	2.60 1.33 .86	2 2 2	SL St. V	8.2 8.4 8.4	34	21	13	1.32 1.38 ---	37.2 35.6 ---	29.8 31.2 ---
Portneuf	53	A.E.C. Reactor Station, Bingham	Sagebrush-grasses, lightly grazed	Upland level 4,950	0-6 CL 6-12 CL 12-18 SiCL		32 22 17	39 46 44	29 32 39	1.65 1.25 1.05	5 10 15	N V V	8.0 8.2 8.2	34	20	14	1.38 1.37 ---	34.5 34.5 ---	28.4 29.5 ---
Portneuf	63	Gooding Airport, Gooding	Grasses, cultivated previously, now lightly grazed	Upland 2 percent 3,630	0-6 L 6-12 SCL 12-18 L		40 51 31	39 27 44	21 22 25	1.77 .78 .70	0 0 0	N N N	8.2 8.2 8.2	28	19	9	1.27 1.45 ---	38.9 29.3 ---	32.3 25.4 ---
Portneuf	64	Bliss, Gooding	Sagebrush-grasses, heavily grazed	Upland 1 percent 3,260	0-6 L 6-12 L 12-18 L		49 47 37	42 39 46	9 14 17	1.05 .70 .86	0 0 0	N St. V	8.2 8.4 8.8	Non-plastic			1.42 1.38 ---	32.8 35.7 ---	28.5 31.0 ---

(Continued)

Table 2. Idaho soil series: site descriptions and soil properties (continued)

Soil series	Site number	Weather station and county	Vegetation and land use	Topo-graphic position, slope and elevation in feet	Depths sampled in inches	Texture class	Mechanical analysis by weight percent			Organic matter by weight percent	Stone content, by volume percent	Soil reaction	Plasticity constants by weight percent			Bulk density grams per cc.	Soil moisture by weight, percent			
							Sand	Silt	Clay				Free carbonates	pH	Liq- uid limit		Plas- tic limit	Plas- ticity index	Sat- uration	At- mosphere tension
Portneuf	66	Bliss, Gooding	Sagebrush-grasses, lightly grazed	Upland 2 percent 3,360	0-6 6-12 12-18	L L L	47 37 34	42 42 43	11 21 23	1.25 .70 .55	1 1 5	N N Sl.	8.0 8.2 9.0	26 18 8	1.37 1.38 ---	32.6 33.9 ---	26.5 26.1 ---			
Portneuf	78	Jerome, Jerome	Grasses-clover, cultivated previously, now in hay	Upland level 3,750	0-6 6-12 12-18	SL SCL	58 56 51	25 26 24	17 18 25	1.05 .86 .70	0 5 40	N V V	8.0 8.0 8.8	21 17 4	1.65 1.73 ---	20.4 18.5 ---	17.4 16.6 ---			
Portneuf	79	Jerome, Jerome	Alfalfa, cultivated previously, now in hay	Upland 3 percent 3,850	0-6 6-12 12-18	SL SL SL	52 57 58	30 25 26	18 18 16	1.05 .55 .46	0 0 0	N N V	8.0 8.0 8.0	22 19 3	1.54 1.68 ---	24.7 21.0 ---	21.7 18.9 ---			
Portneuf	80	Jerome, Jerome	Grain, cultivated	Upland level 3,860	0-6 6-12 12-18	L L SiL	38 36 30	44 45 51	18 19 19	1.15 .70 .62	0 0 0	Sl. St. St.	8.6 8.2 8.6	25 20 5	1.48 1.56 ---	28.9 26.3 ---	25.6 24.1 ---			
Portneuf	82	Hazelton, Jerome	Grasses, lightly grazed	Upland 2 percent 4,060	0-6 6-12 12-18	SiL SiCL SiL	13 9 12	66 61 64	21 30 24	2.47 1.98 1.65	0 0 0	St. St. St.	8.2 8.2 8.2	33 21 12	1.36 1.45 ---	35.5 30.9 ---	31.7 29.3 ---			
Power	68	Mountain Home, Elmore	Grasses-weeds, moderately grazed	Terrace 1 percent 3,180	0-6 6-12 12-18	L CL CL	28 28 21	46 40 39	26 32 40	1.77 1.55 .86	5 15 30	N N V	8.2 8.2 9.0	35 20 15	1.40 1.32 ---	32.1 38.8 ---	26.7 29.0 ---			
