Water for Nevada

RECONNAISSANCE SOIL SURVEY DIXIE VALLEY

State of Nevada

WATER PLANNING REPORT

WATER

FOR NEVADA

Prepared by the State Engineer's Office,
the Agricultural Experiment Station —
University of Nevada, Reno and the
Soil Conservation Service, U.S.D.A.

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TO THE CITIZENS OF THE STATE OF NEVADA

This Report constitutes a part of the State Water Planning effort and was prepared cooperatively by the Division of Water Resources, the Agricultural Experiment Station, University of Nevada, Reno, and the Soil Conservation Service, United States Department of Agriculture.

The statewide reconnaissance soil survey is designed to furnish basic data needed to evaluate soils for a variety of potential uses. Septic Tank Absorption Fields, Soil Hydrologic Groups, Soil Materials Sources, Waste Disposal Sites, Soil Erosion Potential and Soil Irrigability Classes are among the several interpretive evaluations made in Dixie Valley as a result of the survey. The soils of the Dixie Valley area were identified, mapped, and named according to the Soil Taxonomy of the National Cooperative Soil Survey.

In addition to being used in the development of the State Water Plan, the progressive reconnaissance soil survey will also contribute to an eventual soil map of Nevada which will be a basic resource data source for state, regional and local land evaluation and development planning.

Respectfully,

Roland D. Westergard
State Engineer

RECONNAISSANCE SOIL SURVEY DIXIE VALLEY

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SUMMARY

The Dixie Valley reconnaissance soil survey area includes several large desert basins and mountain ranges totaling 1,525,760 acres. Half the area is mountainous; the other half is sloping to nearly level alluvial plains. Surface drainage from most of the area goes to the Humboldt Salt Marsh and playa in Dixie Valley; drainage in Fairview Valley goes to the Labou Flat playa. These playas comprise 2 percent of the area. In Dixie Valley, the playa and salt marsh are bordered by fine textured, somewhat poorly drained, salty soils on a nearly level basin-fill plain; these salty soils are of little agricultural value. At somewhat higher elevations on this basin-fill plain, nearly level, well drained, coarse to fine textured soils occur; some of these soils are shallow to gravelly substrata, but many of the potentially best agricultural soils occur on this part of the Dixie Valley basin-fill plain. In each of the several valleys, smooth alluvial fans slope to basin-fill plains or lateral drainageways. Their soils are medium textured on the surface and most have fine textured subsoils; shallow gravel substrata are common. These soils of the smooth alluvial fans, and particularly of the fan toeslopes, have potential agricultural value. The hills and mountains are mostly covered with moderately steep to steep soils that are shallow to bedrock and have gravelly, moderately coarse or medium textured surfaces and fine textured subsoils. The hill and mountain soils are most valuable for rangeland. Rock outcrop and rubble land of the hills and mountains comprise only 6 percent of the survey area. A large majority of the soils in this area are Aridisols (arid soils), and most of these are Argids with fine textured subsoils. Mollisols, or soils with a thick, dark, humus-rich surface layer, occur only in the higher mountains but are not extensive even there.

The most extensive vegetation is shadscale desert shrub on the alluvial plains and hills. Black greasewood is common on salty soils with shallow water tables. Big sagebrush occurs above the shadscale; pinyon-juniper stands girdle the higher mountains; and the high mountain crests carry sagebrush-grass stands. The predominant shrub vegetation reflects an arid climate.

The area is presentiy used largely for ranching, but 631,000 acres of potentially irrigable soils occur on the alluvial plains. Some 136,000 acres are class B potentially irrigable soils; 272,000 acres are class C; and 223,000 acres are class D soils. The climate is sufficiently warm and the growing season long enough for successful production of alfalfa hay, winter or spring small grains, corn for silage or grain, and alfalfa and grass seed by pump irrigation. Alfalfa seed is being produced successfully in northern Dixie Valley.

The extent, location, and major properties of the common soils are reported here at a scale suitable for general planning. Several interpretive evaluations of the soils are made, including irrigability, and basic soil property data is provided which can be used on demand for additional land use management or planning interpretations. Priority areas for detailed site evaluations also can be selected, using this survey, to insure most profitable returns from any additional field investigations needed for operational developments.

INTRODUCTION

The Dixie Valley area comprises several large, connected desert basins: Dixie Valley, Stingaree Valley, Cowkick Valley, the Eastgate drainage, Fairview Valley, and Bell Flat to the south, and Pleasant and Jersey Valleys to the north. The area is so dry that extensive grazing has been its main agricultural activity, excepting a small tract irrigated from shallow ground water at Dixie. Within the last generation modern technology has been used to produce alfalfa seed by pump irrigation at the northern end of Dixie Valley. As areas under pump irrigation and population grow, additional roads, power lines, and even communities can be expected to be built in this relatively remote area, and more people will use it for recreation. Wise land use and profitable land development demand that expensive pumped water be used on only the most suitable land; that engineering works take advantage of the best soil materials, and that any communities be located to minimize building and sanitary waste disposal problems. Finally, progressive range improvement programs need to better establish the potentials of soil-landscapes for rejuvenating existing range or seeding new stands.

Each of these management or planning tasks is best done with some knowledge of the physical and chemical properties of the soils which will be used. However, in such a huge and unknown area as this, a detailed study of the soils is prohibitively expensive and slow. This reconnaissance soil survey was designed to discover enough facts about the common soils to allow evaluation of their potential for irrigated agriculture, for engineering works, and application of certain range improvement practices on at least a planning basis. Enough information about basic soil properties also has been determined by the soil survey to allow evaluations for possible uses not now forseen. The rapid pace of field survey investigations needed to cover such a large area as this means, of course, that only the more extensive soils can be discovered, and that the map units must show areas where two or three soils occur together in a fairly regular pattern, or soil association, rather than the specific location of each individual kind of soil.

This reconnaissance soil survey was made by first traversing the area and determining the major landforms, kinds of rocks, soils, and vegetation which occur. Numerous backhoe pits were opened to allow us to determine such soil properties as degree of cementation of hardpans or the character of underlying silts, sand, or gravel not easily seen in shovel holes. Precise identification of the kind of soil (i.e., its classification), limited sampling, and detailed technical descriptions of soil properties were also made in the backhoe pits. A number of salinity, alkali, and organic matter analyses were made in the laboratory to establish properties which cannot be determined in the field. With this background experience, concurrent stereoscopic study of 1 inch per mile scale aerial photographs, and numerous selected transects, it is possible to associate the occurrence of particular soil patterns with peculiar landforms, vegetation, geological parent material, and erosional or deposition features, and thus map soil associations.

ENVIRONMENTAL FEATURES

Location and Cultural Features

This survey area is in west-central Nevada; it is largely in Churchill and Pershing counties with small parts in Lander and Mineral counties. Its boundaries are about 20 miles east of Fallon, 35 miles south of Winnemucca, and 40 miles northeast of Hawthorne, Nevada. The survey comprises the Fairview, Stingaree, Cowkick, Eastgate, Dixie, Pleasant, and Jersey Valley hydrographic areas (Nev. State Engineer's Office, 1971). Surface drainage from these valleys flows to the Humboldt Salt Marsh and playa in Dixie Valley, except for Fairview Valley which drains to the Labou Flat playa, and the small drainage of Bell Flat playa. The survey area comprises 2,384 square miles (1,525,760 acres), is about 110 miles from south-southwest to north-northeast, and is from 16 to 36 miles wide, east to west.

The present small population is served by improved roads entering the area from the north and south, and most of the area except the mountainous terrain is accessible to vehicles. U.S. Highway 50, from Fallon, crosses the southern end of the area, and paved Nevada Highways 2, 23, and 31 branch off to the south and east. Improved roads connect the northern portion of the area to Interstate Highway 80 at Lovelock, Winnemucca, and Battle Mountain. However, at the time this survey was made, no all-weather roads connected the northern and southern parts of the area.

Several families reside in the farming community at Dixie, south of the Humboldt Salt Marsh. A restaurant and motel are located at Frenchman on U.S. Highway 50 in Fairview Valley.

FIGURE 1. Southern Dixie Valley viewed from a dissected alluvial fan high on the west valley slope. The dissected fan is illustrative of General Soil Map area 5. Below it are smooth, darkly-vegetated alluvial fans of General Soil Map area 4; beyond the smooth fans is a linear, greyish-toned, well drained basin-fill plain of area 3. In the distance the poorly drained Humboldt Salt Marsh, playa, and surrounding wet saline soils of areas 1 and 2 appear as a whitish flat.

Otherwise, the residents of the area live at several widely separated farms and ranches. Farming, ranching, and seasonal mining are the major economic enterprises. The U.S. Navy operates a bombing range in Fairview Valley, but has no resident installations there. The considerable alfalfa seed production at the northern end of Dixie Valley may portend agricultural development in the area.

Landforms and Geology

Close to half the survey area is comprised of north-south trending mountains and hills which bound elongated valleys, or structural basins. To the west, the Sand Springs, Stillwater and East Ranges form an almost continuous mountain barrier rising from median elevations of 6,000 to 7,000 feet to peaks above 8,000 feet. To the east, 8,000 to 10,000 foot high ridges and peaks of the Desatoya Mountains, Clan Alpine Mountains, Augusta Mountains, and the Tobin Range form a series of offset mountain barriers separated by narrow valleys. The mountain peaks and ridges are most prominent, but foothills are most extensive. The mountains drop steeply to the several valleys; the floor of Fairview Valley is at roughly 4,200 feet elevation, and the Dixie Valley floor is at about 3,400 feet.

In each of the valleys, weathered rock debris and soil washed off the mountain slopes and out from the mountain canyons are heaped in gross, cone-like forms, or alluvial fans below individual canyons. The alluvial fans from the canyons along a mountain front merge laterally to form continuous alluvial plains which break abruptly from the steep mountains and slope gently to the valley floors. These sloping alluvial plains are also called coalescent alluvial fan piedmonts, or fan piedmonts, for short. Fan piedmonts comprise 36 percent of the survey area.

In Dixie and Fairview Valleys — the two largest, most broad valleys — the lower slopes of the alluvial fan piedmonts flare out onto nearly level valley floors, or basin-fill plains which comprise 10 percent of the survey area. At the lowest elevations of these valleys, surface drainage water and fine sediments collect in dry lakes, or playas, which comprise about 2 percent of the survey area. The playa of Fairview Valley collects drainage only from the alluvial plains and mountains of that valley, whereas the Dixie Valley playa is the sink into which the floodwaters of all the remaining valleys flow (excepting small, internally drained Bell Flat). Prominent stream channels and floodplains cross the Dixie Valley basin-fill plain from Pleasant Valley, Jersey Valley, and the Eastgate drainage to the Dixie Valley playa (*i.e.*, the Humboldt Salt Marsh).

In the valleys tributary to Dixie Valley, the fan piedmonts slope to lateral drainageways, rather than basin-fill plains. These main lateral drainageways have been downcut, and proliferating side-drainageways have dissected portions of the fan piedmont toeslopes leaving numerous, parallel, accordant, flat or round-topped remnants of the old fan piedmonts. Stream floodplains border the main drainageway channels. In some situations, the larger side-drainageways have partially re-filled with alluvium forming inset alluvial fans; where several inset alluvial fans debouche from side-drainageways and coalesce, they form an alluvial fan skirt below the old fan piedmont remnants.

Besides being dissected by the drainage tributary to Dixie Valley, the alluvial fan piedmonts of all the valleys commonly are dissected in their upper reaches near the mountain fronts. There, old flattish-topped, or very old, broadly rounded (*i.e.*, ballenas) alluvial fan remnants stand above channelways and inset alluvial fans that spill out and coalesce to form the extensive smooth alluvial fan piedmont surfaces. Thus, the gross forms of the alluvial plains, as they are seen from mountain heights, actually are formed of several ages of alluvial land surfaces and the patterns of soils there are largely determined by the successive acts of deposition or erosion.

The rock fragments, sand, silt, and clay composing each of the alluvial fan surfaces came from the canyons and mountain slopes directly upslope and reflect the kinds of rocks and old soils found upslope. The basin-fill plains, in comparison, are formed of sediments washed beyond the alluvial fan toeslopes, and on toward the playa sinks. Therefore, the basin-fill plains are composed of comingled sediments from many sources, rather than a single one.

Another distinction between basin-fill plains and alluvial fans is the size of sedimentary particles, or alluvium from which they are formed. The finest sand and silt and clay are carried farthest from the mountains by ephemeral floods; hence, the basin-fill plains are most commonly composed of fine textured alluvium, whereas the alluvial fan piedmonts are finest textured on their toeslopes and become progressively more sandy, gravelly, and stony near the mountains. The playas, on the other hand, receive the finest sediments and the dissolved salts resulting from mineral weathering; they are clayey and, in many cases, salty. Area-wide groundwater flow toward the Dixie Valley playa (Humboldt Salt Marsh) has created high water tables and exaggerated salinity there and in the surrounding basin-fill plain soils as the groundwater evaporated and soluble salts accumulated.

As the steep hill and mountain slopes eroded back and the alluvial plains were built, an intervening, narrow pediment slope was left in places. The pediments are erosional slopes cut into bedrock and commonly mantled by alluvium, or pedisediment from the retreating mountain or hill slopes. Their surfaces are continuations of the alluvial fans and indistinguishable except for shallow underlying bedrock. Pediments cut across soft tertiary sedimentary rocks are extensive in Jersey Valley and the Eastgate drainage; they are most commonly dissected.

Wave and current action of extinct Pleistocene lakes in Dixie and Fairview Valleys reworked fan and basin-fill plain alluvium and built beaches, bars, and spits of gravel and sand. Only shallow soils which have formed in a thin loess cap occur on these landforms, but they are valuable sources of sand and gravel. The extinct Fairview Valley lake was perhaps 50 feet deep, whereas the one in Dixie Valley was about 220 feet deep.

Sand dunes formed to the lee of the Pleistocene lake beaches after the lakes dried up, and to some extent the dunes are still active. Sand dune areas occur both north and south of the Dixie Valley playa, but are most extensive in Fairview Valley where an extensive dune-sheet mantles basin-fill plain and fan piedmont slopes (soil map unit 37). The sand source for the Fairview dune-sheet can be traced across the Sand Springs Range, where a considerable area of sand dunes occurs on hill slopes (soil map unit 86), to Sand Mountain in the southeastern Carson desert, and extends on into the Walker Lake basin. Another evidence of pronounced glacial or post-glacial aeolian deposition is the occurrence of a loess capping (windblow silt) on many soils in the area (see General Soil Map, Area 4).

The General Geology Map shows that volcanic rocks are the most extensive bedrock in the uplands and have been the source of alluvium for the greatest extent of alluvial fan piedmonts. Soils with subsurface horizons of clay accumulation (*i.e.*, argillic horizons) are extensive on volcanice parent materials. Granitic rocks, limestone, and soft sedimentary rocks are much less extensive, but have distinctive soils formed from them. Alluvial fans from volcanic rock sources are most commonly very gravelly, whereas those from granitic rocks are sandy.

Climate[2]

The Dixie Valley area is arid to semi-arid, has low precipitation, high evaportranspiration and abundant sunshine. Days are hot in summer and mild in winter; nights are cool or cold.

Topography markedly affects the climate of the area. The Stillwater Range to the west and the Clan Alpine Mountains to the east are barriers largely preventing precipitation in the valleys. The valley floors receive less than 8 inches mean annual precipitation, whereas 16 inches or more might fall on the mountain peaks (see Precipitation Map). The confined valley floors and alluvial fan footslopes can become hot during the day, while temperatures in the mountains remain moderate. At night, however, cold air drainage from the mountains can produce cold temperatures on the valley floors while the upper alluvial fans and mountain slopes remain relatively warm. Temperature differences due to cold air drainage are particularly prominent when it is calm. Night to day temperature changes average 30 degrees Fahrenheit and range from about 20 degrees in winter to near 40 degrees in summer. On the valley floors, extremes of 110 degrees are not uncommon and temperatures as low as −12 degrees have occurred.

Strong westerly winds are not often felt in Dixie Valley, but visible dust and salt being carried over the Stillwater Range from the Carson-Humboldt Sinks to the west are evidence of their violence elsewhere. The orientation and constraining influence of the mountain ranges contributes to prevailing southerly or southwesterly winds in the major valleys. Southerly or southwesterly winds can reach high intensity. No wind records are available for the survey area, but at Fallon, Nevada, wind speeds over 50 miles per hour have occurred, although average winds are less than 20 miles per hour.

Long-term meteorologic records are not available for the area; the estimates and maps shown here are based on limited data from Eastgate (see Appendix 1), Frenchman, two ranches in northern Dixie Valley, and extrapolation from similar climatic situations in Nevada.

Precipitation is highly variable; in some months there is none, at other times thunderstorms create flash floods. Most precipitation is gentle, but rainfall intensities as great as 1.8 inches per 24 hours can occur with a 100-year return expectancy. There are 10 to 15 days per year with thunderstorms, but fewer than one of these produces hail, and the hail is small sized. The majority of precipitation occurs during winter and spring. Snow fall is infrequent and snowcover persists only a few days, although as much as 8 inches of snow have fallen in a month. In the high mountains deeper snowfall and lower temperatures can lead to persistent snow cover during some winters.

Humidity is quite low, ranging from 15 percent in summer to 25 percent in winter, and evaporation is probably on the order of 80 inches annually on the lower valley floors. Therefore, there is a large water deficit in the area and crop production demands careful irrigation.

The growing season (i.e., freeze-free (32°F) season) for most of the potentially irrigable soils in the area is somewhat greater than 130 days, and therefore the area is potentially one of the more agriculturally productive parts of west-central Nevada (see Mean Growing Season Length Map).[3] The higher alluvial fans and Pleasant Valley have about 100-130 day growing seasons — still sufficient for crop production. In the higher mountains, the season is as short or shorter than 70 days. Because of cold air drainage, the lowest parts of the valley floors might experience late or early frosts; where cold air drains off the higher alluvial fans and mountain slopes, growing seasons might be significantly longer than indicated. Such local, topographically determined variations can not be predicted from existing data, and must be determined by local observations.

Vegetation

The Dixie Valley area is in the Great Basin Desert of Shreve. There are four major zones of vegetation (Billings, 1951) on the well-drained, nonsaline soils: (1) a shadscale zone occurs below 5500 feet elevation in the southern part and below 5000 feet in the northern part of the area, (2) a sagebrush-grass zone occurs above the shadscale zone, (3) a pinyon-juniper zone occurs between 6000 and 8000 feet, and (4) an upper sagebrush-grass zone occurs above approximately 8000 feet. These vegetation zones are somewhat differently named in the most recent Nevada Vegetation Map (Anon., 1972). Zone 1 is called "salt desert shrub"; zone 2 is called "northern desert shrub"; zone 3 is called "pinyon-juniper"; and zone 4 apparently is not distinguished from the "northern desert shrub" vegetative type, or is inappropriately lumped with pinyon-juniper.

Shadscale *(Atriplex confertifolia)* and bud sagebrush *(Artemesia spinescens)* are the most common shrubs of the shadscale zone, but Bailey greasewood *(Sarcobatus vermiculatus baileyi)* is commonly the dominant shrub on sandy soils, particularly in the southern part of the survey area. The abundance of spiny hopsage *(Grayia spinosa)* normally increases toward the upper limit of the zone. Much less than one-half the ground area is covered by shrubs, the remainder is mostly bare. Globe mallow *(Sphaeralcea* spp), Indian rice grass *(Oryzopsis hymenoides)* and galleta grass *(Hilaria jamesii)* are common herbaceous plants. Indian rice grass is particularly abundant in Fairview Valley on the extensive sandy soils. Cheatgrass *(Bromus tectorum)* thrives on disturbed soils and peppergrass *(Lepidium perfoliatum)* is abundant on disturbed silt loam textured soils on alluvial fans in the northern part of the survey area. Halogeton *(Halogeton glomeratus)* and Russian thistle *(Salsola kali tenuifolia)* are also common on disturbed soils. Shadscale occurs well above 5500 feet in localities which apparently are drier than average for the area.

Big Sagebrush *(Artemesia tridentata)* is the predominant shrub in the sagebrush-grass zone. However, low sagebrush *(Artemesia arbuscula)* is usually the dominant shrub on very shallow soils. Gooseberry *(Ribes* spp) shrubs are common but not abundant. Bitterbrush *(Purshia tridentata)* is found in the sagebrush-grass zone in the Desatoya Mountains. Sandberg bluegrass *(Poa secunda)* and other grasses are abundant where grazing has not been too heavy. Cheatgrass *(Bromus tectorum)* and bottlebrush squirreltail *(Sitanion hystrix)* are common on disturbed soils.

The pinyon-juniper zone differs from the sagebrush-grass zone mainly in that Utah juniper *(Juniperous osteosperma)* and singleleaf pinyon pine *(Pinus monophylla)* trees are present, though they usually cover less than 50% of the area. The shrub and herbaceous vegetation is similar to that of the sagebrush-grass zone. Singleleaf pinyon pine is not found north of 40°15' N latitude in the survey area. Even Utah juniper is absent from the intermediate altitude range (6000-8000 feet) in parts of the Tobin and East Ranges, and patches of aspen *(Populus tremuloides)* appear in these mountains. In the southern part of the survey area, the altitudinal range of the tree-free big sagebrush zone below the pinyon-juniper zone is very narrow, except on soils over siliceous granitic rocks.

The upper sagebrush-grass zone is dominated by big sagebrush on the deeper soils and low sagebrush on very shallow soils. Creambush *(Holodiscus discolor)* is abundant in rocky areas. No trees are present, but mountain-mahogany *(Cercocarpus ledifolius)* is found in the Desatoya Mountains. Sandberg blue grass and other grasses are abundant where grazing has not been too heavy. Bottlebrush squirreltail is common on disturbed soils. Phlox *(Phlox* spp) is abundant and wild buckwheat *(Eriogonum* spp) and arrowleaf Balsam-root *(Balsamorhiza sagittata)* are common. Lupine *(Lupinus* spp) is commonly abundant on the lee side of high ridges where snow accumulates and remains until late spring or early summer.

Black greasewood *(Sarcobatus vermiculatus)* is common on soils with high groundwater, although it also grows in areas where the water table is many feet deep. Seepweed *(Sueda suffrutescens)* appears to be the most reliable indicator of marked soil salinity; saltgrass *(Distichlis spicata stricta)* and iodine bush *(Allenrolfea occidentalis)* also grow on saline soils. Great Basin wild rye *(Elymus cinereus)* is common on somewhat poorly drained, saline soils south of the Humboldt Salt Marsh. It also grows well on some well drained, nonsaline soils in other areas.

Water Resources[4]

The Dixie Valley Area includes seven valleys: Fairview Valley, which is a topographically closed basin; Dixie Valley and five smaller valleys that drain into Dixie Valley: Jersey, Pleasant, Eastgate, Cowkick and Stingaree Valleys. All are hydrologically connected with Dixie Valley in the subsurface, therefore the seven valleys form a closed hydrologic unit.

All streams in the Dixie Valley Area are ephemeral; however, some are perennial for short distances where springs discharge into the channels.

Drainage in Fairview Valley is toward the playa at Labou Flat.
Campbell Creek flows westward into Eastgate Valley and discharges into Cowkick Valley at Middlegate, from Middlegate the stream flows westward through Cowkick Valley and discharges into Stingaree Valley at Westgate and then flows northwestward into Dixie Valley where it joins Dixie Wash. Dixie Wash flows northward through the southern portion at Dixie Valley and discharges into the Humboldt Salt Marsh.

Spring Creek and its tributaries drain Pleasant Valley. The stream flows southward and discharges into Dixie Valley. Jersey Valley is drained by a southwest-trending ephemeral stream then branches into numerous distributaries. These distributaries and Spring Creek receives tributary stream flow in the northern portion at Dixie Valley and flowing southward ultimately discharges into the Humboldt Salt Marsh.

Water development within the area began as a necessary adjunct to the early mining activities and resultant settlements and towns. Pleasant Valley boasted about its settlements of Goldbanks and Kennedy and Jersey Valley had its Jersey City. Dixie Valley had more numerous settlements which included Bolivia, Dixie, Bernice, Silver Hill, La Plata, Victor, Hercules and the more well known town of Wonder. Fairview Valley was noted for the town of Fairview and Eastgate Valley had its own Eastgate.

Livestock grazing during this early period led also to the development of springs and seeps. And finally agricultural development along springs and streams took place and the settlement at Dixie Valley came into being and with it the first development of ground water for irrigation.

Pleasant Valley has an average run-off of 1,400 ac. ft. per year which is used to irrigate 1,116.67 acres of land with decreed or certificated water rights and under claims of vested rights. In addition applications to appropriate water for 661 acres have been filed.

The main streams in Pleasant Valley are Bushee and Golconda Canyon Creeks and Pleasant Valley Creek. Some flow finds its way out of the valley via Spring Creek at the southern exit of the valley.

Ground water recharge from precipitation in Pleasant Valley is on the order of 3,000 ac. ft. per year of which 2,600 ac. ft. constitutes perennial yield. Appropriation of ground water is limited to 74.4 acres of which 50.9 acres are supplemental to surface water. This would place a total demand at less than 300 ac. ft. on the basin. Of the 3,000 ac. ft. recharge, 800 ac. ft. is lost to Dixie Valley as ground water outflow and the remainder is lost through evapotranspiration. Ground water in storage is estimated to be 6,200 ac. ft. per foot of saturated sediments.

Jersey Valley streams of Home Station and Cow Creeks and the Hot Springs constitute the major contributors of the 200 ac. ft. average run-off. Surface water appropriations in Jersey Valley are for the irrigation of 147.34 acres and there is some out-flow into Dixie Valley.

Ground water recharge from precipitation in Jersey Valley is 800 ac. ft. per year of which 250 ac. ft. is the figure set as perennial yield. There are no appropriations from ground water in Jersey Valley. 500 ac. ft. of the 800 ac. ft. recharge leaves the valley as ground water outflow. Ground water in storage is estimated to be 1,600 ac. ft. per foot of saturated sediments.

Fairview Valley has an annual run-off of 100 ac. ft. most of which flows to Labou Flat and evaporates. Ground water recharge from precipitation is approximately 500 ac. ft. all of which leaves the valley as ground water outflow to Dixie Valley. An infinitesimal amount of water has been appropriated

FIGURE 2. Fairview Valley and Labou Flat playa viewed from the south. The Stillwater Range is to the west, the Clan Alpine Range to the east; these mountains comprise large parts of General Soil Map area 7. The smooth alluvial fans sloping to Labou Flat are characteristic of General Soil Map area 4; in the foreground are included dissected alluvial fans.

for stock watering purposes from both surface water and ground water. Ground water in storage is estimated to be 7,800 ac. ft. per foot of saturated sediments.

Eastgate Valley has run-off from the mountains in the order of 2,200 ac. ft., less than 500 ac. ft. are used for the irrigation of 119.2 acres and about 100 ac. ft. is diverted out of the basin into Edwards Creek Valley for the irrigation of 23.43 acres.

Ground water recharge from precipitation and the perennial yield of Eastgate Valley is 4,000 ac. ft. Some of this is lost through evapotranspiration and a minor amount is lost through ground water outflow to Cowkick Valley. No appropriations for ground water have been made in this valley. Ground water in storage is estimated to be 1,900 ac. ft. per foot of saturated sediments.

The 200 ac. ft. of run-off in Cowkick Valley comes almost exclusively from Bench Creek which is used to irrigate 60 acres of the total of 68.9 acres irrigated by surface waters within the Valley. Bench Creek was diverted and piped for six miles in the southwesterly direction to the town of Wonder in the early 1900's and was used there until the 1920's. Surface and ground waters were also diverted from Cowkick Valley at Westgate and pumped through 40,133 feet of pipeline to the town of Fairview. A difference in elevation of 1,250 feet. Some surface water leaves the valley as overflow to Stingaree Valley and some is lost through evaporation.

Ground water recharge from precipitation and the perennial yield for Cowkick Valley is 800 ac. ft. Certificated water rights have been issued for the irrigation of 120.6 acres of land. Minor appropriations have also been made for stock watering purposes. Some ground water is lost through evapotranspiration and outflow to Stingaree Valley. Ground water in storage is estimated to be 1,700 ac. ft. per foot of saturated sediments.

Stingaree Valley has only a 30 ac. ft. surface water run-off and 100 ac. ft. recharge from precipitation. The only appropriation in the Valley is a permit from ground water for mining, milling and domestic and amounts to 910 ac. ft. per year. The Valley has in ground water storage 1,600 ac. ft. per foot of saturated sediments.

Dixie Valley has a 2,300 ac. ft. surface water run-off which is augmented by 5,600 ac. ft. inflow from Pleasant, Jersey and Stingaree Valleys.

Appropriation of surface water is primarily used for the irrigation of 354.98 acres of land, 142.45 acres in the south end from Horse Creek and Cow Canyon and 212.53 acres in the north end from Warm Springs and Salt Marsh Valley Hot Springs. Other appropriations are for minor amounts of water for stockwatering, mining, and milling purposes.

The 6,000 ac. ft. ground water recharge from precipitation is supplemented by 1,600 ac. ft. of ground water inflow from Fairview, Stingaree, Pleasant, and Jersey Valleys.

Certificated rights for the appropriation of ground water have been issued for 2,920.56 ac. ft. for the irrigation of 730.14 acres; permits have been granted for 14,715.28 ac. ft. for the irrigation of 3,678.82 acres in the southern portion of Dixie Valley.

In the northern portion of the Valley certificates for ground water have been issued for 3,136.60 acre feet for the irrigation of 784.15 acres and permits have been granted for 11,520,000 ac. ft. for the irrigation of 2,880.0 acres of land. No applications for additional lands have been made.

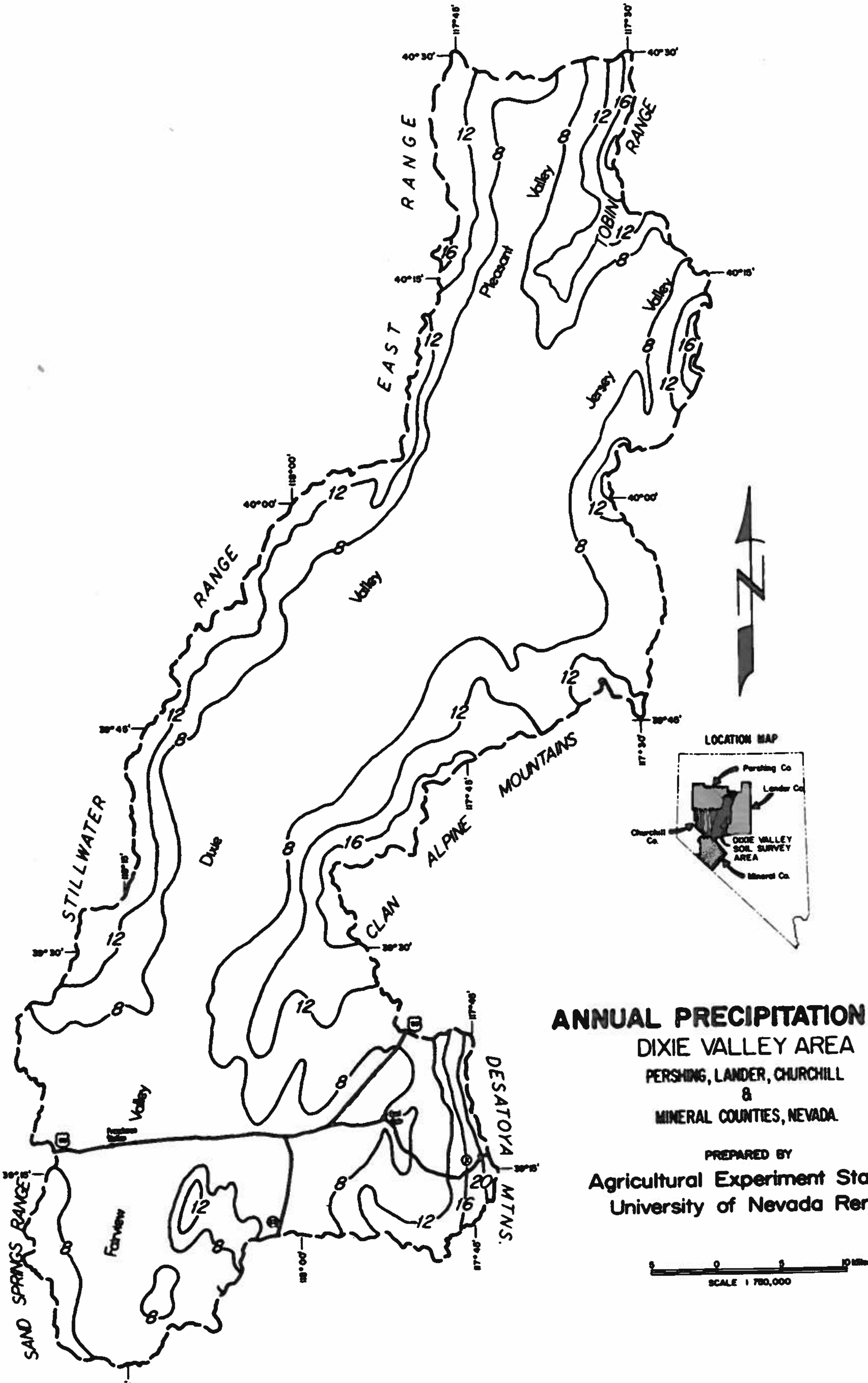
Ground water in storage for the entire valley is estimated to be 35,000 ac. ft. per foot of saturated sediments.

Crop Adaptability[5]

The available climatic data suggest a good potential for irrigated crops in the Dixie Valley area. Most of the potentially irrigable soils are well suited for alfalfa hay with four cuttings possible where the freeze-free season is longer than 120 days. All the irrigable soils have excellent potential for irrigated pastures of species selected to fit availability of irrigation water or any soil problems such as salinity. Winter wheat, winter barley, spring wheat, spring barley and oats are all well adapted to the area. There is a good potential for grass seed production on the irrigable soils. Alfalfa seed production should be possible in those parts of the area with more than about 120 days freeze-free season, as should production of corn for grain or silage.

The climate of Dixie Valley, proper, appears somewhat more favorable for crop production than most agriculturally developed valleys in central and northern Nevada. A variety of other climatically adapted crops could be grown given markets.