Ritzville	29	Bancroft, Caribou	Grasses, undis- turbed	Upland 5 percent 5,460	0-6 6-12 12-18	SiL SiL SiL	19 18 25	61 60 58	22 20 17	1.45 1.15 .86	2 3 5	N N V	8.0 8.4 8.6	30 20 10	1.21 1.40 ---	41.7 31.5 ---	33.6 27.7 ---			
Ritzville	30	Bancroft, Caribou	Grain, cultivated	Upland 3 percent 5,450	0-6 6-12 12-18	SiL SiL SiL	18 16 18	62 64 62	20 20 20	2.08 1.15 .95	5 5 5	N N V	8.8 8.4 8.8	28 20 8	1.20 1.31 ---	41.9 36.0 ---	35.5 31.2 ---			
Rupert	84	Rupert, Minidoka	Alfalfa, cultivated previously, now in hay	Terrace level 4,200	0-6 6-12 12-18	SL SL SL	61 56 58	28 25 29	11 19 13	1.15 .78 .70	0 0 0	N N N	8.2 8.2 8.2	-- 13 --	1.59 1.69 ---	23.0 19.9 ---	16.5 14.8 ---			
Sage Moor	39	Aberdeen, Bingham	Alfalfa, cultivated previously, now in hay	Terrace level 4,490	0-6 6-12 12-18	L L SiL	29 28 21	49 48 52	22 24 27	2.47 .86 .70	0 0 0	Sl. V V	8.2 8.2 8.4	32 20 12	1.48 1.50 ---	28.8 28.0 ---	26.4 25.1 ---			
Sage Moor	40	Spring- field, Bingham	Alfalfa, cultivated previously, now in hay	Terrace level 4,405	0-6 6-12 12-18	L L SL	51 50 57	30 34 29	19 16 14	1.05 .55 .46	0 0 0	V V V	8.4 8.4 8.4	Non-plastic			1.53 1.53 ---	28.0 27.6 ---	24.4 22.9 ---	
Sage Moor	42	Spring- field, Bingham	Alfalfa, cultivated previously, now in hay	Terrace 2 percent 4,405	0-6 6-12 12-18	L SiCL SiL	30 19 22	46 51 57	24 30 21	2.47 1.33 .95	0 0 0	V V V	8.2 8.2 8.2	40 22 18	1.31 1.31 ---	36.7 37.1 ---	32.4 31.9 ---			
Sweet (Like)	72	Arrow- rock Dam, Boise	Sagebrush-grasses, lightly grazed	Upland 12 per- cent 3,900	0-6 6-12 12-18	L L L	40 48 50	38 32 31	22 20 19	3.00 1.45 1.25	5 10 20	N N N	7.6 7.8 7.8	28 20 8	1.56 1.56 ---	23.3 23.9 ---	18.5 17.9 ---			
Sweet (Like)	73	Arrow- rock Dam, Ada	Sagebrush, bitter- brush, grasses, lightly grazed	Upland 10 per- cent 3,800	0-6 6-12 12-18	L L L	49 50 48	34 31 31	17 19 21	3.27 2.47 1.15	2 2 3	N N N	7.6 7.8 7.8	23 15 8	1.55 1.54 ---	24.0 25.2 ---	20.0 20.0 ---			
View	87	Burley Airport, Cassia	Grasses, moderately grazed	Terrace level 4,100	0-6 6-12 12-18	SL SL SL	55 60 58	25 24 24	20 16 18	2.08 .78 .78	0 0 0	St. St. V	8.0 8.2 8.4	Non-plastic			1.36 1.37 ---	29.7 28.4 ---	24.1 21.9 ---	
Walla Walla	27	Conda, Caribou	Sagebrush-grasses, lightly grazed	Upland 1 percent 6,200	0-6 6-12 12-18	SiL SiL SiCL	9 9 13	65 66 59	26 25 28	3.96 2.35 1.55	0 0 0	N N N	8.2 8.2 8.2	34 21 13	1.36 1.42 ---	33.9 31.1 ---	31.8 29.5 ---			
Walla Walla	28	Conda, Caribou	Grain, cultivated	Upland 3 percent 6,200	0-6 6-12 12-18	SiL SiL SiL	11 10 12	63 64 61	26 26 27	3.27 1.77 1.25	0 0 0	N N N	8.0 8.0 8.0	33 20 13	1.40 1.38 ---	32.8 32.6 ---	30.2 29.2 ---			
SERIES UNIDENTIFIED:																				
Desert	54	Arco, Butte	Sagebrush-weeds, lightly grazed	Terrace 3 percent 5,340	0-6 6-12 12-18	L L L	37 42 34	45 40 45	18 18 21	2.08 1.45 1.45	0 0 0	Sl. Sl. V	8.8 8.6 8.4	24 21 3	1.26 1.26 ---	40.3 39.8 ---	35.6 34.4 ---			

(Continued)

Table 2. Idaho soil series: site descriptions and soil properties (continued)

Soil series	Site number	Weather station and county	Vegetation and land use	Topographic position, slope and elevation in feet	Depths sampled in inches	Texture class	Mechanical analysis by weight percent			Organic matter by weight percent	Stone content, by volume percent	Soil reaction	Plasticity constants by weight percent				Bulk density grams per cc.	Soil moisture by weight, percent	
							Sand	Silt	Clay				Free carbonates	pH	Liquid limit	Plastic limit		Plasticity index	Saturation
SERIES UNIDENTIFIED (Continued):																			
Desert	55	Arco, Butte	Alfalfa, cultivated previously, now in hay	Terrace 2 percent, 5,335	0-6	L	35	46	19	2.60	0	St.	8.2				1.37	33.8	29.5
					6-12	L	31	49	20	1.33	0	V	8.2	27	25	2	1.41	32.9	28.4
					12-18	L	37	45	18	.95	0	V	8.2				---	---	---
Desert	57	Arco, Butte	Yellow brush-grasses, lightly grazed	Terrace level, 5,350	0-6	SL	60	22	18	.78	5	N	8.0				1.59	23.1	19.0
					6-12	L	44	30	26	.78	5	N	8.0	22	18	4	1.59	23.2	19.4
					12-18	SL	59	24	17	.62	5	N	8.0				---	---	---
Desert	69	Mountain Home, Elmore	Sagebrush-grasses, moderately grazed	Terrace 1 percent, 3,170	0-6	L	42	38	20	2.23	1	St.	8.2				1.43	29.2	23.7
					6-12	L	42	40	18	1.15	1	St.	8.4	26	20	6	1.40	30.8	25.2
					12-18	L	26	47	27	.86	1	St.	8.4				---	---	---
Desert	74	Boise, Ada	Rabbit brush-grasses, moderately grazed	Terrace 1 percent, 2,650	0-6	SiL	11	64	25	3.41	0	N	8.0				1.11	50.0	41.8
					6-12	SiCL	10	62	28	2.60	0	N	8.0	39	27	12	1.08	51.4	44.6
					12-18	SiC	10	41	49	2.47	0	St.	8.8				---	---	---
Desert	92	Bridge, Cassia	Grease-wood, weeds, moderately grazed	Terrace 1 percent, 5,100	0-6	SiC	6	53	41	4.52	0	St.	8.6				1.02	57.9	43.0
					6-12	SiC	9	49	42	3.69	0	St.	8.4	42	25	17	1.08	53.0	38.0
					12-18	SiC	9	52	39	1.65	0	N	8.0				---	---	---
Desert	93	Bridge, Cassia	Rabbit brush-sagebrush, grease-wood, lightly grazed	Terrace 1 percent, 5,100	0-6	SiC	11	40	49	5.68	0	SiL	8.2				.92	65.9	45.1
					6-12	C	2	39	59	3.41	0	SiL	8.2	55	32	23	1.00	59.7	40.8
					12-18	SiC	5	49	46	2.75	0	SiL	8.7				---	---	---
Alluvial Bottom	56	Arco, Butte	Grasses, hay	Terrace level, 5,320	0-6	SiCL	14	48	38	5.24	0	V	9.0				1.22	43.4	38.4
					6-12	SiCL	16	50	34	2.60	0	V	8.4	45	26	19	1.28	40.6	36.9
					12-18	L	32	43	25	2.08	0	N	7.6				---	---	---
Alluvial Bottom	58	Hailey, Blaine	Grasses, moderately grazed	Terrace level, 5,250	0-6	L	37	41	22	6.04	0	N	8.4				1.11	44.9	38.0
					6-12	L	36	41	23	3.96	0	N	8.4	36	31	5	1.13	47.4	41.7
					12-18	L	40	39	21	2.47	0	N	8.4				---	---	---
Alluvial Bottom	60	Hailey, Blaine	Grasses, lightly grazed	Bottom 1 percent, 5,480	0-6	L	36	43	21	11.36	5	N	8.6				.92	68.3	59.9
					6-12	CL	26	46	28	6.40	5	N	8.4	62	49	13	.82	81.5	76.8
					12-18	SiCL	19	48	33	6.04	30	N	8.4				---	---	---
Alluvial Bottom	77	Cascade 1 NW, Valley	Lodgepole pine-grasses, lightly grazed	Bottom 1 percent, 4,800	0-6	L	40	39	21	3.96	1	N	7.2				1.07	52.4	44.8
					6-12	L	52	28	20	2.08	2	N	6.4				1.16	44.9	39.6
					12-18	SL	72	18	10	.95	2	N	6.4		Non-plastic		---	---	---
Mountain	59	Hailey, Blaine	Sagebrush-grasses, lightly grazed	Upland 6 percent, 5,351	0-6	L	34	40	26	3.27	5	N	8.0				1.42	31.1	26.5
					6-12	CL	31	37	32	1.15	10	N	8.4	29	18	11	1.58	24.9	22.6
					12-18	CL	28	42	30	.78	30	N	8.2				---	---	---
Mountain	90	McCall, Valley	Ponderosa pine-grasses, undisturbed	Upland level, 5,100	0-6	L	29	48	23	6.04	1	N	6.4				.97	64.4	50.0