Development of these desert soils for irrigated crops, as well as rejuvenation of natural meadows with higher yielding species, should be planned as a several year program. Initially, several years of vigorous annual crops, such as small grains, should be grown to improve the soils. Initial infiltration rates are low on most of the soils and should increase to reasonable rates with irrigation, addition of organic matter from roots and



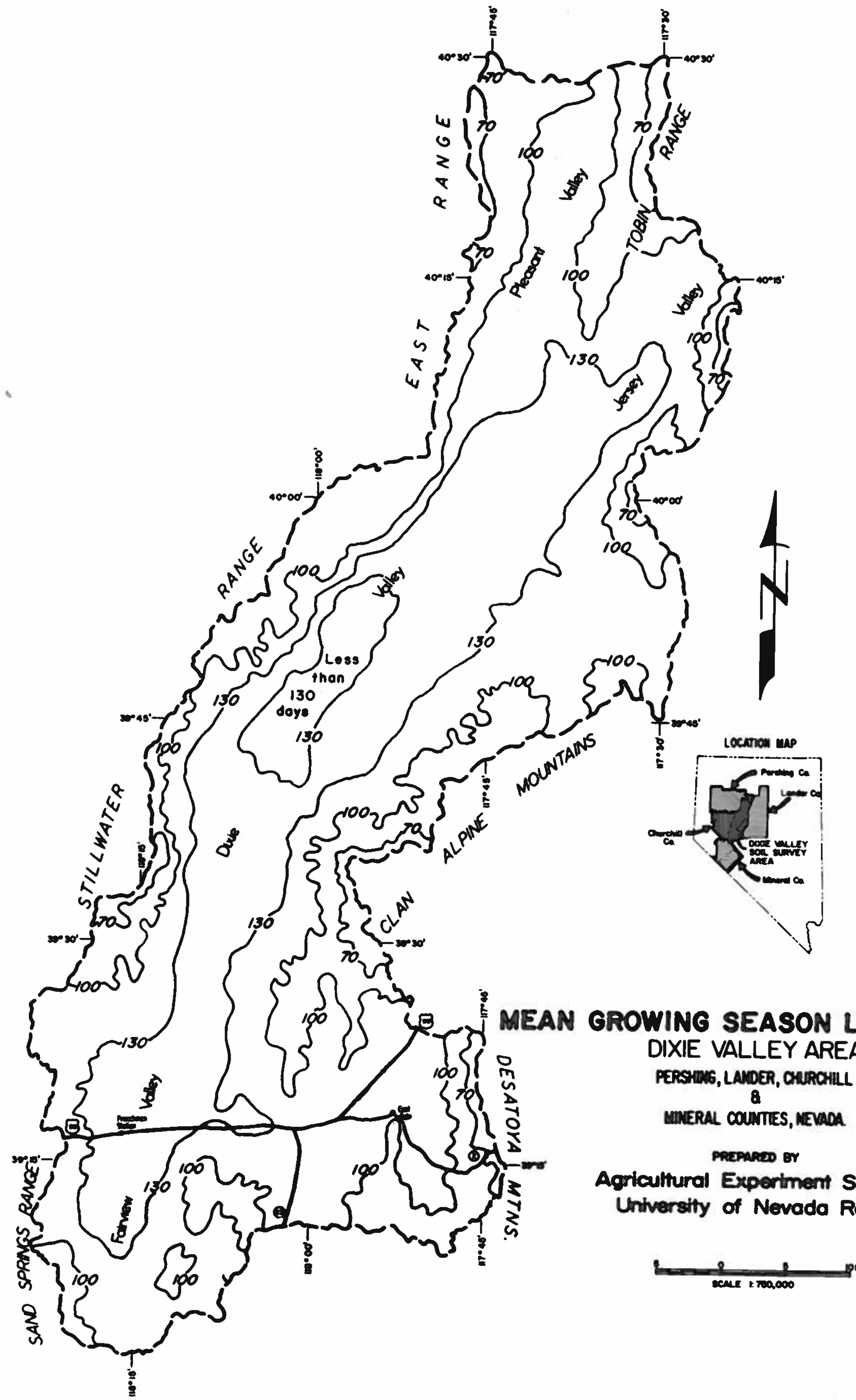
ANNUAL PRECIPITATION (inches)

DIXIE VALLEY AREA

PERSHING, LANDER, CHURCHILL & MINERAL COUNTIES, NEVADA

PREPARED BY

Agricultural Experiment Station
University of Nevada Reno



MEAN GROWING SEASON LENGTH (days)
DIXIE VALLEY AREA
PERSHING, LANDER, CHURCHILL & MINERAL COUNTIES, NEVADA

PREPARED BY
Agricultural Experiment Station
University of Nevada Reno

crop residues, and shading. Some soils will settle and need re-leveling; others might be sodium or salt affected and need gypsum as an amendment or leaching to reclaim them. Successive small grain crops encourage all these beneficial soil changes. Since low available waterholding capacity is a common limitation for many irrigable soils, irrigation systems should be planned to be capable of frequent irrigation during the peak moisture stress periods of the hot, windy summer season. Fertilizers are needed for all crops, and should be applied according to crop needs and soil fertility tests.[6] Sandy irrigable soils should be protected from wind erosion by developing them in small blocks separated by vegetated strips. Some sort of vegetative or trash cover should be maintained on these sandy soils at all times they are not moist. Before a crop is established, sprinkling can be used to prevent bare sandy soils from blowing during windy periods.

SOILS

Soil Taxonomy

Reconnaissance and detailed soil surveys attempt to record enough about the basic physical and chemical properties of soils (as well as map their extent), so that one can use these facts for evaluations for a variety of potential soil uses. A land-classification type survey, in comparison, checks only a few properties against a preconceived rating system, and records only the evaluations on a map; if the rating criteria change, if new technology suggests possible use of hitherto low-value soils, or if the next demand is for locating a highway alignment instead of a gravity irrigation project, the land-classification must be repeated at the same expense. Obviously, surveys which record basic data about soil properties, not evaluations, are the most efficient environmental inventories for multiple-use planning.

Historically, a major portion of the scientific effort of the National Cooperative Soil Survey has been to discover which soil properties we should measure to provide us basic data for making the best interpretations for a variety of uses. These properties are generally capable of being determined in the field. Quality control is maintained by reference to laboratory measurements of physical and chemical properties for representative benchmark soils. The properties also have to be mappable on broad or detailed scale, and must be put in a logical arrangement so technical workers can identify and retrieve data. Suffice it to say, the relatively new U.S. Soil Taxonomy system (Soil Survey Staff, 1970) includes the most useful selection of tested criteria to date. The soils of the Dixie Valley area were identified, mapped, and named according to this taxonomic system. Each kind, or class of soil has a defined range of properties according to this taxonomic system. These properties, depending on the level of classification, can be used to make different interpretations. Although use of this data-organization system, or classification, is a technical job, its soil names are connotative and many of the soil properties, such as presence of a hardpan, are closely indicated by the names and can be used by readers for a variety of simple interpretations.

Table 4 lists the kinds of soils mapped in this survey area, according to the U.S. Soil Taxonomy. This classification system has 6 categories from Order to Series, of which only the top 5 are used here (the soil Series, which is the most specific class identification, is used in detailed soil surveys; the more inclusive soil Family classes are used here since they better fit the greater flexibility needed for a reconnaissance soil survey). Note that the first syllable of the Order names appear in each of the names of their respective Suborders. Similarly, the entire Suborder name reappears as part of the longer names in the Great Groups, and then an additional word is added to the Great Group name to make the Subgroup name. The names of the soil Family classes are formed by adding several descriptive words to the Subgroup name (e.g., see column 2, Table 1); in Table 4, only those additional words descriptive of texture, mineralogy, and soil temperature regimes are listed for the Families, since the Subgroup portion of the Family name is given in the adjacent column.

The soil textural designation in the Family name (e.g., fine, coarse-loamy, loamy-skeletal, etc.) refers to the particle size class of the whole soil, rather than to just the fine earth (<2mm diameter particles) textures of traditional soil survey terminology (e.g., sandy loam, loam, clay, silt loam, etc.; see Soil Survey Staff, 1951). These soil Family particle size classes, or textural designations, are average textures for a "control section" from 10 to 40 inches depth, if an argillic or natric subsurface horizon is absent. For soils shallower than 14 inches to bedrock or hardpan, the average particle size class for the entire soil is used for the Family designation.

If an argillic or natric horizon is present (i.e., a horizon of clay or clay and exchangeable sodium accumulation), and extends below 10 inches depth, then that entire horizon is the control section if it is thinner than 20 inches, or its upper 20 inches is the control section if it is thicker. When an argillic or natric horizon does not extend below 10 inches depth, the average particle size class from the top of the horizon to 40 inches depth is used.

If a soil contains more than 35 percent by volume of gravel, cobbles, or stone in its textural control section, it is called "skeletal", and the texture of the fine earth in the interstices is noted by a hyphenated textural designation (e.g., clayey-skeletal). For soils with less coarse fragments, only the particle size class of the fine earth is noted. The "fine" and "clayey" soil materials contain more than 35 percent clay-sized particles; they are quite sticky and plastic. "Fine-loamy" soil material contains between 18 and 35 percent clay and only moderate amounts of sand or silt-sized particles, whereas "coarse-loamy" soil contains less than 18 percent clay, and similar moderate amounts of sand and silt. "Fine-silty" soil contains large amounts of silt-sized particles and 18-to 35 percent clay, whereas "coarse-silty" material is similarly high in silt, but has less than 18 percent clay. These latter four particle size classes are combined together for the general class "loamy". "Sandy" soil material has more than 70 percent sand-sized particles, and less than 15 percent clay-sized particles; it is prominently gritty and loose.

The soil Family textural designations are necessarily complex in definition, but allow considerable simplification for identification of soils in reconnaissance soil surveys. They are basis for estimating available waterholding capacity, permeability, etc., without demanding burdensome detail. Only general definitions of the particle size class designations used for this survey are given here; for complete explanation, see the Soil Taxonomy (Soil Survey Staff, 1970).

The soil Family mineralogical designations indicate the dominant soil mineralogy (e.g., mixed, montmorillonitic, carbonatic) and can be useful in predicting soil behavior. The soil temperature regime designations[7] indicate the over-all warmth or coolness of the soil, and suggest plant adaptability and water demand for plants. These designations are fully defined in the Soil Taxonomy.

Since the Family classes do not use all the soil property information wanted for this survey, soils in most Families were separated into yet more detailed classes called phases, which are based on slope, stoniness, salinity, depth to hardpans, and occurrence of gravelly substratum (if not recognized in the Family criteria). The phase separations are not a part of the U.S. Soil Taxonomy system, and are designed to reflect needs for use and management. Criteria for phases used here are given in Appendix 3.

The syllables, or formative elements that make up the soil names, each suggest a major property of the soils which belong to that class of soil. For instance, an *Aridi*sol is an arid, or very dry soil which can support only desert vegetation, whereas an *Aqu*oll is a wet Mollisol affected by high groundwater. A list of formative elements is in Appendix 2 for readers who wish to key out the meanings of the soil names. For careful, complete identification of significant soil properties, one must refer to the complete soil taxonomic system (Soil Survey Staff, 1970).

Soils of the Area

Most of the soils of this survey area are dry the majority of time they are warm enough for plants to grow. Half the area is comprised of nearly level to sloping soils, including several extensive soil bodies well suited to mechanized agriculture, whereas the other half is broken, steep hills and mountains. For those interested in the processes by which soils are formed or destroyed by erosion, a third generalization is significant: some 80 percent of the survey area is mantled with soils having genetic horizons which require hundreds or thousands of years to form. (A genetic soil horizon is a weathered or altered layer paralleling the land surface.) This fact indicates that most the area — whether nearly level plains, or very steep mountains — has been stable in the recent geologic past; these stable landscapes have neither eroded significantly, nor have they been buried under alluvium. Only 20 percent of the area is relatively raw alluvium, recently decomposed rock, or barren rock outcrop or rubbleland.

Aridisols are most extensive, occupying 69 percent of the survey area. The soils of this order are usually dry and have at least one distinctive genetic soil horizon. Among the Aridisols, those belonging to the suborder of Argids occupy 56 percent of the survey area. The Argids have a subsurface genetic horizon of clay accumulation, or an argillic horizon. Four kinds, or great groups of Argids occur here.

Natargids are almost the most extensive great group of Argids, and occupy 26 percent of the survey area. They are peculiar in that their argillic horizon also has accumulated significant exchangeable sodium; that is, they are alkali affected. Since the Argids of well drained uplands are known relicts of a moister glacial climate which should have leached the sodium, it is somewhat surprising to find Natrargids high on alluvial fans and even on steep hillslopes. Under today's desert climate, high exchangeable sodium usually occurs only where high groundwater tables lead to evaporative concentration of soluble sodium salts, or where parent materials are saline; the soil parent materials here were not saline. The most probable source of soluble salts, and thereby exchangeable sodium in the Natrargids, is the clouds of salty dust which blow off the Carson and Humboldt River sinks to the west. The Natrargids occur most commonly on remnants of old dissected alluvial fans (45 percent of them) and old but smooth alluvial fans (21 percent) at lower elevations where precipitation is limited. A few are on old basin-fill plains (7 percent), and the remainder are on ballenas (9 percent) or hills (18 percent). Since Natrargids do not occur in the higher mountains, but other soils with argillic horizons do, one can postulate that precipitation and leaching are great enough in the higher mountains to prevent accumulation of exchangeable sodium. About 60 percent of the Natrargids have gravelly alluvial substrata at shallow depths. Some are shallow to soft bedrock (a paralithic contact), but none were mapped that are shallow to hard bedrock (a lithic contact).

The Haplargids are slightly more extensive (27 percent of the survey area) than Natrargids, and are quite similar except their argillic horizon has little exchangeable sodium. Most of the Haplargids occur on steep or very steep hill and mountain slopes (74 percent); the remainder occur on remnants of old, dissected alluvial fans (22 percent), or yet older ballenas (4 percent). Some 70 percent are Lithic Haplargids (i.e., shallow to hard bedrock), in keeping with their extensive occurrence on hill and mountain slopes. About 15 percent are Xerollic Haplargids; these occur at higher elevations, are somewhat moister, support more vigorous vegetation, and have somewhat greater humus content than Typic Haplargids. Almost all the Typic Haplargids occur on alluvial fan remnants or ballenas and are shallow to gravelly alluvial substrata.

The other great groups of Argids are Durargids and Nadurargids; they occupy 1 and 2 percent of the survey area, respectively. The Durargids are like Haplargids except they have a silica cemented hardpan (a duripan) under the argillic horizon. The Nadurargids have exchangeable sodium accumulation in addition to a duripan. Some 53 percent of Durargids occur on hillslopes, whereas almost all Nadurargids are on dissected alluvial fan remnants and are shallow to gravelly substrata.

The other suborder of Aridisols is the Orthids. Among the Orthids, the great group of Camborthids occupy 9 percent of the survey area. These soils have a somewhat weathered and leached subsurface horizon (a cambic horizon) which usually is underlain by a horizon of some calcium carbonate accumulation. Camborthids are most extensive on moderately old, smooth alluvial fans (44 percent of them), and also occur on the stable sideslopes of alluvial fan remnants and on inset fans between the remnants (26 percent). The remainder occur on hill and mountain slopes; a few of these are shallow to soft bedrock. About 30 percent of the Camborthids are shallow to gravelly alluvial substrata.

The other Orthids are Calciorthids and Salorthids; these occupy special landscapes and comprise 1 and 3 percent of the survey area, respectively. The Calciorthids have a prominent horizon of calcium carbonate accumulation (a calcic horizon) in their lower parts and occur on limestone mountains; they are Xerollic Calciorthids with moderate humus contents reflecting relatively vigorous vegetation growth. The Salorthids occur on poorly drained basin-fill plains and contain a horizon of prominent soluble salt accumulation (a salic horizon).

Mollisols with a prominently humus-darkened, thick surface horizon (a mollic epipedon) occur in the higher, very steep mountains and comprise 11 percent of the survey area. Where they occur, precipitation is relatively great, temperatures are cool, and sagebrush-grass vegetation can grow vigorously. Most are Lithic Argixerolls (9 percent of the survey area), which are shallow to hard bedrock, slightly stoney at the surface, and very gravelly or stoney clays in their subsoils. The other Mollisols are Argic Lithic Cryoborolls (like the Lithic Argixerolls, but colder), and Ultic Haploxerolls which are only loamy textured and are more leached than the other Mollisols.

Entisols, or young soils with no distinctive genetic horizons, occupy 12 percent of the survey area. Torriorthents (a great group of the surborder Orthents) are the most extensive Entisols (10 percent of the survey area). These loamy or clayey soils are common on mountain hillslopes (56 percent of them) and on basin-fill plains and smooth alluvial fans. Those on the upland slopes are mostly shallow to hard bedrock; otherwise, all but a few are shallow to soft bedrock. Those on the alluvial plains are mostly comprised of deep, well drained alluvium; a few Aquic Torriorthents with somewhat poor drainage occur south of the Humboldt Salt Marsh. Torripsamments, or dry, sandy soils occur on sand dunes and dune-sheets and comprise about 1 percent of the survey area. Perhaps 1 percent of the survey area is comprised of raw alluvium in stream channels and on stream floodplains; these are Torrifluvents and are reported only as inclusions in the map units. Playas, or dry lakes floored with barren clayey sediment, comprise another 2 percent of the survey area.

Barren rockoutcrop and rubbleland are not particularly extensive, considering the hilly and mountainous character of half the survey area. They each comprise only an estimated 3 percent of the survey area.

Some soil features seem related to kinds of bedrock. Soils with argillic horizons are particularly extensive on volcanic rocks. Shallow Torriorthents are common on granitic rocks. In the uplands, soils with calcic horizons occur on limestone. And, soils underlain by soft bedrock have a more gradual transition from friable soil to bedrock than those underlain by hard bedrock.

Soils underlain by shallow, gravelly substrata are moderately extensive on the alluvial plains, as they are throughout much of Nevada. The extensive underlying gravelly alluvial fan sediments reflect the extent of the upland volcanic rock terrain, and the fragmental nature of detritus from those rocks. The finer texture of the shallow soils, as compared with the substrata, might reflect loess deposition as much or more than it reflects weathering of rock fragments.

Soils with silica cemented hardpans, or duripans, are much less common than soils with argillic horizons, and appear to be less common in the Dixie Valley area than in other basins of central Nevada. Since duripans are most common on the highest parts of the alluvial fans (they are sparse below 4,500 feet elevation in the northern part and below 5,000 feet in the southern part of the area), their occurrence might be as much related to precipitation as to age. Land surface-age sequences were not delineated and this hypothesis remains to be tested.

General Soil Map

By the geologic accidents of mountain-building, erosion, and deposition, large portions of the Dixie Valley area have within them similar land forms, landsurface ages, soil parent materials, local climates, and vegetation. The prominent and more important properties of the soils in these sub-areas are similar or occur in repetitious patterns; their slope and drainage patterns are repetitious. There are 7 of these sub-areas, or composite soil landscapes in the survey area. They provide a simple way of recognizing and remembering the gross landscape features and locations of major soils, and interpretations for potential uses can be outlined in broad fashion. These sub-areas are the map units of the General Soil Map.

Areas 1, 2, and 3 of the General Soil Map comprise the nearly level soils of the playas, basin-fill plains, floodplains and stream terraces; they occupy 12 percent of the entire survey area. Areas 3 and 4 comprise 36 percent of the survey area and include the gently to strongly sloping soils of the alluvial fans. Areas 6 and 7 include 52 percent of the survey area and the steep to very steep soils of the hills and mountains.

Soil Landscapes of the Dixie Valley Area:

Area 1: *Poorly drained soils of wet playas and basin-fill plains.* (Soil Map Unit 01;31,000 acres)

These salty soils occur on the basin-fill plain and playa comprising the Humboldt Salt Marsh of Dixie Valley; groundwater is within 40 inches of the soil surface. The basin-fill and playa deposits consist mostly of clay and silt. The surficial deposits show little or no soil horizon differentiation other than a salt crust. They might be called Typic Salorthids, but were not so distinguished. A silica-cemented hardpan, apparently related to the groundwater table, occurs in some places, particularly near the eastern margin of the basin-fill plain in Dixie Valley. Vascular plants are absent from most of the area. The area has limited forseeable land use potential other than as a sink for drainage waters.

Area 2: *Poor and somewhat poorly drained soils of basin-fill plains and playas.* (Soil Map Units 05, 06, 07, 08, 09;61,000 acres.)

Salorthids comprise 73 percent of this area, Aquic Torriorthents 13 percent and other soils 14 percent. The bulk of the area of these soils is located on the basin-fill plain of Dixie Valley adjacent to the wet Humboldt Salt Marsh where groundwater stands at less than 40 inches. The Labou Flat playa in Fairview Valley is included in this unit and is only somewhat poorly drained. At Labou Flat the groundwater table is very deep; it is intermittently flooded and only perched watertables might occur near the surface. The soils are clays, silty clay loams, or silt loams underlain by silt and clay basin-fill deposits; fine sand is interstratified with the clay under Labou Flat. The soils show little horizon differentiation other than concentration of soluble salts in a salic horizon in most; all are saline. They are Typic Salorthids and Aquic Torriorthents. The soil temperatures regimes are mesic.[7] Salt grass and black greasewood are the most common plants. Shadscale, seepweed, big saltbush, and iodine bush also are common. Labou Flat playa is barren.

The soils of this area are at best marginally suited for irrigation since they have naturally shallow groundwater, are presently saline, and commonly are only slowly permeable. Flooding is a hazard for some soils. Other, better suited soils are available in adjacent areas.

Area 3: *Well drained soils of basin-fill plains and stream floodplains.* (Soil Map Units 11 through 19, and 21 through 27;88,800 acres)

Among the most common soils, Torriorthents comprise 54 percent of this area, Natrargids 38 percent, and Camborthids 8 percent. The soils occur on basin-fill plains in Dixie and Fairview Valleys and on stream floodplains in these and other valleys. The soils and underlying alluvium range from coarse to fine-texture. Groundwater is more than 60 inches deep. Some soils have a sodium-affected horizon of clay accumulation (a natric horizon), some are saline, but there are no hardpans in any. Gravel and sand substrata as shallow as 20 inches are extensive in the basin-fill plain at the northern end of Dixie Valley (soil map unit 16). A small area of sand dunes on top of the basin-fill plain in the southern part of Dixie Valley is included in this area (soil map unit 19). The soils mapped in this area include Typic Torriorthents, Typic Camborthids, Typic Natrargids, and Typic Torripsamments. The soil temperature regimes are mesic.

Shadscale is the most common shrub, followed by Bailey greasewood, bud sage and black greasewood. Seepweed is common on saline soils, and big saltbush and fourwing saltbush are common on finer-textured soils (e.g., soil map unit 12). Big sagebrush is dominant on some of the higher floodplain and terrace soils. Winterfat and budsage are abundant in Bell Flat.

Most of the potentially best agricultural soils are in this area. Stream overflow could be a problem on many of the soils, but few are expected to flood more often than 2 years in 10. Even the saline soils in this area, except those which are fine-textured, should be reclaimable.

Area 4: *Soils of smooth alluvial fans.* (Soil Map Units 30 through 60; 483,500 acres)

Among the most common soils, Natrargids comprise 49 percent of this area, Camborthids 20 percent, Haplargids 20 percent, Nadurargids 6 percent, and other soils 5 percent. Most of these soils occur on smooth alluvial fans, but some areas of basin-fill plains and the Dixie Valley beach-plain (soil map unit 30) are included in this area. The soils are well drained, and only a few are saline. Surface horizons are loamy textured; sandy loams are more common in the southern part of the survey area, whereas silt loam surface textures are more common to the north. Most of the soils have moderately fine or fine textured subsurface horizons in which clay has accumulated (i.e., argillic or natric horizons). Since many of the alluvial fans are gravelly, a large proportion of the soils are gravelly throughout or have gravelly substrata. Nongravelly upper horizons are thicker, (i.e., depth to gravelly substrata is greater) in the soils of Pleasant Valley and Jersey Valley than on the alluvial fans in Fairview Valley to the south. Also, depth to gravelly substrata is greater at higher elevations in tributary valleys on the east side of Dixie Valley, and in the Eastgate drainage. Both the prevailing silt loam surface textures and greater thicknesses of non-gravelly soil material in the northern and high-eastern parts of the survey area probably are due to marked loess deposition there. These landscapes are in the immediate lee of the probable loess source areas of the Carson-Humboldt Sinks.[8] Soils occurring on the basin-fill plains and alluvial fan toeslopes also are deep to gravel or are nongravelly, but in these situations the lack of gravel is probable due to ordinary sedimentary processes. Soils on alluvial fans from granitic rock sources also are mostly nongravelly since the granitic rocks weather directly to sand-sized fragments. Most soils in this general soil map area have mesic soil temperature regimes; some with frigid soil temperature regimes occur at higher elevations. The soils mapped in this area include Typic Natrargids, Duric Natrargids, Typic Haplargids, Duric Haplargids, Typic Camborthids, Haplic Nadurargids, and Xerollic Durargids.

FIGURE 3. A 1954 fault scarp at the foot of the Stillwater Range on the west side of Dixie Valley. This scarp and fault scarps in Pleasant Valley and below Fairview Peak are graphic evidence of mountain building. The rock outcrop above the fault scarp is not characteristic of the area's mountainous terrain which is most commonly mantled with shallow soils.

Shadscale, Bailey greasewood, and bud sagebrush are the predominant shrubs on soils with a mesic temperature regime; big sagebrush is the predominant shrub on soils with a frigid temperature regime. Rabbitbrush is common in drainageways.

Some of the potentially best soils for irrigated agriculture occur on the gently sloping alluvial fan footslopes of this area. Range improvement might be practical on the soils with frigid soil temperature regimes; some areas west of the Tobin Range and Desatoya Mountains have already been cleared and seeded.

Area 5: *Soils of dissected alluvial fans.* (Soil Map Units 62, 63, 64, 65, 66, 67;61,500 acres)

Among the most common soils, Natrargids comprise 63 percent of this area, Haplargids 23 percent, Camborthids 7 percent, Durargids 4 percent and other soils 3 percent. The soils and vegetation are similar to those of general soil map area 4, but the alluvial fans are dissected. Prominent drainageways with sideslopes steeper than 15 percent slope are cut into the old fans at intervals of one-eighth mile or less. Soft sedimentary rocks are exposed on drainageway sideslopes in some areas.

Since the landscape is so broken, mechanized agriculture would not be practical in this area, and even mechanized rangeland improvement would be difficult.

Area 6: *Soils of moderately steep hills and mountain summits.* (Soil Map Units 70 through 89, and 99;140,200 acres)

Among the most common soils, Natrargids comprise 37 percent of the area, Haplargids 30 percent, Torriorthents 15 percent and other soils 18 per cent. Most of the soils in this area are shallow to hard bedrock (a lithic contact) or soft bedrock (a paralithic contact), but some in unconsolidated sediments are deep. Those soils with subusrface horizons of clay accumulation (argillic or natric horizons) occur more commonly on hard bedrock than on soft. Severe erosion is common on the soils of the soft bedrock terrains; these were not identified as eroded phases since evidence that erosion has been accelerated in the recent past is inconclusive. The surface horizons are most commonly loamy textured; some are gravelly. The subsoil horizons most commonly are moderately fine or fine textured, and many are gravelly. Most of the soils on hard bedrock are slightly stony on the surface, some are stony. Some soils on summit shoulder slopes and concave lower sideslopes have silica-cemented hardpans. The soils range from neutral to very strongly alkaline, but none are saline. Soils on sand dunes blown up into the hills on the west side of Fairview Valley are included in this area (soil map unit 86). A large variety of Entisols and Aridisols occur in this area: Typic Torripsamments on the sand dunes, Typic and Lithic Torriorthents, Typic and Duric Camborthids, Typic, Duric, Duric Lithic, Lithic, Lithic Xerollic, and Xerollic Haplargids, Typic and Duric Natrargids, Haplic and Haploxerollic Durargids, and Haplic Nadurargids. Lithic and Duric Lithic Haplargids are the most common soils on hard rock and shallow Typic Torriorthents are the most common soils on soft rocks. Most of these soils have mesic temperature regimes, but soils on hills in a moderately large area (soil map unit 82) northwest of Pleasant Valley and soils on mountain summit slopes (soil map unit 70) on both sides of the Dixie Valley area have frigid temperature regimes.

Shadscale, Bailey greasewood, and bud sagebrush are the most common shrubs. Big sagebrush and grass are dominant at higher elevations, except on the shallower soils of the mountain summit slopes (soil map unit 70) where low sagebrush and phlox are dominant. At intermediate elevations big sagebrush is dominant on north-facing slopes, whereas shadscale and bud sagebrush or Bailey greasewood are dominant on south-facing slopes.

The moderately steep and steep slopes limit agricultural production to grazing. Accessibility is good due to the absence of very steep slopes.

Area 7: *Soils of steep and very steep mountains.* (Soil Map Units 90 through 98; 660,000 acres)

Among the most common soils, Lithic Haplargids comprise 41 percent of the area, Lithic Argixerolls 21 percent, mostly Lithic Torriorthents 11 percent, rock outcrop and rubble land 11 percent and other soils 16 percent. Thus, shallowness to bedrock is the most prominent soil feature of this large area. The shallow bedrock is most commonly hard (a lithic contact), and soils developed from it usually have a subsoil horizon of clay accumulation (an argillic horizon), except on granitic rock (soil map units 90 and 91). Soils with prominent horizons of calcium carbonate accumulation (calcic horizons) occur on limestone and dolomite (soil map units 92, 93, 94, 95). Most shallow (but not very shallow) soils in the pinyon-juniper and upper sagebrush-grass zones have dark grayish brown surface layers which are mollic epipedons. These layers are seldom thicker than 7 inches, except in deep soils on colluvium. The soils in the area range from slightly acid to moderately alkaline. Some soils on colluvium in the upper sagebrush-grass zone are even moderately acid. A large variety of Entisols, Aridisols, and Mollisols occur in this area: Typic and Xerollic Torriorthents, Xerollic Calciorthids, Lithic Ruptic-Entic, Lithic Xerollic Ruptic-Entic, Lithic and Lithic Xerollic Haplargids, Ultic Haploxerolls, Lithic Argixerolls; Lithic Cryorthents, and Argic Lithic Cryoborolls. Lithic Haplargids are most common in the shadscale zone; the shallow Typic Torriorthents occur on granitic rocks in the sagebrush-grass zone; the Lithic Argixerolls occur in the pinyon-juniper zone; and, Argic Lithic Cryoborolls occur in the upper sagebrush-grass zone.

The soil temperature regimes range from mesic in the shadscale zone through frigid in the pinyon-juniper zone to cryic in the upper sagebrush-grass zone. Soils in the sagebrush-grass zone have either mesic or frigid temperature regimes. Shadscale, Bailey greasewood, and bud sagebrush predominate in the shadscale zone. Big sagebrush dominates the sagebrush-grass zone. Big sagebrush, low sagebrush, Utah juniper, and singleleaf pinyon pine predominate in the pinyon-juniper zone. Big sagebrush and low sagebrush predominate in the upper sagebrush-grass zone. Low sagebrush occurs on very shallow and some shallow soils, and big sagebrush occurs on the deeper soils in the pinyon-juniper and the sagebrush-grass zones. Phlox is usually most abundant on very shallow and shallow soils in these zones. Lupine occurs on shallow Cryorthents. Accessibility is poor and precipices are common.

Descriptions of Map Units of the Reconnaissance Soil Map

The basic data of this report are the reconnaissance soil map (in pocket) and the descriptions of the kinds of soils identified in each map unit given in Table 1. Besides the taxonomic names of the soils and their phase designations, notes on physiographic position, helpful for finding individual soils in the field, and on soil properties useful for making interpretations are included in Table 1. Entries in the table are explained next:

Column 1: Soil Map Unit Symbols and Acreage

The map unit symbols serve to identify delineations on the map[9] and in Tables 1 and 2; sequences of map units with similar soils and landscapes are grouped together in the General Soil Map, and listed in the preceding discussion of that map. The General Soil Map is useful for very broad generalizations on potential use, whereas the areas shown on the reconnaissance soil map can be used to make more specific interpretations of potential usefulness.

The acreage of each map unit was calculated as a fraction of the acreage of the entire survey area (1,525,760 acres) by planimetrically measuring its constituent delineations, and dividing this value by the total planimetrically measured area for the entire map. The areas of each map unit were rounded to no less than the nearest 100 acres, in keeping with the precision of the measurements.

Column 2: Constituent Soils and Their Proportions

Most of the map units are soil associations, that is, they comprise soil-landscapes where two or more dominant soils occurring in a fairly predictable pattern were identified and named. A few map units are soil consociations, that is, only one kind of soil dominates the soil-landscape and is named. The dominant soils are named as phases of soil Families and their estimated proportional extent in the map unit is given in parentheses. (Phases and soil Family names are explained in the preceeding soil taxonomy section, and criteria for phase separations are in Appendix 3.)

The proportional extent of each soil is an estimate within about ±20 percentage units of the probable value for any one specific map delineation. This range reflects both possible error, because of the necessarily limited frequency of observations during mapping, and the necessary range of values which must be allowed for the variable soil patterns of delineations mapped in different locations and all reported under the same map unit symbol.

Soils of minor extent are described lastly as "other components" and their aggregate proportional extent indicated in parentheses. Unless otherwise stated, the textures and slopes of these minor soils are like or similar to those of the dominant soils. Average textures for the minor soils are indicated by standard textural names (Soil Survey Staff, 1951), rather than Family-class textural names used for the dominant soils. Slope class names are used for the minor soils, rather than percentage gradients. Some mention of the soils of minor extent should be helpful if this map is used in the field, since these small areas commonly are prominent landform elements or carry a distinctive vegetation.

Column 3: Physiographic Position

The physiographic position, or place in the landscape in which a soil occurs is mentioned to both help the reader visualize the soil landscape, and to find individual soils in the field.

Column 4: Typical Vegetation

Only the more prominent and commonly observed plants occurring on a soil are listed here. These are not complete lists of dominants, do not reflect the variability of plant communities on some soils, and should be taken as only very generally descriptive.

Column 5: Soil Drainage

Three classes of natural soil drainage are recognized in this report: well drained, somewhat poorly drained, and poorly drained. The well drained class includes the excessively, somewhat excessively, well, and moderately well drained classes used in detailed soil surveys; the somewhat poorly drained class is synonymous, and the poorly drained class includes the poorly and very poorly drained classes used in detailed soil surveys (Soil Survey Staff, 1951).

Column 6: Surface Soil Texture and Thickness

The surface soil layer is defined here to include the entire A horizon, or epipedon, if it is less than 10 inches thick, or the 0 to 10 inch depth if more than 10 inches thick or without A horizons. The textural classes used in columns 6, 7, and 8 are the traditional textural designations of detailed soil surveys (Soil Survey Staff, 1951).

Column 7: Subsoil Texture and Thickness

The subsoil layer is defined here as a layer of clay accumulation (argillic horizon), or of alteration (cambic horizon) or if these are absent, the layer from the bottom of the surface soil to 40 inches depth or to bedrock or hardpan at less than 40 inches.

Column 8: Substratum Texture

The substratum is defined here as soil materials below the subsoil. Since soil pits are usually dug to only 5 to 7 feet depth, and deep natural exposures occur only randomly, the substratum texture identifications are necessarily for indefinite depths and must be extrapolated broadly by geologic implications.

Column 9: Depth to Bedrock or Hardpan

Hardpans in this area are silica cemented (i.e., duripans) and can be continuously cemented laterally, and act as effective barriers to root penetration and slow water penetration, or can be somewhat discontinuously cemented and act as irregular root barriers; the latter type pans are noted by the word "haplic" in the soil Family name. Both hard and soft bedrock occur at shallow depth. The boundary to hard rock is called a lithic contact (and noted by "lithic" in the soil Family name if it is at less than 20 inches depth), whereas the boundary to soft bedrock is called a paralithic contact. Hardpan or soft bedrock at less than 20 inches depth are noted as "shallow" phases. In column 9 an additional note is made of the approximate depth to any of these limiting materials occurring within 60 inches depth.

Column 10: Depth to Gravel

Many soils on the alluvial plains are only shallow or moderately deep to gravelly substrata which have low waterholding capacities, moderate to rapid permeability, and distinctive engineering properties. Since these substrata are important for predicting potential uses of the soils, but are not noted in the taxonomic names, approximate depths to substrata shallower than 60 inches and containing more than 35 percent by volume coarse fragments are noted.

Columns 11 to 15: Coarse Fragments

Column 11 gives the estimated percentage surface cover of pebbles larger than 5 mm diameter, cobbles, and stones which can retard sheet erosion or interfere with mechanical tillage or seeding. Columns 12 and 13 give the estimated percentage volume subsoil contents of 2mm to 3 inch, and greater than 3 inch diameter rock fragments, respectively; columns 14 and 15 give like contents for substrata. Coarse fragments in the soil decrease waterholding capacity and alter behavior for engineering uses.

Columns 16 and 17: Soil Reaction (pH)

The approximate ranges of pH values, or the measure of acidity or alkalinity, for the surface and subsoil layers are given in columns 16 and 17. Soil materials with a pH of 8.2 usually are calcareous and might or might not be sodium-affected. Soil material with a pH greater than 8.4 usually has deleterious accumulation of exchangeable sodium and might or might not be calcareous or saline.

Soil Interpretations for Land Use Planning and Management

In Table 2, the major soils in each mapping unit have been evaluated for a variety of possible land uses and physical conditions or behavior which condition land use and management. These interpretations reflect current requests for land use evaluations which the National Cooperative Soil Survey regularly receives. The interpretation of potential irrigability (column 35) is of particular interest at present; the acreages of various classes of irrigable soils are given in Table 3 and a map of irrigable soils is in the pocket. Enough basic soils information has been collected for this survey area that additional interpretations or interpretive maps can be made on demand.

This is a reconnaissance soil survey, and the soil map scale of 1:250,000 is small (e.g., a ¼ by ¼ inch area on the map represents 623 acres), therefore it should be used for general planning purposes and approximate site location only. When specific fields are to be chosen or managed, or when structures are to be located, detailed soil surveys or on-site investigations need to be made for specific identification of soil properties.

Column 18: Available Waterholding Capacity

Available water is that which plants can readily retrieve from soil storage for vigorous growth. High available waterholding capacity means irrigations can be less frequent, that native plants growing on stored winter moisture will be larger, or that more mesic plants can persist.