					6-12	SiCL	16	49	35	4.05	1	N	6.8	40	28	12	1.15	47.9	40.0
					12-18	CL	25	43	32	2.08	1	N	6.8				---	---	---
Mountain	91	McCall, Adams	Lodgepole pine-grasses, undisturbed	Upland 15 percent, 5,025	0-6	SiL	24	54	22	5.34	10	N	6.4				1.08	55.0	44.4
					6-12	L	29	45	26	3.54	15	N	6.6	36	27	9	1.30	40.0	35.8
					12-18	L	33	42	25	2.35	35	N	6.7				---	---	---
Mountain Valley	89	Cascade 1 NW, Valley	Grasses-clover, cultivated previously, now lightly grazed	Terrace 3 percent, 4,812	0-6	CL	26	40	34	4.70	1	N	8.0				1.28	37.8	34.3
					6-12	CL	23	40	37	3.69	1	N	7.8	36	22	14	1.24	40.2	35.8
					12-18	CL	24	41	35	2.47	5	N	7.8				---	---	---

Table 3. Nevada soil series: site descriptions and soil properties

Soil series	Site number	Weather station and county	Vegetation and land use	Topographic position, slope and elevation in feet	Depths sampled inches	Texture class	Mechanical analysis by weight percent			Organic matter by weight percent	Stone content, by volume percent	Soil reaction		Plasticity constants by weight percent			Bulk density grams per cc.	Soil moisture by weight, percent	
							Sand	Silt	Clay			Free carbonates	pH	Liquid limit	Plastic limit	Plasticity index		Saturation	Atmosphere tension
SERIES UNIDENTIFIED:																			
Desert	132	Ely, White Pine	Sagebrush-yellow brush, greasewood, lightly grazed	Upland 1 percent 6,410	0-6	CL	29	41	30	2.08	0	V	--	25	17	8	1.12	48.9	39.2
					6-12	CL	35	36	29	1.05	0	V	--				1.28	38.7	33.2
					12-18	CL	38	35	27	.86	0	V	--				---	---	---
Desert	134	Ely, White Pine	Greasewood, lightly grazed	Upland 3 percent 6,400	0-6	L	37	40	23	2.47	5	V	--	25	17	8	1.27	37.3	28.9
					6-12	CL	36	32	32	1.05	5	V	--				1.28	37.0	29.4
					12-18	CL	32	32	36	.38	5	V	--				---	---	---
Desert	136	Wells, Elko	Sagebrush, lightly grazed	Upland 1 percent 5,650	0-6	CL	38	30	32	1.45	5	Sl.	8.4	30	17	13	1.37	32.8	24.9
					6-12	CL	37	29	34	1.05	5	St.	8.4				1.44	30.9	27.6
					12-18	CL	30	33	37	.86	5	V	8.8				---	---	---
Desert	137	Wells, Elko	Sagebrush, lightly grazed	Upland 1 percent 5,635	0-6	SiL	19	57	24	2.87	0	Sl.	8.6	35	24	11	1.32	34.0	28.9
					6-12	SiL	22	52	26	1.88	0	V	9.2				1.48	27.8	23.6
					12-18	CL	24	46	30	.86	0	V	9.2				---	---	---
Desert	140	Pequop, Elko	Sagebrush, lightly grazed	Upland 2 percent 6,600	0-6	L	30	46	24	2.35	5	Sl.	8.2	20	17	3	1.48	28.4	20.8
					6-12	L	40	38	22	1.77	15	Sl.	8.2				1.63	22.4	17.4
					12-18	SL	71	19	10	1.45	65	V	8.8				---	---	---
Desert	135	Wells, Elko	Sagebrush, lightly grazed	Upland 2 percent 5,725	0-6	C	24	35	41	1.25	10	N	8.4	44	22	22	1.35	37.3	32.5
					6-12	SCL	50	20	30	.78	25	N	8.4				1.32	34.0	22.2
					12-18	CL	44	18	38	.70	50	N	8.4				---	---	---
Desert	138	Pequop, Elko	Sagebrush-grasses, lightly grazed	Upland 5 percent 6,950	0-6	L	38	36	26	.86	5	N	--	Non-plastic			1.46	30.6	14.1
					6-12	L	40	37	23	.78	5	N	--				1.51	28.2	13.8
					12-18	L	32	44	24	.78	10	N	--				---	---	---
Mountain Valley	133	Ely, White Pine	Grasslike plants-grasses, moderately grazed	Bottom level 6,385	0-6	CL	23	45	32	6.76	5	V	--	45	35	10	1.14	52.3	48.0
					6-12	CL	23	41	36	4.90	5	V	--				1.24	43.7	41.0
					12-18	CL	29	40	31	4.90	5	V	--				---	---	---
Alluvial Bottom	139	Pequop, Elko	Sagebrush, lightly grazed	Bottom level 6,800	0-6	SiCL	12	54	34	6.52	0	Sl.	--	48	30	18	1.08	48.3	41.9
					6-12	SiCL	9	55	36	5.80	0	N	--				1.08	51.3	44.5
					12-18	SiC	8	50	42	5.34	0	N	--				---	---	---