The estimates given here are ranges of inches of available water held in the upper 4 feet of soil, or to hardpan or bedrock, and are based on soil texture (Anon., 1968). If a gravel substratum is present within 40 inches depth, and contains less than 15 percent silt plus clay in its fine earth, the estimate was increased by one-half for the overlying finer layer; if the fine earth of the gravel substratum contains more than 15 percent silt plus clay, the estimate was increased by one-third for the overlying finer layer. Investigations of the effects of textural layering of finer over coarser material suggests this procedure is justified (Miller, 1969).

Column 19: Profile Permeability

Estimates of profile permeability given here are based on assumption that the soil is thoroughly wetted, and that the permeability rate is determined by the least permeable, or limiting soil horizon. Obviously, in many of the fine textured soils of the alluvial plains which have gravel substrata, the low permeability rates given would not apply to interpretations for septic tank filter fields with leach lines placed in the gravel, or to estimates of water losses from ponds or canals dug into the more permeable substrata. The criteria for estimating profile permeability classes have been used in four previous reconnaissance soil surveys (Summerfield and Peterson, 1971; USDA Nevada River Basin Survey Staff, 1969, 1970, and 1971), and are given in Summerfield and Peterson (1971).

Column 20: Shrink-Swell Potential

The degree of shrinking or swelling of a soil as it drys and wets is determined by its clay content, type of clay mineral, and thickness of clayey layers. Soils which shrink and swell markedly can break foundations, pavements, or pipelines. The shrink-swell hazard ratings given here are based on the percentage clay content of the soil Family textural control section, regardless of its thickness, and an assumption of mixed or montmorillonitic clay mineralogy. Three hazard classes are recognized (Anon., 1971):

Hazard Class	Percent Clay	COLE Value
Low	<18	<0.03
Moderate	18–35	0.03–0.06
High	>35	>0.06

The COLE value (coefficient of linear extensibility) is the fractional increase in vertical thickness of a clayey layer as it swells from dry to wet states. Potential soil surface movement, or heaving due to swelling, can be calculated by multiplying the COLE values times the thickness of the clayey layers.

Column 21: Frost Action Potential

Low, moderate, and high potential hazard to roads and structures from frost heaving are given here. Only the capillary potential of the surface plus subsoil layers (as indicated by their textures) to transmit water to growing ice lenses is considered in this rating. Neither the soil drainage class, nor the number or intensity of freeze-thaw cycles is considered, though they both determine actual frost heaving. Soils with high silt and very fine sand contents and shallow water tables have the greatest hazards (USDA Nevada River Basin Survey Staff, 1969).

Columns 22 and 23: Engineering Soil Classes

The subsoil layers of each major soil are rated in these columns according to the "Unified" and American Association of State Highway Officials ("AASHO") classifications for engineering uses. It is assumed the thin surface soils would either be removed or mixed during construction. Ratings were based on both tables for conversion of soil survey textural classes to engineering classes (Anon., 1971), and on particle size and Atterberg limits determinations made on several dozen selected samples from the survey area. Two engineering soil classes are given for some soils. If the class designations are linked by "or", the exact engineering class could not be determined; if the designations are linked by "and", both types of soil material occur in the named soil at various sites. Where contrasting soil materials are layered, one engineering class is noted as "over" another.

Columns 24 and 25: Erosion Hazard

Water erosion hazards have been qualitatively estimated for the dominant soils in column 24, assuming that a protective cover of vegetation is not present; a 5-class scale of erodibility hazard is used: low, moderately low, moderate, moderately high, and high erosion hazard. Erodibility is determined by the detachability and transportability of soil particles and is influenced by slope, soil structure, infiltration, litter, gravel or cobbles, and opportunities for channelization of runoff in rills or streams.

Wind erosion hazard depends on the ease of detachment and transport of particles by wind, and is estimated here for bare soils without protective vegetation. Three hazard classes are used in column 25: slight, moderate, severe (USDA Nevada River Basin Survey Staff, 1969).

Column 26: Suitability for Sand or Gravel

The upper 5 feet of soil material is rated in column 26 as a good, fair, poor, or unsuitable source of sand or gravel. Ratings are based on contents of sand and gravel in a suitable layer, its thickness, and the thickness of overburden (Anon., 1971). If suitability for only sand or gravel is specifically noted, the soil is a less suitable source of the other. Beach deposits in soil map unit 30, and at other unmapped locations in Dixie Valley are the best sources of clean gravel in the area.

Column 27: Suitability for Road Fill

Ratings of good, fair, and poor suitability for road fill are given in column 27 for each major soil. The rating criteria (Anon., 1971) consider properties of the entire soil to 5 or 6 feet depth both as it will behave in a road embankment or subgrade, and in terms of ease of excavating the material from the soil.

Column 28: Limitations for Septic Tank Absorption Fields

Soil limitations of severe, moderate, and slight for septic tank absorption fields are given in column 28. For these ratings, leach lines are assumed to be at 2 feet depth, and factors of permeability, depth to bedrock, soil slope, depth to water tables, and flooding hazard are considered (Anon., 1971).

Column 29: Limitations for Sanitary Landfills (trench-type)

Soil limitations for trench-type sanitary landfills are rated as slight, moderate, or severe in column 29. Since the trenches commonly are dug to depths greater than the 5 to 6 foot depths investigated for this soil survey, on-site geological investigations should be made to determine potential for ground water pollution and design of the trench and back-filling procedures for burying refuse. Soil drainage, flood hazard, permeability, slope, soil texture, depth to bedrock, and stoniness or rockiness are considered in this interpretation (Anon., 1971).

FIGURE 4. An eroded spot on a Duric Natrargid in southeastern Pleasant Valley. The surface horizon is being removed by water erosion, as evidenced by the silty overwash in the foreground and the short, rilled scarp forming the upslope rim of the spot. A lag-gravel pavement covers the spot. Such eroded spots are common on old alluvial fan remnants with soils having clayey argillic or natric horizons and probable thin loess caps. The soils of the mountains are Lithic Argixerolls and Xerollic Calciorthids.

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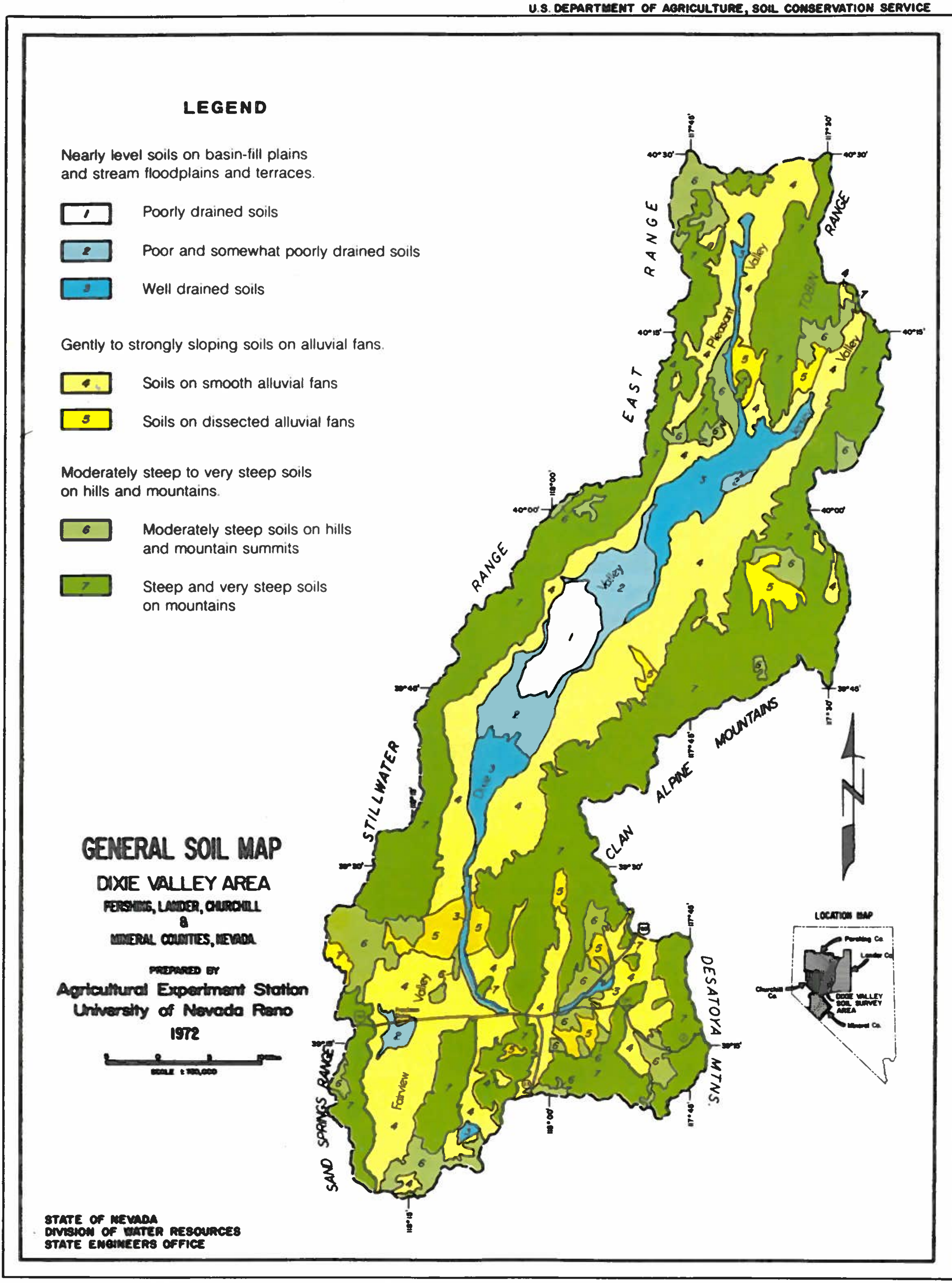

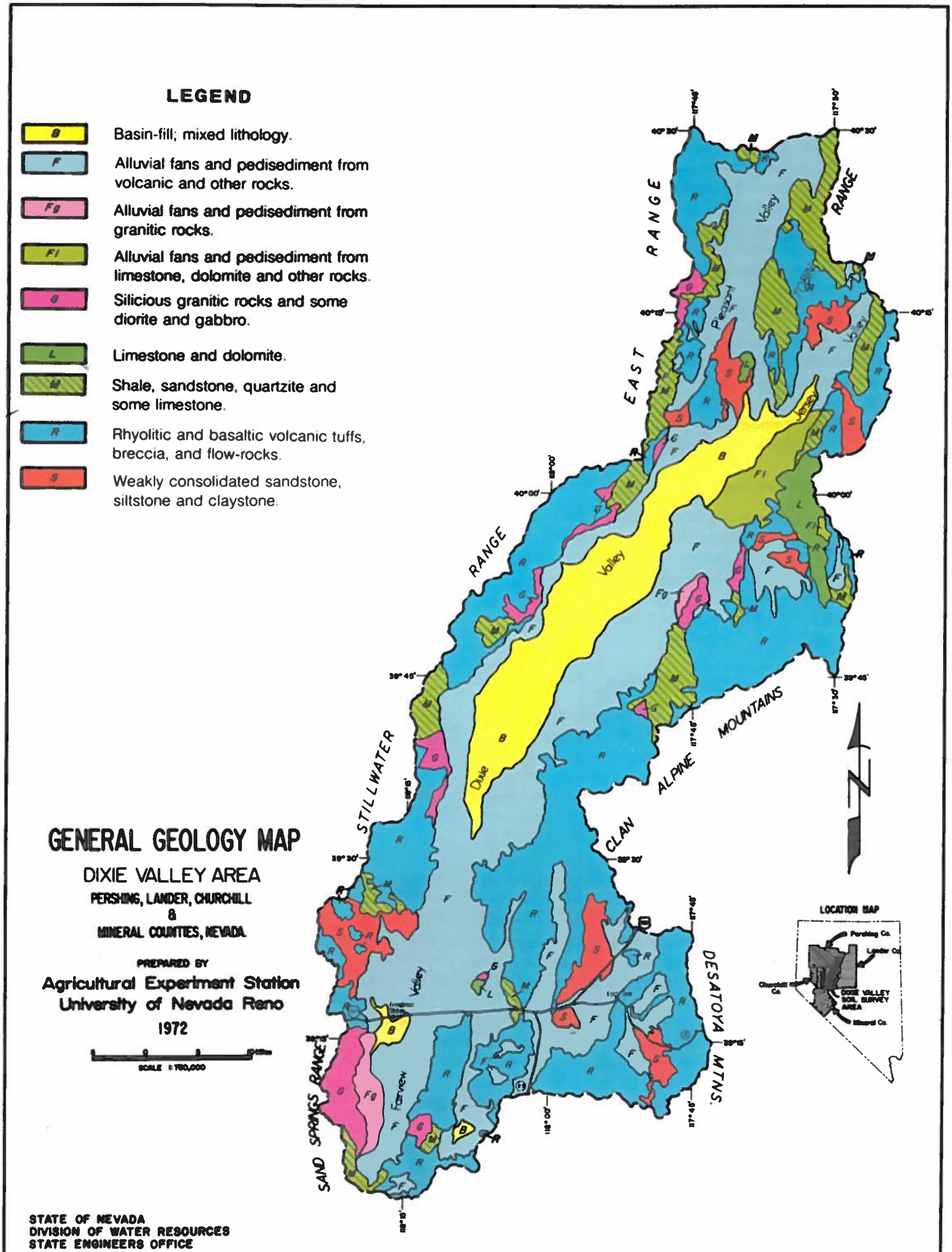
LEGEND
B Basin-fill; mixed lithology.
F Alluvial fans and pedisediment from volcanic and other rocks.
Fg Alluvial fans and pedisediment from granitic rocks.
Fl Alluvial fans and pedisediment from limestone, dolomite and other rocks.
G Silicious granitic rocks and some diorite and gabbro.
L Limestone and dolomite.
M Shale, sandstone, quartzite and some limestone.
R Rhyolitic and basaltic volcanic tuffs, breccia, and flow-rocks.
S Weakly consolidated sandstone, siltstone and claystone.
GENERAL GEOLOGY MAP
DIXIE VALLEY AREA
PERSHING, LANDER, CHURCHILL
&
MINERAL COUNTIES, NEVADA
PREPARED BY
Agricultural Experiment Station
University of Nevada Reno
1972
SCALE 1:750,000
STATE OF NEVADA
DIVISION OF WATER RESOURCES
STATE ENGINEERS OFFICE
EAST RANGE
STILLWATER RANGE
CLAN ALPINE MOUNTAINS
DESATOYA MTNS.
SAND SPRINGS RANGE
Dixie Valley
Pleasant Valley
Fairview Valley
40° 30'
40° 15'
40° 00'
39° 45'
39° 30'
39° 15'
LOCATION MAP
Pershing Co.
Lander Co.
Churchill Co.
DIXIE VALLEY SOIL SURVEY AREA
Mineral Co.

Column 30: Limitations for Dwellings Without Basements

Soil limitations of slight, moderate, and severe for single-family size dwellings without basements are given in column 30. Factors considered are primarily those affecting foundations, but problems of excavation, flooding, and seasonal water tables are also considered. In assigning ratings it has been assumed that foundations will be placed at a minimum depth of 24 inches. Limitations for corrosivity to steel or concrete, for septic tank filter fields, or for landscaping are to be considered separately (Anon., 1971). A moderate or severe limitation does not mean dwellings can not be built if aesthetic or economic considerations are suitable; it does suggest special design needs and perhaps greater expenses.

Column 31: Limitations for Roads and Streets

The slight, moderate, or severe limitations for roads and streets given here pertain to local roads with all weather surfacing, not highways carrying heavy, fast trucks. Factors considered include soil drainage class, flooding hazard, soil slope, depth to bedrock, engineering soil class, shrink-swell potential, frost action potential, and stoniness or rockiness (Anon., 1971).

Column 32: Soil Hydrologic Group

The four hydrologic groups, or classes, by which the major soils are rated in column 32 are used to predict runoff potential at the end of long duration storms when soils are wetted and swelled, and infiltration is minimum. Soil profile permeability is the major criterion used for this rating; the soil is assumed barren of vegetation (USDA Nevada River Basin Survey Staff, 1969).

Columns 33 and 34: Land Capability Class

These are interpretive groupings of soils based on their ability to produce agricultural products for an extended period without soil deterioration (Anon., 1964). In Nevada, there are no significant areas of dryland cultivated crops. Therefore, all cultivated crops are considered to be irrigated, and the potential value of each irrigable soil for irrigated crops is shown by Land Capability classes I to IV, in decreasing value, in column 33. If a soil is nonirrigable, no entry is made in column 33. Dryland use (column 34) is restricted to range in Nevada. Class VI land shows potential for range improvement by seeding, spraying, or other fairly intensive treatments. Class VII land is useful for range, but has little potential for profitable improvement by other than grazing management. Class VIII land is of little value for range and is very difficult to improve.

Column 35: Soil Irrigability Class

The soil irrigability class for each major soil is given in column 35, and a summary tabulation of acreages of various classes of irrigable soils is given in Table 3. Acreages were calculated for only the identified major soils of the map units and are probably conservative, since in several cases the included "other soils" are irrigable. The Irrigable Soils Map, in the pocket, shows the distribution of irrigable soils by class, and the legend indicates the nature of major soil limitations. This map was generalized from the reconnaissance soil map; it shows some similar boundary patterns, and generalizes across other soil boundaries.

FIGURE 5. A coppice dune of fine sand on top of a silt loam textured, saline Aquic Torriorthent in Soil Map Unit 09, southern Dixie Valley. Where the dunes are deeper than 40 inches, as on the first skyline, they are mapped as Typic Torripsamments.

This classification is a rating system which indicates the potential usefulness of different kinds of soil for irrigated agriculture in Nevada. It is based on both judgments of the feasibility of initial improvements such as drainage, removing stones, leveling, ripping hardpan, or removing soluble salts and alkali, and on continuing limitations for use requiring special management, such as control of salt-buildup. It does not consider the present availability or lack of irrigation water. The classification and map are intended for general planning, rather than for location of specific fields for agriculture or for identification of specific management needs. But, it does indicate major limitations for initial improvement and major hazards to continued use.

Five major classes of potential usefulness for irrigation are presented here; these major classes are divided into subclasses to indicate the nature of the most outstanding use-limitations. Since length of growing season is so important in determining the kinds of crops which might be grown, and their economic value, the irrigability classes are subdivided again according to the freeze-free (32°F) season zone in which the various soils occur (Sakamoto et al, 1972).

The symbols by which the soil irrigability classes of the different delineations shown on the map are identified consist of three parts:

Major irrigability class (B) → B-2a ← Irrigability subclass (a)

↑

Freeze-free (32°F) season zone (2)

The five major soil irrigability classes A, B, C, D, and E are described in Appendix 4 in general terms of decreasing potential usefulness and increasing limitations or hazards. Class A soils are the most valuable; class E soils have such serious limitations they cannot be used for irrigated agriculture at present. The soil irrigability subclasses a, c, d, f, etc., are listed under each major class in Appendix 4, and a brief description of the kind of outstanding limitation is given there. The number of days' length of the five freeze-free (32°F) season zones of Nevada are also given in Appendix 4.

Each soil irrigability class includes many different kinds of soils with sometimes rather different properties. However, all the soils in a class offer about the same potential usefulness or degree of limitation. The soils of any one class should respond in similar manner for irrigation, but they might require somewhat different management. They are apt to be differently suitable for other uses, such as for roads, foundations, septic tank filter fields, or recreational areas. The criteria by which the soil irrigability classes were assigned to soils were adapted with limited modification from Pacific Southwest Interagency Committee criteria. The soil irrigability subclasses are defined only to reflect soil and landscape conditions in Nevada.

Additional Possible Interpretations

This soil survey is the first comprehensive identification of the kinds of soils and their properties in this large desert area. It includes enough technical information (which can be supplemented by original detailed soil descriptions and original field maps at one inch per mile scale on file with the Cooperative Soil Survey) that soil scientists could make several kinds of single-factor land use planning or land evaluation maps on demand and in addition to those presented here. For those problems or possible land developments which might necessitate additional field investigations, this survey can identify those areas most apt to be profitably worked. Possible additional uses or interpretations which might be based on this survey include:

- Highway, Transmission Line, Pipeline and Canal Alignment Planning
- Urban Facilities Location
- Airfield Location
- Construction Materials Location
- Suburban Development Location
- Landuse Zoning
- Rangeland and Forestland Management Planning
- Soils-Plant Community Relations
- Geographic and Ecological Studies

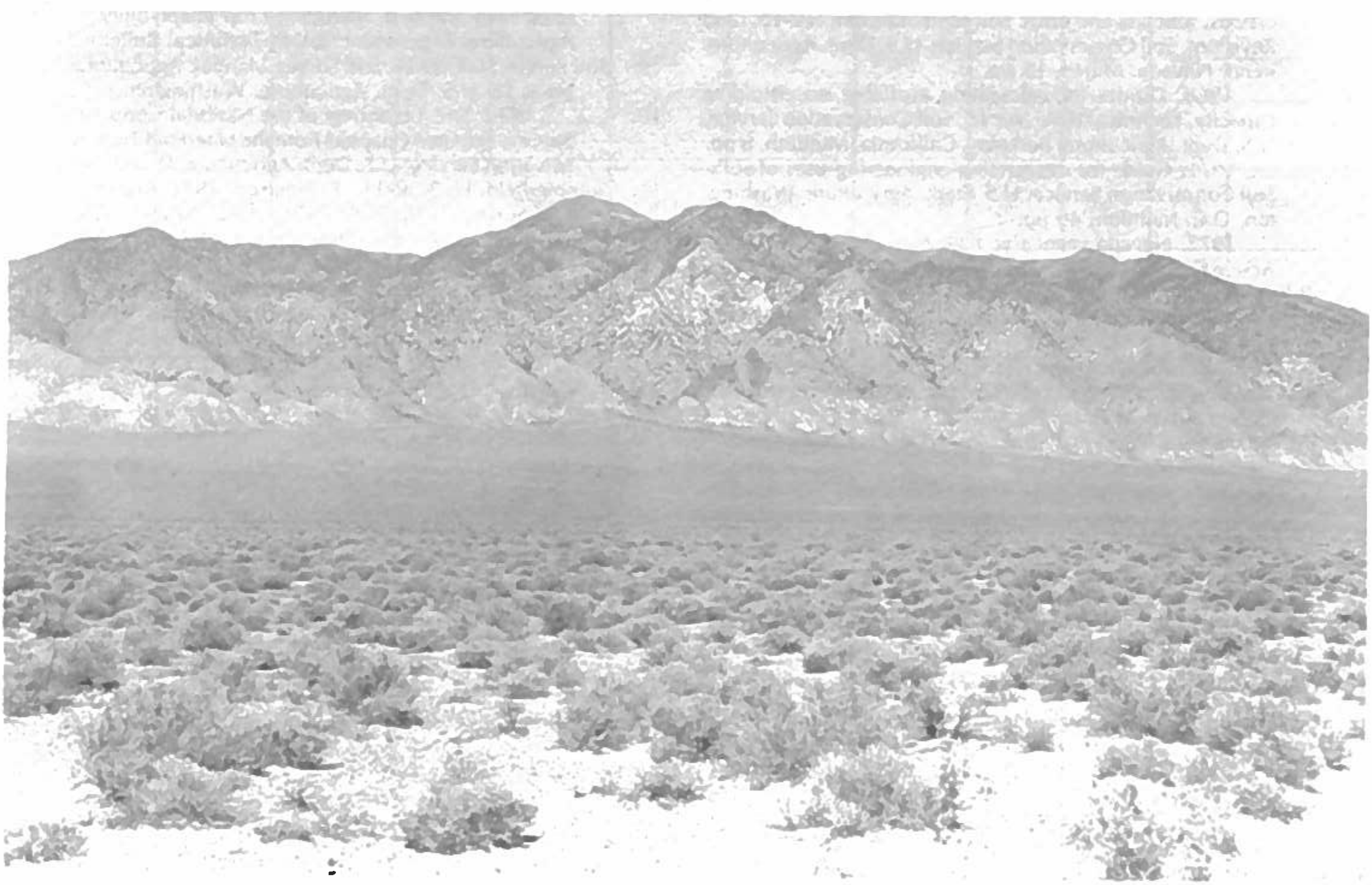

FIGURE 6. The soils of the smooth alluvial fan toeslope in the foreground and the smooth fan in the middle ground are Typic Natrargids and Typic Camborthids characteristic of General Soil Map area 4. Shrubs of the shadscale zone cover the fan and extend up the foothills of Fairview Peak in the distance. Lithic Haplargids are most common on the steep foothill and mountain slopes, whereas Lithic Argixerolls dominate the pinyon-juniper and sagebrush-grass zones of the higher mountain slopes and crests (General Soil Map area 7). A 1954 fault scarp traces the juncture of the foothill slopes and alluvial plain.

FOOTNOTES

1 E. B. Alexander was an Associate Soil Scientist and Frederick F. Peterson is a Soil Scientist, Agricultural Experiment Station, University of Nevada Reno. This soil survey was made according to standards of the National Cooperative Soil Survey; field correlation of kinds of soils and technical review were made by Eddie L. Spencer, Soil Correlator, and Edmund A. Naphan, State Soil Scientist, Soil Conservation Service, Reno, Nevada. The Dixie Valley area is area number 752 of the progressive reconnaissance soil survey of Nevada.

2 The climatic section was prepared by Clarence M. Sakamoto, former Climatologist for Nevada, National Weather Service, National Oceanic and Atmospheric Administration.

3 For comparison of the freeze-free seasons of the Dixie Valley area to other parts of Nevada, and for more detailed discussion of crop adaptability, see: Sakamoto et al. 1972.

4 The water resources section was prepared by Thomas J. Smales of the Division of Water Resources.

5 The crop adaptability section prepared by H. R. Guenthner, Extension Agronomist, Nevada Cooperative Extension Service, Reno.

6 Soil tests for salts, sodium and fertility are available from the Nevada Soil and Water Testing Laboratory, University of Nevada Reno. Sample bags and information forms are available at local County Extension Service offices.

7 The soil temperature regimes reported here were based on estimates available when the survey was made. Subsequent temperature measurements indicate most of the soils reported as mesic, frigid, or cryic are thermic, mesic, and frigid, respectively.

8 R. E. Wallace. (1961. U.S. Geological Survey Prof. Paper 424D p. 242–244) presents evidence that a large volume of Quaternary sediments has been removed from the fill in Buena Vista Valley, which is just west of the northern end of the Dixie Valley area and may be a source for loess deposited there.

9 A delineation is a single, specific land area shown by a closed boundary on a map. A map unit is a group of delineations, all of which have similar kinds and proportions of soils. The description of a map unit therefore must have enough range to cover variations between its component delineations.

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Appendix 1. TEMPERATURE AND PRECIPITATION AT EASTGATE.[1]							
	Temperature, °F					Precipitation, inches	
Month	Average Daily Maximum	Extreme Maximum	Average Daily Minimum	Extreme Minimum	Mean	Average Monthly Total	Maximum 24-Hour Total
JANUARY	44.4	67	18.0	−12	31.2	0.61	0.50
FEBRUARY	51.1	72	25.5	−9	38.4	0.62	1.75
MARCH	55.6	84	27.5	7	41.6	0.79	0.51
APRIL	63.5	87	32.5	17	48.0	0.59	0.80
MAY	72.5	93	41.3	23	56.9	0.76	1.29
JUNE	83.0	103	49.0	32	66.1	0.68	0.63
JULY	92.1	103	55.3	41	73.7	0.29	0.58
AUGUST	88.8	102	53.6	32	70.9	0.29	1.33
SEPTEMBER	81.2	96	47.0	24	64.2	0.49	1.05
OCTOBER	68.5	88	38.5	18	53.5	0.49	1.10
NOVEMBER	53.8	75	25.8	8	39.8	0.63	0.80
DECEMBER	50.2	66	21.8	−3	36.1	0.60	0.50
ANNUAL	67.1	103	36.3	−12	51.7	7.04	1.75

[1]Period of measurement, 1956−64; 5,100 feet elevation.

Appendix 2. MEANINGS OF THE FORMATIVE ELEMENTS USED IN THE TAXONOMIC SOIL NAMES

Formative Element	Example of Use	Meaning for Soils of the Dixie Valley Area
arg	Hapl*arg*id	With clay accumulation in the subsoil (argillic horizon)
aqu	*Aqu*ic Torriorthent	Subject to wetness during the growing season
bor	Cryo*bor*oll	A cold soil
calc	*Calc*iorthid	With prominent calcium carbonate accumulation in the subsoil (calcic horizon)
camb	*Camb*orthid	With a subsoil horizon showing alteration due to some weathering, leaching, mixing, or soil structure formation
cry	*Cry*oboroll	A very cold soil
dur	*Dur*argid	With a silica-cemented hardpan (duripan)
ent	Torriorth*ent*	Recent; without appreciable genetic soil horizon differentiation
hapl	*Hapl*argid	Simple; without extra horizons or features, or with less than maximum expression of any diagnostic feature
id	Haplarg*id*	Arid soil; synonym for "torr" (aridic soil Moisture regime)
lith	*Lith*ic Haplargid	Shallow soil over hard bedrock
nadur	*Nadur*argid	With relatively high exchangeable sodium in a subsoil horizon of clay accumulation and with a silica-cemented hardpan (natric horizon and duripan)
natr	*Natr*argid	With relatively high exchangeable sodium in a subsoil horizon of clay accumulation (natric horizon)
oll	Argixer*oll*	With a thick, dark colored surface (mollic epipedon)
orth	Torri*orth*ent	The ordinary kind; no special features
rupt	*Rupt*ic-Entic Lithic Haplargid	Interrupted; in this case the argillic horizon is discontinuous and the soil in the intervening spaces would be an Entisol if it were continuous
psamm	Torri*psamm*ent	Very sandy
sal	*Sal*orthid	Salty; containing a horizon of prominent soluble salt accumulation (salic horizon)
torr	*Torr*iorthent	Arid soil; synonym for "id"
typ	*Typ*ic Haplargid	Typical example; without special features
ult	*Ult*ic Haploxeroll	More leached, somewhat more acid than typical soil
xer	Argi*xer*oll	Semiarid soil; winter moist, summer dry (xeric soil moisture regime)

Appendix 3. CRITERIA FOR SOIL PHASES

Slope Phases

Slope Classes by Gradient	Slope Names: Simple Slopes	Slope Names: Complex Slopes
0–2%	Level or Nearly Level	Level or Nearly Level
2–4%	Gently Sloping	Undulating
4–8%	Moderately Sloping	Gently Rolling
8–15%	Sloping	Rolling
15–30%	Moderately Steep	Hilly
30–50%	Steep	Steep
50–70%	Very Steep	Very Steep
>70%	Extremely Steep	Extremely Steep

Depth to Bedrock or Hardpan Phases

Very Shallow: less than 10 inches to bedrock or hardpan.
Shallow: 10 to 20 inches to bedrock or hardpan.
(Lithic: less than 20 inches to hard bedrock; this designation appears as part of the soil Subgroup name.)

Gravel Substratum Phases

A gravel substratum is a subsurface layer at least 40 inches thick and containing more than 35 percent by volume of gravel and cobbles. This substratum may contain lenses of sand, and the fine earth in the pebble interstices commonly is sandy or loamy. Gravel substrata within two depth ranges are considered significant phase separations; deeper gravel substrata are described as soil features in Table 1:

Shallow Gravel Substratum: a gravel substratum at less than 20 inches depth.
Gravel Substratum: a gravel substratum at 20 to 40 inches depth.

Surface Stoniness Phases

Slightly Stony: 2 to 10 percent of the soil surface covered with cobbles, stones or boulders.
Stony: 10 to 25 percent of the soil surface covered with cobbles, stones or boulders.

Flooded Phase

Soils subject to stream overflow, or flooding roughtly 5 years in 10 or less; these soils occur in stream channels or on floodplains inherently subject to flooding.

Saline Phase

Soils with soluble salt contents great enough that the upper 20 inches have a salinity such that the saturation extract electrical conductivity is greater than 4 mmhos/cm. Such soils commonly have salt efflorescences on the surface and also are sodic. In the Dixie Valley area, saline soils commonly have pH values of 8.8 or greater.

Eroded Phase

Soils cut by numerous gullies and rills or with subsurface horizons or parent material exposed at frequent intervals.

Appendix 4. DESCRIPTIONS OF IRRIGABILITY CLASSES AND SUBCLASSES[1]			
Irrigability Class and Subclasses	Freeze-free (32°F) Season Zones (days) 130–200	100–130	70–100
CLASS B—Soils that have moderate limitations that reduce choice of crops or require moderate conservation practices.			
Subclass a—Soils having moderately low available waterholding capacity	B-2a	B-3a	
Subclass p—Slowly permeable soils	B-2p	B-3p	
CLASS C—Soils that have severe limitations that reduce choice of crops or require special conservation practices or both.			
Subclass a—Soils having low available waterholding capacity	C-2a	C-3a	
Subclass x—Saline and/or alkali soils	C-2x		
Subclass wx—Wet saline and/or alkali soils	C-2wx		
Subclass as—Soils having low available waterholding capacity and 4 to 8 percent slopes	C-2as	C-3as	
CLASS D—Soils that have very severe limitations that restrict the choice of crops or require special practices and management, or both.			
Subclass a—Soils having a very low available waterholding capacity		D-3a	
Subclass d—Soils having hardpan or bedrock at 10-20 inches		D-3d	
Subclass p—Very slowly permeable soils	D-2p	D-3p	D-4p
Subclass s—Soils having 8 to 15 percent slopes	D-2s		D-4s
Subclass x—Saline and/or alkali soils	D-2x		
Subclass wx—Wet and saline and/or alkali soils	D-2wx		
CLASS E—Soils having properties that preclude their use for irrigated agriculture	E	E	E

[1]For specific class and subclass criteria see "Criteria for Soil Irrigability Classes" Nevada Reconnaissance Soil Survey (Rev. 5/72). Agricultural Experiment Station, University of Nevada Reno, Division of Water Resources, Nevada Department of Conservation and Natural Resources, and Soil Conservation Service, U.S. Department of Agriculture.

Table 1. KINDS OF SOILS IN MAP UNITS AND THEIR PROPERTIES — Dixie Valley

Map symbol and acreage (1)	Soils and land types in the map unit and their approximate proportions (2)	Physiographic position (3)	Typical vegetation (4)	Soil drainage (5)	Surface soil texture and thickness (ins.) (6)	Subsoil texture and thickness (ins.) (7)
01 (31,000 Ac.)	Playas, wet. (100%)	Basin-fill plains	None (barren)	Poor	Silty clay <1	Clay 40
05 (3,000 Ac.)	Playas. (100%)	Basin-fill plains	None (barren)	Somewhat poor	Clay 10	Clay and fine sand inter-stratified 30
06 (36,000 Ac.)	Typic Salorthids — fine, montmorillonitic, mesic — 0 to 2 percent slopes, occasionally flooded. (90%)	Basin-fill plains	Saltgrass, shadscale, big salt-bush, black greasewood, greasewood, seepweed	Poor	Silty clay loam 3-6	Clay 40
	Other components: Typic Torrifluvents in flat bottomed drainageways on basin-fill plains. (10%)					
07 (13,000 Ac.)	Typic Salorthids — fine-silty, mixed, mesic — 0 to 2 percent slopes, occa-sionally flooded. (95%)	Basin-fill plains	Saltgrass, black grease-wood, iodine bush, big saltbush	Poor	Silt loam or silty clay loam 10	Silt loam or silty clay loam 30
	Other components: saline Typic Haplaquolls. (5%)					
08 (6,000 Ac.)	Aquic Torriorthents — coarse-loamy, mixed (calcareous), mesic — 0 to 2 percent slopes, saline. (90%)	Basin-fill plains	Saltgrass, alkali sacaton, shadscale, black greasewood	Somewhat poor	Fine sand 2-4	Fine sandy loam 40
	Other components: Typic Torripsamments on sand dunes. 10%)					
09 (3,000 Ac.)	Aquic Torriorthents — fine-silty, mixed (calcareous), mesic — 0 to 2 percent slopes, saline. (80%)	Basin-fill plains	Saltgrass, alkali sacaton, shadscale black greasewood	Somewhat poor	Fine sand 2-4	Silt loam 40
	Other components: Typic Torripsamments on sand dunes. (20%)					
11 (7,500 Ac.)	Typic Torriorthents — coarse-loamy, mixed (calcareous), mesic — 0 to 2 percent slopes, occasionally flooded. (60%)	Basin-fill plains	Bailey greasewood, shadscale, bud sage-brush	Well	Sandy loam 10	Sandy loam 30
	Typic Natrargids — fine-loamy, mixed, mesic — 0 to 2 percent slopes, occa-sionally flooded. (30%)	Basin-fill plains	Bailey greasewood, shadscale, bud sage-brush	Well	Loamy sand 3-6	Sandy clay loam 4-8
	Other components: Torrifluvents. (10%)					
12 (9,000 Ac.)	Typic Torriorthents — fine, montmorillonitic, (calcareous), mesic — 0 to 2 percent slopes, saline, occasionally flooded. (80%)	Basin-fill plains	Shadscale, black greasewood, seepweed big salt-bush	Well	Silty clay loam 10	Silty clay loam or silty clay 30
	Typic Natrargids — fine, montmorillonitic, mesic — 0 to 2 percent slopes, saline, occasionally flooded. (15%)	Basin-fill plains	Shadscale, black greasewood, seepweed, four-wing saltbush	Well	Silt loam or silty clay loam 4-10	Clay 4-8
	Other components: Torrifluvents. (5%)					

Substratum texture (8)	Depth to bedrock or hardpan (ins.) (9)	Depth to gravel (ins.) (10)	Coarse fragments					Soil reaction (pH)	
			Percent surface cover (>2 mm) (11)	Percent by volume subsoil		Percent by volume substratum		Surface soil (16)	Subsoil (17)
				(>2 mm) (12)	(>3 ins.) (13)	(>2 mm) (14)	(>3 ins.) (15)		
Clay	>60	>60	0-1	0	0	0	0	>9.0	>9.0
Clay and fine sand inter-stratified	>60	>60	0-1	0	0	0	0	8.4-9.0	8.4-9.0
Clay	>60	>60	0-1	0	0	0	0	8.4->9.0	8.4-9.0
Silt loam or silty clay loam	>60	>60	0-1	<2	0	>2	0	8.4-9.0	6.5-8.3
Fine sandy loam	>60	>60	0-1	<2	0	<2	0	8.4->9.0	8.4-9.0
Silt loam	>60	>60	0-1	<2	0	<2	0	8.4->9.0	7.9-9.0
Sandy loam	>60	>60	0-1	<2	0	<2	0	7.4-8.3	7.4-8.3
Sandy loam	>60	>60	0-1	<2	0	<2	0	6.6-7.8	8.4-9.0
Silty clay loam or silty clay	>60	>60	0-1	<2	0	<2	0	7.9-9.0	7.9-9.0
Silty clay loam or silty clay	>60	>60	0-1	<2	0	<2	0	7.9-9.0	7.9-9.0

Table 1. KINDS OF SOILS IN MAP UNITS AND THEIR PROPERTIES — Dixie Valley (continued)

Map symbol and acreage (1)	Soils and land types in the map unit and their approximate proportions (2)	Physiographic position (3)	Typical vegetation (4)	Soil drainage (5)	Surface soil texture and thickness (ins.) (6)	Subsoil texture and thickness (ins.) (7)
13 (3,000 Ac.)	Typic Natrargids — fine-loamy, mixed, mesic — 0 to 2 percent slopes. (90%)	Basin-fill plains	Bailey greasewood, shadscale, bud sage-brush	Well	Loamy sand 4-8	Sandy clay loam 12-30
	Other components: moderately coarse-textured Typic Camborthids. (10%)					
14 (21,000 Ac.)	Typic Torriorthents — fine-silty, mixed (calcareous), mesic — 0 to 2 percent slopes, saline, occasionally flooded. (80%)	Basin-fill plains	Shadscale, seepweed, black greasewood, big salt-bush	Well	Silt loam 10	Silt loam or silty clay loam 30
	Typic Natrargids — fine-silty, mixed, mesic — 0 to 2 percent slopes, saline, occasionally flooded. (15%)	Basin-fill plains	Shadscale black greasewood, seepweed	Well	Loam 3-6	Silty clay loam 4-8
	Other components: Torrifluvents. (%)					
15 (2,000 Ac.)	Duric Camborthids — coarse-loamy, mixed, mesic — 0 to 2 percent slopes. (60%)	Basin-fill plains	Winterfat, grass	Well	Sandy loam 10	Sandy loam 30
	Duric Natrargids — fine-loamy, mixed, mesic — 0 to 4 percent slopes. (30%)	Basin-fill plains	Winterfat, grass	Well	Sandy loam 6-10	Loam or clay loam 8-20 over sandy loam
	Other components: fine textured Haplic Nadurargids. (10%)					
16 (18,000 Ac.)	Typic Natrargids — fine-loamy, mixed, mesic — 0 to 4 percent slopes, saline, gravel substratum. (90%)	Basin-fill plains	Shadscale, seepweed black greasewood	Well	Sandy loam 6-10	Clay loam 4-8 over gravelly sandy loam or sandy loam
	Other components: medium textured Typic Camborthids. (10%)					
17 (10,000 Ac.)	Typic Torriorthents — fine-silty, mixed (calcareous), mesic — 0 to 2 percent slopes, occasionally flooded. (90%)	Basin-fill plains and stream flood plains	Shadscale, black greasewood	Well	Silt loam 10	Silt loam 30
	Other components: moderately coarse textured Typic Camborthids on small alluvial fans. (10%)					
18 (2,000 Ac.)	Typic Natrargids — fine, montmorillonitic, mesic — 0 to 2 percent slopes, occasionally flooded. (80%)	Basin-fill plains	Bailey greasewood	Well	Silt loam or loam 6-10	Clay 4-8
	Other components: medium textured Typic Torriorthents. (20%)					
19 (2,000 Ac.)	Typic Torripsamments — sandy, mixed, mesic — 4 to 15 percent slopes. (70%)	Sand dunes	Black greasewood, shadscale	Well	Sand 10	Sand 30
	Other components: Aquic Torriorthents and moderately fine textured Typic Natrargids on nearly level to very gently sloping basin-fill plains exposed between sand dunes. (30%)					
21 (4,000 Ac.)	Typic Camborthids — coarse-loamy, mixed, mesic — 0 to 4 percent slopes. (60%)	Small alluvial fans	Bailey greasewood	Well	Loamy sand or sandy loam 5-10	Sandy loam or gravelly sandy loam 30
	Typic Torriorthents — coarse-loamy, mixed (calcareous), mesic — 0 to 2 percent slopes, occasionally flooded. (30%)	Stream flood plains	Bailey greasewood, shadscale, bud sage-brush	Well	Sandy loam 10	Sandy loam 30
	Other components: Moderately coarse textured Typic Natrargids on stream terrace remnants. (10%)					

Substratum texture (8)	Depth to bedrock or hardpan (ins.) (9)	Depth to gravel (ins.) (10)	Coarse fragments: Percent surface cover (>2 mm) (11)	Coarse fragments: Percent by volume subsoil (>2 mm) (12)	Coarse fragments: Percent by volume subsoil (>3 ins.) (13)	Coarse fragments: Percent by volume substratum (>2 mm) (14)	Coarse fragments: Percent by volume substratum (>3 ins.) (15)	Soil reaction (pH): Surface soil (16)	Soil reaction (pH): Subsoil (17)
Sandy loam	>60	>60	0-1	<2	0	<2	0	7.9-8.3	8.4-9.0
Silt loam or silty clay loam	>60	>60	0-1	<2	0	<2	0	8.4-9.0	7.9-8.4
Silt loam	>60	>60	0-1	<2	0	<2	0	8.4-.90	7.9-9.0
Very gravelly loamy sand	>60	40-50	2-10	2-10	<2	>50	<2	7.4-7.8	7.9-8.4
Very gravelly loamy sand	>60	40-50	2-10	2-10	<2	>50	<2	7.4-7.8	8.4-9.0
Very gravelly loamy sand	>60	20-40	0-2	0-25	0	>50	0	7.9-9.0	8.4-9.0
Silt loam	>60	>60	0-1	0	0	0	0	8.4-9.0	7.9-9.0
Sandy loam or loamy sand	>60	>60	0-2	<2	0	<2	0	8.4-9.0	8.4->9.0
Sand	>60	>60	0	0	0	0	0	8.4-9.0	8.4->9.0
Sandy loam or loamy sand or gravelly loamy sand	>60	>60	2-10	2-25	<2	2-35	<2	7.9-8.3	8.4-9.0
Sandy loam	>60	>60	0-1	<2	0	<2	0	7.4-8.3	7.4-8.3

Table 1. KINDS OF SOILS IN MAP UNITS AND THEIR PROPERTIES — Dixie Valley (continued)

Map symbol and acreage (1)	Soils and land types in the map unit and their approximate proportions (2)*	Physiographic position (3)	Typical vegetation (4)	Soil drainage (5)	Surface soil texture and thickness (ins.) (6)	Subsoil texture and thickness (ins.) (7)
22 (2,000 Ac.)	Typic Natrargids — fine-loamy, mixed, mesic — 0 to 2 percent slopes. (50%)	Stream terraces	Bailey greasewood, bud sagebrush	Well	Loamy sand 4-8	Sandy clay loam 6-12
	Typic Camborthids — coarse-loamy, mixed, mesic — 0 to 4 percent slopes. (20%)	Stream terraces and small alluvial fans	Bailey greasewood, bud sage brush	Well	Loamy sand or sandy loam 5-10	Sandy loam or gravelly sandy loam 30
	Typic Torriorthents — coarse-loamy, mixed (calcareous), mesic — 0 to 2 percent slopes, occasionally flooded. (20%)	Stream flood plains	Rabbitbrush	Well	Sandy loam 10	Sandy loam 30
	Other components: Moderately coarse-textured Typic Natrargids. (10%)					
23 (4,000 Ac.)	Typic Natrargids — fine-loamy, mixed, mesic — 0 to 2 percent slopes, saline, occasionally flooded. (60%)	Stream flood plains or terraces	Black greasewood, seepweed	Well	Silt loam 3-6	Silt loam or silty clay loam 4-8
	Typic Torriorthents — fine-silty, mixed (calcareous) mesic, 0 to 2 percent slopes, saline — occasionally flooded. (30%)	Stream flood plains or terraces	Black greasewood, seepweed	Well	Silt loam 10	Silt loam 30
	Other components: Moderately coarse-textured Torriorthents and Camborthids. (10%)					
24 (300 Ac.)	Typic Natrargids — fine-loamy, mixed, mesic — 0 to 2 percent slopes. (90%)	Stream terraces	Shadscale, bud sagebrush, black greasewood, big sagebrush	Well	Silt loam or very fine sandy loam 3-6	Clay loam or silty clay loam 9-15
	Other components: Medium textured and moderately coarse textured Typic Torriorthents on stream flood plains and terraces. (10%)					
25 (3,000 Ac.)	Xeric Torriorthents — coarse-loamy, mixed, nonacid, mesic — 0 to 2 percent slopes, occasionally flooded. (90%)	Stream flood plains	Big sagebrush	Well	Sandy loam 10	Sandy loam 30
	Other components: Typic Camborthids and Typic Natrargids on terrace remnants. (10%)					
26 (500 Ac.)	Typic Torriorthents — coarse-loamy, mixed (calcareous) mesic — 0 to 2 percent slopes, occasionally flooded. (90%)	Stream flood plains	Bailey greasewood	Well	Sandy loam 10	Sandy loam 30
	Other components: Typic Torriorthents with gravel substratum on lower flood plain levels. (10%)					
27 (500 Ac.)	Typic Natrargids — fine-loamy, mixed, mesic — 2 to 4 percent slopes. (60%)	Stream terraces and small alluvial fans	Shadscale, black greasewood	Well	Loamy sand or sandy loam 3-6	Sandy clay loam or clay loam 6-12
	Typic Torriorthents — coarse-loamy, mixed (calcareous), mesic — 0 to 2 percent slopes, occasionally flooded. (30%)	Stream flood plains	Halogeton, bud sagebrush, black greasewood	Well	Sandy loam 10	Sandy loam 30
	Other components: Typic Torriorthents with gravel substratum on lower flood plain levels. (10%)					
30 (4,000 Ac.)	Typic Natrargids — fine-loamy over sandy or sandy-skeletal, mixed, mesic, 0 to 15 percent slopes, saline. (90%)	Beach plains	Shadscale, seepweed, black greasewood	Well	Sandy loam 3-6	Loam or sandy clay loam or gravelly loam 6-12
	Other components: Moderately coarse textured Typic Camborthids with and without gravel substrata. (10%)					

Substratum texture (8)	Depth to bedrock or hardpan (ins.) (9)	Depth to gravel (ins.) (10)	Coarse fragments					Soil reaction (pH)	
			Percent surface cover (>2 mm) (11)	Percent by volume subsoil (>2 mm) (12)	Percent by volume subsoil (>3 ins.) (13)	Percent by volume substratum (>2 mm) (14)	Percent by volume substratum (>3 ins.) (15)	Surface soil (16)	Subsoil (17)
Sandy loam	>60	>60	0-1	<2	0	<2	0	6.6-7.8	8.4-9.0
Sandy loam or loamy sand or gravelly loamy sand	>60	>60	0-10	0-25	<2	0-35	<2	7.4-8.3	8.4-9.0
Sandy loam	>60	>60	0-1	<2	0	<2	0	7.4-8.3	7.9-8.3
Silt loam	>60	>60	0-1	<2	0	<2	0	8.4-9.0	7.9-9.0
Silt loam	>60	>60	0-1	<2	0	<2	0	8.4-9.0	7.9-8.4
Sandy loam	>60	>60	0-2	<2	0	<2	0	7.9-8.3	8.4->9.0
Sandy loam	>60	>60	0-2	<2	0	<2	0	7.9-8.3	7.9-8.3
Sandy loam	>60	>60	0-1	<2	0	<2	0	8.4-9.0	8.4-9.0
Loamy sand or sandy loam	>60	>60	0-2	<2	0	<2	0	7.9-8.3	8.4-9.0
Sandy loam	>60	>60	0-2	<2	0	<2	0	8.4-9.0	8.4-9.0
Gravelly sand	>60	10-20	0-2	0-35	0	35-50	0	8.4-9.0	9.0->9.0

Table 1. KINDS OF SOILS IN MAP UNITS AND THEIR PROPERTIES — Dixie Valley (continued)

Map symbol and acreage (1)	Soils and land types in the map unit and their approximate proportions (2)	Physiographic position (3)	Typical vegetation (4)	Soil drainage (5)	Surface soil texture and thickness (ins.) (6)	Subsoil texture and thickness (ins.) (7)
31 (12,000 Ac.)	Typic Natrargids — coarse-loamy, mixed, mesic, 2 to 4 percent slopes. (70%)	Smooth alluvial fan footslopes	Bailey greasewood, shadscale, bud sage-brush	Well	Loamy sand 3-6	Sandy loam 4-8
	Typic Camborthids — coarse-loamy, mixed, mesic — 0 to 4 percent slopes. (20%)	Smooth alluvial fan footslopes	Bailey greasewood shadscale, bud sage-brush	Well	Sandy loam 10	Sandy loam 30
	Other components: Duric Natrargids. (10%)					
32 (4,000 Ac.)	Typic Natrargids — fine, montmorillonitic, mesic, 2 to 4 percent slopes, saline. (80%)	Smooth alluvial fan footslopes	Shadscale, seepweed, black greasewood	Well	Silt loam or very fine sandy loam 4-8	Clay or clay loam or gravelly clay or gravelly clay loam 6-12
	Other components: Medium textured, saline Typic Torriorthents in fill between sinter mounds and ridges. (20%)					
33 (16,000 Ac.)	Typic Natrargids — fine-loamy, mixed, mesic — 2 to 4 percent slopes. (60%)	Smooth alluvial fan footslopes	Bailey greasewood, shadscale, bud sage-brush	Well	Sandy loam 3-6	Clay loam or sandy clay loam or gravelly clay loam 6-12
	Typic Camborthids — coarse-loamy, mixed, mesic — 0 to 4 percent slopes. (30%)	Smooth alluvial far footslopes	Bailey greasewood, shadscale, bud sage-brush	Well	Sandy loam 10	Sandy loam or gravelly sandy loam 30
	Other components: Moderately coarse textured Typic Natrargids. (10%)					
34 (24,000 Ac.)	Typic Natrargids — fine-loamy, mixed, mesic — 2 to 4 percent slopes, saline. (90%)	Smooth alluvial fan footslopes	Black greasewood, seepweed, shadscale	Well	Sandy loam 3-6	Clay loam or sandy clay loam or gravelly sandy clay loam 6-12
	Other components: Moderately coarse textured, saline Typic Camborthids. (10%)					
35 (2,000 Ac.)	Typic Natrargids — fine-loamy, mixed, mesic — 2 to 4 percent slopes. (60%)	Smooth alluvial fan footslopes	Bailey greasewood, shadscale, bud sage-brush	Well	Sandy loam 3-6	Clay loam or sandy clay loam or gravelly sandy clay loam 6-12
	Duric Camborthids — coarse-loamy, mixed, mesic, 2 to 4 percent slopes. (30%)	Smooth alluvial fan footslopes	Bailey greasewood	Well	Sandy loam 10	Sandy loam or gravelly sandy loam 30
	Other components: Haplic Durorthids. (10%)					
36 (9,000 Ac.)	Typic Natrargids — coarse-loamy, mixed, mesic — 2 to 4 percent slopes. (60%)	Smooth alluvial fan footslopes	Bailey greasewood	Well	Loamy sand 3-6	Sandy loam or gravelly sandy loam 4-8
	Duric Natrargids — fine-loamy, mixed, mesic — 0 to 4 percent slopes. (30%)	Smooth alluvial fan footslopes	Bailey greasewood, shadscale bud sage-brush	Well	Sandy loam 3-6	Clay loam or sandy clay loam or gravelly sandy clay loam 6-12
	Other components: Moderately coarse textured Typic Torriorthents. (10%)					

Substratum texture (8)	Depth to bedrock or hardpan (ins.) (9)	Depth to gravel (ins.) (10)	Coarse fragments						Soil reaction (pH)	
			Percent surface cover (>2 mm) (11)	Percent by volume subsoil		Percent by volume substratum				
				(>2 mm) (12)	(>3 ins.) (13)	(>2 mm) (14)	(>3 ins.) (15)	Surface soil (16)	Subsoil (17)
Loamy sand	>60	>60	0-25	2-10	<2	2-10	<2	7.9-8.3	8.4-9.0
Sandy loam	>60	>60	0-25	2-10	<2	2-10	<2	7.9-8.3	8.4-9.0
Gravelly loam or gravelly clay loam	>60	>60	0-2	2-25	<2	2-25	<2	8.4->9.0.	>9.0
Sandy loam or gravelly loamy sand	>60	>60	0-25	2-25	0-10	2-25	0-10	7.9-8.3	8.4-9.0
Sandy loam or gravelly loamy sand	>60	>60	0-25	2-35	0-10	2-35	0-10	7.9-9.0	8.4-9.0
Sandy loam or gravelly sandy loam	>60	>60	0-25	0-25	0-10	0-25	0-10	8.4->9.0	8.4-9.0
Sandy loam or gravelly sandy loam	>60	>60	0-25	2-25	0-10	2-25	0-10	7.9-8.3	8.4-9.0
Sandy loam or gravelly sandy loam	>60	>60	0-25	2-35	0-10	2-35	0-10	8.4-9.0	8.4-9.0
Loamy sand or gravelly loamy sand	>60	>60	0-25	2-25	0-10	2-25	0-10	7.9-8.3	8.4-9.0
Sandy loam or gravelly loamy sand	>60	>60	0-25	2-25	0-10	2-25	0-10	7.9-8.3	8.4-9.0

Table 1. KINDS OF SOILS IN MAP UNITS AND THEIR PROPERTIES — Dixie Valley (continued)

Map symbol and acreage (1)	Soils and land types in the map unit and their approximate proportions (2)	Physiographic position (3)	Typical vegetation (4)	Soil drainage (5)	Surface soil texture and thickness (ins.) (6)	Subsoil texture and thickness (ins.) (7)
37 (11,000 Ac.)	Typic Torripsaments — mixed, mesic — 2 to 4 percent slopes. (90%)	Smooth alluvial fans or basin-fill plains	Indian rice grass, Bailey greasewood	Well	Loamy sand 10	Loamy sand 30
	Other components: Moderately coarse textured Typic Camborthids. (10%)					
38 (6,000 Ac.)	Typic Camborthids — coarse-loamy, mixed, mesic — 0 to 4 percent slopes. (60%)	Smooth alluvial footslopes	Bailey greasewood, shadscale, bud sagebrush	Well	Sandy loam 10	Sandy loam or gravelly sandy loam 30
	Typic Natrargids — fine-loamy, mixed, mesic — 2 to 4 percent slopes. (30%)	Smooth alluvial fan footslopes	Bailey greasewood, shadscale, bud sagebrush	Well	Sandy loam 3-6	Clay loam or sandy clay loam or gravelly sandy clay loam 6-12
	Other components: Typic Torriorthents. (10%)					
39 (1,000 Ac.)	Typic Camborthids — coarse-loamy, mixed, mesic — 0 to 4 percent slopes. (70%)	Smooth alluvial fan footslopes	Indian ricegrass, winterfat	Well	Sandy loam 10	Sandy loam 30
	Typic Natrargids — coarse-loamy, mixed, mesic — 2 to 4 percent slopes. (20%)	Smooth alluvial fan footslopes	Indian ricegrass, winterfat	Well	Sandy loam 3-6	Sandy loam 4-8
	Other components: Medium textured Typic Natrargids. (10%)					
40 (6,000 Ac.)	Typic Camborthids — coarse-loamy, mixed, mesic — 0 to 4 percent slopes. (70%)	Smooth alluvial fans or basin-fill plains	Bailey greasewood, Indian ricegrass	Well	Sandy loam 10	Sandy loam 30
	Duric Natrargids — fine-loamy, mixed, mesic — 0 to 4 percent slopes. (20%)	Smooth alluvial fans or basin-fill plains	Bailey greasewood, Indian ricegrass	Well	Sandy loam 3-6	Clay loam or sandy clay loam 4-8
	Other components: Moderately coarse textured Typic Natrargids. (10%)					
41 (11,500 Ac.)	Duric Natrargids — fine-loamy, mixed, mesic — 0 to 4 percent slopes. (60%)	Smooth alluvial fans or basin-fill plains	Bailey greasewood, shadscale	Well	Sandy loam 3-6	Clay loam or sandy clay loam 6-12
	Typic Camborthids — coarse-loamy, mixed, mesic — 0 to 4 percent slopes. (30%)	Smooth alluvial fans or basin-fill plains	Bailey greasewood, shadscale	Well	Sandy loam 10	Sandy loam 30
	Other components: Medium textured Typic Natrargids. (10%)					
42 (2,000 Ac.)	Typic Natrargids — coarse-loamy, mixed, mesic — 4 to 8 percent slopes. (70%)	Smooth alluvial fans	Bailey greasewood, shadscale, littleleaf horsebrush	Well	Loamy sand 3-6	Sandy loam 4-8
	Typic Camborthids — coarse-loamy, mixed, mesic — 4 to 8 percent slopes. (20%)	Smooth alluvial fans	Bailey greasewood, shadscale, littleleaf horsebrush Mormon tea	Well	Sandy loam 10	Sandy loam 30
	Other components: Duric Natrargids. (10%)					
43 (13,000 Ac.)	Duric Natrargids — fine, montmorillonitic, mesic — 2 to 4 percent slopes, saline, shallow gravel substratum. (80%)	Dissected alluvial fans	Shadscale, seepweed	Well	Fine sandy loam 4-8	Clay or gravelly clay 8-16
	Other components: Typic Camborthids and medium textured Natrargids. (20%)					

Substratum texture (8)	Depth to bedrock or hardpan (ins.) (9)	Depth to gravel (ins.) (10)	Coarse fragments: Percent surface cover (>2 mm) (11)	Coarse fragments: Percent by volume subsoil (>2 mm) (12)	Coarse fragments: Percent by volume subsoil (>3 ins.) (13)	Coarse fragments: Percent by volume substratum (>2 mm) (14)	Coarse fragments: Percent by volume substratum (>3 ins.) (15)	Soil reaction (pH): Surface soil (16)	Soil reaction (pH): Subsoil (17)
Loamy sand or gravelly loamy sand	>60	>60	0-25	0-10	<2	0-20	<2	7.9-8.3	8.4-9.0
Sandy loam or gravelly sandy loam	>60	>60	0-25	2-35	0-10	2-35	0-10	7.9-9.0	8.4-9.0
Sandy loam or gravelly sandy loam	>60	>60	0-25	2-35	0-10	2-25	0-10	7.9-8.3	8.4-9.0
Sandy loam	>60	>60	0-25	2-10	<2	<2	<2	7.9-8.3	8.4-9.0
Loamy sand	>60	>60	0-25	2-10	<2	2-10	<2	7.9-8.3	8.4-9.0
Sandy loam or gravelly sandy loam	>60	>60	0-25	2-10	0-10	2-35	0-10	7.9-8.3	8.4-9.0
Sandy loam or gravelly sandy loam	>60	>60	0-25	2-10	0-10	2-25	0-10	7.9-8.3	8.4-9.0
Sandy loam or gravelly sandy loam	>60	>60	0-25	2-10	0-10	2-25	0-10	7.9-8.3	8.4-9.0
Sandy loam or gravelly sandy loam	>60	>60	0-25	2-10	0-10	2-35	0-10	7.9-9.0	8.4-9.0
Loamy sand	>60	>60	0-25	2-10	<2	2-10	<2	7.9-8.3	8.4-9.0
Sandy loam	>60	>60	0-25	2-10	<2	2-10	<2	7.9-8.3	8.4-9.0
Very gravelly loamy sand or very gravelly sandy loam	>60	15-20	<2	2-25	<2	>50	<2	8.4->9.0	>9.0

Table 1. KINDS OF SOILS IN MAP UNITS AND THEIR PROPERTIES — Dixie Valley (continued)

Map symbol and acreage (1)	Soils and land types in the map unit and their approximate proportions (2)	Physiographic position (3)	Typical vegetation (4)	Soil drainage (5)	Surface soil texture and thickness (ins.) (6)	Subsoil texture and thickness (ins.) (7)
44 (84,000 Ac.)	Typic Natrargids — fine, montmorillonitic, mesic — 4 to 15 percent slopes, shallow gravel substratum. (40%)	Dissected alluvial fans	Shadscale, Bailey greasewood, bud sagebrush	Well	Loam 2-4	Clay or gravelly clay 8-16
	Duric Haplargids — loamy-skeletal, mixed, mesic — 4 to 15 percent slopes. (30%)	Dissected alluvial fans	Shadscale, Bailey greasewood, bud sagebrush	Well	Gravelly sandy loam or gravelly loam 3-6	Gravelly loam or gravelly clay loam 6-12
	Typic Haplargids — loamy-skeletal, mixed, mesic — 4 to 15 percent slopes. (20%)	Dissected alluvial fans	Shadscale, Bailey greasewood, bud sagebrush	Well	Gravelly sandy loam or gravelly loam 3-6	Gravelly loam or gravelly clay loam 6-12
	Other components: Typic Camborthids. (10%)					
45 (15,000 Ac.)	Duric Natrargids — fine, montmorillonitic, mesic — 2 to 8 percent slopes, shallow gravel substratum. (70%)	Dissected alluvial fans	Shadscale, bud sagebrush, Bailey greasewood	Well	Loam 2-4	Clay or gravelly clay 9-18
	Haplic Nadurargids — fine-loamy, mixed, mesic shallow, 2 to 8 percent slopes. (20%)	Dissected alluvial fans	Shadscale, bud sagebrush	Well	Sandy loam 4-8	Clay loam or gravelly clay loam 6-12
	Other components: Typic Camborthids and Duric Haplargids on channelway side slopes. (10%)					
46 (12,000 Ac.)	Typic Natrargids — clayey-skeletal, montmorillonitic, mesic — 4 to 15 percent slopes. (40%)	Dissected alluvial fans	Bailey greasewood, shadscale, bud sagebrush	Well	Gravelly sandy loam 3-6	Gravelly clay or gravelly clay loam 6-12
	Typic Camborthids — loamy-skeletal, mixed, mesic — 4 to 15 percent slopes. (30%)	Dissected alluvial fans	Bailey greasewood, shadscale, bud sagebrush	Well	Gravelly sandy loam 4-8	Gravelly sandy loam 6-12
	Typic Haplargids — loamy-skeletal, mixed, mesic — 4 to 15 percent slopes. (20%)	Dissected alluvial fans	Bailey greasewood, shadscale, bud sagebrush	Well	Gravelly sandy loam or loam 3-6	Gravelly loam or gravelly clay loam 6-12
	Other components: Duric Haplargids. (10%)					
47 (1,000 Ac.)	Duric Haplargids — loamy-skeletal, mixed, mesic — 4 to 15 percent slopes, slightly stony. (60%)	Dissected alluvial fans	Shadscale, Bailey greasewood, bud sagebrush	Well	Sandy loam or gravelly sandy loam 3-6	Very cobbly and gravelly loam 9-18
	Rubble land (20%)	Dissected alluvial fans	None	Well		
	Other components: Typic Camborthids. (20%)					

Substratum texture (8)	Depth to bedrock or hardpan (ins.) (9)	Depth to gravel (ins.) (10)	Coarse fragments: Percent surface cover (>2 mm) (11)	Coarse fragments: Percent by volume subsoil (>2 mm) (12)	Coarse fragments: Percent by volume subsoil (>3 ins.) (13)	Coarse fragments: Percent by volume substratum (>2 mm) (14)	Coarse fragments: Percent by volume substratum (>3 ins.) (15)	Soil reaction (pH): Surface soil (16)	Soil reaction (pH): Subsoil (17)
Very gravelly loamy sand or very gravelly sandy loam	>60	10-20	0-50	0-25	<2	>50	<2	7.4-8.3	8.4-9.0
Very gravelly loamy sand or very gravelly sandy loam	>60	5-10	0-50	35-50	<2	>50	<2	7.9-8.3	8.4-9.0
Very gravelly loamy sand or very gravelly sandy loam	>60	5-10	0-50	35-50	<2	>50	<2	7.9-8.3	7.9-9.0
Very gravelly sand or very gravelly sandy loam	>60	15-20	0-25	2-25	<2	>50	<2	7.9-8.4	8.4-9.0
Hardpan under-lain by very gravelly or very gravelly sandy loam	15-20 hardpan	20-25	0-25	2-25	<2	>50	<2	8.4-9.0	8.4-9.0
Gravelly clay loam	>60	5-10	0-50	35-50	<2	35-50	<2	7.9-8.3	8.4-9.0
Very gravelly sand or very gravelly sandy loam	>60	5-10	0-50	35-50	<2	>50	<2	7.9-8.3	8.4-9.0
Very gravelly loamy sand or very gravelly sandy loam	>60	5-10	0-50	35-50	<2	>50	<2	7.9-8.3	8.4-9.0
Very gravelly and cobbly sandy loam	>60	3-6	2-50	35-50	>35	>50	>35	7.9-8.3	8.4-9.0
—	—	—	>90	—	—	—	—	—	—

Table 1. KINDS OF SOILS IN MAP UNITS AND THEIR PROPERTIES — Dixie Valley (continued)

Map symbol and acreage (1)	Soils and land types in the map unit and their approximate proportions (2)*	Physiographic position (3)	Typical vegetation (4)	Soil drainage (5)	Surface soil texture and thickness (ins.) (6)	Subsoil texture and thickness (ins.) (7)
48 (2,000 Ac.)	Haplic Nadurargids — fine-loamy, mixed, mesic, shallow — 2 to 8 percent slopes. (70%)	Alluvial fans	Shadscale, bud sagebrush	Well	Sandy loam 4-8	Clay loam or gravelly clay loam 6-12
	Duric Natrargids — fine, montmorillonitic, mesic — 2 to 8 percent slopes, shallow gravel substratum. (20%)	Alluvial fans	Shadscale, bud sagebrush, Bailey greasewood	Well	Loam 2-4	Clay or gravelly clay 9-18
	Other components: Typic Camborthids and Duric Haplargids on channelway side slopes. (10%)					
49 (5,000 Ac.)	Typic Camborthids — coarse-loamy, mixed mesic — 4 to 8 percent slopes. (60%)	Dissected alluvial fans	Bailey greasewood, shadscale, bud sagebrush, spiny hopsage	Well	Sandy loam 10	Sandy loam or gravelly sandy loam 30
	Typic Natrargids — fine-loamy, mixed, mesic — 4 to 15 percent slopes. (30%)	Dissected alluvial fans	Shadscale bud sagebrush, Bailey greasewood	Well	Sandy loam 3-6	Sandy clay loam or gravelly sandy clay loam 6-12
	Other components: Typic Torriorthents, Duric Natrargids, and strongly sloping Typic Camborthids on channelway side slopes. (10%)					
50 (17,000 Ac.)	Typic Haplargids — loamy-skeletal, mixed, mesic, 4 to 15 percent slopes. (60%)	Dissected alluvial fans	Bailey greasewood, shadscale, bud sagebrush	Well	Gravelly sandy loam or loam 3-6	Gravelly loam or gravelly clay loam 6-12
	Typic Camborthids — loamy-skeletal, mixed, mesic — 4 to 15 percent slopes. (30%)	Dissected alluvial fans	Bailey greasewood, shadscale, bud sagebrush	Well	Sandy loam or gravelly sandy loam 4-8	Gravelly sandy loam 6-12
	Other components: Typic Torriorthents. (10%)					
51 (6.000 Ac.)	Xerollic Camborthids — loamy-skeletal, mixed, frigid — 4 to 15 percent slopes. (50%)	Dissected alluvial fans	Big sagebrush, grass	Well	Gravelly loam 4-8	Gravelly loam or gravelly and cobbly loam 8-16
	Durixerollic Haplargids — loamy-skeletal, mixed, frigid — 4 to 15 percent slopes. (30%)	Dissected alluvial fans	Big sagebrush, grass	Well	Sandy loam or loam 4-8	Gravelly loam or gravelly clay loam or gravelly and cobbly loam or clay loam 8-16
	Other components: Moderately coarse textured Camborthids, medium textured Haplargids and fine textured Haploxerollic Duragids on alluvial fan foot slopes. (20%)					

Substratum texture (8)	Depth to bedrock or hardpan (ins.) (9)	Depth to gravel (ins.) (10)	Coarse fragments						Soil reaction (pH)	
			Percent surface cover (>2 mm) (11)	Percent by volume subsoil		Percent by volume substratum			Surface soil (16)	Subsoil (17)
				(>2 mm) (12)	(>3 ins.) (13)	(>2 mm) (14)	(>3 ins.) (15)			
Hardpan underlain by very gravelly loamy sand or very gravelly sandy loam	15-20 hardpan	20-25	0-25	2-25	<2	>50	<2		8.4-9.0	8.4-9.0
Very gravelly loamy sand or very gravelly sandy loam	>60	15-20	0-25	2-25	<2	>50	<2		7.9-8.4	8.4-9.0
Loamy sand or gravelly loamy sand	>60	>60	0-50	2-25	<2	10-25	<2		7.9-8.3	8.4-9.0
Loamy sand or gravelly loamy sand	>60	>60	0-50	2-25	<2	10-25	<2		7.9-8.3	8.4-9.0
Very gravelly loamy sand or very gravelly sandy loam	>60	5-10	0-50	35-50	<2	>50	<2		7.9-8.3	8.4-9.0
Very gravelly loamy sand or very gravelly sandy loam	>60	5-10	0-50	35-50	<2	>50	<2		7.9-8.3	8.4-9.0
Very gravelly loamy sand or very gravelly sandy loam	>60	5-10	0-50	35-50	0-35	>50	0-50		6.1-7.8	6.6-7.8
Very gravelly loamy sand or very gravelly sandy loam	>60	6-12	0-50	35-50	0-35	>50	0-50		6.6-7.8	7.4-7.8

Table 1. KINDS OF SOILS IN MAP UNITS AND THEIR PROPERTIES — Dixie Valley (continued)