Table 4. Utah soil series: site descriptions and soil properties

Soil series	Site number	Weather station and county	Vegetation and land use	Topographic position, slope and elevation in feet	Depths sampled, inches	Texture class	Mechanical analysis by weight percent			Organic matter by weight percent	Stone content, by volume percent	Soil reaction		Plasticity constants by weight percent			Bulk density grams per cc.	Soil moisture by weight, percent	
							Sand	Silt	Clay			Free carbonates	pH	Liquid limit	Plastic limit	Plasticity index		Saturation	Atmosphere tension
Airport	8	Salt Lake City Airport, Salt Lake	Grasses, greasewood, undisturbed	Terrace level, 4,200	0-6 6-12 12-18	SL SCL CL	57 49 35	27 21 22	16 30 43	1.15 .86 .70	0 0 0	N St.	8.4 9.0 8.4				1.56 1.65 ---	22.1 19.7 ---	17.1 16.1 ---
Billings	99	Ephriam, Sorensens Field, Sanpete	Alfalfa, cultivated previously, now moderately grazed	Terrace level, 5,560	0-6 6-12 12-18	C C C	14 24 17	39 27 38	47 49 45	1.88 1.65 1.25	0 0 0	V V V	9.2 9.4 9.6				1.29 1.53 ---	38.2 26.2 ---	27.2 22.4 ---
Bracken	110	St. George, Washington	Sagebrush-weeds, moderately grazed	Upland level, 2,880	0-6 6-12 12-18	LS LS SL	79 83 70	15 11 14	6 6 16	.55 .55 .46	0 0 0	V V V	8.8 8.8 8.8	Non-plastic			1.58 1.56 ---	23.9 24.6 ---	19.9 20.1 ---
Farmington	5	Farmington, Davis	Grass-like plants, grasses, moderately grazed	Bottom level, 4,150	0-6 6-12 12-18	SiCL SiC SiCL	19 9 18	46 46 46	35 45 36	15.00 2.35 1.33	0 0 0	St. N N	-- -- --				.78 1.33 ---	90.3 39.0 ---	81.9 36.8 ---
Gila	111	St. George, Washington	Grasses-tamarisk, lightly grazed	Terrace level, 2,820	0-6 6-12 12-18	SL SL C	64 56 23	21 28 36	15 16 41	1.05 .70 .55	0 0 0	St. St. St.	8.6 8.6 8.4	Non-plastic			1.54 1.47 ---	24.9 28.8 ---	18.2 21.0 ---
Gila	112	St. George, Washington	Grasses-pickleweed, moderately grazed	Terrace level, 2,835	0-6 6-12 12-18	SL SCL LS	78 49 80	8 19 13	14 32 7	2.35 .46 .38	0 0 0	St. St. St.	8.2 8.2 8.2	Non-plastic			1.36 1.54 ---	34.2 25.1 ---	29.4 22.3 ---
Ironton	6	Farmington, Davis	Grasses, lightly grazed	Terrace level, 4,180	0-6 6-12 12-18	CL CL CL	37 30 27	36 38 43	27 32 30	6.04 3.41 .95	0 0 0	St. St. V	8.0 8.2 8.0	36	18	18	1.29 1.49 ---	38.2 28.6 ---	33.7 27.0 ---
Kirkham	16	Spanish Fork, Utah	Clover-grasses, moderately grazed	Terrace level, 4,600	0-6 6-12 12-18	C C C	23 16 12	28 34 38	49 50 50	3.96 1.45 1.05	0 0 0	St. V V	8.4 8.8 9.0	35	18	17	1.38 1.57 ---	33.5 24.6 ---	28.0 23.1 ---
Kirkham	21	Spanish Fork, Utah	Grasslike plants-grasses, lightly grazed and hay	Terrace level, 4,600	0-6 6-12 12-18	CL CL SCL	33 36 47	30 32 26	37 32 27	3.77 1.25 .86	0 0 0	St. St. St.	8.8 8.8 8.8	26	16	10	1.42 1.56 ---	31.0 25.6 ---	28.8 24.4 ---
La Verkin	108	La Verkin, Washington	Peach and pear trees, cultivated orchard	Upland level, 3,260	0-6 6-12 12-18	C C CL	11 24 44	33 29 23	56 47 33	4.90 1.25 .70	0 0 0	V V V	8.5 8.5 8.5	33	16	17	1.31 1.45 ---	39.1 30.2 ---	31.7 27.0 ---
Mannassa (Like)	122	Milford, Beaver	Weeds, heavily grazed	Terrace level, 4,970	0-6 6-12 12-18	SiL CL C	24 30 16	57 39 34	19 31 50	1.65 .95 .86	0 0 0	V V V	9.0 9.0 9.4	21	16	5	1.48 1.42 ---	30.3 31.3 ---	24.2 23.8 ---
Mayfield (Like)	121	Cedar City Airport, Iron	Sagebrush-grasses, lightly grazed	Upland level, 5,750	0-6 6-12 12-18	SL SL SL	56 63 60	27 24 26	17 13 14	2.23 .70 .70	0 0 0	V V V	8.6 8.6 8.6	Non-plastic			1.48 1.42 ---	28.5 31.8 ---	22.5 23.6 ---
McBeth	18	Provo, Radio Kovo, Utah	Grains, cultivated previously, now in hay	Terrace level, 4,480	0-6 6-12 12-18	CL CL CL	30 22 40	40 43 32	30 35 28	4.15 4.15 3.62	0 0 0	V V V	8.4 8.4 8.2	45	27	18	1.25 1.26 ---	40.8 40.9 ---	33.4 33.7 ---
Mellor (Like)	123	Milford, Beaver	Alfalfa, cultivated previously, now in hay	Terrace level, 4,955	0-6 6-12 12-18	CL CL C	34 24 17	36 38 29	30 38 54	1.55 1.33 1.25	3 4 5	V V V	8.6 8.4 9.0	25	17	8	1.52 1.47 ---	26.7 28.0 ---	21.8 23.0 ---
Millard (Like)	125	Milford, Beaver	Rabbit brush-yellow brush, moderately grazed	Upland level, 5,150	0-6 6-12 12-18	SL SL SL	64 60 56	22 27 26	14 13 18	.55 .55 .55	2 5 5	Sl. St. V	8.4 8.4 8.6	Non-plastic			1.73 1.56 ---	19.8 24.6 ---	14.8 17.2 ---
Millville	23	Logan Experiment Station, Cache	Grasses-clover, moderately grazed	Bottom level, 4,600	0-6 6-12 12-18	SiC SiC SiC	8 5 12	49 49 47	43 46 41	4.90 2.60 2.60	0 0 0	Sl. Sl. Sl.	8.4 8.0 8.2	40	24	16	1.34 1.40 ---	34.8 31.6 ---	32.3 30.4 ---
Musinia (Like)	104	Circleville, Piute	Alfalfa, cultivated previously, now in hay	Terrace level, 5,635	0-6 6-12 12-18	SCL SL L	57 56 43	18 25 35	25 19 22	1.25 .55 .38	0 0 0	V V V	-- -- --	24	19	5	1.60 1.64 ---	23.6 23.9 ---	20.9 22.0 ---

(Continued)

Table 4. Utah soil series: site descriptions and soil properties (continued)

Soil series	Site number	Weather station and county	Vegetation and land use	Topographic position, slope and elevation in feet	Depths sampled in feet	Texture class	Mechanical analysis by weight percent			Organic matter by weight percent	Stone content, by volume percent	Soil reaction		Plasticity constants by weight percent			Bulk density grams per cc.	Soil moisture by weight, percent	
							Sand	Silt	Clay			Free carbonates	pH	Liquid limit	Plastic limit	Plasticity index		Saturation	Atmosphere tension
Musinia	115	Enterprise, Washington	Rabbit brush-grasses-weeds, moderately grazed	Terrace level 5,400	0-6	L	42	45	13	1.88	0	Sl.	8.8	Non-plastic			1.37	32.1	29.3
					6-12	SL	57	26	17	.62	0	St.	9.0				1.50	27.7	25.7
Palisade (Like)	102	Richfield, Sevier	Rabbit brush-grasses, moderately grazed	Terrace 5 percent 5,315	0-6	SCL	59	12	29	1.77	0	St.	8.2		34	17	1.41	31.9	29.3
					6-12	SL	55	15	30	1.15	0	V	8.2				1.42	31.0	27.9
Redfield	100	Richfield, Sevier	Grasses, moderately grazed	Bottom 1 percent 5,295	0-6	C	5	34	61	3.13	0	V	8.4		42	25	1.26	42.1	38.1
					6-12	C	4	39	57	1.45	0	V	--				1.37	35.5	33.8
Redfield	101	Richfield, Sevier	Clover-grasses, moderately grazed	Bottom level 5,285	0-6	C	14	24	62	5.80	0	St.	--		58	24	1.16	50.4	46.2
					6-12	C	2	35	63	1.45	0	V	--				1.42	33.2	33.0
Redfield (Like)	105	Circleville, Garfield	Grasses, lightly grazed	Terrace level 5,660	0-6	CL	25	39	36	4.15	5	V	--		37	18	1.23	44.7	40.7
					6-12	SC	56	7	37	1.77	5	V	--				1.53	26.6	25.9
Redfield	106	Zion N.P., Washington	Grasses-apple trees, cultivated orchard	Terrace 3 percent 3,950	0-6	CL	37	31	32	3.54	0	V	8.6		35	16	1.43	29.7	27.2
					6-12	CL	40	26	34	1.05	0	St.	8.4				1.66	20.2	19.4
Redfield	107	Zion N.P., Washington	Alfalfa-grasses, moderately grazed	Terrace level 3,800	0-6	CL	35	34	31	2.60	0	V	8.4		30	15	1.55	25.5	22.4
					6-12	CL	42	30	28	1.88	0	V	8.2				1.57	23.5	19.7
Redfield	109	La Verkin, Washington	Clover-grasses, moderately grazed	Upland 3 percent 3,240	0-6	CL	38	27	35	3.00	0	St.	8.2		29	17	1.54	29.5	27.6
					6-12	CL	31	31	38	.95	0	St.	8.2				1.70	22.2	21.7
Red Rock	20	Provo Radio KOVO, Utah	Grasses, moderately grazed	Terrace 1 percent 4,500	0-6	L	48	29	23	2.23	0	St.	9.4		28	21	1.65	20.5	18.9
					6-12	SCL	52	25	23	1.98	0	St.	8.8				1.53	23.4	20.3
Salt Air	9	Salt Lake City Airport, Salt Lake	Bare-pickle weeds, undisturbed	Bottom level 4,215	0-6	SiC	8	41	51	1.33	0	V	--		36	17	1.27	38.8	32.9
					6-12	SiC	7	41	52	1.15	0	V	--				1.60	24.2	22.9
Salt Air	141	Wendover, Tooele	Bare-pickle weeds, undisturbed	Bottom level 4,240	0-6	C	10	15	75	1.88	0	St.	9.0		30	19	1.42	35.4	34.9
					6-12	C	3	23	74	1.25	0	St.	9.0				1.53	29.4	28.1
Salt Air	142	Wendover, Tooele	Bare-pickle weeds, undisturbed	Bottom level 4,240	0-6	C	1	23	76	1.33	0	St.	9.0		34	21	1.41	33.1	31.6
					6-12	C	8	30	62	1.33	0	St.	8.6				1.54	28.8	25.6
Salt Air	143	Knolls, Tooele	Bare, undisturbed	Bottom level 4,240	0-6	C	10	36	54	1.98	0	St.	8.8		25	21	1.34	36.4	36.0
					6-12	SiC	3	44	53	1.05	0	Sl.	8.3				1.34	37.6	37.1
Salt Air	144	Knolls, Tooele	Bare-pickle weeds, undisturbed	Bottom level 4,240	0-6	SiCL	3	67	30	1.05	0	V	--		38	20	1.33	37.9	37.4
					6-12	SiC	3	41	56	1.33	0	V	--				1.30	38.6	38.3
Salt Lake	24	Logan Experiment Station, Cache	Grasses, hay	Bottom level 4,600	0-6	SiC	12	43	45	6.52	0	V	8.4		52	35	1.15	48.0	41.0
					6-12	C	11	38	51	4.90	0	V	8.2				1.08	55.1	52.2
St. George	113	St. George, Washington	Weeds, heavily grazed	Upland 2 percent 2,880	0-6	LS	80	15	5	.55	0	Sl.	8.4	Non-plastic			1.60	23.3	15.1
					6-12	LS	83	11	6	.55	0	Sl.	8.6				1.62	22.0	13.2
Tabiona	116	Enterprise, Washington	Alfalfa-weeds, moderately grazed	Terrace level 5,400	0-6	L	43	34	23	3.00	0	V	8.4		27	17	1.46	29.2	26.5
					6-12	L	41	35	24	2.35	0	V	8.8				1.52	26.4	23.2

(Continued)

Table 4. Utah soil series: site descriptions and soil properties (continued)