Map symbol and acreage (1)	Soils and land types in the map unit and their approximate proportions (2)	Physiographic position (3)	Typical vegetation (4)	Soil drainage (5)	Surface soil texture and thickness (ins.) (6)	Subsoil texture and thickness (ins.) (7)
52 (41,000 Ac.)	Haplic Nadurargids — clayey, montmorillonitic, mesic, shallow — 2 to 15 percent slopes. (30%)	Dissected alluvial fans	Big sagebrush, spiny hopsage	Well	Fine sandy loam 4-8	Clay 9-18
	Typic Nadurargids — fine, montmorillonitic, mesic — 2 to 15 percent slopes. (30%)	Dissected alluvial fans	Shadscale, bud sagebrush	Well	Fine sandy loam 4-8	Clay 9-18
	Duric Natrargids — fine, montmorillonitic, mesic — 2 to 15 percent slopes, gravel substratum. (30%)	Dissected alluvial fans	Shadscale, bud sagebrush, spiny hopsage	Well	Loam or sandy loam 6-10	Clay or gravelly clay 8-16
	Other components: Typic Camborthids. (10%)					
53 (3,000 Ac.)	Xerollic Durargids — fine, montmorillonitic, frigid, 4 to 15 percent slopes. (70%)	Dissected alluvial fans	Big sagebrush, grass, Utah juniper	Well	Loam or silt loam 8-16	Clay or gravelly clay 10-20
	Xerollic Haplargids — fine, montmorillonitic, frigid — 4 to 15 percent slopes. (20%)	Dissected alluvial fans	Big sagebrush, grass, Utah juniper	Well	Loam or silt loam 8-20	Clay or gravelly clay 20-40
	Other components: Xerollic Camborthids and Durixerollic Haplargids. (10%)					
54 (62,000 Ac.)	Duric Natrargids — fine, montmorillonitic, mesic — 2 to 15 percent slopes, gravel substratum. (70%)	Dissected alluvial fans	Shadscale, Bud sagebrush	Well	Loam or silt loam 6-10	Gravelly clay 8-16
	Typic Natrargids — fine, montmorillonitic, mesic — 2 to 8 percent slopes. (20%)	Smooth alluvial fan footslopes	Shadscale, bud sagebrush	Well	Silt loam 8-16	Clay or gravelly clay 12-24
	Other components: Duric Camborthids and Typic Nadurargids on smooth alluvial fan footslopes. (10%)					
55 (6,000 Ac.)	Duric Natrargids — clayey over sandy or sandy skeletal, montmorillonitic, mesic — 4 to 8 percent slopes. (70%)	Alluvial fan remnants	Shadscale, bud sagebrush	Well	Loam or sandy loam 3-6	Sandy clay or gravelly sandy clay 6-12
	Typic Camborthids — coarse-loamy, mixed, mesic — 4 to 8 percent slopes. (20%)	Inset alluvial fans	Bailey greasewood, bud sagebrush, spiny hopsage	Well	Sandy loam 10	Sandy loam or gravelly sandy loam 30
	Other components: Typic Torriorthents, strongly sloping Typic Camborthids and loamy Typic Natrargids. (10%)					

Substratum texture (8)	Depth to bedrock or hardpan (ins.) (9)	Depth to gravel (ins.) (10)	Coarse fragments: Percent surface cover (>2 mm) (11)	Coarse fragments: Percent by volume subsoil (>2 mm) (12)	Coarse fragments: Percent by volume subsoil (>3 ins.) (13)	Coarse fragments: Percent by volume substratum (>2 mm) (14)	Coarse fragments: Percent by volume substratum (>3 ins.) (15)	Soil reaction (pH): Surface soil (16)	Soil reaction (pH): Subsoil (17)
Hardpan under- lain by very gravelly loamy sand or very gravelly sandy loam	15-30	30-40	0-10	2-10	<2	>50	<2	7.4-8.3	8.4-9.0
Hardpan under- lain by very gravelly loamy sand or very gravelly sandy loam	20-40 hardpan	20-40	0-10	2-25	<2	>50	<2	7.9-8.3	8.4-9.0
Very gravelly loamy sand or very gravelly sandy loam	>60	20-30	0-25	2-35	<2	>50	<2	7.9-8.3	8.4-9.0
Hardpan under- lain by very gravelly loamy sand or very gravelly sandy loam	20-40 hardpan	>40	2-25	2-25	0-10	>50	0-50	6.6-7.8	7.9-8.3
Very gravelly loamy sand or very gravelly sandy loam	>40	>40	2-25	2-25	0-10	>50	0-50	6.6-7.8	7.9-8.3
Very gravelly loamy sand or very gravelly sandy loam	>60	20-40	0-25	15-35	<2	>50	<2	7.9-8.3	8.4-9.0
Loam or clay loam or gravelly loam or gravelly clay loam	>60	>40	0-10	0-25	<2	0-25	<2	7.9-9.0	>9.0
Loamy sand or gravelly loamy sand	>60	>60	0-50	2-25	<2	10-25	<2	7.9-9.0	8.4-9.0
Loamy sand or gravelly loamy sand	>60	>60	0-50	2-25	<2	10-25	<2	7.9-8.3	8.4-9.0

Table 1. KINDS OF SOILS IN MAP UNITS AND THEIR PROPERTIES — Dixie Valley (continued)

Map symbol and acreage (1)	Soils and land types in the map unit and their approximate proportions (2)	Physiographic position (3)	Typical vegetation (4)	Soil drainage (5)	Surface soil texture and thickness (ins.) (6)	Subsoil texture and thickness (ins.) (7)
56 (18,000 Ac.)	Typic Torriorthents — loamy-skeletal, carbonatic, mesic — 2 to 15 percent slopes. (70%)	Inset alluvial fans and fan-skirts	Shadscale	Well	Gravelly loam or silt loam 4-8	Gravelly sandy loam or gravelly and cobbly sandy loam 30-40
	Typic Haplargids — loamy-skeletal, carbonatic, mesic — 2 to 15 percent slopes. (30%)	Alluvial fan remnants	Shadscale, bud sagebrush	Well	Silt loam or loam 4-8	Gravelly clay loam 6-12
57 (11,000 Ac.)	Typic Camborthids — loamy-skeletal, mixed, mesic — 4 to 15 percent slopes. (70%)	Inset alluvial fans and fan-skirts	Shadscale	Well	Sandy loam or gravelly sandy loam 4-8	Gravelly sandy loam 6-12
	Duric Haplargids — loamy-skeletal, mixed, mesic — 4 to 15 percent slopes. (20%)	Dissected alluvial fans	Shadscale, bud sagebrush	Well	Gravelly sandy loam or loam 3-6	Gravelly loam or gravelly clay loam 6-12
	Other components: Duric Camborthids and Nadurargids on alluvial fan footslopes. (10%)					
58 (71,000 Ac.)	Duric Natraragids — fine, montmorillonitic, mesic — 4 to 8 percent slopes, shallow gravel substratum. (40%)	Dissected alluvial fans	Shadscale, bud sagebrush	Well	Loam 2-4	Gravelly clay or gravelly clay loam 8-16
	Duric Camborthids — loamy-skeletal, mixed, mesic — 4 to 15 percent slopes. (30%)	Inset alluvial fans and fan-skirts	Bailey greasewood, shadscale, bud sagebrush	Well	Sandy loam or gravelly sandy loam 4-8	Gravelly sandy loam 6-12
	Duric Haplargids — loamy-skeletal, mixed, mesic — 4 to 15 percent slopes. (20%)	Dissected alluvial fans	Shadscale, bud sagebrush, Bailey greasewood	Well	Gravelly sandy loam or loam 3-6	Gravelly loam or clay loam 6-12
	Other components: Typic Haplargids. (10%)					
59 (4,000 Ac.)	Typic Camborthids — loamy-skeletal, mixed, mesic — 4 to 15 percent slopes. (60%)	Inset alluvial fans and fan-skirts	Bailey greasewood, shadscale, bud sagebrush	Well	Gravelly sandy loam 4-8	Gravelly sandy loam or gravelly and cobbly sandy loam 6-12
	Typic Haplargids — loamy-skeletal, mixed, mesic — 4 to 15 percent slopes. (30%)	Dissected alluvial fans	Bailey greasewood, shadscale, bud sagebrush	Well	Gravelly sandy loam or gravelly loam 3-6	Gravelly loam or clay loam or gravelly and cobbly loam or clay loam 6-12
	Other components: Rubble land and Typic Torriorthents. (10%)					

Substratum texture (8)	Depth to bedrock or hardpan (ins.) (9)	Depth to gravel (ins.) (10)	Coarse fragments: Percent surface cover (>2 mm) (11)	Coarse fragments: Percent by volume subsoil (>2 mm) (12)	Coarse fragments: Percent by volume subsoil (>3 ins.) (13)	Coarse fragments: Percent by volume substratum (>2 mm) (14)	Coarse fragments: Percent by volume substratum (>3 ins.) (15)	Soil reaction (pH): Surface soil (16)	Soil reaction (pH): Subsoil (17)
Very gravelly loamy sand or very gravelly sandy loam or very gravelly and cobbly loamy sand	>60	4-8	0-25	35-50	0-35	>50	0-35	7.9-9.0	7.9-9.0
Very gravelly loamy sand or very gravelly sandy loam	>60	5-10	0-25	35-50	<2	>50	<2	7.9-9.0	8.4->9.0
Very gravelly loamy sand or very gravelly sandy loam	>60	5-10	0-50	35-50	<2	>50	<2	7.9-9.0	8.4-9.0
Very gravelly loamy sand or very gravelly sandy loam	>60	5-10	0-50	35-50	<2	>50	<2	7.9-8.3	8.4-9.0
Very gravelly loamy sand or very gravelly sand loam	>60	10-20	0-50	15-25	<2	>50	<2	7.4-8.3	8.4-9.0
Very gravelly loamy sand or very gravelly sandy loam	>60	5-10	0-50	35-50	<2	>50	<2	7.9-9.0	8.4-9.0
Very gravelly loamy sand or very gravelly sandy loam	>60	5-10	0-50	35-50	<2	>50	<2	7.9-8.3	8.4-9.0
Very gravelly loamy sand or very gravelly sandy loam	>60	5-10	0-50	35-50	0-25	>50	0-25	7.9-8.3	8.4-9.0
Very gravelly loamy sand or very gravelly sandy loam	>60	5-10	0-50	35-50	0-25	>50	0-25	7.9-8.3	8.4-9.0

Table 1. KINDS OF SOILS IN MAP UNITS AND THEIR PROPERTIES — Dixie Valley (continued)

Map symbol and acreage (1)	Soils and land types in the map unit and their approximate proportions (2)	Physiographic position (3)	Typical vegetation (4)	Soil drainage (5)	Surface soil texture and thickness (ins.) (6)	Subsoil texture and thickness (ins.) (7)
60 (4,000 Ac.)	Xerollic Haplargids — fine, montmorillonitic, frigid — 4 to 15 percent slopes. (70%)	Dissected alluvial fans	Big sagebrush, grass	Well	Loam or silt loam 8-20	Clay or gravelly clay 20-40
	Xerollic Durargids — fine, montmorillonitic, frigid — 4 to 15 percent slopes. (20%)	Dissected alluvial fans	Big sagebrush, grass	Well	Loam or silt loam 8-16	Clay 10-20
	Other components: Xerollic Camborthids and Durixerollic Haplargids. (10%)					
62 (3,000 Ac.)	Duric Natrargids — fine montmorillonitic, mesic — 4 to 8 percent slopes, shallow gravel substratum, severely dissected. (60%)	Alluvial fan remnants	Shadscale, bud sagebrush	Well	Loam 2-4	Gravelly clay or gravelly clay loam 8-16
	Typic Natrargids — clayey-skeletal, montmorillonitic, mesic — 15 to 30 percent slopes. (30%)	Alluvial fan remnant side slopes	Shadscale, bud sagebrush, Bailey greasewood	Well	Loam or gravelly loam 4-8	Gravelly clay or gravelly clay loam 6-12
	Other components: Shallow Typic Nadurargids on fan convex side slopes of alluvial fan remnants. (10%)					
63 (45,000 Ac.)	Duric Natrargids — fine, montmorillonitic, mesic — 4 to 8 percent slopes, shallow gravel substratum, severely dissected. (70%)	Alluvial fan remnants	Bailey greasewood, shadscale, bud sagebrush	Well	Loam 2-4	Gravelly clay or gravelly clay loam 8-16
	Typic Haplargids — loamy-skeletal, mixed, mesic — 4 to 15 percent slopes. (20%)	Ballenas	Shadscale, bud sagebrush, Bailey greasewood	Well	Sandy loam or gravelly sandy loam 3-6	Gravelly loam or gravelly clay loam 6-12
	Other components: Typic Camborthids on side slopes of alluvial fan remnants. (10%)					
64 (4,000 Ac.)	Typic Haplargids — loamy-skeletal, mixed, mesic — 15 to 30 percent slopes. (90%)	Ballenas	Bailey greasewood, shadscale, bud sagebrush	Well	Sandy loam or gravelly sandy loam 3-6	Gravelly loam or gravelly clay loam 6-12
	Other components: fine textured Duric Natrargids with shallow gravel substratum on flat alluvial fan remnants and Typic Camborthids on remnant side slopes. (10%)					

Substratum texture (8)	Depth to bedrock or hardpan (ins.) (9)	Depth to gravel (ins.) (10)	Coarse fragments: Percent surface cover (>2 mm) (11)	Coarse fragments: Percent by volume subsoil (>2 mm) (12)	Coarse fragments: Percent by volume subsoil (>3 ins.) (13)	Coarse fragments: Percent by volume substratum (>2 mm) (14)	Coarse fragments: Percent by volume substratum (>3 ins.) (15)	Soil reaction (pH): Surface soil (16)	Soil reaction (pH): Subsoil (17)
Very gravelly loamy sand or very gravelly sandy loam	>40	>40	2-25	2-25	0-10	>50	0-50	6.6-7.8	7.9-8.3
Hardpan under-lain by very gravelly loamy sand or very gravelly sandy loam	20-40 hardpan	30-40	2-25	2-25	0-10	>50	0-50	6.6-7.8	7.9-8.3
Very gravelly loamy sand or very gravelly sandy loam	>60	10-20	0-50	15-25	<2	>50	<2	7.4-8.3	8.4-9.0
Gravelly loamy sand or gravelly sandy loam	>60	5-10	0-50	35-50	<2	35-50	<2	7.9-8.3	8.4-9.0
Very gravelly loamy sand or or very gravelly sandy loam	>60	10-20	0-50	15-25	<2	>50	<2	7.9-8.3	8.4-9.0
Very gravelly loamy sand or very gravelly sandy loam	>60	4-8	0-50	35-50	<2	>50	<2	7.9-8.3	8.4-9.0
Very gravelly loamy sand or very gravelly sandy loam	>60	5-10	0-50	35-50	<2	>50	<2	7.9-8.3	8.4-9.0

Table 1. KINDS OF SOILS IN MAP UNITS AND THEIR PROPERTIES — Dixie Valley (continued)

Map symbol and acreage (1)	Soils and land types in the map unit and their approximate proportions (2)	Physiographic position (3)	Typical vegetation (4)	Soil drainage (5)	Surface soil texture and thickness (ins.) (6)	Subsoil texture and thickness (ins.) (7)
65 (4,000 Ac.)	Xerollic Durargids — fine, montmorillonitic, frigid — 2 to 15 percent slopes, severely dissected. (60%)	Ballenas	Big sagebrush, grass	Well	Loam or silt loam 8-16	Clay or gravelly clay 10-20
	Xerollic Haplargids — fine, montmorillonitic, frigid — 2 to 15 percent slopes, severely dissected. (20%)	Ballenas	Big sagebrush, grass	Well	Loam or silt loam 8-20	Clay or gravelly clay 20-40
	Other components: Gravelly Xerollic Camborthids and Durixerollic Haplargids. (20%)					
66 (4,000 Ac.)	Duric Natrargids — fine, montmorillonitic, mesic — 4 to 8 percent slopes, shallow gravel substratum, severely dissected. (70%)	Alluvial fan remnants	Bailey greasewood, shadscale, bud sagebrush	Well	Loam 2-4	Gravelly clay or gravelly clay loam 8-16
	Typic Torriorthents — loamy, mixed (calcareous), mesic, shallow — 4 to 50 percent slopes. (20%)	Remnant side slopes	Shadscale, bud sagebrush	Well	Sandy clay loam or sandy loam 5-10	Weakly consolidated bedrock
	Other components: Fine textured, shallow Typic Haplargids on alluvial fan remnant side slopes. (10%)					
67 (1,500 Ac.)	Typic Natrargids — clayey-skeletal, montmorillonitic, mesic — 15 to 30 percent slopes. (60%)	Alluvial fan remnant side slopes	Shadscale, bud sagebrush, Bailey greasewood	Well	Loam or gravelly loam 3-6	Gravelly clay or gravelly clay loam 6-12
	Duric Natrargids — fine, montmorillonitic, mesic — 4 to 8 percent slopes, shallow gravel substratum, severely dissected. (20%)	Alluvial fan remnants	Shadscale, bud sagebrush	Well	Loam 2-4	Gravelly clay or gravelly clay loam 8-16
	Typic Nadurargids — clayey-skeletal, montmorillonitic, mesic, shallow — 8 to percent slopes. (20%)	Convex alluvial fan remnant side slopes	Shadscale, bud sagebrush, Bailey greasewood	Well	Loam or gravelly loam 3-6	Gravelly clay 4-8
70 (2,500 Ac.)	Lithic Xerollic Haplargids — clayey, montmorillonitic, frigid — 2 to 30 percent slopes, stony. (60%)	Mountain summit slopes	Low sagebrush, phlox, grass	Well	Silt loam 3-6	Gravelly clay or gravelly clay loam 6-12
	Xerollic Haplargids — fine-loamy, mixed, frigid — 4 to 30 percent slopes, stony. (20%)	Mountain summit slopes	Big sagebrush, grass, lupine	Well	Silt loam 3-6	Gravelly loam or clay loam 6-12
	Other components: Rock outcrop and the medium textured Fluventic Haploxerolls in depressions. (20%)					

Substratum texture (8)	Depth to bedrock or hardpan (ins.) (9)	Depth to gravel (ins.) (10)	Coarse fragments: Percent surface cover (>2 mm) (11)	Coarse fragments: Percent by volume subsoil (>2 mm) (12)	Coarse fragments: Percent by volume subsoil (>3 ins.) (13)	Coarse fragments: Percent by volume substratum (>2 mm) (14)	Coarse fragments: Percent by volume substratum (>3 ins.) (15)	Soil reaction (pH): Surface soil (16)	Soil reaction (pH): Subsoil (17)
Hardpan under-lain by very gravelly loamy sand or very gravelly sandy loam or gravelly and cobbly loamy sand	20-40 hardpan	>40	2-25	2-25	0-10	>50	0-50	6.6-7.8	7.9-8.3
Very gravelly loamy sand or very gravelly sandy loam or gravelly and cobbly loamy sand	>40	>40	2-25	2-25	0-10	>50	0-50	6.6-7.8	7.9-8.3
Very gravelly loamy sand or very gravelly sandy loam	>60	10-20	0-50	15-25	<2	>50	<2	7.4-8.3	8.4-9.0
Weakly con-solidated bedrock	5-10 weakly con-solidated bedrock	—	0-25	—	—	—	—	8.4-9.0	8.4-9.0
Very gravelly sandy loam or very gravelly loam	>60	5-15	0-50	35-50	2-25	>50	2-25	7.4-8.3	8.4-9.0
Very gravelly loamy sand or very gravelly sandy loam	>60	10-20	0-50	2-25	2-25	>50	2-25	7.4-8.3	8.4-9.0
Hardpan under-lain by gravelly sandy loam or gravelly loamy sand	8-16 hardpan	5-10	0-50	35-50	2-25	35-50	2-25	7.9-8.3	8.4-9.0
Bedrock	10-20 bedrock	—	10-90	15-25	2-10	—	—	6.6-7.3	6.6-7.3
Gravelly loam	20-40 bedrock	—	10-90	10-25	2-10	15-25	2-10	6.6-7.3	6.6-7.3

Table 1. KINDS OF SOILS IN MAP UNITS AND THEIR PROPERTIES — Dixie Valley (continued)

Map symbol and acreage (1)	Soils and land types in the map unit and their approximate proportions (2)	Physiographic position (3)	Typical vegetation (4)	Soil drainage (5)	Surface soil texture and thickness (ins.) (6)	Subsoil texture and thickness (ins.) (7)
71 (4,000 Ac.)	Typic Torriorthents — loamy, mixed, nonacid, mesic, shallow — 4 to 30 percent slopes. (50%)	Hill side slopes	Big sagebrush, grass, spiny hopsage, Mormon tea	Well	Sandy loam 5-10	Weathered granite
	Typic Haplargids — loamy, mixed, mesic, shallow — 2 to 15 percent slopes. (30%)	Hill slopes and pediment remnants	Big sagebrush, grass, spiny hopsage	Well	Sandy loam 3-6	Sandy clay loam 4-10
	Other components: Rock outcrop and deeper Typic Haplargids on colluvial foot slopes. (20%)					
72 (1,500 Ac.)	Typic Camborthids — loamy-skeletal, mixed, mesic — 15 to 30 percent slopes. (70%)	Ballenas	Bailey greasewood, shadscale, bud sagebrush	Well	Sandy loam or gravelly sandy loam 4-8	Gravelly sandy loam 12-24
	Other components: Duric Natrargids with shallow gravel substrata on alluvial fan remnants and very shallow Typic Torriorthents and shallow Typic Haplargids on remnant side slopes. (30%)					
73 (4,000 Ac.)	Typic Natrargids — fine, montmorillonitic, mesic — 8 to 30 percent slopes. (70%)	Pediment remnants	Big sagebrush, shadscale, grass, black greasewood	Well	Sandy clay loam 3-6	Clay or gravelly clay
	Other components: Typic Camborthids and Typic Haplargids on pediment remnants side slopes. (30%)					
74 (1,500 Ac.)	Duric Natrargids — fine-loamy, mixed, mesic — 4 to 30 percent slopes, shallow gravel substratum. (60%)	Hill side slopes	Bailey greasewood, shadscale, bud sagebrush	Well	Loam 3-6	Gravelly clay loam 6-15
	Haplic Nadurargids — fine-loamy, mixed, mesic, shallow — 2 to 8 percent slopes. (30%)	Hill summit slopes	Shadscale, bud sagebrush, Bailey greasewood	Well	Loam 3-6	Gravelly loam or gravelly clay loam 8-12
	Other components: Duric Camborthids on moderately steep (15 to 30 percent) hill slopes. (10%)					
75 (500 Ac.)	Duric Natrargids — loamy-skeletal, mixed, mesic — 8 to 50 percent slopes, eroded. (80%)	Hill slopes	Bailey greasewood, shadscale	Well	Gravelly sandy loam 1-2	Gravelly clay loam or gravelly sandy clay loam 8-16
	Other components: Camborthids. (20%)					
76 (1,200 Ac.)	Duric Haplargids — loamy-skeletal, mixed, mesic — 15 to 30 percent slopes, slightly stony. (60%)	Hill slopes	Bailey greasewood, shadscale, bud sagebrush	Well	Gravelly sandy loam or loam 3-6	Gravelly loam or gravelly clay loam 6-15
	Haplic Nadurargids — clayey, montmorillonitic, mesic, shallow — 2 to 15 percent slopes. (30%)	Pediment remnants and alluvial fans	Shadscale, bud sagebrush	Well	Sandy loam 3-6	Gravelly clay loam or gravelly clay 6-10
	Other components: Duric Natrargids with gravel substratum on hill summit slopes. (10%)					

Substratum texture (8)	Depth to bedrock or hardpan (ins.) (9)	Depth to gravel (ins.) (10)	Coarse fragments: Percent surface cover (>2 mm) (11)	Coarse fragments: Percent by volume subsoil		Coarse fragments: Percent by volume substratum		Soil reaction (pH)	
				(>2 mm) (12)	(>3 ins.) (13)	(>2 mm) (14)	(>3 ins.) (15)	Surface soil (16)	Subsoil (17)
Weathered granite	5-10 weathered granitic bedrock	—	2-25	—	—	—	—	6.6-7.3	6.6-7.3
Weathered granite	10-20 weathered granitic bedrock	—	<2	2-10	<2	—	—	6.6-7.3	6.3-7.3
Very gravelly loamy sand or very gravelly sandy loam	>60	4-8	0-50	35-50	<2	>50	<2	7.9-8.3	8.4-9.0
Gravelly clay	>40 bedrock	—	0-10	2-25	0-10	15-50	2-25	7.9-8.3	8.4-9.0
Very gravelly loamy sand or very gravelly sandy loam	>60	10-20	0-50	15-25	<2	>50	<2	7.9-8.3	8.4-9.0
Hardpan under-lain by very gravelly loamy sand or very gravelly sandy loam	10-20 hardpan	10-20	0-50	15-25	<2	>50	<2	7.9-8.3	8.4-9.0
Very gravelly loamy sand or very gravelly sandy loam	>60	10-20	50-90	15-35	<2	>50	<2	7.9-8.3	8.4-9.0
Very gravelly sandy loam	>60	8-16	10-50	35-50	2-25	>50	10-35	7.9-8.3	8.4-9.0
Hardpan under-lain by very gravelly loamy sand or very gravelly sandy loam	15-30 hardpan	20-40	0-25	15-25	<2	>50	<2	7.9-8.3	8.4-9.0

Table 1. KINDS OF SOILS IN MAP UNITS AND THEIR PROPERTIES — Dixie Valley (continued)

Map symbol and acreage (1)	Soils and land types in the map unit and their approximate proportions (2)	Physiographic position (3)	Typical vegetation (4)	Soil drainage (5)	Surface soil texture and thickness (ins.) (6)	Subsoil texture and thickness (ins.) (7)
77 (1,100 Ac.)	Duric Camborthids — coarse-loamy, mixed, mesic — 4 to 15 percent slopes. (90%)	Hill slopes	Bailey greasewood, Indian rice-grass, littleleaf horsebrush	Well	Sandy loam 6-10	Sandy loam or sandy clay loam 6-12
	Other components: Typic Torripsamments. (10%)					
78 (300 Ac.)	Duric Camborthids — coarse-loamy, mixed, mesic — 8 to 30 percent slopes, slightly stony. (85%)	Hill slopes	Bailey greasewood, bud sage-brush, big sagebrush, Mormon tea	Well	Gravelly sandy loam 10	Gravelly sandy loam 30
	Other components: Duric Natrargids and Haplic Nadurargids on summit slopes. (15%)					
79 (4,000 Ac.)	Lithic Haplargids — clayey-skeletal, mont-morillonitic, mesic — 4 to 30 percent slopes, slightly stony. (90%)	Hill slopes	Shadscale, bud sage-brush, Bailey greasewood	Well	Gravelly loam 3-6	Gravelly clay 4-8
	Other components: Rock outcrop and slightly stony Duric Lithic Haplargids. (10%)					
80 (13,000 Ac.)	Duric Lithic Haplargids — clayey-skeletal, montmorillonitic, mesic — 4 to 30 percent slopes, slightly stony. (80%)	Hill slopes	Shadscale, bud sage-brush	Well	Gravelly loam 3-6	Gravelly clay 4-8
	Other components: Rock outcrop, rubble land and shallow Haplic Durargids on stony shoulder slopes and slightly stony foot slopes. (20%)					
81 (8,000 Ac.)	Duric Lithic Haplargids — clayey-skeletal, montmorillonitic, mesic — 4 to 30 percent slopes, slightly stony. (60%)	Hill slopes	Shadscale, bud sage-brush	Well	Gravelly loam or silt loam 4-8	Gravelly clay 4-8
	Haplic Durargids — clayey-skeletal, mont-morillonitic, mesic, shallow — 4 to 15 percent slopes, stony. (30%)	Hill shoulders and foot slopes	Big sage-brush, spiny hopsage, grass	Well	Gravelly loam or silt loam 6-12	Gravelly clay 6-12
	Other components: Rock outcrop and Rubble land. (10%)					
82 (12,000 Ac.)	Xerollic Haplargids — fine, mont-morillonitic, frigid — 4 to 30 percent slightly stony. (70%)	Hill slopes	Big sage-brush, grass	Well	Silt loam or silty clay loam 8-20	Clay or gravelly clay 20-40
	Haploxerollic Durargids — fine, montmor-illonitic, frigid — 4 to 30 percent slopes, slightly stony. (20%)	Hill slopes	Big sage-brush, grass	Well	silt loam or silty clay loam 6-15	Clay or gravelly clay 10-20
	Other components: Rock outcrop and Fluventic Haploxerolls in depressions. (10%)					
83 (12,000 Ac.)	Typic Natrargids — fine, montmorillonitic, mesic, 8 to 30 percent slopes. (60%)	Hill slopes	Shadscale, bud sage-brush, Bailey greasewood	Well	Sandy loam or loam 3-6	Clay or clay loam or gravelly clay or gravelly clay loam 6-12
	Typic Camborthids — loamy, mixed, mesic, shallow — 15 to 30 percent slopes. (20%)	Hill	Shadscale, bud sage-brush, Bailey greasewood	Well	Sandy loam or gravelly sandy loam 10	Sandy loam or gravelly sandy loam 15-20
	Other components: Duric Natrargids with shallow gravel substratum and Durargids on alluvial fan remnants. (20%)					

Substratum texture (8)	Depth to bedrock or hardpan (ins.) (9)	Depth to gravel (ins.) (10)	Coarse fragments: Percent surface cover (>2 mm) (11)	Coarse fragments: Percent by volume subsoil (>2 mm) (12)	Coarse fragments: Percent by volume subsoil (>3 ins.) (13)	Coarse fragments: Percent by volume substratum (>2 mm) (14)	Coarse fragments: Percent by volume substratum (>3 ins.) (15)	Soil reaction (pH): Surface soil (16)	Soil reaction (pH): Subsoil (17)
Loamy sand	>60	>60	0-50	2-10	<2	2-10	<2	7.4-7.9	7.9-8.3
Gravelly sandy loam	>60	>40	10-90	15-25	<2	25-50	<2	7.9-8.3	8.3-9.0
Bedrock	7-15 bedrock	—	10-90	35-50	0-25	—	—	7.9-8.3	7.9-8.3
Bedrock	7-15 bedrock	—	10-90	35-50	0-25	—	—	7.9-8.3	7.9-8.3
Bedrock	8-16 bedrock	—	10-50	35-50	0-25	—	—	7.9-8.3	7.9-8.3
Hardpan under-lain by very gravelly clay loam or loam	15-20 hardpan	—	10-50	35-50	2-25	>50	10-50	7.9-9.0	8.4-9.0
Bedrock	40-60 bedrock	—	10-25	10-25	2-25	—	—	6.6-7.8	7.9-8.3
Hardpan over bedrock	20-40 hardpan over bedrock	—	10-25	10-25	2-25	—	—	7.4-8.3	7.9-8.3
Sandy loam or loam or gravelly sandy loam over bedrock	20-40 Weakly con-solidated bedrock	—	0-25	2-25	<2	2-25	<2	8.4-9.0	>9.0
Bedrock	15-20 Weakly con-solidated bedrock	—	0-25	2-25	<2	—	—	8.4-9.0	8.4-9.0

Table 1. KINDS OF SOILS IN MAP UNITS AND THEIR PROPERTIES — Dixie Valley (continued)

Map symbol and acreage (1)	Soils and land types in the map unit and their approximate proportions (2)	Physiographic position (3)	Typical vegetation (4)	Soil drainage (5)	Surface soil texture and thickness (ins.) (6)	Subsoil texture and thickness (ins.) (7)
84 (3,000 Ac.)	Typic Camborthids — coarse-loamy, mixed, mesic — 15 to 30 percent slopes. (70%)	Hill slopes	Big sagebrush, grass, shadscale, bud sagebrush	Well	Sandy loam 10	Sandy loam 10-20
	Other components: Shallow Typic Camborthids and shallow Argids on strongly to gently sloping foot slopes. (30%)					
85 (6,000 Ac.)	Typic Haplargids — loamy, mixed, mesic, shallow — 15 to 30 percent slopes. (70%)	Hill slopes	Big sagebrush, spiny hopsage, Mormon tea	Well	Sandy loam 3-6	Clay loam or sandy clay loam or gravelly clay loam or gravelly sandy clay loam 6-12
	Typic Camborthids — coarse-loamy, mixed, mesic — 8 to 15 percent slopes. (15%)	Hill foot slopes	Big sagebrush	Well	Sandy loam 10	Sandy loam or loam or gravelly sandy loam or gravelly loam 10-30
	Other components: Rock outcrop on hills and fine textured Durargids on alluvial fan remnants. (15%)					
86 (600 Ac.)	Typic Torripsamments — mixed, mesic — 15 to 50 percent slopes. (100%)	Sand dunes	Wild buckwheat, Indian ricegrass, scurf pea, hairy horsebrush	Well	Medium sand 10	Medium sand 30
87 (6,000 Ac.)	Lithic Haplargids — clayey-skeletal, montmortillonitic, mesic — 4 to 30 percent slopes, slightly stony. (60%)	Hill slopes	Shadscale, bud sagebrush	Well	Gravelly loam 3-6	Gravelly clay 4-8
	Lithic Torriorthents — loamy, mixed (calcareous), mesic — 4 to 50 percent slopes, very shallow. (30%)	Eroded hill slopes	Shadscale	Well	Gravelly sandy loam or loam 5-10	Bedrock
	Other components: Rock outcrop, Typic Camborthids and Duric Haplargids. (10%)					
88 (4,000 Ac.)	Typic Torriorthents — loamy, mixed (calcareous), mesic, shallow — 4 to 50 slopes. (40%)	Eroded hill slopes	Shadscale	Well	Sandy loam, loam, or sandy clay loam 5-10	Bedrock
	Typic Natrargids — clayey, montmorillonitic, mesic, shallow — 4 to 15 percent slopes. (40%)	Hill slopes	Shadscale, bud sagebrush	Well	Sandy loam, loam, or sandy clay loam 2-4	Clay or sandy clay 6-15
	Other components: Rock outcrop and shallow Typic Camborthids. (20%)					
89 (47,000 Ac.)	Typic Torriorthents — loamy, mixed (calcarerous), mesic, shallow — 4 to 50 percent slopes. (30%)	Eroded hill slopes	Shadscale	Well	Sandy loam, loam, or sandy clay loam 3-6	Bedrock
	Typic Natrargids — fine, montmorillonitic, mesic — 8 to 30 percent slopes. (30%)	Hill slopes	Shadscale, bud sagebrush	Well	Sandy loam, loam or sandy clay loam 3-6	Clay, clay loam or sandy clay 6-15
	Duric Natrargids — fine, montmorillonitic, mesic — 4 to 8 percent slopes, shallow gravel substratum. (20%)	Alluvial fan remnants	Shadscale, bud sagebrush	Well	Loam 2-4	Gravelly clay or gravelly clay loam 8-16
	Other components: Typic Camborthids and shallow Arigds on hills. (20%)					

Substratum texture (8)	Depth to bedrock or hardpan (ins.) (9)	Depth to gravel (ins.) (10)	Coarse fragments: Percent surface cover (>2 mm) (11)	Coarse fragments: Percent by volume subsoil (>2 mm) (12)	Coarse fragments: Percent by volume subsoil (>3 ins.) (13)	Coarse fragments: Percent by volume substratum (>2 mm) (14)	Coarse fragments: Percent by volume substratum (>3 ins.) (15)	Soil reaction (pH): Surface soil (16)	Soil reaction (pH): Subsoil (17)
Loamy sand over bedrock	20-40 Weakly consolidated bedrock	—	<2	0-10	<2	0-10	<2	7.9-8.3	8.4-9.0
Bedrock	10-20 Weakly consolidated bedrock	—	0-25	2-25	<2	—	—	7.9-8.3	7.9-8.3
Bedrock	20-40 Weakly consolidated bedrock	—	0-25	2-25	<2	2-25	<2	7.9-8.3	7.9-8.3
Medium sand	>60	>60	0	0	0	0	0	7.4-7.8	7.4-7.8
Bedrock	7-15 bedrock	—	10-90	35-70	0-25	—	—	7.9-8.3	7.9-8.3
Bedrock	5-10 Hydrothermally altered bedrock	—	0-50	2-25	<2	—	—	7.9-8.3	7.9-8.3
Bedrock	5-10 Weakly consolidated bedrock	—	0-25	—	—	—	—	8.4-9.0	8.4-9.0
Bedrock	10-20 Weakly consolidated bedrock	—	0-10	0-10	<2	—	—	8.4-9.0	8.4->9.0
Bedrock	5-10 Weakly consolidated bedrock	—	0-25	—	—	—	—	8.4-9.0	8.4-9.0
Bedrock	20-40 Weakly consolidated bedrock	—	0-10	0-10	<2	—	—	8.4-9.0	>9.0
Very gravelly loamy sand or very gravelly sandy loam	>60	10-20	0-50	2-25	<2	>50	<2	7.4-8.3	8.4-9.0

Table 1. KINDS OF SOILS IN MAP UNITS AND THEIR PROPERTIES — Dixie Valley (continued)

Map symbol and acreage (1)	Soils and land types in the map unit and their approximate proportions (2)	Physiographic position (3)	Typical vegetation (4)	Soil drainage (5)	Surface soil texture and thickness (ins.) (6)	Subsoil texture and thickness (ins.) (7)
90 (22,000 Ac.)	Typic Torriorthents — loamy, mixed, nonacid, mesic, shallow — 30 to 70 percent slopes. (80%)	Mountain slopes	Big sagebrush, grass	Well	Gravelly sandy loam 5-10	Weathered granite
	Rock outcrop. (10%)	Mountain slopes	None	—	—	—
	Other components: Moderately fine-textured Typic Haplargids and moderately coarse textured Typic Camborthids on colluvial foot slopes. (10%)					
91 (3,000 Ac.)	Xeric Torriorthents — loamy, mixed, nonacid, frigid, shallow — 15 to 70 percent slopes. (75%)	Mountain summit and side slopes	Big sagebrush, singleleaf pinyon pine	Well	Sandy loam 5-10	Sandy loam or gravelly sandy loam 5-10
	Ultic Haploxerolls — coarse-loamy, mixed, frigid — 30 to 70 percent slopes. (20%)	Mountain side slopes and foot slopes	Singleleaf pinyon pine, big sagebrush, grass	Well	Sandy loam 5-10	Sandy loam or gravelly sandy loam 10-30
	Other components: Rock outcrop. (5%)					
92 (19,00 Ac.)	Lithic Ruptic-Entic Haplargids — clayey-skeletal, carbonatic, mesic — 15 to 70 percent slopes, slightly stony. (40%)	Mountain summit and side slopes	Shadscale, grass, Mormon tea	Well	Gravelly loam or silt loam 3-6	Gravelly clay loam or gravelly clay 3-9
	Typic Torriorthents — loamy-skeletal, carbonatic, mesic — 30 to 70 percent slopes, slightly stony. (30%)	Mountain side slopes and foot slopes	Bailey greasewood, grass, littleleaf horsebrush	Well	Gravelly loam or silt loam 10	Gravelly loam or gravelly silt loam 30-40
	Other components: Rock outcrop and rubble land. (30%)					
93 (6,000 Ac.)	Lithic Argixerolls — clayey-skeletal, carbonatic, frigid — 30 to 70 percent slopes, slightly stony. (40%)	Mountain side slopes	Utah juniper, big sagebrush, phlox, grass	Well	Gravelly silt loam 3-6	Gravelly clay loam or gravelly clay 6-15
	Xerollic Calciorthids — loamy-skeletal, carbonatic, frigid — 30 to 70 percent slopes, slightly stony. (30%)	Mountain side slopes and foot slopes	Utah juniper, sagebrush, phlox, snowberry	Well	Gravelly silt loam 4-8	Gravelly silt loam or silty clay loam 30-40
	Lithic Xerollic Ruptic-Entic Haplargids — clayey-skeletal, carbonatic, frigid — 15 to 50 percent slopes, slightly stony. (20%)	Mountain summit and convex side slopes	Low sagebrush, phlox, Utah juniper	Well	Gravelly silt loam 3-6	Gravelly clay loam or gravelly clay 5-10
	Other components: Rock outcrop. (10%)					
94 (43,000 Ac.)	Lithic Haplargids — clayey-skeletal, montmorillonitic, mesic — 30 to 70 percent slopes, slightly stony. (30%)	Mountain summit and side slopes	Bailey greasewood shadscale, bud sagebrush	Well	Gravelly loam 3-6	Gravelly clay 5-10
	Lithic Ruptic-Entic Haplargids — clayey-skeletal, carbonatic, mesic — 15 to 70 percent slopes, slightly stony. (20%)	Mountain summit and side slopes	Shadscale, grass, Mormon tea	Well	Gravelly loam or gravelly silt loam 3-6	Gravelly clay loam or gravelly clay 3-10
	Typic Torriorthents — loamy-skeletal, carbonatic, mesic — 30 to 70 percent slopes, slightly stony. (20%)	Mountain side slopes and foot slopes	Bailey greasewood, grass, littleleaf horsebrush	Well	Gravelly loam or gravelly silt loam 10	Gravelly loam or gravelly silt loam 30-50
	Other components: Lithic Torriorthents on mountain summit and convex side slopes, rock outcrop, rubble land and Typic Camborthids and Typic Haplargids on mountain side slopes and foot slopes. (30%)					

Substratum texture (8)	Depth to bedrock or hardpan (ins.) (9)	Depth to gravel (ins.) (10)	Coarse fragments					Soil reaction (pH)	
			Percent surface cover (>2 mm) (11)	Percent by volume subsoil (>2 mm) (12)	Percent by volume subsoil (>3 ins.) (13)	Percent by volume substratum (>2 mm) (14)	Percent by volume substratum (>3 ins.) (15)	Surface soil (16)	Subsoil (17)
Weathered granite	5-10 Weathered granitic bedrock	—	2-25	—	—	—	—	6.6-7.3	6.6-7.3
—	—	—	—	—	—	—	—	—	—
Weathered granitic bedrock	10-20 Weathered granitic bedrock	—	0-10	0-25	<2	—	—	6.1-6.5	6.6-7.0
Weathered granitic bedrock	20-40 Weathered granitic bedrock	—	0-10	0-25	<2	0-25	<2	6.1-6.5	6.6-7.0
Bedrock	5-15 Bedrock	—	10-90	35-50	10-25	—	—	7.9-8.3	7.9-8.3
Bedrock	40-60 Bedrock	—	10-90	35-50	10-25	—	—	7.9-8.3	7.9-8.3
Bedrock	10-20 Bedrock	—	10-90	35-50	2-25	—	—	7.9-8.3	7.9-8.3
Bedrock	>40 Bedrock	—	10-90	35-50	2-25	—	—	7.9-8.3	7.9-8.3
Bedrock	5-15 Bedrock	—	10-90	35-50	2-25	—	—	7.9-8.3	7.9-8.3
Bedrock	5-15 Bedrock	—	10-90	35-50	0-25	—	—	7.9-8.3	7.9-8.3
Bedrock	5-15 Bedrock	—	10-90	35-50	10-25	—	—	7.9-8.3	7.9-8.3
Bedrock	>40 Bedrock	—	10-90	35-50	10-25	—	—	7.9-8.3	7.9-8.3

Table 1. **KINDS OF SOILS IN MAP UNITS AND THEIR PROPERTIES — Dixie Valley (continued)**

Map symbol and acreage (1)	Soils and land types in the map unit and their approximate proportions (2)	Physiographic position (3)	Typical vegetation (4)	Soil drainage (5)	Surface soil texture and thickness (ins.) (6)	Subsoil texture and thickness (ins.) (7)
95 (40,000 Ac.)	Lithic Argixerolls — clayey-skeletal, montmorillonitic, frigid, 15 to 70 percent slopes, slightly stony. (50%)	Mountain summit and side slopes	Big sagebrush, Utah juniper, grass, phlox	Well	Gravelly loam 4-8	Gravelly clay loam or gravelly clay 6-12
	Xerollic Calciorthids — loamy-skeletal, carbonatic, frigid — 30 to 70 percent slopes, slightly stony. (20%)	Mountain side slopes and foot slopes	Utah juniper, sagebrush, phlox, snowberry	Well	Gravelly silt loam 4-8	Gravelly silt loam or gravelly silty clay loam 30-40
	Other components: Lithic Xerollic Ruptic-Entic Haplargids and Lithic Xerollix Haplargids on mountain summit and side slopes, rock outcrop, rubble land and Xerollic Camborthids, Xerollic Haplargids and Pachic Haploxerolls on mountain side slopes and foot slopes. (30%)					
96 (313,000 Ac.)	Lithic Haplargids — clayey-skeletal, montmorillonitic, mesic — 30 to 70 percent slopes, slightly stony. (60%)	Mountain slopes	Bailey greasewood, shadscale, bud sagebrush	Well	Gravelly loam 3-6	Gravelly clay 5-10
	Lithic Torriorthents — loamy-skeletal, mixed (calcareous), mesic — 8 to 70 percent slopes, very shallow, slightly stony. (10%)	Mountain summit and slopes	Shadscale	Well	Gravelly sandy loam or loam 5-10	Bedrock
	Other components: Rock outcrop, rubble land and Typic Camborthids and Typic Natrargids on mountain side slopes and foot slopes. (30%)					
97 (196,000 Ac.)	Lithic Argixerolls — clayey-skeletal, montmorillonitic, frigid — 15 to 70 percent slopes; slightly stony. (60%)	Mountain slopes	Big sagebrush, singleleaf pinyon pine, Utah juniper, grass, phlox	Well	Gravelly loam 4-8	Gravelly clay loam or clay 6-12
	Lithic Xerollic Haplargids — loamy-skeletal, mixed, frigid — 15 to 50 percent slightly stony. (10%)	Mountain summit and side slopes	Low sagebrush, Utah juniper, phlox, grass	Well	Gravelly loam 3-6	Gravelly clay loam or gravelly clay 3-9
	Other components: Rock outcrop, rubble land and Xerollic Camborthids, Xerollic Haplargids, and Pachic Haploxerolls on mountain side slopes and foot slopes. (30%)					
98 (18,000 Ac.)	Argic Lithic Cryoborolls — clayey-skeletal, montmorillonitic, 30 to 70 percent slopes, slightly stony. (60%)	Mountain side slopes	Low sagebrush, phlox, grass	Well	Loam 4-8	Gravelly clay loam or gravelly clay 6-12
	Lithic Xerollic Haplargids — loamy-skeletal, mixed, frigid — 15 to 50 percent slopes, slightly stony. (10%)	Mountain summit and convex side slopes	Low sagebrush	Well	Loam 3-6	Gravelly clay loam or gravelly clay 3-9
	Pachic Cryoborolls — fine-loamy, mixed — 15 to 50 percent slopes. (10%)	Mountain side slopes and foot slopes	Big sagebrush, lupine	Well	Loam or gravelly loam 10	Loam or gravelly loam 30-40
	Other components: Rock outcrop, rubble land, Lithic Cryorthents on lee side of ridges, and stony Typic Cryoborolls and Argic Cryoborolls on mountain side slopes and foot slopes. (20%)					

Substratum texture (8)	Depth to bedrock or hardpan (ins.) (9)	Depth to gravel (ins.) (10)	Coarse fragments: Percent surface cover (>2 mm) (11)	Percent by volume subsoil (>2 mm) (12)	Percent by volume subsoil (>3 ins.) (13)	Percent by volume substratum (>2 mm) (14)	Percent by volume substratum (>3 ins.) (15)	Soil reaction (pH) Surface soil (16)	Soil reaction (pH) Subsoil (17)
Bedrock	10-20 Bedrock	—	10-90	35-50	2-25	—	—	6.6-7.3	6.6-7.3
Bedrock	>40 Bedrock	—	10-90	35-50	2-25	—	—	7.9-8.3	7.9-8.3
Bedrock	5-15 Bedrock	—	10-90	35-50	0-25	—	—	7.9-8.3	7.9-8.3
Bedrock	5-10 Bedrock	—	10-90	35-50	2-25	—	—	7.9-9.0	7.9-9.0
Bedrock	10-20 Bedrock	—	10-90	35-50	2-25	—	—	6.6-7.3	6.6-7.3
Bedrock	5-15 Bedrock	—	10-90	35-50	2-25	—	—	6.6-7.3	6.6-7.3
Bedrock	10-20 Bedrock	—	10-90	35-50	2-25	—	—	6.6-7.3	6.6-7.3
Bedrock	5-15 Bedrock	—	10-90	35-50	2-25	—	—	6.6-7.3	6.6-7.3
Bedrock	>40 Bedrock	—	<2	10-25	0	—	—	6.1-6.6	5.6-6.0

Table 1. KINDS OF SOILS IN MAP UNITS AND THEIR PROPERTIES — Dixie Valley (continued)

Map symbol and acreage (1)	Soils and land types in the map unit and their approximate proportions (2)	Physiographic position (3)	Typical vegetation (4)	Soil drainage (5)	Surface soil texture and thickness (ins.) (6)	Subsoil texture and thickness (ins.) (7)
99 (8,000 Ac.)	Typic Natrargids — fine, montmorillonitic, mesic — 30 to 50 percent slopes. (50%)	Hill slopes	Shadscale, bud sagebrush, big sagebrush	Well	Sandy loam, loam or sandy clay loam 3-6	Clay, clay loam, sandy clay or gravelly clay 6-15
	Duric Natrargids — fine-loamy, mixed, mesic, 30 to 50 percent slopes. (20%)	Hill slopes and colluvial foot slopes	Shadscale, bud sagebrush, big sagebrush	Well	Sandy loam, loam, or sandy clay loam 3-6	Clay, clay loam, sandy clay or gravelly clay 6-15
	Other components: Shallow Typic and Duric Natrargids on side slopes and concave foot slopes and shallow Durargids on shoulders of hills. (30%)					

Substratum texture (8)	Depth to bedrock or hardpan (ins.) (9)	Depth to gravel (ins.) (10)	Coarse fragments: Percent surface cover (>2 mm) (11)	Coarse fragments: Percent by volume subsoil (>2 mm) (12)	Coarse fragments: Percent by volume subsoil (>3 ins.) (13)	Coarse fragments: Percent by volume substratum (>2 mm) (14)	Coarse fragments: Percent by volume substratum (>3 ins.) (15)	Soil reaction (pH): Surface soil (16)	Soil reaction (pH): Subsoil (17)
Gravelly sandy loam, gravelly loam or gravelly clay loam	>40 Weakly consolidated bedrock	—	0-10	2-25	<2	35-50	<2	7.9-9.0	8.4->9.0
Gravelly sandy loam, gravelly loam or gravelly clay loam	>40 Weakly consolidated bedrock	—	0-10	2-25	<2	35-50	<2	7.9-9.0	8.4->9.0

Table 2. SOIL INTERPRETATIONS

Map symbol symbol and acreage (1)	Soils and land types in the map unit and their approximate proportions (2)	Available water-holding capacity (ins.) (18)	Profile perm-eability (19)	Shrink-swell potential (20)	Frost-action potential (21)	Engineering soil classification	
						Unified (22)	AASHO (23)
01 (31,000 Ac.)	Playas, wet. (100%)	6–9	Very slow	High	Moderate	CH or MH	A–7
05 (3,000 Ac.)	Playas. (100%)	6–8	Very slow	High	Moderate	CH or MH	A-7
06 (36,000 Ac.)	Typic Salorthids — fine, montmorillonitic, mesic — 0 to 2 percent slopes, occasionally flooded. (90%) Other components: Typic Torrifluvents in flat bottomed drainageways on basin-fill plains. (10%)	6–9	Slow	High	Moderate	CH	A–7
07 (13,000 Ac.)	Typic Salorthids — fine-silty, mixed, mesic — 0 to 2 percent slopes, occasionally flooded. (95%) Other components: Saline Typic Haplaquolls. (5%)	6–9	Slow	Moderate	High	CL	A–7
08 (6,000 Ac.)	Aquic Torriorthents — coarse-loamy, mixed (calcareous), mesic — 0 to 2 percent slopes, saline. (90%) Other components: Typic Torripsamments on sand dunes. (10%)	4.5–6	Moderately rapid	Low	High	SM or ML	A–4
09 (3,000 Ac.)	Aquic Torriorthents — fine-silty, mixed (calcareous), mesic — 0 to 2 percent slopes, saline. (80%) Other components: Typic Torripsamments on sand dunes. (20%)	6–9	Slow	Moderate	High	CL	A–7
11 (7,500 Ac.)	Typic Torriorthents — coarse-loamy, mixed (calcareous), mesic — 0 to 2 percent slopes, occasionally flooded. (60%)	4.5–6	Moderately rapid	Low	High	SM	A–2 or A–4
	Typic Natrargids — fine-loamy, mixed, mesic — 0 to 2 percent slopes, occasionally flooded. (30%) Other components: Torrifluvents. (10%)	5–6	Moderate	Moderate	High	SC over SM	A–6 over A–2 or A–4
12 (9,000 Ac.)	Typic Torriorthents — fine, mont-morillonitic (calcareous), mesic — 0 to 2 percent slopes, saline, occasionally flooded. (80%)	6–9	Slow	High	Moderate	CL or CH	A–7
	Typic Natrargids — fine, mont-morillonitic, mesic — 0 to 2 percent slopes, saline, occasionally flooded. (15%) Other components: Torrifluvents. (5%)	6–9	Very slow	High	Moderate	CL or CH	A–7
13 (3,000 Ac.)	Typic Natrargids — fine-loamy, mixed, mesic — 0 to 2 percent slopes. (90%) Other components: Moderately coarse textured Typic Camborthids. (10%)	4.5–6	Moderate	Moderate	High	SC over SM	A–6 over A–2 or A–4

Erosion hazard		Suitability for sand or gravel (26)	Suitability for roadfill (27)	Septic tank absorption fields (28)	Soil limitations for —			Soil hydrologic group (32)	Land capability subclass		Soil irrigability class (35)
Water (24)	Wind (25)				Sanitary landfills (trench) (29)	Dwellings without basements (30)	Roads and streets (31)		Irrigated (33)	Dry (34)	
Low	Slight	Unsuitable	Poor	Severe	Severe	Severe	Severe	D	—	VIIIw	E
Moderate	Slight	Unsuitable	Poor	Severe	Severe	Severe	Severe	D	—	VIIIw	E
Moderately low	Slight	Unsuitable	Poor	Severe	Severe	Severe	Severe	D	—	VIIw	D-2wx
Moderately low	Slight	Unsuitable	Poor	Severe	Severe	Severe	Severe	D	—	VIIw	D-2wx
Moderately low	Severe	Unsuitable	Fair	Severe	Severe	Moderate	Severe	C	IIIw	VIIw	C-2wx
Moderate	Moderate	Unsuitable	Poor	Severe	Severe	Severe	Severe	C	IIIw	VIIw	C-2wx
Low	Severe	Poor sand	Fair	Severe	Severe	Severe	Moderate	B	IIw	VIIw	B-2a
Moderately low	Severe	Poor sand	Fair	Severe	Severe	Severe	Moderate	B	IIw	VIIw	B-2a
Moderate	Slight	Unsuitable	Poor	Severe	Severe	Severe	Severe	D	IVw	VIIw	D-2x
Moderately low	Slight	Unsuitable	Poor	Severe	Severe	Severe	Severe	D	IVw		D-2x
Moderately low	Severe	Poor sand	Fair	Slight	Slight	Moderate	Moderate	B	IIs	VIIs	B-2a

Table 2. SOIL INTERPRETATIONS (continued)

Map symbol symbol and acreage (1)	Soils and land types in the map unit and their approximate proportions (2)	Available water-holding capacity (ins.) (18)	Profile perm-eability (19)	Shrink-swell potential (20)	Frost-action potential (21)	Engineering soil classification	
						Unified (22)	AASHO (23)
14 (21,000 Ac.)	Typic Torriorthents — fine-silty, mixed (calcareous), mesic — 0 to 2 percent slopes, saline, occasionally flooded. (80%)	6–9	Slow	Moderate	High	ML or CL	A–4 or A–6
	Typic Natrargids — fine-silty, mixed mesic, 0 to 2 percent slopes, saline, occasionally flooded. (15%)	6–9	Slow	Moderate	High	ML or CL	A–4 or A–6
	Other components: Torrifluvents. (5%)						
15 (2,000 Ac.)	Duric Camborthids — coarse-loamy, mixed, mesic — 0 to 2 percent slopes. (60%)	5–6	Moderately rapid	Low	Moderate	SM over GP–GM or GM	A–2 or A–4 over A–1
	Duric Natrargids — fine-loamy, mixed, mesic — 0 to 4percent slopes. (30%)	5–6	Moderate	Moderate	High	CL and SM over GP–GM or GM	A–6 and A–2 over A–1
	Other components: Fine textured Haplic Nadurargids. (10%)						
16 (18,000 Ac.)	Typic Natrargids — fine-loamy, mixed, mesic — 0 to 4 percent slopes, saline, gravel substratum. (90%)	4.5–5	Moderate	Moderate	Moderate	CL and SM over GP–GM or GM	A–6 and A–2 over A–1
	Other components: Medium textured Typic Camborthids (10%)						
17 (10,000 Ac.)	Typic Torriorthents — fine-silty, mixed (calcareous), mesic — 0 to 2 percent slopes, occasionally flooded. (90%)	6–8	Slow	Moderate	High	CL or ML–CL	A–4 or A–6
	Other components: Moderately coarse textured Typic Camborthids on small alluvial fans. (10%)						
18 (2,000 Ac.)	Typic Natrargids — fine, montmorillon-itic, mesic — 0 to 2 percent slopes, occasionally flooded. (80%)	6–8	Very slow	High	Moderate	CH over SM	A–7 over A–1 or A–2
	Other components: Medium textured Typic Torriorthents. (20%)						
19 (2,000 Ac.)	Typic Torripsamments — sandy, mixed, mesic — 4 to 15 percent slopes. (70%)	3–4	Rapid	Low	Low	SP or SP–SM	A–3
	Other components: Aquic Torriorthents and moderately fine textured Typic Natrargids on nearly level to very gently sloping basin-fill plains exposed between sand dunes. (30%)						
21 (4,000 Ac.)	Typic Camborthids — coarse-loamy, mixed, mesic — 0 to 4 percent slopes (60%)	4.5–5	Moderately rapid	Low	Moderate	SM	A–2
	Typic Torriorthents — coarse-loamy, mixed (calcareous,) mesic — 0 to 2 percent slopes, occasionally flooded. (30%)	4.5–6	Moderately rapid	Low	Moderate	SM	A–2 or A–4
	Other components: Moderately coarse textured Typic Natrargids on stream terrace remnants. (10%)						

Erosion hazard		Suitability for sand or gravel (26)	Suitability for roadfill (27)	Septic tank absorption fields (28)	Soil limitations for —			Soil hydrologic group (32)	Land capability subclass		Soil irrigability class (35)
Water (24)	Wind (25)				Sanitary landfills (trench) (29)	Dwellings without basements (30)	Roads and streets (31)		Irrigated (33)	Dry (34)	
Moderately low	Moderate	Unsuitable	Poor	Severe	Severe	Severe	Severe	C	IIs	VIIs	B-2p
Moderately low	Moderate	Unsuitable	Poor	Severe	Severe	Severe	Severe	C	IIw	VIIw	B-2p
Low	Severe	Poor sand good gravel	Good	Slight	Slight	Slight	Moderate	B	IIs	VIIs	B-3a
Moderately low	Severe	Poor sand, good gravel	Good	Slight	Slight	Slight	Moderate	B	IIe	VIIs	B-3a
Moderately low	Severe	Poor sand good gravel	Good	Slight	Moderate	Slight	Moderate	B	IIIe	VIIs	B-2a
Moderately low	Moderate	Unsuitable	Poor	Severe	Severe	Severe	Severe	C	IIw	VIIw	B-2p in Dixie Valley and Jersey Valley B-3p in Pleasant Valley
Moderate	Moderate	Poor sand	Fair	Severe	Severe	Severe	Severe	D	IVw	VIIw	D-2p
Low	Severe	Good sand	Good	Moderate	Severe	Moderate	Moderate	A	IVs	VIIs	D-2s
Low	Severe	Poor sand	Fair	Slight	Slight	Slight	Moderate	B	IIe	VIIs	B-2a
Low	Severe	Poor sand	Fair	Severe	Severe	Severe	Moderate	B	IIw	VIIw	B-2a

Table 2. SOIL INTERPRETATIONS (continued)

Map symbol symbol and acreage (1)	Soils and land types in the map unit and their approximate proportions (2)	Available water-holding capacity (ins.) (18)	Profile perm-eability (19)	Shrink-swell potential (20)	Frost-action potential (21)	Engineering soil classification	
						Unified (22)	AASHO (23)
22 (2,000 Ac.)	Typic Natrargids — fine-loamy, mixed, mesic — 0 to 2 percent slopes. (50%)	5–6	Moderate	Moderate	High	SC over SM	A–6 over A–2 or A–4
	Typic Camborthids — coarse-loamy, mixed, mesic — 0 to 4 percent slopes. (20%)	4.5–6	Moderately rapid	Low	Moderate	SM	A–2
	Typic Torriorthents — coarse-loamy, mixed (calcareous), mesic — 0 to 2 percent slopes, occasionally flooded. (20%)	4.5–6	Moderately rapid	Low	Moderate	SM	A–2 or A–4
	Other components: Moderately coarse-textured Typic Natrargids. (10%)						
23 (4,000 Ac.)	Typic Natrargids — fine-loamy, mixed, mesic — 0 to 2 percent slopes, saline, occasionally flooded. (60%)	6–8	Slow	Moderate	High	CL over ML	A–4
	Typic Torriorthents — fine-silty, mixed (calcareous), mesic — 0 to 2 percent slopes, saline, occasionally flooded. (30%)	6–8	Slow	Moderate	High	ML or CL	A–4 or A–6
	Other components: Moderately coarse textured Torriorthents and Camborthids (10%)						
24 (300 Ac.)	Typic Natrargids — fine-loamy, mixed, mesic — 0 to 2 percent slopes. (90%)	5–6	Moderate	Moderate	High	CL over SM or ML	A–6 or A–7 over A–2 or A–4
	Other components: Medium textured and moderately coarse textured Typic Torriorthents on stream flood plains and terraces. (10%)						
25 (3,000 Ac.)	Xeric Torriorthents — coarse-loamy, mixed, nonacid, mesic — 0 to 2 percent slopes, occasionally flooded. (90%)	4.5–6	Moderate	Low	Moderate	SM	A–2
	Other components: Typic Camborthids and Typic Natrargids on terrace remnants. (10%)						
26 (500 Ac.)	Typic Torriorthents — coarse-loamy, mixed (calcareous), mesic — 0 to 2 percent slopes, occasionally flooded. (90%)	4.5–6	Moderately rapid	Low	Moderate	SM	A–2
	Other components: Typic Torriorthents with gravel substratum on lower flood plain levels. (10%)						

Erosion hazard		Suitability for sand or gravel (26)	Suitability for roadfill (27)	Septic tank absorption fields (28)	Soil limitations for —			Soil hydrologic group (32)	Land capability subclass		Soil irrigability class (35)
Water (24)	Wind (25)				Sanitary landfills (trench) (29)	Dwellings without basements (30)	Roads and streets (31)		Irrigated (33)	Dry (34)	
Moderately low	Severe	Poor sand	Fair	Slight	Slight	Slight	Moderate	B	IIs	VIIs	B-2a in Dixie and Stingaree Valleys, B-3a in Cowkick Valley
Low	Severe	Poor sand	Fair	Slight	Slight	Slight	Moderate	B	IIe	VIIs	B-2a in Dixie and Stingaree Valleys, B-3a in Cowkick Valley
Low	Severe	Poor sand	Fair	Severe	Severe	Severe	Severe	B	IIw	VIIw	B-3a
Moderately low	Severe	Unsuitable	Poor	Severe	Severe	Severe	Severe	C	IIw	VIIw	B-3p
Moderately low	Moderate	Unsuitable	Poor	Severe	Severe	Severe	Severe	C	IIw	VIIw	B-3p
Moderately low	Moderate	Poor sand	Fair	Slight	Slight	Slight	Severe	B	IIs	VIIs	B-3a
Low	Severe	Poor sand	Fair	Severe	Severe	Severe	Moderate	B	IIw	VIw	B-3a
Low	Severe	Poor sand	Fair	Severe	Severe	Severe	Moderate	B	IIw	VIIw	B-3a

Table 2. SOIL INTERPRETATIONS (continued)

Map symbol and acreage (1)	Soils and land types in the map unit and their approximate proportions (2)	Available water-holding capacity (ins.) (18)	Profile perm-eability (19)	Shrink-swell potential (20)	Frost-action potential (21)	Engineering soil classification: Unified (22)	Engineering soil classification: AASHO (23)
27 (500 Ac.)	Typic Natrargids — fine-loamy, mixed, mesic — 2 to 4 percent slopes. (60%)	5–6	Moderate	Moderate	High	SC or CL over SM	A–2 or A–6 over A–2
	Typic Torriorthents — coarse-loamy, mixed (calcareous), mesic — 0 to 2 percent slopes, occasionally flooded. (30%)	4.5–6	Moderately rapid	Low	Moderate	SM	A–2
	Other components: Typic Torriorthents with gravel substratum on lower flood plain levels. (10%)						
30 (4,000 Ac.)	Typic Natrargids — fine-loamy over sandy or sandy-skeletal, mixed, mesic 0 to 15 percent slopes, saline. (90%)	3.4–5	Moderate	Moderate	Moderate	SC over GP or GP–GM	A–2 or A–6 over A–1
	Other components: Moderately coarse-textured Typic Camborthids with and without gravel substrata. (10%)						
31 (12,000 Ac.)	Typic Natrargids — coarse-loamy, mixed, mesic — 2 to 4 percent slopes. (70%)	4–4.5	Moderate	Low	Moderate	SM	A–2
	Typic Camborthids — coarse-loamy, mixed, mesic — 0 to 4 percent slopes. (20%)	3.5–4	Moderately rapid	Low	Moderate	SM	A–2
	Other components: Duric Natrargids. (10%)						
32 (4,000 Ac.)	Typic Natrargids — fine, montmorillonitic, mesic — 2 to 4 percent slopes. (80%)	6–8	Slow	High	Moderate	CL or CH over SM or SC	A–7 over A–2 or A–6
	Other components: Medium textured, saline Typic Torriorthents in fill between sinter mounds. (20%)						
33 (16,000 Ac.)	Typic Natrargids — fine-loamy, mixed, mesic — 2 to 4 percent slopes. (60%)	5–6	Moderate	Moderate	Moderate	SC or CL over SM	A–6 or A–7 over A–2
	Typic Camborthids — coarse-loamy, mixed, mesic — 0 to 4 percent slopes. (30%)	4.5–5	Moderately rapid	Low	Moderate	SM	A–2
	Other components: Moderately coarse-textured Typic Natrargids. (10%)						

Erosion hazard		Suitability for sand or gravel (26)	Suitability for roadfill (27)	Septic tank absorption fields (28)	Soil limitations for —			Soil hydrologic group (32)	Land capability subclass		Soil irrigability class (35)
Water (24)	Wind (25)				Sanitary landfills (trench) (29)	Dwellings without basements (30)	Roads and streets (31)		Irrigated (33)	Dry (34)	
Moderately low	Severe	Poor sand	Fair	Slight	Slight	Slight	Severe	B	IIe	VIIs	B-3a
Low	Severe	Poor sand	Fair	Severe	Severe	Severe	Moderate	B	IIw	VIIw	B-3a
Moderate	Severe	Good gravel	Good	Moderate	Severe	Moderate	Moderate	B	IVe	VIIs	D-2s
Moderate	Severe	Poor sand	Fair	Slight	Moderate	Slight	Slight	B	IIIe	VIIs	C-2a
Moderately low	Severe	Poor sand	Fair	Slight	Slight	Slight	Slight	A	IIIe	VIIs	C-2a
Moderate	Moderate	Unsuitable	Fair	Moderate	Slight	Slight	Moderate	C	IIIe	VIIs	C-2x
Moderate	Moderate	Poor sand	Fair	Slight	Slight	Slight	Moderate	B	IIe	VIIs	B-2a in Dixie, Jersey, and Fairview Valleys; B-3a in Pleasant Valley
Moderately low	Moderate	Poor sand	Fair	Slight	Slight	Slight	Moderate	B	IIe	VIIs	B-2a in Dixie, Jersey, and Fairview Valleys; B-3a in Pleasant Valley

Table 2. SOIL INTERPRETATIONS (continued)

Map symbol symbol and acreage (1)	Soils and land types in the map unit and their approximate proportions (2)	Available water-holding capacity (ins.) (18)	Profile perm-eability (19)	Shrink-swell potential (20)	Frost-action potential (21)	Engineering soil classification: Unified (22)	Engineering soil classification: AASHO (23)
34 (24,000 Ac.)	Typic Natrargids — fine-loamy, mixed, mesic — 2 to 4 percent slopes, saline. (90%)	5-6	Moderate	Moderate	Moderate	SC or CL over SM	A-6 or A-7 over A-2
	Other components: Moderately coarse textured, saline Typic Camborthids. (10%)						
35 (2,000 Ac.)	Typic Natrargids — fine-loamy, mixed, mesic — 2 to 4 percent slopes. (60%)	4.5-5	Moderate	Moderate	Moderate	SC or CL over SM	A-6 or A-7 over A-2
	Duric Camborthids — coarse-loamy, mixed, mesic, 2 to 4 percent slopes. (30%)	4-4.5	Moderately rapid	Low	Moderate	SM	A-2
	Other components: Haplic Durorthids. (10%)						
36 (9,000 Ac.)	Typic Natrargids — coarse-loamy, mixed, mesic — 2 to 4 percent slopes. (60%)	4-4.5	Moderate	Low	Moderate	SM	A-2
	Duric Natrargids — fine-loamy, mixed, mesic — 0 to 4 percent slopes. (30%)	4.5-5	Moderate	Moderate	Moderate	SC or CL over SM	A-6 or A-7 over A-2
	Other components: Moderately coarse textured Typic Torriorthents. (10%)						
37 (11,000 Ac.)	Typic Torripsamments — mixed, mesic, 2 to 4 percent slopes. (90%)	3-4	Rapid	Low	Low	SM	A-2 or A-1
	Other components: Moderately coarse textured Typic Camborthids. (10%)						
38 (6,000 Ac.)	Typic Camborthids, coarse-loamy, mixed, mesic — 0 to 4 percent slopes. (60%)	4.5-5	Moderately rapid	Low	Moderate	SM	A-2
	Typic Natrargids — fine-loamy, mixed, mesic — 2 to 4 percent slopes. (30%)	5-6	Moderate	Moderate	Moderate	SC or CL over SM	A-1 or A-7 over A-2
	Other components: Typic Torriorthents. (10%)						
39 (1,000 Ac.)	Typic Camborthids — coarse-loamy, mixed, mesic — 0 to 4 percent slopes. (70%)	4-4.5	Moderately rapid	Low	Moderate	SM	A-2
	Typic Natrargids — coarse-loamy, mixed, mesic — 2 to 4 percent slopes. (20%)	5-6	Moderate	Low	Moderate	SM or SC	A-2
	Other components: Medium textured Typic Natrargids. (10%)						
40 (6,000 Ac.)	Typic Camborthids, coarse-loamy, mixed, mesic — 0 to 4 percent slopes. (70%)	3-4	Moderately rapid	Low	Moderate	SM	A-2 and A-1
	Duric Natrargids — fine-loamy, mixed, mesic — 0 to 4 percent slopes. (20%)	4.5-5	Moderate	Moderate	High	SC or CL over SM	A-6 or A-7 over A-2
	Other components: Moderately coarse textured Typic Natrargids. (10%)						