Soil series	Site number	Weather station and county	Vegetation and land use	Topographic position, slope and elevation in feet	Depths sampled in inches	Texture class	Mechanical analysis by weight percent			Organic matter by weight percent	Stone content, by volume percent	Soil reaction		Plasticity constants by weight percent			Bulk density grams per cc.	Soil moisture by weight, percent		
							Sand	Silt	Clay			Free carbonates	pH	Liquid limit	Plastic limit	Plasticity index		Saturation	Atmosphere tension	
Tabiona	117	Enterprise, Washington	Sagebrush-rabbit brush, lightly grazed	Terrace level 5,420	0-6 6-12 12-18	SL SL SL	70 66 49	23 23 29	7 11 22	1.65 .95 1.15	3 5 15	V V V	-- -- --				1.52 1.55	25.1 24.6	21.9 21.0	
													Non-plastic				---	---	---	
Taylorsville	12	A.S.R. Research Lab., Salt Lake	Grasses, undisturbed	Terrace level 4,210	0-6 6-12 12-18	SiC C C	18 19 22	42 39 33	40 42 45	4.80 2.35 1.45	0 0 0	St. V V	8.0 8.2 8.2	31	18	13	1.44 1.48	29.1 25.5	25.0 21.3	
																	---	---	---	
Taylorsville	13	A.S.R. Research Lab., Salt Lake	Grasses-weeds, undisturbed	Terrace level 4,210	0-6 6-12 12-18	CL CL CL	21 25 28	39 38 32	40 37 40	4.34 1.88 1.65	5 5 5	V V V	8.2 8.8 8.6	30	18	12	1.22 1.46	40.6 27.5	30.1 23.4	
																	---	---	---	
Taylorsville	14	Magna, Salt Lake	Grasses, undisturbed	Terrace level 4,200	0-6 6-12 12-18	SiC SiC C	16 10 5	43 42 37	41 48 58	3.96 1.88 1.05	0 0 0	V V V	8.6 9.2 8.6	33	18	15	1.36 1.46	33.2 28.0	27.9 25.6	
																	---	---	---	
Terminal	10	Salt Lake City Airport, Salt Lake	Grasses, lightly grazed	Terrace level 4,190	0-6 6-12 12-18	SiC C SiC	10 8 6	40 39 41	50 53 53	2.60 .78 .62	0 0 0	V V V	8.4 8.4 9.4	41	16	25	1.37 1.50	33.4 30.4	25.2 27.4	
																	---	---	---	
Terminal	15	Magna, Salt Lake	Grasses-weeds, lightly grazed	Terrace level 4,200	0-6 6-12 12-18	CL CL CL	28 34 40	37 34 29	35 32 31	3.62 1.45 1.05	0 0 0	V V V	8.8 8.4 8.4	26	17	9	1.38 1.44	32.4 28.9	28.1 24.5	
																	---	---	---	
Timpanogas	7	Farmington, Davis	Weeds, moderately grazed	Terrace level 4,400	0-6 6-12 12-18	L L L	38 37 32	43 41 44	19 22 24	2.87 2.87 2.08	0 0 0	Sl. Sl. N	8.2 8.2 8.2	25	18	7	1.37 1.44	30.6 28.5	25.9 23.0	
																	---	---	---	
Tobler	114	St. George, Washington	Sagebrush-grasses, lightly grazed	Upland level 2,860	0-6 6-12 12-18	S LS LS	91 88 87	5 5 9	4 7 4	.32 .18 .18	0 0 0	N N N	8.2 8.2 8.2				1.60 1.69	21.8 20.5	8.8 11.6	
																	---	---	---	
Trenton	22	Logan Experiment Station, Cache	Grasses-grasslike plants, moderately grazed	Bottom level 4,600	0-6 6-12 12-18	SiC SiC C	5 4 4	52 43 38	43 53 58	6.04 3.77 1.88	0 0 0	St. St. St.	8.2 8.6 8.4	49	27	22	.97 1.26	63.0 42.2	53.6 39.8	
																	---	---	---	
Welby	11	A.S.R. Research Lab., Salt Lake	Grasses, hay	Terrace level 4,200	0-6 6-12 12-18	SL SL SL	53 57 57	31 29 26	16 14 17	3.00 1.25 .70	0 0 0	Sl. St. St.	8.2 8.2 9.0	22	18	4	1.54 1.58	26.6 24.4	23.1 19.8	
																	---	---	---	
Welby	17	Spanish Fork, Utah	Grasses, cultivated previously, now lightly grazed	Terrace level 4,680	0-6 6-12 12-18	CL L L	28 34 34	39 44 39	33 22 27	3.96 2.60 2.23	0 0 0	V V V	8.2 8.2 8.6	25	17	8	1.20 1.42	41.4 29.6	29.8 22.8	
																	---	---	---	
Welby	19	Provo Radio KOVO, Utah	Grasses, moderately grazed	Terrace level 4,520	0-6 6-12 12-18	CL CL CL	30 32 32	34 36 31	36 32 37	5.92 5.68 4.90	30 35 40	V V St.	8.8 8.4 8.0	48	30	18	1.18 1.17	44.6 45.0	40.3 40.8	
																	---	---	---	
SERIES UNIDENTIFIED:																				
Desert	97	Ephriam, Sorensens Field, Sanpete	Sagebrush-grasses, moderately grazed	Upland level 5,580	0-6 6-12 12-18	CL CL C	22 24 23	41 37 36	37 39 41	2.35 1.45 1.25	5 5 5	V V V	9.4 9.4 9.4	31	18	13	1.39 1.48	32.0 27.4	25.6 22.0	
																	---	---	---	
Desert	118	Beryl-Enterprise Junction, Iron	Rabbit brush, lightly grazed	Upland level 5,400	0-6 6-12 12-18	C SiC SiC	35 14 10	19 41 42	46 45 48	3.62 2.35 1.65	0 0 0	V V V	-- -- --	42	28	14	1.04 1.08	52.8 52.4	41.4 43.7	
																	---	---	---	
Desert	119	Beryl-Enterprise Junction, Iron	Sagebrush-saltbush, lightly grazed	Upland level 5,370	0-6 6-12 12-18	C C SCL	10 15 46	36 36 23	54 49 31	2.08 1.65 1.25	0 0 0	Sl. Sl. Sl.	8.6 8.6 8.6	34	22	12	1.38 1.18	32.8 45.8	27.1 39.2	
																	---	---	---	
Desert	120	Cedar City Airport, Iron	Shadscale-sagebrush, lightly grazed	Upland level 5,600	0-6 6-12 12-18	C C CL	5 12 25	28 28 38	67 60 37	3.13 1.65 1.55	0 0 0	V V V	9.0 9.0 8.8	34	18	16	1.41 1.69	31.2 21.4	24.8 19.9	
																	---	---	---	
Desert	126	Desert Experiment Range, Millard	Yellow brush-grasses, lightly grazed	Upland level 6,000	0-6 6-12 12-18	SL SL SL	77 76 67	15 11 23	8 13 10	.32 .38 .32	2 2 2	N Sl. Sl.	8.6 8.6 8.6				1.46 1.52	28.5 25.1	11.1 12.0	
														Non-plastic				---	---	---

(Continued)

Table 4. Utah soil series: site descriptions and soil properties (continued)