Erosion hazard		Suitability for sand or gravel (26)	Suitability for roadfill (27)	Septic tank absorption fields (28)	Soil limitations for —			Soil hydrologic group (32)	Land capability subclass		Soil irrigability class (35)
Water (24)	Wind (25)				Sanitary landfills (trench) (29)	Dwellings without basements (30)	Roads and streets (31)		Irrigated (33)	Dry (34)	
Moderate	Moderate	Poor sand	Fair	Slight	Slight	Slight	Moderate	B	IIe	VIIs	B-2a
Moderate	Severe	Poor sand	Fair	Slight	Slight	Slight	Moderate	B	IIe	VIIs	B-2a
Moderately low	Severe	Poor sand	Fair	Slight	Slight	Slight	Moderate	A	IIIe	VIIs	C-2a
Moderate	Severe	Poor sand	Fair	Slight	Moderate	Slight	Moderate	B	IIIe	VIIs	C-2a
Moderate	Severe	Poor sand	Fair	Slight	Slight	Slight	Moderate	B	IIe	VIIs	B-2a
Moderately low	Severe	Fair sand	Good	Slight	Moderate	Slight	Slight	A	IIIs	VIIs	C-2a
Moderately low	Moderate	Poor sand	Fair	Slight	Slight	Slight	Moderate	B	IIe	VIIs	B-2a
Moderate	Moderate	Poor sand	Fair	Slight	Slight	Slight	Moderate	B	IIe	VIIs	B-2a
Moderate	Moderate	Poor sand	Fair	Slight	Slight	Slight	Moderate	B	IIe	VIIs	B-2a
Moderately low	Severe	Poor sand	Fair	Slight	Moderate	Slight	Moderate	B	IIe	VIIs	B-2a
Moderately low	Severe	Poor sand	Fair	Slight	Slight	Slight	Moderate	B	IIIe	VIIs	C-2a in Fairview Valley except C-3a at Bell Flat
Moderate	Severe	Poor sand	Fair	Slight	Slight	Slight	Severe	B	IIe	VIIs	B-2a in Fairview Valley except B-3a at Bell Flat

Table 2. SOIL INTERPRETATIONS (continued)

Map symbol and acreage (1)	Soils and land types in the map unit and their approximate proportions (2)	Available water-holding capacity (ins.) (18)	Profile perm-eability (19)	Shrink-swell potential (20)	Frost-action potential (21)	Engineering soil classification	
						Unified (22)	AASHO (23)
41 (11,500 Ac.)	Duric Natrargids — fine-loamy, mixed, mesic — 0 to 4 percent slopes. (60%)	4.5–5	Moderate	Moderate	High	SC or CL over SM	A–6 or A–7 over A–2
	Typic Camborthids — coarse-loamy, mixed, mesic — 0 to 4 percent slopes. (30%)	3–4	Moderately rapid	Low	Moderate	SM	A–2
	Other components: Medium textured Typic Natrargids. (10%)						
42 (2,000 Ac.)	Typic Natrargids — coarse-loamy, mixed, mesic — 4 to 8 percent slopes. (70%)	4–4.5	Moderate	Low	Moderate	SM or SC over SM	A–2 over A–2 or A–1
	Typic Camborthids — coarse-loamy, mixed, mesic — 4 to 8 percent slopes. (20%)	3.5–4	Moderately rapid	Low	Moderate	SM	A–2
	Other components: Duric Natrargids. (10%)						
43 (13,000 Ac.)	Duric Natrargids — fine, montmorillonitic, mesic — 2 to 4 percent slopes, saline, shallow gravel substratum. (80%)	3–4.5	Slow	High	Moderate	CH over GP or GM	A–7 over A–1
	Other components: Typic Camborthids and medium textured Natrargids. (20%)						
44 (84,000 Ac.)	Typic Natrargids — fine, montmorillonitic, mesic — 4 to 15 percent slopes, shallow gravel substratum. (40%)	4.5–6	Slow	High	Moderate	CH over GP or GM	A–7 over A–1
	Duric Haplargids — loamy-skeletal, mixed, mesic — 4 to 15 percent slopes. (30%)	3–4.5	Moderate	Low	Low	GC or GM–GC over GM or GP–GM	A–2 over A–1
	Typic Haplargids — loamy-skeletal, mixed, mesic — 4 to 15 percent slopes. (20%)	3–4.5	Moderate	Low	Low	GC or GM–GC over GM or GP–GM	A–2 over A–1
	Other components: Typic Camborthids. (10%)						
45 (15,000 Ac.)	Duric Natrargids — fine, montmorillonitic, mesic — 2 to 8 percent slopes, shallow gravel substratum. (70%)	4.5–6	Very slow	High	Moderate	CH over GP or GM	A–7 over A–1
	Haplic Nadurargids — fine-loamy, mixed, mesic, shallow — 2 to 8 percent slopes. (20%)	4.5–5	Slow	Moderate	High	CL over GP or GM	A–6 or A–7 over A–1
	Other components: Typic Camborthids and Duric Haplargids on alluvial fan side slopes. (10%)						

Erosion hazard		Suitability for sand or gravel (26)	Suitability for roadfill (27)	Septic tank absorption fields (28)	Soil limitations for —			Soil hydrologic group (32)	Land capability subclass		Soil irrigability class (35)
Water (24)	Wind (25)				Sanitary landfills (trench) (29)	Dwellings without basements (30)	Roads and streets (31)		Irrigated (33)	Dry (34)	
Moderate	Severe	Poor sand	Fair	Slight	Slight	Slight	Severe	B	IIe	VIIs	B-2a
Moderately low	Severe	Poor sand	Fair	None to slight	Slight	Slight	Moderate	B	IIIe	VIIs	C-2a
Moderate	Severe	Poor sand	Fair	Slight	Moderate	Slight	Moderate	B	IIIe	VIIs	C-2as
Moderately low	Severe	Poor sand	Fair	Slight	Slight	Slight	Moderate	B	IIIe	VIIs	C-2as
Moderate	Moderate	Fair gravel	Fair	Slight	Severe	Slight	Severe	C	IIIe	VIIs	C-2a
Moderate	Moderate	Fair gravel	Fair	Moderate	Severe	Moderate	Moderate	D	IVe	VIIs	D-2s
Moderate	Moderate	Fair gravel	Fair	Moderate	Severe	Moderate	Moderate	B	IVe	VIIs	C-2s
Moderate	Moderate	Fair gravel	Fair	Moderate	Severe	Moderate	Moderate	B	IVe	VIIs	C-2as
Moderately high	Moderate	Fair gravel	Fair	Slight	Severe	Slight	Severe	D	IVe	VIIs	D-2p in Dixie and Fairview Valleys, D-3p in the Eastgate Valley area
Moderate	Moderate	Fair gravel	Fair	Severe	Severe	Slight	Severe	D	IVe	VIIs	D-2d in Dixie and Fairview Valleys, D-3d in the Eastgate Valley area

Table 2. SOIL INTERPRETATIONS (continued)

Map symbol symbol and acreage (1)	Soils and land types in the map unit and their approximate proportions (2)	Available water-holding capacity (ins.) (18)	Profile perm-eability (19)	Shrink-swell potential (20)	Frost-action potential (21)	Engineering soil classification	
						Unified (22)	AASHO (23)
46 (12,000 Ac.)	Typic Natrargids — clayey-skeletal, montmorillonitic, mesic — 4 to 15 percent slopes. (40%)	3–4	Moderate	Moderate	Low	GC	A–2 or A–6
	Typic Camborthids — loamy-skeletal, mixed, mesic — 4 to 15 percent slopes. (30%)	3–4.5	Moderate	Low	Low	GM over GP or GM	A–2 over A–1
	Typic Haplargids — loamy-skeletal, mixed, mesic — 4 to 15 percent slopes. (20%)	3–4	Moderately rapid	Low	Low	GM or GC over GP–GM or GM	A–2 over A–1
	Other components: Duric Haplargids. (10%)						
47 (1,000 Ac.)	Duric Haplargids — loamy-skeletal, mixed, mesic — 4 to 15 percent slopes, slightly stony. (60%)	2.5–3	Moderate	Low	Low	GM or GC	A–1 or A–2
	Rubble land. (20%)	—	—	—	—	—	—
	Other components: Typic Camborthids. (20%)						
48 (2,000 Ac.)	Haplic Nadurargids — fine-loamy, mixed, mesic, shallow — 2 to 8 percent slopes. (70%)	4.5–5	Slow	Moderate	High	CL over GP or GM	A–6 over A–1
	Duric Natrargids — fine, montmorillonitic, mesic — 2 to 8 percent slopes, shallow gravel substratum. (20%)	4.5–6	Very slow	High	Moderate	CH over GP or GM	A–7 over A–1
	Other components: Typic Camborthids and Duric Haplargids on side slopes. (10%)						
49 (5,000 Ac.)	Typic Camborthids — coarse-loamy, mixed, mesic — 4 to 8 percent slopes. (60%)	4–4.5	Moderately rapid	Low	Moderate	SM	A–2 over A–1 or A–2
	Typic Natrargids — fine-loamy, mixed, mesic — 4 to 15 percent slopes. (30%)	4.5–5	Moderate	Moderate	Moderate	SC over SM	A–6 over A–1 or A–2
	Other components: Typic Torriorthents, Duric Natrargids and strongly sloping Typic Camborthids on channelways side slopes. (10%)						
50 (17,000 Ac.)	Typic Haplargids — loamy-skeletal, mixed, mesic — 4 to 15 percent slopes. (60%)	3–4.5	Moderate	Low	Moderate	GC over GP or GM	A–2 or A–6 over A–1
	Typic Camborthids — loamy-skeletal, mixed, mesic — 4 to 15 percent slopes. (30%)	3–4.5	Moderately rapid	Low	Moderate	GM over GP or GM	A–2 over A–1
	Other components: Typic Torriorthents. (10%)						
51 (6,000 Ac.)	Xerollic Camborthids — loamy-skeletal, mixed, frigid — 4 to 15 percent slopes. (50%)	3–4.5	Moderately rapid	Low	Moderate	GM or GC over GP or GM	A–2 or A–6 over A–1
	Durixerollic Haplargids — loamy-skeletal, mixed, frigid — 4 to 15 percent slopes. (30%)	3–4.5	Moderate	Low	Moderate	GC over GP or GM	A–2 or A–6 over A–1
	Other components: Moderately coarse textured Camborthids, medium textured Haplargids and fine textured Haploxerollic Durargids on alluvial fan foot slopes. (20%)						

Erosion hazard		Suitability for sand or gravel (26)	Suitability for roadfill (27)	Septic tank absorption fields (28)	Soil limitations for —			Soil hydrologic group (32)	Land capability subclass		Soil irrigability class (35)
Water (24)	Wind (25)				Sanitary landfills (trench) (29)	Dwellings without basements (30)	Roads and streets (31)		Irrigated (33)	Dry (34)	
Moderate	Moderate	Unsuited	Fair	Moderate	Severe	Moderate	Moderate	B	IVe	VIIs	C-2as and C-3as in Dixie Valley
Moderate	Moderate	Fair gravel	Fair	Moderate	Severe	Moderate	Moderate	B	IVe	VIIs	C-2as and C-as in Dixie Valley
Moderately low	Moderate	Fair gravel	Fair	Slight	Severe	Moderate	Moderate	B	IVe	VIIs	C-2as and C-3as in Dixie Valley
Moderately low	Moderate	Poor gravel	Fair	Moderate	Severe	Severe	Moderate	B	IVs	VIIs	D-2s
—	—	—	—	—	—	—	—	—	—	VIIIs	E
Moderate	Moderate	Fair gravel	Fair	Severe	Severe	Moderate	Moderate	D	IVe	VIIs	D-3d
Moderately high	Moderate	Fair gravel	Fair	Slight	Severe	Slight	Severe	D	IVe	VIIs	D-3p
Moderately low	Moderate	Poor sand	Fair	Slight	Moderate	Slight	Moderate	B	IIIe	VIIs	C-2as
Moderate	Moderate	Poor sand	Fair	Slight	Moderate	Moderate	Moderate	B	IVe	VIIs	D-2s
Moderate	Moderate	Good gravel	Fair	Moderate	Severe	Moderate	Moderate	B	IVe	VIIs	C-2as
Moderate	Moderate	Good gravel	Fair	Moderate	Severe	Moderate	Moderate	B	IVe	VIIs	C-2as
Moderately low	Slight	Fair gravel	Fair	Moderate	Severe	Moderate	Moderate	B	IVe	VIIs	D-4s
Moderate	Moderate	Fair gravel	Fair	Moderate	Severe	Moderate	Moderate	B	IVe	VIs	D-4s

Table 2. SOIL INTERPRETATIONS (continued)

Map symbol symbol and acreage (1)	Soils and land types in the map unit and their approximate proportions (2)	Available water-holding capacity (ins.) (18)	Profile perm-eability (19)	Shrink-swell potential (20)	Frost-action potential (21)	Engineering soil classification	
						Unified (22)	AASHO (23)
52 (41,000 Ac.)	Haplic Nadurargids — clayey montmorillonitic, mesic, shallow — 2 to 15 percent slopes. (30%)	3–5	Very slow	High	Moderate	CH over GP or GM below hardpan	A–7 over A–1
	Typic Nadurargids — fine, montmorillonitic, mesic — 2 to 15 percent slopes. (30%)	4–6	Very slow	High	Moderate	CH over GP or GM below hardpan	A–7 over A–1
	Duric Natrargids — fine, montmorillonitic, mesic — 2 to 15 percent slopes, gravel substratum. (30%)	6–8	Slow	High	Moderate	CH over GP or GM	A–7 over A–1
	Other components: Typic Camborthids. (10%)						
53 (3,000 Ac.)	Xerollic Durargids — fine, montmorillonitic, frigid, 4 to 15 percent slopes. (70%)	4–6	Very slow	High	Moderate	CH	A–7
	Xerollic Haplargids — fine, montmorillonitic, frigid — 4 to 15 percent slopes. (20%)	6–8	Very slow	High	Moderate	CH	A–7
	Other components: Xerollic Camborthids and Durixerollic Haplargids. (10%)						
54 (62,000 Ac.)	Duric Natrargids — fine, montmorillonitic, mesic — 2 to 15 percent slopes, gravel substratum. (70%)	4.5–6	Slow	High	Moderate	CH over GP or GM	A–7 over A–1
	Typic Natrargids — fine, montmorillonitic, mesic — 2 to 8 percent slopes. (20%)	6–8	Very slow	High	Moderate	CH over CL	A–7
	Other components: Duric Camborthids and Typic Nadurargids on alluvial fan foot slopes. (10%)						
55 (6,000 Ac.)	Duric Natrargids — clayey over sandy or sandy-skeletal, montmorillonitic, mesic — 4 to 8 percent slopes. (70%)	4.5–5	Slow	Moderate	Moderate	SC over SM	A–6 over A–1 or A–2
	Typic Camborthids — coarse-loamy, mixed, mesic — 4 to 8 percent slopes. (20%)	4–4.5	Moderately rapid	Low	Moderate	SM	A–2 over A–1
	Other components: Typic Torriorthents, strongly sloping Typic Camborthids and loamy Typic Natrargids. (10%)						
56 (18,000 Ac.)	Typic Torriorthents — loamy-skeletal, carbonatic, mesic — 2 to 15 percent slopes. (70%)	2.5–3	Moderate	Low	Low	GM over GP or GM	A–1
	Typic Haplargids — loamy-skeletal, carbonatic, mesic, 2 to 15 percent slopes. (30%)	3–4	Moderately rapid	Low	Moderate	GC over GP or GM	A–2 over A–1
57 (11,000 Ac.)	Typic Camborthids — loamy-skeletal, mixed, mesic — 4 to 15 percent slopes. (70%)	3–4.5	Moderately rapid	Low	Low	GM over GP or GM	A–1 or A–2 over A–1
	Duric Haplargids — loamy-skeletal, mixed, mesic — 4 to 15 percent slopes. (20%)	3–4.5	Moderate	Low	Moderate	GC over GP or GM	A–2 over A–1
	Other components: Duric Camborthids and Nadurargids on alluvial fan foot slopes. (10%)						

Erosion hazard		Suitability for sand or gravel (26)	Suitability for roadfill (27)	Septic tank absorption fields (28)	Soil limitations for —			Soil hydrologic group (32)	Land capability subclass		Soil irrigability class (35)
Water (24)	Wind (25)				Sanitary landfills (trench) (29)	Dwellings without basements (30)	Roads and streets (31)		Irrigated (33)	Dry (34)	
Moderately high	Moderate	Fair gravel	Fair	Severe	Severe	Moderate	Severe	D	IVe	VIIs	D-3p
Moderately high	Moderate	Fair gravel	Fair	Severe	Severe	Severe	Severe	D	IVe	VIIs	D-3p
Moderately high	Moderate	Fair gravel	Fair	Moderate	Severe	Moderate	Moderate	D	IVe	VIIs	D-3p
Moderately high	Moderate	Poor gravel	Poor	Severe	Severe	Severe	Severe	D	IVe	VIs	D-4p
Moderately high	Moderate	Poor gravel	Poor	Severe	Severe	Severe	Severe	D	IVe	VIs	D-4p
Moderately high	Moderate	Fair gravel	Fair	Moderate	Severe	Moderate	Severe	D	IVe	VIIs	D-3p
Moderately high	Moderate	Unsuited	Poor	Moderate	Slight	Severe	Severe	D	IVe	VIIs	D-3p
Moderate	Moderate	Poor sand	Fair	Slight	Moderate	Moderate	Moderate	C	IIIe	VIIs	C-2s
Moderately low	Moderate	Poor sand	Fair	Slight	Moderate	Slight	Moderate	B	IIIe	VIIs	C-2as
Moderately low	Moderate	Fair gravel	Good	Moderate	Severe	Moderate	Moderate	B	IVe	VIIs	D-3a
Moderate	Moderate	Fair gravel	Fair	Moderate	Severe	Moderate	Moderate	B	IVe	VIIs	C-3a
Moderately low	Moderate	Fair gravel	Fair	Moderate	Severe	Moderate	Moderate	B	IVe	VIIs	C-3as
Moderate	Moderate	Fair gravel	Fair	Moderate	Severe	Moderate	Moderate	B	IVe	VIIs	C-3as

Table 2. SOIL INTERPRETATIONS (continued)

Map symbol symbol and acreage (1)	Soils and land types in the map unit and their approximate proportions (2)	Available water-holding capacity (ins.) (18)	Profile perm-eability (19)	Shrink-swell potential (20)	Frost-action potential (21)	Engineering soil classification	
						Unified (22)	AASHO (23)
58 (71,000 Ac.)	Duric Natrargids — fine, montmorillonitic, mesic — 4 to 8 percent slopes, shallow gravel substratum. (40%)	4.5–6	Slow	High	Moderate	CL or CH over GP or GM	A–7 over A–1
	Duric Camborthids — loamy-skeletal, mixed, mesic — 4 to 15 percent slopes. (30%)	3–4.5	Moderately rapid	Low	Low	GM over GP or GM	A–2 over A–1
	Duric Haplargids — loamy-skeletal, mixed, mesic — 4 to 15 percent slopes. (20%)	3–4.5	Moderate	Low	Moderate	GC over GP or GM	A–2 or A–6 over A-1
	Other components: Typic Haplargids. (10%)						
59 (4,000 Ac.)	Typic Camborthids — loamy-skeletal, mixed, mesic — 4 to 15 percent slopes. (60%)	3–4.5	Moderately rapid	Low	Low	GM over GP or GM	A–2 over A–1
	Typic Haplargids — loamy-skeletal, mixed, mesic — 4 to 15 percent slopes. (30%)	3–4.5	Moderate	Low	Moderate	GC over GP or GM	A–2 over A–1
	Other components: Rubble land and Typic Torriorthents. (10%)						
60 (4,000 Ac.)	Xerollic Haplargids — fine, montmorillonitic, frigid — 4 to 15 percent slopes. (70%)	6–8	Very slow	High	Moderate	CH	A–7
	Xerollic Durargids — fine, montmorillonitic, frigid — 4 to 15 percent slopes. (20%)	4–6	Very slow	High	Moderate	CH	A–7
	Other components: Xerollic Camborthids and Durixerollic Haplargids. (10%)						
62 (3,000 Ac.)	Duric Natrargids — fine, montmorillonitic, mesic — 4 to 8 percent slopes, shallow gravel substratum, severely dissected. (60%)	4.5–6	Slow	High	Moderate	CL or CH over GP or GM	A–6 or A–7 over A–1
	Typic Natrargids — clayey-skeletal, montmorillonitic, mesic — 15 to 30 percent slopes. (30%)	3–4	Moderate	Moderate	Moderate	GC over GP or GM	A–2 or A–6 over A–1
	Other components: Shallow Typic Nadurargids on convex side slopes of alluvial fan remnants. (10%)						
63 (45,000 Ac.)	Duric Natrargids — fine, montmorillonitic, mesic — 4 to 8 percent slopes, shallow gravel substratum, severely dissected. (70%)	3–4.5	Slow	High	Moderate	CL or CH over GP or GM	A–6 or A–7 over A–1
	Typic Haplargids — loamy-skeletal, mixed, mesic — 4 to 15 percent slopes. (20%)	3–4.5	Moderate	Low	Moderate	GC over GP or GM	A–2 or A–6 over A–1
	Other components: Typic Camborthids on side slopes of alluvial fan remnants. (10%)						

Erosion hazard		Suitability for sand or gravel (26)	Suitability for roadfill (27)	Septic tank absorption fields (28)	Soil limitations for —			Soil hydrologic group (32)	Land capability subclass		Soil irrigability class (35)
Water (24)	Wind (25)				Sanitary landfills (trench) (29)	Dwellings without basements (30)	Roads and streets (31)		Irrigated (33)	Dry (34)	
Moderate	Moderate	Fair gravel	Fair	Slight	Severe	Slight	Severe	C	IIIe	VIIs	C-3s
Moderate	Moderate	Fair gravel	Fair	Moderate	Severe	Moderate	Moderate	B	IVe	VIIs	C-3as
Moderate	Moderate	Fair gravel	Fair	Moderate	Severe	Moderate	Moderate	B	IVe	VIIs	C-3as
Moderate	Moderate	Fair gravel	Fair	Moderate	Severe	Moderate	Moderate	B	IVe	VIIs	D-3s
Moderate	Moderate	Fair gravel	Fair	Moderate	Severe	Moderate	Moderate	B	IVe	VIIs	D-3s
Moderately high	Moderate	Unsuitable	Poor	Severe	Severe	Severe	Severe	D	IVe	VIIs	D-4p
Moderately high	Moderate	Poor gravel under hardpan	Fair	Severe	Severe	Severe	Severe	D	IVe	VIIs	D-4p
Moderate	Moderate	Fair gravel	Fair	Slight	Severe	Moderate	Severe	D	—	VIIs	E
Moderate	Moderate	Fair gravel	Fair	Severe	Severe	Severe	Severe	B	—	VIIe	E
Moderate	Moderate	Fair gravel	Fair	Slight	Severe	Slight	Severe	D	—	VIIs	E
Moderately high	Moderate	Fair gravel	Fair	Moderate	Severe	Moderate	Moderate	B	—	VIIs	E

Table 2. SOIL INTERPRETATIONS (continued)

Map symbol symbol and acreage (1)	Soils and land types in the map unit and their approximate proportions (2)	Available water-holding capacity (ins.) (18)	Profile perm-eability (19)	Shrink-swell potential (20)	Frost-action potential (21)	Engineering soil classification	
						Unified (22)	AASHO (23)
64 (4,000 Ac.)	Typic Haplargids — loamy-skeletal, mixed, mesic — 15 to 30 percent slopes. (90%)	3–4.5	Moderate	Low	Moderate	GC over GP or GM	A–2 over A–1
	Other components: Fine textured Duric Natargids with shallow gravel substratum on flat alluvial fan remnants and Typic Camborthids on remnant side slopes. (10%)						
65 (4,000 Ac.)	Xerollic Durargids — fine, montmorillonitic, frigid — 2 to 15 percent slopes, severely dissected. (60%)	4–6	Very slow	High	Moderate	CL or CH	A–6 or A–7
	Xerollic Haplargids — fine, montmorillonitic, frigid — 2 to 15 percent slopes, severely dissected. (20%)	6–8	Very slow	High	Moderate	CL or CH	A–6 or A–7
	Other components: Gravelly Xerollic Camborthids and Durixerollic Haplargids. (20%)						
66 (4,000 Ac.)	Duric Natrargids — fine, montmorillonitic, mesic — 4 to 8 percent slopes, shallow gravel substratum, severely dissected. (70%)	4.5–6	Slow	High	Moderate	CL or CH over GP or SM	A–6 or A–7 over A–1
	Typic Torriorthents — loamy, mixed (calcareous), mesic, shallow — 4 to 50 percent slopes. (20%)	1–2	Moderate	Moderate	Moderate or high	SC or CL	A–2 or A–6
	Other components: Fine textured shallow Typic Haplargids on interfluve side slopes below dissected alluvial fan. (10%)						
67 (1,500 Ac.)	Typic Natrargids — clayey-skeletal, montmorillonitic, mesic — 15 to 30 percent slopes. (60%)	3–4	Moderate	Moderate	Moderate	GC over GM	A–2 or A–6 over A–1
	Duric Natrargids — fine, montmorillonitic, mesic — 4 to 8 percent slopes, shallow gravel substratum, severely dissected. (20%)	4.5–6	Slow	High	Moderate	CL or CH over GP or GM	A–6 or A–7 over A–1
	Typic Nadurargids — clayey-skeletal, montmorillonitic, mesic, shallow, 8 to 15 percent slopes. (20%)	1–2	Slow	Moderate	Moderate	GC over CM below hardpan	A–1 or A–2 over A–1 below hardpan
70 (2,500 Ac.)	Lithic Xerollic Haplargids — clayey, montmorillonitic, frigid — 2 to 30 percent slopes, stony. (60%)	1–2	Slow	High	Moderate	CL or CH	A–7
	Xerollic Haplargids — fine-loamy, mixed, frigid — 4 to 30 percent slopes, stony. (20%)	3–6	Moderate	Moderate	Moderate	CL or ML	A–6
	Other components: Rock outcrop and the medium textured Fluventic Haploxerolls in depressions. (20%)						

Erosion hazard		Suitability for sand or gravel (26)	Suitability for roadfill (27)	Septic tank absorption fields (28)	Soil limitations for —			Soil hydrologic group (32)	Land capability subclass		Soil irrigability class (35)
Water (24)	Wind (25)				Sanitary landfills (trench) (29)	Dwellings without basements (30)	Roads and streets (31)		Irrigated (33)	Dry (34)	
Moderately high	Moderate	Fair gravel	Fair	Severe	Severe	Severe	Severe	B	—	VIIe	E
Moderate	Moderate	Poor gravel	Fair	Severe	Severe	Severe	Severe	D	—	VIs	E
Moderate	Moderate	Unsuitable	Poor	Severe	Severe	Severe	Severe	D	—	VIs	E
Moderate	Moderate	Good gravel	Fair	Slight	Severe	Slight	Severe	D	—	VIIs	E
Moderately high	Slight	Unsuitable	Poor	Severe	Severe	Severe	Severe	D	—	VIIe	E
Moderately high	Moderate	Fair gravel	Fair	Severe	Severe	Severe	Severe	B	—	VIIe	E
Moderate	Moderate	Fair gravel	Fair	Slight	Severe	Moderate	Severe	D	—	VIIs	E
Moderately high	Moderate	Fair	Fair	Severe	Severe	Moderate	Moderate	D	—	VIIs	E
Moderate	Slight	Unsuitable	Poor	Severe	Severe	Severe	Severe	D	—	VIIe	E
Moderate	Slight	Unsuitable	Poor	Severe	Severe	Severe	Severe	C	—	VIIe	E

Table 2. SOIL INTERPRETATIONS (continued)

Map symbol symbol and acreage (1)	Soils and land types in the map unit and their approximate proportions (2)	Available water-holding capacity (ins.) (18)	Profile perm-eability (19)	Shrink-swell potential (20)	Frost-action potential (21)	Engineering soil classification	
						Unified (22)	AASHO (23)
71 (4,000 Ac.)	Typic Torriorthents — loamy, mixed, nonacid, mesic, shallow — 4 to 30 percent slopes. (50%)	<1	Moderately rapid	Low	Low	SM	A−1 or A−2
	Typic Haplargids — loamy, mixed, mesic, shallow, 2 to 15 percent slopes. (30%)	1−2	Moderate	Moderate	Moderate	SC	A−2 or A−6
	Other components: Rock outcrop and deeper Typic Haplargids on colluvial foot slopes and rock outcrop. (20%)						
72 (1,500 Ac.)	Typic Camborthids — loamy-skeletal, mixed, mesic — 15 to 30 percent slopes. (70%)	3−4.5	Moderately rapid	Low	Low	GM over GP or GM	A−1
	Other components: Duric Natrargids with shallow gravel substrata on alluvial fan remnants and very shallow Typic Torriorthents and shallow Typic Haplargids on remnant side slopes. (30%)						
73 (4,000 Ac.)	Typic Natrargids — fine, montmorillonitic, mesic — 8 to 30 percent slopes. (70%)	6−9	Very slow	High	Moderate	CH	A−7
	Other components: Typic Camborthids and Typic Haplargids on pediment side slopes. (30%)						
74 (1,500 Ac.)	Duric Natrargids — fine-loamy, mixed, mesic — shallow gravel substratum. (60%)	5−6	Moderate	Moderate	Moderate	CL over GP or GM	A−6 or A−7 over A−1
	Haplic Nadurargids — fine-loamy, mixed, mesic, shallow — 2 to 8 percent slopes. (30%)	2−4	Moderate	Moderate	Moderate	CL over GP or GM below hardpan	A−6 over A−1 below hardpan
	Other components: Duric Camborthids on moderately steep (15 to 30 percent slopes. (10%)						
75 (500 Ac.)	Duric Natrargids — loamy-skeletal, mixed, mesic — 8 to 50 percent slopes, eroded. (80%)	4−4.5	Moderate	Moderate	Moderate	SC or CL over GP or GM	A−6 over A−1
	Other components: Camborthids. (20%)						
76 (1,200 Ac.)	Duric Haplargids — loamy-skeletal, mixed, mesic — 15 to 30 percent slopes, slightly stony. (60%)	3−4	Slow	Moderate	Moderate	GC or CL over GP or GM	A−2 or A−6 over A−1
	Haplic Nadurargids — clayey, montmorillonitic, mesic, shallow — 2 to 15 percent slopes. (30%)	3−4	Slow	High	Moderate	CL over GP or GM below hardpan	A−6 or A−7 over A−1 below hardpan
	Other components: Duric Natrargids with gravel substratum on hill summit slopes. (10%)						
77 (1,100 Ac.)	Duric Camborthids — coarse-loamy, mixed, mesic — 4 to 15 percent slopes. (90%)	4−4.5	Moderately rapid	Low	Moderate	SC over SM	A−2
	Other components: Typic Torripsamments. (10%)						

Erosion hazard		Suitability for sand or gravel (26)	Suitability for roadfill (27)	Septic tank absorption fields (28)	Soil limitations for —			Soil hydrologic group (32)	Land capability subclass		Soil irrigability class (35)
Water (24)	Wind (25)				Sanitary landfills (trench) (29)	Dwellings without basements (30)	Roads and streets (31)		Irrigated (33)	Dry (34)	
High	Moderate	Unsuitable	Poor	Severe	Severe	Severe	Severe	D	—	VIIe	E
Moderately high	Moderate	Unsuitable	Poor	Severe	Severe	Moderate	Moderate	D	—	VIIs	E
Moderately high	Moderate	Good gravel	Fair	Severe	Severe	Severe	Severe	B	—	VIIe	E
Moderately high	Slight	Unsuitable	Poor	Severe	Severe	Severe	Severe	D	—	VIe	E
Moderately high	Moderate	Fair gravel	Fair	Severe	Severe	Severe	Severe	B	—	VIIe	E
Moderate	Moderate	Fair gravel	Fair	Severe	Severe	Moderate	Moderate	D	IVe	VIIs	D-3a
Moderately high	Slight	Fair gravel	Poor	Severe	Severe	Severe	Severe	B	—	VIIe	E
Moderate	Slight	Fair gravel	Fair	Severe	Severe	Severe	Severe	B	—	VIIe	E
Moderately high	Moderate	Fair gravel	Fair	Severe	Severe	Moderate	Severe	D	IVe	VIIs	D-3s
Moderately low	Severe	Poor sand	Fair	Moderate	Moderate	Moderate	Moderate	A	IVe	VIIs	D-2s

Table 2. SOIL INTERPRETATIONS (continued)

Map symbol and acreage (1)	Soils and land types in the map unit and their approximate proportions (2)	Available water-holding capacity (ins.) (18)	Profile perm-eability (19)	Shrink-swell potential (20)	Frost-action potential (21)	Engineering soil classification	
						Unified (22)	AASHO (23)
78 (300 Ac.)	Duric Camborthids — coarse-loamy, mixed, mesic — 8 to 30 percent slopes, slightly stony. (85%) Other components: Duric Natrargids and Haplic Nadurargids on summit slopes. (15%)	3–4.5	Moderately rapid	Moderate	Moderate	SM over SM or GM	A–2 over A–1
79 (4,000 Ac.)	Lithic Haplargids — clayey-skeletal, montmorillonitic, mesic — 4 to 30 percent slopes, slightly stony. (90%) Other components: Rock outcrop and slightly stony Duric Lithic Haplargids. (10%)	0.5–2	Slow	Moderate	Moderate	GC	A–2 or A–6
80 (13,000 Ac.)	Duric Lithic Haplargids — clayey-skeletal, montmorillonitic, mesic — 4 to 30 percent slopes, slightly stony. (80%) Other components: Rock outcrop, rubble land and shallow Haplic Durargids on stony shoulder slopes and slightly stony foot slopes. (20%)	0.5–2	Slow	Moderate	Moderate	GC	A–2 or A–6
81 (8,000 Ac.)	Duric Lithic Haplargids — clayey-skeletal, montmorillonitic, mesic — 4 to 30 percent slopes, slightly stony. (60%)	0.5–2	Slow	Moderate	Moderate	GC	A–2 or A–6
	Haplic Durargids — clayey-skeletal, montmorillonitic, mesic, shallow, 4 to 15 percent slopes, stony. (30%)	1–3	Slow	Moderate	Moderate	GC	A–2 or A–6
	Other components: Rock outcrop and rubble land. (10%)						
82 (12,000 Ac.)	Xerollic Haplargids — fine, montmorillonitic, frigid — 4 to 30 percent slopes, slightly stony. (70%)	6–9	Very slow	High	Moderate	CL or CH	A–7
	Haploxerollic Durargids — fine, montmorillonitic, frigid — 4 to 30 percent slopes, slightly stony. (20%)	3–6	Very slow	High	Moderate	CL or CH	A–7
	Other components: Rock outcrop and Fluventic Haploxerolls in depressions. (10%)						
83 (12,000 Ac.)	Typic Natrargids — fine, montmorillonitic, mesic — 8 to 30 percent slopes. (60%)	3–6	Slow	High	Moderate	CL or CH	A–6 or A–7
	Typic Camborthids — loamy, mixed, mesic, shallow — 15 to 30 percent slopes. (20%)	0.5–2	Moderate	Low	Moderate	SM	A–2
	Other components: Duric Natrargids with shallow gravel substratum and Durargids on alluvial fan remnants. (20%)						

Erosion hazard		Suitability for sand or gravel (26)	Suitability for roadfill (27)	Septic tank absorption fields (28)	Soil limitations for —			Soil hydrologic group (32)	Land capability subclass		Soil irrigability class (35)
Water (24)	Wind (25)				Sanitary landfills (trench) (29)	Dwellings without basements (30)	Roads and streets (31)		Irrigated (33)	Dry (34)	
Moderate	Moderate	Poor sand	Fair	Severe	Severe	Severe	Severe	B	—	VIIe	E
Moderate	Slight	Unsuitable	Poor	Severe	Severe	Severe	Severe	D	—	VIIe	E
Moderate	Slight	Unsuitable	Poor	Severe	Severe	Severe	Severe	D	—	VIIe	E
Moderate	Slight	Unsuitable	Poor	Severe	Severe	Severe	Severe	D	—	VIIe	E
Moderately low	Slight	Unsuitable	Poor	Severe	Severe	Severe	Severe	D	—	VIIe	E
Moderately high	Slight	Unsuitable	Poor	Severe	Severe	Severe	Severe	D	—	VIIe	E
Moderately high	Slight	Unsuitable	Poor	Severe	Severe	Severe	Severe	C	—	VIIe	E
High	Moderate	Unsuitable	Poor	Severe	Severe	Severe	Severe	D	—	VIIe	E
Moderately high	Moderate	Unsuitable	Poor	Severe	Severe	Severe	Severe	C	—	VIIe	E

Table 2. SOIL INTERPRETATIONS (continued)