Soil series	Site number	Weather station and county	Vegetation and land use	Topo-graphic position, slope and elevation in feet	Depths sam-pled in inches	Tex-ture class	Mechanical analysis by weight percent			Organic matter by weight percent	Stone con-tent, by volume percent	Soil reaction		Plasticity con-stants by weight percent			Bulk density grams per cc.	Soil moisture by weight, percent	
							Sand	Silt	Clay			Free car-bonates	pH	Liq-uid limit	Plas-tic limit	Plas-tic index		Satur-ation	.06 At-mosphere tension
SERIES UNIDENTIFIED (Continued):																			
Desert	127	Desert Experiment Range, Millard	Shadscale-winter fat-saltbush, lightly grazed	Upland	0-6	SL	70	19	11	0.55	5	V	8.4	Non-plastic			1.40	29.4	17.2
				2 percent	6-12	SL	68	21	11	.55	10	V	8.4				1.44	28.6	21.2
				6,000	12-18	SL	60	22	18	.38	30	V	9.0				---	---	---
Desert	129	Garrison, Millard	Shadscale-weeds, lightly grazed	Terrace	0-6	L	42	34	24	1.33	0	V	8.4	21	17	4	1.34	35.4	26.0
				1 percent	6-12	L	40	34	26	1.33	0	V	8.4				1.36	34.0	23.0
				5,300	12-18	CL	20	46	34	.78	0	V	8.6				---	---	---
Desert	130	Garrison, Millard	Yellow brush, grease-wood, lightly grazed	Upland	0-6	SL	60	23	17	1.15	5	V	8.8	Non-plastic			1.62	22.1	15.4
				2 percent	6-12	L	34	46	20	.95	10	V	9.2				1.59	23.9	16.9
				5,285	12-18	CL	34	34	32	.95	30	V	9.2				---	---	---
Desert	131	Garrison, Millard	Shadscale, grease-wood, lightly grazed	Upland	0-6	SL	53	29	18	1.05	5	St.	8.8	Non-plastic			1.52	26.6	19.6
				1 percent	6-12	SL	54	27	19	1.05	10	St.	8.8				1.56	25.8	19.6
				5,230	12-18	L	49	34	17	.86	25	St.	8.8				---	---	---
Desert	145	Knolls, Tooele	Shadscale-weeds, undis-turbed	Terrace	0-6	CL	28	44	28	2.08	0	V	9.2	31	15	16	1.51	25.2	18.0
				1 percent	6-12	CL	29	37	34	1.77	0	V	8.8				1.50	26.2	19.2
				4,240	12-18	C	28	28	44	1.33	0	V	9.2				---	---	---
Desert Playa	128	Desert Experiment Range, Millard	Bare, undis-turbed	Upland	0-6	C	4	27	69	2.35	0	V	8.2	34	24	10	1.24	41.5	33.7
				level	6-12	C	8	26	66	1.45	0	V	8.2				1.25	43.4	33.0
				5,990	12-18	C	1	35	64	1.15	0	V	8.4				---	---	---
Mountain Valley	98	Ephriam, Sorensens Field, Sanpete	Grasses, grass-like plants, lightly grazed	Bottom	0-6	C	7	36	57	6.52	0	V	9.6	50	23	27	1.21	45.4	39.7
				level	6-12	C	6	35	59	2.75	0	V	9.2				1.38	34.4	33.6
				5,500	12-18	C	2	33	65	1.45	0	V	9.2				---	---	---
Mountain Valley	103	Circle-ville, Piute	Grasses, grass-like plants, lightly grazed	Bottom	0-6	C	14	35	51	2.87	0	V	--	54	29	25	1.04	54.3	49.7
				level	6-12	C	24	36	40	2.35	0	V	--				1.16	49.7	47.4
				5,650	12-18	C	19	31	50	2.35	0	V	--				---	---	---
Mountain Valley Soil	124	Milford, Beaver	Grasses, grass-like plants, lightly grazed	Terrace	0-6	C	10	24	66	5.24	0	St.	9.4	50	24	26	1.23	43.8	41.8
				level	6-12	C	8	36	56	3.13	0	V	8.8				1.40	34.6	33.4
				4,966	12-18	SiCL	7	54	39	1.88	0	V	9.0				---	---	---
Mountain Soil	1	Farming-ton, Buckman Flat, Davis	Aspen, undis-turbed	Upland	0-6	CL	25	42	33	5.80	5	N	6.8	41	28	13	.99	61.9	40.2
				5 percent	6-12	CL	33	40	27	5.24	5	N	6.8				1.18	45.2	33.1
				7,100	12-18	CL	38	31	31	5.46	5	N	6.6				---	---	---
Mountain Soil	2	Farming-ton, Parrish Plots, Davis	Grasses-weeds, undis-turbed	Upland	0-6	SL	57	25	18	5.56	10	N	6.8	Non-plastic			1.20	43.8	28.4
				3 percent	6-12	SL	68	18	14	2.47	20	N	7.0				1.30	38.2	24.7
				8,400	12-18	SL	65	22	13	1.88	25	N	7.0				---	---	---
Mountain Soil	3	Farming-ton, Rice, Davis	Grasses-weeds-aspen, undis-turbed	Terrace	0-6	CL	25	43	32	9.00	5	N	6.8	39	25	14	1.23	42.6	29.5
				3 percent	6-12	CL	32	38	30	5.68	20	N	6.8				1.26	40.6	32.5
				6,950	12-18	L	36	39	25	4.05	30	N	6.8				---	---	---
Mountain Soil	4	Farming-ton, Ranger Station, Davis	Grasses, undis-turbed	Upland	0-6	L	34	40	26	3.86	10	N	6.4	31	19	12	1.43	28.1	24.6
				1 percent	6-12	L	32	41	27	3.77	30	N	6.8				1.48	27.6	25.3
				7,600	12-18	CL	27	43	30	3.13	40	N	7.2				---	---	---
Mountain Soil	94	Ephriam, Alpine Meadows, Sanpete	Grasses, undis-turbed	Upland	0-6	C	10	34	56	4.52	1	N	8.2	56	26	30	1.22	44.7	40.0
				2 percent	6-12	C	11	35	54	4.05	5	N	8.8				1.31	39.7	38.4
				9,860	12-18	C	5	32	63	2.60	15	N	8.0				---	---	---
Mountain Soil	95	Ephriam, HDQS, G.B.R.C., Sanpete	Aspen, undis-turbed	Upland	0-6	C	15	36	49	5.92	0	Sl.	8.2	59	32	27	1.01	58.1	50.2
				3 percent	6-12	C	10	35	55	5.80	0	Sl.	8.2				1.22	42.6	41.2
				8,500	12-18	C	8	35	57	5.34	0	Sl.	8.0				---	---	---
Mountain Soil	96	Ephriam Oaks, Sanpete	Scrub oak-grasses, undis-turbed	Upland	0-6	C	22	34	44	3.62	1	N	8.8	49	23	26	1.28	40.6	33.3
				7 percent	6-12	C	23	34	43	3.62	2	N	8.6				1.41	31.8	30.9
				7,655	12-18	C	20	30	50	2.35	4	Sl.	8.4				---	---	---