Map symbol symbol and acreage (1)	Soils and land types in the map unit and their approximate proportions (2)	Available water-holding capacity (ins.) (18)	Profile perm-eability (19)	Shrink-swell potential (20)	Frost-action potential (21)	Engineering soil classification	
						Unified (22)	AASHO (23)
84 (3,000 Ac.)	Typic Camborthids — coarse-loamy, mixed, mesic — 15 to 30 percent slopes. (70%) Other components: Shallow Typic Camborthids and shallow Argids on strongly to gently sloping foot slopes. (30%)	2–4.5	Moderately rapid	Low	Moderate	SM	A–2
85 (6,000 Ac.)	Typic Haplargids — loamy, mixed, mesic, shallow — 15 to 30. percent slopes. (70%) Typic Camborthids — coarse-loamy, mixed, mesic — 8 to 15 percent slopes. (15%) Other components: Rock outcrop on hills and fine textured Durargids on alluvial fan remnants. (15%)	1.5–2.5 3–4.5	Moderate Moderately rapid	Moderate Low	Moderate Moderate	CL or SC SM	A–6 A–2 or A–4
86 (600 Ac.)	Typic Torripsamments — mixed, mesic, 15 to 50 percent slopes. (100%)	3–3.5	Rapid	Low	Low	SP	A–3
87 (6,000 Ac.)	Lithic Haplargids — clayey-skeletal, montmorillonitic, mesic — 4 to 30 percent slopes, slightly stony. (60%) Lithic Torriorthents — loamy, mixed (calcareous), mesic — 4 to 50 percent slopes, very shallow. (30%) Other components: Rock outcrop, Typic Camborthids and Duric Haplargids. (10%)	0.5–2 0.5–1.5	Slow Moderate	Moderate Moderate	Moderate Moderate	GC SC, ML or CL	A–2 or A–6 A–4 or A–6
88 (4,000 Ac.)	Typic Torriorthents — loamy, mixed (calcareous), mesic, shallow — 4 to 50 percent slopes. (40%) Typic Natrargids — clayey, montmorillonitic, mesic, shallow — 4 to 15 percent slopes. (40%) Other components: Rock outcrop and shallow Typic Camborthids. (20%)	1–2 1.5–2.5	Moderate Slow	Moderate High	Moderate Moderate	SC or CL CL or CH	A–4 or A–6 A–6 or A–7
89 (47,000 Ac.)	Typic Torriorthents — loamy, mixed (calcareous), mesic, shallow — 4 to 50 percent slopes. (30%) Typic Natrargids — fine, montmorillonitic, mesic — 8 to 30 percent slopes. (30%) Duric Natrargids — fine, montmorillonitic, mesic — 4 to 8 percent slopes, shallow gravel substratum. (20%) Other components: Typic Camborthids and shallow Argids on hills. (20%)	1–2 3–6 4.5–6	Moderate Slow Slow	Moderate High High	Moderate Moderate Moderate	SC or CL SC, CL or CH CL or CH over GP or GM	A–4 or A–6 A–6 or A–7 A–6 or A–7 over A–1
90 (22,000 Ac.)	Typic Torriorthents — loamy, mixed, nonacid, mesic, shallow — 30 to 70 percent slopes. (80%) Rock outcrop. (10%) Other components: Moderately fine textured Typic Haplargids and moderately coarse textured Typic Camborthids on colluvial foot slopes. (10%)	0.5–1	Moderate	Low	Low	SM	A–1 or A–2

Erosion hazard		Suitability for sand or gravel (26)	Suitability for roadfill (27)	Septic tank absorption fields (28)	Soil limitations for —			Soil hydrologic group (32)	Land capability subclass		Soil irrigability class (35)
Water (24)	Wind (25)				Sanitary landfills (trench) (29)	Dwellings without basements (30)	Roads and streets (31)		Irrigated (33)	Dry (34)	
Moderate	Moderate or severe	Unsuitable	Poor	Severe	Severe	Severe	Severe	C	—	VIIe	E
Moderately high	Moderate	Unsuitable	Poor	Severe	Severe	Severe	Severe	D	—	VIIe	E
Moderately low	Moderate or severe	Unsuitable	Poor	Severe	Severe	Moderate	Moderate	C	—	VIIs	E
Moderately low	Severe	Good sand	Fair	Severe	Severe	Severe	Severe	A	—	VIIe	E
Moderate	Slight	Unsuitable	Poor	Severe	Severe	Severe	Severe	D	—	VIIe	E
High	Slight	Unsuitable	Poor	Severe	Severe	Severe	Severe	D	—	VIIe	E
Moderately high	Slight	Unsuitable	Poor	Severe	Severe	Severe	Severe	D	—	VIIe	E
Moderately high	Slight	Unsuitable	Poor	Severe	Severe	Moderate	Moderate	D	—	VIIs	E
Moderately high	Slight	Unsuitable	Poor	Severe	Severe	Severe	Severe	D	—	VIIe	E
High	Moderate	Unsuitable	Poor	Severe	Severe	Severe	Severe	D	—	VIIe	E
Moderate	Slight or moderate	Fair gravel	Fair	Slight	Severe	Slight	Severe	D	—	VIIs	E
High	Moderate	Unsuitable	Poor	Severe	Severe	Severe	Severe	D	—	VIIs	E

Table 2. SOIL INTERPRETATIONS (continued)

Map symbol symbol and acreage (1)	Soils and land types in the map unit and their approximate proportions (2)	Available water-holding capacity (ins.) (18)	Profile perm-eability (19)	Shrink-swell potential (20)	Frost-action potential (21)	Engineering soil classification	
						Unified (22)	AASHO (23)
91 (3,000 Ac.)	Xeric Torriorthents — loamy, mixed, nonacid, frigid, shallow — 15 to 70 percent slopes. (75%)	0.5–2	Moderate	Low	Low	SM	A–1 or A–2
	Ultic Haploxerolls — coarse-loamy, mixed, frigid—30 to 70 percent slopes. (20%)	3–4	Moderately rapid	Low	Low	SM	A–1 or A–2
	Other components: Rock outcrop. (5%)						
92 (19,000 Ac.)	Lithic Ruptic-Entic Haplargids — clayey-skeletal, carbonatic, mesic, 15 to 70 percent slopes, slightly stony. (40%)	0.5–2	Moderate	Moderate	Moderate	GC	A–2 or A–6
	Typic Torriorthents — loamy-skeletal, carbonatic, mesic — 30 to 70 percent slopes, slightly stony. (30%)	3–4.5	Moderately rapid	Low	Moderate	GM	A–1 or A–2
	Other components: Rock outcrop and rubble land. (30%)						
93 (6,000 Ac.)	Lithic Argixerolls — clayey-skeletal, carbonatic, frigid — 30 to 70 percent slopes, slightly stony. (40%)	1–2	Moderate	Moderate	Moderate	GC	A–2 or A–6
	Xerollic Calciorthids — loamy-skeletal, carbonatic, frigid — 30 to 70 percent slopes, slightly stony. (30%)	3–4.5	Moderately rapid	Low	Moderate	GC	A–2 or A–6
	Lithic Xerollic Ruptic-Entic Haplargids — clayey-skeletal, carbonatic, frigid — 15 to 50 percent slopes, slightly stony. (20%)	0.5–2	Moderate	Moderate	Moderate	GC	A–2 or A–6
	Other components: Rock outcrop. (10%)						
94 (43,000 Ac.)	Lithic Haplargids — clayey-skeletal, montmorillonitic, mesic, 30 to 70 percent slopes, slightly stony. (30%)	0.5–2	Moderate	Moderate	Moderate	GC	A–2 or A–6
	Lithic Ruptic-Entic Haplargids — clayey-skeletal, carbonatic, mesic — 15 to 70 percent slopes, slightly stony. (20%)	0.5–2	Moderate	Moderate	Moderate	GC	A–2 or A–6
	Typic Torriorthents — loamy-skeletal, carbonatic, mesic — 30 to 70 percent slopes, slightly stony. (20%)	3–4.5	Moderately rapid	Low	Moderate	GM	A–1 or A–2
	Other components: Lithic Torriorthents on mountains ummit and convex side slopes, rock outcrop, rubble land and Typic Camborthids and Typic Haplargids on mountain side slopes and foot slopes. (30%)						
95 (40,000 Ac.)	Lithic Argixerolls — clayey-skeletal, montmorillonitic, frigid — 15 to 70 percent slopes, slightly stony. (50%)	0.5–2	Moderate	Moderate	Moderate	GC	A–2 or A–6
	Xerollic Calciorthids — loamy-skeletal, carbonatic, frigid — 30 to 70 percent slopes, slightly stony. (20%)	3–4.5	Moderately rapid	Low	Moderate	GC	A–2 or A–6
	Other components: Lithic Xerollic Ruptic-Entic Haplargids and Lithic Xerollic Haplargids on mountain summit and side slopes, rock outcrop, rubble land (scree), and Xerollic Camborthids, Xerollic Haplargids and Pachic Haploxerolls on mountain side slopes and foot slopes. (30%)						

Erosion hazard		Suitability for sand or gravel (26)	Suitability for roadfill (27)	Septic tank absorption fields (28)	Soil limitations for —			Soil hydrologic group (32)	Land capability subclass		Soil irrigability class (35)
Water (24)	Wind (25)				Sanitary landfills (trench) (29)	Dwellings without basements (30)	Roads and streets (31)		Irrigated (33)	Dry (34)	
High	Moderate	Unsuitable	Poor	Severe	Severe	Severe	Severe	D	—	VIIe	E
Moderately high	Moderate	Unsuitable	Poor	Severe	Severe	Severe	Severe	B	—	VIIe	E
Moderate	Slight	Unsuitable	Poor	Severe	Severe	Severe	Severe	D	—	VIIe	E
Moderately low	Slight	Unsuitable	Poor	Severe	Severe	Severe	Severe	B	—	VIIe	E
Moderate	Slight	Unsuitable	Poor	Severe	Severe	Severe	Severe	C	—	VIIe	E
Moderate	Slight	Unsuitable	Poor	Severe	Severe	Severe	Severe	B	—	VIIe	E
Moderate	Slight	Unsuitable	Poor	Severe	Severe	Severe	Severe	D	—	VIIe	E
Moderate	Slight	Unsuitable	Poor	Severe	Severe	Severe	Severe	D	—	VIIe	E
Moderate	Slight	Unsuitable	Poor	Severe	Severe	Severe	Severe	D	—	VIIe	E
Moderately low	Slight	Poor gravel	Poor	Severe	Severe	Severe	Severe	B	—	VIIe	E
Moderate	Slight	Unsuitable	Poor	Severe	Severe	Severe	Severe	D	—	VIIe	E
Moderate	Slight	Unsuitable	Poor	Severe	Severe	Severe	Severe	B	—	VIIe	E

Table 2. SOIL INTERPRETATIONS (continued)

Map symbol symbol and acreage (1)	Soils and land types in the map unit and their approximate proportions (2)	Available water-holding capacity (ins.) (18)	Profile perm-eability (19)	Shrink-swell potential (20)	Frost-action potential (21)	Engineering soil classification	
						Unified (22)	AASHO (23)
96 (313,000 Ac.)	Lithic Haplargids — clayey-skeletal, montmorillonitic, mesic — 30 to 70 percent slopes, slightly stony. (60%)	0.5–2	Moderate	Moderate	Moderate	GC	A–2 or A–6
	Lithic Torriorthents — loamy-skeletal, mixed (calcareous), mesic — 8 to 70 percent slopes, very shallow, slightly stony. (10%)	<1	Moderately rapid	Low	Moderate	GM	A–2 or A–4
	Other components: Rock outcrop, rubble land (scree), and Typic Camborthids and Typic Natrargids on mountain side slopes. (30%)						
97 (196,000 Ac.)	Lithic Argixerolls — clayey-skeletal, montmorillonitic, frigid — 15 to 70 percent slopes, slightly stony. (60%)	0.5–2	Moderate	Moderate	Moderate	GC	A–2 or A–6
	Lithic Xerollic Haplargids — loamy-skeletal, mixed, frigid — 15 to 50 percent slopes, slightly stony. (10%)	0.5–1	Moderate	Moderate	Moderate	GC	A–2 or A–6
	Other components: Rock outcrop, rubble land and Xerollic Camborthids, Xerollic Haplargids, and Pachic Haploxerolls on mountain side slopes and foot slopes. (30%)						
98 (18,000 Ac.)	Argic Lithic Cryoborolls — clayey-skeletal, montmorillonitic — 30 to 70 percent slopes, slightly stony. (60%)	0.5–2	Moderate	Moderate	Moderate	GC	A–2 or A–6
	Lithic Xerollic Haplargids — loamy-skeletal, mixed, frigid — 15 to 50 percent slopes, slightly stony. (10%)	0.5–1	Moderate	Moderate	Moderate	GC	A–2 or A–6
	Pachic Cryobrolls — fine-loamy, mixed, 15 to 50 percent slopes. (10%)	6–9	Moderate	Moderate	Moderate	ML	A–4
	Other components: Rock outcrop, rubble land (scree), Lithic Cryorthents on lee side of ridges, and stony Typic Cryoborolls and Argic Cryoborolls on mountain side slopes and foot slopes. (20%)						
99 (8,000 Ac.)	Typic Natrargids — fine, montmorillonitic, mesic — 30 to 50 percent slopes. (50%)	4.5–6	Slow	High	Moderate	CL or CH over GM or GC	A–6 or A–7 over A–1 or A–2
	Duric Natrargids — fine-loamy, mixed, mesic — 30 to 50 percent slopes. (20%)	4.5–6	Moderate	Moderate	Moderate	CL or CH over GM or GC	A–4, A–6 or A–7 over A–1 or A–2
	Other components: Shallow Typic and Duric Natrargids on side slopes and concave foot slopes and shallow Durargids on shoulders of hills. (30%)						

Erosion hazard		Suitability for sand or gravel (26)	Suitability for roadfill (27)	Septic tank absorption fields (28)	Soil limitations for —			Soil hydrologic group (32)	Land capability subclass		Soil irrigability class (35)
Water (24)	Wind (25)				Sanitary landfills (trench) (29)	Dwellings without basements (30)	Roads and streets (31)		Irrigated (33)	Dry (34)	
Moderate	Slight	Unsuitable	Poor	Severe	Severe	Severe	Severe	D	—	VIIe	E
Moderate	Slight	Unsuitable	Poor	Severe	Severe	Severe	Severe	D	—	VIIe	E
Moderate	Slight	Unsuitable	Poor	Severe	Severe	Severe	Severe	D	—	VIIe	E
Moderately high	Slight	Unsuitable	Poor	Severe	Severe	Severe	Severe	D	—	VIIe	E
Moderate	Slight	Unsuitable	Poor	Severe	Severe	Severe	Severe	D	—	VIIe	E
Moderately high	Slight	Unsuitable	Poor	Severe	Severe	Severe	Severe	D	—	VIIe	E
Moderately high	Moderate	Unsuitable or poor gravel	Poor	Severe	Severe	Severe	Severe	B	—	VIIe	E
Moderately high	Moderate	Unsuitable	Poor	Severe	Severe	Severe	Severe	D	—	VIIe	E
Moderately high	Moderate	Unsuitable	Poor	Severe	Severe	Severe	Severe	C	—	VIIe	E

Table 3. ACREAGES OF IRRIGABLE AND NONIRRIGABLE SOILS

Soil Class	Hydrographic Areas							
	124 Fairview Valley	125 Stingaree Valley	126 Cowkick Valley	127 Eastgate Valley	128 Dixie Valley	130 Pleasant Valley	132 Jersey Valley	Totals for Survey Area
				acres				
B-2a	12,500	2,500			74,000		2,000	91,000
B-2p					21,500		2,500	24,000
B-3a	1,500	900	1,500	6,000	1,500	2,000	900	14,300
B-3p						7,000		7,000
B	14,000	3,400	1,500	6,000	97,000	9,000	5,400	136,300
C-2a	19,000				30,000			49,000
C-2as	25,000				103,000			128,000
C-2wx					9,000			9,000
C-2x					4,000			4,000
C-3a	1,500							1,500
C-3as	23,000	8,000	13,000	6,000	27,000		3,500	80,500
C	68,500	8,000	13,000	6,000	173,000		3,500	272,000
D-2p	3,000				6,000			9,000
D-2s	900				7,200			8,100
D-2wx					49,000			49,000
D-2x					9,000			9,000
D-3a		200			21,800			22,000
D-3d			2,000					2,000
D-3p	200		4,800	23,000	11,000	58,000	14,000	111,000
D-4p				3,000		4,000		7,000
D-4s	2,000	1,000			1,800		1,200	6,000
D	6,100	1,200	6,800	26,000	105,800	62,000	15,200	223,100
E	93,900	14,900	49,200	100,000	458,200	111,500	66,900	894,600

Table 4. KINDS OF SOILS MAPPED IN THE DIXIE VALLEY RECONNAISSANCE AREA

Order	Sub-order	Great Group	Subgroup	Family	Phases
Aridisols	Argids	Durargids	Haplic Durargids	clayey-skeletal, montmorillonitic, mesic, shallow	4–15% slopes, stony
			Haploxerollic Durargids	fine, montmorillonitic, frigid	4–30% slopes, slightly stony
			Xerollic Durargids	fine, montmorillonitic, frigid	2–15% slopes, severely dissected 4–15% slopes
		Haplargids	Typic Haplargids	loamy-skeletal, carbonatic, mesic	2–15% slopes
				loamy-skeletal, mixed, mesic	4–15% slopes 15–30% slopes
				loamy, mixed, mesic, shallow	2–15% slopes 15–30% slopes
			Duric Haplargids	loamy-skeletal, mixed, mesic	4–15% slopes 4–15% slopes, slightly stony 15–30% slopes, slightly stony
			Durixerollic Haplargids	loamy-skeletal, mixed, frigid	4–15% slopes
			Duric Lithic Haplargids	clayey-skeletal, montmorillonitic, mesic	4–30% slopes, slightly stony
			Lithic Haplargids	clayey-skeletal, montmorillonitic, mesic	4–30% slopes, slightly stony 30–30% slopes, slightly stony
			Lithic Ruptic-Entic Haplargids	clayey-skeletal, carbonatic, mesic	15–70% slopes, slightly stony
			Lithic Xerollic Haplargids	loamy-skeletal, mixed, frigid	15–50% slopes, slightly stony
				clayey, montmorillonitic, frigid	2–30% slopes, stony
			Lithic Xerollic Ruptic-Entic Haplargids	clayey-skeletal, carbonatic, frigid	15–50% slopes, slightly stony
			Xerollic Haplargids	fine-loamy, mixed, frigid	4–30% slopes, stony
				fine, montmorillonitic, frigid	2–15% slopes, severely dissected 4–15% slopes 4–30% slopes, slightly stony

Table 4. KINDS OF SOILS MAPPED IN THE DIXIE VALLEY RECONNAISSANCE AREA (continued)

Order	Sub-order	Great Group	Subgroup	Family	Phases
		Nadur-argids	Typic Nadurargids	clayey-skeletal, montmorillonitic, mesic, shallow	8–15% slopes
				fine, montmorillonitic, mesic	2–15% slopes
			Haplic Nadurargids	(fine-)loamy, mixed, mesic, shallow	2–8% slopes
				clayey, montmorillonitic, mesic, shallow	2–15% slopes
		Natrarg-ids	Typic Natrargids	clayey-skeletal, montmorillonitic, mesic	4–15% slopes 15–30% slopes
				coarse-loamy, mixed, mesic	2–4% slopes 4–8% slopes
				fine-loamy over sandy or sandy-skeletal, mixed, mesic	0–15% slopes, saline
				fine-loamy, mixed, mesic	0–2% slopes 0–2% slopes, occasionally flooded 0–2% slopes, saline, occasionally flooded 0–4% slopes, saline, gravel substratum 2–4% slopes 2–4% slopes, saline 4–15% slopes
				fine-silty, mixed, mesic	0–2% slopes, saline, occasionally flooded
				clayey, montmorillonitic, mesic, shallow	4–15% slopes
				fine, montmorillonitic, mesic	0–2% slopes, occasionally flooded 0–2% slopes, saline, occasionally flooded 2–4% slopes, saline 2–8% slopes 4–15% slopes, shallow gravel substratum 8–30% slopes 30–50% slopes
			Duric Natrargids	loamy-skeletal, mixed, mesic	8–50% slopes, eroded
				fine-loamy, mixed, mesic	0–4% slopes 4–30% slopes, shallow gravel substratum 30–50% slopes
				clayey over sandy or sandy-skeletal, montmorillonitic, mesic	4–8% slopes
				fine, montmorillonitic, mesic	2–4% slopes, saline, shallow gravel substratum 2–8% slopes, shallow gravel substratum 4–8% slopes, shallow gravel substratum 4–8% slopes, shallow gravel substratum severely dissected 2–15% slopes, gravel substratum
	Orthids	Calci-orthids	Xerollic Calciorthids	loamy-skeletal, carbonatic, frigid	30–70% slopes, slightly stony
		Camb-orthids	Typic Camborthids	loamy-skeletal, mixed, mesic	4–15% slopes 15–30% slopes
				loamy, mixed, mesic, shallow	15–30% slopes
				coarse-loamy, mixed, mesic	0–4% slopes 4–8% slopes 8–15% slopes 15–30% slopes
			Duric Camborthids	loamy-skeletal, mixed, mesic	4–15% slopes
				coarse-loamy, mixed, mesic	0–2% slopes 2–4% slopes 4–15% slopes 8–30% slopes, slightly stony
			Xerollic Camborthids	loamy-skeletal, mixed, frigid	4–15% slopes
		Salorth-ids	Typic Salorthids	fine-silty, mixed, mesic	0–2% slopes, occasionally flooded
				fine, montmorillonitic, mesic	0–2% slopes, occasionally flooded

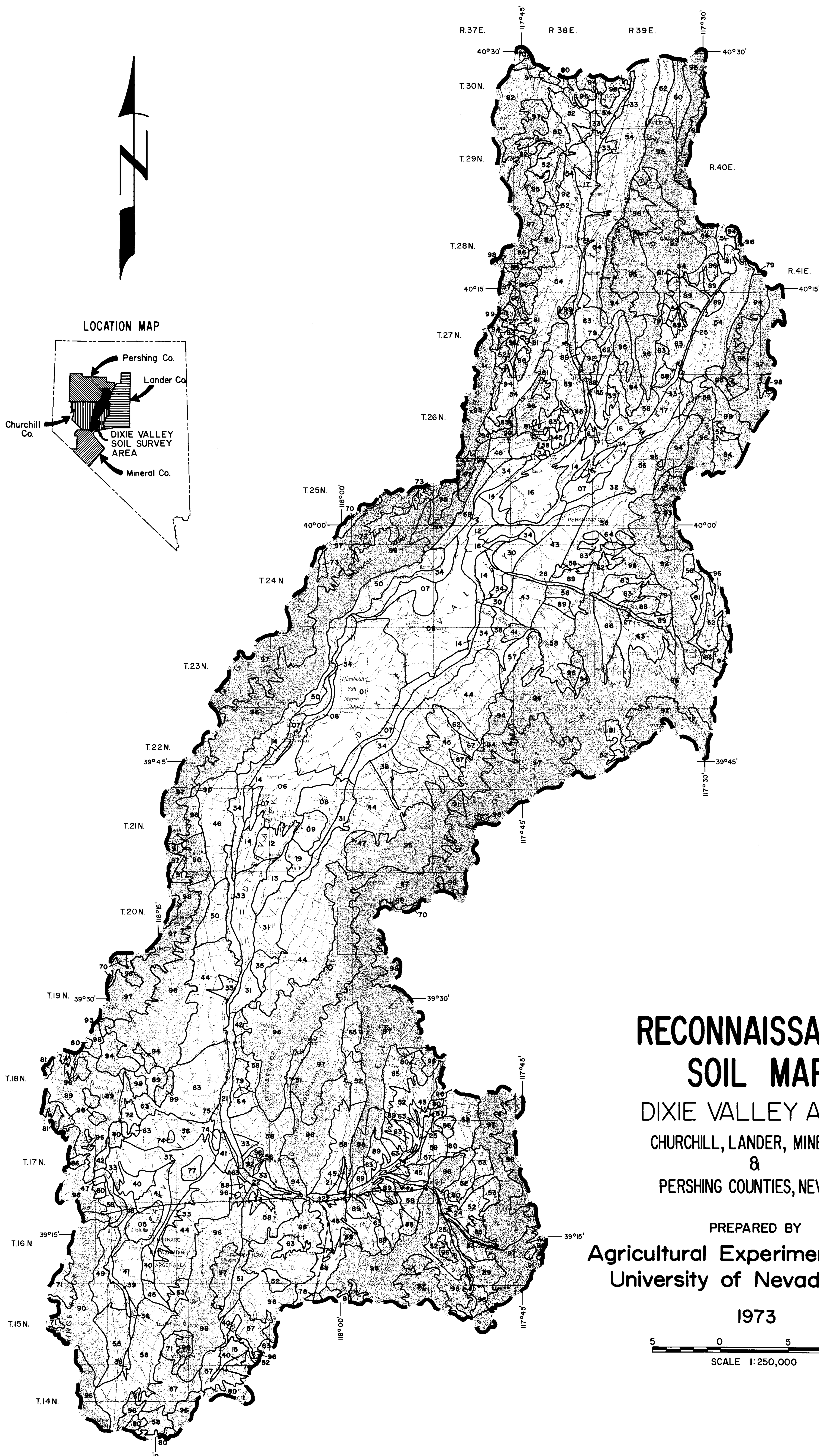
Table 4. KINDS OF SOILS MAPPED IN THE DIXIE VALLEY RECONNAISSANCE AREA (continued)

Order	Sub-order	Great Group	Subgroup	Family	Phases
Entisols	Orthents	Torriorth-ents	Typic Torriorthents	loamy-skeletal, carbonatic, mesic	2–15% slopes 30–70% slopes, slightly stony
				loamy, mixed, nonacid, mesic, shallow	4–30% slopes 30–70% slopes
				loamy, mixed (calcareous), mesic, shallow	4–50% slopes
				coarse-loamy, mixed (calcareous), mesic	0–2% slopes, occasionally flooded
				fine-silty, mixed (calcareous), mesic	0–2% slopes, occasionally flooded 0–2% slopes, saline, occasionally flooded
			Aquic Torriorthents	coarse-loamy, mixed (calcareous), mesic	0–2% slopes, saline
				fine-silty, mixed (calcareous), mesic	0–2% slopes, saline
			Lithic Torriorthents	loamy-skeletal, mixed (calcareous), mesic	8–70% slopes, very shallow, slightly stony
				loamy, mixed (calcareous), mesic	4–50% slopes, very shallow
			Xeric Torriorthents	loamy, mixed, nonacid, frigid, shallow	15–70% slopes
				coarse-loamy, mixed, nonacid, mesic	0–2% slopes, occasionally flooded
	Psam-ments	Torripsam-ments	Typic Torripsamments	mixed, mesic	2–4% slopes 4–15% slopes 15–50% slopes
Mollisols	Borolls	Cryobor-olls	Argic Lithic Cryoborolls	clayey-skeletal, montmorillonitic	30–70% slopes, slightly stony
			Pachic Cryoborolls	fine-loamy, mixed	15–50% slopes
	Xerolls	Argixer-olls	Lithic Argixerolls	clayey-skeletal, carbonatic, frigid	30–70% slopes, slightly stony
				clayey-skeletal, montmorillonitic, frigid	15–70% slopes, slightly stony
		Haplox-erolls	Ultic Haploxerolls	coarse-loamy, mixed, frigid	30–70% slopes

Table 5. CHEMICAL ANALYSIS OF WATER SAMPLES FROM DIXIE VALLEY
(In parts per million)

	Constituent	USPHS & Nevada Standards	Well Location				Stark Well (South End Dixie Valley)	Wonder District Mineral Exploration Co.
			24N 35E S18(#1)	24N 39E S29	25N 35E S10	21N 35E S19		
RECOMMENDED	Alkyl Benzene Sulfonate (ABS)	0.5						
	Arsenic (As)	0.01	Neg.					
	Chloride (C)	250.	1	142	25	28	26	37
	Copper (Cu)	1.						
	Carbon Chloroform Extract	0.2						
	Cyanide (CN)	0.01						
	Fluoride (F)		Neg.					
	Iron (FE)	0.3	2.20	0.38	Neg.	.03	0.10	>3.0
	Manganese (Mn)	0.05	5.0					
	Nitrate (NO_3)	45.	0.4	111	2.0	1.7	1.3	3.3
	Phenols	0.001						
	Sulfate (SO_4)	250.	4.0	38.4	192	75	43.2	310
	Total Dissolved Solids	500	117	665	313	310	289	626
	Zinc (Zn)	5.						
MANDATORY	Arsenic (As)	0.05				.025		
	Barium (Ba)	1.0						
	Cadmium (Cd)	0.01						
	Chromium (Hexavalent) (Cr^{+6})	0.05						
	Cyanide (CN)	0.2						
	Flouride (F)					6.10	2.35	
	Lead (Pb)	0.05						
	Selenium (Se)	0.01						
	Silver (Ag)	0.05						
NO LIMITS GIVEN	Alkalinity ($CaCO_3$)		68	108	90	70	96	144
	Bicarbonate (HCO_3)		83	132	110	85	117	176
	Total Hardness ($CaCO_3$)		60	244	72	47	92	268
	Calcium (Ca)		16	75.28	32.03	17	30.43	83.28
	Magnesium (Mg)		5	13.66	Neg.	1	3.89	14.58
	Sodium & Potasium (Na+K)		5	88.89	123.59	66	39.80	114.06
	pH		7.41	7.30	7.93	7.90	7.79	7.36
	Carbonate (CO_3)		0	0	0	0	0	0
	Turbidity		15	2	5	0.6	2.12	5.3

SOURCE: Samples analyzed by Nevada State Division of Health.



RECONNAISSANCE SOIL MAP

DIXIE VALLEY AREA

CHURCHILL, LANDER, MINERAL & PERSHING COUNTIES, NEVADA.

PREPARED BY

Agricultural Experiment Station
University of Nevada Reno

1973

5 0 5 10 Miles
SCALE 1:250,000

Base from U.S. Geological Survey 1:250,000 Scale maps: Winnemucca, Nevada (1956); Reno, Nevada–California (1957); and Millett, Nevada (1957).

State of Nevada
Division of Water Resources
State Engineers Office

B — **Class B irrigable soils, including some class C and D soils.**

- B-2a 130-200 day frost-free period; moderate available waterholding capacity is the principal soil limitation.
- B-2p 130-200 day frost-free period; slow permeability is the principal soil limitation.
- B-3a 100-130 day frost-free period; moderate available waterholding capacity is the principal soil limitation.
- B-3p 100-130 day frost-free period; slow permeability is the principal soil limitation.

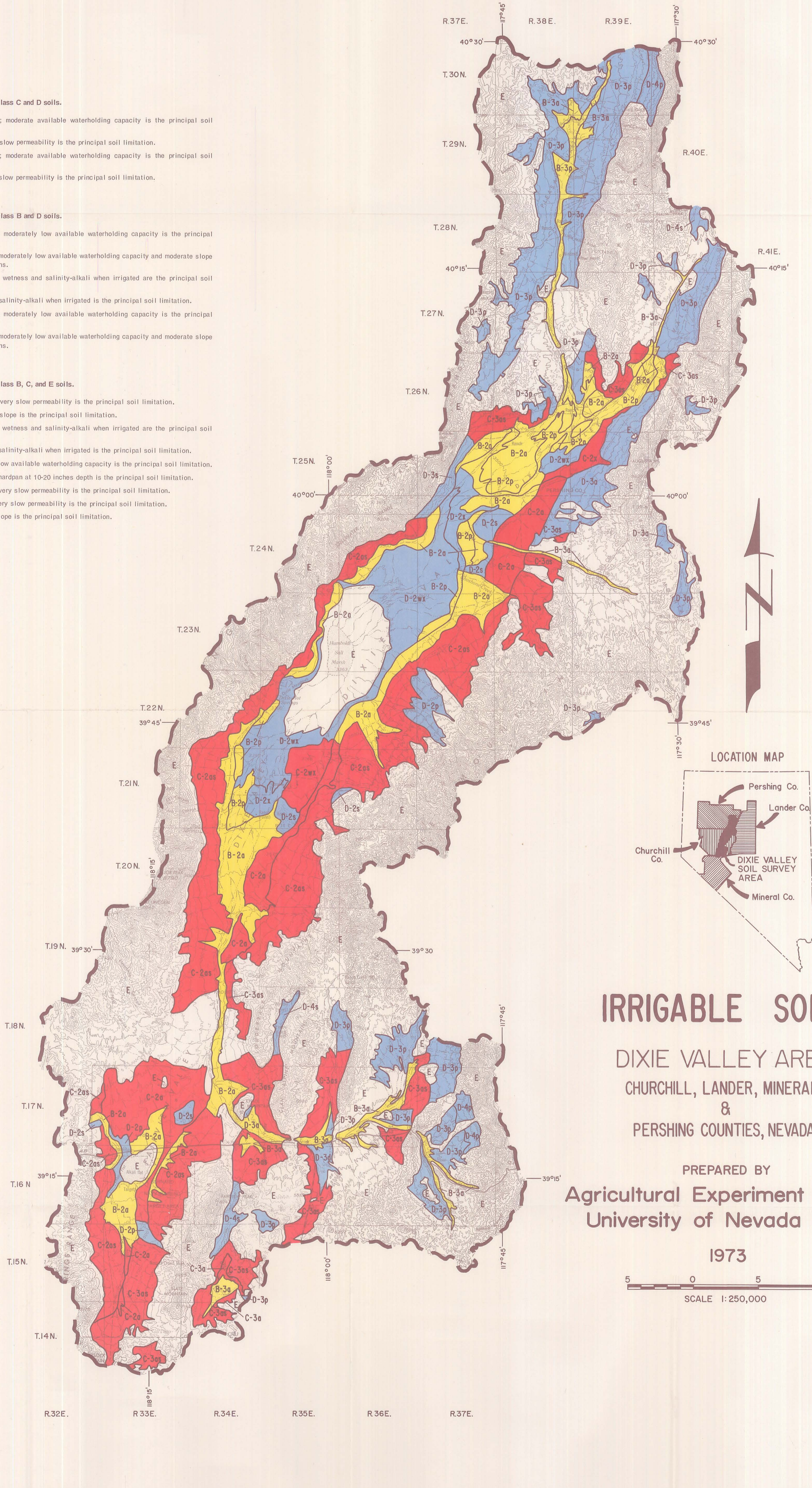
C — **Class C irrigable soils, including some class B and D soils.**

- C-2a 130-200 day frost-free period; moderately low available waterholding capacity is the principal soil limitation.
- C-2as 130-200 day frost-free period; moderately low available waterholding capacity and moderate slope are the principal soil limitations.
- C-2wx 130-200 day frost-free period; wetness and salinity-alkali when irrigated are the principal soil limitations.
- C-2x 130-200 day frost-free period; salinity-alkali when irrigated is the principal soil limitation.
- C-3a 100-130 day frost-free period; moderately low available waterholding capacity is the principal soil limitation.
- C-3as 100-130 day frost-free period; moderately low available waterholding capacity and moderate slope are the principal soil limitations.

D — **Class D irrigable soils, including some class B, C, and E soils.**

- D-2p 130-200 day frost-free period; very slow permeability is the principal soil limitation.
- D-2s 130-200 day frost-free period; slope is the principal soil limitation.
- D-2wx 130-200 day frost-free period; wetness and salinity-alkali when irrigated are the principal soil limitations.
- D-2x 130-200 day frost-free period; salinity-alkali when irrigated is the principal soil limitation.
- D-3a 100-130 day frost-free period; low available waterholding capacity is the principal soil limitation.
- D-3d 100-130 day frost-free period; hardpan at 10-20 inches depth is the principal soil limitation.
- D-3p 100-130 day frost-free period; very slow permeability is the principal soil limitation.
- D-4p 70-100 day frost-free period; very slow permeability is the principal soil limitation.
- D-4s 70-100 day frost-free period; slope is the principal soil limitation.

E — **Class E nonirrigable soils.**



IRRIGABLE SOILS

DIXIE VALLEY AREA

CHURCHILL, LANDER, MINERAL & PERSHING COUNTIES, NEVADA.

PREPARED BY

Agricultural Experiment Station
University of Nevada Reno

1973

5 0 5 10 Miles

SCALE 1:250,000

Base from U.S. Geological Survey 1:250,000 Scale maps: Winnemucca, Nevada (1956); Reno, Nevada–California (1957); and Millett, Nevada (1957).

State of Nevada
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